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MAJOR ROBERT ARTHUR, C. A. C. . . . . *Editor and Manager*
FIRST LIEUT. JAMES L. WHELCHEL, C. A. C. . . . . *Assistant Editor*

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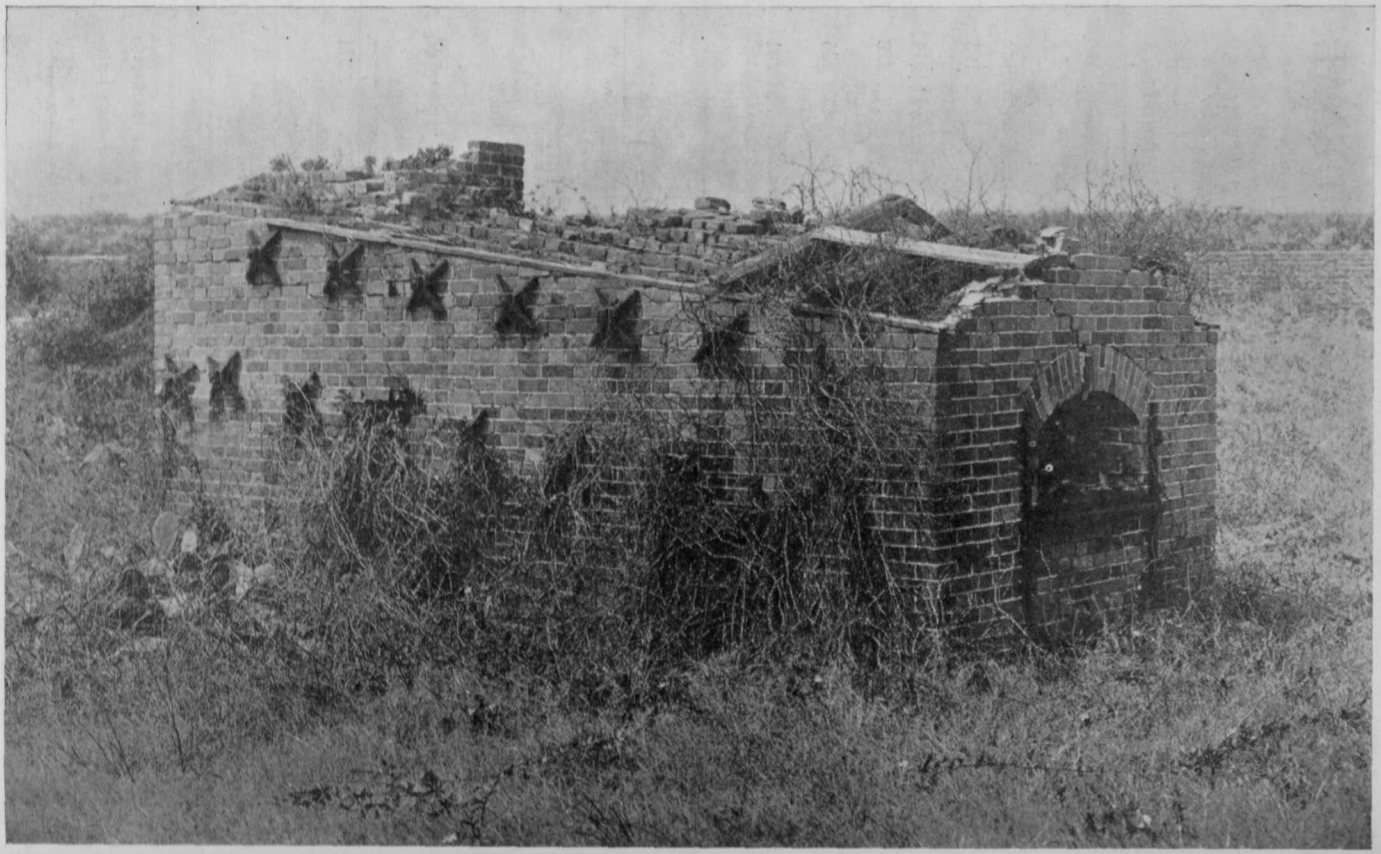

AN OLD SHOT OVEN AT FORT MORGAN, ALABAMA

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The Battle of Vittorio-Veneto

By CAPTAIN CHARLES J. SULLIVAN, *26th Inf.*

THE battle of Vittorio-Veneto was the largest coherent engagement fought during the World War and is, therefore, the largest battle in all history. It engaged nearly two million combatants, these troops being used in this particular battle and not in merely related or fortuitiously adjacent actions; the battle was a concerted one along a front of about 250 kilometers, through snow- and ice-trenches, among lofty peaks, on top of rugged plateaus above the clouds, and through a land so swampy that only breastworks could be built; it was planned and prepared in secret by one commander-in-chief and his staff, and was executed by that same command so nearly per schedule that it might have been a vast tactical exercise. It was the only decisive victory on such a large scale for either side during the World War; its immediate results were greater than those of any other battle since Waterloo.

Practically nothing is known about this battle either in England or in America. In the popular mind its magnitude and importance were obscured by the closely following general armistice. The only sources available to the professionally interested American student are a few brief pages in the too-quickly written general histories of the war and a very able consideration of its terrain by Major Douglas W. Johnson in his *Battlefields of the World War.*

The sources of this present article are: *La Battaglia di Vittorio Veneto* (The report of the Italian Supreme Command), Parte I of the report by the *Ministero della Guerra (Vittorio-Veneto)* and *Parte II, L'Italia E La Fine della Guerra Mondiale,* personal notes made while acting as an observer along the Italian lines from a month prior to the battle to October 20, and a diary written up after the action in which my regiment was attached to Lord Cavan's Tenth Army.

Italy, from the day she declared war on Austria until the armistice, was confronted with a problem which was not appreciated by anyone except those few who had studied her strategical situation. The civilian part of the Allied world wondered to the end why Italy did not simply

march across the plains cut by the Piave, the Livenzia, and the Tagliamento, cross the parapeted Isonzo, and hurl the divided Austrians back upon Vienna. These people reasoned that Austria, which had already been half whipped by little Serbia, and was even then holding a great Russian army back with difficulty, could not cope with a fresh nation in arms in her rear. But that is only half of the picture.

From first to last Italy was fighting with one hand tied behind her; she was in the position of one who, while trying to hold closed a pushed door with one hand, is trying to unlock a second door just beyond reach of the other. A study of the rather impressionistic map will illustrate her position. The reader will note that in this map the Alps from the Stelvio Pass to the mouth of the Isonzo River are represented as a wall, a straight line. I ask the reader to realize that north of this line are the Trentine Alps, the most complex mass of peaks, lofty plateaus, glacial canyons, steep precipices, inaccessible divides, and plunging streams through which an army ever attempted to operate. It is an almost roadless jungle of rock, snow, and ice. Because of the international boundary, Austria was perched on the top of this wall at the beginning of the war, and at the beginning of the battle of Vittorio-Veneto she was practically in the same place.

But there were corridors through these mountains and doors opening through this long wall. These are represented by the double lines, widths varying according to their military value. These corridors are formed by rivers which flow rapidly out of the heights and then spread into the alluvial plains of the piedmont. None of these corridors are wide enough to be free of domination by an enemy on either of its sides.

Strategically the international boundary line was, before the war, about the same as that represented by the wall. It did, in fact, cross the Giudicaria about fifty kilometers from Brescia, and the Adige about 30 kilometers north of Rivoli. It then included a part of the Asiago plateau and the north edge of the Grappa; it crossed the Brenta at Primolanto, then turned northward. This line permitted Austria to fortify and hold strong positions during peace and from which, during war, she literally looked into the actual rear of any force sent against her. She was not driven out of these positions until during the last few days of the war.

It is clear now, I believe, that if Italy were to carry out a large offensive in the east, along or across the Isonzo, she would have to keep constantly upon the active defensive along the west end of this wall. If she paused or grew tired even for a day she was in danger of having a mountain-weary enemy plunging into Lombardy—one hundred and fifty miles in her rear. What army can afford that?

Why did she not push the enemy back from these controlling positions before beginning an action in the east? She tried. She could succeed on a small scale on narrow fronts and then only for a short time. For every kilometer there were added difficulties in bringing up reserves and material—in many fronts cannon and men were transported by *teleferica,* an aerial tramway operated by cable from the valleys to the peaks. Also, the attackers on this kind of terrain had to outnumber the defenders more than twenty to one. It was conceded long before the end of the war that Austria could not be driven from her positions between the Giudicaria and the Piave by any sort of an attack directly upon those positions.

The Opposing Forces

After the failure of the Second Battle of the Piave in July, 1918, Austria held the long line from Stelvio Pass to the Piave delta with sixty-three and a half divisions, of which thirty-nine and a half were in the front line, thirteen and a half in the second line, and ten and a half in reserve. These divisions contained a total of 827 battalions with 1,070,000 combatant troops. Austria had on this front slightly more than 7,000 guns and mortars.

The allied forces consisted of fifty-seven divisions, containing 709 battalions with 912,000 combatant troops. There were 8,929 guns and mortars. Diaz's army was almost a microcosm of the Allied Powers. There were fifty-one Italian divisions, three British, two French, and one Czecho-Slovak divisions, and the 332d American regiment.

In detail, the Austrian forces were disposed as follows: From Brenta to the Ponte di Piave there were eighteen divisions in the first line and five in the second, these twenty-three divisions being in groups of eleven, nine, and three as follows: From the Brenta to Pederobba there were eight in the front line and three in the second; from Pederobba to Ponte della Priula there were seven in the front line and two in the second; and from Ponte della Priula to Ponte di Piave there were three in the front line and none in the second. Prior to September there were ten and a half divisions in reserve in the lower part of this sector, but during September, a rumor of the impending battle having arrived at Austrian Headquarters, this entire force was moved into the sector behind the Brenta-Pederobba front. Thus at the start of the battle the enemy could oppose thirty-three and a half of his best divisions to the Italian offensive at the point where it was almost necessary for it to fall. This concentrated reserve force was so located that it could be easily and rapidly transferred from one sector to another by means of the Trent–Feltre–Belluno road in the Val Sugana corridor.

It will be seen that Diaz's Jackson-like strategy held this powerful reserve force where it was and at last drew the whole of it into the conflict at a point removed from the main point of attack. It was because of this premature use of reserves that the Italian Eighth Army was able to march upon Vittorio and then execute its enveloping movement almost without resistance after the third day.

The remaining thirty divisions were thinly disposed along the lower Piave in the Fifth Army, and formed the Tenth and Eleventh Armies in the Trentino Group. In the sector in front of the Italian Seventh Army from Lake Garda to the Stelvio Pass there were many miles of front held securely by only an occasional white-clad sentinel.

The disposition of the Italian and allied forces was as is indicated on the map. It is only necessary to call attention to the fact that from the Brenta to Pederobba, in front of Giardino's Fourth Army, the enemy had concentrated eleven divisions, with ten and a half in reserve, while in front of Caviglia's Eighth Army and Lord Cavan's Tenth Army there were only twelve divisions, with practically no immediate reserves.

Positions

Austria's position was doubtless the strongest natural position ever occupied by so large an army on the defensive. Major Johnson calls it an ideal defensive terrain. The enemy's right flank rested upon a neutral boundary line, and, in addition, was tactically secure, holding the peaks and inaccessible benches of the Adamello Alps. His line from there to the Montello was one which he had been able to hold against all attacks since the beginning of the war. The corridors opening from the plain form a network of avenues for communication lines available to the army which dominates them, but offering only death-traps to attackers from the south or west. The rivers in these corridors are obstacles in themselves, but are far from being the most serious ones. They can be forded and bridged in a great many places, though they are at all places and at any time subject to any kind of a fire which a hidden enemy on the peaks and benches may wish to lay down. Once across these streams the attacker finds himself in a worse plight than when he was on the other side; often he is confronted by nearly perpendicular walls hundreds of feet high, or he finds that he must crawl up a natural, slanting glacis capable of being swept from three directions by machine-gun and artillery fire; or, if the slope be gentle and inviting he is hurled back by artificially prepared avalanches of rocks

and snow. His attack cannot be on a large scale and he therefore finds himself under fire from points far distant from the place he is attacking. Then when he succeeds he nearly always finds himself deserted by reserves and supplies.

Austria's left flank rested upon the impenetrable marshes at the delta of the Piave, near the town of Cortellazzo. This flank was probably as strong as his right and for exactly the opposite reason. Here there was no chance at all of any operation on a scale large enough to require artillery. During the Second Battle of the Piave in July the Italians mounted a few guns on rafts and barges camouflaged with bushes, but this was a sacrificial act. The same ruse could not have been used as an aid to an offensive.

The forty-five kilometers of front stretching northwest from Dona di Piave to the Montello was the Piave front proper. Here the enemy held the left bank of the river and most of the islands in mid-stream, some, in fact, within a few yards of the right bank and the Italian breastworks. The most important group was the Grave di Papadopuli. This group consisted of one long, narrow sand-island, nearly three miles long, and three other much smaller sand-bars, and were tactically the most important position held by the Austrians south of the mountains.

In order to understand the nature of the Austrian position in this particular sector it will be necessary to consider the Piave River. There is no river in America to which it can be profitably compared. In the first place, a few miles below the Montello it ceases to be a river and becomes a system of rivers, there being in some places as many as ten separate and distinct streams flowing through its wide bed. Rushing down out of the Alps it suddenly flattens out, but does not lose its fierce momentum until it has spread into its delta forty miles below. Few of these streams that make up the Piave are more than thirty feet wide and seldom is there a depth of more than five feet, and yet all of these streams are very serious military obstacles. Its swiftness makes of this river a great military feature. The Italian official report states that on the night of October 24 the current in the west channel in front of the Tenth Army measured more than four feet per second. A man carrying a pack and a rifle cannot wade through even three feet of water flowing at that rate, neither can boats be rowed except by specially trained punters. Pontoons can be placed only with the use of more anchors than are usually carried on a pontoon train.

Such was the front and such the disposition of enemy divisions. The Austrians made the most of their advantage in position so far as their

first and second lines were concerned, but beyond that the lack of preparation showed over-confidence and carelessness. The very strength of their front lines was therefore the indirect cause of their ultimate defeat, for in but few sectors had there been any real attempt to build up secondary positions, this in spite of the fact that at the Livenzia and the Tagliamento there were natural positions in readiness as strong as the Piave line.

Personnel

The Austrian soldier, when in a fully trained organization, was the equal of any other. The infantryman was not as good as the German, French, or British foot soldier, nor could he be compared with the Italian Arditi or Bersagleri, but this was the fault of his training, his organizational training, and the faulty staff work of the larger units. Individually, he was just as brave and fought just as intelligently as any other individual, considered as such. He was better on the offensive than in defense.

In view of post-war impressions regarding the Austrian soldier, it is well to remember that in October, 1918, Austria was the only one of four Central Powers which was as yet unbeaten. Germany was being whipped to her knees, Turkey had already quit, and Bulgaria was pleading for an armistice. Austria alone was in her old position and was planning an offensive.

The Austrian artilleryman was the best on either side; perhaps he was second to the Frenchman in handling the lighter guns, but certainly he was second to none in the manufacture and the handling of the heavier Skodas.

The qualities of the British and French are too well known to need comment. The Italians were a nation in arms fighting for what they fully and sincerely believed to be a part of their fatherland. For the most part their divisions were excellently trained and those in the Fourth, Twelfth, and Eighth Armies had been specially prepared for their part in this battle. It was odd that nearly every officer and man to whom the Americans talked during September and October was sold on the idea that this was to be the last battle, the "battle to the last man," the final effort; the drive to Vienna. There was to be no halting. This was Diaz's idea, and it adds to his fame that he so entirely imbued his vast army with that spirit.

The Austrian air service was about equal to that of the Italians but not equal in numbers or efficiency to the combined air forces of the Allies on this front. Treviso, Venice, and other cities in the rear were bombed nightly by the Austrians just before the battle opened.

Artillery

Of the 8,929 guns and mortars available, Diaz had concentrated 4,750 behind the comparatively narrow front of the main effort. Six hundred of these were heavy trench mortars. There was concentrated also in this sector an eight-day ammunition supply, about 5,700,000 rounds.

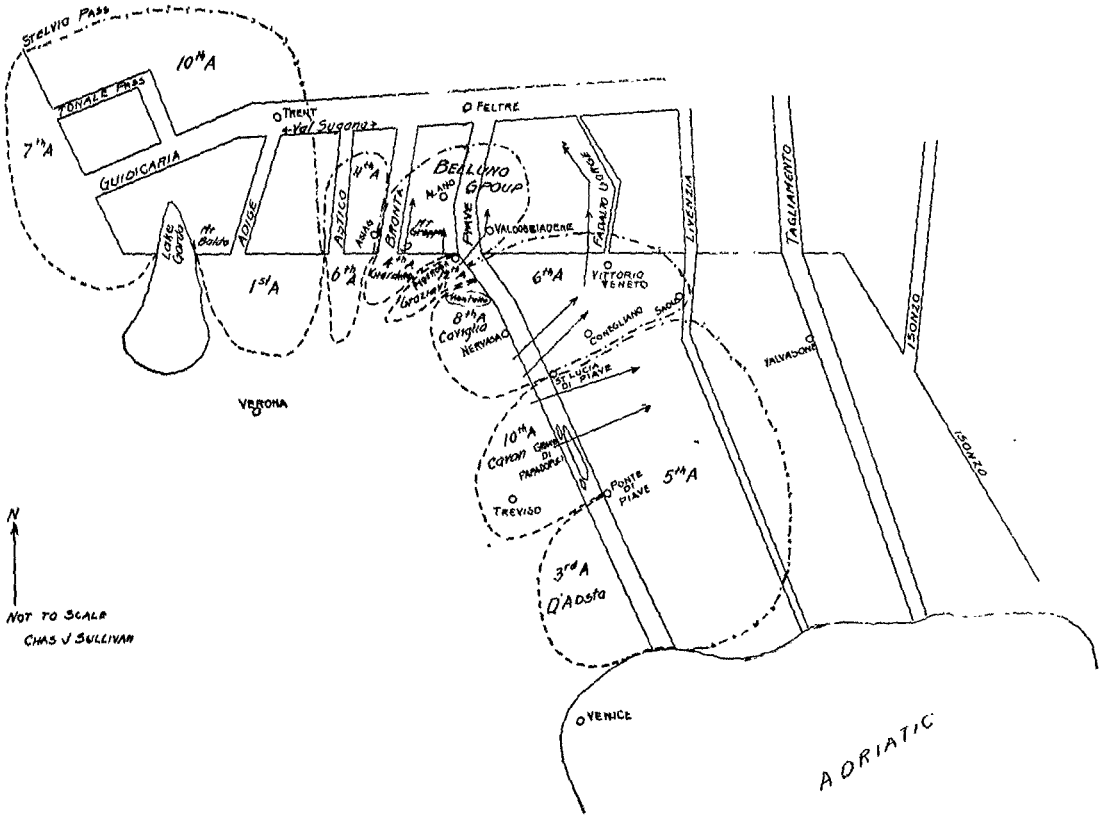
Of this number there were 800 heavy guns opposite the Grave di Papadopuli as compared to the normal 350 of the enemy. On the other hand, against about 2,000 guns in the Grappa front the Allies had only 1,800, despite the fact that the enemy's position was so much the stronger. The British guns had been brought down from the mountains, but were not allowed to fire even for registration until the opening hour of the battle, as the presence of these guns on this front would have revealed the Italian plans.

The Plan and Preparation

The original plan included a preliminary attack on the Asiago plateau with a hope of taking the Col Santo and pushing towards the Folgaria plateau which defends the highly important Val Sugana corridor and its line of communications. This part was abandoned during September as being too costly and not at all certain. It is mentioned here to show that Diaz, from the beginning, was occupied with the idea of influencing the enemy to move the bulk of his reserves away from the middle Piave and into the mountains. All of the plans which we know that Diaz entertained contained at least one phase by which it was intended to mislead the Austrian high command into committing the error of weakening her southern lines in front of the Eighth and Tenth Armies and strengthening her already overpowerful positions in the mountains.

The fundamental idea of the battle was to separate the Austrian mass in the Trentino from that on the Piave by a sudden and surprising plunge between them at the junction of the Austrian Sixth and Fifth Armies. Diaz, in short, expected to carry the mountain positions by an enveloping attack on and through the enemy's left flank. This would have been difficult of accomplishment had there been even a normal reserve force not committed to action in front of the Eighth Army after the break-through.

This particular point of attack invited Diaz also because of the tactically weak position of the Sixth Army at its junction with the Fifth Army. The front of the Austrian Sixth Army extended from the Grappa to a point near San Lucia di Piave. Its line of communications


STELVIO PASS
10th A
TONALE PASS
7th A
GUIDICARIA
TRENT
Val Sugana
FELTRE
4th A
BELLUNO GROUP
N. LINO
BRENTA
PIAVE
VALDOBBIADENE
FALMIRO GROUP
LIVENZIA
TAGLIAMENTO
ISONZO
LAKE GARDA
Mt. Baldo
ADIGE
ANTICO
1st A
6th A
4th A
6th A
VITTORIO VENETO
8th A
Conegliano
NERVIANO
CONEGLIANO
SACILE
ST. LUCIA DI PIAVE
FALVASONE
VERONA
10th A
CANON GRAPPA DI PAPADOPOLI
PONTE DI PIAVE
5th A
TREVISO
3rd A
D'ADOSTA
VENICE
ADRIATIC
N
NOT TO SCALE
CHAS J SULLIVAN

ran along its left boundary for some distance, its railhead being Vittorio-Veneto and its distributing points being Conegliano and Sacile. This was of course a dangerous line, and when once broken beyond Conegliano left fully half of the Sixth Army in the air. If Vittorio could be taken and held, it meant that the whole of this Army would have to retire beyond the Livenzia or be destroyed.

But Diaz planned further than this. He assigned to the VIII Corps of the Eighth Army the task of securing Vittorio, and then swerving to the left to Feltre gorge, thus reaching the rear of the enemy force on the Grappa. The mission of the Tenth Army under Lord Cavan was simply to advance as rapidly as possible but to tend southward, thus driving the Austrian Fifth Army away from the main attack and protecting the advance of the Eighth Army. Graziani, commanding the Twelfth Army, was to advance with the Eighth, securing its right flank and engaging as many of enemy reserves as possible.

To the Fourth Army, commanded by Giardino, was allotted the costly feint attack on the Grappa. This attack is called a feint, or perhaps more correctly a holding attack, only by comparison with the main attack by the Eighth and the Tenth Armies. In reality Giardino's fight with his Fourth Army became one of the bloodiest, most desperate encounters of the war.

Naturally the success of the maneuver contemplated by Diaz depended upon surprise and rapidity of movement. The surprise was not so difficult of attainment as might be supposed. The Austrians, placing themselves in the position of Diaz, decided that the logical point of attack was in the Grappa or the Asiago; that Diaz, being inferior in numbers and position, could not risk even a success on the river front and leave in his rear a powerful force in condition for a counterattack. Diaz, on the other hand, foresaw exactly this attitude of his enemy and did everything in his power to foster it. He moved troops to the mountain by daylight and back again under cover of night. He strengthened Giardino's Fourth Army by the addition of both men and guns; he even led the personnel of that Army to believe that when the big drive began the Grappa was to be the scene of the main drive, so that when the Austrians took prisoners during early October they learned only what Diaz desired that they should learn.

So it was that, although the enemy knew that there was to be a great battle, although they knew almost the exact date of its beginning, Diaz's plans remained a secret, and, when on the 27th it became clear that his main attack was in front of the Grave di Papadopuli and below Montello with the Eighth and the Tenth Armies, the surprise was complete and effective.

The preparations for this battle were more difficult. In addition to the usual concentration of materiel, guns, men, and ammunition for an offensive on a large scale, there was also assembled in the Treviso–Mestre area the following enormous amount of engineering equipment: twenty pontoon bridging trains; 5,000 yards of tubular foot-bridging, an uncounted number of barges, small boats, gondolas, punts, and rafts, and 700,000 cubic feet of bridging timber.

During the days of preparation—during September and early October—we of the American regiment were billeted in Treviso, in the Tenth Army's area, eight kilometers from the front. We took our turn in the front line trenches by battalion, and when not in the line we were trying to punt across the Sile River under the instruction of gondoliers. None of us were very good at it. This stream flowed at about half the rate of the Piave.

These days were apparently very quiet. During the daylight hours there was scarcely a man or an animal to be seen for many miles behind the lines. At almost regular intervals a gun somewhere would fire one registering round, then perhaps in half an hour another one. The Austrian anchored balloons lolled idly almost above us, and once in awhile, just for appearances, one of them would be shot down. Four of them were destroyed by airplanes during the two weeks preceding the attack.

But the nights were different. Then the roads everywhere were jammed with double columns. Long lines of men marched in the ditches, long chains of trucks, wagons, guns, pontoon bridges moved slowly but constantly in the middle of the road. There were no lights, no noise, just the usual sounds of the night, the swish of the constant rain and the rattling of countless wheels.

All concentrations were completed on October 16 and the Battle of Vittorio-Veneto was scheduled to have begun on that date. The condition of the river and the certainty that this condition would grow worse made it imperative to postpone the start. This was a very wise decision. If troops in large numbers could have crossed between the 16th and the 24th there is no doubt at all that their supplies and reserves would have been trapped on the right bank. It is certain now in retrospect that if Diaz had ordered the opening of this battle even one day before the 24th the whole plan would have been endangered. The first stages might have been successful, the Grave di Papadopuli might have been carried, the left bank might have been gained at several points, one or more bridgeheads might have been established, but the great follow-up would have been impossible.

The Battle

On Wednesday night, October 23, two English battalions, dressed in the Italian green, under the leadership of Lieut. General Sir J. M. Babington, crossed the west channel and captured the northern half of the Grave di Papadopuli. These troops were rowed over in small punts by Italian *pontieri*. They were dressed in Italian uniforms and were supported by Italian guns, because if at that time the enemy had seen English troops or heard English guns in that sector it is doubtful if he would have eventually committed his reserves to action on the Grappa.

The Austrians were surprised and were driven out of their strong front-line trenches. The English hung onto the north end of this island through a dozen heavy counterattacks and as many bombardments until on the second day, the 25th, they were reinforced by two more English battalions and two Italian battalions. These relieving troops had not been able to cross earlier owing to a sudden rising of the stream on the morning of the 24th. These six battalions, on the 25th and 26th, drove the remaining enemy off the island and, on the 26th, began bridging the channel behind them and the stream in their front. All of their pontoon materiel was destroyed, but they succeeded in laying light foot bridges with the wreckage, and it was upon these bridges that a part of the Tenth and the Eighth Armies crossed the following day.

This action, the capture of the Grave di Papadopuli and the holding of it through two terrible days, was one of the most telling strokes of the battle. In order to appreciate its importance it is only necessary to note that two days after the beginning of the battle proper, the Eighth Army, just north of these islands, had been unable to complete a bridge and were forced to send a corps down to these bridges in order to gain the left bank.

In the meantime, the gigantic feint attack by the Fourth Army on the Grappa had begun an hour before dawn on the morning of the 24th. Giardino opened up at 5:00 o'clock with every gun he had, concentrating all of his weight on the Pertica area and the Solarlo salient. The weather was cold and foggy. There was no observation at all. At about 6:00 o'clock this fog changed to a heavy, slanting rain and during this rain the Fourth Army left their rocky trenches and began the attack. It was at once seen that the heavy weather had little effect upon the accuracy of previously registered machine guns. The assaulting lines melted away and the attack was halted everywhere except in a few sheltered ravines and shallow gorges. There were a few minor and temporary successes and all at great cost.

On this first day, the 24th, Mt. Asolone, a height on the left of the Grappa, was taken during the morning, and then, within the hour, had to be abandoned under a withering fire from machine guns hidden in enfilade across a narrow ravine in another sector. It was stormed and taken again, and again the attackers were driven out by a series of counterattacks. The Italians captured this one point four times during the day and at the end were where they had started at dawn; they took it three times again on the 25th, but were not able to hold it until on the 26th.

The Pesaro Brigade carried Mt. Pertica, to the right of Asolone, on the 24th, but after having lost nearly forty per cent of their assault lines, these two regiments were driven beyond their original lines, where during the remainder of the 24th and most of the 25th they were hard pressed by a constant series of violent counterattacks. This Brigade, having been strengthened by its division reserves on the 26th, and assisted by the advance of the Lombardia Brigade on its right, again carried the heights on the 26th, and, though driven back, it did not lose entire control of the slopes, and on the 27th managed to take and hold this whole very important peak.

Likewise, the attacks upon the Solarolo summits, the Valderoa benches, and the Col di Vaial were costly failures on this first day. The Lombardia Brigade enveloped the Solarolo and were able to hold Point 1671, but were not strong enough to secure the peak itself until the 26th. A battalion of the 96th Infantry reached the Col di Vaial and began to climb the steep slopes of the Zoc, but were stopped and then pushed back by heavy bombardments and counterattacks.

Supporting this attack of the Fourth Army, the left wing of the Twelfth Army swarmed down from its positions on Mt. Tomba and Mt. Fenera, on the right of the Grappa, and established itself securely in the Ornic basin near Alano. Also, in support of Giardino's effort, assault patrols from the First Army advanced through the Val d'Astico, and special attacking columns of the Sixth Army on the Asiago plateau, on the left of the Grappa, rushed the advanced posts of the Redentore Val d'Astico and turned the enemy's front lines in the Val d'Assa. These latter units reached the trenches at Canove and Stenfle on the 25th, and held them long enough to lend importance to the maneuver. The object of all of these operations by the First, Sixth, and Twelfth Armies at this time was simply to deny maneuver ability to the enemy on the flanks of the Fourth Army, and this object was entirely attained.

The desperate resistance encountered in the Grappa region caused no change in the plans of Diaz; on the contrary, on the 26th, replace-

ments were sent to Giardino, and he was ordered to push his attack with renewed force. His losses in the three days fighting were enormous, totaling more than 11,000 killed and wounded among nine divisions of his army. The final losses in the Fourth Army during this battle were 23,000 killed and wounded and less than 1,000 captured.

But though Giardino did not make any appreciable headway or gain any ground to speak of during these first days, his effort had entirely fulfilled his mission. The terrible earnestness of his attack, the savage persistency with which it was continued, deceived the enemy as to its real nature, and led him to commit to action all of his immediate reserves in the Feltre gorge and to move northward those few and very precious mobile reserves in front of the Eighth Army.

Many of the incidental assaults and minor actions of this grand gesture of the Fourth Army were doubtless beyond all experience in warfare. In one sector on the right of the Grappa the way of attack had been prepared by the use of electric and hydraulic drills. By means of these rather unusual weapons footholds were cut into the solid rock of a precipice which formed the flank of a strong Austrian position. The attacking force then climbed up the face of the cliff, surprised the enemy garrison and captured a center of resistance which could not have been approached in any other way, and which dominated approaches to a half dozen other strong points. In the attack on Mt. Asolone it was early learned that no advance in force could be made until the Col della Barretta had been taken. This *col,* or little hill, was almost surrounded by other and higher hills, all of which were, of course, mutually supporting. Mt. Asolone could not be taken with Berretta in the hands of the enemy, and Berretta could not be taken and held because even if an assaulting force reached the knob it could not remain there under the converging fire of machine guns and artillery. These latter could not be reached with the allied artillery in its present position.

A battalion of Arditi was assigned the mission of clearing the Berretta and then to return. Without any artillery preparation these intrepid assault troops rushed the position, climbed the steep slopes, and plunged among the astonished enemy. The garrison was destroyed or captured, and then the Arditi herded more than 600 prisoners back down the slopes and into their own lines. Soon afterward, before the peak could be re-garrisoned, a brigade rushed forward and during the day and the next all of the positions surrounding Asolone were taken.

There were numerous cases of strongly held points being taken and held by unbelievably small groups; often a squad, all that was left of

a battalion, would reach the peak, or bench, or cliff's edge which had been the objective, and hold it until supports could arrive.

The battle proper began at 11:30 on the night of October 26-27 with the opening of the artillery of Eighth, Tenth, and Twelfth Armies. It was then that the enemy received his first inkling that something was wrong with his Intelligence. English guns were firing in great numbers, and it was very apparent that the mass of guns in this lower sector was far greater than in the Grappa.

There were 4,750 guns of all sizes in this opening salvo and they kept up an undiminished roar until 6:45 in the morning. To this the enemy made as good a reply as was possible, but it was weak in comparison; all of his strength was in the mountains. After daylight his counterbattery work became very effective, and during the 27th and part of the 28th he put on a demonstration of accurate long-range firing that would be difficult to duplicate. This consisted in destroying pontoons and rafts in front of the Eighth and Tenth Armies with a regularity that was uncanny. It was apparent that the observers were permitting the pontoons to be well begun, then there would come the sudden wheeing of a Skoda shell, and almost invariably it would fall squarely on the bridge or well within effective radius. The losses among the English pontoon trains during the 27th were exceedingly heavy and were due almost entirely to this artillery fire. Owing to this fire also only six bridges on the whole front were ever completed, whereas twelve had been planned. Actually only four were finished in time to be used by the first infantry to cross.

The bridges which were completed and used were as follows: One in the Twelfth Army sector at Pederobba, two between Fontana del Buoro and the Falze salient in the Eighth Army sector, and three across the Grave di Papadopuli in the front of the Tenth Army. It will be noted that of the seven bridges expected to be placed in front of the Eighth Army, it was possible to furnish only two, and the most southern of these was ten kilometers north of the left flank of the Tenth Army.

This gap of ten kilometers came near to being disastrous. Between Falze and the Tenth Army was located the VIII Corps of the Eighth Army. It was this Corps which had been assigned the mission of reaching and securing Vittorio-Veneto. The fact that there were no bridges in its front not only endangered its own mission, but exposed the left wing of the Eighth Army and the whole advance of the Tenth Army.

In spite of the destruction of the embryo bridges along this front—in fact, under the cover of this destruction—the Tenth Army managed to send across three brigades early on the morning of the 27th, and the

left Corps of Caviglia's Eighth Army crossed in sufficient force to establish a bridge head near Vidor in the Sernaglia plain, though this bridgehead was not advanced far enough during the 27th to place the crossings out of artillery range. The 107th French Infantry of Graziani's Twelfth Army crossed early in the morning, and by dint of hard fighting established the most northern bridgehead near Valdobbiadene. This regiment was, later in the day, assisted by three battalions of Alpini. The Eighth Army was not able to complete any of its projected crossings from this doubtfully established bridgehead south to the Grave di Papadopuli.

The most important advance of this day and, as a result, the most securely established force on the left bank of the river, was that made by the XI Italian Corps, forming the left wing of Lord Cavan's Army. This was the force which had used the bridges across the Grave di Papadopuli, the bridges which had been made possible by the preliminary attack of the English on the 24th. This Corps, together with the XIV English Corps and the 332d American regiment, advanced quickly, almost too quickly, during the morning; then, having gone too fast for supporting troops, were whirled back in the face of heavy counter-attacks. Later in the afternoon its most advanced lines reached Borgo Malanoote, and, though subject to attacks during most of this night, a safe bridgehead was established. The Tenth Army during this day's fighting took 6,000 prisoners and 24 guns. So rapid had been the early advance of this part of the Tenth that had it not been for the failure of the right wing of the Eighth to cross the river, it is probable that a great part of the left of the enemy's Sixth Army would have been routed or captured and the hard fighting of the next day would have been unnecessary. As it was, this unengaged left wing made Cavan's position on the evening of the 27th extremely dangerous, and would eventually have meant his withdrawal.

On this day the Third Army, under the Duke D'Aosta, assisted the main attack by a feint at crossing at the Ponte di Piave and by an artillery demonstration. The First and Sixth Armies were already helping the Fourth by their raids in force upon the Asiago, and the Twelfth was nearing Alano and had established a bridgehead at Valdobbiadene. The First Army, on the extreme left, was the only one which at this time had not become actively engaged.

During the night of the 27th-28th, the work of repairing the destroyed bridges and of trying to place those which were absolutely necessary, continued without rest. Everything happened to increase the difficulties of this work. The enemy artillery in position beyond the bridgeheads had every inch of this ground registered, and now, during

this rainy, foggy night, began to intensify his already uncannily accurate fire with the use of gas and yperite shells. The rain increased the volume and the velocity of the already violent streams to such an extent that in most sectors nothing at all could be done. The right wing of the Eighth Army, appreciating the danger of the 10-kilometer gap, worked feverishly and with great losses during the night, but at daylight the flooded channels were still unbridged.

It was then that Diaz proved himself to be a leader beyond the ordinary, one of the few who can think at a time of crisis, and then take a chance. Realizing that unless Caviglia's VIII Corps got across the river very soon, the two central bridgeheads could not remain where they were, he transferred Caviglia's Reserve Corps, the XVIII, to Lord Cavan's Tenth Army, with orders that it be sent across the upper bridges of that army at once. General Basso, in command of this Corps, which from being an army reserve suddenly became the pivotal maneuver element of the whole battle, led his advanced units into the Tenth Army area and hurried across the river. He succeeded in getting two divisions over before the bridges were destroyed behind him. Without waiting for his supports, however, he deployed what he had and immediately advanced at an enfilading angle to the enemy's front, thus at the same time covering Lord Cavan's left flank. This enabled Lord Cavan to lift his flank from the beach and to extend greatly the front of his bridgehead. Basso's action also eased the pressure in front of Caviglia, and during the night of the 28th, the Eighth Army at last managed to throw a bridge over at Nervassa and to safeguard it with a comparatively strong assault column on the left bank.

Thus it was that during the night of the 27th General Diaz met and passed his trial. Later events showed that the enemy had prepared a strong counterattack aimed at Lord Cavan's left flank. Owing to the fact that the Tenth Army's forward troops would have been cut off from their reserves and supplies, it is highly improbable that they could have remained on the left bank of the river, and, once it had been forced back, Caviglia's left wing would have been in an almost impossible position. The enemy's counter thrust did fall late in the afternoon of the 28th, but it was then too late, as it found a determined Italian force filling the gap and driving its own front line forces before it in an enveloping attack—a maneuver which had almost been forgotten during the years of trench warfare. The use of the XVIII Corps on this occasion is an almost ideal example of the use of an army reserve on the offensive.

The advances made by the Tenth Army, the progress of the XVIII Corps of the Eighth Army and a slight improvement of position by

the Twelfth Army's bridgehead at Valdobbiadene were the only successes along the whole front on the 28th, the second day of the main battle. The Fourth Army continued its terriffic assaults all along the Grappa where there were many local victories followed by heartbreaking abandonments owing to the fact that flanking troops could not advance. A strong assaulting column managed to cling to the slopes of Mt. Valderoca during the night of the 28th and, from this line, this dominating peak was taken early on the 29th; but Giardino had about become convinced that all he could do was to fulfill his mission, that is, lead the enemy to believe that this attack was the main one. This much he had already accomplished to a greater degree than was ever expected. He kept hammering now just to be able to take advantage of the break he knew must come if Cavan and Caviglia broke through on the river below him. Events of the next few days proved that neither his force nor any other one would have been able to break this front without the assistance of a potential enveloping force coming from the direction of Vittorio.

Except on the Grappa the enemy did his last real fighting in front of the Eighth and Tenth Armies on the afternoon of the 28th. During the 29th his back was broken; he still fought stubbornly and bravely in groups as large as a battalion and smaller, and his rear-guard actions were brilliant and effective up to and including the crossing of the Tagliamento on the 3d and 4th of November; but his divisions and larger units south of the Grappa were so broken that from the 28th on there was no further determined defense on a large scale. This condition was caused primarily by the almost blind rush forward of Caviglia's VIII Corps. This Corps, it will be remembered, was the one picked to be the first across the Piave; it was to have passed Marcatelli on the first day and proceed to Vittorio. It had not been able to cross the river at all, and had been held straining at its leash while units on its right and left crossed and began the battle. During the early hours of the 29th, however, this Corps, under cover of the XVIII, bridged the river at Ponte della Priula. It crossed quickly and carried the enemy's lines at Marcatelli by an irresistible storm. Within six hours it took possession of Susegana, and spread to the left to join the northern bridgehead.

In the meantime, the XVIII Corps plunged forward and occupied Conegliano, the mid-point on the Austrian Sixth Army's line of communication, and late in the afternoon pushed out a flying column of Firenze lancers and Bersagleri bicyclists to occupy Vittorio. This bold stroke was successful in so far as that important objective was reached. It was not actually secured until infantry arrived on the 30th.

On the 29th also, the 23d Division (French), of the Twelfth Army, captured Mt. Cesen and Point 1569, a most important peak commanding the Quero gorge and the Feltre road, far on the left flank of the enemy's Grappa line and almost in its rear. From the moment of this advance by the Twelfth Army together with the showing of Cavalry in Vittorio, the resistance on Grappa began to weaken. Here was a case of an impregnable stronghold being made untenable by the mere threat, as yet, against a flank which, a few days before, had not been a flank at all.

Another and a more direct result of the securing of Mt. Cesen was that it made the accomplishment of Caviglia's second mission possible. It will be remembered that Caviglia's Eighth Army was to secure Vittorio; then it was to turn to the north, cross the ridges separating the lower plains from the Piave River in the eastern Val Sugana, and thus arrive in the rear of the Grappa bastion. Graziani's capture of Mt. Cesen would serve to protect Caviglia's left flank during this operation, and also denied maneuver to the enemy in the Feltre gorge.

During the 29th, while his fate was being sealed at Mt. Cesen and at Vittorio, the enemy threw his last two reserve divisions into the melée on the Grappa, in a last gigantic counterattack. It is certain that he was no longer in doubt as to the nature of the battle, and it is improbable that Boroevic used these divisions just to halt the attack of the Fourth Army. If the maneuver was anything but a gesture, it was made with the forlorn hope of hurling the Italians into the plains below the Grappa and forcing thereby the withdrawal of lines advanced far beyond the Piave. This would have been sound tactics a few days earlier, but now, with nothing behind him, not even Corps reserves, it was foredoomed to failure. It failed tragically; practically none of these two divisions ever got back to their own lines. A few hours later, Giardino, sensing that his enemy's condition was ripe for an attack, advanced his right and captured Mt. Spinoncia and secured Valderoca.

The enemy's defeat had become a certainty by the evening of the 30th. During that day the Tenth Army, still forming a defensive flank for the maneuvering of the Eighth Army, advanced at almost a marching rate to the Livenzia River, 25 kilometers east of the Piave. It could not cross this river on the evening of this day owing to the strong defensive positions held by the enemy on its left bank, but the line of the river furnished a good place for reorganization, and Lord Cavan took advantage of this. Because of the angle of his advance, *i. e.*, in an east of north direction, whereas the Eighth Army was advancing directly north, a rather uncomfortably wide gap had appeared between the two armies before the arrival at the Livenzia. Caviglia, because of this

gap and also with the view of pursuit, thrust his division of Cavalry (the 1st Division) into this gap with orders to secure Sacile, cross the Livenzia, and proceed to the Tagliamento.

On this day the Twelfth Army secured itself on Mt. Cesen and advanced into the valley toward Feltre. The enemy at this point had begun to resist desperately again, and during this day the advance was very slight. The Eighth Army had proceeded up the narrow gorge connecting Vittorio with the gorge leading to Feltre, but there had been somewhat slowed before strongly held enemy positions. It was evident that the Austrians were intending to make a final desperate stand here to save their troops in the Trentino. The resistance on the Grappa had also stiffened, though it was evident that this was in the nature of a rearguard action. The Fourth Army, however, was not able to make any appreciable progress on this day.

Late on the 30th a division of the Third Army crossed at the Ponte di Piave and rapidly advanced into the lower plains of the Piave. It met with quite surprising resistance from rearguards until other troops at Salgareda, Romanziol, and San Dona crossed suddenly, and the advance of this army became general.

On the 31st the Fourth Army suddenly felt the wall give way in front of it, and the leading infantry units rushed through the several breaks like the Piave streams through a broken dike. Some of these were trapped by strong rear guards, some were stopped until nightfall, but a strong detachment reached Feltre at 5:30 that evening, and its appearance was so astonishing that 2,000 of the enemy surrendered, among these being the engineer company detailed to blow up the Feltre bridge. With this advance all action of a major character ended on the Grappa.

During the night of the 31st-1st, a regiment of the Padova Light Cavalry crossed the Grappa by mule paths, and, in the morning, emerged from the Val di Seren. It advanced upon Belluno, scattering an astonished Bosnian regiment of infantry by an old-time cavalry charge.

The Pursuit

The action from the 30th to the 4th was properly a pursuit in force. In the zones of the Seventh, the First, the Sixth, and Third Armies there were not even respectable rear guard actions, the enemy in these sectors having no responsibilities at all except to get away. The Third Army having crossed the Piave as a whole on the morning of the 31st was along the Livenzia that evening—that is almost marching rate. The Sixth did not advance, as an Army, until the forenoon of the 1st of

November, and succeeded in clearing the Asiago on the same day. The First Army moved forward on the 2d and its left elements reached Rovereto that evening. The Seventh, moved forward on the 3d, reached Fondo at the signing of the armistice at 3:00 o'clock on the 4th.

But in the fronts of the Tenth, Eighth, Twelfth, and Fourth Armies the enemy fought gamely and bravely to protect the withdrawal not only of his own immediate divisions, but those in the Trentino and on the lower Piave. Even at dawn on the 4th of November when it was known that the armistice was to be signed that afternoon, the American regiment, in forcing a crossing of the Tagliamento at Valvasone, met with determined resistance. These last few days of the battle have been spoken of by French and Italian observers as a rout. This is true, but not all of the truth. It was a rout on the part of those units which were fartherest removed from safety. Large units lost cohesion and their elements wandered to the roads as to magnets; once upon these highways leading to home and hearing the truth as to the situation, the men threw away rifles and equipment. The roads were literally covered with machine-gun belts, single clips of ammunition, rifles, haversacks, intact batteries of artillery, with the horses lying dead beside them. (As showing the state of the civilian population in this area: Always where there were dead horses the flanks had been cut away for food.)

But, in the first place, this haste in retirement would not have been necessary had not the Austrians as a whole put up such a strong resistance everywhere and such a prolonged one on their flanks and at the Grappa. In the second place, the Austrians in the crucial zones did not retire in disorder; that is to say, those units who remained in contact with the advancing allies did not do so. The divisions in the rear, when it was made clear to them that they were retreating, that there was no further positions ready to occupy, that the war was over, these troops did get beyond control. No actual observer has so reported and an Austrian report has denied that there was a rout, but I passed over several of the roads on the 4th and 5th of November, and no troops under even the semblance of control would have strewn their line of march with their equipment, ammunition, even their clothes and personal belongings, as these had done. At cross-roads, on every little hill, at fords and bridges, within little stone houses, at almost every point which lended itself to a small defensive action, there was a little heap of dead men and from one to a platoon of machine guns, but these

were all of the units which had been chosen as the rearguards. In a rout, this sort of rearguards is not found.

On the evening of the 3rd November a platoon of the American regiment had a unique experience. The regiment had been attached to the Tenth Army under Lord Cavan and had been brigaded with an Italian regiment. With the Gordon Highlander regiment it had helped to fill the gap between the Tenth and the Eighth Armies. It arrived at the Tagliamento River after dark on the 3rd. As yet nothing was known of the pending armistice, but a lot had been heard about the terrible Tagliamento; it was a much stronger position than the Piave (potentially it was); the enemy was entrenched there in force and we were being led into a trap; more rain had fallen, all bridges had been destroyed, and we would not be able to cross the river. Force was added to these rumors by the fact that as we neared the river we began to hear again the drone and wheeing of Austrian guns. We arrived at about 9:00 o'clock and the night was very dark and moonless. We were to cross at dawn. Someone had to make a reconnaissance. How?

Upon request, a platoon from Co. K volunteered to cross the river at midnight, and at the appointed hour it was led to the brink of the first channel. The officer waded in to his knees and was nearly swept off his feet. He judged that the stream was about five feet deep and about thirty feet wide, but that no man could either swim it or ford it. Now he had a man in this platoon who was six feet four inches tall. At the lieutenant's direction about thirty of the men removed the slings from their rifles, and these were then hooked together, and one end was looped about the tall man's waist. He then took a running jump out into the middle of the stream, and was at once turned end over end by the swift current. About fifty yards below him there was a sort of oxbow loop, and he managed to gain a footing there. He scrambled ashore and made his end of the sling-rope fast to a sturdy shrub, the other end being held by men of the platoon on the other side. The men crossed the stream then holding to this line, the last man being pulled across. The river at this point was about 2,000 yards wide, and there were eight streams, all of which were crossed both going and returning in this manner.

Arriving at a high bank in the dark, after crossing the eighth stream, the platoon leader and his runner who was a German-American, advanced to reconnoiter. They had reached the shadows under the bank and were preparing to climb upward when suddenly they heard the buzz of a German conversation. Several men were just beyond the top of the bank. The platoon leader and the runner climbed cautiously nearer until the runner could make out the conversation. After a

moment's listening he turned to the lieutenant and was on the point of speaking aloud, then, turning, he hurried back to the platoon, motioning for the officer to follow. It is probable that no member of that platoon remembers a single minute of that long grind back to the regiment.

The runner had heard a German officer announce casually, as if it were generally known, that the Austrian-Italian armistice was to be signed that afternoon at 3:00 o'clock. This was the first news we had received since the jump-off on October 26th.

Results of the Battle

It is not quite fair to say that certain things would have happened anyway. A military operation should be judged by its direct results, and, if those results were foreseen and planned for, the leader who designed the action and foresaw the results should get the credit. The direct results of the Battle of Vittorio-Veneto were:

The enemy's armies, even as a potential field force, were completely destroyed. He had lost more than 400,000 prisoners. (The *Encyclopedia Brittanica* gives 500,000.) He had lost more than 180,000 killed and wounded. The remainder no longer constituted an army in any sense of the word.

More than 150,000 allied prisoners were immediately repatriated, this without reciprocity.

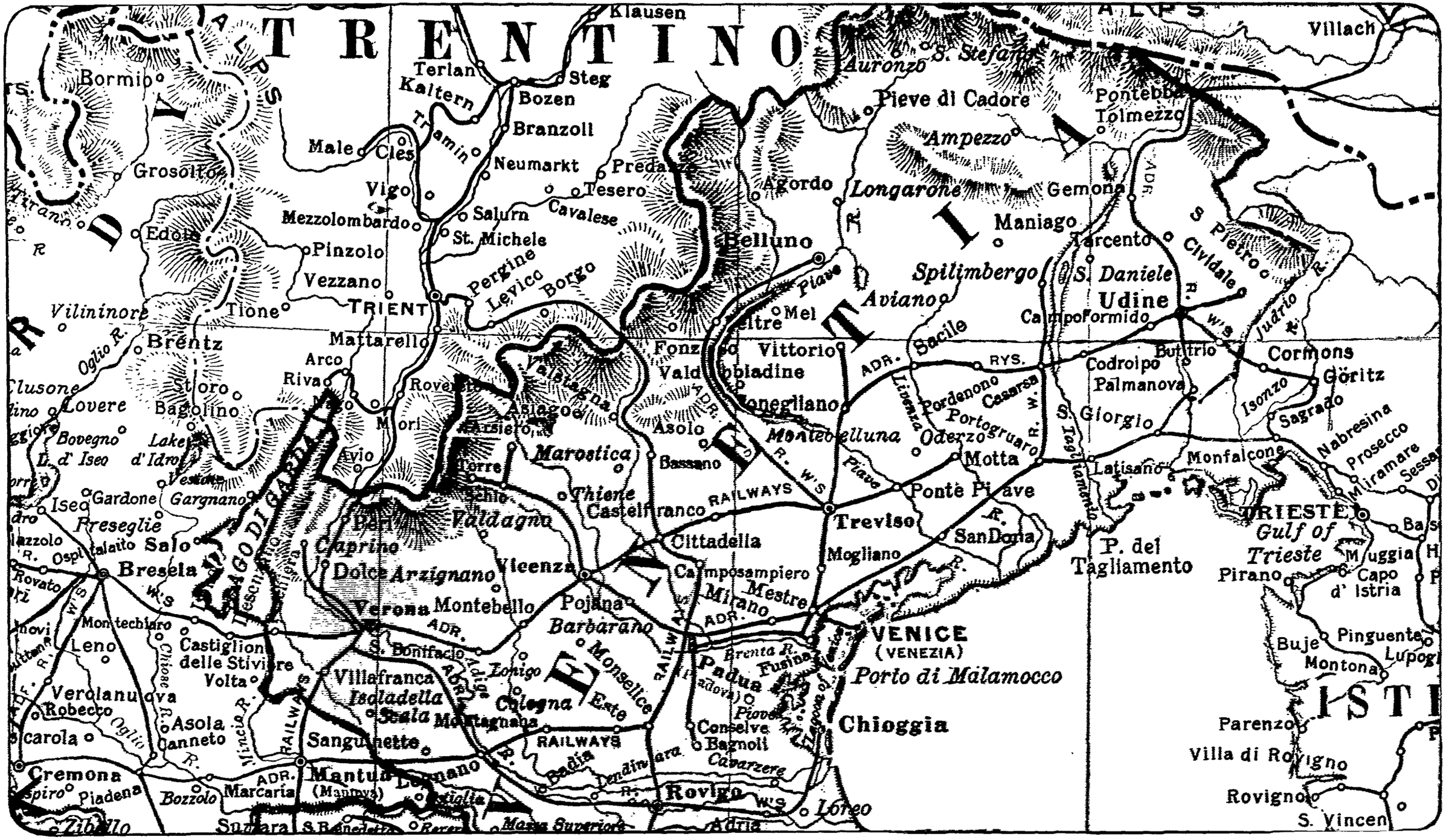
All German troops in Austria were interned.

The allies were given the free use of all railroads, waterways, rolling stock, and boats for the transportation of troops into Germany.

The allies gained the use of all resources such as coal mines in Austria.

The victory was the direct cause of the overthrow of the Hapsburg dynasty, the oldest in Europe.

The victory was actually a turning of the German left flank, and thus permitted the enveloping of the new left flank which rested on the Swiss border in France. It freed about fifty divisions of veteran troops to be used against Germany on the Western front, but which would have been moved directly into Germany by way of the Tyrol and Salzburg. If it had not been for this battle it would have been highly possible for Germany to have made an indefinite stand along the Rhine; after this battle this was impossible.


TRENTINO
Klausen
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Vigo
Mezzolombardo
Salurn
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Edolo
Pinzolo
Vezzano
Pergine
Levico
Borgo
TRIENT
Tione
Vilininore
Brentz
Mattarello
Arco
Riva
Rovereto
Storo
Bagolino
Lovere
Bovegno
Lake d'Idro
Avio
Mori
Asiago
Marostica
Bassano
Thiene
Castelfranco
Valdagna
Caprino
Dolce
Arzignano
Vicenza
Montebello
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Barbarano
Monselice
Este
Lonigo
Villafranca
Isolabella
Scala
Colegna
Montagnana
Sanguinetto
Mantua
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Legnano
Marcaria
Bozzolo
Piadena
Cremona
Zibello
Suzzara
S. Benedetto
Rovigo
Lendinara
Badia
Conselve
Bagnoli
Cavarzere
Loreo
Adria
Mazza Superiore
Iseo
Gardone
Gargnano
Preseglie
Salo
Bresela
Ospitaletto
Rovato
Montechiaro
Leno
Castiglione delle Stiviere
Volta
Verolanuova
Robecco
Asola
Canneto
Carola
Belluno
Agordo
Longarone
Pieve di Cadore
Auronzo
S. Stefano
Ampezzo
Tolmezzo
Pontebba
Gemona
Maniago
Tarcento
Spilimbergo
S. Daniele
Udine
Aviano
Mel
Feltre
Vittorio
Fonzaso
Valdobbiadine
Conegliano
Montebelluna
Asolo
Sacile
Campoformido
Codroipo
Palmanova
Buttrio
Cormons
Göritz
Pordenone
Casarsa
Portogruaro
Oderzo
Motta
Ponte Piave
Treviso
San Donà
Mogliano
Cittadella
Camposampiero
Mirano
Mestre
Padua
(Padova)
Piove
VENICE
(VENEZIA)
Porto di Malamocco
Chioggia
Rovigo
Giorgio
Latisano
Monfalcone
Sagrado
Nabresina
Prosecco
Miramare
TRIESTE
Gulf of Trieste
Muggia
Capo d' Istria
Pirano
Buje
Pinguente
Montona
Parenzo
Villa di Rovigno
Rovigno
S. Vincen
P. del Tagliamento
Tagliamento
Isonzo
Judrio
Cividale
S. Pietro
Piave
Livenza
Brenta R.
Fusina
Lagoon of Venice
Oglio R.
Chiese R.
Mincio R.
Adige
Tesina
Lago di Garda
Lake d'Iseo
Vestone
Iseo
Lazzolo
Rovato
Inovi
Lutton R.
Oglio R.
Vilininore
Clusone
Lovere
Bovegno
Storo
Bagolino
Riva
Arco
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Avio
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Marostica
Thiene
Castelfranco
Vicenza
Verona
Montebello

Training Orders

By Major Francis P. Hardaway, C. A. C.

THERE are two general methods of controlling training, namely, the centralized method and the decentralized method.

In the centralized method, higher authority prescribes in great detail not only what training is to be conducted but how it is to be conducted. This was the method very generally employed before the World War as we find by referring to old orders relating to training.

In the decentralized method, the pendulum swings to the other extreme. Higher authority prescribes only the objectives, leaving all details of the conduct of training to subordinates.

A combination of the two methods is desirable. Such a combination may be referred to as the method of centralized control and decentralized operation. This is the method now in use. Under this method, training is controlled through the various echelons of command from the highest to the lowest, principally by prescribing certain objectives and general methods, but the commanders of all echelons are allowed great latitude in choosing the special means and methods to attain the prescribed objectives.

Let us examine the peace-time working of this system.

First, the War Department issues training regulations and, in addition, publishes annually a training directive and certain other instructions, usually in the form of a general order, relating to training. The Corps Area then issues its training program which is based on the War Department directive and instructions. Considering, now, the chain of command from a Coast Artillery viewpoint only, the Coast Artillery District program is based on that of the Corps Area. Then, in turn, the Harbor Defense or similar command, the regiment or groupment, and the battalion or group each issue a program of training covering a period which may vary in length from a year to a month or so.

The battalion or group is the smallest unit to issue a written training program. The battery commander can and does issue general training directives, but he issues them verbally. He always prepares a written weekly schedule.

The difference between a program and a schedule should be borne in mind.

A program is a general directive for subordinate units. It prescribes objectives and the very general methods of conducting the training.

A schedule is issued by the unit which conducts the training and is for the guidance of the unit itself in the conduct of the training. The schedule goes into great detail and tells how, when, and where the training is to be conducted.

Schedules are issued weekly by batteries. They are based on the program of the next higher unit and prescribe the training which, in the best judgment of the battery commander, will conform to the policy prescribed and accomplish the results demanded.

A form suitable for a battery schedule is appended after the illustrative problem.

Since a schedule prescribes the training that is to be conducted by the unit which issues the schedule, schedules are issued by units above the battery only for those periods during which such higher units engage in combined training.

So far no standard form for a training program has been prescribed and there is little or no uniformity as to the contents and arrangement of the programs that are issued by various commands. Of course, there are certain essentials that appear in all training programs. Among these may be included the statement as to the duration of the training year and its division into periods and the objectives for each period. However, the arrangement of the subject matter and the scope of the subject matter have presented very wide variations in the programs of different commands.

Recently, the War Department has included in the proposed revision of Training Regulations No. 10-5 the following statement covering the scope and contents of a training program:

> 67. *Training programs.—a.* A training program is a general directive for coordinating and directing the training of any command during a certain definite period. It always pertains to a command comprising several subordinate units or activities.
>
> *b.* Training programs, based on instructions received from higher authority, will be prepared and issued by all territorial, post, camp, or unit commanders, down to but excluding commanders of companies or similar units.
>
> *c.* The scope and contents of the training porgram is determined largely by the size and character of the command for which it is issued. It should provide for the training of the entire command, and will include, when applicable—
>
> (1) In territorial, post, and camp programs, the training objective of each separate unit, component, or activity comprised in the command.

(2) In unit programs, the training objective for the unit as a whole and for each of the next subordinate units.

(3) A division of the training into phases or periods, if necessary, with an allotment of time and a training objective for each phase. This will include any period required for combined training or training of the unit as a whole under the personal direction of the issuing commander.

(4) Citation of orders, regulations, or policies to be followed in the conduct of training.

(5) Assignment of periods, when necessary, for the use of general training facilities by the various subordinate units or activities.

(6) Instructions as to the establishment, attendance, and conduct of troop and post schools.

(7) Instructions in regard to tactical or training inspections, with dates of tactical inspections to be made by the issuing commander, or higher commanders.

(8) Instructions as to the conduct of efficiency tests, or records of progress to be maintained.

(9) Instructions as to the submission of programs or schedules by subordinate commanders.

(10) Instructions, if any, as to administrative duties in their relation to training.

(11) General instructions as to any special features of training which are to be emphasized.

The illustrative problem which follows is based on this form. This problem was given as a conference problem in the course in Methods of Training at the Coast Artillery School during the past year.

For the purposes of the problem, a number of assumptions have been made which are stated in the situation. It is desired to call special attention to the fact that the program is for an imaginary organization. The problem of writing a training program is different for every organization. The scope and contents of a training program and the duration of the period for which it is prepared will depend upon the size and character of the command, the location, the climatic conditions, the available training facilities, the previous state of training of the command, and a number of other variable factors. It was considered better, therefore, in preparing the problem to base it on an imaginary unit which could conduct its training in a rather ideal way unhampered by deficiencies in organization, training facilities, and other conditions presenting obstacles to training.

For the reasons given above, it must be realized, therefore, that the program presented can not fit any actual local conditions exactly nor be entirely suitable for any actual organization. While the program does allow for certain interruptions in the training, it takes little account of innumerable other obstacles to the progress of the training. It merely shows one method of planning the training and writing the

program to put the plan into effect for an imaginary organization. For an actual organization confronted by the difficulties which exist to a greater or less degree everywhere, many changes would have to be made.

It is also desired to point out that this program is based on the provisions of General Orders No. 21, War Department, October 26, 1926, Notes on Training for 1927. This was made necessary due to the fact that Notes on Training for 1928 have not yet been published.

ILLUSTRATIVE PROBLEM

Preparation of a Training Program

	Paragraphs
Section I—Situation and Requirement	1- 3
II—A Solution	4
III—Discussion	5-14

Section I

SITUATION AND REQUIREMENT

	Paragraph
General Situation	1
Special Situation	2
Requirement	3

1. *General Situation.—a.* The 18th Coast Artillery (H. D.) is stationed at Fort A in the Harbor Defense of A. It consists of a headquarters battery and two battalions of two batteries each. The 1st Battalion is assigned to the 1st Group (12-inch mortars) and the 2d Battalion is assigned to the 2d Group (14-inch guns, D. C.)

b. The climatic conditions at Fort A are such as to render outdoor training generally inadvisable between about 15 December and 15 March.

c. Training during the previous training year has been generally satisfactory with the following exceptions:

(1) Tactical inspections disclosed the fact that communications personnel was not well trained and that staff officers were not familiar with their tactical functions and duties.

(2) Demands for troop labor were large. An effort was made to meet these demands and at the same time to carry on the training. This method resulted in impairing both the efficiency of the training for the time being and the efficient management of the work on which the troops were employed.

d. The regiment is at approximately authorized strength on 1 September 1927. It is expected that recruits in small numbers will be received at irregular intervals during the next training year.

2. *Special Situation.*—On 1 September 1927, Colonel A, command-

ing the 18th Coast Artillery (H. D.) receives the training program of the Harbor Defense for the ensuing training year which, in part, contains the following provisions:

> The training year to begin 1 October 1927, and end 30 September 1928.
>
> Training periods to be as follows: (See note 1) . . .
>
> The 18th Coast Artillery (H. D.) to be called upon to conduct a CMT Camp during the period 12 July-11 August.
>
> Troop schools to be conducted under the supervision of regimental commanders (See note 2).
>
> Post school to be conducted by the Harbor Defense (See note 2).
>
> A formal tactical inspection to be made by the District Commander in the latter part of September. The District Commander to make inspections of each phase of training on dates to be announced later.

3. *Requirement.*—Prepare the annual training program issued by Colonel A for the training year, 1 October 1927–30 September 1928.

NOTES.—(1) For the purpose of the problem, the solver will make his own assumptions regarding all omitted data and prepare the regimental training program as though the Harbor Defense program were complete and contained the assumptions the solver is required to make.

(2) In the paragraph on schools in the training program of the 18th Coast Artillery (H. D.), solvers will list the schools but are authorized to omit data relating to the conduct of the schools under the assumption that this data will be covered in a separate training memorandum.

(3) The scope and contents of the program will conform to the provisions contained in the proposed revision of Training Regulations No. 10-5.

(4) The program will be based on the provisions contained in General Orders, No. 21, War Department, October 26, 1926.

SECTION II

A SOLUTION

	Paragraph
Training Program of the 18th Coast Artillery (H. D.)	4

4. *Training Program.*—

18th Coast Artillery (H. D.),
Fort A,
10 September 1927.

Training Memorandum
No. 25

ANNUAL TRAINING PROGRAM

	Paragraph
Objectives	1
Training Periods and Objectives	2
Training Policies	3
Use of Training Facilities	4
Schools	5
Inspections	6
Efficiency Tests	7
Programs and Schedules	8
Administration	9
General Instructions	10

1. *Objectives.—a.* All batteries will attain a standard of disciplinary and basic training worthy of being considered the model for the Army of the United States.

b. The final objective for the year will be the attainment of a standard in artillery training so that the regiment will be prepared for combat service and will be able to function efficiently in the Harbor Defense tactical team.

2. *Training Periods and Objectives.—a.* The training year begins 1 October 1927 and ends 30 September 1928. It is divided into training periods as follows:

1st Period: 1 October 1927 - 31 December 1927.
2d Period: 1 January 1928 - 31 March 1928.
3d Period: 1 April 1928 - 7 July 1928.
4th Period: 8 July 1928 - 15 August 1928.
5th Period: 16 August 1928 - 30 September 1928.

b. Objectives for training periods will be as follows:

(1) First period: To complete individual instruction in subjects generally required of all combat soldiers regardless of branch. To qualify at least 80% of the command as marksmen or better (rifle or pistol). All organizations to include the battalion as a unit to attain proficiency in close order drill. All organizations to include the regiment as a unit to attain proficiency in ceremonies.

(2) Second period: To complete individual artillery instruction of the soldier and gunners' examination. A reserve of expert gunners will be built up.

(3) Third period: To complete the artillery training of all units up to and including the battery.

(4) Fourth period: To prepare for and conduct the Citizens' Military Training Camp.

(5) Fifth period: To complete the artillery training of all units and attain the final objective for the year.

c. The last two weeks of the 5th period reserved for regimental training, the combined training of the regiment with other units of the Harbor Defense and inspections prescribed by higher authority.

3. *Training Policies.—a.* The following list of orders and regulations are applicable to the training prescribed in this program:

Training Regulations 10-5, Doctrines, Principles and Methods.
*Training Regulations 435-10, The Minimum Specification for Enlisted Men of the Coast Artillery Corps.
Army Regulations 265-10, Tactical and Training Inspections.
*Coast Artillery Training Requirements.
General Orders No. 21, War Department, October 26, 1926.

b. The principle of centralized control and decentralized operation will be observed.

c. The applicatory method of instruction will be followed wherever practicable.

4. *Use of Training Facilities.*—Days and hours for ceremonies and for the use of the target range and other common facilities and periods during which lectures will be given by the Surgeon and others will be published in separate training memorandums.

*Not yet published.

5. *Schools.—a.* The following schools will be conducted:

(1) Troop schools for officers.

(2) Troop schools for enlisted men.

(3) Post School: To be conducted by the Harbor Defense. See Training Memorandum No. 10, Harbor Defense of A, 5 September 1927.

(4) Recruit School: A special school, to be conducted under the supervision of the Regimental Commander, will be held for each detachment of recruits received. The course will cover the fundamental training of the soldier to include the Articles of War and personal hygiene.

b. Regulations concerning the troop schools will be published in a separate training Memorandum.

6. *Inspections.—a.* Group commanders will make such training inspections of their commands as they deem necessary and will make at least one inspection in each period, but no formal tactical inspection will be made during the training year without special authority.

b. The Regimental Commander will make an informal tactical inspection on 17 September 1928.

c. The District Commander will make the following formal inspections on dates to be announced later:

1st Period:	General military training.
2d Period:	Gunners' instruction and schools.
3d Period:	Artillery technique.
4th Period:	Conduct of training camps.
5th Period:	Artillery tactics (formal annual tactical inspection.

7. *Efficiency Tests.—a.* Examination of gunners will be completed by the end of the 2d Period.

b. Analysis of drill will be held at least twice a week during the period devoted to battery training.

8. *Programs and Schedules.—a.* Group commanders will submit period training programs ten days before the beginning of each period.

b. Battery commanders will prepare and follow weekly training schedules.

c. Other commanders will issue schedules for all periods in which their commands participate in training or other duties as units.

9. *Administration.—a.* During the first and second periods and during the first two months of the third period, the mornings will be devoted to training and the afternoons to duties incident to administration and military housekeeping. During the remainder of the year, the entire day will be devoted to training when necessary.

b. During the first, second, and third periods, training will be suspended for two days each month. This is in addition to the necessary suspension of training caused by guard duty. In addition, all training will be suspended for one week in December and for one week in April. During the periods when training is suspended, troops will be employed on projects in accordance with schedules to be issued in advance by the Regimental Commander.

10. *General Instructions.—a.* Technical artillery training will be given during the second and third periods and will culminate in target practice.

b. The annual service target practices will be held in the third period. They will be preceded by firing problems using 75-mm. guns for the purpose of instructing officers and noncommissioned officers in the adjustment of fire.

c. Tactical training will be given mainly in the fifth period. This training will be progressive and will culminate in the formal annual tactical inspection by the District Commander.

d. By means of the troop schools and command post exercises to be held during the third period, staff officers and communications personnel will be trained in their duties. The regiment will conduct two command post exercises during the third period on dates to be announced later.

e. During the last two weeks of the fifth period reserved by the regiment, two or more field exercises will be conducted illustrating the principles involved in defense against the following forms of attack:

(1) Naval bombardment only.

(2) A landing in force.

f. Wednesday afternoons will be devoted to recreation and voluntary athletics. Schedules for competitive athletic events will be published from time to time.

By order of Colonel A:

X,
Executive.

OFFICIAL:
Y,
R-3

SECTION III

DISCUSSION

	Paragraph
Purpose	5
Conditions of the Problem	6
Division of Training Year into Periods	7
Inspections	8
Programs and Schedules	9
Administration	10
Target Practice	11
Tactical Training	12
Technique	13
The Function of the Program	14

5. *Purpose.*—This problem is drawn to illustrate the technique of preparing an annual training program for a regiment and to show the principles involved.

6. *Conditions of the Problem.*—*a.* The regimental program is based on the program issued by the Harbor Defense Commander. The latter program divides the training year into periods in accordance with the scheme prescribed by higher authority. The regimental commander is not authorized to change these periods though he may further subdivide them if the situation so demands. In this problem, the solver is required to make his own assumptions as to the training periods prescribed in the Harbor Defense program and then make a decision as to the periods to be prescribed in the regimental program.

b. In this problem, the 18th Coast Artillery (H. D.) is assumed to consist of two groups and the regimental program serves, therefore, as a directive to the group commanders who will prepare period programs governing the training of their batteries. In many instances, particularly in the Continental United States, organizations are at such reduced strength that the echelon between the regiment and the battery, namely, the battalion or group, is necessarily omitted. In such a case, the regimental program serves as the training directive for the battery commanders and it must, therefore, contain considerably more detail than the program considered in this problem. Moreover, in such a case, the regiment would issue period or perhaps even monthly programs.

c. In this problem, the solver receives but scant information as to the state of training of the 18th Coast Artillery (H. D.) and is largely free to make his own assumptions concerning this matter. In actual practice, however, a commander must give serious consideration to the actual conditions existing in the organization so that defects and deficiencies in training observed during a previous training cycle may be removed and training improved to the end that training will not only be progressive from period to period but also from year to year.

7. *Division of Training Year Into Periods.—a.* The training which harbor defense artillery receives and is required to conduct in this situation may be divided into five phases, namely:

(1) General military training, which includes subjects common to all combat branches.

(2) Individual technical artillery training.

(3) Collective technical artillery training.

(4) Tactical artillery training, including the training of units above the battery.

(5) The conduct of a citizens' military training camp.

b. The training year is, therefore, divided into five training periods in accordance with the above named sub-divisions.

c. The Harbor Defense program states that the training year begins 1 October 1927. Colonel A decides that general military training, being basic, should precede other phases of training. Moreover, the autumn, under the given climatic conditions, is very suitable for training of this sort.

d. Individual technical artillery training can be given during the cold weather season more readily than other forms of training. In

addition, this training must precede the collective training and Colonel A decides on the period, 1 January to 31 March for this phase. This allows sufficient time to complete the gunners' examinations before the end of the period.

e. The collective technical training can and should be given on conclusion of the individual training. The training of the various echelons up to and including the battery is primarily technical while the training of the higher units is principally tactical. The artillery training of the units to include the battery should, therefore, be completed during this phase. This phase of training should be completed before the training camp begins so that battery teams will be well trained. Colonel A therefore decides on the period 1 April to 7 July for this phase.

f. The training camp is over about the middle of August leaving about a month and a half of the most favorable season of the year for the completion of the training of the command and the attainment of the ultimate objective—combat efficiency. This period is, therefore, devoted to the tactical training which embraces all echelons up to and including the Harbor Defense and culminates in the formal annual tactical inspection by the District Commander.

8. *Inspection.—a.* Inspections are an important part of training. They are classified as tactical and training inspections and are further sub-divided into formal and informal inspections. Training inspections, both formal and informal, are a routine part of training and are made frequently throughout the year.

b. Formal tactical inspections are usually made once a year, though sometimes more frequently, towards the end of the training year. Under the provisions of Army Regulations 265-10, they are made by commanders of all echelons from the battalion or group to the Corps Area, both inclusive. However, the provisions of General Orders No. 21, War Department, October 26, 1926, have temporarily modified Army Regulations 265-10, and no formal tactical inspections by commanders below the District Commander are contemplated.

9. *Programs and Schedules.—a.* It is the duty of every commander to prepare programs of training for the next lower units of his command. Programs are thus training directives for the next lower units. A battery commander, however, issues his training directives verbally to his subordinates and does not prepare a written program. The

period of time covered by programs generally diminishes from the higher to the lower units. In this situation, Colonel A is directed to submit an annual program. In accordance with the principle stated above, he directs his group commanders to submit programs covering only one period at a time. Later in the year, due to unforseen conditions or requirements arising subsequently Colonel A may himself issue period programs. Also he may published additional Training Memorandums changing or amplifying his annual program but, as a general principle, a training program covering any given period of time should be made sufficiently complete and comprehensive so that changes will not have to be made in it.

b. A schedule is a detailed statement of the training to be conducted by the unit itself. It is generally issued in tabular form, showing the date, hour, and duration of the periods of instruction or the subdivisions of such periods together with the place where the instruction is to occur, the character of the instruction, and often the assignment of specific paragraphs of regulations or texts governing the instruction during the period. A battery schedule invariably covers a period of a week; it is an essential to the scheme of progressive instruction. Colonel A considers it advisable to include in his program a caution to the effect that battery schedules will be prepared weekly.

c. Schedules are issued by higher units only for periods during which the higher unit engages in combined training.

10. *Administration.*—Colonel A has taken advantage of the authority granted in General Orders No. 21, War Department, October 26, 1926, to set aside certain times and periods for administrative work including projects which may require the large scale employment of troop labor. Colonel A proposes to give the same care and thought to planning the administrative work as he gives to training. Prior to the periods that are to be devoted exclusively to administrative work, Colonel A will issue schedules for the work and require subordinate commanders to do likewise. This action should reduce lost motion and wasted effort to a minimum and permit the troops to attain a high degree of efficiency in accomplishing their tasks.

11. *Target Practice.*—Target practice is the best test of the efficiency of the training of the battery team and is, therefore, placed in the third period. Where local conditions permit, it may be advisable

also to conduct target practice for groups and higher echelons as a part of the tactical training.

12. *Tactical Training.*—The tactical training is to be conducted mainly during the fifth period. Last year, tactical inspections disclosed the fact that communications personnel was not well trained and that staff officers were not familiar with their tactical functions and duties. These deficiencies will be partly corrected in the troop schools. In addition, Colonel A has directed that certain command post exercises (CPX) be conducted during the third period. A command post exercise is a field exercise for training command, staff, and communications personnel. They are a valuable aid in this training and possess the further advantage that they can be conducted without materially interrupting the progress of the basic training of the lower units.

13. *Technique.*—*a.* The program should follow the form set forth in Training Regulations No. 10-5 (proposed revision).

b. In order to give group commanders ample time to prepare their programs, Colonel A's program should be issued about 10 September and not later than the 15th.

c. A table of contents should appear on the first page of the program to facilitate a ready reference to the various paragraphs and the body of the program should be paragraphed according to the method used in Training Regulations.

14. *The Function of the Program.*—The training program is only the first step in the conduct of training. The commander, while leaving to his subordinates initiative in the conduct of training in accordance with his directives, will hold them strictly accountable for results. He must make frequent inspections of training not only to ascertain the results being achieved but to determine the practicability of the methods prescribed and to assist his subordinates and remove obstacles which impede the progress of training.

A Form for the Battery Schedule

SCHEDULE OF TRAINING

.....

(Name of Organization)

For week beginning ..... 192 .....

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Hour

.....

Comdg.

NOTES: Opposite each hour in each column, enter instructions as to the training to be given. Instructions include, where desirable, nature and scope of training, place, unit, instructor, equipment, and paragraphs of training regulations or other publications applicable to the instruction.

The Antiaircraft Artillery Problem

By Captain Gordon B. Welch, C. A. C.

LIMITATION of the Title.—The title of this paper opens a field of discussion which, if covered thoroughly, would include not only the considerations governing the employment of antiaircraft artillery but also the technical problems encountered in such an employment. These technical problems and their solutions have been developed and discussed in many official and unofficial documents. It seems desirable however, to re-state the fundamental considerations upon which our technique is based and in the present discussion the title will be considered as limited to such fundamentals. The statements made herein represent the opinions of the writer and do not necessarily agree with the official doctrine of the Coast Artillery Corps, although a thorough study of all available thought on the subject was made before committing these opinions to paper.

Mission of the Antiaircraft Service.—The mission of the antiaircraft service is to furnish at all times an adequate local defense of our ground forces and establishments against hostile aerial activity. There are two basic reasons for its employment. First, airplanes, even under the most favorable conditions cannot furnish a continuous defense of all ground elements against which hostile aerial attacks would interfere seriously with our operations. Second, it is a fundamental principle that forces possessing great mobility and capable of offensive action (in this case, the air forces) should not be tied down to local defensive rôles.

Characteristics of Antiaircraft Defense.—The radius of action of the antiaircraft defense against hostile aircraft is limited to the area within range of its guns when in position. Its mobility enables it to occupy positions covering ground forces and establishments and to be ready to combat hostile aerial activity within a short period of time. Its effectiveness is measured by the degree to which it prevents or defeats hostile aerial activity directed at our elements on the ground rather than by the destruction of hostile aircraft. The function of the antiaircraft defense may be compared with that of our harbor defenses, which furnish sufficient defense of vital points to relieve the fleet of the necessity of providing close defense, thus permitting its employment on offensive and aggressive missions. When the situation requires the employment of our own airplanes against hostile air formations operat-

ing over areas covered or partially covered by antiaircraft weapons, the coordination of the action of the antiaircraft service with the action of the air units is controlled by the commander under whom both are operating.

Mission of the Artillery of the Antiaircraft Service.—The mission of the antiaircraft artillery is, in cooperation with the other elements of the antiaircraft service, and, on suitable occasions, in cooperation with the Air Corps, to defend the ground forces by bringing to bear at the earliest instant on all appropriate hostile air targets that threaten our ground forces, a rapid, accurate, and overwhelming fire. In certain tactical situations, and when abundant supply of ammunition is available, fire will be brought to bear on all appropriate hostile air targets within or entering the field of fire with a view to weakening the hostile air forces.

The Airplane as a Target.—The antiaircraft artilleryman is vitally concerned with the nature, capabilities, and probable activities of the target he is expected to engage. The principal characteristic of the airplane, from which many others of military importance are derived, is its mobility. This is expressed in the following capabilities:

(a) Ability to travel at high speed. Airplane speeds are seldom less than 80-100 miles per hour for the slowest and heaviest machines and range up to 150 and more miles per hour for the light, fast pursuit planes.

(b) Ability to move in three dimensions. Of the movements in these three dimensions, the vertical, from which changes in the altitude of the airplane result, are of particular importance to the antiaircraft artilleryman. A certain amount of power is required for an airplane to maintain horizontal flight. For the airplane to climb, excess power must be available over that necessary to maintain horizontal flight. The power delivered by the motor decreases as the airplane rises into the rarer atmosphere so that at 20,000 feet it is about 40 per cent of its sea level power. At the same time the sustaining power of the air becomes less so that every airplane has a "ceiling" above which it is unable to rise. This ceiling varies with the condition of the atmosphere and the load carried. It can be raised within certain limits by the use of supercharges.

(c) Ability to change direction quickly. When operating well below its ceiling, an airplane can change the direction of its course to any other direction almost instantaneously. The changes most easily made are to the right, left, or downward. By the man-

euver known as the Immelman turn or by flying upside down, it can reverse its direction through 180 degrees with the loss of very little time.

Another consideration of importance to the antiaircraft artilleryman is the small vulnerable area of the airplane. Aircraft have in the past and will in the future withstand considerable punishment. Innumerable bullet holes through their fabric and through most of the fuselage will have practically no effect on their ability to fly. The motor, gas tank, and the personnel are the most vulnerable parts. Armor has been experimented with as protection for these elements but has been given up for the time being as limiting too much the mobility of the machine so equipped. Reliance for protection is at present placed on speed and maneuverability and in the armament which all fighting aircraft carry.

Characteristics of War Aviation.—The hostile air forces may be expected to include and to use aviation of the following classes:

(a) Observation Aviation. Aircraft of this type are usually of medium size and maneuverability, and are nearly always two seaters. One of the passengers is the pilot, the other an observer. Both fixed and flexible machine guns are ordinarily carried. Their missions may comprise any of the following:

1. Reconnaissance, both visual and photographic.
2. Liaison and contact with advanced forces.
3. Artillery regulation.
4. Smoke laying.

(b) Pursuit aviation. This type comprises small, fast single seaters of high ceiling and great maneuverability. Its primary mission is to attack and destroy or drive away all classes of enemy aviation. Its normal objective is the hostile pursuit aviation.

(c) Attack aviation. Aircraft of this type are two seaters of great speed and maneuverability at low altitudes and their normal mission is the attack of ground troops. They sometimes carry light bombs, both chemical and explosive.

(d) Bombardment aviation. This class comprises single and multimotored airplanes of great reliability and radius of action. They will carry bombs ranging in weight from the light 100-pound demolition bombs to the heavy bombs of 2000 pounds and more. A bomb of 4000 pounds has been successfully carried. Crews of three to five men will ordinarily be carried. The great military load handled by these airplanes together with the necessity for a large radius of action will tend to make

them slow and of small maneuverability. The normal method of employment will therefore be in formations designed to utilize the power of numbers, both by increasing the volume of defensive fire and by so arranging the airplanes in the formation that the strength of one will guard the weakness of the others. It is evident that the formation will be far less maneuverable than will the individual airplane. This class of aviation has the normal missions of attacking the following types of targets. Many of these attacks will be carried out at night.

1. Towns and cities.
2. Supply systems.
3. Industrial centers.
4. Lines of communication.
5. Naval and merchant vessels.

Characteristics of Fire at Aerial Targets.—The problem of firing at an aerial target is the same as that of firing at a moving land or water target complicated by the fact that the moving aerial target can move in three dimensions instead of two and at a much greater speed than does the land or water target. In both cases it is desired to pass a trajectory through the point at which the target will have arrived at the end of the time of flight of the projectile. In antiaircraft fire it is also necessary to cause the projectile to burst at the intersection of the trajectory with the course of the target in order to enlarge the danger volume at that point. The elementary problem consists in predicting the future course of the target on the basis of its behavior in the time just preceding the firing of the gun, determining its probable position at the end of the time of flight, and preparing the necessary firing data to burst a projectile at that point. From a study of the characteristics of the airplane as a target in the preceding paragraphs, the fundamental doctrines of antiaircraft artillery fire can now be deduced. The characteristics of importance are:

1. High speed.
2. Ability to move in three dimensions.
3. Ability to change direction quickly.
4. Small area of vulnerability.

The first three indicate the ability of the pilot, once warned that he is being fired upon, to change his direction so quickly and so frequently as to make successful prediction difficult if not impossible. The last indicates the necessity for hitting very close to the target to secure destructive effect. Such accuracy is not to be expected with a single shot.

A great many shots in a minimum of time at a given position of the target will probably be required. The doctrines to which these considerations give rise are:

(a) *The doctrine of surprise.*—Surprise effect necessitates the most careful consideration of all the factors affecting the accuracy of fire prior to the engagement.

(b) *The doctrine of volume of fire.*—The small vulnerable area of the target together with the probability that he will not have arrived exactly at the predicted point at the instant of burst, necessitate that the vicinity of the predicted point be well covered with bursting projectiles. To this end, rapidity of fire and the concentration of the fire of at least four guns on one objective is a necessity.

Corollaries to the Doctrines of Antiaircraft Fire.—The above doctrines of antiaircraft fire give rise to several corollary doctrines or principles. These are:

(a) Data computation must be accurate and rapid.

(b) Guns must be served rapidly and laid or aimed accurately.

(c) The antiaircraft battery must be capable of opening fire within a very short time after the target is sighted.

(d) The first salvos must be accurate. After the first bursts, the pilot may take warning and present his ship under conditions unfavorable to accurate prediction.

(e) The time of flight to any point in space within range should be the minimum consistent with mobility and strength of the materiel. This necessitates as high a muzzle velocity as is consistent with an appropriate accuracy life of the guns. It also requires as heavy a projectile as practicable consistent with mobile guns and the rapid service of ammunition.

(f) The dead time required to compute the data and fire the guns laid on that data should be a minimum.

The Bases of Prediction.—It was stated in a preceding paragraph that prediction was based on the behavior of the target during the time just prior to the firing of the gun. The natural elements by which a target should be located in three dimensional space would, at first thought, seem to be (a) the length of the gun-target line, (b) the azimuth of that line in its horizontal projection, and (c) its angular height. By measuring the rate of change of these three elements, the future slant range with its two direction angles could be predicted. It was realized however, early in the history of antiaircraft artillery firing, that means for

measuring the rapidly changing slant range of an aerial target with sufficient accuracy and speed were difficult if not impossible to obtain. Further consideration of the problem led to the understanding that the slant range depends on two other elements, altitude and angular height. That is, slant range is always equal to altitude divided by the sine of the angular height. If an airplane is to remain in the air and maintain its maximum of horizontal speed, it cannot change its altitude very much or very rapidly. If it loses altitude, it will eventually come to the ground. If it gains altitude, the excess power consumed will slow down the horizontal speed. Altitude was therefore chosen to replace slant range as one of the position coordinates of the target because of its tendency to remain constant. The number of variables on which predictions must be based was thus cut to two, azimuth and angular height, on the assumption that the target's altitude would remain constant during the predicting interval. The geometrical figure in space which results from tracing the probable courses of a target in a horizontal plane at a constant altitude from the time observations forming the bases of prediction are made to the time the gun is fired, and from the time the gun is fired to the burst of the projectile, results in a simple mathematical solution for the angular changes in azimuth and angular height only when the course of the target is a straight line during this time and the speed of the target is constant. The target, of course, may not maintain a constant speed nor a straight line (rectilinear) course but may deviate from these conditions in any direction. If, however, the aviator is under the necessity of accomplishing a mission at some distant point as expeditiously as possible and is at the same time unmolested, his most probable course is in a straight line, at near his maximum speed and at as great an altitude as is consistent with the proper performance of his mission. These considerations give rise to the basic assumptions of prediction for antiaircraft artillery firing. These are that during the predicting interval:

(a) The target will fly at a constant altitude,
(b) at a constant speed, and
(c) in a straight line.

Systems of Data Computation.—Based upon the assumptions outlined above, two systems of data determination have been devised. These are known respectively as the angular travel method and the linear speed method. In the former, measured rates of change (angular velocities) of the azimuth and angular height are used to predict the future azimuth and angular height. Upon the determination of the altitude, the future position of the target may be determined and the fir-

ing data computed for the point so located. In the latter, the linear velocity of the target is measured or estimated. The angle made by the target's course with the gun-target line is measured or estimated in its horizontal projection. By using these two data with a determined altitude, the future azimuth and angular height of the target can be computed and the firing data determined as before. Of these two methods, the angular travel method has received by far the greater development, largely because of the inherent difficulty encountered in measuring accurately the course and speed of an aerial target. On the other hand, the measurement of angular rates of change as seen from the battery is comparatively easy and many instruments have been devised which make such measurements accurately and rapidly. Instruments have been tried out which are not based upon a strict adherence to the basic assumptions as given above but their development is as yet incomplete and all data computers now in service depend for the theory of their construction upon these basic assumptions of target flight.

Suitable Targets for Antiaircraft Artillery.—A consideration of the possibilities of antiaircraft prediction and fire, together with the probable types of war aviation and their missions, will lead to an understanding of what should be considered as suitable targets for the antiaircraft artillery. Clearly a pursuit plane maneuvering for position in pursuit of its enemy, or lying in wait behind a cloud, cannot be considered a suitable target as prediction of its future course is impossible. Also an attack plane, "hedge hopping" and following an irregular line of trenches or maneuvering above a column of troops on the march presents a problem to the antiaircraft artilleryman impossible of solution. The machine gunner is the natural enemy of the latter and our own pursuit aviation of the former. On the other hand, the other two classes of war aviation, observation and bombardment, may often be constrained to fly under conditions sufficiently approximating the basic assumptions to enable the antiaircraft artillery to deliver effective fire. In the first place, aircraft of these two classes, due to their comparatively slow speed and small maneuverability, will usually fly in formations, especially when proceeding to and from distant objectives. It is difficult for a formation to zigzag with sufficient rapidity to affect predictions seriously. Moreover any maneuver which might throw the leading plane out of the danger area, might at the same time throw those behind right into it. Single observation airplanes on photographic missions, if unmolested by hostile pursuit aviation or antiaircraft artil-

lery will normally fly fairly regular courses at a constant altitude in order that the photographs taken may have the same scale and bear an orderly relation to each other. Artillery regulation planes and others of this class may or may not fly regular courses. Their missions do not normally require rectilinear flight. A single bomber approaching an objective is constrained to fly at constant altitude and speed and on a rectilinear course for at least a few seconds before dropping his bombs. The time required may vary from 10 to 60 seconds. From these considerations, the following statements regarding suitable targets for antiaircraft artillery may be formulated:

(a) Appropriate targets for antiaircraft artillery are all aircraft in flight formations, single bombers and airships, and single attack, pursuit, and observation planes when flying on reasonably regular courses.

(b) The mission of the antiaircraft artillery is best accomplished by the destruction of the hostile target. However, an accurate fire, while it may not destroy the target will often accomplish the mission by causing the enemy aircraft to maneuver and thus render the hostile bombardment, observation, or reconnaissance ineffective or less effective.

(c) The neutralization of enemy aerial reconnaissance is an important function of antiaircraft artillery. The destructive effect of antiaircraft artillery fire against observation aviation is, of course, the same as against other classes when flying similar courses. Efforts to avoid fire by maneuvering, while not hampering the aviators so seriously as would be the case in bombing operations, will usually be detrimental to the work of the observers.

Other Parts of the Problem.—The elements of the antiaircraft artillery problem as limited in the first paragraph have now been briefly discussed. The mission of the antiaircraft artillery has been stated, the kind of fire it will normally deliver in carrying out that mission deduced, and the considerations formulated which will govern in the selection of suitable targets. Only the technical problems remain involving the selection and maintenance of positions, fire control, position finding, and prediction. Except for some obscure points, these are fairly well covered elsewhere and are omitted from this study of *The Antiaircraft Artillery Problem.*

The American Soldier as a Citizen

By CHAPLAIN MILTON O. BEEBE, U. S. A.

INTRODUCTION

WHILE it is not laid down in the regulations as a rule of conduct for the Army, the fundamental presumption is that every soldier in the American Army is an American citizen. There are many reasons on which this presumption might rest, though we know that in actual practice a considerable part of the enlisted personnel of the Army, even now, is made up of young men who are citizens of foreign countries. So evident was this during the World War that men were naturalized by hundreds at all the camps in America, and if a man had failed to be naturalized in one of these groups, the law provided that upon the presentation of his honorable discharge from the Army he could receive his final papers and become a full-fledged citizen at once.

So, citizenship and the military service have always been in intimate fellowship. The great Army of America is not the Regular but the magnificent, through untrained, body of citizens who in any emergency will be made available for military service and who will be guided in the matter of training by officers and men of the Regular Army.

Inasmuch as the military service theoretically precludes citizenship, we may be sure that it ought to be one of the chief concerns of military men to be magnificent citizens as well as excellent soldiers. If we are the former, we cannot fail to be the latter, and by no seeming logic or mental gymnastics can we reach the conclusion that we are good citizens unless we are as good soldiers as it is possible for us to be.

In this respect, it is but right to admit that some men have a larger capacity in the matter of service than others. This condition is recognized in the Army and accepted. All men cannot be officers or even noncommissioned officers. There must be some whose maximum capacity is that of a private soldier. If they are the best privates possible, they shall not be without honor in their own country. It is wholesome for us to recall that General Phil Sheridan had a brother in his own Army who was just a "buck" private. He is little known today, but

who shall deny him such honor as is his by right of being one hundred per cent American, and the best soldier he knew how to be.

Men in the Army as soldiers do not lose their rights as citizens, as some suppose. Throughout their service they maintain those rights inviolate, adding to them certain privileges extended to them by the federal government on account of their military service, such as homestead rights, priority in government employment, life insurance at low cost, professional training without cost to disabled soldiers, and many others that men of no military experience cannot claim. A soldier's residence, during the time of his service in the Army, does not change unless it is by his own declaration. However, his rights of suffrage are usually suspended, though that is dependent entirely upon state laws. New York residents can, or could at any rate, vote at any place in the United States where they were stationed as soldiers and mail their ballot to their state, providing of course that they were of legal age. I believe that the State of Illinois permits its citizens who are in the Army and Navy to vote if they are at the seat of their legal residence on election day. Kansas denies the right of suffrage to any and all its military personnel during the period of their service. However, it should be remembered that citizenship for soldiers is not dependent upon the rights of suffrage. Rather, suffrage is a privilege of citizenship. Citizenship for any soldier remains the same through his service, though some of the privileges of it are curtailed, unless it is changed by some definite act of the citizen himself. The privileges denied him while he is in the Army will again be his upon his ceasing to be a part of the military.

If my presumptions thus far are logical, it naturally follows that every soldier in the American Army owes a threefold duty—to his country, the country of which he is a citizen; to the Army in which he is a soldier; and to himself as a soldier-citizen.

The American Soldier's Duty to His Country

Perhaps we have never before considered this question or reached any conclusion concerning it. If so, we should take occasion to think and feel something of the relation of the privileges and duties of soldiering to citizenship. Loyalty is a high and controlling sentiment and is daily practiced by soldiers. It ought, indeed must be, extended to infinitely larger fields of American citizenship and beyond the field of military endeavor. In time of war, the law may seem to be the best friend of all because obedience to it becomes the safe-guard to life, to property, and to personal rights. Service as a soldier ought to give

one a new sense of belonging to the land of his birth or his adoption, and an equally new and finer sense of possessing it—something that is his own to love and serve and protect to the end of his life.

The American Citizen's Duty to the Army

A great many soldiers feel that the general public looks on them as government bums, who are forced into the Army because they cannot make a living outside. This is far from the truth. Indeed, there is a splendid thrill about being a member of the armed forces of our country. The professional soldier has a right to take pride in his professional attainments, his organization, and his personal appearance. Soldiers are usually clean, neat, upstanding men who are quick in the defense of their profession as in the defense of their country. I knew a little soldier who was born in Lithuania and was proud of it. I found him telling the people of the entire Mexican border one day—and in no uncertain tones—that the Twelfth Cavalry was the best blankety-blank outfit in the U. S. Army, and was there any one in the blinkety state of New Mexico that didn't think so? That is loyalty to the Army by an adopted soldier-citizen.

There is a magnificent fellowship in the Army that is appreciated by every soldier. An industrial leader may meet another on the street without a sign of recognition between them unless they are personal or business friends. This condition could not exist in the Army. Even the humblest soldier, the poorest recruit that ever donned a uniform, may meet the General of the Armies and give and receive instant recognition—the mutual salute—not of slave or servant to master, but of soldier to soldier. There is a real joy in this. Personally I get a great deal more satisfaction out of saluting a superior officer than I do in receiving salutes from others. Vulgarly, there is a real "kick" in it. It is the recognition sign in the profession of arms that only military men can use. It is my right to salute my superiors, and my joy. It reveals the respect of the American citizen as soldier to the American Army.

The civilian removes his hat when he hears the national anthem or when the colors go by. To him it is an acknowledgement of the protection afforded him by the country of which the anthem and the colors are symbols. The soldier, at such a time, simply comes to salute because they are symbols of things he has sworn to protect, and by keeping his head-dress on he shows his willingness to march to its protection at a moment's notice. That is the duty he at once owes the nation and the Army.

Not long since America paid homage to the ideal man of arms at Arlington Cemetery in the form of "The Unknown Soldier." We, who wear the same uniform he wore, are his blood brothers, since we are bound by the same oath from which he was released only by death. If one is true to this oath, to this uniform, to our Army, to our country as he was, one's glory will not be less than his, though perhaps less spectacular in death. Ours is a holy profession, rightly used, and by virtue of our service we associate with a galaxy of eminent servants of whom Washington, Grant, Lee, Jackson, Pershing are magnificent examples. Let us make the most of it! Let us be loyal as citizen-soldiers to the Army because it is worthy of our loyalty. America has never taken up arms except in a worthy cause and to accomplish humanitarian ends. This means that our uniform has never been stained by any low purpose of conquest or territorial expansion. True, we have expanded, but America's colonial policy can stand the lime-light of any examination. So the American soldier can hold up his head as one who truly believes in himself and his profession as being inherently worth while.

The American Soldier's Duty to Himself

There is a sense in which the duty one owes to himself must be paid before he can consider discharging his duty to his country and to his profession, for he must have developed along particular lines before he is a fit man to serve the common weal, or to undertake professional responsibilities. The Army will not enlist just any one. The candidate for enlistment must come up to certain established standards morally and mentally, as well as physically. Ex-convicts, moral perverts, habitual criminals, mental deficients, all this general type of men are excluded from the Army as entirely undesirable. Our soldiers are self-respecting and pride themselves on the high quality of their manhood and ability, a condition that is essential if soldiers are to render the finest service to their country and their profession. Every soldier owes this to himself first.

There are reasons in plenty why a man should be true to himself. However, all others fall in the presence of the outstanding one, which is, that if a man isn't true to himself first, he can never be trusted to be true to his country, the Army, or any cause in which the two may be interested. If one is true to himself, he won't gamble, drink, and go around with loose women. There is a physical reason why this is

impossible, as well as a moral one. It is difficult to say that one reason is more convincing than any other, for both are intimately related. Suffice it to say that being true to oneself is prohibitive of these so-called pleasures.

It is not easy to keep oneself free from all stains—to be true to oneself. There are temptations on every hand, and a man will find the thing he really wants. The only safe rule to follow is, "Want the right thing!"

The greatest privilege in the world today is that of being an American citizen and soldier. If one appreciates this privilege, he will guard well the treasure house of his life. No commander ever had back of him so clean, so fine an Army as ours. America is with the American soldier, back of him, believes in him, and trusts him to the limit. Then, when his service is finished, be it one hitch or many, it wants him back in the capacity of a private citizen.

APHORISME XXIII

There is nothing so glorious or sweet in the fruition, that is not difficult and painfull in the acquisition; nor can wee tast the kernell of pleasure, unlesse we crack the hard shell of danger: such are the craggie and untrodden paths to honour, where though the first entrance bee hard and many times disastrous, yet overcome by true resolution and perseverance, it after turns to a mans great glory.—Ward's Animadversions of War *(London, 1639).*

EDITORIAL

Why Soldiers Fight Wars

SOMEONE with a happy imagination—and probably an Irish ancestry—recently wrote that soldiers fight wars because nobody else can. Our firstborn claims that this is merely a recital of an obvious truth, but we are not so sure that it is obvious. It certainly took our country a long time to learn that it was necessary to have soldiers to carry on wars. We tried to fight the Revolutionary War and the War of 1812 and the Civil War with ploughboys and clerks and merchants, and we made no progress until we converted them into soldiers. In the Mexican War and the World War we made our raw levies into soldiers first, and our successes started with the first battles.

The premise would seem to admit of no argument—and it applies to all walks of life. Why do bankers run banks? Why do architects design buildings? Why do bootblacks shine shoes? Why do soldiers fight wars? Nobody else can! We do not expect barbers to extract teeth, or dentists to build bridges, or civil engineers to practice law. And yet, somehow, a considerable part of our citizens seem to expect farmers and artisans and mechanics to be able to fight wars should the necessity arise. The newsboy who wishes to conduct a drug store first becomes a druggist, and the farmer who would manage a grocery store invites disaster if he fails first to become a grocer. Likewise, it is unwise to expect the clerk to fight until he has become a soldier.

Those of our worthy citizens who decry the soldier place the cart before the horse. They argue from the proposition that soldiers make wars, when, as a matter of fact, it is war that makes soldiers. The World War made four million of them in America alone. If we exterminate the soldier we do not prevent war any more than the discharge of firemen will prevent fires. But when we can prevent fires the firemen may be released, and when we can prevent war the soldier may be eliminated.

The moral is, of course: If we are to have wars we must have soldiers.

May Explorers

In May, 1804, Capt. Meriwether Lewis and Lieut. William Clark, with twenty-nine picked soldiers, left St. Louis to explore the "Western Empire." On November 15 of the following year they reached the mouth of the Columbia River. It took them eighteen months to follow the westward movement of this Nation's boundaries.

On May 8, 1919, a squadron of United States naval planes took off from Rockaway Beach for a transatlantic flight. The *NC-4*, the only one to complete the trip, landed in Lisbon. This was just nineteen days after the start, and stops had been made at Halifax, Trepassey, Horta, and Punta Delgada.

Early in the morning of May 20, 1927, Capt. Charles Lindbergh left Roosevelt Field, and shortly after dark the following day he had reached Le Bourget. In less than thirty-three and a half hours two continents had been linked and the Atlantic crossed.

Each of these May adventures marked a definite step in the progress of the United States and the world. The difference in the time that passed between the first and second and the second and third marks the speed with which civilization is advancing.—*Washington Post.*

Peace and Preparedness

In his Arlington address President Coolidge set forth felicitously the American attitude toward war—toward the international employment of military force. The people of the United States have never been anti-warlike in spirit. The nation was born in war. It has had to fight to defend national interests and even to save its nationality. It does not shrink from war when war is necessary. But it has always had the will to peace and has refrained from wars of aggression and conquest.

Our feeling about military preparedness clearly proves this. All our major wars have caught us glaringly unprepared. After every one we have gone back or nearly back to a former easygoing, over-optimistic peace basis. We wish no more wars and are ready to do everything which can reasonably be done by international concert to limit armament and armed clashes. Yet we should be flying in the face of repeated and costly experiences if we trusted mainly to diplomacy or to the good faith and good will of other nations to escape unscathed when our national honor and interests are threatened.

Thomas Jefferson was an extreme anti-militarist. He skeletonized the country's armed forces. He depended on neutrality proclamations and embargoes to hold the United States aloof from European struggles

a century or more ago. He failed utterly, just as President Wilson did in the European struggle of our own day. In both cases we drifted into war unprepared. We had neglected to take out the indispensable national insurance of commonsense military preparation.

* * * * *

The United States is for peace, arbitration, conciliation, and armament limitation as means to non-aggression and tranquility. But the latter cannot be purchased by renouncing an army and a navy adequate for national defense in time of broken faith or international disorder. —*New York Herald Tribune.*

The American People Should Appreciate Their Fine Army

* * * * *

Once history was written almost wholly in terms of rulers and soldiers. Our day, in its recoil from war, is in danger of forgetting what it owes to its standing army even in time of peace. As the President said: "These men stand ready to respond at any moment to the order of our Government to proceed to any point in our own country or to any portion of the globe where disorder and violence threaten the peaceful rights of our people. Their post is always the post of danger."

Not only is this true, but it is also true that the existence of a well-equipped military force is a most useful asset in a peacetime emergency.

Secretary Hoover told with pride the other evening how the great Mississippi River flood, with its 700,000 victims suddenly engulfed in the worst disaster our nation has yet seen outside of war, was met by splendid cooperation of relief forces with the loss of only six lives.

Were he to apportion the credit, our army would come first. For it was ready with 30,000 cots and tents, 150,000 blankets and vast stores of food—a reserve of practical relief instantly started to points of need.

Nowhere else could an equal supply have been found. Nowhere else was there an organization equally trained and ready to route the shipments with a minimum of delay.

* * * * *

Our fortunate country does not need a large standing army. But it needs and it has a good one. It needs to make sure that the goodness of its little army is not whittled away by carelessness falsely masquerading as economy.—*New York American.*

Peace Wisdom

Three points made in a recent speech by Dr. David Jayne Hill, experienced diplomat and clear-visioned historian, merit remembrance.

(1) If military disarmament preceded moral disarmament, civilization would be at the mercy of barbaric impulses.

(2) To declare all war unlawful would be both futile and contrary to truth, since self-protection is a sovereign right.

(3) To refer all differences to tribunals of compromise without predetermined laws by which the decision of judges would be regulated would completely sacrifice sovereign independence.

The dove of peace cannot be caught by sprinkling sophistry on its tail.—*San Antonio Light.*

Make Haste Slowly

Hanford MacNider, assistant secretary of war, applies the brakes gently to some of the enthusiasm that is breaking out over aviation. Not that he depreciates the spirit behind the propaganda, but because he has had some experience that makes him pause. It will be nice to have the air force for defense purposes, but, he points out, something else must be considered.

Just now the munitions supply of the United States in all branches amounts to about as much as the army would require for three hours of actual battle. What real service will a thousand airplanes be, or any given number, if we have nothing to arm them with?

Again, we are approaching that happy state of mind which led one of our statesmen a few years ago to vision "a million Americans leaping to arms overnight." Mr. MacNider does not want to discourage anyone, nor is he willing to be a party to any deception. We need something else just now more than we need airplanes.—*Omaha Bee.*

APHORISME XXXIII

In the government of a prudent Commander rests the safety of the Army; and the greatest weakening thereof is by disorder and want of discipline. From want of pay springs up disorder: money comforts more than aqua vitae; *but want is such an* aqua fortis *as will eat up the steel coat of discipline: for hunger and penury will rout a well composed Army sooner than an over-potent enemy.—Ward's* Animadersions of War *(London, 1639).*

PROFESSIONAL NOTES

Sixty-First Coast Artillery (Antiaircraft)

The Coat of Arms of the 61st Coast Artillery (AA) was approved by the War Department on October 25, 1921; and its blazonry is as follows:

Shield: Per fess dancette *argent* (silver) and *sable* (black), a thunderbolt bendwise proper (natural color) penetrating the chariot wheel of Helios winged with two dexter wings inverted, forming a saltire with the first charge all counterchanged and upon the wheel the sun in splendor of the third.

Crest: On a wreath of the colors (silver and black) an eagle's head erased *or* (gold).

Motto: Non est ad astra mollis e terris (The way to the stars is not an easy one).

The aims and purposes of the regiment are told in pictorial form by the story of Greek mythology of the winged chariot of Helios which was brought to earth by a bolt of lightning thrown by Zeus. A summary of the story is as follows: Helios, the sun, drove across the heavens from East to West daily, in a winged chariot drawn by the celestial horses. His son Phaeton, in order to please his mother and to satisfy those who doubted that he was really a son of Helios, obtained permission from his father to take his place in the chariot for one day. Phaeton had scarcely taken the reins when the celestial horses, realizing that the load they drew was lighter than usual and that a weaker hand was guiding them, commenced to rush headlong ahead and left the travelled road. Then for the first time, the Great and Little Bear were scorched with heat. Phaeton saw with terror the monstrous forms scattered over the surface of heaven. He beheld the Scorpion extending his two great arms, and with his tail and crooked claws stretching over two signs of the Zoodiac, reeking with poison and menacing with his fangs; his courage failed, and the reins fell from his hands. The horses, when they felt them loose on their backs, dashed headlong and, unrestrained, went off into unknown regions of the sky, in among the stars, hurling the chariot over pathless places, now high up in heaven, now down almost to the earth. The clouds began to smoke and the mountain tops took fire; the fields were parched with heat, the plants withered, the trees with their leafy branches burned, the harvest blazed. Then, it is believed, the people of Ethiopia became black by the blood being forced so suddenly to the surface, and the Libyan desert was dried up to the condition in which it remains to this day. The Nile fled away and hid its head in the desert and there it still remains concealed. The earth cracked open. the sea shrank up. Jupiter saw what had happened and, calling to witness all the gods, including him who had lent the chariot, and showing them that all was lost unless some speedy remedy were applied. brandished a lightning bolt in his right hand and launched it against the charioteer and struck him at the moment from his seat and from existence. This is the first historical record of a hit being scored against an aerial target.

The shield is divided by the saw tooth line taken from Lord Delaware's arms which were the basis of the coat of arms for the Harbor Defenses of Chesapeake Bay, where the organization was formed as the 1st Antiaircraft Battalion, in 1921. The colors, black and white, were also taken from the shield of the Harbor Defenses of Chesapeake Bay. The crest is taken from the arms of James Monroe with the colors reversed, a red eagle's head on a gold shield, signifying that the unit was formed at Fort Monroe.

The personnel of the organization wear the shield in metal and enamel as a distinctive regimental badge on their uniforms.

The history of the regiment's units are as follows:

Headquarters Battery, 61st Coast Artillery, was organized in 1907 at Fort Howard, Maryland, as the 140th Company, Coast Atrillery Corps; became the 1st Company, Fort Howard, Maryland, in 1916, and the 1st Company, Coast Defenses of Baltimore, in 1917; was demobilized in December, 1918; reconstituted later with a unit which was formed from the 2d Company, Maryland National Guard, Coast Artillery, in 1918, and was called the 6th Company, Coast Defenses of Baltimore; became the 1st Company, Coast Defenses of Baltimore, in 1919, and was transferred to Fort Monroe, Virginia, and given the designation, 9th Company, Coast Defenses of Chesapeake Bay, in 1920; became the Headquarters Detachment and Combat Train, 1st Antiaircraft Battalion, in 1921, and Headquarters Detachment and Combat Train, 61st Artillery Battalion (AA) in 1922, with the additional designation, 140th Company, Coast Artillery Corps. In 1924 it became Headquarters Battery, 61st Coast Artillery.

Battery A, 61st Coast Artillery, was organized in 1808 by Captain Nathan Estabrook as a company of the Light Artillery. It was commanded by Captain Luther Leonard during the War of 1812 and participated in the battles of Queenstown Heights, Canada, October 13, 1812; Stoney Creek, New York, June 6, 1813; and Plattsburg, New York, September 6 to 11, 1814; became Company B, Light Artillery, in 1816, and Company C, 1st Regiment of Artillery, in 1821. During the Seminole War it took an active part in the following battles: Okahumpka Swamp, Florida, March 30, 1836; Fort Drane, 10 miles from Micanopy, Florida, August 21, 1836; Wahoo Swamp, Florida, November 21, 1836; and the Everglades, Florida, March 23, 1838. In the Mexican War its battle honors were as follows: Cerro Gordo; Hacienda de Oka Lake; San Antonio Contreas; Churubuseo; Chapultepec; City of Mexico; and Pass of La Hoya.

Civil War: at Blackburns Ford, July 18, 1861; Bull Run, July 18, 1861; Manassas, July 21, 1861; Siege of Yorktown, April 5 to May 4, 1862; Glendale, Virginia, June 30, 1862; White Oak Swamp, June 30, 1862; Malvern Hill, June 30 to July 2, 1862; Groveton and Bull Run (Manassas), August 29-30, 1862; Antietam, September 16-17, 1862; Fredericksburg, Virginia, December 11-15, 1862; Chancellorsville, May 1-3, 1863; Aldie, Virginia, June 17, 1863; Upperville, Virginia, June 21-22, 1863; Gettysburg, July 1-3, 1863; Shepherdstown, West Virginia, July 16, 1863; Brandy Station, Virginia, September 12-15, 1863; Mine Run Campaign, Virginia, November 26 to December 2, 1862; Custer's Expedition in Albermarle County, Virginia, February 28 to March 1, 1864; The Wilderness, Virginia, May 5-7, 1864; Chesterfield, Virginia, May 23, 1864; Polecat Creek, Virginia, May 26, 1864; and Cold Harbor, Virginia, June 1-2, 1864. It was designated 6th Company, Coast Artillery, in 1901; became the 6th Company, Fort Monroe, Virginia, in 1916, and 6th Company, Coast Defenses of Chesapeake Bay, in

1917; later became Battery E, 60th Artillery, Coast Artillery Corps; was sent to France and participated in the St. Mihiel and Meuse-Argonne offensives; returned to the United States and was demobilized at Fort Monroe, Virginia, in 1919; was reconstituted and consolidated with Battery A, 61st Artillery Battalion, by G. O. No. 12, W. D., 1924. The latter had been formed in 1918 as the 6th Company, Coast Defenses of Chesapeake Bay, from the 6th Company, Virginia National Guard, Coast Artillery; designated Searchlight Battery, 1st Antiaircraft Battalion, in 1921, then Battery A, 61st Artillery Battalion (AA) with the additional designation of the 6th Company, Coast Artillery Corps, in 1922; and became Battery A, 61st Coast Artillery, in 1924.

Battery B, 61st Coast Artillery, was organized in 1917 as the 13th Company, Fort Monroe, Virginia, designated 5th Company, Coast Defenses of Chesapeake Bay, later in the same year; became the Gun Battery, 1st Antiaircraft Battalion, in 1921, Battery B, 61st Artillery Battalion (AA) with additional number 257th Company, Coast Artillery Corps, in 1922, and Battery B, 61st Coast Artillery in 1924.

Battery E, 61st Coast Artillery, was organized in 1907 as the 168th Company, Coast Artillery Corps; designated 8th Company, Fort Monroe, Virginia, in 1916, and 8th Company, Coast Defenses of Chesapeake Bay, in 1917; became Headquarters Battery, 60th Artillery, Coast Artillery Corps, later in the same year; went overseas and participated in the St. Mihiel and Meuse-Argonne offensives; returned to the United States in 1919 and was demobilized; was reconstituted and consolidated with Battery C, 61st Artillery Battalion, by G. O. No. 12, W. D., 1924. The last-named Battery was formed in 1918 from the 4th Virginia National Guard, Coast Artillery, and designated the 8th Company, Coast Defenses of Chesapeake Bay; became Machine Gun Battery, 1st Antiaircraft Battalion, in 1921; changed to Battery C, 61st Artillery Battalion (AA) in 1922, with the additional designation 168th Company, Coast Artillery Corps; and became Battery E, 61st Coast Artillery, in 1924.

Service Battery, Headquarters Detachment and Combat Train, 1st and 2d Battalions, and Batteries C, D, F, G, and H were authorized in 1924 but have never been organized.

Graduation Exercises of the Army Industrial College

Address by MAJOR GENERAL CHARLES P. SUMMERALL

Though your class is the sixth to graduate from this institution, it is the first to have devoted a full free academic year to the study of the war-time problems of industry. These graduation exercises, therefore, constitute an especially significant occasion. They signalize the progress which has resulted in conformity with an idea to which I gladly give my sincere approbation.

Your studies have contributed to a compilation of basic information on the industrial effort in war, comparable in value to the purely tactical literature which was formerly of main concern to military students. However, your mission in this line of endeavor is not completed. You have had the privilege of release from all other duty for a period of nine months, in order that your devotion to reflection and study on this all-important question of industry in war might prepare you for greater responsibility. Your attention to this question does not cease with your graduation. You have the basic facts as a groundwork. We hope and expect

that you will contribute further elaboration of your ideas on this subject during the ensuing years of your military careers.

This is an unique institution from the standpoint of old conceptions of army schools. At our service schools for many years military art was studied mainly from the point of view of troop leadership. We thereby gained a habit through prescribing the principles upon which the eligible manhood of the country was to be organized and trained as an army. We could stipulate the basic requirements of a soldier without reference to civil requirements. You have had to take a different point of view during the courses here. You learned at an early stage in your studies that you could not prescribe a new machine or organization for war, but that the wartime industrial structure is no other than the peace-time industry, abridged here and expended there, but spurred to its maximum effort on its maximum time schedule. You learned that even though the nation be at war, its industry remains in the same hands as during peace. Consequently, your studies of industrial mobilization have been a study of civil organization. Your plans had to pass the critical test of industrialists and keep step with their progress.

Long before the clouds of the Revolutionary War took form, General Washington realized the dependence of the colonies upon foreign industry and understood the serious handicap which would be entailed by resistance to the mother country. Industry continued to be recognized as an element of our national defense but it took the World War to demonstrate fully its great importance, especially to our peace-loving nation, which has avoided a large standing army and a large investment in reserve materiel. Now at last we fully appreciate that a coordinated industry is essential to an army in the field and that effectixe mobilization is dependent upon the ability of factories to supply the needs of the army.

Standardization, specialization, and the resulting mass production are comparatively recent developments by industry. These practices have come to dominate industry and are responsible for our world leadership in trade. Upon such an organized industry the Army must depend for its supply in an emergency. To receive full benefit we must understand the principles upon which industry is built, and aid industrial organizations in their efforts to solve our supply problems.

The military mind is prone to interpret the term "mass production" as an assurance of rapid munition supply. We hear of factories which turn out so many completed automobiles every minute, and of packing houses which convert ever-moving streams of live stock into products ready for the table, but we neglect to reflect upon the days and months devoted to the planning of this production before it became almost a mechanical operation.

With 80 per cent of the motor cars of the world and the gasoline to operate them, with a production of over 50 per cent of the world's steel, with the ratio of horsepower to labor the highest in the world, and, with few exceptions, having available all essential raw materials, this country should eventually exceed any probable enemy in production, provided we are not crippled before we develop our industrial potentialities. Planning in peace for the prompt and efficient use of those industrial advantages, assures such early supply as should prevent our being crippled during the early months of a war, and so should make possible the mobilization of such strength as might be needed for a decisive victory.

During the World War the monthly increment of soldiers sent to France was, at its maximum, about 300,000. Your future efforts will follow your studies which have pertained to reduction of the time necessary for obtaining the vital articles of equipment and supply. We are not so concerned with eventual quantities of muni-

tions, which will be sufficient even though no thought or effort is given to this problem prior to the actual beginning of war, provided defeat does not disrupt industry. We are concerned with reduction of the time required to start effective production. If you can reduce this period thirty days, the combat army is increased by 300,000. This is equivalent to giving the commander of any future army a reinforcement of fifteen divisions; or, if you wish to view the problem from the other angle—if you fail to reduce the period of production by thirty days, and such reduction be possible, your failure is equivalent to the loss of fifteen divisions. Therefore, your task has potentialities of the greatest import to the future safety of our nation. Your work is of prime interest and importance to all military men.

There is another aspect to your endeavors. During the World War, 39 per cent of our Regular Officers were sent to the theater of operations. Of the remaining 61 per cent, many were employed in an attempt to obtain the munitions and supplies required by our forces. These officers on this duty were not all officers of the supply branches but were drawn from the Infantry, Cavalry, and Artillery. If plans are prepared, and the task broken up into clear-cut missions, all but a few Regular officers can be released for the zone of combat. Any commander of an army who received an addition of a thousand regular officers would certainly extol the benefits of a plan that made this possible and practicable.

Notwithstanding our best attempts to foresee the future, it may be necessary, in the early days of an emergency, to bring men to the colors at a greater rate than is now contemplated. We must be ready to do this so far as it is within the bounds of possibility. We must make definite investigations in order to determine the availability of all practicable substitutes. While we can not, of course, improvise ammunition and airplanes, we can, from the abundance of our resources, find substitutes for clothing, transportation, and many other articles.

Research for improved weapons and improved methods of manufacture must receive persistent attention if we are fully to perform our obligations to preparedness. In your work on plans you represent the War Department, which has been charged by law with the task. As these plans touch every phase of our nation's industries, you must deal with many leaders of industry. With definite purpose and knowledge you must present to them our needs so they can prepare their plans, so their willingness to cooperate can be made effective, and so they may give us the benefit of their suggestions.

In conclusion, I congratulate both the faculty and students upon the completion of an extremely beneficial course of instruction. I know the Army and the nation will benefit from the interest and ideas which you graduates will carry to your duties from this college. Your preparation for these duties assures you an eager welcome on your new assignments.

Army Ordnance Developments

A contract has been placed for manufacture of 80 mounts, tripod, machine gun, A. A. M-1, which are to be supplied to antiaircraft units of the Regular Army. They are of the type recently approved for use with caliber .30 machine guns, and they were designed for use as well with the caliber .50 water-cooled machine gun.

A new type of shoulder rest has been developed for use with that mount. It is attached rigidly to the tripod cradle, rather than to the gun as has been the case heretofore. It will be available for use during this year's antiaircraft exercises. —*Army and Navy Register.*

Why Should There Be a Department of War?

By M'CREADY SYKES

EDITOR'S NOTE.—As an excellent example of the confused thinking now apparently abroad in the land, we reprint this article from *Commerce and Finance*. A curious intermingling of fact and fancy gives rise to opinions that would scarcely be worth noticing were they less general. Given inclination, time, and patience, one can refute the arguments presented; but most of us are inclined to disregard them. In particular, one might mention the activity of the Chamber of Commerce of the city of Newport News in the retention of troops at Fort Eustis and in the improvement of that post.

We once lived in a town that had an army post. It is one of the best towns in the United States, and one to which we are attached by many ties of memory and friendship. It so happened that for several years there was also in progress not far from this town a great work of construction for a public use. A score of miles up the valley they had laid out a little city. It was but a temporary affair, for with the completion of the great dam the community would vanish, the small force required for maintenance and operation requiring but a few buildings.

This little temporary city was not a body organized on anything like military lines. It was purely an industrial community, organized for efficiency. There was of course the broad parallel with the military division into officers. In this construction camp the engineers and their staff corresponded to the officers in an army. The place of the privates was taken by the workmen on the job.

The work was laid out and organized by the staff. The project took form according to a well thought out plan, devised by intelligence. There were well arranged living quarters for both the staff and the working force. When their work was through the men could do pretty much as they pleased. While they were working, their work was definitely efficient; they were consciously and manifestly contributing to the completion of a work of high utility, one that would outlast many generations and be performing its beneficent functions long after the construction camp was forgotten.

The men received the prevailing wages, a substantial part of which they were able to save. It was not a bad kind of job, for conditions were sanitary, the experience of value and the morale good.

At the army post a few miles down the river life was organized in quite a different way. Everything of course was on the military plan. When a private met an officer he must salute him. The salute was something quite different from the friendly nod or bow given by a workman on the reclamation project when he met one of the engineers. If the private failed to salute he would be punished.

For many hours each day the soldiers at the post were drilled. Much of this drilling consisted of walking in straight lines, starting nowhere in particular and ending nowhere. The energy used in the drill evaporated in thin air, except as it taught the man to walk in straight lines, to do the same thing at the same time, to learn the trick of following the direction of a man's eye and hand and the lesson of implicit obedience. For centuries soldiers have been drilled in pretty much the same way, under traditions coming down from the days when men were regarded as so much potential food for cannon.

Under modern conditions, when a war comes there is no chance for much marching in straight lines. One can only wonder in what way the years of training according to traditional military standards is utilized. The training and experience of the men working on the government project, organized as a productive industrial unit under the direction of engineers carrying on an actual productive

work, must have far transcended that obtained by private soldiers drilled in the military routine of the centuries when there were cavalry charges and when infantry would march in the open across a plain and smash the enemy's line.

Supposing the training given the men of the United States Army were rendered by turning them to the actual construction work that is being carried on by the United States? Suppose, for example, they were organized into construction camps for building the post offices and highways that the government is from time to time building throughout the country. Does anyone really doubt that these men thus trained would not be better equipped for the possible demands of a war, waged under such conditions as modern war must be?

Even the prime military virtue of instant and unswerving obedience finds its parallel in the spirit of morale and loyalty that was manifest at the government project up the river. As for the morality, the initiative, the whole mental and spiritual development of the men, between the life of the private soldier and that of the worker in a well organized and conducted engineering camp there is simply no comparison. It is a long time since intelligent persons have really believed that an army post was an asset to a town.

We seriously doubt whether under modern conditions there is any occasion whatever for such a country as the United States to have a department of war. Under modern conditions, if the United States had at command the services of bodies of men normally engaged in useful industrial work, accustomed to working efficiently in really productive work, receiving living wages, it would seem that the services of such men would be of greater value in time of war than those of men trained in the century-old military traditions of ages that had no conception of modern warfare.

In the same way technical military training is relied on to prepare officers for the efficient organization and application of physical force, which is all that modern warfare is. How can any such training compare for an instant with the training that engineers, transportation and industrial executives, and men of science have received in the great school of modern industry?

Engineers from construction camps, chemists from the laboratories, railroad men from the shop; it is from these, rather than from the brigadier generals in gold lace, that the men to direct the organized application of the country's physical force must be chosen.

The more we think about why we should have a "war department" the harder it is to give a real reason for it.

Army Garrison Ration

The commutation value of the garrison ration for enlisted men of the Army, except the Philippine Scouts, for the fiscal year 1928 has been fixed at 50 cents per ration. The commutation value of the garrison ration for the Philippine Scouts for the fiscal year 1928 is fixed at 25 cents per ration.

The foregoing values are effective from July 1 and have application to the commutation of the money value of the ration due on account of furlough, but they will not apply to credits due organizations on rations and savings accounts.

The commutation value of the garrison ration for students of the advanced

course, reserve officers' training corps, for the fiscal year 1928 has been fixed at 30 cents per ration.—*Army and Navy Register.*

Use of the Words "Fuze" and "Fuse"

In order to eliminate confusion in the use of the words "fuze" and "fuse," the following designations have been prescribed by the War Department:

1. "Fuze" will be used to designate those items of ordnance materiel which may be defined as follows:

A mechanical device, with or without explosive elements, used to explode a shell, bomb, grenade, or other type of projectile.

Such items at present include detonating fuzes, both time and percussion; igniting fuzes, also of both time and percussion types; and bomb fuzes which contain no explosive element integral with the fuze.

2. "Fuse" will be used to designate electrical fuses, and a type consisting essentially of a train of combustible material, such as the ordinary Bickford or safety fuse.

Detail and Transfer to the Air Corps

There are many vacancies in every grade in the Air Corps, which the War Department is desirous of filling as early as practicable.

The attention of officers of other branches is invited to the promising future of aviation in general, and of the Army Air Corps, in particular, and those interested in aviation who have the necessary qualifications therefor are urged to submit to the Adjutant General, through channels, application for detail in the Air Corps for flying training with a view to eventual transfer thereto.

Adjusted Compensation Loans

By the close of business on July 15 the Veterans' Bureau had mailed to banks throughout the country approximately 1500 checks totaling $135,000, in redemption of Adjusted Compensation loan notes which have come into the Bureau since the first of the week, Brig. Gen. Frank T. Hines director of the Bureau has announced.

About 6000 of these notes had been received for redemption, and action has been had on practically all. If the notes received are in proper form, accompanied by the information necessary for handling them, there is no delay in sending out the checks, but if the accompanying information is incomplete or incorrect, redemption must be delayed until the additional information can be secured from the loaning bank.

"However," Gen. Hines stated, "it is not anticipated that much difficulty of this nature will be encountered as the banks of the country have been splendidly cooperative, and the records already on hand concerning these transactions are in excellent form. No loss of interest will be suffered by the banks in any event where a transaction has been consumated in accordance with law as the bureau will pay the banks interest on the loans up to the day of mailing the check.

A German's Impression of "Winged Defense"

An unnamed writer in the March 4, 1927, issue of the *Militär-Wochenblatt* gives a very comprehensive review, interspersed with forceful and intelligent criticisms and comments of the former Colonel Mitchell's work, published under the above title.

After a brief introductory paragraph describing Colonel Mitchell's career as an aviator and his service in that capacity in France and touching lightly on his very successful efforts in gaining publicity incident to his subsequent service in the aviation branch of the United States, the German writer says:

> It would be erroneous to permit ones self to be wholly repelled by such external manifestations which cannot well be brought into harmony with the fundamental German military maxim "*be* more than you seem!" The psyche of the American reader appears to be less concerned with the contents of a book than with the personality of its author, and the slim and youthful flying general is indebted to a very great extent to the publicity he has achieved for his status as "a picturesquely outstanding figure" and as a predominently graphic personality in the United States.

The German writer takes up in brief but well chosen detail Colonel Mitchell's conclusions and arguments sustaining his views regarding the superiority of aircraft over other arms as they are stated in his book and quotes freely from the narrative of his experiences in sinking naval vessels. He follows this with copious extracts of the salient features from variously published reports and statements of naval and military authorities of the United States and England and of press comments taking the opposite ground from Mitchell. The reviewer's treatment of the subject shows a very comprehensive grasp of all the essential points of the matter under discussion.

In his presentation of the side of the defense, that is, of the side of those in disagreement with Mitchell's conclusions, the reviewer refers to and appears to give special emphasis to the contents of an article written by Major J. C. Haw, C. A. C., U. S. Army, which was published in the October, 1925, issue of the COAST ARTILLERY JOURNAL under the heading "Antiaircraft Defense." Taken all in all, the arguments and statements of both sides on the principal controversial points at issue are well and clearly stated by the reviewer and leave the reader to form his own judgment. They are, however, so stated that there is an inclination on the part of a careful reader toward the conclusion that aircraft will not, for the present at least, do away wholly with battleships, cruisers, submarines, and other arms and appliances now in use for war purposes.

The closing paragraph of the article is given in full translation, as follows, in his own words:

> The preceding remarks, quotations and references present only a small but essential part of the exceptions thus far enunciated to Colonel Mitchell's conclusions. They are advanced and assembled here not for the purpose of minimizing in any manner the significance of the flying arm, to which there will undoubtedly be accorded a prominent, even, possibly, a leadingly predominant place in modern fighting appliances in wars of the future, but they are here brought out because Colonel Mitchell has failed to bring them out himself. This proves that *Winged Defense* cannot justify the assumption of being an exhaustive scientific war study that lays down and carefully weighs and estimates all the pros and cons, but that it is and one must so regard it in spite of its merits and some valuable disclosures, a biased, sensational, and one-sided contraversial propaganda publication. Such publica-

tions tend to provoke similar controversial polemic literature from adherents of other arms as a consequence of which the controversial points are greatly emphasized and the merits of the cases under discussion are obscured. Numerous voices of the American press are taking up this subject and pointing out that, from the military point of view and standpoint, such rivalries are not conducive to progressive development but rather detrimental and liable to have disastrous consequences. That a proper recognition of the shape likely to be taken by future wars and the specialized problems arising therefrom for all arms will be promoted only on the basis of the very closest cooperation of the work of the several arms affected. The fact that Colonel Mitchell has undoubtedly succeeded in promoting and stimulating the progressive development of American aviation by his one-sided publicity program does not in any way change the fundamental principle above alluded to. On the other side of the sheet there stands also the "imperative demand for giving the newly emerging arms willingly and timely a position corresponding to their importance and not to permit them to be suppressed by the older arms." *Winged Defense* has accomplished that and has, as a result, taken its place as a significant event in the military literature of the United States.—G. R.

Captain Liddell Hart's Book on Scipio Africanus

The *Militär-Wochenblatt* of January 25, 1927, publishes a brief notice of a book issued by Wm. Blackwood Sons, London, in the summer of 1926, written by the well-known English author of military works, Captain Liddell Hart, under the title: *A Greater than Napoleon—Scipio Africanus.* The author endeavors, in this book to furnish proof that Scipio Africanus was the greatest military field commander-in-chief and statesman of all times, and one who surpassed in those capacities Alexander, Hannibal, Cæsar, Frederick the Great, and Napoleon. He gives a masterly description of the life and achievements of the Roman general, some of which are very briefly referred to in the German's review of the book.

It begins with his action as Roman Military Tribune at the age of 21, when he assembled at Canusium and rescued and brought back to Rome 4000 men of the dispersed Roman army after its defeat and almost utter annihilation by Hannibal at Cannæ, 216 B. C. At the age of 25 he became pro-consul in Spain, where he took Cartagena by storm, defeated Hasdrubal Barca at Baecula by a double encompassment, and in 206 B. C. inflicted renewed defeats on the armies of Magos, brother of Hannibal, in the battles of Illipa, and converted the regions heretofore held by the Carthaginians in Spain into Roman colonies. Returning to Rome when he had been chosen consul he intended to remove his forces to Sicily with a view to establishing there a base for an attack against the Carthagenians in Africa, but he was opposed by the government at Rome. He finally succeeded in landing with an army in Northern Africa in 204 B. C. where he defeated Hasdrubal and his African auxiliaries and forced Carthage to sue for peace. He also succeeded, by skillful manipulations, in stimulating the spirit of dissention that usually prevailed among the leaders of the African tribes affiliated with Carthage, and after destroying one of them attacked the other, under their king, Massanissa, to himself. Hannibal, having been recalled by his government from Southern Italy, prevailed upon the city to withdraw its peace proposals and renew its resistance to Rome. This came to a climax in 202 B. C. in the battle at Zama, not far from Carthage, where Hannibal was defeated and his army practically annihilated.

Scipio, after taking the city exercised great moderation in his treatment of the Carthagenians by leaving the city intact as a commercial center, after depriv-

ing it of all military prestige and resources. Returning to Rome he was subsequently sent on a military enterprise to the East as commander-in-chief against the king of Antioch, and after a successful conclusion of the campaign returned to Rome and to retirement, while still a comparatively young man, to his landed estates not far from the city.

His later years were embittered by the envy and malignant jealousy of his fellow citizens, who brought against him charges of bribery and maladministration in the several military expeditions in which he had been engaged. He refused to appear in Rome to defend himself against these charges. He died at the age of 52 almost at the same time when his great former opponent Hannibal, who had been compelled to flee from Carthage to Bythinia, committed suicide following the persecutions of his enemies.

Captain Hart bases his judgment of Scipio Africanus as the greatest of all military leaders of all times, on his action at Zama where he achieved success by accomplishing the double environment of an enemy in every way his equal, under the command of a leader of equal capacity. He also points out that Scipio had, throughout his military career, always to do with military forces equal and in some cases superior to his own and guided by skillful leaders, and not, as was the case with Alexander, Cæsar, Frederick, and Napoleon, with enemies of inferior quality. As a statesman he showed his superiority by moderation in the treatment of his defeated enemies.—G. R.

The Genius for Abbreviation

Summing up the characteristics which have led to America's industrial and commercial advancement, Alfred Pearce Dennis, Vice Chairman of the United States Tariff Commission, speaking before the annual dinner of the Chamber of Commerce of the United States, called them "the genius for abbreviation."

"I mean by abbreviation," he said, "the conquest of time and space through such weapons as the telephone, the express train, the automobile, the refrigerator car, the elevator, the tin can, the gas tank. We are arranging city life on the vertical rather than the horizontal plane, to which the answer is the elevator. It is quicker and easier to take an elevator than to climb flights of stairs. It is quicker and easier to turn a valve in the gas range than to lug a scuttleful of coal up from the cellar. It is quicker and easier to open cans of food than to cook a meal.

"As of light and heat. so of power. We contrive to load the energy of cold falling water upon a slender wire and cause it to glow in a reading lamp at our elbow or operate a delicate drill in a dentist's office some hundreds of miles away. We move fast and travel faster. It is as difficult to establish equilibrium as it is to deal with quicksilver. We have become the greatest business people in the world chiefly because of our passion for doing things quicker and better than they have been done before."

MacNider Commissioned

Hanford MacNider, assistant secretary of war, who served with the 9th Infantry in the World War, has been commissioned a colonel of infantry in the Army Reserve Corps.—*Army and Navy Register.*

Arms and Ammunition Tested Exactingly

Few men who have not taken a trip through a great firearms factory have any idea of the great care and skill, technical knowledge, and intricate, up-to-date equipment required, or of the number of processes and tests through which firearms must pass. For instance, there are 3700 separate and distinct operations on each Remington autoloading shot gun in which 4000 individual jigs, fixtures, gauges, cutters, reamers, and like tools are used; while in the testing of rifles hundreds of thousands of rounds of metallic cartridges are consumed annually at the Remington Arms factory at Ilion, N. Y.

It is only natural that Remington should use in its .22 rifle tests its great recent contribution to sportsmen, Remington Kleanbore Cartridges, the first cartridge to prevent rust, pitting and corrosion in the bores of rifles, pistols, and revolvers and practically to eliminate erosion. From January 1 to April 21, 1927, the testing room at Ilion fired 84,590 .22 Short Kleanbore Cartridges, during which time there was but one misfire. During the same period, 101,794 .22 Long Rifle Kleanbore Cartridges were fired in these tests, with but five misfires. This is as near perfect performance as anything man-made can give; and it speaks well for the uniform dependability of these new cartridges.

Flood Control, a Radical Suggestion

"With the widespread ruin and destruction, loss of life, and loss of property wrought by the floods from the Mississippi, there is every likelihood that the matter of flood control will have the attention it demands when the next Congress convenes in December," says Walter Scott Meriwether, Editor and Publisher, *Mississippi Sun*, Charleston, Mississippi.

"And we hope that Congress will consider this:

"The Mississippi and other waterways of this nation are under the jurisdiction of the War Department, and the levees are under supervision of Army engineers.

"Why under their supervision?

"This work is non-military. No stretch of imagination can connect inland waterways with the problem of national defense. As these waterways are arteries of commence, why should they not be under the control of the Department of Commerce?

"That very efficient department under the control of its very efficient head, Secretary Hoover, himself one of the foremost engineers of the country, could undoubtedly mobilize engineering skill far superior in this line to any the Army can furnish, for by the very nature of their calling, Army engineers cannot be considered experts in this work.

"Inland waterways should be for the efficient handling of commerce, and as such should be under the jurisdiction of the Department of Commerce. As for the protection of harbors, that is for the Army and Navy."

In the foregoing editorial, Editor Meriwether brings up a vital point for consideration. Flood control is a proper function of government just as is the deepening of rivers and harbors, the erection of fortifications, the maintenance of courts, the building of highways and the police power lodged in government for the protection of all the people. Time and again the people of this nation have seen so-called political blocs and special interests attempt to enlarge the real functions of government to include the operation or control of purely commercial enterprises.

Government has all it can do to give the people protection and equal opportunity, without entering the field of private endeavor in competition with its citizens and taxpayers.

The Missipissippi catastrophe should prove to the people as well as to lawmakers that flood control is a vital function of government. It should not be made a plaything of politics, and used as a lever to launch the government upon purely industrial enterprises which are not for the common safety or benefit of all the people in like measure.—*Industrial News Bureau.*

The Basis of Road Strength

In discussing road building, W. J. Emmons, highway research specialist, U. S. Bureau of Public Roads, in an address before Fifth Annual Asphalt Paving Conference, in Washington, made points which are vital to future road building programs.

> The native soil under a pavement must ultimately carry the wheel loads, so in building a pavement it is a question of distributing a load over an area of soil large enough so that the unit pressure on that soil will not exceed its bearing power.
>
> If the pavements were 12 inches thick instead of six, the pressure per square inch on the soil would be much less, probably somewhere about one-fourth as much. Twelve inches of gravel costs only $4000 per mile, or about the equivalent of one inch of concrete. If the old roads had been built 12 inches or more in thickness, nearly all of them would have been in use today.

The big point to Mr. Emmons' article is the necessity for the building up of a good thickness of foundation, using cheap materials on the bottom and materials of better bearing power in each layer as the top is approached, till you have so distributed your wheel loads over the subsoil that there is a good factor of safety between the pressure exerted upon it and its bearing power. With a waterproof bituminous wearing surface, such a road should last for an indefinite period.

APHORISME XXV

Above all other actions, fortune is said to have the greatest stroke in Warre; yet the fault cannot bee so transferred upon her, but the greatest blame will rest upon the Generall; for her two only advocates (Blindnesse and Ignorance) which plead her innocencies, will bee your chiefest accusers, and prove you guilty of your owne ruine. It behoves therefore every Commander to open the one eye of his providence upon the danger, and fix the other of his knowledge upon his remedie.
—*Ward's* Animadversions of War *(London, 1639).*

Lieut. Col. George F. E. Harrison

Commandant Coast Artillery School October 24, 1906–January 14, 1909

MILITARY NOTES

Japan

BAYONET TRAINING OF THE JAPANESE ARMY.—So much has been said and written in this country on the use of the bayonet, so many controversies formerly agitated the minds not only of the infantry tacticians themselves but of the ordnance experts as well, that it is interesting to look into the way this question is handled in Japan.

It will be remembered that our own bayonet and bayonet training have gone through a process of evolution since the days of the old single-shot Springfield of Spanish War days.

The old bayonet of '98, triangular in cross section, was a real thrusting weapon at any rate. The Krag, which followed, had our first short knife bayonet, an improvement in many respects over the Springfield bayonet at the expense of length.

Then we were told that the bayonet was obsolete and the new model 1903 rifle had only a useless ramrod bayonet. Temporarily, at least, the spirit of the bayonet was in abeyance.

From this extreme, sentiment violently swung to the other in 1905, when a new, longer, double-edged knife bayonet was adopted and, for the first time, the infantryman had an admirable cutting and thrusting weapon.

Although given the weapon, the "spirit of the bayonet" was still lacking and training in its use was for several years little more than a physical exercise—an adjunct of "Butt's Manual."

The World War, as a result of trench fighting, saw the bayonet come most decidedly into its own. Real use of the weapon was brought to this country by the members of the various British training units which, installed at our numerous divisional cantonments, preached the bayonet both by word of mouth and by spectacular visual precept.

Today our infantry still features the bayonet training as one of the two or three most important subjects in the curriculum of the infantry recruit. The indispensable foot soldier must be thoroughly trained to march, to shoot, and to use his bayonet.

Turning now to our neighbor on the other side of the Pacific, let us see how the Japanese treat this all-important subject.

The Japanese infantryman is taught from the beginning that the bayonet is *the* weapon of the infantry, that with it and with it only can the enemy be made to give ground. He is constantly reminded that the ultimate decision is sought in the assault and that the bayonet is the ultimate factor in every assault. The following is a summary of the school of the bayonet as taught at present:

> The spirit of the Japanese Army is the spirit of the offensive and the bayonet is essentially the weapon of the offensive. To be effective in its use a soldier must be confident, skilled and without fear. He must have absolute confidence in his weapon and in himself. This confidence is only begot by constant training and practice and a nurturing of the spirit of the bayonet.

The abdomen of the enemy is the first objective of the bayonet, and it is the place easiest hit and easiest pierced, with the exception of the throat. The thrust to the throat, however, is often hard to get home; the throat is the part of the enemy's body which he can most easily remove from the line of the bayonet thrust. The soldier will do well, therefore, to run at his foe at top speed, shouting his battle-cry in order to weaken the spirit of the enemy, and thrust hon ɜ at the stomach with all his might and with the full strength of his weapo ı and his arm. Usually this first thrust will be successful. If not d thrust should be made from either side of the foe, and at once, ~ ıe should be lost in fencing. The man who thrusts the surest and ' quickes and thrusts repeatedly, is the man who wins in the bayonet fi T' colu steel has, from time immemorial, been the weapon of the Japa er. With it, and with it alone, he has preserved our country ar is glorious record as a fighting man.

No mı ' ill ever be invented that can withstand the bayonet courageously anc ıgently directed by the human brain and the human hand. Let others place their reliance chiefly in machines. They can never devise a war mac ıe that will overcome the Japanese infantryman and his bayonet. Handle ; ɔ your fathers did their swords and rely on it as they relied on their swords. Machines and all the mechanical agencies of war may batter and torture the Japanese infantryman; they may churn the ground he is holding into quagmires of blood and frightfulness; they may shatter his advancing ranks; but eventually, as in all times, he will close with the enemy and the final issue will be met man to man. Then the bayonet will be supreme and the spirit of the bayonet will be the spirit of the winner. As in the offensive, so in the defense. The enemy must eventually dislodge us, or attempt to take ground by closing with us. His artillery, gas, air squadrons may prepare the way for his infantry, but he must seek the ultimate decision in the assault and his infantry will be opposed by our bayonets. We can no more rely on machine-guns and other mechanical weapons in the defense than the enemy can rely on them, and them alone, in the assault. We must keep our ground with our bayonet when he attempts to take it with the bayonet. Even on the defensive the spirit of the bayonet will be the spirit of the offensive. We can not wait for the enemy to enter our trenches. We must oppose him before he reaches them. At the proper time the order will be given to meet the enemy in the open and meet his attack with an attack more fierce, more determined, more confident and more fearless. But the defensive will seldom be the rôle of the Japanese infantry. He has always kept in mind that it is only the offensive that wins and the spirit of the offensive will dominate the plans of the army and its operation, and be alive in the soul of the Field Marshal, and all the way down to the brave warrior in the ranks. The Field Marshal will count his bayonets and measure the strength of his forces by that count. All his other weapons he will use in protecting and assisting the man with the bayonet, but the latter will be his chief reliance, and on the latter will his plans be based. The enemy can not overthrow our plans until he has overthrown our infantry and their bayonets, and we can only overthrow the enemy by the fearless use of these same bayonets. The machine-gunner, the engineer, the transport corps soldier and all others, in close cooperation with the bayonet man, will do all in their power to help him forward, for on him and him alone, in the ultimate assault, depends the fortune of all. If he wins, the Army wins; if he fails, all is lost. The most brilliant exploits of the artillery, cavalry, air service, and all other arms can not save the day if the man with the bayonet fails.

The foregoing is taken from the Japanese regulations verbatim. Eye witnesses of their infantry training report that bayonet training is continuous and most practical.

The long thrust is used to the exclusion of all other forms of attack, the butt of the rifle is seldom, if ever, used. If the first long thrust fails, the soldier

at once drops his rifle and closes with his enemy, using his hands and feet. No time is lost in fencing. The men are taught that the abdomen first and the throat second are the only points to attack.

The attack is made in pairs as far as possible, efforts being made to gain the enemy's left side and aim at the lower abdomen.

A large part of the time instruction in bayonet training is devoted to personal combats; the winner of each combat must meet man after man until he is himself defeated, when he retires from the ring for practice with a skilled instructor.

Night maneuvers are always carried out with unsheathed bayonets in order to accustom the men to handling the rifles in the dark under these circumstances.

The Japanese bayonet run used in training has several novel features. One is a trench about twelve feet deep and eight feet wide which must be crossed in the charge. One man bends over while his companion leaps upon his back and scrambles over the top with his rifle still held in his right hand. The sides of the trench have about a three degree slope revetted with watling which assist in getting out of the trench to some degree.

Assaults are also made against a section of trench protected by a belt of barbed wire about fifty feet deep. The first few men to reach the wire (which is about three feet high) throw themselves over it. Their fellows jump on their backs and in turn throw themselves as far forward into the wire as possible and begin cutting it out from the bottom and worming themselves forward as they clean it out. In practice, smooth wire is used. The first man who throws himself on the wire lays his rifle over it in front of him, and the man who comes after him leaps from the back of the former onto the rifle, and from there on deeper into the wire. This method of advancing in the assault is very effective when the infantry can get no artillery preparation to clean out the wire and seems to obviate the necessity of pausing to cut through the first fifteen feet of wire.

The skilled bayonet man is looked up to with something akin to awe by his fellow soldiers. The expert is frequently excused from various onerous duties that must be performed.

The bayonet instructor is treated with special deference and respect by both the officers and enlisted men. In many cases he is a civilian—a professional bayonet and sword fencing master who is engaged by the regiment to polish off the rough spots in the technique of the bayonet class.

When the first and second reservists report for training great care is taken and much time spent in rekindling the spirit of the bayonet in the hearts of these old soldiers. The Regimental Commander personally hands each reservist his rifle with the bayonet fixed and admonishes him to guard it and keep it unsullied as he would his soul. He is reminded that the spirit of the bayonet never changes and that he must strive to regain the mastery of the bayonet that he won years ago by hard training and practice.

When the students of the high schools, normal schools and colleges report for three weeks of military training with the regiment during the summer, particular emphasis is placed on bayonet training. At least one hour and a half each day is devoted to a series of personal combats, and at least another half hour is given to instruction on the bayonet run where the students practice assaults over broken ground and through barbed wire and other obstacles.

To say that the bayonet is venerated by the Japanese infantryman is certainly not putting it too strongly.

COAST ARTILLERY BOARD NOTES

Communications relating to the development or improvement in methods or materiel for the Coast Artillery will be welcome from any member of the Corps or of the Service at large. These communications, with models or drawings of devices proposed, may be sent direct to the Coast Artillery Board, Fort Monroe, Virginia, and will receive careful consideration. R. S. ABERNETHY, *Colonel, Coast Artillery Corps, President Coast Artillery Board.*

Projects Initiated During the Month of July

Project No. 575, Test of SCR-180 Radio Truck for Transporting and Housing Sound Ranging Equipment.—A truck, which it is hoped will be suitable for transporting and housing sound ranging equipment, is being prepared by the 1st Sound Ranging Battery, Fort Eustis, Virginia, for test by that battery.

Project No. 576, Approved Form for Antiaircraft Firing Tables.—An approved form for Antiaircraft Firing Tables, recently completed by the Ordnance Department, was submitted to the Coast Artillery Board for comment and recommendation.

Project No. 577, Test of Light Ray Filters for Aerial Observation.—Blue, red, orange, and yellow glass lenses to filter the light rays received in Antiaircraft sights and observing instruments are being tested to determine their value in increasing visibility of aerial targets.

Project No. 578, Program for Test of Coleman 4-Wheel Drive, 5-Ton Truck.—The Ordnance Department, as a result of the demand for a high speed tractor for Antiaircraft gun batteries, has purchased a Coleman 4-wheel drive, 5-ton truck. This truck is to be tested by the Ordnance Department at Aberdeen Proving Ground, Maryland. In this connection the Coast Artillery Board has suggested a tentative program covering the use which would be expected of such a truck in Antiaircraft organizations.

Project No. 579, Comments on Report of Philippine Department Coast Artillery—Air Corps—Antiaircraft Board.—This report is on tests of joint action by pursuit planes and antiaircraft searchlights against hostile bombardment.

Project No. 580, Comments on Provisional Changes No. 1, TR 435-280, "Gunnery."—Provisional Changes No. 1, TR 435-280, have been submitted to the Coast Artillery Board for study and comment.

Completed Projects

Project No. 533, Method of Transporting and Housing Fire Control Equipment for Tractor Drawn Artillery

I—HISTORY OF THE PROJECT.

1. The following is quoted from a letter from the Chief of Coast Artillery, dated February 1, 1927:

> 1. Forwarded herewith is 1st Indorsement of this office on correspondence pertaining to a request from the Hawaiian Department for some chart room trailers to be used for transporting the fire control equipment of railway and tractor artillery batteries and as plotting rooms after the batteries

are in position. The equipment was originally procured by the Signal Corps for issue to the Air Corps.

2. This office is not favorably inclined toward any such elaborate proposition which involves the use of special vehicles or adds to the already enormous quantity of equipment to be carried by these organizations.

3. As a result of the many studies on the subject by the Coast Artillery Board in the past few years, the necessary fire control and communication equipment for these organizations has been practically settled. The next step is to determine the best method of transporting this equipment and setting it up in the battery position. Some consideration was given to this phase of the subject in Coast Artillery Board Project No. 75 (see paragraphs 26, 30, and 65 *g*) but, as that project covered many other problems of more importance at that time, effort was concentrated on those problems first. An important feature of the setup "in position" and not discussed in that project, was the location of the message center with respect to the B C station and the plotting room.

4. It is desired that you make a study of this problem having in mind the desirability of meeting requirements with the minimum increase in amount of equipment to be carried.

5. It is believed that the *wall tent* prescribed in Circular No. 373, War Department, 1920, per firing battery, was intended as shelter for the fire control equipment rather than for an office as stated therein.

2. The indorsement referred to in paragraph 1 of the letter quoted above is as follows:

1. The requirement for the chart room trailer as stated in the original request for four submitted in 1922 was one per regiment and one per battalion in the 55th Coast Artillery. This requirement as restated in 3d Indorsement, Hawaiian Department, AG 451.3, April 14, 1924, is increased so as to include one battery of the Coast Artillery and the 41st Coast Artillery. This is a special type of apparatus, the need for which has not been reported by other organizations. The data submitted from the Hawaiian Department is not sufficient to show conclusively that there is an actual need for it there.

2. The Coast Artillery Board now has under consideration a project involving test of railway ammunition cars that have been modified to accommodate the equipment required in the plotting room and the B. C. station. This type of car will probably meet the needs of the 41st Coast Artillery better than the chart room trailer. Studies will be made by the Coast Artillery Board in the near future with a view to solving this problem for tractor artillery units.

3. In view of the situation as above presented and the fact that the nine trailer units, if transferred, must be held on temporary loan from the Air Corps subject to immediate recall, the Chief of Coast Artillery does not consider that the transfer of this materiel at the expense involved would be warranted.

4. It is recommended that this matter be referred to the Commanding General, Hawaiian Department, inviting attention to the above discussion and suggesting that the matter be further presented to the War Department with detailed data setting forth the needs in the case, provided issue of these chart room trailers is still deemed necessary.

3. Sixth Indorsement, Headquarters, Harbor Defenses of Pearl Harbor, Fort Kamehameha, T. H., dated March 2, 1927, is as follows:

1. Since the original request for chart room trailers for use with the 41st Railway Artillery, the matter of furnishing railway fire control cars for that regiment has been investigated and reported on, with the result that the Chief of Ordnance has been directed by the War Department to include in his estimate for fiscal year 1929 the cost of the fire control cars desired.

2. In view of the above further consideration for chart room trailers for use with the 41st Railway Artillery is not desired.

3. At the present time the 55th Coast Artillery is in no immediate actual need for chart room trailers of the kind or type covered in this correspondence. This type is inadequate for the needs of the 55th Coast Artillery in that it will not accommodate the fire control apparatus used in connection with harbor defense work.

4. Paragraph 3, 1st Indorsement hereon is concurred in.

5. It is recommended that these chart room trailers be not furnished.

4. The following is quoted from a report submitted by the Commanding Officer, 51st Coast Artillery, on the Annual Survey of Adopted Types of Equipment:

Plotting Room Trailer: The rapid transportation and installation of the radio truck in the field has inspired the idea of plotting room trailer. It is

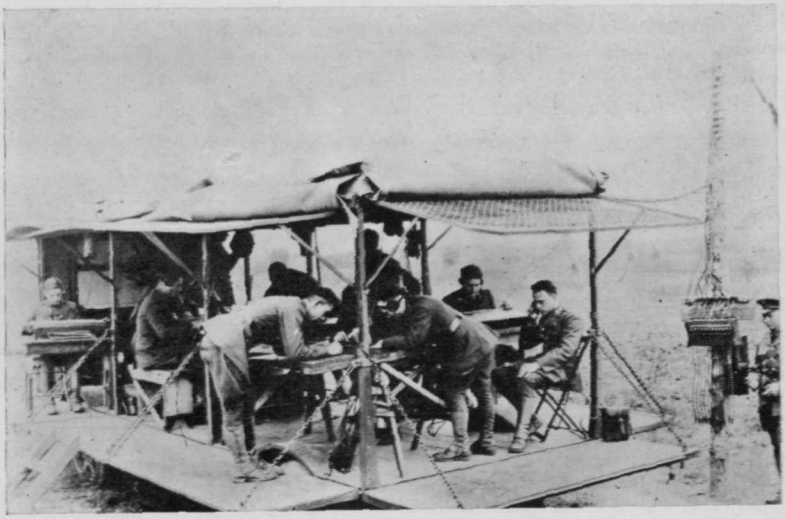

Fig. 1

believed that a trailer, auto type, of comparatively light construction, and provided with a roomy inclosed body, would accommodate the plotting room equipment and operators. The advantage of the trailer is the facility by which the fire control equipment can be transported and installed in new positions, and in protecting the instruments and apparatus from dirt and dust.

5. The following extracts are quoted from Coast Artillery Board Project No. 75, "Fire Control System for 155-mm. Guns":

26. . . . All of the above fire control equipment, together with some of the operating personnel can be transported in a G. M. C. or similar truck. This has been demonstrated to be practicable by service tests. The remaining personnel required for operation of the devices can be transported in a reconnaissance car. Provision for suitable transportation should be made in the table of basic allowances of equipment for these units.

30. (Extract) The range detail should organize its station in a tent, truck, or suitable favorably located small building.

65 *g*. That Section VIII of the said table be extended to provide for each battery a suitable truck for the fire control equipment and a reconnaissance car for the transportation of orientation personnel. (Note: Table referred to is Table IV-G, Circular 373, WD, 1920).

II—Discussion.

6. The problem of a plotting room on wheels for a tractor drawn battery may be solved by three methods:

a. A special trailer capable of being towed only by a tractor.

b. A special trailer capable of being towed by a truck, or even by a reconnaissance car.

c. A truck with a special body.

The great advantage of a plotting room on wheels is the short time required for the range section to commence operating after the plotting room has reached its destination, and the relatively small amount of labor required. The disadvantages of a plotting room on wheels are:

(1) That frequently the most suitable location for a plotting room will be one to which the special truck or trailer could not be moved.

(2) That one vehicle is limited to this exclusive use, even after the plotting room is in position.

(3) That the special equipment required would be difficult of supply and replacement.

7. In considering separately the methods *a*, *b*, and *c*, given above, it appears:

a. This has the advantage that the plotting room can be amply large and all parts may be heavy enough to be very rugged. It has the disadvantage that the fire control and communications equipment and personnel must move with the battery detail and hence cannot be limited to tractor speed.

b. This would have the advantage that the plotting room could move with the battery detail, but it is exceedingly doubtful that a trailer could be designed which would serve adequately the purpose of a plotting room and yet allow the truck towing it to keep up with the unhampered trucks.

c. This has the advantage that the plotting room without question could move with the battery detail. It has the disadvantage of tying one truck down to the plotting room at all times.

8. The 51st Coast Artillery has used experimentally a heavy Ordnance trailer as a plotting room. Two photographs (Figs. 1 and 2) of the installation are attached hereto. At Fort Eustis, this arrangement has the advantage that the trailer may be locked up and the equipment left over night without a guard, in a location where the mosquitos are so plentiful as to endanger the health of a guard.

9. Fig. 3 illustrates the set-up of a plotting room, employing a truck with a special body.

10. The transporting of the fire control equipment in a standard truck, similar to other trucks supplied the organization, has the following advantages and disadvantages:

a. Advantages:

(1) The fire control equipment can move with the battery detail, and can be moved in this truck to a point as near the spot selected for the plotting room as though it were in a special truck body or trailer.

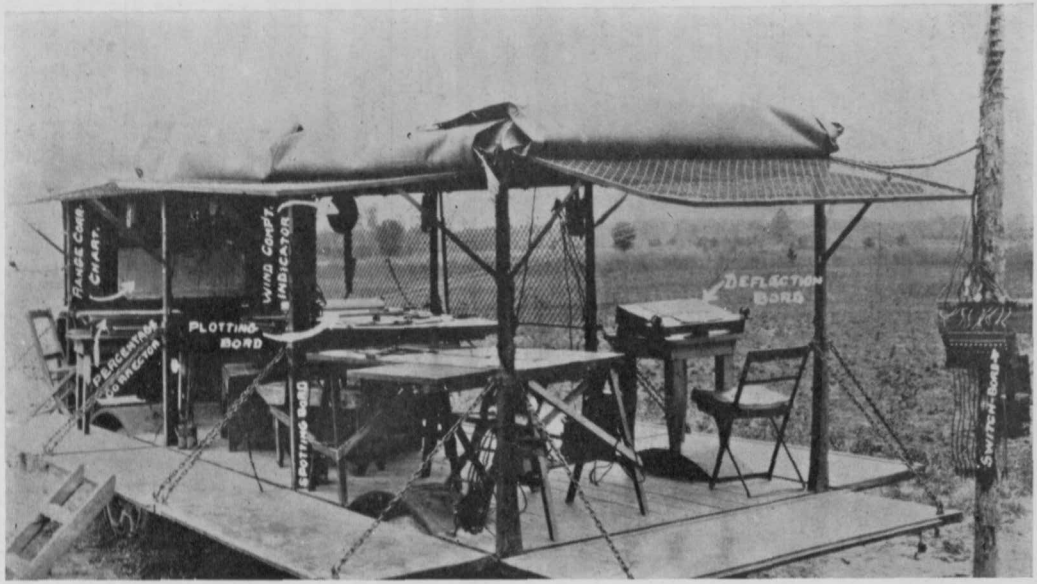
RANGE CORR. CHART.
PLACEMENT CORRECTION
PLOTTING BORD
WIND COMPT. INDICATOR
SPOTTING BORD
DEFLECTION BORD
SWITCH-BORD

Fig. 2

(2) In case this truck becomes disabled the equipment can be transferred to another truck more expeditiously than if a part of it were rigidly fixed to a special truck body or trailer.

(3) When the fire control equipment has been unloaded at the location selected for the plotting station, this truck is available for other use.

b. Disadvantages:

(1) Part of the equipment must be boxed. This will be true of the plotting board. The latest range correction boards and deflection boards manufactured at Frankford Arsenal are provided with covers that constitute all of the necessary packing.

(2) Upon the arrival of the equipment at or near the plotting station location more time and labor will be required to set up the equipment than if it were in a special truck body or trailer. As the truck will move with the battery detail preceding the guns, ample time will be available. In many instances, however it be transported on the road, it will be necessary to move the equipment by hand to the plotting station location.

11. The best arrangement of the fire control equipment at the location selected for a plotting station will depend upon the type of shelter available. It is believed that it would be better to leave this to the discretion of the battery commander than to attempt to prescribe a standard arrangement which frequently would have to be changed to meet local conditions.

12. *a.* The message center of a battery is the place at which tactical messages from higher, coordinate, or subordinate units are received and where the intentions of the battery commander and the quickest means of communicating with him directly are known. The essential element of the battery in performing its tactical functions is the gun. It is therefore believed advisable that the message center be located conveniently to the guns without reference to the location of the battery commander's observation post, which frequently must be located at a considerable distance from the guns.

b. Considering the relative location of the message center and plotting room, both are centers of communications, both should be located in close vicinity of the guns, and well sheltered. It follows that as a rule they will be located close together, but it should be kept in mind that if associated too intimately, one may interfere with the other.

13. *a.* In "Proposed Table, Tractor Coast Artillery, 155-mm. Gun, January, 1926," prepared by the Department of Military Art of the Coast Artillery School, the following items are noted:

(1) Proposed table 148 W, Battery:	
(44) Car, Reconnaissance	1
(51) Trucks, FWD, cargo	3
(1 plotting equipment)	
(1 wire and reels)	
(52) Trucks, ¾-ton	1
(1 signal equipment)	
(2) Proposed table 147 W, Battalion Hq. and Hq. Battery:	
(51) Trucks, cargo, ¾-ton	
(1 signal equipment)	
(1 radio equipment)	

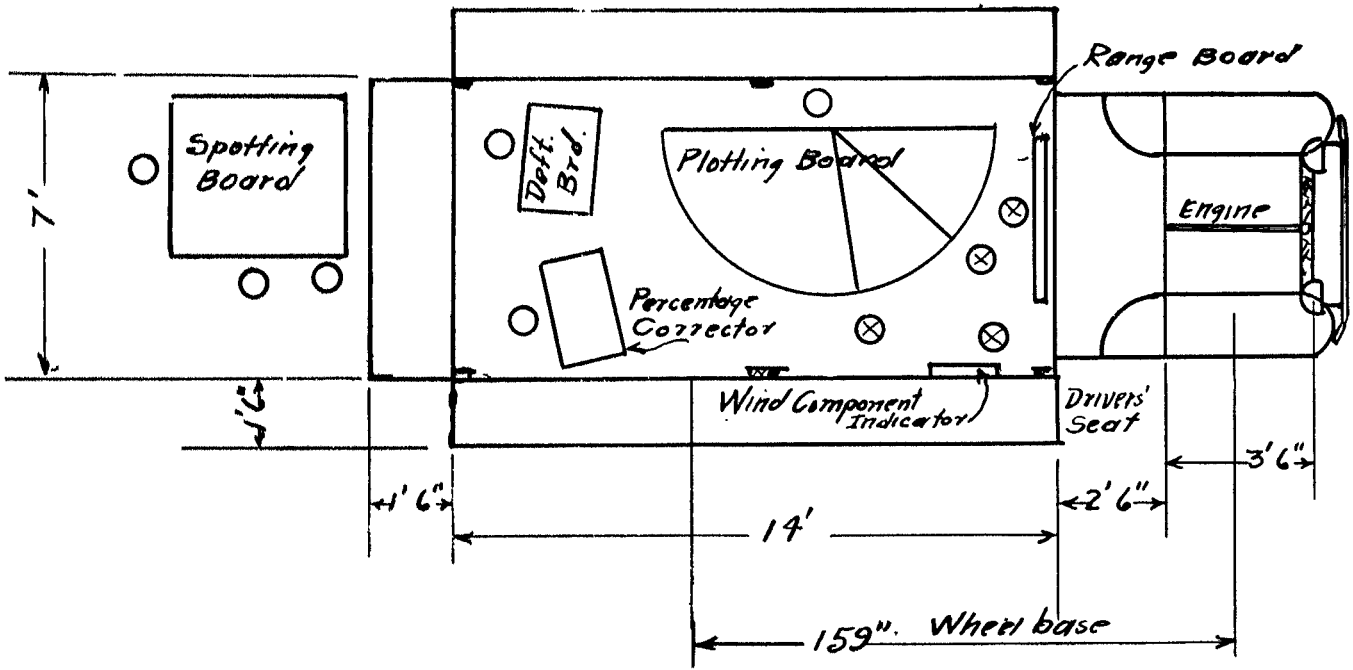
Range Board
Spotting Board
Deft. Brd.
Plotting Board
Engine
7'
Percentage Corrector
Wind Component Indicator
Drivers' Seat
1' 6"
1' 6"
2' 6"
3' 6"
14'
159". Wheel base

Fig. 3

(52) Trucks, FWD, cargo 1
(1 wire and plotting equipment)

(3) Proposed table 144 W, Regimental Hq. and Hq. Battery:
(62) Trucks, ¾-ton, cargo 2
(1 wire, reels, telephone equipment)

b. The tables referred to provide necessary and adequate transportation for fire control and communications equipment and personnel.

III—CONCLUSIONS.

14. The Coast Artillery Board is of the opinion:

a. That no special type of vehicle is necessary or desirable for the transportation of fire control equipment for tractor artillery.

b. That the following transportation should be provided:

(1) To a battery of tractor artillery, for transportation of fire control and communication equipment and personnel:

Car, reconnaissance 1
Truck, cargo, FWD, or equal 2
(1 for plotting equipment)
(1 for wire and reels)
Truck, ¾-ton, cargo 1
(1 signal equipment)

(2) To a battalion headquarters and headquarters battery of tractor artillery, for transportation of fire control and communication equipment and part of the personnel:

Trucks, ¾-ton, cargo 2
(1 signal equipment)
(1 radio equipment)

(3) To a regimental headquarters and headquarters battery, tractor artillery, for transportation of fire control and communication equipment and part of the personnel:

Truck, ¾-ton, cargo 1
(wire, reels, telephone equipment)

c. That it is not desirable to prescribe the arrangement of fire control equipment at the plotting station of a tractor battery.

d. That the battery command post (message center) should be near the firing battery.

e. That the wall tent prescribed in Circular No. 373, W. D., 1920, per firing battery, is intended as a shelter for the fire control equipment rather than for an office.

IV—RECOMMENDATIONS.

15. The Coast Artillery Board recommends:

a. That no attempt be made to design trailers or special truck bodies for the transportation of fire control and communication equipment for tractor artillery.

b. That tractor artillery organizations be furnished transportation as stated in Paragraph 14 *b* above.

c. That for tractor artillery the arrangement of the fire control equipment at the point of use be at the discretion of the organization commander.

d. That the practice be adopted of locating the command post (message center) of a tractor battery without reference to the battery commander's observation post and near the guns.

V—ACTION BY THE CHIEF OF COAST ARTILLERY.

The proceedings of the Board under Project No. 533 are approved. In the revision of Circular No. 373, W. D., 1920, which has been submitted to the War Department, provision was made for the vehicles listed in paragraph 14 *b* of that project.

It is desired that you arrange for the publication of these proceedings in the COAST ARTILLERY JOURNAL.

APHORISME XXXV

The two famous Souldiers of Rome *and* Greece *which shot like two thunderbolts into the West and East, filling the whole world with the fame of their victories, were renowned for nothing more than their celeritie in doing, and preventing the very report of their coming. For there is nothing so excellent in a Chiefe as prevention; it blesseth the action with successe, and crowneth the Actor with glory. Hee therefore that will arrive at the ports of Victory, and by her gates enter the town of Fame, must steer his course this way.—Ward's* Animadversions of War *(London, 1639).*

BOOK REVIEWS

The World Crisis 1916-1918. By Winston S. Churchill. Charles Scribner's Sons, New York. 1927. 2 v. 6"x 9". 302 + 325 pp. Ill. $10.00.

As a strategist Mr. Churchill gives evidence of being an adroit politician; as a historian he distorts facts in charmingly readable English. In his preface he explains himself thus:

> In dealing with a field so wide as that of the last three years of the World War, a highly selective process has been necessary. I have tried to find and follow the stepping stones of fate. I set myself at each stage to answer the questions "What happened and Why?" I seek to guide the reader to those points where the course of events is being decided, whether it be on the battlefield, in a conning tower, in Council, in Parliament, in a lobby, a laboratory, or a workshop. In this present volume I try to present the reader at once with a comprehensive view of the mighty panorama and with a selection of its dominating features; but I also tell my own story, and survey the scene from my subordinate though responsible station.

The reader of these volumes will seek in vain for the dispassionate survey of events. From the first to last Mr. Churchill is an advocate seeking here to justify his own conduct, there to demonstrate the unwisdom of opposing views, and almost everywhere to prove the fulfillment of all the Churchill prophecies.

In Chapter I, entitled "The High Command," Mr. Churchill undertakes to destroy the portrait of Joffre as a great soldier—"this bull headed, broad-shouldered, slow-thinking, phlegmatic, bucolic personage." The appointment of Joffre is attributed to accident following the dismissal of General Michel because of the latter's pre-war insistence that the Germans would attack through Belgium, and that the French armies should be disposed defensively. Even to sustain his thesis, it is astonishing to find Mr. Churchill seriously advancing the long abandoned contention that Gallieni's *spontaneous* intervention was decisive as to the Battle of the Marne.

Now it is well known that Joffre's entire plan to turn and fight was dependent upon the reconstruction of an offensive mass on the allied left. On September 1, he issued the following instruction: "As soon as the Vth Army shall have escaped from the menace of envelopment against its left, the III, IV, and Vth Armies will resume the offensive."

On September 2, Joffre announced that the British army would be asked to participate in the offensive and directed the garrison of Paris to attack simultaneously in the direction of Meaux. On September 4, Joffre's staff—in accordance with his instructions—prepared and issued the order containing the full plan of the Battle of the Marne, and during the preparation of this order Joffre himself *rejected an alternative plan proposed by Gallieni, Manoury, and Murray* (British Chief of Staff).

The first volume repeatedly gives evidence of the amateur strategist's idea that wars are to be won by political maneuvers, by wonderful mechanical inventions, in fact in every way but by combat with, and destruction of, the enemy's main force. Apparently convinced that those who have devoted their lives to the

war are lacking in initiative and imagination, and believing that the only successful strategists are bright young men whose imaginations are unfettered by knowledge or experience, he proceeds to demonstrate by carefully selected figures that the five great allied assaults prior to July, 1918, were useless expenditures of material and lives. Further, he proves to his own satisfaction that the true strategic objectives of Germany in 1916 were the Black Sea and the Caspian, and adds:

> One half the effort, one quarter the sacrifice, lavished vainly in the attack on Verdun, would have overcome the difficulty of the defective communications in "the rich lands of the Ukraine". Attack the strongest at his strongest point, not the weakest at his weakest point, was once again proclaimed the guiding maxim of German military party.

It hardly need be pointed out that such arguments are subject to the *reductio ad absurdam*, which Mr. Churchill approaches in the following on the German offensive of 1918: "Had they not squandered their strength in Ludendorf's supreme offensive in 1918, there was no reason why they should not have maintained their front in France practically unaltered during the whole year, and retreated at their leasure during the winter no further than the Meuse."

To this (in *Foreign Affairs*, for July, 1927) General Maurice replies:

> What should we be saying today of Ludendorff if, with Russia collapsed, with the power of assembling superior forces in the West, with America in the war, and landing daily more troops in France, he had waited passively until the assembly of an immense American Army had enabled the Allies to crush him. How could he by "saving up" have kept his people, daily suffering greater and greater privations in the war with the specter of America's might looming more formidable in their eyes?

Another of Mr. Churchill's ideas is stated as follows:

> Suppose we both, French and British, have trained our armies behind the French line to a high standard of flexible maneuvering efficiency, suppose we have permanently fortified with concrete and every modern device those parts of the front where we cannot retreat, suppose we have long selected and skilfully weakened those parts where we could afford to give 20 or 30 kilometers of ground, suppose we lure the enemy to attack them and make great pockets and bulges in a thin and yielding front, and then just as he thinks himself striking on to final victory, strike with an independent counter-offensive on the largest scale and with deeply planned railways, not at his fortified trench line, but at the flank of a moving, quivering line of battle.

General Maurice believes this will make soldiers laugh and adds:

> To which we may answer, suppose that the Germans were not absolute fools, suppose they had airmen equipped with good cameras, who photographed every line of trenches, every railway, every depot, every dump of ammunition. Suppose that the results of these photographs were plotted on to maps which showed in detail every defensive preparation of the Allies. In that case, which was the real case, we may refer Mr. Churchill to the Proverb, "Surely in vain the net is spread in front of the bird".

The reviewer ventures the suggestion that Mr. Churchill's views might have been met by acting defensively in France, Russia, and Italy, and transporting the bulk of the Allied Armies to Africa to attack the Triple Alliance at its weakest point.

Mr. Churchill does much better in his story of the naval battle of Jutland. The account is clear, dispassionate, and not inaccurate. Although an after-the-event suggestion is offered as to the deployment of the British battle fleet, the British naval commanders are treated with high consideration and excuses are

made for their possible errors. The reviewer confesses his inability to account for this difference in Mr. Churchill's treatment of naval and military leaders. Surely it is not merely that the naval leaders belonged to the right political party or the "British upper classes."

The description of the battle should give the non-technical reader a clear idea of what occurred, as Mr. Churchill conceives it—and it can not be asserted that his conception is seriously at fault. The charts are adequate.

Little has been published in English concerning the second time (August 19, 1916) Admiral Scheer led his High Seas Fleet to sea. This interesting series of maneuvers—in which battle was avoided by the withdrawal first of the British, who "suspected a trap," and then the Germans, is clearly described and shown by chart. So far as this reviewer is aware, no better description of this near-engagement has been made public.

The second of the two volumes is devoted largely to an account of the operations of the Ministry, and in particular, the Minister of Munitions, and possesses real historical value, not omitting the sometimes näively amusing suggestions of the minister to his colleagues of the War Cabinet on grand strategy.

As a whole this fascinatingly readable work is a valuable contribution to the history of the war, not from a military but from a governmental and political point of view. It should be read by soldiers who may learn what to expect from statesmen and politicians, and by statesmen who may learn how—as well as how not—to deal with military and naval commanders and with a General Staff. —R. S. A.

Fire Control and Position Finding for Seacoast Artillery. Bookshop, Fort Monroe, Va. 1927. 6⅛"x 9¼". 337 pp. Ill. Paper. $1.00.

There has long existed a need for a complete text on fire control and position finding. Our TR 435-221 on the subject has been inadequate, and much of the material and many of the procedures prescribed therein have, since its publication, become obsolescent, if not obsolete. The superseding material and procedures have been available in one form or another only from a number of different sources. The text book on *Fire Control and Position Finding for Seacoast Artillery*, prepared at the Coast Artillery School under the direction of the Chief of Coast Artillery, has just been published, and contains in one volume of 337 pages the entire subject.

The text material is complete and amply descriptive. The principles of the various systems of position finding are covered in detail; each of the various position finding instruments is described, and its operation prescribed; photographs and line drawings profusely illustrate the textual matter; the devices of later development, such as the universal deflection board, the range percentage corrector with interpolator, the angular travel computer, the fire adjustment board, the Stephens predictor, and the perfected range correction board, are covered in a completeness that should leave no need for a battery commander to refer to other sources.

The book contains illustrations and silhouettes of the various classes of war vessels of all the major powers of the world. These represent a distinct improvement over the comparatively few illustrations, mostly of U. S. vessels only, contained in our other text books. They enable a ready distinction between the characteristic types of the different powers.

There are twelve sections to the book, the first ten being devoted to the detailed explanation of the basic principles connected with each operation or function of the position finding service; to the detailed description of the instruments and their operation which are used for the performance of each function; to the application of data to the guns; and to communications systems. Section XI covers the organization of the range section and the duties of individuals thereof, and Section XII covers the coordinated and detailed functioning of the complete position finding service, both of these sections including those revisions and changes made necessary by recent developments in apparatus and methods. Probably the most valuable contribution of the book is the initial standardization of position finding procedure. It is stressed that only two distinctive procedures obtain, namely, that one necessary for Case II conditions of pointing and that one necessary for Case III conditions of pointing. Illustrating Section XII are two diagrams which should prove highly valuable in the training of personnel of the position finding service. These diagrams illustrate the routing of data under each of the two conditions, Case II and Case III. They bear the merit that they have been made sufficiently large to permit the showing of the exact point or the exact scale of each device where each element of data is applied, the data determined by each device and its course through other instruments or devices, and the various operations which culminate in the corrected data which are applied at the gun emplacements. They furnish a graphical and pictorial view of the whole position finding operation, and if there is any virtue in the belief that something one may see is more instructive than something one reads or hears, then these two diagrams are most valuable from an instruction point of view.

The typography of the book is satisfactory and the illustrations are generally excellent. Some of the cuts might very well be larger in order to show more clearly the particular apparatus in its smallest detail, but the number to which this criticism may be applied is small in consideration of the great number of illustrations in the book. There are some few typographical errors, which seem to be an inevitable fault in all first editions of text books. Such few, however, are obvious and relatively unimportant.

The book affords a valuable contribution to our available text book material. There is all too little of it in as complete a form available to a battery commander for use in the training of his battery. The text is modern, containing the developments in the subject up to its date of publication, and it is complete. It should be greatly in demand.—R. B. B.

The Services of Supply, A Memoir of the Great War. By Major General Johnson Hagood. Houghton Mifflin Company, New York. 1927. 6"x 8½". 385 pp. Ill. $5.00.

General Hagood lived with great earnestness the life of the S. O. S. of which he writes and with devout enthusiasm and entertaining style he carries his readers through the great supply problems confronting our military effort in the A. E. F., the confusion which arose, the reasons therefor, and the manner and means of bringing order out of chaos and accomplishing the superhuman results which made successful our participation in the World War. He was in great part responsible for the reorganization of the Headquarters of the A. E. F. along lines recommended by the Hagood Board and hesitates not at all to give full and hearty praise to his associates who ran the war in France, as well as to point out lack of

proper cooperation and failure to meet the demands of the Commander-in-Chief.

From his journal kept at the time and from his personal and official correspondence he has been able to present a most delightful book of the war which is of marked historical interest. It is rich in personalities of the men of the hour and in happenings that made life enjoyable or miserable in the S. O. S., such as the handling of the mail, the establishing of the Blois organization, the personal equipment situation, the use of service chevrons, the elimination of red tape and the use of telephones for conducting business, and the welfare activities.

Transportation was most vital to the successful culmination of our participation in the war and to this problem the author devotes considerable space. The methods of General Staff procedure good, bad, and indifferent are thoroughly set forth.

The author has had very prominent army assignments, which have given him a most broad view of the War Department and of the Army in all its ramifications, and which qualify him unquestionably as a brilliant authority on matters of departmental organization. It is then with profound thought that we ponder his suggestions for reorganization. To appreciate the last chapter of this book it must be carefully read. In earlier chapters he advocates reestablishing the Army Service Corps and also promotion by selection, saying, "The question is not who deserves promotion, but where can we find men qualified for the job! ! !" But in the last chapter we find the most reactionary of all his recommendations, criticisms, and suggested remedies, which strike at the very foundations of the offices of the Chiefs of Branches, the General Staff, and the War Department organization. His ideas are not due to disgruntlement and disaffection and are not propaganda of one who has fallen from grace, but are well-reasoned thoughts proposed by one who has fared well in all his Army endeavors. So when he proposes the abolition of G-1, of the Inspector General's Department, of the Signal Corps, of the Chiefs of line branches, of the Chemical Warfare Service, and takes construction from the Quartermaster General and gives it to the Engineers, and hands transportation to a new corps of that name, well may one wonder if he is trying to commit "hari-kari" or "lèse-majesté" or what not. To him that hath shall be given and to this author we can without hesitation prophesy that the storm aroused by this book will add luster to his crown, stimulate creative thought, and will eventually result in a sound, secure, and better organization for national defense. No Army officer should fail to read General Hagood's book, wherein we find him at his best.—A. W. F.

The Bridge to France. By Edward N. Hurley. J. B. Lippincott Company, Philadelphia. 1927. 5½"x 8¾". 338 pp. Ill. $5.00.

The collective history of the World War would not be complete without a comprehensive account of our maritime transportation problems such as is given in this book and it is doubtful if a more delightfully composed or more entertainingly readable book could be written on this topic. Mr. Hurley, inspired by the magnitude of the accomplishments during the War of the U. S. Shipping Board, of which he was chairman, and of the Emergency Fleet Corporation, of which he was ex-officio chairman, tells of their undertakings and of the degree of success attained therein. Much is recounted concerning the building of fabricated, wooden, and concrete ships, the Hog Island development, labor troubles and remedies, and of the equipping, the manning, the protecting, and the operating

of the great fleet produced.

Such statistical information as is presented is rendered far from dry and uninteresting by clear and enlightening accounts of the many prominent and efficient men who made possible the results achieved and of the political events at home and abroad, as well as of the political, economic, military, and naval strategy of the Allies. Maritime transportation in a military policy may hold a position of paramount strategic importance and the author raises the question as to whether or not lack of a proper merchant marine invited the submarine warfare. In this he is paralleling some thoughts developed by General Palmer in his *Statesmanship or War*. Vivid accounts of the conferences of Treves, Spa, Brussels, and Paris throw an interesting light on the European diplomacy displayed.

The proper solution of our future munitions problems in an emergency will depend largely on industrial mobilization. Mr. Hurley is opposed to an industrial draft law and such an opinion for one so eminent should be carefully considered. This book is recommended to all readers of history and Americana.—A. W. F.

The Story of the Battles of Gettysburg. By James K. P. Scott. The Telegraph Press, Harrisburg. 1927. 5½"x 8½". 301 pp. Ill. $2.00.

This is the first of a set of three books which the author has prepared covering the Battle of Gettysburg. Each volume treats of one of the three days of the battle. The story of each day is complete in its own volume, but the three are to be issued as a trilogy under the title given above.

The author enlisted in Troop H, 1st Pennsylvania Cavalry, at the outbreak of the war, as a youth of but sixteen years of age. He served through the War, but the "vicissitudes of a soldier's life" kept him from the battles at Gettysburg. For the past fifteen years he has made a study of the battle and the battlefield in preparation for these books.

If this first volume may be taken as a guide, this study of the battles at Gettysburg will be accepted as authoritative. It is evident that use has been made of the Rebellion Records and other important references. The book is not annotated, so it is to be hoped that the author's bibliographical list is to be included in the third volume. An important feature is a set of eighteen maps drawn to scale showing the positions of the troops at various times during the first day. Having read the first volume, we await with interest the remainder of the set.

The Great Delusion. A Study of Aircraft in Peace and War. By Neon. Preface by Arthur Hungerford Pollen. The Dial Press, New York. 1927. 5½"x 8½". 288 pp. $4.00.

Scarcely a day goes by without some reference in the Hearst papers to the supremacy of aircraft in warfare and to the rapidly increasing importance of aircraft in commercial fields. We are shown that battleships have been rendered obsolete and that combat land troops are no longer necessary to the successful prosecution of war. If we are to believe what we are told, armies and navies are about to become extinct. and. with forth-coming developments, giant aircraft are to supplant freight and passenger carrying trains and ships.

These are, of course, extreme views—claimed only by a few of the protagonists of aircraft—but those of the anonymous writer, Neon, are none the less

extreme. Taking the opposite stand, he damns aircraft as war machines and condemns them as commercial prospects. A large part of his book is made up of quotations from official reports, statements by military authorities, speeches by representatives of the government, records of flights, and claims by ardent aircraft advocates. He makes quite a case against the airship, but he is not so sure of himself in his treatment of the airplane.

In his foreword, the author says: "Cool and dispassionate consideration of the facts will show, however, that 'air power' is illusory and 'air supremacy' a will-o'-the wisp. The development of aircraft for war purposes is a sheer waste of men and money, and moreover constitutes a grave danger, since expenditure and dependence upon unreliable and futile weapons is a sure road to defeat.

"It will be shown that airships can never be safe or practical as commercial long-distance vessels, and that they are useless in war; that aeroplanes can never be made to pay in peace as passenger or freight carriers, and that in war they have proved themselves unreliable, ineffective, and unprofitable, no matter how brave the pilots or spectacular their exploits. While prodigal of life and treasure, aerial warfare has only succeeded in sowing mistrust and enmity, breeding fear, encouraging frightfulness, provoking thereby a manifest return to barbarism."

With this as a theme, he marshals an imposing array of facts. He finds that Great Britain spent about $12,027,500 on the construction and repair of eight airships built between 1919 and 1921, of which three were never completed, three flew a total of only 240 hours, and two flew a total of 1300 hours. He recites failures and disasters, and concludes that "all airship work at the expense of the State should cease * * *"

As regards the heavier-than-air craft, the author finds that airplane reconnaissance is unreliable, that air combats are in themselves entirely irrelevant to the issue, that bombing is inaccurate and indiscriminate, that artillery cannot be adjusted by an airplane flying a hundred miles an hour and dodging antiaircraft shells, and that no airplane service can be operated commercially without a subsidy.

While it is well to apply brakes to the widespread enthusiasm for air service —both military and commercial—fostered by propaganda and by the spectacular exploits of aerial navigators, one cannot go to the extreme of condemning aircraft because the period of development is expensive and without immediate practical results. Aircraft have undoubtedly a great future before them, Neon to the contrary notwithstanding. However, his "sensational challenge" to existing views cannot go unnoticed. The book should be carefully studied by all protagonists of aircraft.

Marching on Tanga (With General Smuts in East Africa). E. P. Dutton & Company, New York. New ed. 1927. 5"x 7½". 265 pp. Ill. $2.00.

This is an account of the campaign of General Smuts against the enemy forces in German East Africa. The expedition started from Taveta, in British East Africa, and crossed the mountains south of Kilimanjaro to the upper waters of the Pangani (Ruwu) River, near Soko Nassai, whence it moved southeast along the valley of the Pangani in the direction of Tanga and Pangani, on the coast, driving the Germans before it.

Captain Brett Young accompanied the expedition, in his capacity as a medical officer, to the Lukigura River, southwest of Pangani, where he was evacuated

while suffering from a fever. He draws upon his own experience and that of those immediately around him to paint a dramatic picture of campaigning in the deadly climate of interior Africa. The book is not without value as a record of a remarkable military movement, but its real fascination lies in its descriptions of the country, of the natives. and of the difficulties under which the men lived, marched, and fought. The rythmn of the book is quite in accord with its subject matter, so that, in the end, we share the author's regret in taking leave of the Pangani valley.

Taschenbuch der Tanks. By Ingenieur Fritz Heigl. J. F. Lehamnns Verlag, Munich. 1927. 4½"x 6¾". 182 pp. Ill. 8 marks.

This pocket-size handbook of tanks is supplemental to the larger volume brought out in 1926, and the two should be used in conjunction. They may be purchased bound as a single volume of 480 pages, giving complete and authoritive information concerning the tanks of all the principal nations—particularly of Europe.

The important sections of the volume for 1927 are devoted to tank developments during the year 1926 in Europe and the United States, arranged by countries, and a chapter on the modern tactics of tanks. These two chapters—or parts—cover two-thirds of the book. An appendix gives statistical details of the various types of tanks employed in twenty-three different countries. The volume is well illustrated and conveniently arranged, and will make a valuable reference book for anyone concerned with the design, operation, or employment of tanks.

The South Africans. By Sarah Gertrude Millin. Boni and Liverright. 1927. 5¾"x 8½". 287 pp. $3.50.

Those who have read *God's Stepchildren* and *Mary Glenn* will welcome a new book by Sarah Gertrude Millin, for they are assured of brilliant writing with original subject matter cleverly handled. To the description of the growth and development of South Africa this skilled novelist has brought her capacity for vivid and imaginative writing; and the whole romantic procession of that Commonwealth passes before us like a pageant—the aboriginal Bushman, "so near man's creation"; the Hottentot who displaced him, a little higher in civilization; "the spreading flood" of the conquering Kaffir of unknown origin; the coming of the white men—French Huguenot, Dutchman, German, and Briton; the arrival of the East Indian who now challenges in numbers the white population; the inrush of the diamond and gold adventurers of 1870; the amazing treks of the Afrikaander—the Boer—to escape too close contact with the Englishman and his laws; the frightful wars when virile white man met virile black man; the development of that remarkable race of half-castes known as the Cape people, despising their black blood and cherishing their heritage of white; the long and bitter struggle of the Boer and Briton for supremacy, a struggle that is not yet ended—the whole story is one of absorbing interest.

As to the Boer and Briton, Mrs. Millin has this to say.

> "Between the Englishman and the Boer there was this fundamental difference. The Englishman remembered his old home; felt himself to be but an exiled son from it. The Boer had forgotten his beginnings. South Africa was his home. He had no other home. He wanted no other home. He was not a South African colonist. He was a South African.

> That was, and still is, the barrier between the Englishman and the Boer—the quality of the feeling each has towards South Africa. As that quality varies, as the Englishman is prepared, or not, to substitute Africa for England, so is the barrier lowered or raised. Today, since Africa cannot forever be resisted, it is being lowered.

Mrs. Millin paints her country in vivid word-pictures. "A great, bare land, sharply picked out in gold and black by the sun."

> To live in South Africa is a sort of training in greatness. It is not a country of lesser things; of brooklets and sown fields and singing-birds; of spring and autumn; of intimate content. Brooks do not go on forever in South Africa. As often as not they are dry. Birds do not merrily twitter. There is no spring. There is no autumn. A dust-storm blows and brings the rain, and it is winter. A dust-storm blows and brings the rain, and it is summer. No seasonal vagueness. No stepping-stones. Summer. Winter. . . . .
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> But plant trees, and in a few years there stands a forest. Let the rain come . . . and in two days the world is green. Let it be winter and there is a desolation of naked grandeur that shames a clothed prettiness. . . . And at night there is a clear, living warmth, and stars more than any other world sees stand stark in the sky. All through the year the sun shines unhindered, defining the shapes and colours of things, giving space and distance, so that other continents seem, by comparison, vague and misty.
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> And then, underneath all this fierce brightness, also its darkness, the menace and mystery of the land, its hidden past and future. . . . .

We all admit that a city has a distinct personality and Mrs. Millin has recognized this fact in her description of the cities of South Africa—"the flaunting spick-and-span prettiness of Durban covering the anxiety at its heart—the East Indian problem"; "the self-respecting solidity of Pretoria, with its attractively, dowdy and simple little aristocracy"; "the deep-rootedness of Cape Town, with its respect for culture"; "the demure charm of Port Elizabeth"; "Kimberley, the dead ghost of its former self"; "Johannesberg, ardent, urgent, alive, electrical, spurring men to action."

The pioneers of South Africa—"the men who have written their names in gold across the brooding, patient continent"—are analyzed with searching intensity and stand forth in strong relief against the background of their own making. But whether discussing history, races, politics, or economic conditions, Mrs. Millin never for a moment loses sight of the real tragedy of South Africa—the color question, assuming such proportions today in South Africa that the color problem of our own country is as nothing beside it.

Directly or indirectly, chapter after chapter in Mrs. Millin's book is based on this overwhelming question and it is discussed from every angle. "When Anthony Trollope came to South Africa in the year 1877," writes Mrs. Millin, "he went through it—its provinces and its problems—with his characteristic swift and imperturbable thoroughness. . . . And in the Bay of Biscay, as he was voyaging home, he penned his final conclusion: 'South Africa,' he wrote, 'is a country of black men—and not of white men. It has been so; it is so; and it will be so'." But Mrs. Millin says white South Africa will not today admit this. "As white and black came into the land together less than three hundred years ago, so they shall remain together. As white has always governed, so it shall continue to govern. . . ."

"That is white South Africa's aspiration."

"But it involves the solution of a problem before which not only every other problem in South Africa, but every other problem in all the world, is simplicity.

. . No one can yet tell whether Anthony Trollope was right or whether he was wrong. No one is as wise as Destiny."—E. L. B.

Wine, Women and War. A Diary of Disillusionment. Anon. J. H. Sears & Company, Inc., New York. 1927. 5¼"x 8". 313 pp. $2.50.

We are told that this is the actual diary of a soldier in which the writer "strips war of its gold braid, its brass bands, its shining medals, and sheds it of all its glory." This is mere advertising, for the writer saw but little of war, except from a distance. For the most part, he held "cushy" jobs in the S. O. S., occasionally escorting parties of Congressmen, or the like, to the "front lines." In the parlance of the A. E. F., he was "sitting on the top of the world," with a succession of interesting jobs, but he was usually dissatisfied with what he had and did not know what he wanted.

Although possessing a marked propensity for profanity and vulgar expressions, he clamps a halo upon his brow and climbs upon a pedestal, whence he looks down upon his fellowman and grouses at this "God damned army." Strongly tempted, but afraid of the women, he takes great pride in avoiding liaisons. Wine, he found less dangerous. " A hard life, this," he wrote, "with Venus pulling at one arm, Bacchus on the other, and Mercury waiting in the background."

The book will be widely read, but it should not be accepted as a picture of the A. E. F. To the author, the relative importance of the subjects listed in the title was women, wine, and war; but for a large part of the A. E. F. the arrangement was war, wine, and women. On the whole, the A. E. F. was more moral and more sober than the author would have us believe. Hundreds of thousands spent months at the front with scarcely a sight of a woman or a drink of liquor. Most of these had a pride in the service which the anonymous author lacked. They were in sympathy with the attitude of General Pershing, who, some time after the Armistice, was inspecting a division in Luxembourg. Passing down the front of a battery, he inquired: "How many venereal cases have you in your battery, Captain?" "One, Sir," was the reply. The general sighed. "Too many, Captain, too many," he said.

The experiences of the author of *Wine, Women and War* has produced material for an interesting book, but it is fortunate for the A. E. F. that most of its members were cast in a different mold.

APHORISME XLI

In moralitie it is a greater vice to commit a wickednesse, than to omit the doing of a vertuous act: so in martial government it is worse for the Souldier to doe what he is forbidden in his own Camp, than not to doe what he is commanded upon the enemy; for this only bereaves him of some fair advantage, but that laies himselfe open to all ambush and deseit.—Ward's Animadversions of War *(London, 1639).*