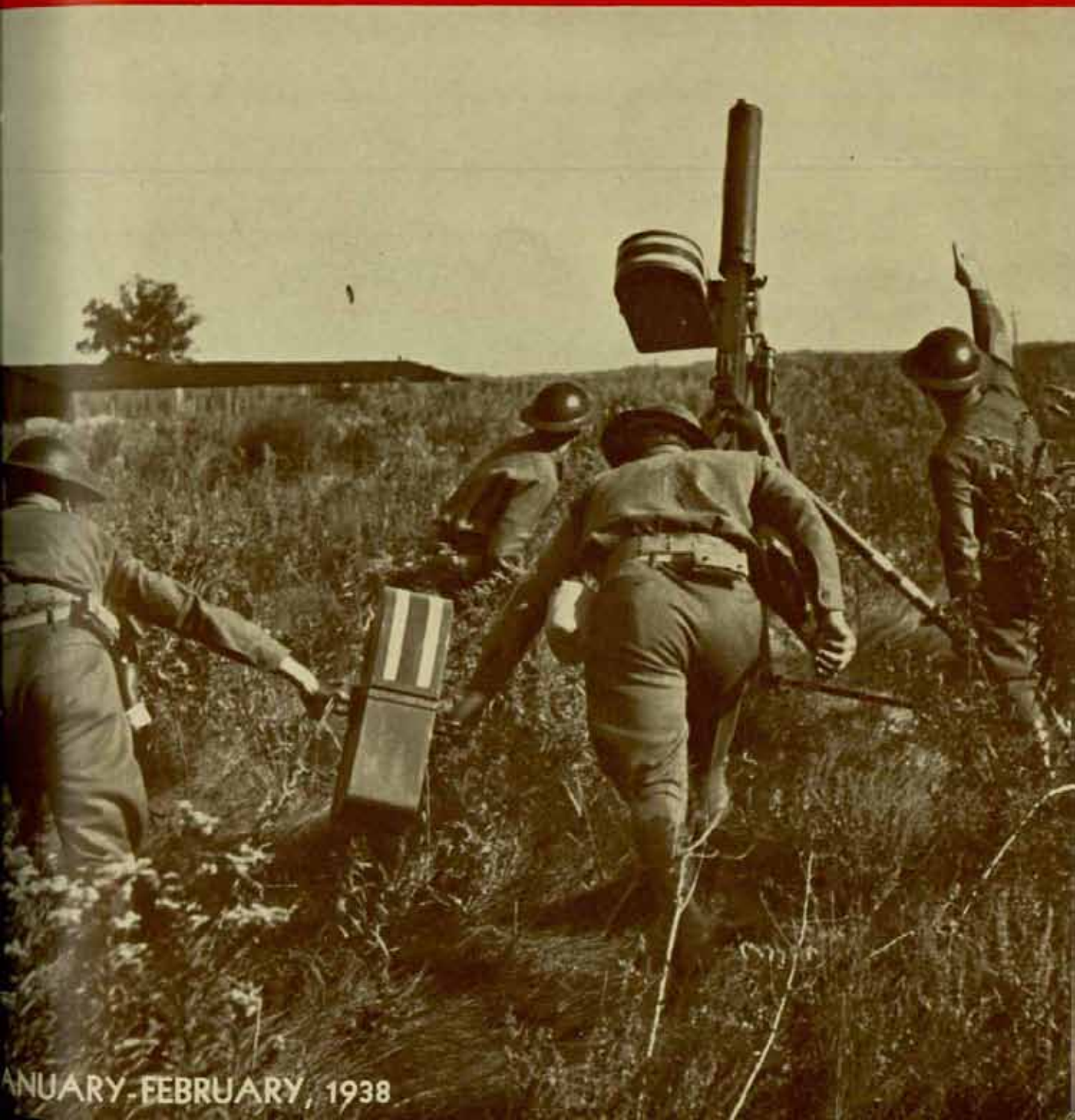
The Coast Artillery JOURNAL



JANUARY-FEBRUARY, 1938

PRIZE ESSAY COMPETITION
1938

First Prize $200.00
Honorable Mention Prizes . 100.00

It has been decided to conduct a prize essay competition for 1938. The details are tabulated below.

a. PERMISSIBLE COMPETITORS:

Any member of the Coast Artillery Association at date of submission of essay.

b. SUBJECT:

To be selected by the author. Appropriateness of subject for Coast Artillery readers is a point to be considered in awarding prize.

c. PRIZES:

(1) *Number:*

(*a*) One First Prize—$200.00. Not to be awarded if no essay submitted is outstanding.

(*b*) Not to exceed two Honorable Mention Prizes—$100.00 each.

(2) Awarded by Chief of Coast Artillery upon recommendation of Board of Officers appointed by him. Membership of Committee to be published only after awards for the year have been made.

(3) *Time limit.*

No essay received after September 30th will be awarded a prize.

(4) *Payments.*

Payments of prizes will be made immediately after awards are made. All essays submitted become the property of COAST ARTILLERY JOURNAL. Any person receiving a prize for an essay will receive no other compensation. If any essay is published the author of which received no prize, such author will be paid at the usual rates.

d. HOW SUBMITTED:

Essays will be submitted to the Editor of the COAST ARTILLERY JOURNAL in a sealed envelope bearing the notation "Prize Essay Contest." The copy submitted will contain nothing to indicate its authorship, will be signed by a "nom de plume," and will be accompanied by a separate sealed envelope containing the nom de plume and also the name of the writer. This latter envelope will be delivered to the Chief of Coast Artillery when received and will be opened in the presence of the Editor of the COAST ARTILLERY JOURNAL after the relative merits of the essays have been determined.

e. FORM:

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

(2) Three typewritten copies of each essay will be submitted on letter size paper (one original, two carbons) with double-spaced lines. At least one of any illustration will be a drawing, tracing, or photograph, not a blue print or brown print.

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STREAMLINED ANTIAIRCRAFTERS

By Major Charles S. Harris, C. A. C.

Organization

THE PROVISIONAL Machine-Gun Battalion, 69th Coast Artillery (AA) was organized at Fort Crockett, Texas, on August 24, 1937, for participation in the tests of the Proposed Infantry Division conducted last fall on the Leon Springs military reservation, 20 miles north of San Antonio.

The battalion included the battalion Headquarters and Headquarters Battery (6 officers and 56 men) and 2 machine-gun batteries (10 officers and 344 men); a total of 16 officers and 400 men. It was organized on the basis of special tables drawn up for the Proposed Division. The two machine-gun batteries were short two officers and 38 enlisted men.

No service section was included. The combat train was filled by selected men from the regimental supply and transportation sections. This unit had the triple function of transportation maintenance, general supply (including rations and motor fuel), and munitions supply. As it later developed, it took a high-powered combat train to put the job over.

Each machine-gun battery manned 18 caliber-.50 machine guns of the latest type. Each battery had three platoons, each with two sections of three machine-gun squads each. The squad included a leader, a chauffeur, and four gunners.

Transportation, as provided by the tables, was not available, although the shortage was not excessive. Each machine-gun section used two 2½-ton cargo trucks, in lieu of three 1½-ton trucks. The vehicles used in the battalion were as follows:

Battalion Headquarters:
- 1 car, passenger.
- 2 cars, reconnaissance, 8-passenger.
- 2 motorcycles, W/side cars.
- 2 trucks, cargo, 2½-ton—wire and radio.
- 4 trucks, cargo, 1½-ton. (1) Two for C.P. personnel and equipment. (2) Two for radios (normally attached to the batteries for operation).

Combat train:
- 1 truck, cargo, 1½-ton—maintenance.
- 6 trucks, cargo, 2½-ton. (1) Four for ammunition supply and two spares to replace other trucks in battalion out of repair.

Each Machine-Gun Battery:

Battery Headquarters and Maintenance:
- 1 car, reconnaissance, 8-passenger.
- 1 motorcycle, W/side car.

The AA machine-gun battalion with the Proposed Infantry Division

Attack aviation flying over an ammunition distributing point during the recent tests of the streamlined division.

4 trucks, cargo, 3½-ton. (1) Mess, (2) Supply, (3) Communication, and (4) Maintenance.

Three Platoon Headquarters:

3 motorcycles, W/side cars.

3 trucks, cargo, 1½-ton, personnel and wire laying.

Six Machine-Gun Sections:

12 trucks, cargo, 2½-ton, for 18 machine-gun squads.

Preliminary Training

Rumor had it that the tests were to be realistic and severe. Accordingly, all elements of the battalion plunged into the preparations with more than the usual zest for such exercises and, in short, intensive training was in progress.

Airport officials and golf-course keepers suddenly found themselves protected from air dangers which they had hitherto not fully appreciated. Khaki caravans of army trucks marched up and down West Beach with its long stretch of sand, grass, and beach debris in the practice of cross-country mobility. At night, drivers learning the art of driving without lights, threaded their way along the same beach through herds of Texas steers. With all of this activity, September 10th arrived, and the battalion was on its way to the scene of the tests.

Leaving Fort Crockett at 6:00 A.M., the battalion made the 265-mile march without mishap, and arrived at Camp Bullis by 6:00 P.M. There it encamped in semi-permanent camp alongside the Provisional 6th Infantry (6th, 22d, and 29th combined), the Engineer Battalion, and the Cavalry Reconnaissance Squadron. The remainder of the Division was barracked and encamped at Fort Sam Houston.

Camp Bullis

Camp Bullis and the reservation thereabout of approximately 25,000 acres is little known to the Coast Artillery, but to the troops in the Southwest, Camp Bullis is Camp Bullis. The hills are just a bit more rugged than elsewhere; mud is more viscous; the roads are ruts and the ruts are gullies; dust is a mass of impenetrable particles; and the trails wind off into the unknown. Withal it is a beautiful landscape and the deer abounds. So do the armadillos, the ticks, and the chiggers. The rattlesnake is spoken of more often than seen. The outstanding characteristic of Bullis is intimated by the rich history of lost units. Adjacent to the reservation some 50,000 acres had been leased for the purposes of the tests. In this setting the antiaircraft battalion was given *carte blanche* for two weeks of unit training. Other units were using the same terrain, but the experience of an unforeseen entanglement with other units was properly judged good training for the more complicated tests to come. The rapid development of halt discipline as well as march discipline was noteworthy. When a unit halted for any cause, officers and noncommissioned officers promptly alighted, took charge, and had all vehicles move off to the right of the road and clear.

The Division

The Proposed Infantry Division comprises a total strength of approximately 700 officers and 13,000 men—roughly a 50 per cent reduction from the strength of the present division. Yet, by the wider use of automatic weapons, the theory is that it has roughly equal fire power in the defense. Under the Napoleonic theory of measuring power in terms of mass and velocity it has for certain operations equal or greater offensive power.

It is not completely motorized, though there are some 1,600 vehicles. The rifle battalions can march just like "Stonewall" Jackson's. But by borrowing artillery ammunition trucks and quartermaster motor battalion vehicles for the infantry, the entire division can be transported by motor. The general idea is that the troops need little ammunition during movement and few motor vehicles for combat during the battle.

Three infantry regiments replace the two infantry brigades. The rifle platoons are smaller. The machine-gun battalion is back again, though in operations its companies functioned more frequently under rifle battalion control.

One field artillery regiment replaces the brigade. It includes three support battalions and one heavy howitzer battalion. The 75-mm. howitzer replaces the 75-mm. gun. The support battalions also man the mortars and the infantry howitzer company is dropped. The engineer battalion replaces the regiment. It also takes over the functions of the military police. With the division headquarters and the signal company it is organized under the command echelon. The medical battalion replaces the regiment. The quartermaster regiment is replaced by the Q.M. Motor Battalion and two companies for maintenance and service. All service troops are included in the service echelon, with a brigadier general in command. The cavalry reconnaissance squadron becomes an integral part of the division. For the tests the observation squadron, the antiaircraft battalion, and the anti-mechanized battalion were attached.

The Exercises

The exercises were conducted in three phases as follows:

(1) *Preliminary Training and Unit Tests.* From date of organization to September 25. Conducted both at home stations and on the Leon Springs Reservation.

(2) *Combat Team Tests.* Sept. 27-October 9. As implied, this period was devoted to the development of teamwork among the units of the various arms, to provide training for the division staff, and to get all units into the swing for the division tests. One infantry regiment and its field artillery support battalion composed the combat team. One combat team, together with other miscellaneous units, participated in each test. The tests were based on particular phases of the division tests, though care was taken to prevent any combat team from performing the same maneuver twice. All units participated in three combat team tests.

(3) *Division Tests.* October 11-November 13. The tests around Leon Springs involved problems in strong defense, strong attack, wide envelopment, and withdrawal and delaying action. During the last week the division made a march to the Mineral Wells area and return; taking up problems in advance on a wide front (day and night), change of direction, pursuit, attack, and a march of 325 miles in one column not in the presence of the enemy. Unfortunately Uncle Sam ran short on transportation funds before the last week arrived. Accordingly the antiaircraft battalion and several other units were left behind on this march.

Antiaircraft Unit Tests

Nine unit tests were conducted during the preliminary period. All of these were initiated at Fort Crockett, and most of them were completed at Camp Bullis. They provided a basis both for necessary unit training and for the desired factual data. No undue stress was placed on speed; however, each test was repeated under different terrain conditions until the results were considered representative of what might be expected from a well-trained unit. Practically all tests were conducted both by day and by night without lights. The comments hereunder are based on the results of the unit tests as tempered by the results later obtained in the division tests.

AA Test No. 1 Organization. This test was conducted to determine the adequacy and suitability of the machine-gun battery organization. Each battery was deployed first with the three platoons as the local fire units, and then with the six sections as the local fire units. Conclusions:

(1) That the personnel was adequate.

(2) That the section was the more suitable fire unit because less guns were masked in firing, and a better distribution of fire was practicable for the area to be normally defended.

AA Test No. 2 Plan of Loads. The tests were conducted to develop systematic plans of loading for all vehicles. With machine-gun and ammunition trucks it was found that weight was the controlling factor in load capacity; with other trucks, space. For machine-gun trucks plans were developed both for the machine guns mounted (with the bows and covers down) and dismounted. During the division tests the machine gun was mounted and manned ready for action during all movements, except when weather prevented. In the tests conducted with one 1½-ton truck per machine-gun squad, it was found that one truck could carry the squad of six men, their equipment, the machine gun, all accessories, and 2,700 rounds of ammunition. 1,600 rounds were carried in belt-loaded boxes and the remainder in bulk boxes.

AA Test No. 3. Road Marches. These were conducted by day and by night (with and without lights) to determine the optimum conditions of speed and distance for maximum practicable utility of roads in major movements. The mileage was accurately read both at the head and at the tail of the column at 5-minute intervals. Moreover, frequent checks were made at various points to determine the time length of the column. This test was conducted repeatedly by all units of the Division. Night tests were usually made on secondary roads; day tests, over primary and secondary roads. The dust encountered on the dirt roads by day made conditions about as difficult as did the darkness at night. Frequently the dust enshrouded the vehicle ahead, but the columns rolled on, with occasional collisions. At night it was found virtually useless to cut off headlights without also disconnecting stop-lights, because the brakes were applied more frequently than usual. An appropriate "stop" signal could be designed, but the immediate solution was to secure a signal flag or salvaged white cloth to the rear of each vehicle. Preliminary tests in daylight convoys indicated the extreme difficulty of running a convoy successfully on any fixed distance plan. In order to secure the desired factual data it was ordered that all convoys, regardless of length, would run without prescribed distances, except for a "minimum safe distance" between vehicles as determined by the individual drivers.

An antiaircraft unit (section) on the march on a dusty road during PID tests recently held in Texas.

A tremendous mass of statistics resulted and are now under study. Suffice it to say here that the Division experienced its due share of trouble with "whipping"—that inexplicable tendency in motorized columns to have vehicles racing at maximum speed at one point and other vehicles only a short distance ahead jammed up and crawling at a snail's pace.

AA Test No. 4 Cross-country Mobility. Conducted to determine capability of vehicles in cross-country travel. All of the trucks in use (four-wheel-drive) gave surprisingly satisfactory performance. In dry weather they would climb any hill on the reservation, hills which the passenger and reconnaissance cars could make only with difficulty, and which motorcycles could not make at all. The four-wheel-drive trucks gave the best performance. Motorcycles were not popular. Passengers did not like the jolting or the necessary pushing; worst of all they feared getting run over by trucks at night or in the dust. Only one test was conducted in rain and mud. The rain kept the planes aground, and the mud nearly demobilized the motorcycles, but the effect on other motor vehicles was not sufficient to warrant conclusions.

AA Test No. 5 Bivouac. With the entire battalion in bivouac, time was taken from the command "March Order" till the battalion was on the road ready to march. Time: day, 26 minutes; night, 28 minutes.

AA Test No. 6. Ammunition Supply. Four 2½-ton trucks were used in the combat train for the two batteries. This gave a slightly greater hauling capacity per battery than the combat train of 10 1½-ton trucks, provided by the tables of organization for the four-battery battalion. Sand-loaded ammunition boxes were available to fully load one-half of the trucks. Upon arrival at the R.P. the full load was removed from one truck and placed upon its mate, and vice versa upon arrival at the D.P. Thus was gained the loading experience and full-load running experience for half of the trucks. In each unit test one truck from each machine-gun section made one trip to the refilling point to speed up the initial supply. The practice was later found to be impracticable for sections in the division tests, due to frequency of movement in position. It was also found unnecessary, since the combat train could keep pace with normal expenditure when the refilling point was within 40 miles distance. The test dictated the expediency of breaking down the combat train into battery sections. It also led to the utilization of battery D.P.'s in order to eliminate loss of time by the combat train in trying to find each section position. Each machine-gun squad arrived in position with 3,520 rounds of ammunition. The battery section of the combat train immediately dumped approximately 1,500 rounds per gun at the battery D.P. Within four hours it returned with a like amount. Machine-gun trucks on runs for meals could easily keep the desired quantity at the section positions. 3,600 rounds per gun appeared to be sufficient for a "day of fire" even in active periods. A greater amount results in the abandonment of ammunition at objectionable places upon movement.

AA Test No. 7. Communications. The battalion was equipped with three radio sets, two of which were normally attached to the two machine-gun batteries. It was also equipped for complete wire communication when the batteries were located with an intervening distance of five miles or less. The test ran simultaneously with several other tests. In both batteries the platoon headquarters trucks were used to assist in wire laying. Time required to install complete communications: Within a battery one and one-half hours; Battalion complete, two hours.

During the division tests the batteries were usually widely separated, and consequently it was necessary to rely on radio for communication. The tables of basic allowances prescribed a small portable radio set for each machine-gun section; however, it was not available for the tests. Other units of the division did use such sets, apparently with good results. Other units used power-driven reels to pick up wire.

In command-post operation stress was laid on operation with a minimum number of men. The battalion command post was manned by men whose normal duties were at battalion headquarters. The same was true in the batteries.

A warning service was developed, but the value was limited due to the lack of distant observing stations. It served little purpose to have the sections "flash" each other. They usually detected the attacking planes simultaneously.

AA Test No 8 was omitted.

AA Test No. 9. Occupation of Position. Action: The battalion being in column at a distance of five miles or more from the area to be defended, orders were issued assigning areas to be defended; battery reconnaissance parties were released; the march was made; positions were occupied; and complete wire communications installed. At night no lights were used either in the march or in the occupation of positions. The average time record from the arrival in the area was as follows:

	Hr.	Min.
Till the last section in each battery was ready for action	1	15
Till the battery communications were completed	1	30
Till the battalion communications were completed	2	00

The time factor was reduced as the tests progressed. During the division tests the average time required for a battery to occupy positions and prepare for action was thirty-six minutes. Command was decentralized, orders were brief (utilizing gestures), and the action was tuned to that of the streamlined division.

Tests were also made to determine the time required to emplace the individual machine gun at various distances from the truck, hook-up the water system, and get ready to fire, with the following results:

Time to a point 40 yards distant. . 2 minutes, 47 seconds.
Time to a point 225 yards distant . 9 minutes, 2 seconds.

During these tests we found a need for more vehicles

suitable for reconnaissance, command, and liaison than now provided. In stabilized conditions in a rear area, one passenger car, if it runs 100% of the time, may meet the requirements of a battery. Our battery commanders needed at least two vehicles of the general passenger or reconnaissance car type. Throughout the division tests all units of the battalion needed twice as many reconnaissance vehicles as are provided. Small field artillery batteries had more of these vehicles than the entire antiaircraft battalion. Light pick-up trucks are well suited for reconnaissance and other necessary trips by section and platoon commanders. Motorcycles appear to be suitable only for messengers on road nets, and preferably should be used solo.

AA Test No. 10. Change in Defensive Position. Action: The battalion being in position, orders were issued through regular communication channels assigning new areas to be defended at a distance of approximately five miles. The test was usually conducted shortly after the completion of Test No. 9, and the action was generally similar. The average time required to move and set up in the new position was two hours. This time factor, too, was reduced during the Division Tests.

The Division Tests

The division tests were conducted as controlled exercises. The participants knew the broad plan of each test before it began, but it would be in error to imply that the operations were "canned." We knew the "what" and roughly the "how," but the division staff was quite crafty at keeping the "who," the "where" and the "when" well concealed until ready to release the orders.

The tests involved the employment of the Proposed Infantry Division as a part of a corps. The 1st Division and the 3d Division were assumed. Furthermore it was assumed that the enemy also was motorized and that his force included mechanized units. In one test the Proposed Infantry Division participated in a meeting engagement. Usually, however, the 1st Division was assumed to have gone ahead clearing the way, and to have developed the enemy. At times the Proposed Division detrucked within range of red artillery.

To begin each test the units were alerted from one to two hours before departure. The hour of march and the route were announced later. Usually the combat teams assembled before departure at the station of the infantry regiment, though at times the assembly was effected at a junction en route. The advance was usually in three columns, with one combat team in each column plus such miscellaneous units as might be assigned. The commander of the infantry regiment formed the column and commanded it on the march. The foot elements of the 6th Infantry sometimes marched on foot; usually all regiments were motorized. In order to effect this, each regiment had to borrow approximately 100 trucks for the movement of the rifle battalions from its support battalion of artillery. A standard scheme was perfected whereby these vehicles reported and were released and returned to original units immediately upon arrival. Early in the tests the advance guards were large—frequently a reinforced battalion with strong flanking patrols to establish antitank blocks. As the tests progressed the tendency was toward reduction until one rifle company with attached machine guns became the usual security force. The reconnaissance squadron was out ahead screening the movement. While en route the convoy commander usually received a further message. It might give further orders as to the operations. More than likely it would be, "Guides report to Advanced Division C.P. at ———." Each regimental and battalion headquarters had guide squads headed by the regulating officer, who received the overlay from the division which showed the bivouac or detruckment area and, in turn, suballotted the areas. Without further orders the guides returned to their units and led them to their destination. The engineer officer prepared the traffic plan and gave out information at the advanced C.P. No traffic plan was published. Orders were always brief and usually fragmentary.

The opposing force consisted of:

- Airplanes, varying in number from one plane to an attack group;
- Tanks and armored cars; ever on the go trying to ride down the artillery or the reserves, or springing a surprise on the reconnaissance, anti-mechanized and antiaircraft forces;
- Infantry squads with flags representing red battalions, in sufficient number to represent three red divisions; the flags indicated when the blue force could hold its ground, could advance by proper maneuver, or was forced to withdraw.

The red army though small in numbers, was a force to be reckoned with. They appeared to have an excellent intelligence service. They entertained a healthy rivalry with the blues; albeit, in emergencies they proffered sound advice on the road net to commanders of lost blue details.

Though not a part of the opposition, it may be mentioned that umpires were attached to all units. They were required to collect data and submit factual reports on each test.

The tests were designed primarily toward the determination of organizational rather than tactical data. Attention was directed toward the development and test of methods of movement, assembly, detrucking, supply, and the suitability of the various organizations to accomplish these objectives. Rations might be delivered at the railhead, or at a unit D.P., or at the kitchens. Like schemes were tested in the supply of ammunition and gasoline. A division ammunition D.P. was sometimes employed. The trains hauled ammunition whether it was needed or not. Running tallies showed the score. With the trains running night and day, they were usually ahead.

Casualties were assessed, designated "walking" or "litter" cases, and the collecting squads carried out their functions. Stragglers were released and collected. At first the collecting agency functioned poorly due to the fact

that John Doe proceeded to the nearest kitchen. However, remedial action was taken, collecting plans revised, and thereafter the pickups frequently exceeded the releases.

A logical employment of the antiaircraft force was attempted in each test. In some cases, however, it was necessary to create assumptions in order to make logical the desired test of some features of employment. In most tests the battalion was employed in the combat area, since little further data was required on railhead protection. In all, the battalion engaged in the protection of the division railhead, rear echelon, command echelon, reserves, ammunition D.P.'s, and the supply route and the combat troops in movement, assembly, detruckment, deployment, front line combat, withdrawal, and delaying action. It also engaged in the anti-mechanized defense.

The first phase of one test in defense found the division entering a bivouac area in rear of the position occupied by the 1st Division (assumed). The test was drawn to represent the action following a sudden decision of the commander to enter an area with poor roads and a limited road net. Tactical conditions began upon arrival in the area. The antiaircraft battalion commander advancing north on Malabang Trail and accompanied by S-3, the sergeant major, and the master gunner, arrived at the advanced division C.P. at the junction of Cowgill Road at 4:15 P.M. He reported and received an overlay as shown on Figure 1. S-3 had ascertained that traffic on all trails was one-way except on Malabang south of the junction. The antiaircraft plan required the battalion to protect the assembly of the division. There was no further information. The anti-mechanized battalion was arriving and blocking the road south. Advance parties and umpires were arriving and reporting. The antiaircraft battalion was due in five minutes. The battery commanders had arrived with their platoon commanders. In lieu of the five-paragraph order, the battalion commander issued one of the five-second

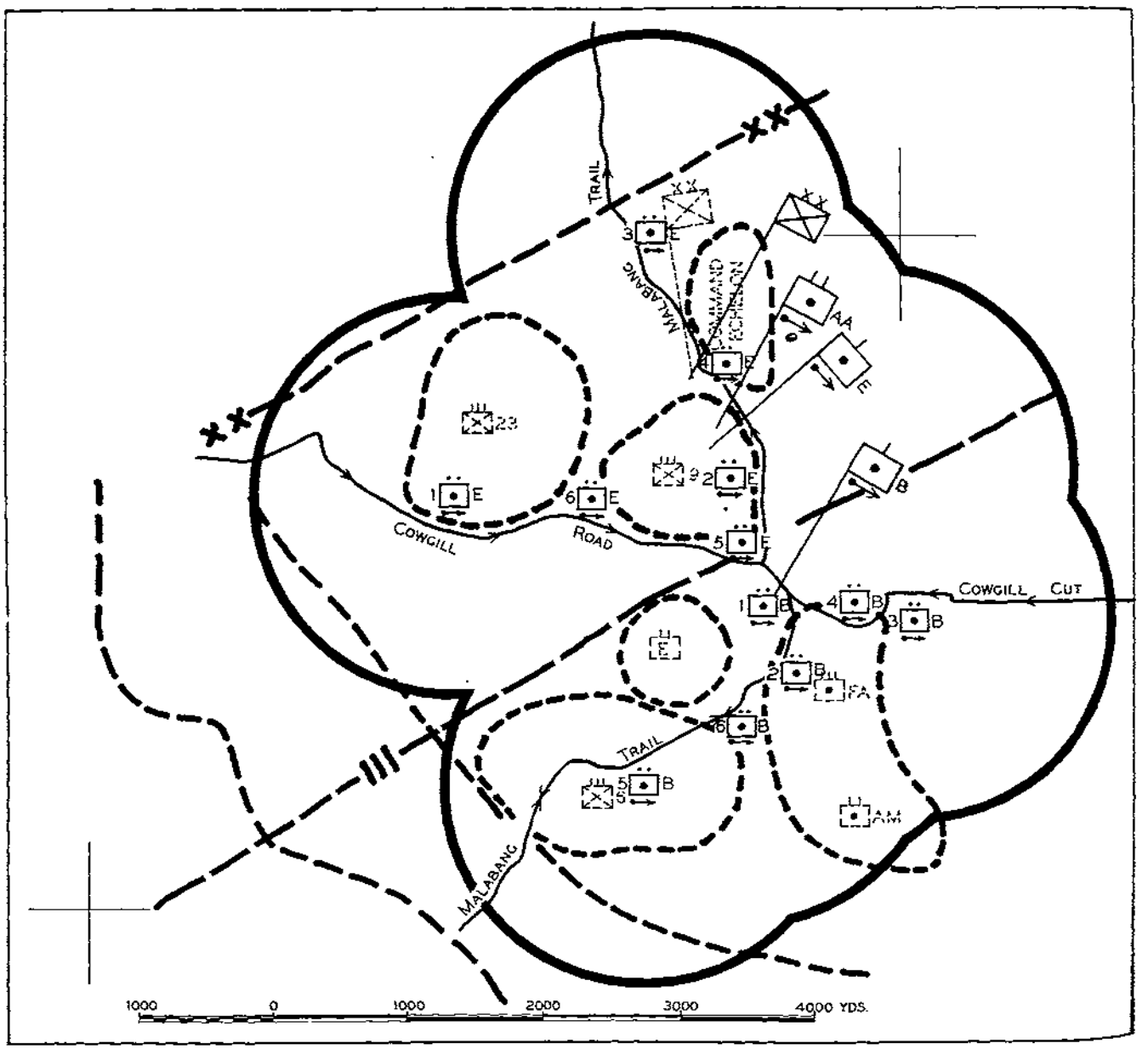

Figure 1—Defense of a bivouac area. Broken lines show sectors and bivouac areas.

type (by pointing), to the effect that Battery "B" would protect the junction and main trails east and south; and Battery "E," the trails west and north to include the Division C.P. He announced general locations of kitchens and C.P.'s, and dismissed staff and commanders. S-3 returned south on Malabang to meet the battalion headquarters and lead it to position. Battery Commanders hastily issued their orders on the spot and then returned with their platoon commanders to meet their units. Platoon commanders, declining to use their motorcycles on account of the rain and mud, mounted their leading trucks and led them to positions. All antiaircraft units going north had cleared the junction at 4:29 P.M.

The division entered the area in two columns. The antiaircraft battalion, the 6th Infantry, and the engineer battalion entered from the south on Malabang, the two latter units bivouacking short of the junction. All other troops entered in one motor column on Cowgill Road from the east. The 23d Infantry at the head of the column arrived at the junction at 4:38 P.M., turned north on Malabang, and continued to pass the junction for 20 minutes in a steady flow of traffic, with about 15 yards between vehicles. It was immediately followed by the 9th Infantry on the same route. At times the traffic was blocked up a half mile or more east on Cowgill. By 5:20 P.M. the artillery was arriving and swinging to the south on Malabang. This continued till 6:00 P.M. By that time more than 100 field artillery and quartermaster vehicles, returning from the two infantry regiments, had closed up at the junction from Cowgill west and were awaiting clearance at the junction.

Figure 1 also shows the antiaircraft defensive positions occupied. The first section was ready for action at 4:42 P.M. All sections were ready for action at 5:11 P.M.

This event is related to show a typical instance of the motorized division making an entrance into an assembly or a detruckment area. It was carried out in an efficient manner. However, in any operation of this nature there is necessarily congestion, and frequently confusion. As long as each vehicle follows the vehicle ahead, all is well; when one unit takes one path and the next, another, then the confusion is on and the congestion backs up. In addition, there are always some vehicles with special missions.

Throughout the movement the columns were more vulnerable to air attack than they normally are in the march. Fortunately the same mud which caused trouble to them also operated to keep the hostile air force aground.

The antiaircraft disposition typifies good results in rapid occupation, where the platoon and section commanders selected their locations while en route.

Upon completion of the assembly Battery "B" was ordered to withdraw from positions, serve supper, move to and protect the division railhead. Battery "E" was directed to reorganize its defense to protect the command echelon and important routes in the vicinity.

Meanwhile infantry and artillery commanders had been reconnoitering defensive positions. By dawn the next morning these were occupied. On the second day the antiaircraft defense was again reorganized to include the junction of Malabang and Cowgill, where a division ammunition D. P. was set up.

In another test the Division Commander found himself confronted by an inferior force offering a stubborn defense along the foothills on the northern part of the reservation. He decided to attack in force with one combat team in wide envelopment. Under the plan the enveloping force was to be screened by the reconnaissance squadron, supported by one anti-mechanized battery, and protected by the Antiaircraft Battalion. We had known the decision and the antiaircraft plan for a month. Two hours before the movement began we learned what combat team would make the envelopment. A hurried trip was made to the C.P. of the regimental commander concerned, his plan of movement and detruckment ascertained, and arrangements were made for interspersing the antiaircraft sections. The sections of one battery in defensive positions nearby were moved to the bivouac areas of the several subordinate units to be accompanied. The other battery, however, was back in the service echelon area. This battery arrived at a designated junction en route ahead of the enveloping force, and by taking position on a broad road at a crest of a hill, and by the aid of energetic liaison, succeeded in interspersing its units in accordance with the plan without halting the movement. Obviously such a plan had to be simple. One platoon accompanied the advance guard. Another platoon preceded the main body by 300 yards. The remainder, interspersed by sections, protected the command group, the two leading rifle battalions, the artillery, and the trains.

The battalion in this problem had a dual rôle in antiaircraft and anti-mechanized defense. An attack group reinforced the red air force. They were reported as spraying mustard. More specifically, we had information that this unit was equipped to spray whitewash to simulate mustard. The battallion was equipped with gas masks. When attack was likely one gunner was kept on the alert, masked, and reincoated to simulate protection against the simulated mustard.

The time factor indicated that the attack might come about the time the force reached its detruckment area. Accordingly an area defense was planned and established immediately upon arrival. It appeared highly possible that the attack would be launched on the straight road from Boerne to Leon Springs, as it was. Obviously the antiaircraft commander could not be sure to have sections at the right place except by accompanying the column and protecting it from positions in column.

In flights of three planes each, the attack group sprayed the entire column by sections, from an altitude of 100 feet and flying from rear to front. At first the spray missed its mark due to lack of correction for wind, but in each flight a shift up wind was made and the spray was made effective from one or more planes. Shortly before the attack a friendly plane flew over the column wabbling his ship and signaling "enemy attack in force." Unfortunately not all

of the division personnel understood the signal, and consequently much simulated fire was directed at the plane. Moreover, a large number of distinguished soldiers and citizens had gathered by the roadside to observe the operations. Consequently all units were well alerted. The hostile aircraft continued to fly over the troops simulating bombardment attack until the ground force had reached its detruckment area.

Meanwhile hostile tanks and armored cars were encountered en route and in the detruckment area, thereby furnishing interesting opposition to the antiaircraft sections at the head of the column as well as to the anti-mechanized battery. Platoon commanders were putting in practice their developed methods of truck deployment to avoid masking guns.

As each antiaircraft section arrived it was directed to a position in area defense by the battery and platoon commanders. When the detruckment was completed, trucks scattered and concealed, and the deployment begun, the danger from air attack practically disappeared. The antiaircraft units were then assigned missions to provide anti-mechanized defense during the attack. The leading units advanced with the infantry reserves. The rear units protected the artillery and trains. The antiaircraft battalion CP kept pace with that of the enveloping regiment and the battery commanders maintained liaison with appropriate battalion commanders. Practically all of the antiaircraft sections were engaged during a tank attack from the flank in the afternoon.

Throughout the exercises the battalion handled various problems with interesting results. It will suffice here to relate them briefly:

a. All tests were conducted under rapidly changing situations and in such haste that the platoon and section commanders invariably had to select the actual machine-gun positions under circumstances which could not be foreseen exactly by the battery and battalion commanders.

b. The battalion CP was habitually located near that of the division and a liaison officer kept there constantly. Coordinating conferences with other subordinate units were rushed affairs. Coördination was well achieved only when the units became familiar with each other's methods of operations.

c. In the protection of front-line combat troops such protection did not appear necessary except for a major effort where several successive assaulting waves are involved. However, the antiaircraft sections were able to keep pace. Platoon commanders needed personnel to maintain constant liaison with the assault battalions.

d. In the protection of marching columns from position in column some practical difficulties were met in interspersing the antiaircraft units properly, due to the speed of assembly as well as to the normal congestion in an entrucking area. Infantry battalions organized their own antiaircraft protection by the employment of machine guns and rifles. Infantry trains and artillery were not so well protected.

e. In one problem in withdrawal, the antiaircraft units had to rally to the anti-mechanized defense. In another, the battalion provided antiaircraft protection over a seven-mile stretch of road and trail over which the motorized elements of the whole division withdrew in more than three hours of constant flow.

The officers and enlisted men of the battalion thoroughly enjoyed the exercises. The discomforts endured, the constant opposition provided by red tanks and airplanes, and the necessary decentralization in command all served to sharpen initiative. As an example, in the march to one test a driver punctured his radiator. At first glance it appeared to be a matter of just one more truck laid up for repair; but not to the corporal. Taking an inventory of material at hand, he designed and effected a water-supply system by utilizing cans of water and the water-pump and hose designed for the gun. The gunners operated the pump all day and the truck held its place. Upon arrival in position in the afternoon the transportation officer was waiting ready to install a spare radiator which had been brought up for the purpose.

Attack aviation passing over a truck column of the PID.

MODERN ATTACK TRENDS

By Major Richard G. Tindall, INFANTRY

Since 1933 more progress has been made in armament than in any other four years in history, always excepting 1914-18. New weapons have been placed in the hands of the infantry; the artillery is being greatly improved; and mechanization and motorization are in full swing.

In view of the European political situation, it is only natural that France and Germany should actually have and use masses of the new matériel which the rest of us talk about or experiment with in small quantities. Since these two nations have recently published their fundamental combat doctrines,[1] a discussion of certain 1938 European ideas on attack and defense, with particular reference to that tactical novelty, the fast tank, is timely.

In central and western Europe large forces will be engaged in comparatively small areas; there will be no action by small independent units. Therefore, for tactical discussion, French and German military students adopt the viewpoint of an interior unit. This article conforms to their practice.

Since tactical doctrine is based not only upon the weapons of today, but upon the experience of yesterday, it seems advisable to glance briefly at the offensive tactics developed during the World War on the Western Front before starting an examination of modern attack technique. We therefore turn back twenty-three years.

* * *

Masses of riflemen in rigidly-dressed firing lines, beating down the hostile fire, closing with a faltering enemy and sticking him with gleaming bayonets—such was the universal conception of the attack on August 1, 1914. True, the artillery might help a little, but, generally speaking, waves of men were to submerge the opposition. The number of riflemen engaged was the measure of the power of an attack.

Naturally there were minor variations, depending on the nation doing the visualizing. The experiences of the Boer War made the British a bit cool to the idea of a heavy firing line. Instead, they stressed individual marksmanship, depending on this for the fire superiority which was deemed an essential preliminary to "closing with the bayonet." The Germans were going to get fire superiority by musketry training and discipline and by crowding more men into the firing line on a given frontage. We adopted the German dish as a whole, but added a little American sauce, since our national tradition was accurate shooting. The French neglected rifle marksmanship and kidded themselves into the belief that if enough Frenchmen ran at the enemy, the enemy would run away.

In thirty days of battle the automatic weapon exploded these theories and their variations. The attacking riflemen found the battlefield empty but bullets came from everywhere. Even crack shots were unable to gain fire superiority over an invisible opponent. On the other hand, the dense firing lines advancing to the attack presented conspicuous targets. Regiments were wrecked in a few moments by the fire of one or two machine guns or a single battery of artillery. The effects of modern fire were nothing short of devastating against troops moving in the open.

These thirty days proved that, *regardless of number, skill, or bravery, riflemen alone have not enough power to overcome a continuous defense.* The rest of the World War on the Western Front resolved itself into a test of whether *any* attack could prevail over such a defense.

When, in the sombre fall of 1914, European tacticians realized that their pre-war ideas were sour, there was not much they could do about it at once. Calls for artillery support resounded to high heaven but there were few guns and the supply of shell was almost exhausted. Neither side could attack effectively, and soon the bullet drove men underground. It was dig or die, and dying didn't seem to do much toward winning the war. So the rifleman spent his time digging trenches, stringing barbed wire and bringing up more and more machine guns, making the prospect for a successful attack even more dismal than before.

Gradually, however, munitions became less scarce and guns from naval vessels, old fortresses and new factories appeared at the front. Early in 1915 the French and British tried a series of small-scale attacks. They concentrated all available artillery on narrow fronts and demanded that it destroy the enemy wire, trenches and garrisons, and thus help the rifleman to advance into the open and resume mobile warfare. Success was in exact proportion to the quality and surprise effect of the artillery bombardment. The attacking infantry met a disastrous repulse unless the wire had been cut and the garrison of the hostile front line killed or demoralized. Where this had been done, the attackers advanced and occupied that line with the greatest of ease. But even in these cases, attempts to exploit the success and push beyond that one trench usually proved costly failures. For example, after making a slight ad-

[1] The German *Truppenführung* and the French *L'Emploi Tactique des Grandes Unités*, corresponding to our F.S.R. This article is based on these regulations and on articles appearing recently in the foreign military press.

An army whose infantry is inferior is itself second rate

vance at Neuve Chapelle, some 48 British battalions were stopped—by one German battalion.

The Allies concluded that wider fronts must be attacked and that the action of the artillery must be more thorough and deeper. "The artillery conquers; the infantry occupies" became the slogan. Artillery preparations now lasted for days. The hostile wire had to be cut or the attack would fail, and artillery fire seemed the only satisfactory method of accomplishing this. Moreover, the artillery was asked to *destroy* the hostile trenches and emplacements of automatic weapons, and this was a slow process. Likewise, the construction of special assembly trenches, shelters, and new artillery emplacements was considered essential before an attack. Under these conditions surprise was almost impossible. The later attacks of 1915, notably in Champagne, overran the forward portion of the hostile defense and made large captures of prisoners, but broke down inside the first position or in front of the second.

In 1916, at Verdun and on the Somme, more methodical attacks were made. These attacks, which had successive limited objectives, aimed at breaking the hostile front, not with one punch as before, but with two or three blows in that same place. These offensives achieved local successes but failed to bring about a decision. However, it was obvious that the attack was gaining on the defense. The artillery now had more and better guns and shells, and the infantry began to get equipment (automatic rifles, mortars, rifle and hand grenades) which would permit it to fight its way forward inside the hostile position, once an entrance had been blasted open for it. At the same time, 1916 saw a great improvement in infantry-artillery teamwork, including the birth of the rolling barrage.

These developments continued in 1917. The long artillery preparations still gave the defender a week's warning and allowed him to reinforce the threatened zone. But even so, the attack now had so much power that it drove ahead until brought to a standstill by its own ponderosity. During this portion of the war it was repeatedly proved that the attacker could overrun the enemy's forward position any time he felt like paying the price in artillery ammunition.[2] His real troubles started after this initial success.

The range of the field artillery was too short for it to carry the attacking infantry through the entire depth of organized resistance and the infantry still seemed unable to go far by itself. Thus, after satisfactory initial progress, the attacker of 1917 had two choices: he could either stop his infantry and wait while the artillery moved up, or attempt to push on with inadequate or no artillery support. In the first case the forward movement of the artillery over terrain torn up by days of bombardment always proved a matter of many hours. Before the attack could be resumed, the enemy invariably managed to plug the holes in his front, reëstablish a continuous resistance, and the opportunity was lost. Everything had to start over again. When the infantry tried to go it alone it was stopped with heavy losses by a few enemy reserves which possessed great defensive power against unaided infantry, or—worse still—was thrown back in disorder by a well-prepared counterattack.

However, toward the end of 1917, several significant changes took place. For one thing, the tank was given its chance at Cambrai and more than made good. At the same time a new artillery technique appeared which was almost an equal threat to the defense. Based on extremely accurate maps and survey devices for determining the correct bearings of artillery aiming points, this technique enabled the artillery to dispense in part with observation and preliminary registration. For the first time, the artillery was *capable of massive and accurate surprise fire.*

Other material conditions no longer favored the defense so strongly. There were now enough guns and munitions for offensives on extremely wide fronts or even for several simultaneous offensives. Shell fuses were greatly improved. The new powerful trench artillery could blow wire sky-high in a few hours. Nearly all the Western Front by this time had been offensively equipped; that is, the material installations were such that offensives could be launched at short notice. The growth of the GHQ artillery reserve placed a powerful mobile weapon in the hands of the high command and masses of motors allowed rapid transportation of reserves behind the front.

The infantry had not only been reëquipped but was now being trained to overcome local resistance by its own means. Pétain stressed this point in his instruction on offensive combat of large units; Pershing loudly called for open warfare; and Ludendorff's notes on the infantry attack prescribed infiltration tactics. Thus, at the moment when surprise once more became practicable, the infantry became capable of exploiting its effects. It shook off the despondency engendered by years of failure and trench warfare, and regained confidence in itself.

It was not surprising, therefore, that in the spring of 1918 the attack began to go places on the Western Front. The new artillery technique, featured by extensive use of gas and short but violent preparations, opened huge gaps in the Allied front. Through these gaps poured German shock troops, apt at infiltration tactics and adept at turning a temporary advantage into a definite tactical success.

A noteworthy feature of the German infantry attack, once it got within the Allied position, was the use of *minenwerfer* to crush local resistance rapidly. These weapons, extremely light in comparison with the devastating effect of their bombs, were an integral part of the German infantry regiments and gave the riflemen splendid support in the later stages of the attack.

But despite spectacular victories, the Germans failed to gain a decision. They lacked a mobile exploiting force and sufficient motors to shift their heavy weapons rapidly. Consequently they could neither exploit one success strategically nor launch new offensives quickly. Therefore, Allied reserves, rushed up by truck, always managed to

[2]Casualties during the early portion of an attack were usually not exorbitant. They only piled up in later stages when attempts were made to exploit initial success or to continue the advance with insufficient fire support.

reëstablish a continuous resistance in rear of a break. The arrival of American masses in the summer of 1918 definitely turned the tide, but not before the Germans had conclusively proved that even the elaborate defenses of the Western Front were vulnerable to an infantry-artillery attack.

In the four months following July 15, 1918, the tank, the motor truck and the new artillery technique permitted the Allies to pound the German Army to pieces. American reinforcements and an ever-increasing superiority in matériel allowed them to launch powerful attacks at various points in quick succession, each of which wrecked its share of the Kaiser's divisions and tore a hole in the German front.

Correctly or incorrectly, the Allies made little effort to exploit any one success strategically. Instead of attempting to push forward in the pocket they had created, they preferred to strike anew, somewhere else. No sooner would the Germans rush reserves to the rescue of one sadly battered army, than the Allies would shift their offensive to another portion of the front.[3] Trucks would pick up the tanks, reserve divisions and GHQ artillery and rumble off 100 kilometers to a zone where communications were intact and supply presented no difficulties. Everything being in readiness, another trip-hammer surprise would be delivered within a few days; and a few more German divisions would be washed up.

Each Allied victory made the next attack easier, for the weakened Germans were unable to cope with the system. Toward the end, the Allied superiority in men and matériel was so great that several armies could strike at the same time—and the German reserves were gone. Germany yielded as strategic exploitation by the Allies finally began.

The gasoline motor thus restored mobility and maneuver to the Western Front, in attenuated form perhaps, but nevertheless a mobility of a sort. At the end of four years of trial and error, the attack had achieved a certain parity with the defense.

At the end of the World War victories could be won under Western Front conditions with 1918 weapons, but the fruits of victory could not be reaped at once. Without strategical exploitation of victories, winning a war was certain to be a long-drawn-out process. Quick decisions were impossible unless the attack could be speeded up and could retain its initial impetus much longer.

In the fifteen years following the war there was no great change in armaments. For instance, far more tank literature was produced than tanks. Tank enthusiasts argued for tanks and more tanks; there were even hyper-enthusiasts whose claims left scant room in warfare for any weapon save their own. But the armies got no great numbers of new tanks. Therefore, for a decade and a half the infantry remained as helpless against tanks as it had been in 1918, for no effective antitank gun made its appearance.

Moreover, there was little change in tactical ideas. The French, naturally enough, stressed fire power more than mobility, for they had a somewhat clumsy, short-term conscript army and masses of heavy weapons. The Germans, who always had preached mobility, were led to stress this even more than before, since their army, deprived by the Versailles Treaty of tanks and heavy artillery, was composed of long-term professionals.

And then, four years ago, things began to hum. The political horizon of Europe changed and, with it, the armies. The German Army threw off all imposed restrictions, completely refitted itself with new equipment, and again became a national army. The French Army got masses of new matériel and its term of service was doubled. Let us take a look at these two armies today, before they change further.

The French Theory

The French Army has an imposing mass of fast tanks;[4] just how large is not known. It has three light mechanized divisions composed of combat cars, armored cars, motorcycle units, fast tractor artillery and troops transported in cross-country carriers. It has several completely motorized divisions which can move 150 or 200 miles in twenty-four hours and enter combat soon afterward. It has an especially large and powerful motorized GHQ artillery reserve. It has a large and new air force.

The French infantry regiment includes a covey of *chenillettes*—handy miniature supply tanks which can haul mortars and machine guns, tow antitank guns, serve as movable C.P.'s or carry infantry ammunition into the front lines (a ton and a half per vehicle).[5] It also has a company of nine 25-mm. antitank guns[6] and disposes of eight Brandt 81-mm. mortars (six of which are organic parts of infantry battalions). Each rifle company contains 12 highly satisfactory light machine guns, and a 60-mm. Brandt mortar. Each rifle platoon is getting a special bomb thrower and an improved rifle grenade is being introduced. The marked increase in curved-trajectory weapons throwing explosive projectiles indicates that *curved fire in general should be considered as the principal offensive fire of the infantry,* and seems to foreshadow an important transformation in the tactics of small infantry units.

Other arms have, or are getting, the latest in gadgets. Some new artillery matériel is available. Antitank guns, larger than the 25-mm. weapon, are undergoing test. Each division has an extra battery of six 75-mm. guns, especially adapted for antitank fire. All in all, the French Army is reasonably prepared for modern war.

The possession of all this new equipment should again bring strategical mobility and maneuver into the foreground of the picture. At the start of a war, at any rate,

[3]The American Meuse-Argonne offensive was somewhat of an exception, although it was immediately preceded by the St. Mihiel operation.

[4]In addition to the medium tanks, a new light tank is expected soon to replace the modified Renaults. German reports state that large numbers of heavy tanks are being constructed, some mounting guns as large as 6-inch.

[5]The allotment of these varies, but is increasing.

[6]The quota of antitank guns will be increased soon, and a divisional detachment probably will be created in addition when production of matériel permits. The divisional reconnaissance group at present contains four guns, so that the French division contains thirty-one 25-mm. antitank guns in all.

we may expect to see sweeping dashes of 100 and 200 miles by motorized armies, covered by light mechanized divisions.[7]

But in the field of tactics, the experience of 1914 makes the French rather loath to adopt ideas that have not been tested in war. Like other armies, they are in a dilemma—either they must stick to a tested doctrine, or they must risk untried theories. On the one hand, war may reveal "tested doctrine" obsolete and unable to cope with the capabilities of new weapons and modern science; and on the other, the untried theories may prove unsound—as they did in 1914.

A direct fruit of the unhappy 1914 gamble is the present French tendency to avoid revolutionary change in their basic doctrine and to think twice before discarding methods that proved successful in the World War. For example, they cling to their system of successive objectives and centralized control, and their pet tactical abomination is anything that even suggests leading with the chin.[8]

However, this cautious attitude does not mean that they have forgotten Napoleon's observation that tactics change every ten years.[9] They often change details of procedure in an effort to keep their tactics abreast of their new weapons. Of particular interest to American readers is the following French estimate of the present capabilities of the fast tank:

> The days when the tank could cruise about, scattering battalions as the knight of old dispersed unarmed peasantry, are gone forever. Although recent improvements in the tank have been great, the improvements made in antitank defense in the last three years have been even greater. *Today the fast tank finds itself confronted by the modern antitank gun just as the infantry of 1914-18 found itself confronted by the machine gun.*[10]

The French are firmly convinced that the fast tank needs the assistance of other arms, including infantry, just as the infantry needs the support of artillery and fast tanks. The French doctrine of tank employment is based on this estimate. Let us see how the French might coördinate the action of tanks and other arms in a 1938 attack. We will consider a "type" division; an interior unit of a larger force which has gained contact with and is preparing to attack a hastily organized position, held by first-class infantry equipped in accordance with modern European standards.

Prior to the attack our division would be powerfully reinforced by tanks and artillery; for an outstanding characteristic of French offensive action is that it is "lavish with steel, stingy with blood." According to the French way of thinking, a division with only its organic elements is too weak to participate in a major attack. Abundant automotive equipment permits reinforcement to be effected rapidly and just before the attack; in fact, the tanks would probably be held far behind the front until the last minute.

Two important questions are: should the tanks lead the attack, and should there be an artillery preparation? Let us assume that the tanks participate in the early stages of the operation.[11] The French would decide the question of an artillery preparation after an analysis of its purpose. In general, its purpose is:

(1) To destroy mine fields and barbed wire.
(2) To destroy or neutralize weapons (automatic arms, antitank guns, artillery).
(3) To diminish the enemy's strength by inflicting losses, lowering morale, blinding observation, isolating or destroying command posts, and interdicting the movements of reserves and supplies.

The French admit that tanks can deal with the small amount of wire to be met in a hastily organized position, but insist that antitank mines are something else again. They point out that mining logical avenues of tank attack is fast becoming a national military sport in Europe and cramps the tank's style no end. Furthermore, they say that if the mines are there and the attacker desires to use tanks at the outset, the question of an artillery preparation is settled. There must be one.[12]

Automatic weapons may be neutralized by tanks and infantry and artillery fire *after* the attack has started, and the French do not consider a preparation for this purpose essential. On the other hand, they do consider it highly desirable to knock out all located or suspected antitank guns *before* the tanks debouch. They hold that the attacker's supporting weapons will have plenty to do in dealing with antitank weapons which reveal themselves only after H-hour. Furthermore, an attempt to deal with *all* the hostile antitank guns after the start of the attack might be fatal.

Similarly the question of counter-battery is given careful consideration, since the hostile artillery can by itself wreck an attack for keeps. If the attack has enough artillery to devote a powerful portion of it to counter-battery missions *throughout the action,* and if the majority of the enemy battery positions have been accurately located action against the hostile artillery can wait until H-hour. If these conditions do not prevail—and frequently they will not—the French say that a preparation probably is essential.

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[7]The new French regulations place increased emphasis on mobility and maneuver.

[8]A favorite motto of the French General Staff is "Strategical boldness, tactical prudence."

[9]Marshal Pétain in 1935 reminded a distinguished gathering of French generals and General Staff officers that tactics was the most changing of arts and demanded that the French directing staffs "interrogate the future."

[10]This last sentence is printed in italics in the new French regulations.

[11]Even if possible, this may not be always considered desirable. Moreover, if the defender has selected a position with a good water line as an obstacle, the tank cannot be used until an infantry-artillery attack has established a bridge-head.

[12]Mine fields will show up on a good aerial photograph. The destruction of mines by artillery fire is not considered an ideal solution by the French, but at present means have not been perfected for taking tanks over mine fields. However, experiments are being made to this end with various types of machines.

What happens to attacking tanks when they strike a mine field was shown in the World War. The American 301st Tank Battalion lost a dozen tanks in the attack of September 29, 1918, against the Hindenburg Line as the result of crossing a mine field, which incidentally had been originally laid by the British.

The general diminution of hostile combat strength is seldom in itself considered enough reason to order a preparation against a hastily organized position. Therefore, a French artillery preparation under such conditions is usually limited to the destruction of mine fields and the neutralization of hostile antitank guns and artillery. Of course, the commander weighs these advantages against the partial loss of surprise. On the whole, the French incline toward a one- to three-hour preparation, and doubt the feasibility in the future of attacks without preparation, such as Soissons and Amiens.[13]

Let us now assume that the attack is about to start and that it is time for the tanks to move out. The employment of tanks in small numbers is not countenanced. An attack with only one tank platoon on the front of an infantry battalion (as contemplated only a few years ago) would be classsed today as tank murder by the French, regardless of whether the tanks were fast or slow. Instead the French deploy their tanks in great depth (see Figure 1) and send them forward in successive waves. At least four and often as many as eight or ten waves are used.[14] This gives a density of 40 to 80 tanks per kilometer of front.

Some of these tanks will be accompanying tanks, forming part of the infantry-tank groupments; and some will be general maneuver tanks, operating under the division commander. The accompanying tanks will be light tanks, preferably fast. The modified Renaults may be used in this rôle for another year or so, but they must always be preceded by waves of fast tanks. The last one or two waves are always accompanying tanks. The general maneuver tanks, which are fast medium models, assist and support the infantry but do not accompany it closely and are not subordinated to it.

As the first wave of the general maneuver tanks moves out, the artillery blocks off an area or compartment (smoke being frequently used) and takes under fire any antitank guns which reveal themselves.[15] Rapidly advancing combing fires precede the tanks, which are expected to advance on the battlefield at an average rate of 12 kilometers an hour, or 100 meters in half a minute.

The first tank wave dashes for its objective, usually an important terrain feature on the visible horizon and seldom more than 2,000 meters distant. It endeavors to neutralize or destroy automatic weapons encountered en route. The next wave remains in surveillance a few moments, looking for newly revealed antitank guns, and then moves forward in support of the leading wave.

With the rear waves of general maneuver tanks will move small distributed groups of heavy tanks, whose mission initially is to deal with antitank guns. These tanks

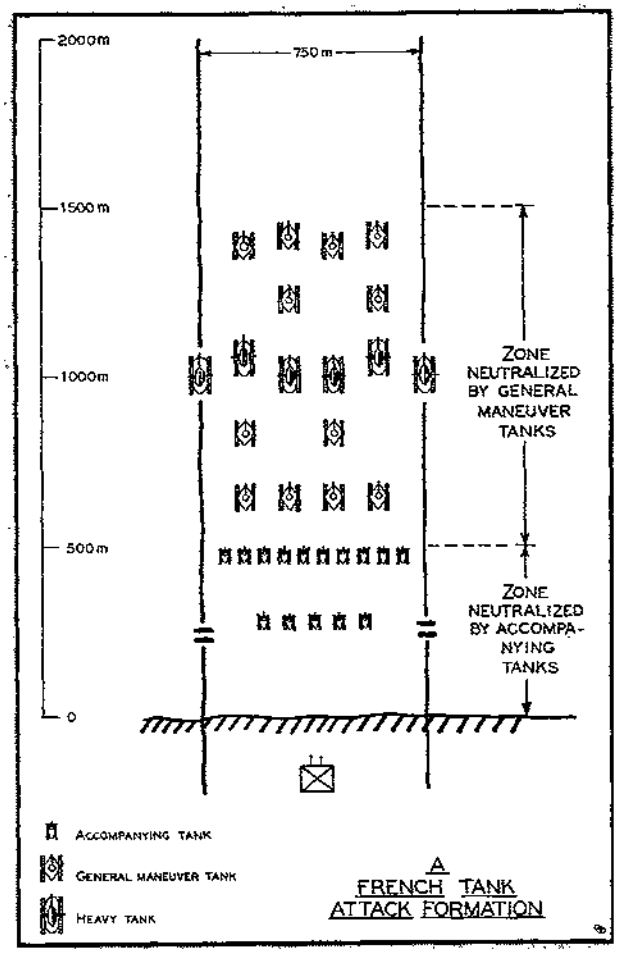


Figure 1: The Attack

are armed with 75-mm. guns capable of knocking out antitank guns at ranges of 1,200 to 1,500 meters and have such thick armor that antitank guns are ineffective against them at those ranges. These tanks closely support the general maneuver tanks, a later mission being to smash tank counter-attacks.

Then the first wave of accompanying tanks moves out, followed later by a supporting wave. Although not tied to the infantry, these tanks do not get more than a few hundred yards away from it. This does not mean that they move at the pace of the foot soldier; instead they utilize their speed to scour the ground in front of the infantry, at times moving laterally, at other times forging ahead, and every so often returning to the infantry, but moving all the time.

The attack thus tries to neutralize hostile weapons over a great depth. When the infantry begins its advance (some five to ten minutes after the first tanks), the French want to have some weapons acting on all areas from which fire can possibly be directed at their infantry.

Diagrammatically this situation is shown on Figure 2. The foremost tanks are almost on their objective and the divisional artillery[16] is about to lift. The tank waves cover

[13]The French hold that the conditions which permitted the attack of July 18, 1918, are exceptional. They point out that the attack disposed of abundant counter-battery artillery and that the location of the majority of German batteries was known.

[14]The exact number of waves depends largely on the depth of the terrain compartment which is to be neutralized. The French want a tank wave each 200 or 300 meters.

[15]The infantry base of fire helps neutralize these weapons.

[16]The corps artillery would be engaged on counter-battery missions.

the ground for nearly 2,000 meters in front of the infantry, thus replacing the artillery's direct-support fires. The artillery furnishes protective or general-support fires for the infantry, rather than direct support. The tanks get the direct support.

Mastery of the air, of course, is considered essential. The French say that air observation will play a major rôle in a tank attack because of the tank's blindness. The combat-liaison plane is expected to spot antitank guns in action during the attack and notify tanks, artillery, and infantry. Moreover, there has been considerable discussion regarding the employment of combat aviation against antitank guns during the tanks' progression. Such action is undoubtedly contemplated, although not specifically mentioned in the new regulations. The use of aviation in the Spanish war to support and accompany attacks has impressed the French and clearly points to closer air-tank teamwork in the future.

The French still regard the infantry's rôle in such an attack as primary. They say that an infantry advance within the blocked-off area sets the seal of success upon the entire operation, and that if the infantry does not get forward, the attack is a fizzle. However, this advance will be no parade, for despite tanks, airplanes and artillery, numerous resistances will have to be overcome by the infantry *with its own means*.

The French believe that the infantry can do this, for thanks to the tanks and artillery, these resistances will no longer be mutually supporting posts, but isolated nests which can be outflanked and maneuvered. To deal with such resistances rapidly the French infantry's allotment of curved-trajectory weapons has been much increased, and control of the mortars has been decentralized, contrary to usual French custom. The closest of support by mortars is considered essential. Since speed of entry into action is held to be of utmost importance, each French infantry commander has *his own* curved-trajectory weapon. He can act instead of having to request mortar support. Moreover, his mortars cannot be taken away from him. French regulations prohibit the formation of groupments of mortars.

The French believe that, as in the World War, the infantry's great difficulty will be to locate resistance. The defenders may be expected to lie low until after the tanks have passed and then open up with automatic weapons on the advancing infantry. At such moments the fate of the attack will hang in the balance.

Even if the infantry overcomes resistance rapidly, it will

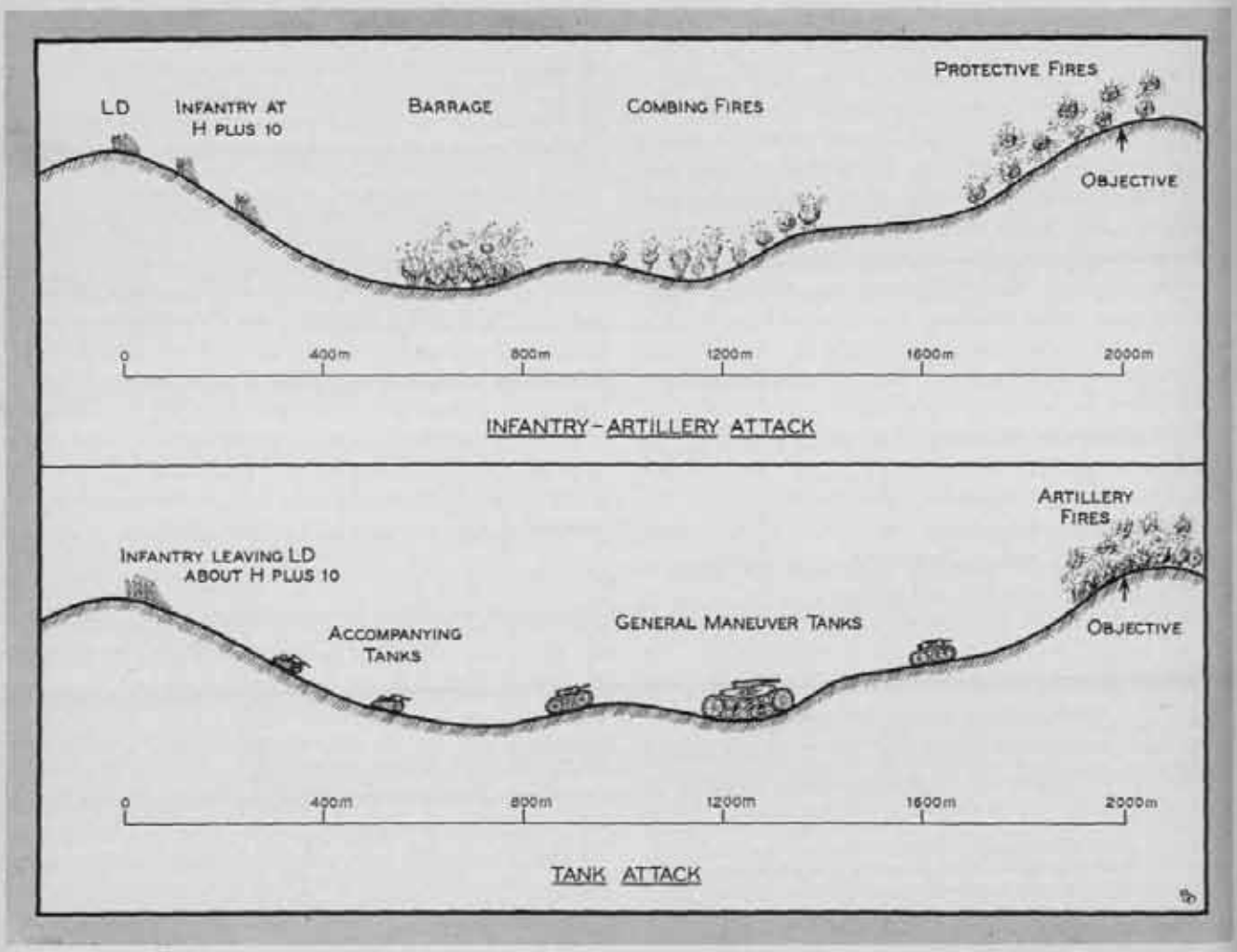


Figure 2: A Comparison of Neutralization Methods

be some time before it can join the tanks on an objective. This is because infantry starts later and moves much more slowly. Should the fast tanks, then, refrain from advancing during this period? The French answer is an emphatic yes. To them the experience of the World War was conclusive—if tanks and infantry get separated, the attack fails. Moreover, they feel that the tank actions of the Spanish war confirm this view. The French are more than ever convinced that their tank doctrine is sound, and that other nations' doctrines are less so.

Thus, even in a tank attack the French expect to eat through the hostile position, not in one bite but in two or three. Not until the enemy dispositions appear to have been dislocated will the French abandon this methodical procession. Then the tanks will cut loose from the infantry and penetrate deeply, attacking artillery positions, command posts and reserves.

The principal exploitation, however, falls to the light mechanized divisions. These units are not intended as front breakers, but once the front has been broken, it will be up to them to prevent the enemy from reforming on positions in rear. The mobility of these formations permits them to be held well back until the last moment. Then, when the time is ripe, they race through the gap, cut loose from other troops and wreck everything in sight. Meanwhile, the divisions in rear attempt to widen the gap.

From the foregoing it is evident that a French tank attack is not a success until infantry has crossed the entire depth of the hostile position. Although recollections of 1918 may make this appear a rather slow process, the French expect their new matériel to give them greatly increased speed in the attack. They reason thus:

(1) The time required by preliminaries has been greatly reduced. Tanks, artillery and other reinforcing troops can be brought up swiftly by motors. No longer will the enormous 1918 tonnages of artillery ammunition be required. Some artillery missions will be taken over by tanks, so that the number of guns can be slightly reduced. Moreover, the divisional artillery will not have to fire at top speed during the progression of the infantry, but only during that of the tanks, a far shorter period. The rest of the time, its activity will be sporadic.

(2) The time required for displacement of the divisional artillery, formerly estimated at a minimum of two to four hours, has been greatly decreased. Not only can tractor artillery easily do 15 kilometers per hour across country, but the reëstablishment of communications and observation are greatly facilitated by modern developments. The use of modern artillery observation posts on self-propelled mounts equipped with radiotelephone, permits a great saving in time.

(3) The artillery does not have to change position as often as it used to. The new guns have longer ranges but even the old guns can support an attack longer than in 1918. This is because tanks are not harmed by shell fragments and the artillery need not be as careful about its fires when supporting tanks. Thus the present French matériel can support tanks at distances up to 7,000 and 8,000 meters with the 75's and up to 9,000 meters with the 155-mm. howitzers—something that cannot be done when the front line consists of infantry. Since tanks are easily seen, artillery observers no longer have such agonizing doubts about the location of the front line.

(4) Thanks to improved artillery technique, the French can maneuver and concentrate fire power on the battlefield with a speed and precision considerably beyond World War standards.

(5) The infantry should be able to advance more rapidly than during the World War. The ground will not be so torn up and the way will be cleared more effectively. Moreover, the infantryman will not be as encumbered, for many supplies and weapons will be brought forward by chenillette instead of being manhandled. These same vehicles, equipped with radio, enable infantry commanders to keep in closer touch with the situation, maintain better control, and deal more promptly with emergencies. In fact, the chenillette has done much toward abolishing the tyranny of the static command post.

(6) The machine-gun nest, once a cause of interminable delays should be dealt with in short order. Locating this resistance twenty years ago was often a matter of hours. Today the tank takes over the task, and is an "intelligent projectile," which can search suspected areas effectively. Moreover, the French infantry itself is better equipped than ever before to deal with machine-gun nests.

(7) Finally, when the organized portion of the hostile position is penetrated and hostile dispositions dislocated, the light mechanized divisions and fast tanks can begin effective exploitation at once, something impossible in 1918.

Thus we see that a 1938 French attack by a normal division should move with equal power but much greater speed than a World War attack. And if the attack succeeds, an ideal weapon is available to clinch the victory.

The German Theory

Whereas the French emphasize fire power, the Germans stress mobility. Moulded by Frederick the Great, Clausewitz, Moltke, and Schlieffen, German military thought has an inherited instinct for speed and maneuver. The present economic situation of the Third Reich strengthens this tendency; for in case of war, the Germans feel that they must win quickly. Their tactics, and no doubt their strategy, are designed with this in view.

"Wegen und Wagen"—weigh the chances, then chance the risks—was a Schlieffen motto which the German Army follows today. To obtain swift and decisive success German tacticians will take chances which French leaders would reject. They stress rapidity, deceit, and surprise far more than the French; and their tank procedure in a break-through attack is in harmony with the rest of the system. They decentralize, tend to eliminate prearranged halts on objectives, and demand more of their infantry.

Equipment keeps pace with doctrine, for the German

Army is probably the most modern in the world—the one whose equipment is most nearly abreast of today's science. It has masses of airplanes, trucks, tanks, antiaircraft guns —all new.

The new German artillery features 105-mm. howitzers with greatly increased range (12,000 meters). These replace the old 77-mm. gun as the divisional light weapon. The French credit the new German 15-cm. howitzer with a range of 14,000 meters and the new 100-mm. gun with a range of 18,000 meters.

The equipment of the German infantry is not strikingly different from that of the French, although it is newer. Instead of Brandt mortars, the German regiment has a company of light infantry howitzers which replace the World War minenwerfer. These weapons have a range of 3,500 to 5,000 meters and the projectile is highly effective. The infantry's antitank weapons are 37-mm. guns on a shielded carriage, with a split trail giving a wide traverse. These have rubber-tired wheels, and are drawn at high speed by four-wheeled tractors. According to British accounts, they can do twenty miles per hour across country on favorable terrain. Each regiment has a company of 12 of these guns; and in addition there is a divisional detachment of 36 guns, which gives the division a total of 72.

The German tank organization differs radically from that of the French. Instead of a pool of tank regiments, the Germans have organized an armored or mechanized corps of three divisions. All tanks are an integral part of these divisions, which also contain armored cars for reconnaissance, and mechanized infantry and artillery.

Let us see how the Germans coördinate these arms in a break-through attack. The armored corps may not always be used as a unit; occasionally ordinary divisions may be reinforced by tanks for such an operation. The reinforcement, however, will be a tank brigade, not just a company or two. For in a break-through attack, the Germans probably will mass even more tanks on a given front than the French, and dispose them in even greater depth.

The German tank attack, like the French, is made in conjunction with other arms, but details differ. For one thing, liaison with the infantry is not so close. The bulk of the German tanks are often given missions that require them to cut loose entirely from the infantry; even the tanks designated to help the infantry are not required to keep near it.

General Guderian, in discussing the attack of a tank brigade, states that each tank unit and sub-unit must be given definite tasks. He indicates the following as possible missions in a break-through:

First echelon: Drive through to the hostile command posts and reserves and eliminate them.

Second echelon: Destroy the hostile artillery.

Third echelon: Attack the hostile infantry and hold it down until our infantry reaches it; then proceed as directed by the tank commander.

Thus, at the very start of an attack, the German tanks will attempt to drive rapidly through the hostile position, and attack artillery, reserves and installations at the same time that the enemy infantry is being attacked by German infantry. Contrasted with the French attack, this procedure sacrifices power for speed. The hostile rear areas are attacked rapidly, but less power is applied at any one moment against a single objective. This is especially true of the enemy infantry position if the bulk of the tanks drive through to the rear areas at the outset of the attack.

The tanks directed to assist the attacking infantry are not tied to it as closely as the French accompanying tanks are. This is clearly established by the provisions of *Truppenführung* and is borne out by German practice in recent maneuvers. *Truppenführung* deprecates the idea of holding back tanks because infantry cannot follow immediately, but it does leave the door open for the attachment of tanks to infantry. Undoubtedly some tanks will be so used, but probably not many. Perhaps an attacking brigade might drop off a company or two to act as accompanying tanks.

When given the mission of assisting their own infantry, German tanks are frequently directed against a definite terrain feature inside the hostile infantry position. According to published accounts, tanks were used in this manner on several occasions in recent maneuvers. Formed in great depth on a very narrow front, they dashed for the terrain feature and left the infantry far behind. Here their rôle resembled that of the French general maneuver tanks rather than that of accompanying tanks. Incidentally, the tank attack usually came from a different direction than that of the infantry attacking the same objective. In such cases, the tanks may debouch before, after, or at the same time as the infantry, depending on our old friends, the terrain and the situation.

Upon completion of the tank attack, their further employment is left to the judgment of the tank commander. He may pursue, widen the gap and roll up the hostile flanks, attack reserves, or, in case of a check, retire to an assembly point.

A tank attack gets considerable assistance from other weapons. *Truppenführung* prescribes that combat aviation give support by attacking the weapons of the hostile defense, reserves and artillery, antitank weapons being among the preferred targets. Artillery support blocks off the zone in which the tank attack operates. Moreover, the artillery "takes hostile weapons under fire, reduces O.P.'s or blinds them with smoke, neutralizes woods and villages which the tank attack passes, . . . and prevents the intervention of enemy reserves." A portion of the infantry's heavy weapons "beats down the enemy's antitank weapons." And smoke and gas are used to create barriers on the flanks. Thus, to a certain extent, the way will be cleared for the tanks.

Employed as indicated, and in conjunction with other arms, a German tank brigade would afford powerful assistance to a division endeavoring to break a front. However, it should not be assumed that the tank advance

would necessarily come at the beginning of an action.

The Germans are convinced that the tank is a valuable front-breaker but they are not sure that it will always be needed for this purpose. They believe that an infantry-artillery attack can overrun a hostile position as it did in 1918, and that often the best employment for the tank will be to *keep the attack rolling in the later stages*. This will prevent the loss of impetus which usually occurs during the artillery displacement. *Therefore, the Germans will frequently throw in their tanks in mass and by surprise several hours after the infantry assault has started.*

So much for the attack of a normal German division reinforced by tanks. Much as in 1918, this attack seeks decisive results earlier than does a French attack, and its methods are therefore characterized by greater rapidity. Obviously, things would roll even faster if the supporting artillery were mechanized and if the infantry followed in fast cross-country carriers. Such would be the case in an attack by the German armored corps employed as a unit. This force could be used as the spearhead of the attack. One can picture its divisions debouching by successive waves from a concealed position well behind the front. Following by bounds from cover to cover comes its artillery on self-propelled mounts, and infantry in cross-country carriers, ready to take over promptly the terrain seized by the tanks. As soon as the hostile position is subdued, the armored force pushes on to deal with the enemy's hastily arriving mechanized reserves. This appears to be the manner in which General Eimannsberger would employ these formations in a break-through.

However, the German official view may be more conservative. The increasing effectiveness of antitank defense may well prevent the armored divisions from being used in the early stages of a break-through attack. In fact, many German authorities lean to the belief that such formations should be used like the heavy cavalry of bygone days—as a weapon of opportunity.

It may well be that the modern equivalent of the charge of a Seydlitz or Murat will be the assault of the armored divisions at the crisis of the battle. Once "the event" has been brought about, the armored divisions can immediately start exploitation, pushing forward their lighter reconnaissance elements at the earliest opportunity.

Since the World War imaginative writers have filled the public prints with prophecies about a future conflict. Naturally it was the new weapons which allowed the fullest scope to their fancies. Infantry, lacking in romantic appeal, was often treated as a rabble unfit to be mentioned on the same page with the lordly newer arms. Even some military writers of undoubted ability were inclined to dismiss infantry as something secondary, if not altogether obsolete.

But those dull fellows, the French and German General Staffs, refuse to accept the scribes' pronouncements. Instead they retain the quaint belief that, tanks or no tanks, infantry still bears the brunt of battle and that an army whose infantry is inferior is itself second-rate. Consequently, while by no means neglecting mechanization, they save a place for infantry in the forefront of battle and are training and equipping it accordingly.

With this view American infantry will be in accord. *It may be difficult to imagine modern war without tanks, but it is impossible to imagine it without infantry and artillery.* As in the past, many battles will hinge on an infantry-artillery attack. This certainly will be the case if the attack is across a stream line, or if for any reason it is not considered desirable to employ the tanks in the initial stages of the attack. Moreover, the infantry will have the difficult task of gaining contact with the real hostile position and it will have to deal with wooded areas and other antitank terrain. In fact, there are abundant primary tasks left for infantry, and we may be sure that at the start of the next war, it will have as important a rôle as it had at the close of the last one. The post-war prognosticators who have so often announced the demise of the Queen of Battles have had, not a vision, but a nightmare. Infantry will continue to exist, although it doubtless will—and should—change.

Whatever changes are made should both improve infantry's footwork and develop its punch. Infantry can expect to be helped by other arms; it cannot expect to be carried all the way. The rapidity of its advance depends on its own ability to reduce isolated resistances quickly. Today its offensive ability is still somewhat deficient; for one thing, its production of offensive fire is limited. Generally speaking, offensive fire is not flat-trajectory; it is curved-trajectory fire. This indicates that if infantry is to pull its weight in a major offensive against a strong enemy, it must have plenty of curved-trajectory weapons.

When we view offensive tactics as a whole, it is clear that the tempo of modern combat has been speeded up considerably. Today it is possible to win a battle much faster than in 1918—in a few hours—and to begin exploitaion at once.

However, it would be premature to conclude, as many have done, that the next war will be short and decisive. Maneuver space may be limited and the armies may again have to solve the problem of the continuous front. In any event, the defense retains such strength that an attacker still requires a large margin of superiority before he can reasonably look for a quick and decisive success. In this connection, it is noteworthy that the new weapons, although employed in appreciable quantities in Spain, have not brought about a quick decision.

Undoubtedly Victory has found some new wings, and high time too. But just how far and fast she can fly with them remains to be seen.

Part I

The Big Hike

By PETER B. KYNE

"Turn out the guard! General officer!"

During the days of the Empire I was a private in Company L of the 14th Infantry, which was holding down a sector that ran from Manila Bay to the Pasig River. This was known as the South line and, with the exception of sporadic hates, was so quiet we usually could hear old Dad Keyes, the first sergeant, snoring o' nights on the floor of the *nipa* shack he used for an orderly room.

On the afternoon of June 9, 1899, I had gone down into the adjacent village of Pasay with the pious intention of testing a somewhat attenuated credit with a suspicious native woman who operated a little grog shop. I did not enter, however, for my mind was taken off beer by the sight of a big cavalry brigadier on a black American horse, and with him a couple of shavetails and a higher grade or two. The sentry on duty in front of Colonel Aaron S. Daggett's headquarters snapped into it and turned out the guard for a general officer, and Colonel Daggett came out and said: "Hello, General Lawton" —whereupon eighteen-year-old Private Kyne fled home with the alacrity of a tin-canned dog, because gossip of any kind was welcome in the trench line and real news was an event.

"We'll be moving out tonight," I told Dad and gave as my authority for the statement the fact that Lawton was down from the North line with his staff, nosing around our sector.

Within the hour we were being issued three days' rations and a hundred and fifty extra rounds of ammunition. At dark, in a heavy rain, we pulled out, with two carabao carts following at the tail of the company with the officers' baggage, the kitchen equipment, spare rations, ammunition and entrenching tools. My bunkie, Private John Ryan, late of Her Brittanic Majesty's 21st Hussars, a veteran of Omdurman, Suakim and Tel-El Kebir, plus seven years on the Burma Border—cursed the terrible Lawton for moving us in a rain through mud up to our ankles and himself for enlisting in the American infantry, where they dressed a man in beggar's rags and fed him beans.

After slogging along an hour somebody guided us off into the grassy plain south of San Pedro Macarti. The grass was long and wet and we tripped in it and finally lay down in it. We had had ponchos issued in San Francisco a year before, but the rubber had worn off in a month and now they shed water like a mosquito net. A squadron of the 4th Cavalry, mounted on Filipino stallions, rode in about ten o'clock and put up picket lines. The stallions squealed and fought and the infantry cursed the cavalry. Then artillery commenced rumbling in and the braying of mules was added to the discordant noises of the bivouac. By midnight, however, all the troops in the concentration appeared to have arrived, and we fell asleep in the rain.

At 2:00 A.M., on the 10th the bugles roused us out; the companies had all brought along dry fuel on the bull carts so we had coffee, but nothing else unless we cared to dig into our reserve rations. By daylight we were all down on the road that runs along the west bank of the Pasig River up to where Fort McKinley now stands. As nearly as I can recollect the 1st Colorado Infantry and a troop of Nevada cavalry nobody had ever seen before were

the only *volunatarios* in the concentration. Besides these the force consisted of ten companies of the 14th Infantry, the 9th Infantry, the 12th Infantry, the 13th Infantry, one mounted squadron of the 4th Cavalry, a company of Signal Corps, mostly mounted, one battery of one-pounder guns, Capron's Battery of 3.2 guns, Reilly's Battery and one other—probably Dyer's or Scott's. In those days a battery was named for the battery commander and so known, the battery letter and the number of the regiment being used only in official communications.

I suppose each outfit had its own medical unit. I know we had ours—one doctor, one hospital steward and three Corpsmen—and the regiment was about nine hundred strong that day. Imagine that little bunch trying to take care of our hundred and thirty-nine wounded and get them off the field! The answer was—they didn't. When a man beside me was hit I used my first-aid packet on him and tried to be clean about it; and then hoped, if I should get hit, there'd be somebody hard by with a first-aid packet and brains enough and training enough to use it intelligently.

I imagine General Lawton knew whither he was bound, but nobody else did. Fortunately, nobody gave a damn. I suppose we had an intelligence section and maybe it had drawn a map of sorts but it didn't matter. Our warfare in that Luzon day was not complicated. We just issued three days' rations, one hundred and fifty extra rounds (in the case of Regulars armed with the Krag-Jörgensen rifle) and pushed off in the direction from which the enemy had been shooting at us. Once started we kept on going; when the rations were gone we lived on the country; when the job was done we sat down and waited for more grub and ammunition to catch up with us. Then we continued the motion. It was nice warfare, despite the physical handicaps, because it took one into so much new scenery!

About the only thing we were certain of that day was that somewhere out front a lad named Pio Del Pilar, a *mestizo* who had had his upbringing in the Spanish Army, had about thirty-five hundred troops that could and would fight and, in the matter of musketry, were better than the run-o'-the-mill Insurrecto *soldados*. They were mostly armed with Mausers and uniformed and quite a lot of them wore shoes. In all probability many of them had gone over the hill with Pio from the Spanish Army.

Personally the thought of good old Pio disturbed me no little. I hoped he'd view the entire procedure in a sensible manner and go far far away where we could never find him. And I wished we had somebody else in command of our forces, because that man Lawton was a cavalryman who used to run Apaches down with infantry! I had heard a tale to the effect that somebody once had asked Lawton how he managed to catch mounted Apaches with infantry and he had replied: "Why it's simple. I just run the infantry along behind my cavalry until it can't run another step. Then I make it get up and run twenty miles more." I never doubted this tale for Lawton ran us about twelve miles that day; and seven miles across country in Luzon was considered good going for seasoned troops.

I was further disturbed by the water situation. Down in the trenches on the South Line we always kept a big pot of water boiling day and night to purify it, but when we pulled out on short notice there wasn't half enough on hand to fill the canteens. And we wondered if we would find water where Lawton was leading us. First Lieutenant Henry G. Learnard, who commanded Company L, must have read our thoughts, for when we rested he warned us not to fill our canteens at the Pasig River flowing just below the road. That water, he said, would kill us. I thought so, too, for the river was in freshet and the swollen carcasses of animals bobbed along on the current. And we saw a small bamboo raft coming down with an American soldier crucified on it. Mr. Learnard said we'd probably get water later in the back country. He was sorry but it was better to know thirst than dysentery and typhoid . . . we were bound to find better water out where we were going. And John Ryan was too old a soldier to accept that wishful prediction on faith. He shook his canteen and poured the contents into his tin cup. Half a cupful. I did the same with mine. A full cup. We split the water equally between us and Ryan swore he'd break my young back in two halves if he caught me drinking without his permission. Strangely, this old reprobate loved me and conceived it his duty to look after me. And cripes, I was famished for a swig then!

An officer rode back down the road and spoke to Major Hasbrouck, whereupon the 1st Battalion began climbing at right angles to the line of march straight up that eighty to one hundred foot bluff that rises above the Pasig Valley. We were quite winded when we reached the top and the Major gave us a brief breathing spell; then away we went through the tall wet grass that clutched at our legs like detaining hands. . . . A long way up front, we heard faintly, the sound of musketry. We marched toward it.

Presently a bullet whined over, very high, then another and another. They were coming out of the morning mist that still spread over the land like a blanket. Quietly Mr. Learnard put us into line of skirmishers.

Now we could hear Krags firing—not very many but unmistakable. We assumed, correctly, that the scouts had gone on ahead and established contact with the enemy.

We went down into a broad deep swale. The sun was up now and at our backs and we were steaming. We plodded on. More and more metal came over, but high. The sun was burning up the mist and presently, about four hundred yards below us, at the foot of the next rise we caught glimpses of blue-shirted men in the grass. There was a line of entrenchments on the crest and plenty of enemy shoulders and heads silhouetted.

"Double-time!" cried Mr. Learnard.

"'Tis a wooden leg or a wooden overcoat for you this day, kid," the Ryan yelled, and Sergeant Hoar told him to quit trying to scare the child. A man on my right fell on his face. He wasn't hit—just faint from thirst, and exertion and dysentery. Thirst dropped seven or eight more before we closed in on the scouts and infiltrated

among them, and nobody in my company was hit during the advance. Mr. Learnard gave the range as eight hundred yards, and told us to fire slowly and at will.

I was pretty jumpy.

Mr. Learnard came walking sedately down the line, as if on Saturday morning inspection. He assured each of us we were quite safe, but I didn't believe that. He came in back of me, looked over my shoulder at my sights and saw that they had slipped up to 1,600 yards. So he slid the rear sight down to eight hundred and tightened it in with the little set-screw; he told me to take my time . . . he patted me between the shoulders and shouted in my ear: "They can't hit you, son." He smiled at me and I was comforted. Then I saw him spin around and sit down abruptly. The bullet that hit him passed between my legs and slipped through back of his left knee, between the tendons and the bone.

more about than he did, but I paid no attention to him. When I was finished, Ryan lifted Mr. Learnard to his feet. I pulled up his trousers and handed him his sword. (Yes, officers carried a sword in the field in those days—a slender, straight dress sword.) He thanked us both, tested his game leg, and resumed his prowl up and down behind the skirmish line. And when he took over again and I picked up my Krag and got back on my job, lo, a miracle had occurred. For the first time (and I had been under fire a number of times before) I was not frightened! The wind had left me. I wasn't fit to win a Medal of Honor but I was fit at last to soldier in the 14th Infantry. I could never be stampeded again; I could remember what I had learned on the target range and now I had the nerve to apply it. I was so happy I rolled down through the grass to Ryan and told him about it.

Mr. Learnard had done that to me. I do not know how

Sat down on the parados and fanned his tail.

I shrieked: "The company commander is hit." Ryan heard me and ran over. Mr. Learnard, pretty white, was flat on his back with that momentary paralysis that often goes with even a superficial wound. Ryan thinking him dead, laid his Krag on the ground and shook his fists toward the enemy on the crest. "Arrah," he growled, "but ye'll pay dear for this before the day's wurrk is over."

Just a wild Irish soldier dramatizing himself; but it was obvious he loved Mr. Learnard and was quite willing to die to avenge him. I knelt to apply first aid, but Mr. Learnard sat up like a Jack-in-the-box, and gave Ryan the finger. The latter bent over him. "Tell Lieutenant Gilbreth to take command of the company until I relieve him," he ordered. Ryan fled up the line for Mr. Gilbreth.

Instead of taking command Mr. Gilbreth came down to find out just what had happened. He proceeded to tell me how to apply my first-aid packet, a job I knew far

but I think it was with that elusive something about which millions of words have been written in service journals and which nobody seems to know exactly how to describe, to-wit: leadership.

Here I will digress to add my mite to this age-old discussion. I think leadership has its genesis in human love. Unless a man loves his fellow-man he is as devoid of leadership as a tone-deaf man is of melody. Once he gets that over to his men they will follow. Of course he must have courage of the cool, quiet, smiling sort; and a sense of humor helps; also he must be sympathetic and understanding and forgiving—know when to sock 'em cold and when to toss 'em a compliment. That was Henry G. Learnard.

About this time a troop of dismounted volunteer Nevada cavalry came up. They were armed with 45-70 single-shot Springfield carbines and when they slid in

between our skirmishers and opened up with black powder, there was the devil to pay. Mr. Learnard was furious and said things to that cavalry commander I may not repeat here. And Pio Del Pilar's men commenced correcting their fire to get on those smoke balls, so the battalion commander told his trumpeter to blow us up and forward. So up the long slope we went, with the bugler blowing "Guide right! Guide left! Guide center!" and the major trying to maintain a parade ground alignment. He didn't succeed in that worthy, if impracticable endeavor, but we kept going.

The enemy didn't wait. He wasn't doing any execution and he knew, if he stayed, we'd come in with the bayonet and the long yell. So he beat it, and when we got to the abandoned trench he was about five hundred yards away and moving fast. So we sat down on the parados of his trench and fanned his tail until he disappeared in the heat haze. He left behind him one casualty—a trumpeter about fourteen years old, shot through the temples. We laid the little martyr in the trench and hacked dirt down on him with our bayonets.

From the crest we could look down across country and our hearts sank. As far as we could see stretched a level or slightly rolling sea of dry grass. There wasn't a tree in sight, nor any sign of water.

About two miles off on our left flank we could see our main force creeping like a dark gigantic snake, across the plain, leaving little dots in the trail it made through the grass. These, we knew, were the men who had fainted and fallen out from heat prostration and thirst.

As we started down the slope in column and headed toward the main force Ryan said: "God help me, I've quit sweatin'." This conveyed no significance to me, but the old veteran knew! "What does that mean?" I demanded. "I've quit sweating, too."

"It means we're dehydrated. It means we're through."

I thought him an alarmist. At the foot of the hill Mr. Learnard halted us, gave us "fours right" and we were in company-front formation. He opened ranks and then went hobbling along the front of each rank, looking into the faces of his men and trying to estimate what strength the day had left in them. And it was only about eight o'clock now! Finally he closed ranks and addressed us. "Men," he said, "we have a long, hot, thirsty, cruel day ahead of us. Conserve what water you have for I do not think we will find any very soon. Any man who feels that he can not keep up should drop out now. It will be no gain to himself or me if he hangs on to show his gameness, only to drop further on. He need not feel disgraced."

Twenty-six men stepped out of ranks and we closed the gaps. Again Mr. Learnard went down the line. "Ryan," he said, "you're done. You're weaving on your feet now. Fall out."

And then a soldier spoke: "Sor, I sogered in the 21st Hussars in the Soudan an' at Suakim we had to kill the camels to get wather out o' them an' damn little o' that. But I didn't fall out—an' me wit' a lance wound in me thigh."

Sir, I won't fall out 'til the leftenant does.

"How old were you then?"

"Sixteen, sir. I was a trumpeter, sor, and I blew the maiden charge of the 21st Hussars whin we wint into the Mahdi's bucks wit' the lance an' broadswoord at Omdurman."

Mr. Learnard shook his head. "I'm sorry to lose you, but—fall out."

"Sor," Ryan replied, "whin I fall out I'll shtay out. Till thin, sor, I'll follow the leftenant."

For the first time I saw Mr. Learnard lose his temper with an enlisted man. "Stay then," he said wearily, "and be goddamned to you, you contrary, disobedient Irishman." He poked a finger in my wishbone. "Drop out, son."

I was eighteen—and the man was about to inflict upon me a public disgrace! He was going to lead on, with a hole through his leg—and just because I was a little thirsty and heat weary he would forbid me to follow him! He was shaming me—with kindness! But I could not be a lesser man than my bunkie and I had to be worthy of a regiment that has always thought well of itself and always will—and with good reason. I said: "I'll stick with Ryan, sir, if you please. When the lieutenant takes a header I'll be there to keep him company."

He complained that we were making it hard for him, and Ryan uncorked his canteen and held it up to Mr. Learnard "Have a *slante*, sir, an' maybe ye'll feel betther about it?"

Jerked me violently backwards and sucked up the water.

To those not of Celtic ancestry be it known that when two Micks are having a snort they say, "Slante," which is the Gaelic equivalent of "Mud-in-Your-Eye" or "How."

Mr. Learnard ironed the irritability out of his face and said: "Thanks Ryan, not now. Later, perhaps." But we knew he lied. He wouldn't accept even to keep life in himself. One had to follow a man like that. I've often wondered if he knew anything about leadership, or ever discussed it at the officers' mess. I'm inclined to think he did not. He had it but he didn't know it.

We slogged along. Presently I began to see myriads of big black balls jumping out of the grass in front of me; when I came to, on my hands and knees, the black balls were gone and the company was two hundred yards ahead of me. A mile in my rear considerable shooting was going on. So I knew that Filipino soldiers who had hidden in the gullies as our troops passed were now busy sniping the stragglers, who were sniping back. Interesting, but not important. The army marched on and I got to my feet and ran until I was by Ryan's side again. He looked at me with hot eyes and said "Good morning" to me in Hindustani. He was crazier than a hoot owl!

I do not remember very much about that passage. I just slogged along until I fainted, and when I came to I slogged along again until it was time for another faint. Somehow I kept up—probably because the troops had to rest every quarter of a mile. As far as the eye reached along the broad trail tramped flat in the grass one could see men lying where they fell. . . . After a while we could no longer hear the sniping in our rear, because of the firing up front. I passed a dead man and saw some wounded being carried on stretchers. The enemy—not very many of him—was retreating before us. It was a running rear-guard action on his part and I do not think either side did any damage to the other, all hands just blazed away because it was the thing to do.

About noon, Ryan fell and that was my cue to fall too. But the terrible old soldier was not unconscious. He said: "I'll die if I don't get wather." So I found a little depression that had, quite recently, held a pool of rain water and dug in the damp earth with my mess kit. A trickle of water began to seep in, stinking and black; I was about to scoop it up for Ryan, when a big Chinese coolie, one of our bearers, jerked me violently backward, half knocked me out and sucked up the water. I tried to shoot him but he ran among the soldiers, so I took after him with the bayonet and pursued him until I fainted. But when the company went forward and Ryan got up and went forward too, I had to follow. I heard the gurgling of cool waterfalls, I saw shimmering lakes edged with cool green trees; I listened to men moan and cry and sob and pray and sigh and swear. Ryan was delirious. He was pursuing turbaned men in forgotten little wars in the Himalayas and cursing them in Hindustani.

About four in the afternoon Mr. Learnard fell. Dad Keyes took him by the collar and dragged him over to a little bush that cast a meager shade over his head; when I came by I unfolded my shelter half and spread it over the little bush to augment the shade. We pressed on—and then, way up ahead, I heard wild shouting. . . . After a while I made out the words: "Water, water."

I must have staggered a quarter of a mile before I came to a scene that reminded me, even then, of swine at feeding time. The setting was a deep *arroyo* that flattened out into a pool about three feet deep and forty feet wide, and then narrowed again into another *arroyo*. Some of the men were struggling to reach the pool while others who had gotten water fought to get down the *arroyo* and out. I knew better than to get down into that narrow *arroyo*, so I slid down the six-foot bank that bordered the pool on to the heads and shoulders of the soldiers below. Uplifted hands caught me as I arrived; somebody knocked me into the pool and there I was down among the trampling feet filling Ryan's canteen and my own. I drove my head under the water and drank; I rolled in it. Then somebody picked me up, hit me several times, called me a dirty little greedy bastard, and threw me up on the bank.

I was groggy from the blows I had received, but I felt grand. I hurried back to Mr. Learnard opened his shirt and poured water on his spine and breast and over his face; when he blinked I poured water into him. . . . I got him up on his props and he came along obediently and sat with me by the waterhole and watched the lunatics battle for the water. A fat, freckled-faced 13th Infantry boy had a heart attack close by me and we watched him die. . . . After a while we formed column of squads again and pressed on into the lowering sun toward a fight that was going on over the next hill.

Mr. Learnard, walking on the flank beside me, said: "Let me carry your piece, Kyne. And slip me that haversack!"

Ryan, walking beside me, had a lucid interval. "The pot is callin' the kettle black," he complained.

I declined Mr. Learnard's assistance with thanks. I told him that when I could no longer carry my gear I'd drop out and lie beside it, and, in any event I was not low enough to accept assistance from a cripple.

Ryan moved out of ranks and vomited, and I followed

suit. Just the power of suggestion. Then suddenly I was really sick. I had drunk too much water all at once. I ached all over and the will to go on began to waver. Mr. Learnard paused, looked at us a moment, shook his head and went on with his disintegrating company.

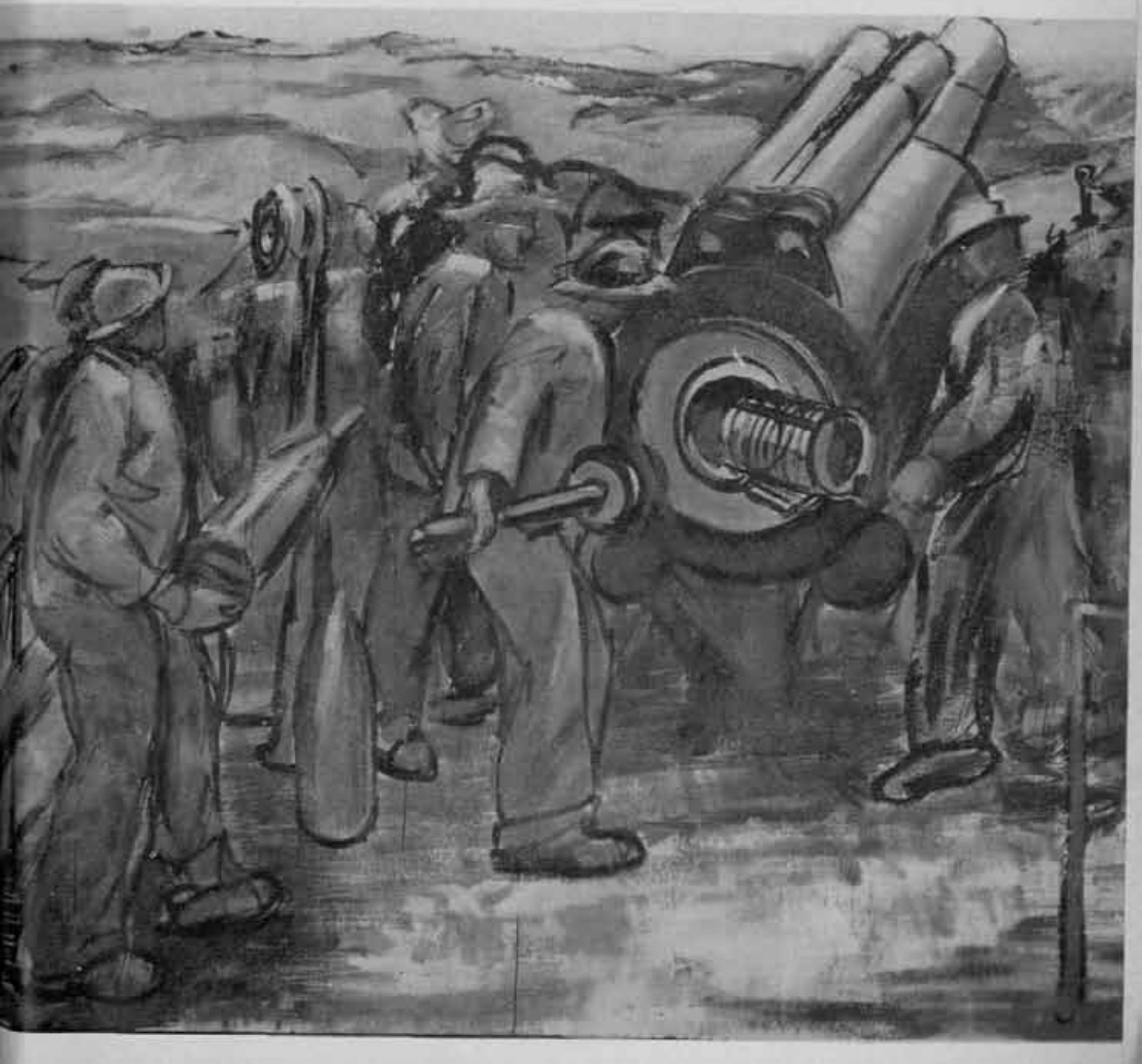
In a little while Ryan moved off at right angles toward a lone thick-topped tree about two hundred yards away. "Where are you going, Jack?" I asked.

"I'm going over to die under that tree," he replied wearily. "I'm through. I've got to quit."

So his indomitable will had cracked at last. He had used up all of that something men for a want of a better name call stamina—that spiritual strength that drives a man on after his physical strength is gone. And now Ryan's soldier pride was gone out of him. I thought my bunkie was going to die; I called after him. "Wait for me, Johnny, I'm going with you. We'll die together."

So together we went to the lone tree, shucked our equipment, pulled off our atrocious heavy navy-blue woolen shirts and threw ourselves on the hot earth. There, naked to the waist we lay with arms outspread, waiting for the dark wings of Azrael to touch us.

(To be concluded.)



SEACOAST ARTILLERY FIRE

By Brigadier General R. S. Abernethy

IMPROVEMENT in methods and devices, seemingly permanent and satisfactory, should be our ultimate objective. It does not seem impossible to develop the subject of seacoast artillery fire and its adjustment scientifically, from the viewpoint that the *general* case is a target moving freely in space, and that special cases are targets restricted to the horizontal plane or stationary.

The Perfect Adjustment

In firing at moving seacoast targets, the continual application of ballistic and weather corrections is intended to meet calculable conditions for the successive positions of the target. The so-called "Adjustment Correction" may be considered as compensating as well for errors in the computed corrections as for unknown causes of variation. The perfect adjustment correction must be expressed in such form as to place the center of impact on the center of the target and keep it there regardless of the target's position changes. It is inconceivable that such a correction could ever be constant, or bear any simple relation to position coördinates. In fact it is to be expected that the algebraic expression may be very complex in form, and contain other variables than those relating to position.

The expression of the adjustment correction as a percentage of the range makes it variable with the range alone. It tends to serve our purpose only when the adjustment correction appears to be dealing mainly with minor muzzle velocity variations from normal. In such cases and at the lower elevations, other causes of deviation may be disregarded for a time and the percentage method used, but at the higher elevations, caution is necessary.

It is important to note that, with targets moving at battle speed, the adjustment correction, even when sliding for a time with the range, will soon become stale and new adjustment by continued observation of fire, and unhesitating discard of dead observations, will always be necessary.

Repeated Use of Some Deviations in Calculating Adjustment Corrections

It is becoming the custom at target practice to compute and apply an adjustment correction based on a small number (the first 2 or 3) of deviations, and subsequently to apply for record fire a correction based on these together with a number of later ("Improvement Fire") deviations. A study of the results of several years seacoast practices in Hawaii indicates that, in a majority of cases, better results might have been obtained had the earlier deviations been disregarded in computing the new corrections. I must confess that I have always had an unreasoned prejudice against the repeated use of the same deviation in computing corrections, although I know that the new correction is applied only after stripping away those preceding it.

I believe that in battle the rate of fire will be so slow, when considered in connection with the target's speed, that we must train ourselves to make effective use of small numbers of the latest observations, and not to depend upon loose averagings of greater numbers of deviations, some of which may be stale. This demands constant effort to improve the accuracy of deviation measurement and eventually to make our spotting as accurate as our position finding.

Errors in Azimuth Prediction

For several years in the Hawaiian Separate Coast Artillery Brigade the azimuth deviations in target practices seemed unaccountably large, and efforts were made to find the underlying causes.

It was noted that, in making use of the bow-on figure we were predicting on a target whose direction of travel was abeam (sidewise). In other words we were predicting on a target moving in the direction of its least dimension. I do not believe that this is an adequate excuse for so many errors in azimuth. It appeared that the slow speed and consequent comparatively slow motion in azimuth of the old broad-side target had led to some laxness in prediction in azimuth. All firings were by Case III. One cause of errors was the use of a long past time of flight as a result of a habit formed in dealing with low target speed. A time of flight corresponding to even the last set forward point may be too old when there is a high rate of range change. For example, if we consider the case of a ship traveling at 17 yards per second (30 knots per hour) on a course at 45 degrees with the line of fire, we find that the target changes positions in range (as in direction) at rate of 12 yards per second. Now, assume fire by 16-inch rifle (2,100-lb. projectile) at about 25,000 yards. Here the time of flight changes about 0.2 seconds for every hundred yards so that in 30 seconds of travel the range change (360 yards) would give an increase or decrease of .7 seconds in time of flight. Now if we use a time of flight corresponding to the very latest past prediction, errors of 0.7 times 12 yards or 9 yards in range and in azimuth will be made. Although most of our firing was at low target speeds and none in excess of 18 knots, the fact remains as demonstrated above that the new time of flight and new range, being interdependent, should be calculated simultaneous-

Approximations should be done away with

ly. This is not difficult as can be ascertained by reference to the report of Coast Artillery Board Project 32, published in the COAST ARTILLERY JOURNAL for July, 1925. This report also points out other difficulties in connection with fire at high-speed targets which are worth studying.

METEOROLOGICAL CORRECTION

The above discussion reference the discard of stale data naturally brings up the question of meteorological observations and corrections. Something as to the rate at which meteorological changes occur may be deduced from the fact that violent storms of large size do not normally travel more than 500 miles in a day so that as a rule when there are no violent meteorological disturbances the rate of change of air density, temperature and of wind (in velocity and direction) is comparatively slow. I believe accurate observations every 30 minutes to be sufficient. Meteorological station may be some miles distant from the field of fire if they are not separated from it by topographical features of such magnitude as to cause climatic variations.

The most frequent observations from locations actually in the field of fire should not be expected to correct for tornado-like and other rapidly moving disturbances of limited area. As to the meteorological *correction* on the other hand, high-target speeds produce rapid change of wind component effects, or trajectory altitudes, and therefore of correction values generally. There should be no excuse for failing to reset the range correction and deflection board and to recompute range and deflection corrections for each new set forward point position. To obtain the very best results, with the least delay, it might be advisable to make an approximate advanced prediction of the set forward point range and even its azimuth for early computation of corrections to be applied to the finally determined set forward point coördinates. Such a preliminary prediction could well be made in connection with the determination of an advanced time of flight.

SLIDING CENTER OF IMPACT

A complete study of target practice reports of 1925, 26, and 27 for the Coast Artillery, failed in my opinion, to demonstrate in any single case a "sliding center of impact" although there were several doubtful cases.

This may be explained by the contention that the number of shots fired in a target practice is so limited that a demonstration of the sliding center of impact should not be expected. However, sliding in a straight line or simple curve should rarely be expected.

The small number of rounds and the short duration of fire, when considered with the magnitude of armament probable errors and of other errors are such as to make graphical correction for a sliding center of impact unwise. Even in firing a long series of shots in battle, I think it wise to try to find some explanation of difficulty in adjustment other than the sliding center of impact. The obtaining of a new and carefully checked meteorological message would be a worthwhile precaution.

ADJUSTMENTS BASED ON DEVIATIONS FROM SET FORWARD POINT

It has been said that a gun ashore must be expected to fight on equal terms against a ship afloat. I mention this for the purpose of focusing attention on the great need for accuracy in Coast Artillery fire, especially for large calibre guns when firing at long range against capital ships. Every unnecessary approximation should be done away with, in this class of fire, and the greatest accuracy sought in preparation of fire, position finding, gun-laying, observation of, and adjustment of fire.

For comparatively short range weapons, with high rates of fire, it does not seem to be objectionable to base adjustments upon the deviations of impacts from the target, instead of from the point on which the gun is actually laid, i.e. "the Set Forward Point," even though it is realized that there will be significant errors in the location of the set forward point and that these errors may become serious in the case of a target maneuvering so that accurate predictions cannot be made. On the other hand, it is my belief that in the case of fire beyond twenty-thousand yards, with slow firing major calibre guns, the required degree of accuracy cannot be expected in battle unless the adjustment is based upon deviations from the set forward point.

It is quite true that we apply the theory of error, not only to the so-called accidental errors, but also to a great many errors incidental to range finding and gun-laying, and that to some degree, at least, all these "incidental" errors may be assumed to conform to our theory of error.

In the case of a maneuvering target and a long time of flight such an assumption may not be justified. The maneuvering of the target is purely arbitrary and errors in prediction of the probable set-forward point may vary between wide limits and jump around quite irregularly. It seems to me that basing adjustment on deviations from set forward points together with separate continuing study of prediction errors, whether resulting from maneuvering of the target or other possible causes, may lead to considerable improvement in prediction.

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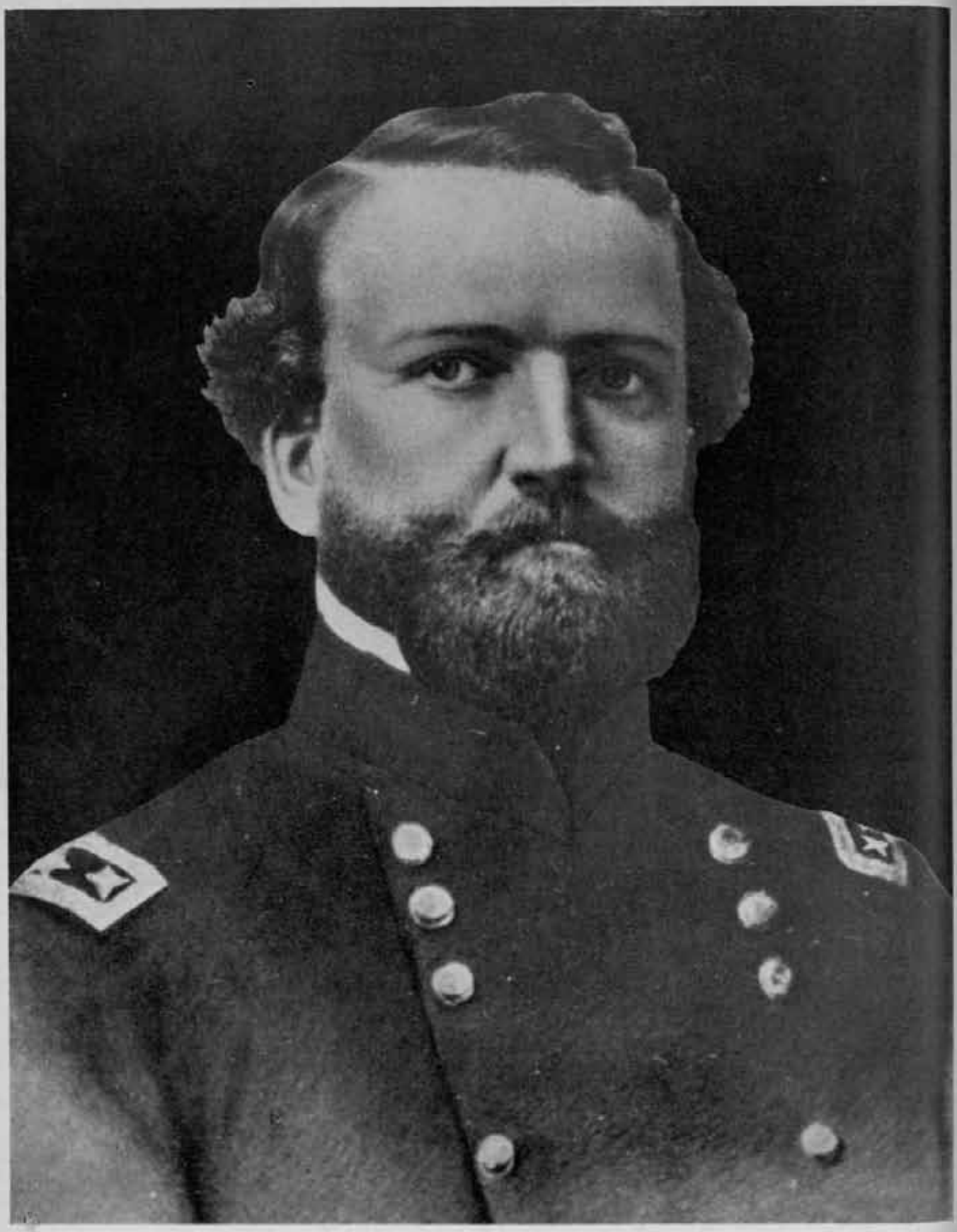


General George Henry Thomas

"Old Pap"

By FLETCHER PRATT

Part I

He opened the war by destroying a small army; he ended it by destroying a great one

We live in an age of counter-punchers. When eleven boys in blue and yellow come dashing onto the mimic battlefield of football with the band playing, nearly everyone in the stands knows that this is not the team that will strike for victory, but a special battalion of defense, whose mission it is to draw the fangs of the opposition before an entirely different team delivers its stroke. When a dull-eyed negro comes rocking from his corner for the mimic single combat of the ring, the audience is perfectly aware that there will be no contest until his opponent tries a right lead, under which the black will duck to deliver a left hook of explosive violence.

It cannot be altogether accident that these little wars pattern the great. There must be some relation, some basic pattern of human thought, underlying the resemblance between Notre Dame, Joe Louis and the World War. For when the full history of that latter struggle is written no observer concerned with the larger issues can miss the fact that all its decisive victories were those of a defense that passed into a crushing counterstroke. There is not one exception—the Marne, Tannenberg, the British drive in Palestine, Mackensen's in Roumania, the 1918 victory in France—all, all began as defensive battles.

With this material in hand we can look back to our own Civil War and perceive what the men of that age missed —*that one truly modern mind was brought to bear there*, one mind that realized that modern technology had outlawed the system of Napoleon and Jomini and prepared the way for the new age. That mind belonged neither to Grant, Jackson, Lee nor Sherman, but to the least publicized of the great generals of the war—George H. Thomas, the old grey mare of the Union.

It is curious to learn that like Bonaparte, he was an artillerist with a passion for geography; and, again like him, a solitary character at military school, more respected than liked, working through late hours that he might not be found wanting in his studies. "No cadet from our district has ever yet graduated," said Mr. Mason to young Thomas when the boy called to thank him for his appointment to West Point. "If you do not, no more will be appointed and I never want to see your face again." Add that Mr. Mason was a tempestuous social and political lion, whose frown made flies tremble on the wall and that the Thomas family of Virginia valued its local position—and it becomes evident that the cadet felt himself in a position of some responsibility.

Yet there is no need to make a psychological melodrama out of the matter; if Thomas possessed a special incentive for study he also possessed a temperament for it. "Slow-trot," they called him at the Academy. He was deliberate in speech, in movement and reaction—deliberate but thorough. He made his highest grades in mathematics and, on the strength of this, was gazetted to the 3d Artillery upon graduation.

Exactly a year later Thomas had his brevet for gallantry, gained in the Seminole War by the personal capture of 28 braves. He is next heard of in Mexico, where the battle of Monterey has taken place and Lieutenant George H. Thomas is mentioned three times in dispatches, receiving the brevet rank of captain for the handling of his battery on September 23, 1846. At Buena Vista in the following February he won the unprecedented honor of a third brevet —to major. Out of 25 artillery casualties that day his company suffered 18, and "without those guns we were lost," reported the general.

The event brought him some fame in the service and was probably responsible for his post-war detail to West Point as instructor in cavalry and artillery. There he met the Miss Kellogg who became his wife, and there the pair lived for a year before Thomas was ordered to Fort Yuma.

His promotion to major came in 1855, and he was assigned to the newly organized 2d Cavalry stationed in Texas. He was still there when the elections of 1860 turned the world upside down.

II

Thomas was on leave when the voting took place. Coming north through Louisville he got into a railroad accident and lay for six weeks in a hospital, where it was doubted that he would ever walk again. A physical crisis was thus added to that spiritual crisis which confronted every officer from the seceding states. Today, with the knowledge of what was to happen, we accept Thomas' fidelity to the Union as commonplace and remark on how difficult it was for Lee to place himself on the other side. But in the winter of 1860-'61 Thomas really made the more difficult choice of the two.

Secession was an accomplished fact, and a fact in which the Buchanan government seemed to acquiesce to a degree

that would prove binding on the incoming administration. Few believed there would be a war, and nobody believed that if there were, the North would stand any chance—what! with all the northern Democrats on the secession side? But war or no war, by staying with the Union, Thomas was cutting himself off from his family, his friends, his home, every association that makes life comfortable and agreeable. To Virginians, he was a traitor to his state; one little remark to an officer who had said something about the effect that breaking all the old ties must have on his feelings, shows how this must have cut him. "I have had to educate myself not to feel," answered Thomas, and going to his room, closed the door.

In short, he decided on duty, at the cost of feeling, for there was no advantage in taking the national side. Thomas was known only to that limited circle of friends who had been associated with him long enough to realize that behind the glacis of slow movement and difficult speech there lay a spirit bright as a blade. And who were these? Well, his commander in Mexico had been Braxton Bragg. The colonel of the 2d Cavalry was Albert Sidney Johnston, its lieutenant-colonel, Robert E. Lee, the majors were Hardee and Van Dorn. The department commander was D. E. Twiggs. In other words, Thomas could expect advancement only in the Confederate service.

In the North his loyalty would certainly be suspect, both because he was a Virginian and because 20 of the 27 officers in his regiment had "gone with the state." Twelve of these 20 became generals in the Confederate service; yet the South could better have spared the 20 (even including Lee) than the one. For both the spiritual and the physical justification of the Southern system ultimately shattered on the Rock of Chickamauga. To Grant they could always reply—"Pooh! Superior numbers"; to Sherman, "Superior mechanical resources," but Thomas propounded a question they could not answer with gun or pen.

Consider the war as a whole; it was a foregone conclusion that the main forces of both armies must meet and struggle in the narrow ground between the capitals until one was stabbed in the back. That blow must come from the west; and in the west four times—at Munfordville; Stones River, Chickamauga and Peachtree Creek—Thomas and Thomas alone stood between the Stars and Bars and a victory that would have made the Union the desperate cause. He opened the war by destroying a small army on the battlefield and he ended it by destroying a great one. He was the only officer on either side who achieved this ultimate triumph of the military art. He was the one general never beaten—the one indispensable figure the Union had in the field as Lincoln was the one indispensable in the government.

III

The day Virginia seceded he was ill; at the news he staggered from bed, dressed, sought out a magistrate and for the sake of the record repeated his oath of allegiance to the United States. In the South they said later that his wife influenced him to the step; she denied it, with the comment that any effort to apply influence would drive him in the opposite direction.

The remark indicates that she was aware of the volcanic stresses that had accumulated beneath the snows of a prematurely white head and were to burst into some startling eruptions at later moments. Explosions, however, are a privilege of the higher ranks; there was nothing eupeptic about the newly-made Colonel Thomas who, with his sick-leave revoked, was ordered to Carlisle Barracks to reorganize the 2d Cavalry, the loyal members of which had just come north by boat.

General Robert Patterson found him there and appointed him to command a brigade consisting of his own regiment and three of Pennsylvania militia. The new colonel had barely time to set up his brigade organization before Patterson's corps was ordered forward to cover the flank of McDowell's march on Richmond. The Washington strategists directed Patterson into the mouth of the Shenandoah Valley, apparently because there was a Confederate force already there under General Joe Johnston. Thomas protested; crossing the Potomac at Leesburg outside the mountain chain, he said, would protect Washington quite as thoroughly as a direct advance against Johnston, at the same time placing Patterson where he could either strike in on the flank of the main rebel army or cut the feet from under the Valley force by driving through the passes. The plan was rejected; it was both too bold and too intelligent for Secretary Cameron, who seems to have had the final voice.

And so Patterson moved into the Valley, following Johnston's retirement in a languid manner. "The venerable Patterson" was an amiable old banker who had taken militia into the field both in 1812 and the Mexican War. He did not grip Johnston nor even scout his movements; the Confederates slipped away to show up on the plateau of Manassas in time to send McDowell flying from the first Bull Run.

The incident was important to Thomas, for when the demand for official heads followed the loss of the battle, Patterson was obviously nominated for the rôle of sacrificial goat. The Virginian defended his general with vigor (it would be interesting to know on what grounds), which caused the rivulet of suspicion round his own loyalty to widen into a pool, on the theory that no one but a traitor would defend an incompetent. Fifty-four men were promoted past Thomas to brigadier-general. Indeed he might have remained a mere colonel for the rest of the war, but for the intervention of Robert Anderson.

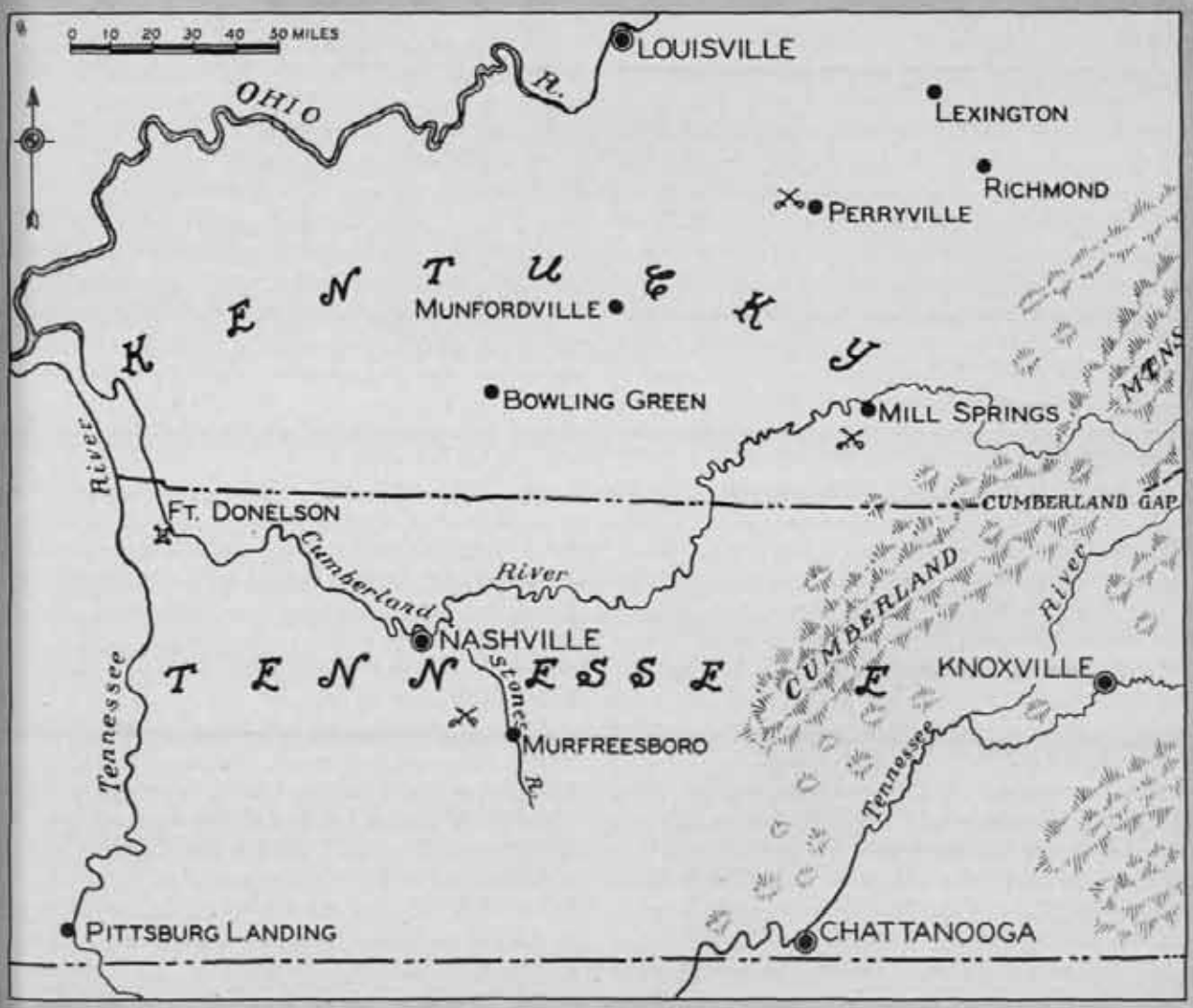
The hero of Sumter had just been appointed to the command in Eastern Kentucky and Lincoln had told him it would be desirable to choose his four brigadiers from slave-state loyalists, because of the delicate political situation in the state. Anderson agreed and placed Thomas first on the list. Faint echoes of the towering row that followed come down to us; even Lincoln was doubtful about the Virginia colonel, but Anderson made his own acceptance conditional on that of Thomas. Since Anderson was too important to be spared, he got his man.

The new general went west in the fall with orders to organize a division and found everything at sixes and sevens in the camp. There was no mustering officer; he had to muster in most of his own privates. There being no quartermaster service, he had to offer his personal credit for necessary groceries. The place was full of politicians who entertained the unruly recruits with speeches every evening after colors, the proceedings always closing with the division shouting for various officers to come out and talk to them. On one occasion they called for Thomas. "Damn this speech-making!" he bellowed, then retired to his quarters for twenty-four hours; for, like that other testy Virginian, George Washington, he thought losing his temper as bad as losing a battle.

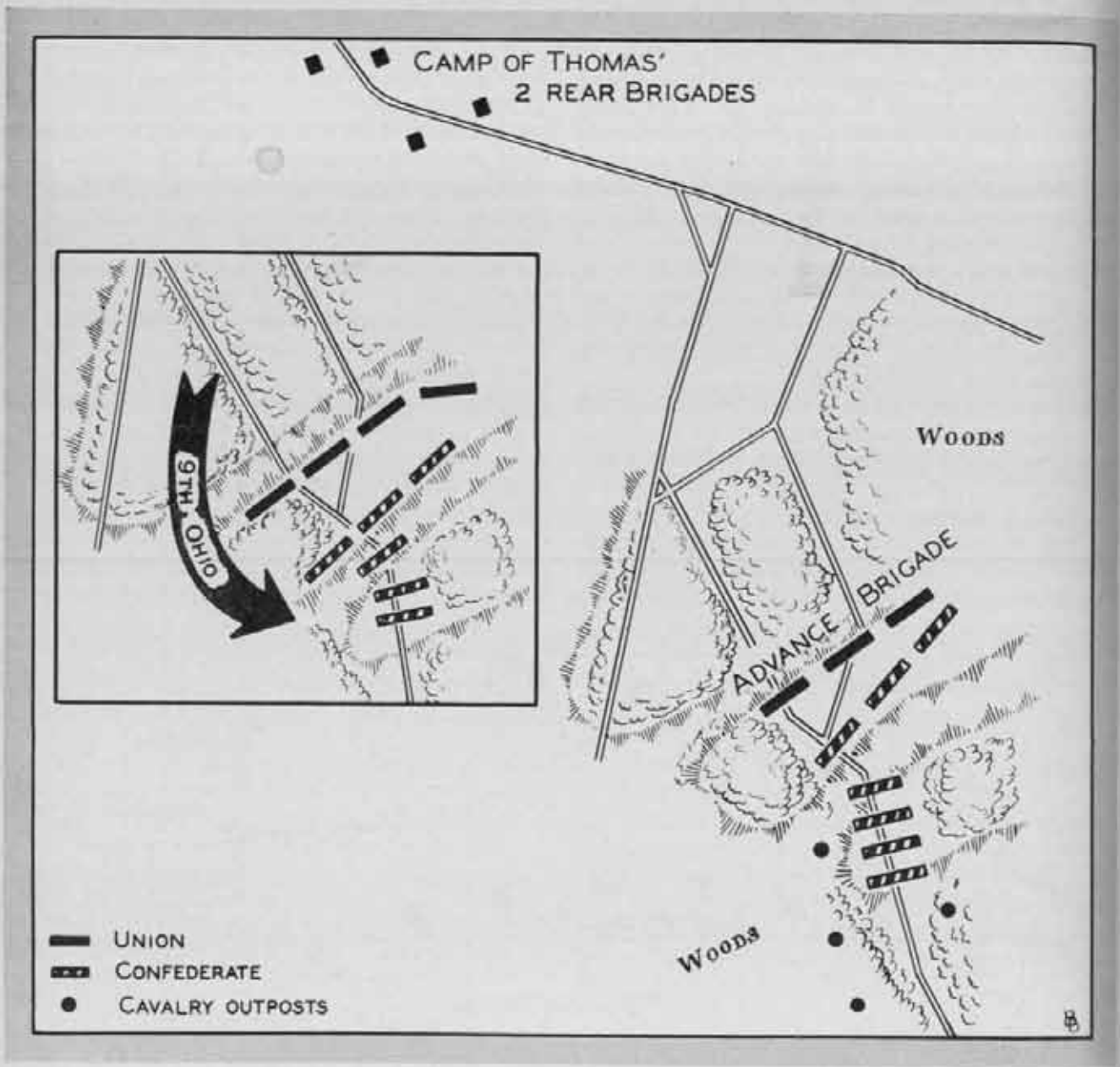
Anderson was replaced by Sherman and Sherman by Buell as the task of organization went forward. The Southern leaders had their plan now, drawn by Albert Sidney Johnston. The part calling for a defense-line across central Kentucky is remarked in every history book, but not so familiar is his intention of staging an invasion of the North around the right of the line, through the territory Thomas was covering. Thomas, however, was not merely thinking of covering this line; he submitted a plan for cutting through Cumberland Gap, marching down the valleys to Knoxville in Unionist East Tennessee, and then taking position facing northwest on the mountain slopes. It would flank the rebel line across the west and place him astride their vital supply railroad from Nashville to Richmond; this would force the Confederates to attack against the natural bastions of the Cumberland Mountains. The Union itself was forced to attack these summits later and found it hard enough work, but—Plan rejected: we cannot spare the men, they told Thomas.

The result was that Johnston got his defenses set up and pushed General Zollicoffer across the Cumberland River into Eastern Kentucky, with orders to strike for Lexington and Louisville. Zollicoffer crossed the river without difficulty (the officer Thomas sent to the spot forgot to put out pickets!), intrenched a strong position on the north bank opposite Mill Springs and began to feel his way forward.

It was the turn of the year, the weather was bad, and the roads in a mire, but Thomas moved out to stop Zollicoffer. Uncertain by which of two roads the Confederates would come, he did what he would not have done later—



The Western Theatre—1862-'63



MILL SPRINGS: *At right—First position. Inset—Thomas' attack*

divided his forces, sending Colonel Schoepf with a strong wing eastward down one road, while he took the other himself. A wide creek lay between him and his subordinate. When it came on to rain the afternoon of January 18, the stream swelled to spate. Zollicoffer, who had perfect information in that land of divided loyalties, came hurrying forward to knock Thomas out while the tumultuous creek kept his detachment from closing.

The Union general was posted near a place called Logan's Cross-Roads, where a string of low hills was crossed by the road down which the Confederates were advancing. Most of the hills were scalped on top for farming, while the slopes and gullies were wooded. Thomas had two infantry regiments with a battery of artillery well forward at the southern edge of a clearing. A regiment of cavalry (Wolford's) was forward in the woods of the slope. The troops were dismounted and spread out in pickets so strong as to constitute patrols—an extremely odd tactical arrangement for 1862. The main-guard, two brigades, was back at the next hill with more artillery. The whole force aggregated perhaps 5,000 men; the rebels, pushing toward them through dark and rain were half again as many.

At six in the morning, still in road column, Zollicoffer struck Wolford's outposts. The cavalry, fighting dismounted, executed "fire and retire," slowing up the rebel advance and forcing it into a deployment much cramped by the trees. Yet half-hearted as this deployment was, it took time; when the rebels mounted to the clearing, the line of Thomas' advance brigade was already drawn across it, the rear regiments were hurrying up and a messenger riding to call Schoepf in.

The Union line received Zollicoffer with a fire more noisy than damaging and got better than it gave. The

Confederates came swinging on into the clearing, extending toward their right, where the ground was clearer, to turn a flank. Both advance and extension however, were held up by hostile fire, mud, the jam on the road, and the constant nagging of Wolford's men around the head of the column. Before the turning move was half complete, Thomas was on the field, riding around as conspicuous as Goliath of Gath. One of his brigades was up; this formed at an angle across the wing of the hopeful Confederate flanking body, flanked it in turn and hurt it badly with a blaze of fire. A regiment of Minnesota lumbermen came up to sustain the center and their fire killed Zollicoffer. Just as the rebel line began to shake under these blows, Thomas brought the 9th Ohio around behind his line of battle and threw it with the bayonet into the Confederate left flank, which had achieved almost no deployment.

The rebels went to pieces. Thomas put his fresh troops (including Schoepf) onto their track with most of his artillery, which had not even unlimbered. Before twilight he was outside their lines at the intrenched camp of Mill Springs. There he directed the placing of his guns and shelled the place all night. In the morning he found it empty except for a few companies which surrendered.

"We were doing pretty well," said one of the captured officers, "till old man Thomas rose up in his stirrups and we heard him holler, 'Attention, Creation, By kingdoms, right wheel!' Then we knew the war was over." It was for Zollicoffer's army; the casualties were only about 800, but the pursuit and night bombardment had been so relentless that the force was broken up, dissolved into stragglers and could not get together again.

Mill Springs was more than the destruction of a minor Confederate force. In the North it was received like a gift of flowers—admirable but not important—but Albert Sidney Johnston, a man who ought to know, took it to heart. "If my right wing is broken as stated," he wrote to his president, "the country must be roused to make the greatest effort they will be called on to make during the contest. Our people do not comprehend the magnitude of the danger that threatens us." The shadow of what would follow the Chattanooga battles already lay across his mind. When Johnston found the reports of Zollicoffer's defeat not exaggerated, he made preparations to abandon the Kentucky line, even before Grant broke it again and for keeps at Donelson.

IV

After Grant's thrust, Thomas and his division were drawn into the general swing forward of Buell's army toward Pittsburg Landing. When Halleck came down to take over after the desperate battle at that point and kicked Grant upstairs into the anomalous post of second-in-command, he gave the latter's wing to Thomas. A coolness sprang up between Grant and Thomas over this, emanating apparently from neither man so much as from the staff officers of both, who felt there should be resentment and without actually carrying tales, pushed advocacy to the irritation point. The two generals got on very well when they could talk to each other; it was only when they had to convey ideas through intermediaries that misunderstanding resulted.

For the time being, Thomas passed into a period of district commands, during which he established himself by imperceptible degrees as the operating brain of Buell's Army of the Cumberland of which he commanded a wing. He was in charge of many operations but these were minor. The next time he emerged on the center of the stage it was August, and he was trying to persuade Buell that the unusual Confederate activity out toward the strategic left portended a drive north by Bragg. Where? Up the central of the three great corridors into which the West is divided by the Tennessee River and the Cumberland range. Buell would not believe; pointed to Forrest's famous raid westward, insisted Bragg was trying a wide flank sweep to the Union on Nashville and drew Thomas in on that base. On the last day of the month Thomas captured a courier and sent the dispatches to Buell without comment. They told how Bragg had watered his horses in the Cumberland a week before and was marching on Louisville and Lexington with all speed and a week's start.

Buell, still not more than half convinced, wired Grant to borrow a division, ordered it in on Nashville, and leaving Thomas there with three more, started north through Bowling Green. Half way to Louisville, his line of communications north suddenly went dead. Bragg had got as far north as he wished, turned west to Munfordville where he captured 5,000 men and a depot, then swung across the only line Buell could take, and took up a strong position on jutting hills.

The Federals, in these last days forced into an eccentric march that meant two miles to the Rebel one, came tramping up on September 19th, footsore, hungry, and short of ammunition. Everything was hearts and flowers at the Confederate headquarters that night; for once they had the Union Army outnumbered, and had secured a position where the damyanks would have to attack uphill against a prepared position. Bragg thrust forward Buckner's division to provoke a battle that could have but one result. Buell refused to attack during the day and toward evening Bragg himself went out to the skirmish line to see what could be done about starting trouble in the morning. Just as he reached it, torches began to be carried through the Union camp and there was faintly borne to his ears the sound of shoutings, cheer on cheer. This seemed such strange behavior for a dispirited army that Bragg held Buckner in check and sent patrols to learn the reason.

To the Confederates' complete dismay the scouts brought in word that Thomas, without orders, had gathered up 20,000 men in Nashville and come marching to Munfordville in one gigantic stride. Bragg's own lieutenant, Kirby Smith, was off on a raid, with a considerable part of his force. Thomas' arrival shifted the preponderance in numbers most prodigiously to the other side; and of all the men in the Confederacy none knew better than Braxton Bragg the power of the stroke the Virginian could deal. He hesitated; liked the prospect less every minute; finally drew away. Buell slipped past to save Louisville,

STONES RIVER: *First position, and the Confederate attack*

and Munfordville became the great unfought battle of the war, a bloodless victory instead of a sanguinary defeat.

Whether Thomas was justified in refusing the appointment to command the army, *vice* Buell, that came within the next few days, is a nice question in military ethics. The Virginian's loyalty to Buell in making the refusal, and his modesty have been much praised. The question is whether modesty in such a case be not a kind of failure to accept responsibility; and loyalty to his friend and commander a kind of sublimal disloyalty (on the largest scale and from the purest motives) to the nation he could serve better than the other. The question is worthy of discussion only in evaluating that Virginia code which Thomas shared with so many officers who fought for the grey. For practical purposes, it was settled by the re-appointment of Buell, who promptly fought the battle of Perryville, gained a half-victory through young Sheridan's brilliant work, and failed a whole one through an incorrect estimate of the situation.

That was enough for Washington. Buell, a sound man, but one who faltered whenever it was necessary to form sweeping conceptions, was removed. Stanton fought hard to have Thomas in his place, but all the rest of the Cabinet was against him, even Lincoln, who said that the Virginian had refused his chance and did not deserve another. "Well, you have made your choice of idiots!" snapped the Secretary as he signed the commission naming Rosecrans to the Army of the Cumberland. "Now you can await the news of a terrible disaster."

VI

They very nearly had it. Perryville left Bragg suspended at the end of a dangerously long line of communication with Union armies clouding all round him; he swayed back to the Nashville area, and there clashed head-on with Rosecrans during Christmas week. For two days the forces, nearly equal, lay with the little stream of Stones River separating them at the town of Murfreesboro. On the final day of the year Bragg and Rosecrans started movement to carry out complementary plans of battle, each arranging to hold with his right on his own side of the stream, take a heavy left wing across and crush the other's right.

Arthur McD. McCook, of the fighting McCooks, had the Union right with three divisions. Crittenden with his own three divisions and one borrowed from Thomas, was given the attack mission. Thomas held the center with four of his original five divisions. The left of this center reached into a loop of Stones River; its front was penetrated by two roads (Wilkinson and Nashville Pikes) through rolling country starred by brush and groves. McCook's right, the tip of the Union line, was held well back from the stream.

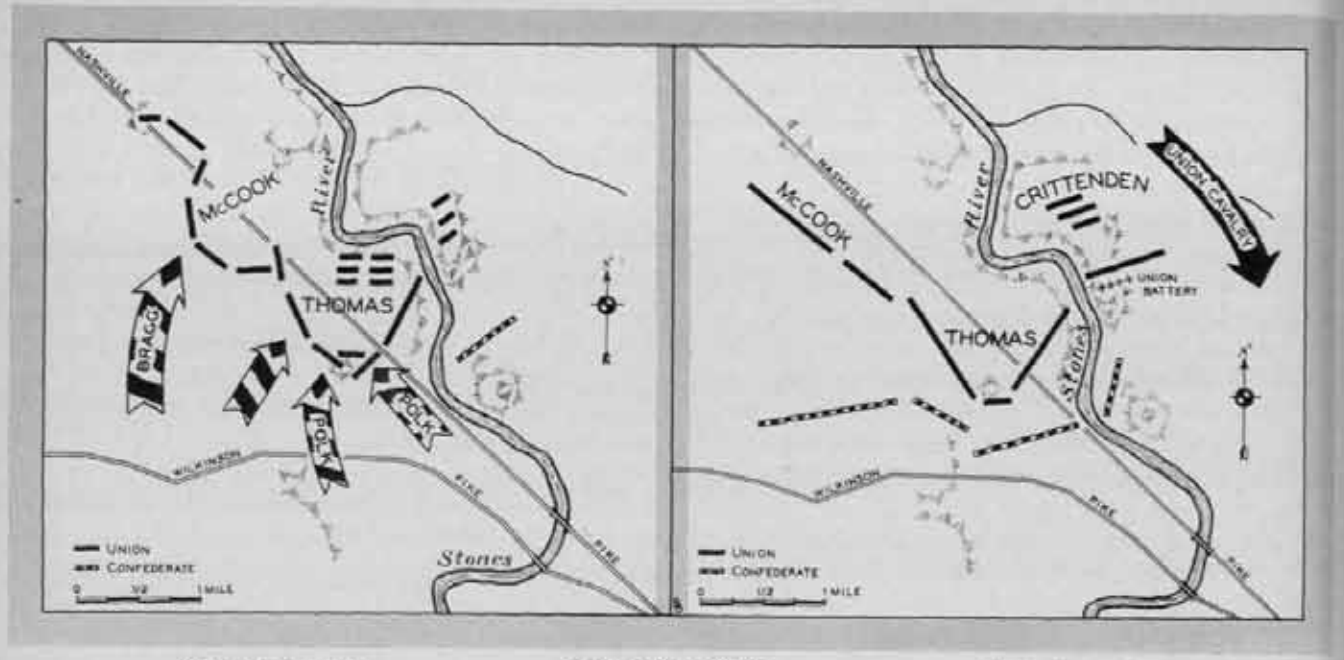
At the conference of corps commanders on the night before the battle, Rosecrans pointed out that the success of the whole combination depended upon McCook holding against anything that came toward him for three hours. He calculated this to be the time it would take Crittenden to gain a line of heights on the other side and there deploy his own and Thomas' artillery to blast the stuffing out of the Confederate army with an enfilade.

McCook said he could hold but he does not appear to have inspected his lines to make certain; and Rosecrans, being busy with the details of his attack did not bother either. Neither general was aware that Johnson, the commander of the extreme flanking division, had prolonged beyond his own wing a line of campfires to give a spurious impression of strength in that quarter. The result of the trick suggests the thought that although camouflage is useful in concealing the strength and dispositions of an attacker, it may be a positive detriment when used to hide the weakness of a defense. In this case it deceived the Confederates; but it deceived them into prolonging and greatly strengthening their attacking left wing.

Bragg had set his movement an hour ahead of the time Rosecrans had named for the Union attack; when it came on, led by Hardee, it was already beyond Johnson's most extreme position. There was no one to direct when the attack fell for the Union division commander had placed his headquarters two miles behind the line, because there was a comfortable house there. The Union regiments were mopped up in detail under a frontal and flank attack of overwhelming numbers. The big Confederate left hook turned in on the next Union division, Davis', took it front, flank and rear all at once, and demolished it in turn, though Davis had been granted time to reach the line of the Wilkinson Pike. Sheridan, next in line, beat off two assaults and only stopped a third by a last-gasp countercharge that wrecked his division.

When news of the attack on Johnson came to Rosecrans, it was with no tale of rout, only that the flank had been attacked. The Union commander treated it as interesting but unimportant. (Had not McCook been positive?) It was two or three hours later, Johnson and Davis had been broken, Sheridan's division pounded to shreds, and the Wilkinson Pike lost, before he realized what had happened. When he did realize it, he ordered a couple of divisions back across the river from Crittenden, but things were then so bad that the men jammed in the loop of the river, would have been cut to pieces like the Romans at Cannæ if the line, now back to the Nashville Pike and cramped at a frightening angle, gave way.

It did not give way; Thomas held it. Before anyone else he had realized what was happening; perceived that the rebel attack could sweep McCook's wing back for a long distance without serious damage, but that if the point where the Nashville Pike approached the river were lost, everything was lost and Crittenden cut off. He rushed nearly all the artillery of the center to this point—a cedar clump on a hill, the Round Forest. Sheridan, falling back from the rebel masses, was ordered to direct his own guns thither; the cannon of Negley's and Van Cleve's fresh divisions were hurried out to the new right wing, where another bit of high ground gave them an enfilade into the flank of any force crossing the Nashville Pike. The infantry were arranged under the general's own eye just as the Confederates came across the low crests in six-deep waves, yelling with the consciousness of certain vic-



(Thomas' stand) STONES RIVER *(The victory)*

tory, three to one at the point of contact.

There is a legend of Thomas quiet and dignified in the hour of emergency; on the testimony of at least one soldier who saw him during the crisis at Stones River it was certainly not true there. He always had an eye to the value of formal effects, and as usual when a battle was toward, that morning had climbed into the nearest thing to a full-dress uniform that the camp afforded. Now, all togged out like a Christmas tree, he rode along the line, bellowing in a voice audible to every man within a hundred yards that help was coming, all they had to do was keep down and shoot low. "Fighting under Thomas," said one of his soldiers, "was like having a stone wall in front of you or a battery to cover you." He was the most conspicuous object on the field; and hardly any man, perceiving how he rode untouched through the storm, but lost some of that sense of personal danger which makes troops break. Nor was personal courage all Thomas offered by his presence; if a spot were really weak, the appearance of the general was infallibly followed by reinforcements.

Bragg's attack was driven back along the line of the Nashville Pike and a second, third and fourth likewise, all of them delivered with furious enthusiasm. At the Round Forest eight of Sheridan's guns had been lost, but not until they had taken such toll that one Confederate regiment lost 207 men in 402, another 306 in 425. Polk commanded there for the rebels; he recognized the spot as the key of the battle and asked another division to win it. Bragg, satisfied that there was nothing to be done against the new Union right, where Negley's artillery had stalled him and cavalry menaced his floating wing, sent the men to Polk. At 2:00 P.M. Polk pumped in the first two brigades, concentrically against the angle held by Thomas; they lost. At 4:00 Polk tried again with two fresh brigades leading the swing, the original pair in support. Again Thomas beat them off, and as the tide began to ebb, flung out his weary troops in a counterstroke that shattered the attacking formations.

That ended the day's fighting. Rosecrans, a man whose brain was better than his nerves, called a council of war for the night, at which officer after officer spoke of losses, disorganization, shortage of bullets. There seemed only one thing to do; Rosecrans turned to Stanley of the cavalry to ask him about covering a retreat.

Thomas, whose physical mechanism, like that of a clock, required periodic re-windings, had come out of the battle so wearied that he dozed off, but that final word penetrated his half-consciousness. "Retreat?" he said suddenly, drawing every eye in the room as he slowly pulled himself to his feet. "This army doesn't retreat."

"By God, no!" cried Sheridan, and they all began to talk at once. The Union army did not retreat, but spent New Year's Day waiting for ammunition from Nashville; and the Confederates, who had had so heavy a dose of Thomas on the first day, spent the second reorganizing.

On the morning of January 2d Bragg discovered that Rosecrans had sneaked a division across Stones River during the night and established a big battery on some hills to enfilade his right. He ordered an attack that was temporarily successful, but got caught in one flank by a terrific counter from one of Thomas' brigades and in the other by the fire of the battery. The attacking division went to pieces, the Union cavalry began to reach for Bragg's line of communications, and he pulled out quickly. The battle had cost each side over 10,000 men, and it ended Bragg's opportunity to invade the north—the Gettysburg of the Cumberland, as Perryville had been its Antietam. And narrow as the margin was to be between victory and defeat on Cemetery Ridge, Stones River saw a dividing line still finer—namely, that Thomas stood in the Round Forest during the afternoon and sat at the council table in the night. *(To be concluded)*

AA Machine-Gun Telephone Coaching Set

By Major E. T. Conway, C. A. C.

The antiaircraft machine-gun coaching set was designed and built by the Coast Artillery Board as an aid in the test of various articles of machine-gun equipment. It was hoped that, in addition to aiding in these tests, the use of the set would prove of benefit in training individual gunners and would increase the effectiveness of flank spotting.

The principal characteristic desired in the coaching set was a combination of power and sound fidelity that would insure clear transmission and reception during firing. After trying various combinations of equipment, the "sound-power" receiver combined with the standard battery-powered field telephone was found to meet these requirements.

Sound-power receivers are normally used with sound-power transmitters, without any source of power other than the energy resulting from the vibration of the transmitter diaphragm by the voice. In this case, the use of the battery-powered field telephone transmitter resulted in such amplification and clearness that reception was excellent even by a gunner at a firing gun.

The complete installation, as illustrated, consisted of four sets of sound-power receivers tied into leather helmets for the gunners (two receivers per helmet), two sets of sound-power receivers in helmets for the central control adjusters, a roving telephone with a generous length of field wire for the platoon commander, two telephones for flank observers, one for a rear observer, one for a recorder and a switch box to permit the flank spots to be switched to either the gunners or the central control adjusters.

In previous tests, it had been impossible to collect data for a comparison of the appearance of the same tracer, viewed from several different points, due to the inability of the average man to retain an impression of the appearance of the tracers during an entire course. The average gunner or spotter was able to remember the appearance of the last few tracers, but was usually very hazy as to

Gunner wearing sound-power receivers in helmet

Spotter using coaching set and one meter stereoscope on home-made mount

what had happened at the beginning or middle of a course. The recorder's telephone was added to the set for the purpose of securing an immediate record of what the flank spotter was seeing. The running record of the flank spots, thus secured, was filed with similar records made by observers at the battery for later analysis.

Previously, because of the noise of the gun, any coaching of gunners, during individual tracer firings, could be accomplished only by jabs or shouts.

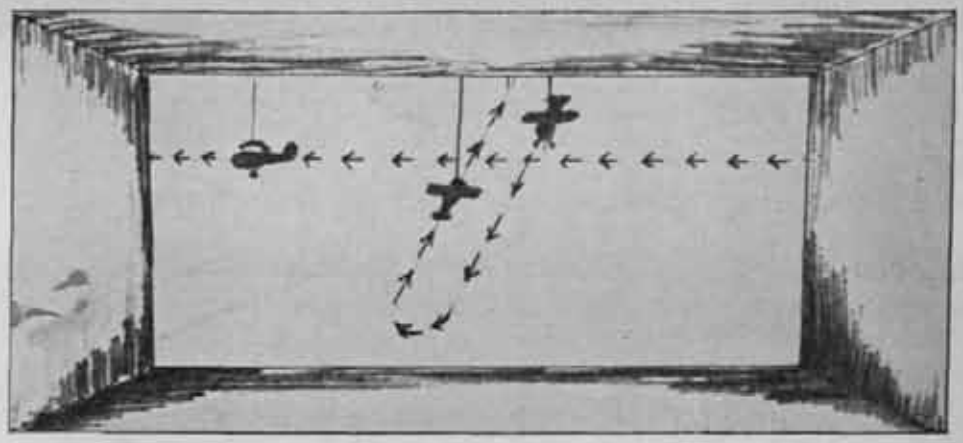
With the coaching set, however, the gunner was advised during the entire firing. He was corrected as to his position at the gun, his manner of sighting, his leads, or any other deficiency noted by the coach. When the gunner had progressed to an advanced stage of training, his receiver was switched to the flank spotter and he was trained in correcting his leads by the information coming from the flank.

The set was also used to control the fire of the platoon. "Commence firing," "cease firing" (very effective when given by the blast of a whistle in the platoon commander's transmitter), the type of fire, color of ammunition, which guns were to fire, "stand by," special instructions for any particular gunner, and other firing line details were all telephoned. The smoothness and lack of confusion resulting from this use of the set, invariably drew favorable comments from visitors at the tests.

Items of equipment used in Coast Artillery Board Antiaircraft Machine-Gun Telephone Coaching Set.

Whether the set has tactical value, and whether its value as an aid to training is sufficient to warrant its issue to organizations, must be determined by extensive service tests. Experimental sets are now being built by the Signal Corps and should be ready for test during 1938.

View of target from firing point



Planes Up! By Captain W. H. Boughton, 105th Infantry

Airplane Target for Indoor Training

THE 105TH INFANTRY, New York National Guard, has designed and installed on the target range in the regimental armory at Troy, an airplane target which will make possible the participation of troops in actual training in this form of marksmanship when outdoor ranges are not available.

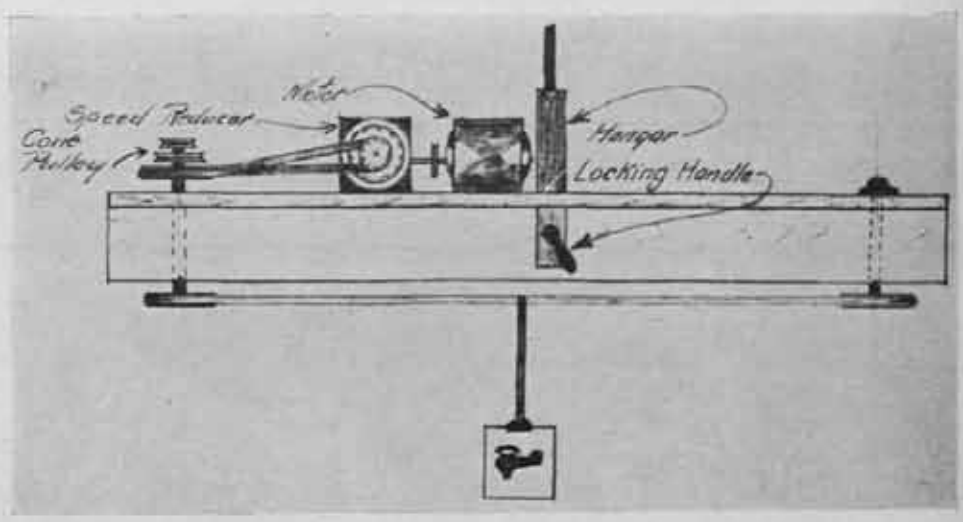
The apparatus is so designed that the airplane target may be made to dive at troops on the firing point, and, upon reaching the bottom of its dive, turn and climb in the opposite direction. By a simple adjustment, the airplane target may be made to travel parallel to the firing point.

There is a speed control, so that the effect may be had of an airplane traveling at 100 to 300 miles per hour at a distance of 800 yards.

There are three types of targets, one showing the side view of the plane, another representing a diving plane and the third, the plane going away. The targets are fastened to the activator in such a manner that any of the changes may be made in a fraction of a minute.

The activator itself, is so constructed that it may be hung in any indoor range at very small expense. It is simple in construction and, with ordinary care, should operate for years at practically no expense.

This target was designed by Captain William H. Boughton, assistant plans and training officer of the 105th Infantry and is manufactured by the Rolfe Pump and Machine Corporation of Troy. The information concerning it is published through the courtesy of the Editor, The New York *National Guardsman*.



Detail of activator

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• *Above: James River, Virginia, during the Civil War.*

(Signal Corps, USA)

• *Above: Upatoi Creek, 1926.*

(Signal Corps, USA)

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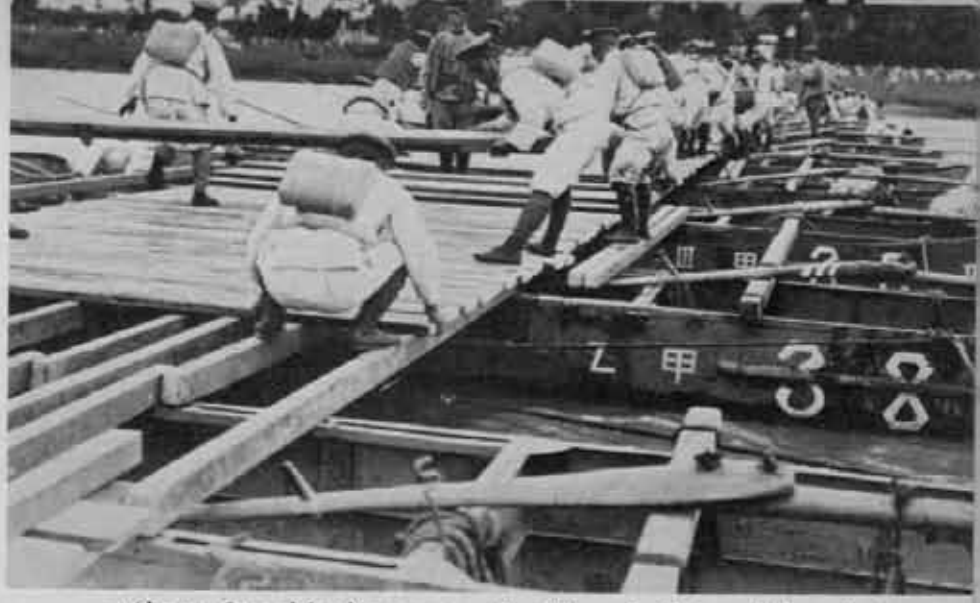

• *Above: Speed is the essence of military bridging. These Japanese engineers demonstrate careful haste at the Ara River during maneuvers.*

(Pictures, Inc.)

• *Above: This amphibious machine-gun squad of the 3d Austrian Infantry makes its way across the Danube without benefit of bridge.*

(Pictures, Inc.)

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(Wide World)

RED ARMY

This one-man Soviet patrol has an alert assistant to handle the get-away job.

This magnificent animal carried off top honors in the Twelfth All-Union Service Dog Show.

DOGS

These Red border guards blend into the snow, while their patrol dog stares suspiciously ahead.

A war dog never barks—he growls. Here a growl (or a photographer) has brought a Red border patrol to the alert.

Appropriately enough, this dog wears the insignia of the Red Cross. He is being taught to range the field of battle in search of wounded.

THE CAPTURE OF BELGRADE

By Captain Gordon Gordon-Smith, Attache, Royal Yugoslav Legation

ONE OF THE most important episodes of the World War was the breakthrough of the Germans on the Danube front in September, 1915. It caused a complete reversal of the military position of the belligerent Powers.

The situation at that time was one which, if maintained, assured the victory of the Entente Powers. A line of trenches, such as the world had never seen, ran in France from the North Sea to the Swiss frontier. The Swiss, to maintain the integrity of their territory, had mobilized their small but extremely efficient army and had constructed along their frontiers a series of field works which could have held back any attack.

On the other side of Switzerland the line of trenches was taken up by the Italian army and ran down to the Adriatic. On the other side of the Adriatic the Serbian line of trenches ran along the Danube to the frontier of Roumania. Roumania, though neutral, was like Switzerland, ready to prevent any violation of her territory.

On the other side of Roumania the Russian trenches began and ran right up to the Baltic. The British and French navies assured the blockade of the German coast while the Italian fleet performed a similar mission in the Adriatic.

The Central Powers were thus a besieged fortress, surrounded on every side by a ring of steel on which bristled ten million bayonets. Cut off from every source of supply, their position, if the investment continued, was a hopeless one. The combat swung back and forth, with varying fortunes, within this grim circle but the defeat of Germany and Austria, if the Entente Power maintained their strangle-hold, was only a matter of time.

Germany accepted, perforce, the rôle of a besieged fortress but took measures to place Russia, in her turn, in a similar position. By means of her alliance with Turkey she closed the Dardanelles, while in northern Europe the German fleet occupied the Skagerack and the Kattegat, thus closing the Baltic. Russia was thus completely cut off from her Allies and the only means they had of communicating with her, on any serious scale, was through Archangel, in the Arctic Circle, and Vladivostok, in the South Pacific.

With a view to breaking this strangle-hold of the Central Powers on Russia, the French and British sent an expedition to the Gallipoli Peninsula, with the mission of advancing on and capturing Constantinople and reopening the Dardanelles, thus giving the French and British fleets access to the Black Sea.

This enterprise, though strategically perfectly sound, was characterized by a series of tactical errors in carrying it out. The resistance of the Turks proved so strong that the Allies' only hope of ultimate success lay in the fact that the enemy had no means of manufacturing munitions. These were obtained from Germany via Roumania.

When, therefore, in the spring of 1915, the Entente Powers brought such pressure to bear in Bucharest that the Roumanian Government closed the frontiers to further supplies for Turkey, the position of the Central powers became desperate. It became a question of life and death for them to break through the circle that was slowly but surely throttling them, and prevent the defeat of their Turkish ally.

The vital point for such a breakthrough was the Danube front, and a German army of 300,000 men, under the command of Field Marshal von Mackensen, with another brilliant German soldier, General von Gallwitz, as his second-in-command, was assembled in the plains of Hungary. The defense of Belgrade and the Danube front thus became, for the moment, the crucial front in the whole War.

Unfortunately for the Serbian Army, the Entente Power committed the colossal blunder of placing their confidence in the loyalty of Bulgaria, with which they negotiated to come in on their side and march on Constantinople to administer the *coup de grace* to the resistance of the Turks. The diplomacy of the Entente Powers allowed itself to be hoodwinked by the astute Bulgarian Premier Radislovov and his German-born sovereign, the

A typical Serbian infantryman.

The breakthrough on the Danube freed Germany from the iron grip of the Entente.

Czar Ferdinand, formerly Prince of Saxe-Coburg-Gotha. Long after the Bulgarians had signed their treaty of alliance with Germany and had accepted a loan of 200,000,000 gold marks as a "war chest," they continued to "string along" the diplomats of the Entente.

This put the Prince Regent Alexander, Commander-in-Chief, and Field Marshal Putnik, Chief of Staff of the Serbian Army, face to face with a desperate situation. They knew that it was a life-and-death matter for the Central Powers to break through the circle of steel which threatened them and drive down to Constantinople to save their Turkish Ally from imminent defeat. They knew that the Central Powers would spare no effort to achieve their purpose. Not only was the Danube front threatened by the German-Austrian army under Field Marshal von Mackensen but Austrian troops threatened the Western front on the Drina, while the armies of the Bulgarian Czar Ferdinand were ready to storm the eastern frontier as soon as the Austro-German armies moved.

The Central Powers had further encouraged the wild Albanian tribes simultaneously to raid Serbian territory. Though militarily of little importance, these forces had a "nuisance value" and means had to be taken to hold them in check.

Strange to say, though the breakthrough on the Danube front was one of the most important episodes in the whole World War, no detailed account of it has ever been given in the history of the War on the side of the Entente Powers. The accounts published in the military journals in Berlin and Vienna give a one-sided version of the operations, in which the forces and material at the disposal of the Serbian Commander-in-Chief are greatly exaggerated, probably to enhance the importance of the German-Austrian victory.

The following account of the operations and dispositions of the troops on both sides is compiled from the official records of the Serbian Great General Staff in the Belgrade Ministry of War. It constitutes the first authentic account in English of the fateful events of the early days of September, 1915. On the 1st of September the position was as follows:

On the north, on the left bank of the Danube, in the district known as the Banat of Temesvar, was the XI German Army, under the command of General von Gallwitz. This Army was made up of the 3d and 4th German Army Corps and the 10th German Reserve Corps. This Army, with its seven infantry divisions, had as its objective the crossing of the Danube near Smederevo and the invasion of the valley of the Morava.

On the left bank of the Save, in Syrmia, was the III German-Austrian Army, under the command of the Hungarian General Kevesh. This Army was made up of the 8th and 19th Austrian Army Corps and the 22d German Reserve Corps.

The objective of this Army was to push forward with its main body, four infantry divisions strong, with 500 guns of all calibers, capture Belgrade, and then push forward to the south, in the direction of Kraguevac, where the headquarters of the Serbian army was established. Another section of this Army, two infantry divisions, was ordered to cross the Danube at Obrenovac and advance along the valley of the Kolubara. The total enemy forces facing the Serbs on the north were 190 battalions with 350 heavy machine guns. The whole force was under the supreme command of Field Marshal von Mackensen.

On the western front, along the Drina, the Serbs were faced by 20 Austrian battalions.

In addition to these enemy forces on the north and west the Serbs had to face on the eastern front the Bulgarian Army of six infantry divisions. The latter's mission was to facilitate the task of the Austro-German Armies by attacking the Serbs on the flank and rear and cutting their communications by rail with Salonica, the port through which the Serbian army received its munitions and war material. They further had the mission of opposing the advance of the Franco-British force, under the command of General Sarrail, which had been hastily landed at Salonica with the view of coming to the assistance of King Peter's Army.

The total strength of the Bulgarian Army, concentrated on the eastern frontier, amounted to 152 battalions of infantry and 20 squadrons of cavalry. The Serbian Army was thus face to face with Austro-German-Bulgarian troops totalling 342 battalions of infantry, with 500 heavy machine guns, 60 squadrons of cavalry, and 1,700 guns of every caliber.

The disposition of the Serbian forces was as follows:

a. Against the Austro-German Armies.

The III Army, made up of the Danube and Drina Divisions, 1st Ban,* and the Branicevski Detachment, held the Danube line from Djerdap, near Golubac, to Grocka. The line Grocka—Belgrade—Ostruznica was held by a force known as the Defense of Belgrade, made up of various units.

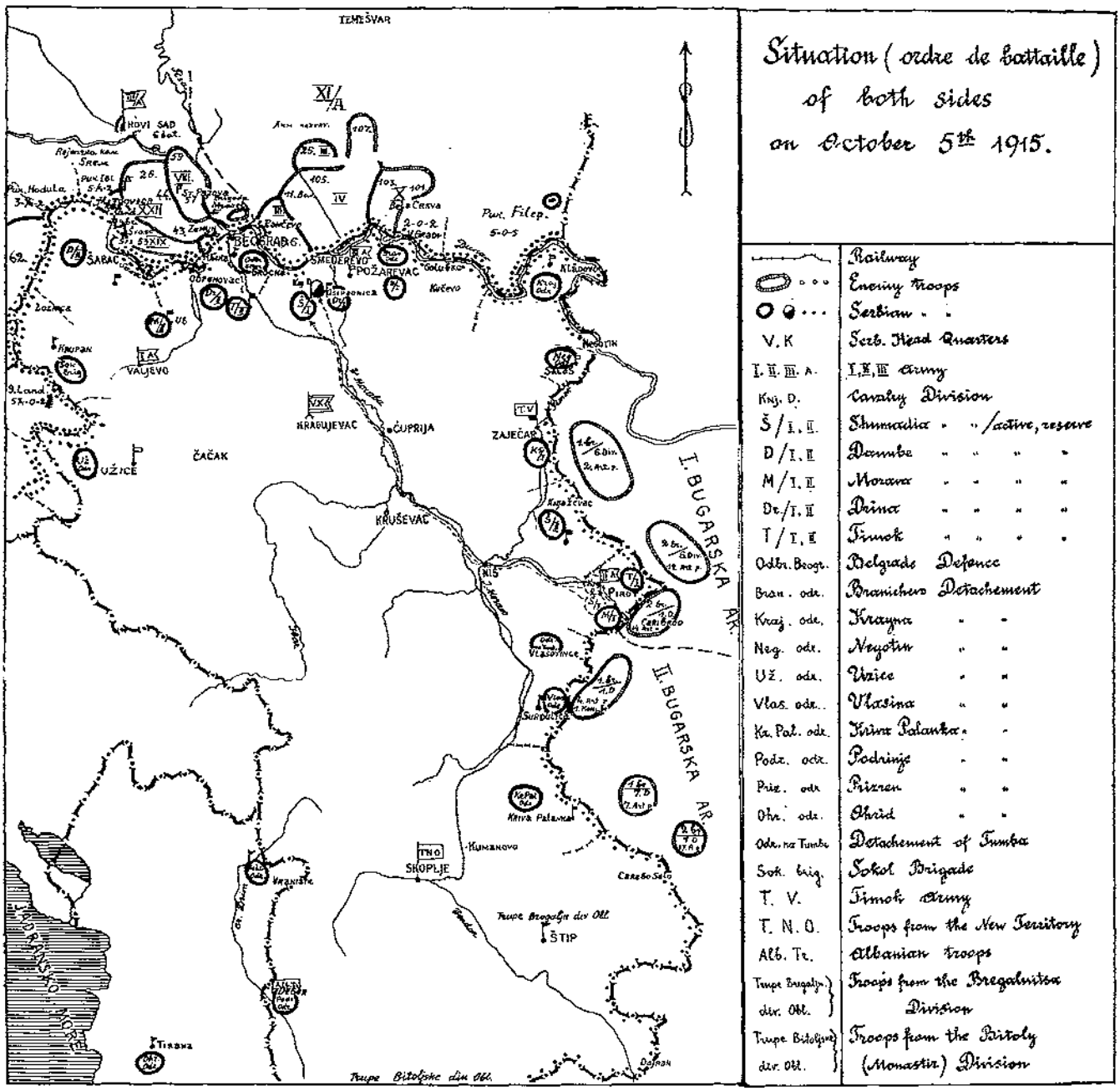
From Ostruznica to the Montenegrin frontier the line was held by the I Army, composed of the Drina, Timok, Danube and Morava Divisions, 2d Ban; and the Sokolska and Uzhice Brigades.

The total Serbian strength on the northern and western fronts was 143 battalions of infantry, 112 heavy machine guns, 15 squadrons of cavalry, and 362 guns.

b. Against the Bulgarians.

The Timok Army, made up of the Kladovski and Negotinski units; the Combined Division, 1st Ban; and

*The Serbian Army, on a war footing was composed of three "Bans" or classes. The 1st Ban consisted of men from 21 to 30 years of age; that is to say, the men serving in the active army at the moment of the declaration of war, plus the men in the first class Reserve. The 2d Ban consisted of men of 30 to 38 years of age. The 3d Ban consisted of men from 38 to 45 years of age. This was much on the lines of the French Army on mobilization, the 1st Ban corresponding to the French active Army plus the first class Reserves; the 2d Ban corresponding to the French Territorial Army, and the 3d Ban to the Reserve of the Territorial Army. In addition the Serbian Government had the right, if necessary, to mobilize the young men of 18 to 20 and the men of 45 to 50 years of age. This would correspond to the French *levée en masse*.



The general situation.

the Shumadia Division, 2d Ban; held the line from Djerdap to Midzor on the Old Mountain.

The II Army, made up of the Morava and Timok Divisions, 1st Ban, the Independent Cavalry Division and weak defensive units from the Tumba and Vlasinska Detachments, held the line from Midzor, on the Stara Mountain up to the old Serbo-Turkish frontier.

The troops raised in the new territories, which had been captured from Turkey in 1912, were provisionally formed into two divisions, known as the Vardar and Bregnalica Divisions. With other units they made a total force of 31 battalions of infantry with 54 guns and held the line running from the old Serbo-Turkish frontier to the Greek frontier.

The total Serbian strength on the eastern front, facing the Bulgarians, amounted to 132 battalions of infantry, 96 heavy machine guns, 25 squadrons of cavalry, and 292 guns.

c. At the disposition of General Headquarters was:

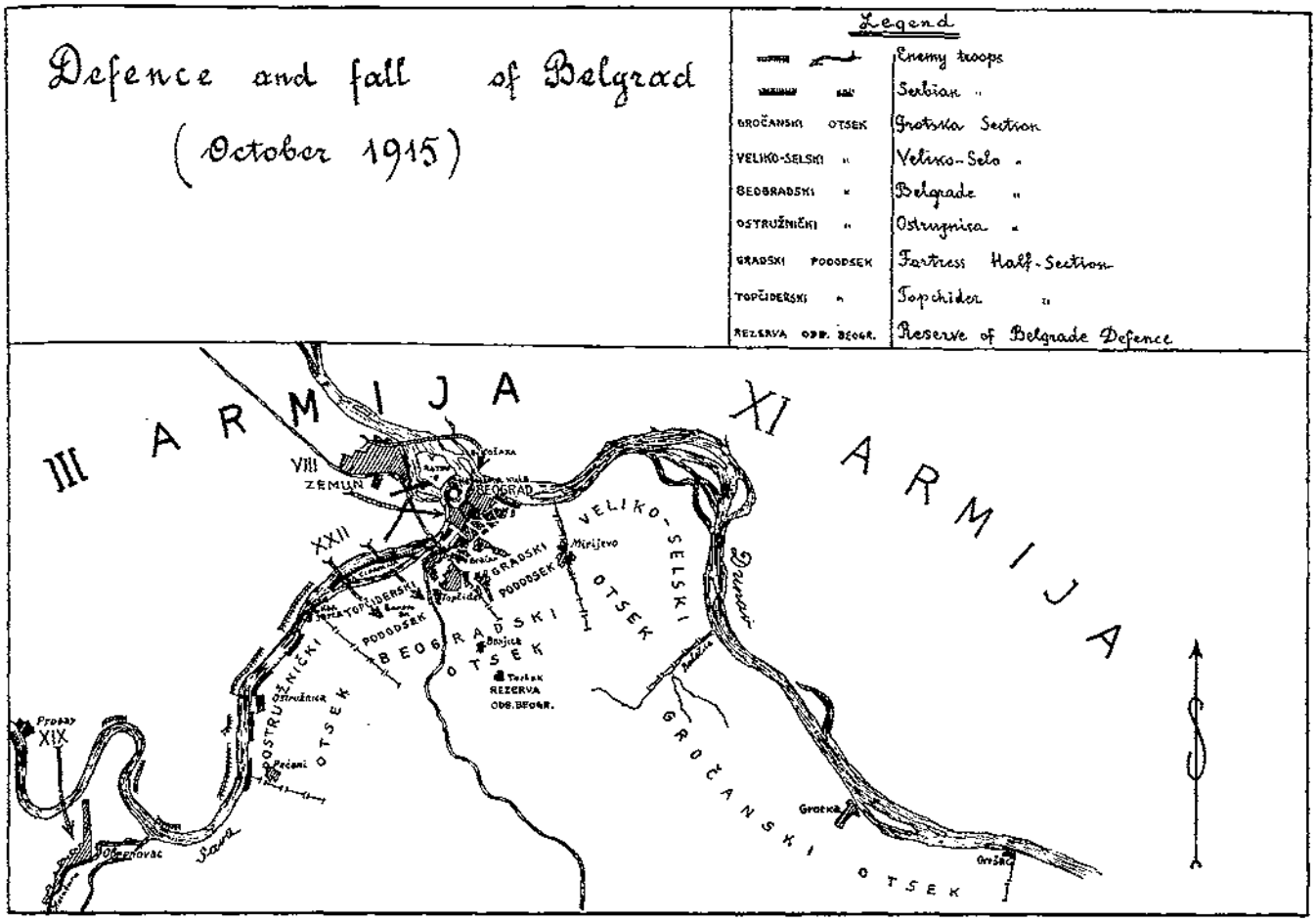
The Shumadia Division, 1st Ban. At first this was concentrated near Pirot, on the eastern frontier, but was afterwards transferred to Smederevo, on the northern front.

d. On the Albanian frontier there was:

One unit of 13 battalions, with 8 heavy machine guns, and 24 guns.

The total strength of the Serbian Armies amounted to 288 battalions of infantry of the 1st, 2d, and 3d Bans, 216 machine guns, 40 squadrons of cavalry, and 678 guns, of which only 498 were quick-firers.

According to the foregoing data the united strength of



The situation at Belgrade.

the Austrian, German, and Bulgarian forces attacking Serbia was superior in numbers to the extent of 55 battalions of infantry, about 300 heavy machine guns, 20 squadrons of cavalry, and 1,020 guns of all calibers.

To this it must be added that the enemy units were at war strength. This was not the case with the Serbian units, which had lost thousands of men as the result of the epidemic of typhus, which had swept the country in November, 1914 and the following months. This disease had been brought into the country by the Austrian troops in 1914 and raged in the camps containing the thousands of prisoners captured during the rout of Field Marshal von Potierek's army.

According to the data in the archives of the Serbian Ministry of War the direct attack on Belgrade was executed by the 8th Austrian Army Corps, with its two divisions and part of the 22d German Reserve Corps. This attack was preceded by an artillery preparation carried out by 500 guns of every caliber, which later supported the infantry attack. Among the artillery there were many guns of 300-mm. and one gun of 420-mm.

The troops actually defending the city, as has been said above, were known as the Defense of Belgrade. They held the line from Grocka, to the east of Belgrade, to the village of Ostruznica, on the right bank of the Save. The total length of the line was about 55 kilometers.

The Defence of Belgrade was made up of 20 battalions of infantry (of which 12 were 3d Ban) and 77 guns, of which only 49 were quick-firers. The heavy artillery consisted of four guns of 120-mm., two of 150-mm., two Russian coast-defense guns of 150-mm., a French coast-defense gun battery (3 guns) of 140-mm. and 8 British long guns of 120-mm.

The distribution of the troops of the Defense of Belgrade when the attack began on October 6th, 1915 was as follows:

(1) *Grocka Sector.* From the Oreshacke Inn (to the east of Grocka) to the river Bolecice (to the west of Grocka). Troops: Four battalions of infantry, 3d Ban, and 16 guns (two field pieces of 75-mm., two British long guns of 120-mm., and twelve slow-firing De Bange guns).

(2) *Great Selski Sector.* From the Bolecice river to the Mirijavskog rivulet. Troops: Four battalions of infantry, 3d Ban, eighteen guns (4 field pieces of 75-mm., 2 guns of 57-mm., 2 British long guns of 120-mm., 1 French coast-defense gun of 140-mm., and 9 slow-firing De Bange guns) and two heavy machine guns.

(3) *Belgrade Sector.* From Mirijavski river to the Jarac tower, on the eastern bank of the Save (Southwest of Belgrade). This sector was defended by a special body of troops with the following formations:

(a) City Subsector: From the Mirijavski river to the railway bridge over the Save. Troops: Two battalions of

infantry, of 600 men each, 1st Ban; a detachment of Belgrade police, 370 strong; a detachment of volunteers from Syrmia, 250 strong; 2 British long guns of 120-mm., two field pieces of 75-mm., three slow-firing De Bange guns and 2 antiaircraft guns, placed at Vracar (in the southern section of Belgrade). In the upper and lower sections of the city there were six field pieces of 75-mm., two Russian coast-defense guns of 150-mm. and two heavy machine guns. The total number of guns of all calibers defending the city proper was thus 17 pieces of artillery and 2 heavy machine guns.

(b) Topchider Subsector. From the railway bridge over the Save to the Jarac tower. Troops: Two and a half battalions of infantry, 2d Ban, with 12 guns and 4 heavy machine guns. On Topchider Hill: Two French coast-defense guns of 140-mm., two guns of 150-mm. and four slow-firing De Bange guns; on the New Hill, four field pieces of 75-mm.

(c) Reserves of the Sector. One and a half battalions of infantry, 2d Ban, and one machine-gun unit (5 heavy machine guns) at Banjica.

(4) *Ostruzhnica Sector.* From the Jarac tower to the Peline marshes. Troops: Two battalions of infantry, 2d Ban, two heavy machine guns and fourteen guns (2 British long guns of 120-mm., 2 guns of 120-mm., 2 field guns of 75-mm. and 8 slow-firing De Bange guns).

(5) *Reserves of the Defense of Belgrade.* Troops: Two battalions of infantry, 1st Ban, two squadrons of cavalry, and four guns. This force was posted at Torlac.

From the data regarding the strength and distribution of the troops of the Defense of Belgrade, at the beginning of the Austro-German offensive in October, 1915 (which are taken from the archives of the Serbian Ministry of War), it is clearly evident that the superiority, both in numbers and material, lay with the attacking force. On the Belgrade Sector alone the enemy had 66 battalions of infantry, 120 machine guns, and 500 pieces of artillery of all calibers. To this the defending force could only oppose 20 weak battalions of infantry, 15 heavy machine guns and 77 pieces of artillery. This superiority was most evident at the point where the enemy forced the crossing of the Danube.

This crossing was executed by the entire 8th Austrian Army Corps (31 battalions of infantry and 48 heavy machine guns, supported by 500 pieces of artillery of various calibers).

On October 3d the German-Austrian forces began a fairly heavy but desultory bombardment of Belgrade. This lasted three days but it was only on October 6 that the direct attack was opened with extreme violence. Five hundred guns of every caliber began a tremendous fire on the city. It was estimated that in the course of 24 hours nearly fifty thousand shells of every kind were thrown into the area of the city's defenses.

In addition, enemy airplanes, flying low over the city, dropped bombs wherever they pleased. To this terrific artillery assault the city was practically unable to reply. The Allied heavy guns had been emplaced, not to repel an attack on Belgrade itself, but to prevent the free movement on the Danube and the Save of any boats transporting enemy troops. The only Allied guns which were in a position to offer active resistance were the Russian guns on the old Turkish fortress. Both the heavy guns were put out of action the first day by direct hits and had to be stripped and abandoned, while the quick-firer ran out of ammunition and was destroyed by the Russians themselves.

The British guns in the Grocka Sector did not come into action on the first day as they could do nothing to aid in repelling the enemy landing and it was better to keep their position concealed until they could be used effectively.

The destruction wrought by the tremendous enemy bombardment was almost complete. Such antiaircraft guns as the Serbs possessed were immediately located and put out of action. The electric lights, the telephone and telegraph communications, were all cut. The city was on fire at many points and the whole river front was pulverized and torn to bits.

During the night of the 6th of September the enemy commenced their landing operations, making use of flotillas of flat-bottomed boats which had been prepared at Jakovo, on the Save and behind Zemun (Samlin).

The landing was made at two places: on the west end of the Tzigantia Island, which was connected with the Serbian bank by a bridge, and on the quays of the Danube in front of the city itself.

The crossing at the latter sector was executed by the entire Austrian 8th corps (31 battalions, and 40 heavy machine guns) supported by the whole of the enemy bombardment artillery. The defense of the city subsector was composed of one weak battalion (600 men), one police unit of 370 men, one unit of volunteers from Srem (about 250 men), 2 heavy machine guns, and 17 guns of various calibers.

(The official German report speaks of the whole Serbian bank being covered with machine-gun nests supported by guns on disappearing platforms. On the whole Danube front there were only 15 heavy machine guns and the Serbs did not possess a single gun on a disappearing platform.)

On the morning of the 7th of September the Austrian troops on the Tzigantia Island were still held in check by a small force which fought with great gallantry, but in the course of the day the small remnant of survivors was compelled to evacuate.

By daybreak on September 7th it was estimated that 4,000 to 5,000 Austrians had, at the expense of tremendous losses, gained a footing on the Serbian bank of the river. Throughout that day the bombardment continued with undiminished fury. In the morning the British battery had come into action against the batteries across the river, 24 guns and 4 howitzers. The concentration of fire was such that both of the British guns were covered with debris and had to be abandoned until night, when they were cleared and made ready for action the next day.

Another British battery was on this day brought from Grocka and put in position on Banova Hill which commanded Tzigantia Island. It came into action in the afternoon and was immediately made the object of concentrated fire, but continued in action during the remainder of the day.

The other British battery had meanwhile resumed firing but one of the guns was almost immediately destroyed by a direct hit from a heavy howitzer.

The enemy monitors on the Danube now came out and attempted to take part in the fighting. They were at once attacked by the two French guns and the one remaining British gun and driven off. One of the French guns, however, was the victim of a direct hit and put out of action.

During the night of September 7th to 8th the enemy continued landing men in large numbers and by noon on the 8th they were practically in possession of the river front of the city. The city itself was burning fiercely at several points and there remained only one French gun at Topchider, one British gun at Velike Varchar, and two British guns at Banovo Hill.

Before noon on September 8th the British gun at Velike Varchar was hit and destroyed. In the afternoon the French destroyed and abandoned their remaining gun. Orders were given to destroy the British battery at Banovo Hill, but with great gallantry, under cover of the darkness, the men succeeded in bringing up the ox teams and got the guns away down one side of the hill while the enemy infantry was swarming up the other. These guns later rendered yeoman service during the retreat of the Serbian army.

A second crossing of the Danube was made at Semendria by the German troops under the command of General von Gallwitz. Here the attack commenced a day later than that on Belgrade. The bombardment here was equally fierce and overwhelming. It was estimated that the enemy had in action against Semendria, throughout the days and nights of October 7 and 8, no less than 200 guns. Twenty of these had been placed on the island facing Semendria, under cover of the trees.

The Serbs had practically nothing to reply to this tremendous fire and after two days' artillery preparation the enemy crossed the river in force and occupied the town, though not until after desperate fighting with the Serbian infantry.

By this time, thanks to the overwhelming superiority of the enemy forces, the fate of the Serbian capital was sealed. German troops, having crossed to the right bank of the Save and occupied Banovo Brdo, threatened the rear of the troops defending the city subsector.

The Serbian General Staff has no intention of belittling the courage shown by the 8th Austrian Army Corps, which fought with gallantry, but it is evident that 31 battalions supported by 48 heavy machine guns and 500 pieces of artillery did not need to display heroism and morale to crush the two Serbian battalions supported by 2 heavy machine guns and 17 pieces of artillery.

The consequences of the breakthrough on the Danube front were immediate and far-reaching. Germany had freed herself from the iron grip of the Entente Powers; she obtained direct rail connection through Bulgaria to Constantinople and was able to come to the rescue of her Turkish ally, in a critical position for want of ammunition and other war material.

The first result of this was to render hopeless all prospect of success on the Dardanelles. The Danube was the front-line trench of the force in the Gallipoli Peninsula. Once this was gone and the Turks reënforced and reprovisioned nothing was left but to evacuate. On October 11th, two days after Belgrade fell, Lord Kitchener telegraphed to General Ian Hamilton, asking for an estimate of the losses which would be involved in the evacuation of the Peninsula. Six weeks later the evacuation was carried out.

The political consequences of the fiasco of the Allied policy in the Balkans was also very great. Under pressure of public opinion in France, Mr. Delcassé, Minister of Foreign Affairs, resigned and disappeared from public life. But this did not appease the public indignation, and a few days later the Viviani cabinet was driven from power.

In Russia M. Sasanoff, Minister of Foreign Affairs, as the result of the complete failure of his Balkan policy, was completely discredited and shortly after was replaced in the Ministry of Foreign Affairs. In Great Britain the boundless indignation caused by the Balkan disaster and the evacuation of Gallipoli was the main cause of the downfall of M. Asquith and his replacement by Mr. Lloyd George.

IN FORMING A PLAN *of campaign, it is requisite to foresee everything the enemy may do, and to be prepared with the necessary means to counteract it.*—NAPOLEON.

THE KNOX TROPHY

The most sought-after annual prize for artillerymen is the Knox Trophy. As all gunners know, this trophy is named after General Henry Knox, the father of American artillery. The award is made possible by the generosity of the Society of the Sons of the American Revolution in the Commonwealth of Massachusetts. Each year the battery of the Coast Artillery Corps demonstrating the greatest all-around efficiency receives the trophy at the annual dinner of the Society held at Boston during the month of January.

Many factors enter into the determination of which battery is "best" for the year in question. The bed-rock of the award is excellence in target practice, but the award does not necessarily go to the organization which made the highest numerical score. If that were the case, luck might at times determine the winner. Therefore, to eliminate the "breaks," consideration is given to personnel errors, time-out occasioned by avoidable causes, errors in applying the rules of adjustment, accuracy of spotting, and other similar factors. It can therefore be said that the organization winning the trophy clearly shows that it possesses battle efficiency of a high degree.

This year, when all the scores and related factors had been counted up it was found that the winner was Battery B, 69th Coast Artillery (AA), Fort Crockett, Texas. The Chief of Coast Artillery and the Coast Artillery Association join in congratulating Battery B, and the 69th Coast Artillery on the splendid work that made their victory possible. They have added fresh laurels to those of an outstanding organization.

Captain William H. Papenfoth commanded Battery B, 69th Coast Artillery (AA) at the time of its practices. The congratulations of the Secretary of War have been sent him and the battery. The following is the letter of commendation sent to Captain Papenfoth by The Adjutant General:

January 6, 1938.

Captain William B. Papenfoth
Battery B, 69th C.A.
Ft. Crockett, Texas

Dear Captain Papenfoth:

It is desired to exptess to you the heartiest congratulations upon the winning by Battery B, 69th Coast Artillery (AA), Fort Crockett, Texas, of the Knox Trophy for the calendar year 1937. This trophy is much sought after by all organizations of the Coast Artillery Corps and Battery B is announced as the winner after the most careful review and study of all 1937 target practice reports by the Coast Artillery Board. The fine record made by Battery B in its target practices is a tribute to the high state of training of the battery and its fitness for service. It should be a source of gratification to you as commanding officer of the battery at the time of its target practices to know that your efforts have been recognized by the award of this much coveted trophy.

By order of the Secretary of War.

F. M. Smith,
Adjutant General.

As in all competitions there were runners-up, but this year the contest was by no means one-sided. The winners of second and third place worked hard and did their best. The second honors go to Battery C, 59th Coast Artillery (HD), Fort Mills, Philippine Islands. Battery C was commanded by Captain Matthew K. Deichelmann during the 1937 target practices. Captain Deichelmann and his battery have received a commendatory letter from the Chief of Coast Artillery. Third-place honors fell to the lot of Battery B, 91st Coast Artillery (HD), Fort Mills, Philippine Islands. At the time of its target practice this battery was commanded by 1st Lieutenant Arthur Roth. Lieutenant Roth and Battery B have received the congratulations of the Chief of Coast Artillery.

For the 1938 competition some changes have been made in the procedure governing the award. The following letter from The Adjutant General sent to all corps area commanders (except the Fifth and Seventh Corps Areas) gives the details of the changes:

1. The Society of the Sons of the Revolution in the Commonwealth of Massachusetts presents annually a Knox Trophy to the Coast Artillery battery of the Regular Army which has conducted the best target practice (primary assignment) during the preceding year. The presentation is made at the annual dinner of the Society, held about the middle of January.

2. This trophy is highly valued. The resultant competition is very keen among battery commanders. Great care and much work are involved in making an equitable award. Target practice reports received late in the calendar year can not be reviewed and compared with the required thoroughness,

THE WINNERS — Battery B, 69th Coast Artillery (AA), Fort Crockett, Texas.

if appropriate and timely report is to be made to the donor of the trophy.

3. Effective for the calendar year 1937, and succeeding years, the provisions of paragraph 48, Coast Artillery Memorandum No. 17, dated War Department, June 15, 1937, are hereby modified. Target practices fired after September 30th will not be considered in that calendar year. Practices held in October, November and December will be considered with the first nine months of the next year, i.e., the year is October 1st to September 30th. (Practice held during October, November, and December 1937, will be included in the year ending September 30, 1938.) The foregoing applies to no other features of Coast Artillery Memorandum No. 17, June 15, 1937.

4. Any report, of a target practice fired prior to September 30th, not received by The Adjutant General by December 10th, will not be considered in making the award for any year.

Elsewhere in this number we carry an article by Captain Papenfoth on how Battery B, 69th Coast Artillery (AA) won the Knox Trophy for 1937.

General Sunderland has expressed his appreciation to the members of Battery B, 69th Coast Artillery in the following letter:

Subject: Knox Trophy.

To: The Adjutant General.

1. It is desired to express to all members of Battery B, 69th Coast Artillery (AA), Fort Crockett, Texas, heartiest congratulations on the winning of the Knox Trophy for the calendar year 1937. This trophy is much sought after by all organizations of the Coast Artillery Corps and Battery B is announced as winner after the most careful review and study of all 1937 target practice records by the Coast Artillery Board. The fine record made by Battery B in its target practices is a tribute to the high state of training of the Battery and its fitness for service. All members of the Battery should derive great satisfaction on the realization that their efforts have been rewarded by winning the coveted Knox Trophy. An officer will be designated to receive the trophy when it is presented by the Society of the Sons of the Revolution in the Commonwealth of Massachusetts at their annual dinner in Boston on January 17, 1938. This officer will make the necessary arrangements for the shipment of the trophy to the Commanding Officer, Battery B, 69th Coast Artillery (AA).

2. It is requested that this letter be forwarded through channels, to the Commanding Officer, Battery B, 69th Coast Artillery (AA), Fort Crockett, Texas.

A. H. SUNDERLAND,
Major General,
Chief of Coast Artillery.

THE KNOX MEDAL

In addition to the award of the Knox Trophy to a battery of the Corps, the Society of the Sons of the American Revolution in the Commonwealth of Massachusetts also awards a medal to an outstanding soldier of the Coast Artillery. The selection is made from the students attending the enlisted specialists' courses at the Coast Artillery School. Since the men in attendance are of the highest type and are specially selected for the detail, it follows that the student winning the Knox Medal is an outstanding all-around soldier.

This year the medal was won by Staff Sergeant Forrest H. Butters, CAC. The Chief of Coast Artillery has sent his congratulations to Sergeant Butters for the hard work and spirit that made the accomplishment possible.

Sergeant Butters is a native of New York and was born in Corning in 1906. After graduation from Corning grammar school he attended Elmira High School for two years. He enlisted in the Coast Artillery Corps of the Regular Army in February, 1930 and was sent to the Canal Zone for station, being assigned to Battery B, 1st Coast Artillery. Within a year, he was a corporal; before two years had passed he achieved sergeant's stripes. Upon his return to the United States in 1933, he reënlisted for duty at Fort Monroe. He attained the rank of corporal in June, 1934.

At the time of his detail to the enlisted specialists' course, Sergeant Butters was serving as a corporal. He took the examination for staff sergeant (clerical) in April, 1937 and received his warrant June 1, 1937, about three weeks prior to graduation. His present assignment is to the Submarine Mine Depot, Fort Monroe.

That Sergeant Butters is not essentially the studious type whose knowledge comes mainly from books is evidenced by the fact that he takes an active interest in all outdoor sports. In this field he confesses a greater liking for tennis and handball than for the others.

Sergeant Butters has ably demonstrated that he possesses to an outstanding degree the major factors that are considered when the award of the medal is made. These are:

Scholastic standing
Coöperation
Diligence
Conduct
Attention to duty
Military bearing and neatness
Character.

We predict that Sergeant Butters will have a long and successful career as a Coast Artilleryman.

WINNING THE KNOX TROPHY

By Captain William B. Papenfoth, C. A. C.

THE 1937 TARGET practices of Battery B, 69th Coast Artillery (AA) were held at Fort Crockett. During the month of August the west end of the reservation is more or less ideally suited for firing over the Gulf of Mexico. The battery is equipped with four 3-inch guns (M3), M1A1 director, T9E1 stereoscopic height-finder and two 1920 altimeters.

Throughout the season Colonel Allen Kimberly, the regimental commander, gave the battery every facility for training, but exacted a high order of training before permitting it to fire. The guard and fatigue requirements were so arranged as to allow the entire organization to attend both drills and firings.

Realizing the great importance of obtaining correct altitudes, an intensive training course for stereoscopic observers began early in the year and continued until the practices were completed. All men were tested on the stereoscopic trainer and results carefully analysed, resulting in the final selection of six men to be trained as observers. The commanding officer authorized the use of the Quartermaster "J" boat by the battery as a water target. Ranges were read by the observers and compared with those determined by use of a horizontal baseline and an improvised plotting board which proved to be satisfactory from a training point of view. Training for the observers was thus continued until the summer encampment of the ROTC and the ORC, when airplane tow targets became available. Each practice of the summer trainees was carefully analysed and the computed altitudes from the analyses were used as a basis for check of the observed altitudes. A record was kept for all observers, to determine the proper adjuster settings under all conditions, these settings being used in the regular practices. The comparative accuracy of the observed altitudes in all the practices was gratifying, and to Sergeant Thomas F. Emond, the observer, must go the credit for a job well performed.

A complete detail for the director, with a capable reserve, trained under the supervision of 1st Lieutenant Carl E. Green, ably assisted by the instrument sergeant, Malcolm E. Thomas.

Following closely upon the completion of gunners' instruction, the range section was given theoretical instruction, including visual representation of all elements of firing data. Special attention was paid to the operation of the detail as a team, and the importance of accuracy of operation of the individual was stressed.

The range, vertical and lateral spotters were trained during the indoor period by use of a spotting board, which consisted merely of a board with vertical and horizontal lines painted on it. A stick with a wad of cotton on the end was used to simulate bursts.

During the summer the battery participated in the firings of reserve regiments and the ROTC. These firings were carefully analysed. The fuze error and developed muzzle velocity ran consistently; accordingly the data was used to advantage during the record practices. It was also noted that there was a tendency to fire the gun too rapidly. The gun section frequently achieved a rate of 30 rounds per gun per minute. To allow vertical and lateral clocks and muzzle to settle, as well as permit accurate fuze cutting, the rate was slowed down to 25 rounds per gun per minute, and a greater accuracy resulted. In the training of the gun sections credit for excellent work is due 1st Lieutenant Charles R. Longanecker, the battery executive, 1st Sergeant William G. Wood, and the four gun commanders.

Major Charles S. Harris, the battalion commander, contributed valuable assistance in the conduct of the practices, especially in the technical training. Major James G. Devine "pinch hit" and acted as safety officer and plane director during his tour with a Reserve regiment.

The task of safety officer and plane director was not easy, since at the altitudes and ranges involved the guns were pointed almost directly at the plane a great deal of the time. Major Devine's experience and judgment insured absolute safety, with the four courses of each practice consecutive.

The practices were fired at altitudes ranging from 12,000 to 14,000 feet and at maximum practicable ranges. In each practice, firing was conducted on four courses. Hits were obtained on each of the twelve courses, except one, and on that course the target was shot down on one of the first two salvos by a shrapnel hit on the target bridle. Only one minor matériel failure was experienced.

Average data for all practices is tabulated below:

Slant range	6,312 yards
Altitude	4,506 yards
Ground speed of plane	109 m.p.h.
Per cent of hits	14.2
Hits per gun per minute	3.4
Shots per gun per minute	24.3
The three scores	172.7
	138.9
	318.9

Coast Artillery Activities

OFFICE OF CHIEF OF COAST ARTILLERY

Chief of Coast Artillery
MAJOR GENERAL A. H. SUNDERLAND

Executive
COLONEL JOSEPH A. GREEN

Personnel Section
MAJOR CLARE H. ARMSTRONG

Matériel and Finance Section
MAJOR C. W. BUNDY
MAJOR H. B. HOLMES, JR.
MAJOR S. L. MCCROSKEY

Organization and Training Section
COLONEL HORACE F. SPURGIN
MAJOR AARON BRADSHAW, JR.
MAJOR W. H. WARREN

Plans and Projects Section
LIEUT. COL. JOHN L. HOMER

Notes from the Chief's Office

Most of the target practice reports for 1937 have been received. The Chief of Coast Artillery has noted with interest the excellent results that have been obtained by many organizations.

* * * * *

An excellent text on stereoscopy and stereoscopic range finding has been prepared at the Coast Artillery School and copies sent to all Coast Artillery regiments. Target practice reports indicate, in some cases, that this text is not being used to the best advantage. It is believed that this condition may be responsible for the failure of some organizations to obtain satisfactory stereoscopic spotting. As this method of altitude determination and spotting is the one most likely to be used in war, a thorough understanding of the limitations and capabilities of the height finder and the principles involved is essential. Every effort should be made to exploit the possibilities of stereoscopic height finding and range sensings during peacetime training.

* * * * *

The use of the term "ex-caliber" is not considered proper when referring to sub-caliber matériel.

* * * * *

The Knox Trophy is a highly coveted award and, if it is to continue to have the significance in the Coast Artillery which it has had in the past, every effort must be made to insure that the award goes to that organization which has made the best actual record in target practice for the year. This means that the complete target practice reports of all batteries must be studied carefully and evaluated before notifying the Society of the Sons of the Revolution in the Commonwealth of Massachusetts of the Chief of Coast Artillery's selection for the award. The award is made at the Society's annual dinner about the middle of January. Past experience has demonstrated that there is insufficient time to make a thorough study of the target practice reports of batteries that fire late in the calendar year or of those batteries on foreign service which fire after October 1st. To overcome this difficulty it has been decided that in so far as the Knox Trophy award is concerned, the target practice year will run from October 1st to September 30th, inclusive. Also, that the target practice reports covering firings within this period, must reach The Adjutant General on or before December 10th. Otherwise they will not be considered in making the award. This procedure has been followed in the selection for 1937. The few 1937 practices which were fired after September 30th, 1937 will be considered in making the award for 1938.

* * * * *

Experience is the best teacher. After two years in command of a searchlight battery, a captain submitted a report in which he listed the defects in the design and operation of the matériel with which he had been serving. It was natural that some of the defects to which he referred had been recognized before the receipt of his letter but there were others which had not been reported. For each defect he suggested a suitable remedy. The following is quoted from the comments made by the Engineer Board: "It is felt that this is exactly the sort of constructive criticism we need most. If all officers with comparable searchlight experience would submit such reports as this, the work of the Engineer Board would be greatly simplified." More important, perhaps, is the net result—better matériel.

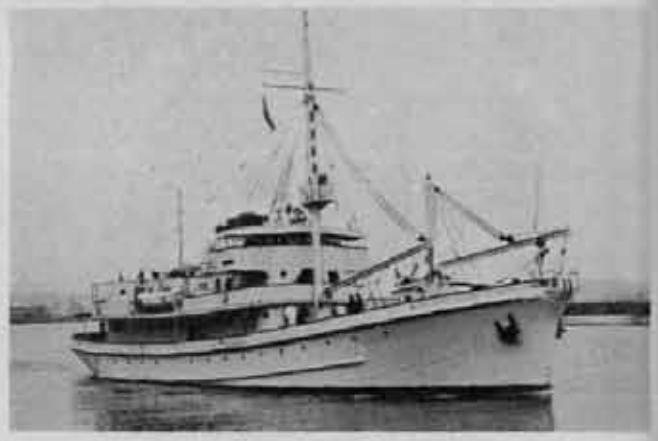
* * * * *

Matériel data sheets are important. Each year it is necessary to return many of these sheets for minor corrections. The information appearing in these sheets is used almost daily to answer questions which could not be answered otherwise without corresponding with the harbor defense

concerned. No other similar source of information is available to the Chief of Coast Artillery. Accuracy in their preparation is essential.

* * * * *

The *Niles*. Unforeseen circumstances resulted in a delay in the delivery date of the new mine planter Lieutenant Colonel *Ellery W. Niles* until December 28, 1937. The approved itinerary for the *Niles* provides for visits to Washington, the Harbor Defenses of Chesapeake Bay, the Harbor Defenses of Boston, the Harbor Defenses of Sandy Hook, the Army Base at Brooklyn, and the Harbor Defenses of Pensacola during the shakedown trials. The mine laying equipment will be tested in Hampton Roads and the cable equipment will be tested in the Second Corps Area.



U. S. Army Mine Planter Niles

Fort Monroe

BRIGADIER GENERAL JOHN W. GULICK, U. S. Army, *Commanding*

COLONEL W. E. SHEDD, JR.
Commanding, Harbor Defenses of Chesapeake Bay and 2d Coast Artillery

COLONEL EUGENE B. WALKER
Commanding 51st Coast Artillery

LIEUTENANT COLONEL FREDERIC A. PRICE
Commanding 52d Coast Artillery

By 2d Lieutenant H. Bennett Whipple

General Gulick entertained several visitors of note during November and December. Among them was Major General Hwang Chin-san, Chinese Army, who arrived on the Washington boat on the morning of November 22 accompanied by three fellow countrymen, all graduates of noted U. S. universities: Mr. Chang, secretary to the General, and Captain Te-Ming Yi and Lieutenant Yuan Chuen Li, aides to the General. The visitors were escorted to Randolph Hall by Captain F. S. Kane, appointed special aide to General Hwang during the latter's stay at Fort Monroe.

At 9 A.M. the party, accompanied by General Gulick and Lieutenant Peterson, A.D.C., proceeded to District Headquarters where a guard of honor, commanded by Captain P. McC. Smith, rendered the usual honors due a major general. After a brief tour around the post and luncheon at General Gulick's quarters the guests motored to Yorktown where the afternoon was profitably spent inspecting the old Revolutionary War fortifications.

Major General Hwang Chin-san, Chinese Army, receives Escort of Honor at Fort Monroe.

On a rainy December 2, Major General McCoy, Second Corps Area commander, flew from Governors Island, to Langley Field on his way to visit the commandant of the Portsmouth Navy Yard. To meet General McCoy and party at Fort Monroe came Admiral Wilson Brown, U.S.N., General Williams, U.S.M.C., and the destroyer *Leary*, which docked at the main wharf. Saluting guns placed at the main dock fired thirteen rounds for the visitors who proceeded to General Gulick's office. This party, including General Gulick, joined General McCoy on his way from Langley Field to Fort Monroe. Saluting guns located at the Mill Creek Guardhouse fired the salute for General McCoy as he passed through the post on his way to board the *Leary*. The party from Governors Island visited naval officials to discuss winter maneuvers in the Caribbean.

SCHOOL LISTS AND PROMOTIONS

Fort Monroe relinquishes several officers next summer to be students at Leavenworth and the War College. To the War College, Monroe loses Major E. M. Foster, Finance Department, Captain R. E. Starr, instructor, Coast Artillery School, and Captain Hobart Hewett, now a member of the Coast Artillery Board and formerly an instructor, Coast Artillery School. The Leavenworth list reduces Monroe's present strength by eight officers from various departments. From school instructors go Major J. R. Townsend, Captains N. A. Burnell, L. W. Bartlett and E. B. Thompson. From school students go Captains

J. R. Lovell and W. L. Wright and Lieutenant R. T. Frederick. From the Harbor Defenses goes Captain R. E. Dingeman.

Lieutenant Colonel W. R. Nichols, executive, Third C. A. District, and Lieutenant Colonel F. S. Clark, assistant commandant, Coast Artillery School, were examined for promotion recently and should be full colonels early in the spring. Lieutenants W. H. Hennig, R. T. Frederick and E. D. Peddicord were examined for promotion to captain, effective early in June.

Troops

To Portsmouth went the 2d Coast Artillery on a cold, wet November 11. With Major Paul H. French in command, the Second was loaded on a Navy flat barge early in the morning for a bitter, rough crossing. After marching in a long drawn out but inspiring parade the weary Fort Monroe troops made another choppy trip back to Old Point and docked in mid afternoon, having been on their feet since an early hour.

During November and December the Harbor Defense Commander, Colonel W. E. Shedd, in addition to routine inspections, reviewed the 2d, 51st and 52d in march order on successive Fridays.

In mid December, a Peninsula Charity Fair was held at Langley Field. The Coast Artillery presented several exhibitions of guns, searchlights and fire control equipment, which filled one of the five or six hangars vacated by the Air Corps for use by the fair committee.

Christmas

The Christmas season opened on December 22, on which date many officers left the post to pass the holidays with friends and relatives. The old Jeff Davis tree on the parade ground was colored with scores and scores of colored lights, as were many trees on the water front and at the Coast Artillery School.

The post Christmas tree celebration was held in Liberty Theatre on the twenty-fourth. Children below the age of twelve years of every officer, warrant officer and enlisted man were given presents. The tremendous task of gathering, wrapping and marking these presents was handled by Mrs. J. W. Gulick, Mrs. W. E. Shedd and Mrs. P. P. Lowry, who labored long and weary hours for several weeks prior to the 24th. Among all the Coast Artillery officers at Monroe not one could be discovered who had the qualifications necessary for a Santa Claus. The committee, after long and profound contemplation, decided to search outside our branch and found, one Major (Pete) Poland, Infantry, who had every desirable trait and characteristic for the part. He played the rôle well. Every child departed from the theatre that day happy and very appreciative of the task accomplished by the ladies of the committee and their fellow workers, Chaplain Bodel, Major Poland and those who procured and decorated the tree.

The 2d Coast Artillery Band made its traditional round of the post early Christmas morning, awakening the garrison with "Hark the Herald Angels Sing" and other appropriate selections. Chapel services during the week were well attended. The midnight service on Christmas Eve was a capacity gathering for the small chapel which had been tastefully decorated by several ladies of the congregation.

SPECIAL CLASS, OFFICERS OF THE NATIONAL GUARD AND OFFICERS' RESERVE CORPS, 1937

Front Row (left to right): Capt. Case, Capt. Dunnington, Capt. Groff, Capt. Herrod, Capt. Hutchinson, Capt. Kimble, Capt. Martell, Capt. Martin, Capt. Prevost.

Middle Row (left to right): Capt. Schubert, Capt. Schoenfeld, Capt. Skeele, Capt. Wesley, 1st Lieut. Ahrens, 1st Lieut. Beyers, 2d Lieut. Jefferis, 1st Lieut. Daleda, 1st Lieut. Dresser, Capt. Gudger, 1st Lieut. Kert.

Back Row (left to right): 2d Lieut. Lee, 1st Lieut. Lewis, 1st Lieut. Long, 1st Lieut. McKay, 1st Lieut. Mitchell, 1st Lieut. Ridgell, 1st Lieut. Smith, 1st Lieut. Starr, 1st Lieut. Taylor, 1st Lieut. Ward, 1st Lieut. Hasham.

Hawaiian Separate Coast Artillery Brigade

Brigade Commander, Brigadier General James A. Woodruff
Chief of Staff, Colonel Robert Arthur
Adjutant General, Major M. S. Daniels

S-1 & S-4, Lieutenant Colonel Wm. D. Frazer — S-2, Captain William H. Dunham
S-3, Lieutenant Colonel Ralph E. Haines, C.A.C.

Major LeRoy A. Whittaker
Com. and Engineer Officer

Captain L. D. Flory
Asst. Com. and Engineer Officer

War Plans and Motor Officer
Lieutenant Colonel A. E. Rowland

Harbor Defenses of Pearl Harbor
Colonel H. C. Merriam

Sixty-fourth Coast Artillery (AA)
Colonel Ralph N. Mitchell

Harbor Defenses of Honolulu
Colonel G. A. Wildrick

By Lieutenant John J. Stark

Distinguished Visitors of 1937

This being our end-of-the-year letter, we would like to recount some of the most important happenings of the year in the Hawaiian Separate Coast Artillery Brigade. The year 1937 was marked by a number of distinguished visitors to our sunny shores. The entire United States Fleet visited us early in the spring, some 125 ships strong, and furnished our "enemy" for the 1937 Hawaiian Department maneuvers. Also among the distinguished visitors were a cabinet member and many senators and representatives from Congress. Secretary of the Treasury Henry Morganthau came in June and was afforded the military courtesies of the Department, which included a large review at Schofield. The many senators and representatives who came here were mostly members of the congressional statehood committee. Incidentally, we expect the United States Fleet back in March to again join us in maneuvers. Judging from the success of the maneuvers last spring, the 1938 visit of the Fleet will be more than welcome.

A great many changes in officer personnel took place during the year. Heading the list, our department commander, General Moses, took over the command from General Drum in July. This brigade had its new commander arrive in January, at which time General James A. Woodruff succeeded General R. S. Abernethy. During the year, Colonel Robert Arthur relieved Colonel B. H. L. Williams as brigade chief of staff, and at Fort Kamehameha, the commanding officer underwent a change, Colonel Merriam relieving Colonel Biscoe. All in all, it was one of the largest turn-overs of officer personnel in recent years, there being a total of 57 new officers coming into the Brigade during a single year.

HSCAB Has Good Target Practice Season

In summarizing the target practices for the year, we report a most successful completion of this important part of our assignment. Outstanding among the sea-coast target practices was that of Battery A, 55th Coast Artillery, which made a score of 175.1 firing 155 mm. guns. This score was especially notable because the target was towed by our Army tug at a slow speed. The battery commander of this battery was Captain Fred F. Scheiffler.

Just in from the field, the 64th antiaircraft regiment has a great deal of news for us. For one thing, they report an outstanding antiaircraft practice—that of Battery K, 64th Coast Artillery, which made a score of 241 in a night practice, Captain Pierre Denson, commanding. We believe the 64th has set a new record for high altitude firing. At times the sleeve was towed at the remarkable height of 16,500 feet, even in night practices. A high speed bomber was used for towing. The scores for the various batteries of the regiment as they have just been reported to us are listed below. These scores are average for three practices which each battery was required to fire using the mobile 3-inch antiaircraft guns.

Battery	*Score*	*Battery Commander*
B-64	116.6	Capt. F. L. Hayden
C-64	118.1	Capt. M. L. Skinner
F-64	85.3	Lt. L. G. Ross
G-64	97.4	Capt. F. C. Wilson
K-64	177.3	Capt. P. B. Denson
L-64	99.9	Capt. G. W. Palmer

H.S.C.A.B. Sports

Fort Kamehameha won the swimming crown with a total of 1,000 points, while Fort Shafter fought them to the finish to garner 991 points for second place. The Green Wave from Honolulu took third position, hard on the heels of the leaders, with 973 points. The margin of victory in the swimming battle was not sufficient for the Fort Kam men to offset the early lead established by the Shafterites in boxing, track and baseball and the athletic supremacy for the Brigade went to the Antiaircraftmen from Fort Shafter.

The keen rivalry displayed in the past year by the units in the H.S.C.A.B. is clearly shown in the statistical listing of the final athletic standings for 1937.

Team	Boxing	Basketball	Track	Baseball	Swimming	Tot. Pts.
Ft. Shafter	1000	500	1000	1000	991	4491
Ft. Kamehameha	905	1000	736	625	1000	4266
Ft. Ruger	754	214	808	438	973	3187

Corregidor

Brigadier General P. P. Bishop, *Commanding*

Colonel T. A. Terry, *Executive*

59th Coast Artillery
Colonel George Ruhlen

60th Coast Artillery
Colonel J. H. Cunningham

91st Coast Artillery (PS)
Lieutenant Colonel William C. Koenig

92d Coast Artillery (PS)
Lieutenant Colonel Albert H. Warren

By Major R. E. Phillips

From the standpoint of officer personnel the harbor defenses were greatly strengthened when the transport *Grant* limped into Manila on October 29th bringing Lieutenant Colonel Koenig to take command of the 91st Coast Artillery (PS), and Lieutenant Colonel Crawford, who is assigned to the staff for work on war plans and as Inspector. As reported in the regimental sections below, a considerable number of other newly arrived field officers joined the various regiments for staff and command duties therein. They were sorely needed and found plenty of problems awaiting attention.

During the two-month period October 1-November 30, antiaircraft firings have dominated training activities. Five preliminary and five record machine-gun practices have gone forward with scores averaging well over 100 and three 3-inch AA M1918 gun practices and a searchlight practice are in process of analysis.

The outstanding feature of officer athletics for the period was playoff of the post golf championship. Weather prevented the establishment of qualification by a number of our players but the contest was generally a success and many extra hole matches resulted before Lieutenant George Keeler and Captain F. J. French emerged for the final round of 36 holes to determine the club champion. A see-saw battle was carried to the twenty-seventh hole and it was championship golf all the way, the match ending 5 and 4, in favor of Lieutenant Keeler.

Besides sending a full quota to the Army-Navy game festivities in Manila a local celebration was put on at the Corregidor Club, about fifty people attending. The rebroadcast of the shortwave results sent from the US to Manila came in very clearly.

The entire garrison is rejoicing in the assured recovery of Lieutenant Reybold who suffered a serious fracture when he was hit in the left temple by a baseball and was taken to Sternberg General Hospital.

The Honorable John Van H. MacMurray, chairman of the joint committee making the study of economic aspects of American-Filipino relations accepted the commanding general's invitation to visit Corregidor on October 30th. Formal honors were dispensed with at the request of Ambassador MacMurray. The Ambassador and Mrs. MacMurray were entertained at the commanding general's quarters during their two-day stay at Corregidor.

The Commanding General and family have been visiting at Baguio since November 3d. Lieutenant Donnelly and family accompanied the General's party. Colonel Ruhlen assumed command of the Harbor Defenses during General Bishop's absence.

Fifty-ninth Coast Artillery

By Lieutenant Leland R. Drake

During October and November the 59th participated in basketball, boxing and golf. Battery "C" beat Headquarters Battery in a close game for the battery league basketball championship. The regimental basketball team was organized the latter part of October and played a three-game series with the 60th Coast Artillery for the American troop championship of Fort Mills. The two teams were so closely matched that it took three games to decide the series. The 59th won the first game 38-27, lost the second 32-37, and nosed out the 60th in the final game 36-32. The team then went on to Manila to win the Philippine Department basketball tournament. On the evening of November 17th an inter-regimental boxing smoker was held with the 60th C.A. whose pugilists outfought the 59th fighters 5½ to 3½. The officers' golf team proved not to be of Bobby Jones caliber, for it came out third in the Caldwell Cup matches and fourth in the Marathon Golf Tournament which created much amusement for both the players and spectators.

The *Grant* arrived on October 29th with several new officers for the 59th. Major McBride succeeded Major Barrows as regimental adjutant. Other new officers include Captain McNamee, Lieutenant Roy and Lieutenant Lazar, who have been given command of Battery E, Battery A and Service Battery, respectively. The new arrivals have already experienced two typhoons, one of which was the worst one the Philippines has had in over four years.

All of the batteries have been intensively training for the artillery season which commences for most batteries in December with subcaliber practices. "C" Battery has fired its record 3-inch antiaircraft practice and from observation it appeared to be an excellent shoot. Under the supervision of Major Campbell, who has been conducting an artillery school, the officers have been given some interesting practical instruction in artillery.

At Fort Hughes a large retirement party was given for First Sergeant Fleming. All the first three grades of the 59th were invited and were brought over by a special boat. First Sergeant Fleming has left for Pensacola, where he has many friends.

Sixtieth Coast Artillery

By Lieutenant C. W. Hildebrandt

The searchlight and machine-gun batteries have finished their record target practices with gratifying results. Captain Bender, commanding Battery "A" had scores of

167.8 and 173.1 for his searchlight practices. "E" Battery, Captain Wrean commanding, had two .30 caliber shoots of 196.9 and 187.2, and two .50 caliber shoots of 239.1 and 164.6. "F" Battery, Lieutenant Hale commanding, did equally as well with scores of 101.32 and 242.6 for his .30 caliber shoots, and 209.1 and 292.99 for his .50 caliber shoots.

The 3-inch gun batteries are beginning intensive training now for their target practices which will be held in February.

The fifteenth anniversary of the 60th Coast Artillery was celebrated with an appropriate organization day program on October 26th. A regimental formation in the morning and a holiday which included free movies, a regimental basketball game, and an officers' beach party made a very enjoyable day.

Arriving 3 days behind schedule, on October 29th, the *Grant* brought Major and Mrs. Marquat to the 60th. Major Marquat assumed command of the 1st battalion upon his arrival.

In the American Troop swimming meet, the 60th Coast Artillery beat the 59th by eight points. However we were not as fortunate in basketball and the 59th nosed us out, winning two games out of three. In boxing we were again victorious. With good weather here, track and baseball are the main sports for the next few months.

Ninety-first Coast Artillery (PS)

By Major Arthur L. Lavery

During the months of October and November athletic interest was centered on basketball, boxing and track.

A capacity crowd in the athletic arena saw the 91st Regimental Basketball team win the first game and lose the next two in the playoff with the 92d for the post championship in the Scout Division. Scores of 40-29, 32-37 and 38-43 indicate how well matched the two teams were. The regimental team was entered in the Philippine Department tournament and tied for first place at the end of the round robin schedule. In the playoff, however, they lost to the 14th Engineers by a score of 34-27.

The first of a series of monthly track meets was held on November 16th. It was won by Battery "B" with 67 points followed by Battery "C" with 42 points and Battery "G" with 40 points. One of the outstanding performances was a 10 second 100 yard dash by Private First Class H. Fernandez.

Two boxing meets have been held in the arena. Members of the regimental team to box against the 92d fighters for the Post Scout Division trophy on December 3d were picked on their performance in these meets.

The last transport brought a number of officers to the regiment. Lieutenant Colonel William C. Koenig as commanding officer, is well fitted to carry on the tradition of the regiment; Major Leroy H. Lohmann, after years of mine planters and cable ships, has received the mine command and Captain Lee A. Denson, Jr., has been assigned as fort commander of Fort Frank.

All batteries finished their additional antiaircraft assignments during this period with excellent results. In addition several beach defense problems were fired, both day and night with similar results.

Ninety-second Coast Artillery (PS)

By Major H. A. McMorrow

Captain and Mrs. John Harry arrived on the *Grant* on October 29th bringing the 92d one more officer. Captain Harry has been assigned to Battery "A" and to command Fort Wint.

As the next scheduled departure is that of Lieutenant and Mrs. Wilson in February, we expect no changes for several months.

Antiaircraft machine-gun practices have had the attention of the entire regiment. The Guard Battalion did some spectacular shooting early in October, making scores of 173.5 and 134.8. Next to fire were Batteries "A" and "D," about the middle of November. Battery "B" and "C" will finish up the shooting just prior to the Christmas holidays.

All batteries are using the Morgan sight in the AA MG firings and the results obtained are well beyond those of previous firings under tracer control.

The 92d defeated the 91st to take the basketball championship of Corregidor (Scout Division) for the second successive year. After losing the first of the three-game series, the 92d came back in fighting form to grab the second and third games.

The team fared badly in the department tournament, however. The 14th Engineers beat us by three points and went on to win the championship.

Battery "B" won the regimental track meet held on November 24th, Battery "C" placing second. The Guard Battalion brought out a tug-of-war team that whipped all comers.

On Friday, December 3d, the Boxing meet between the 91st and 92d will be held at the athletic arena. Our squad has been working out under the supervision of Captain Pamplin and Sergeant Kantere and we expect them to come away with the victor's laurels.

Fort Crockett

Colonel Allen Kimberly, *Commanding*

The Provisional Machine-Gun Battalion, which was formed from troops of the 69th, returned from Camp Bullis, on November 9th after two months of interesting participation in the maneuvers of the Proposed Infantry Division. Shortly thereafter, rifles were issued to the 69th pursuant to the new tables of basic allowances. As only about 10% of the command had handled rifles before, the parade ground gave all appearances of a recruit depot for about ten days.

Trucks of the entire regiment accompanied the machine-gun battalion on the division test. They operated over open country, through woods, and on unimproved roads and functioned well throughout. However, a complete over-

haul and repainting is necessary and this will require months of well organized work.

The Houston Chapter of the Coast Artillery Association held two social functions in December; a small dinner dance at the famous San Jacinto Inn, on the San Jacinto battlefield, and a reception and dance at the Fair Oaks Country Club. The reception was attended by reserve and regular officers.

Brigadier General E. S. Hartshorn of the War Department, accompanied by Lieutenant Jeff Barnette, President of the Texas Reserve Officers' Association, were guests of Colonel Kimberly on December 13th.

San Francisco

COLONEL H. T. BURGIN, 6th Coast Artillery, *Commanding*

By Major Willard W. Irvine

The 6th Coast Artillery furnished an escort of honor for Governor Merriam of California, November 21, at "Treasure Island," the site of the Golden Gate International Exposition which opens in San Francisco February, 1939. The escort, consisting of a battery and the band, was commanded by Captain Dean Luce. Lieutenants Joseph C. East and George V. Underwood, Jr., were platoon commanders. "Treasure Island" is a 400-acre tract built in San Francisco Bay near Yerba Buena Island.

The regiment, less Battery "K," participated in a parade and Armistice Day ceremonies at Oakland, California. The band directed by Warrant Officer W. K. Hershenow, was awarded the first prize of $60.00. Battery "K," stationed at Fort Baker, took part in similar exercises at Mill Valley.

Battery "E," under the direction of Lieutenant George R. Carey, Battery Commander, and Lieutenant William H. Ball, Range Officer, fired a service practice with 12-inch disappearing guns. At a range of 16,000 yards, 8 bow on and 2 broadside hits were made in 10 record shots. The score was 199.3.

The U.S.A.M.P. *Bell* commanded by Lieutenant John H. Sawyer, Warrant Officer Erik H. F. Lundblad, Master, arrived on November 4th for duty in these defenses and departed December 30th. The mine planter *Niles*, recently completed and now on the East Coast, is expected to arrive in April.

Service practices for the year have been completed with the following results:

Battery "A" 6" guns, DC, Captain R. R. Hendrix, Score 116.4.

Battery "E" 12" guns, DC, Lieutenant George R. Carey, Score 199.3.

Battery "K" 12" guns, BC, Captain Dean Luce, Score 145.6.

Orders have been received assigning Sergeant Majors Harry M. Keive and James Kelly to the harbor defenses on their return from Hawaii the early part of this year. The N.C.S. Club House was the scene of several enjoyable parties during the holidays.

Washington Chapter

The Washington Chapter of the U. S. Coast Artillery Association held its annual dinner in conjunction with the Washington Coast Artillery Club on December 7, 1937, at the Army and Navy Country Club.

As usual, the party was a real success, being attended by over 80 Regular, National Guard and Reserve officers. The Chief of Coast Artillery, Major General A. H. Sunderland, was the guest of honor. Practically all of the Regular Coast Artillery officers stationed in Washington and the National Guard and Reserve officers in the vicinity attended. General Sunderland, Colonel Avery J. Cooper, Colonel Walter H. Burns, Colonel J. A. Green, Colonel H. F. Spurgin, Colonel Sanderford Jarman, Colonel H. P. Newton and Colonel Clifford Jones, made short but interesting talks. Colonel James B. Bentley acted as toastmaster.

The new officers elected for the Washington Chapter at this meeting are:

President: Lieutenant Colonel Roy S. Atwood, C.A.C.
Vice-Pres.: Captain Joseph H. Church, CA-Res.
Secretary-Treasurer: Major William J. Heale, D.C. N.G.

The President of the Coast Artillery Club, Captain Lyman E. Morris, 913th C.A., will serve in that capacity for another year.

The success of the meeting was largely due to the energetic work by the chairman of the committee on arrangements, Colonel Harry P. Newton, and Captain Joseph H. Church.

Los Angeles

The Los Angeles Chapter, United States Coast Artillery Association held a regular meeting at Griffith Park Planetarium on the evening of December 14, 1937. At this session the following-named officers were elected to office for the ensuing year:

President—Lieutenant Colonel George W. Oertley, 251st C.A., Cal. N.G.

Vice President—Lieutenant Colonel Avery J. French, CAC.

Secretary-Treasurer—Captain Lauron E. Salisbury, 519th C.A.-Res.

Directors—Colonel R. H. Williams, CAC; Colonel Edward A. Evans, 977th C.A.-Res.; Lieutenant Colonel Frank H. Holden, 975th C.A.-Res.; Captain Paul W. Cole, 63d C.A.; 1st Lieutenant C. F. Beyers, 251st C.A., Cal. N.G.

Under the leadership of Colonel Oertley the chapter plans a program that will interest all branches of the Coast Artillery Corps. Two future meetings, it is planned, will take the chapter into the field for a first-hand observation of current Coast Artillery problems.

News and Comment

THE UNITED STATES COAST ARTILLERY ASSOCIATION

"The purpose of the Association shall be to promote the efficiency of the Coast Artillery Corps by maintaining its standards and traditions, by disseminating professional knowledge, by inspiring greater effort towards the improvement of matériel and methods of training, and by fostering mutual understanding, respect and coöperation among all arms, branches and components of the Regular Army, National Guard, Organized Reserves and Reserve Officers' Training Corps."

OFFICERS

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Vice-President
COLONEL AVERY J. COOPER

Secretary-Treasurer
MAJOR AARON BRADSHAW, JR.

Additional Members of the Executive Council
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COLONEL E. C. WEBSTER
COLONEL W. S. POLLITZ
COLONEL E. W. THOMSON
COLONEL CLIFFORD JONES
LT. COL. R. M. PERKINS
LT. COL. J. P. HOGAN

NEWTON D. BAKER
1871-1937

Mr. Baker's great mind and magnanimity of spirit materially assisted in successfully guiding the country through the World War. During that troublesome period he let the Army tell its own story by its perfect morale and its great strength; only entering into controversy simply to state the fact that it was pressing on to victory.

Assailed on all sides, he never lost his innate graciousness. He fought openly and fairly without the use of abuse, depending alone on the clarity of his reasoning to bring out the facts.

He was above the use of expediency, to build himself up or to secure advantage. He sought only clarification of the issues.

He was a great Secretary of War.

We Move Onward

The JOURNAL has checked off another year.

It has been a good year—measured by the real tests of accomplishment. We have gone onward and upward. We have had the loyal support of our friends to sustain us and their expressed appreciation to stimulate and encourage us.

We now are entering upon another year, chin up and facing forward, confident that this appreciation and support will continue.

The JOURNAL is yours. It is for you to say what the new year shall bring forth for it. By pulling together you can make the new year better than the old. That means the Coast Artillery Corps, in each of component parts—Reserve, National Guard and Regular; it means you individually as a member of the Association.

The exchange of ideas is the ferment of progress. The JOURNAL exists to promote that exchange of ideas. It is at your service whether you talk or listen or both. It makes no pronouncements. It assumes no official authority. It only enables you to express your convictions to those who are interested in hearing them or to listen to what others have to say.

Above and beyond that, of course, it is the one constant purpose of the JOURNAL, to enable the Coast Artillery Corps to do a better job. This calls for constructive comment on basic questions. It calls for constructive thinking and constructive listening.

It is for you, then, to say what the New Year shall yield. It is for you to say whether we shall be able to say, as the procession of the year passes, that we are keeping up the pace.

Steady Growth

One of the surest signs of a healthy professional interest is the growing number of National Guard, Organized Reserve, and ROTC subscribers. This interest is in evidence most in those localities where the Regular Army officer is imbued with the idea of selling The JOURNAL to his people. However, the success of the majority of these officers can be directly attributed to the willingness of the civilian-component officer to learn the game.

For instance, up in Rhode Island the 243d Coast Artillery has made it a requisite that every commissioned officer be a subscriber to the Coast Artilleryman's magazine. At the beginning of the year, the regimental fund pays for all subscriptions; each officer in turn reimbursing the fund in five installments. This system provides a major short-cut in bookkeeping and eliminates the necessity for dunning the occasional dilatory subscriber. The credit for initiating this system goes to Colonel E. C. Webster, commanding officer of the 243d, and Lieutenant Colonel E. H. Metzger, unit instructor. Incidentally, Colonel

Webster has just been elected to a post on the Association's executive council. We may be sure that such a true believer in the JOURNAL will be more than an asset in the administration of the affairs of our Association.

Similar systems are in operation with such strong and continuous supporters as the 202d C.A. Ill. N.G., commanded by Colonel C. C. Dawes; 250th C.A. Calif. N.G. commanded by Colonel R. E. Mittelstaedt and the 213th C.A. Pa. N.G. commanded by Colonel C. J. Smith.

We hope that this progressive movement will grow. The National Guard support has been continuous and strong. In expressing our appreciation we should not pass on without also commenting upon the fine work done by Lieutenant Colonel C. M. Irwin and Major Kenneth Rowntree commanding officer and unit instructor of the 249th CA. (HD), Ore. N.G., respectively.

Another stout booster for The JOURNAL is located at San Antonio, Texas. Here Lieutenant Colonel Oscar Warner, unit instructor of the 969th C.A. (AA) and attached units, keeps up a continual drum-fire of sales-talk for the magazine. Moreover, Colonel Warner gets results. Hardly a day goes by that does not bring with it a subscription from Texas. In addition to this, the Texans find that The JOURNAL is of rare value as an instructional medium. The Coast Artillery Reserve News Letter to the officers of the Texas area for January told them about some of the articles they were missing if they did not subscribe to The JOURNAL. Among these were mentioned those dealing with the training movies of the 603d C.A. (Ry), the training of the 519th C.A. at Fort MacArthur, Major Mead's article on Television and Colonel Green's article on Harbor Defenses—all from the November-December, 1937 number of The JOURNAL.

Then, at Los Angeles, Colonel R. H. Williams on duty as instructor for the Reserve units of Southern California, has his own method. In the early fall when he mails out his information and application blanks for enrollment in the Army Extension Courses, he is thoughtful enough to include a letter telling about The COAST ARTILLERY JOURNAL and its value as an extra-curricular medium of instruction. Colonel Williams' method works, too.

Officers on duty with the ROTC are not idle. At Washington University, St. Louis, Major A. D. Chipman has succeeded in signing up every member of his junior class. He found Major Braly's article on ROTC instructional aids of value—and he told us about it. The subscription-getting feat of Washington University is matched by two other ROTC units—The University of Alabama and the University of Delaware. The spreaders of the gospel at those schools are Captain Ralph Russell, Major Reamer Argo and Captain Frank S. Cunningham.

This steady growth should be a source of satisfaction to every member of the Association. We congratulate those volunteers and the many others not mentioned who made it possible. If every well-wisher of The COAST ARTILLERY JOURNAL were to inaugurate a one-man campaign, circulation would be doubled within six months. Moreover, thousands of the Corps would be more closely in touch with what is going on in the military world.

Annual Election

The new members of the Executive Council elected for the period January 1, 1938, to December 31, 1939, are:

Vice President—Colonel Avery J. Cooper, C.A.C.

Additional Members—

Colonel E. C. Webster, 243d C.A., R.I.N.G.
Colonel E. W. Thomson, CA-Res.
Lieutenant Colonel R. M. Perkins, C.A.C.
Lieutenant Colonel J. P. Hogan, C.A.C.

Colonel Avery J. Cooper, CAC, is at present on duty with the War Department General Staff and is serving as executive officer, Supply Division—G-4.

Colonel Earl C. Webster is the commanding officer of the 243d C.A., R.I.N.G. He has served continuously with the Rhode Island National Guard since 1915. At present he is the principal of the George W. West Junior High School.

Colonel E. W. Thomson is the commanding officer of the 916th C.A., Org. Res. He is at present professor of physics at the U. S. Naval Academy.

Lieutenant Colonel R. M. Perkins, CAC, is at present on duty with the War Department General Staff and is a member of the Supply and Project Section, War Plans Division.

Lieutenant Colonel J. P. Hogan, CAC, is on duty in the office of the Chief of the National Guard Bureau, as assistant to Chief of the Operations and Organization Division.

Last year we were highly gratified by the material increase in the number of voters. This year again we have a marked increase in the number of voters over the totals of former years. We know our readers welcome this news, and believe with us that it is an indication of progress. That so many members are keenly interested in the selection of officers for the Executive Council is a source of gratification to the Association. It means that the JOURNAL is being read and that the readers are taking active interest in its welfare.

We congratulate the new members on their election and desire to express our appreciation to the retiring members for their support and coöperation.

Prize Essay Competition

The JOURNAL has decided to conduct a prize essay competition in order to stimulate thought and create interest in current professional subjects.

A detailed description of the provisions governing the contest appears on the inside front cover of this number.

It is especially desired to impress upon all contestants the fact that the subject of each essay is to be selected by the author and his selection will be restricted in no manner. However, in order to aid those who may not have subjects readily in mind the following are given as desirable subjects on which essays may be written.

The rôle, organization, and training of AA artillery with a view to its employment with a field army.

AA Intelligence service.

Aircraft warning service.

A system of beach defense.

Training methods for National Guard, Organized Reserves and R.O.T.C.

Proper weapon and organization for the AA machine-gun battalion.

Coast Artillery gunnery of today and the problems of long-range and indirect fire.

The value of mines in harbor defense.

National Guard spirit and the best means of maintaining efficient Coast Artillery National Guard regiments.

The mission of the Coast Artillery Organized Reserve in the event of an emergency, including its mobilization and assignment to station.

Tactical employment of railway artillery when operating with an army in the field.

On the assumption that a harbor of major importance is to be fortified, what would constitute an ideal defense?

The antiaircraft regiment: a discussion of an ideal organization and ideal armament, including guns, ammunition and fire control equipment.

Coast Artillery target practice: its purpose and how best to accomplish it.

The ideal types of weapons for seacoast defense.

Inadequacy of Service Pay

Major General Frederick W. Boschen, in his annual report as Chief of Finance of the Army stated:

"In my annual report for the fiscal year ended June 30, 1936, I discussed at length, the provisions of the present pay law, Act of June 10, 1922 under which the amount of monthly rental and subsistence allowances to be paid to commissioned officers is determined on the basis of their family or domestic relationships, and not upon the service rendered by them.

"The situation relative to this provision of the pay law, and the objections thereto, made in previous annual reports, remain unchanged.

"I am firmly of the opinion, based on experience gained in the years since the present pay law was enacted, that this provision in that act was a mistake; and that we should go back to the sound principle that payment of pay and allowances should be on the basis of service rendered by the military personnel concerned and not on domestic or marital conditions entirely foreign to the performance of their military duties.

"The question of inadequacy of service pay has been the subject of considerable discussion in the annual reports of the Chief of Finance for the past several years, and because of its paramount importance, I again desire to bring the attention of the War Department to the necessity of procuring legislation at the next session of Congress correcting the inadequacy of the pay of military personnel, not only with reference to existing living conditions, but also in comparison with the salaries paid to civil officers or employees with relatively commensurate duties and responsibilities.

"The last comprehensive revision of Army pay was effected by the Congress in 1908, more than a quarter of a century ago. The rates then prescribed by the Congress are presumed to have been adequate at that time. With the lapse of years, however, the cost of living mounted and cognizance was taken of this fact by the Congress in its action with respect to the salaries of its civil officers and employees, whose pay was increased, not merely once, but with respect to some classes, several times, within the last 20 or 25 years. In fact, the pay of some civil officers has been increased within that period as much as 175% while the pay of the Army and the other uniformed services has lagged far behind in this regard. In 1929 and 1930, an Interdepartmental Pay Board, made up of officers representing the six uniformed services of the United States, studied the subject of service pay carefully and exhaustively, and, in its final report dated October 31, 1930, set out data showing conclusively the need for a substantial increase in pay of the personnel of the Army and the other uniformed services. However, the country was then in the midst of a financial depression and, it is presumed, principally for this reason, nothing came of the report of that board, and shortly thereafter the general reduction in pay, with its special discriminatory features with respect to service personnel, was effected by the Economy Acts.

"In view of the improved economic conditions in this country, and of the gradually mounting cost of living, it is believed that the time is now ripe for a renewal of action by the War Department, either individually or in collaboration with the executive departments administering the other uniformed services, looking to an increase in service pay. As before stated, the report of the Interdepartmental Pay Board of 1930 is an exhaustive study, and a masterly discussion of the subject, and contains recommendations as to rates of pay, and even a draft of legislation designed to carry these recommendations into effect. That report was published in full in Senate Document 259—71st Congress, 3d session, and in my opinion, said report furnishes an excellent basis for the consideration of, and recommendation for, increased service pay.

"In view of what has just been shown, I earnestly recommend that every effort be made by the War Department at the next session of the Congress to procure legislation correcting the inequality in service compensation and in like manner correcting the inadequacy of service pay, hereinbefore discussed."

AA Equipment Deficiencies

There are only ten regiments of antiaircraft artillery in the entire National Guard of the United States, and there is sufficient armament and equipment in all ten of them to equip completely only one of these regiments for war service, in the event of an emergency which may break upon the nation. When one considers the rôle of antiaircraft artillery in modern warfare, he must at once realize that the deficiency in this very important arm of the military service is vital in the scheme of national defense

and that steps should be taken without delay to correct it. The armament and equipment of an antiaircraft regiment is highly mechanical and extremely technical. It can not be improvised in any event and can not be made in a week or a month. In case of emergency requiring its use America can count only on that which is in the hands of the troops at the time. The Chief of Staff of the Army in his annual report indicates that determined efforts are being made to correct the deficiency, which he hopes will be done by the end of the fiscal year 1939. All of this is a mere beginning in the providing of an adequate antiaircraft defense, however. The United States has a long way to go on the project. To be sure, the material is costly, but the funds for its provision constitute some of the best national defense insurance premiums that are included in the national budget. General Craig will have the support of the country at large as well as the services in his plans for providing this element, and the Congress should see that the funds for it are forthcoming in sufficient amounts. America has already dallied too long on this vital project. —*Army and Navy Register.*

British AA Target Practice Wireless-Controlled Targets

The results obtained by the Regular and Territorial units at the AA target practice camps during 1937 show an increase in the standard of efficiency of these units according to the British press. Special progress is reported in the results obtained by the altitude finding units.

A series of practices were carried out with full service charge ammunition at ranges varying from 7,000 to 14,000 ft. and at heights varying from 8,000 to 13,000 ft. Direct hits were obtained on the targets in two-thirds of the shoots, the average number of hits on each course being six. The targets for these practices were flags towed by planes.

One practice was fired at a wireless-controlled airplane with full service charges. The target was brought down with the first few rounds fired. The remaining practices were fired with practice ammunition which does not explode but emits only a puff of smoke. These latter practices were fired also at a wireless-controlled airplane and during these firings one wireless-controlled airplane was reported as being hit.

Progress is certainly indicated by the extensive use of wireless-controlled planes and special ammunition in these practices.

Battleships and Airplanes

So far as Germany is concerned the much disputed question as to whether the next war on the seas will be won by battleships or airplanes has been definitely decided in favor of the battleship.

Experts who determine Germany's naval policy are convinced, according to the new Naval Year Book just out, that the "battleship is still the nucleus of every fleet which is unwilling to stay glued to the coast but is willing to fight for supremacy" and openly scoff at "younger schools" which pronounce the battleship dead every time a new weapon appears.

The doom of the battleship, the Year Book points out, was first proclaimed as early as fifty years ago, when the first torpedoboat appeared, until the Russo-Japanese naval battles taught the "youngsters" otherwise.

The same predictions were repeated when the submarine appeared until the World War showed after the early months that a submarine was unable to sink even one major battleship and naval battles were still being decided by superior shooting and heavier armor.

Now it is the airplane which is supposed to have rendered the battleship fit for the scrapheap. But, the Year Book says, "Events in Spain clearly have shown how small the hitting results of planes in attack against battleships really are."

At the same time, as in the air fleet so in their navy the Germans do not propose to exaggerate one feature of naval construction at the expense of another, but to strike a golden mean between the three factors determining the ships' fighting value, namely speed, gun caliber and armor protection. The New York *Times.*

Battle of Guadalajara

In reading . . . . . of the operations of the Russian aircraft in Spain last March, one is impressed with the degree of demoralization which aircraft can bring about in unseasoned ground troops when unopposed by other aircraft and undeterred by adequate antiaircraft defense. A few antiaircraft machine guns and a few pieces of antiaircraft artillery would have afforded very material protection to the troops and their trains. More important still they would have preserved the morale of the ground forces by making some reply to the attack from the air, even though it might not have been a wholly effective one. Good troops can stand heavy punishment if they can fight back, but even the best feel a sinking at the heart when subjected to an attack to which they can make no reply whatever. In modern warfare troops at the front or marching to the front must anticipate being raided by air and must have with them proper weapons with which to meet such raids. *Military Engineer.*

French Air Raid Precautions

In a recent article entitled "Air Raid Precautions in France," Captain J. R. J. Macnamara, M.P., gives a brief but comprehensive outline of the measures being taken not only in France but also in Germany and England. He points out that the French have worked out a happy medium between precaution and expense, and that they have not shown themselves indifferent to the dangers as has England for so many years. He contends that one can gain protection against almost any known form of aerial

warfare provided that expense is no object. On the other hand, a nation, at least a democracy, has to live its normal life of daily work and gaining bread. Hence, it might be able to achieve safety, only to die of starvation. He wonders how Germany, which never seems to have any money for anything, is able to spend so much on armament, especially so much more than her more well-to-do neighbors. He says France cannot accept the principle of totalitarian defense at a cost of some $2,500,000,000, as has Germany.

The following extracts from his article are of interest:

The French air raid precautions are interesting, particularly in that the policy guiding them is based on diametrically-opposed principles and conjecture to those in Germany. In Germany air raid precautions and training are compulsory. In France they are voluntary. In Germany every town, village, farmhouse, and factory is being equipped with the devices so far invented. The French will not do this, as they fear that all these will be obsolete in a few years and that money would only be wasted.

The Germans say that everyone should always be ready and fully equipped. The French do not believe this to be necessary. They point out that bombing from the air is exceedingly expensive and dangerous, and that the murder of civilians gains no military objective. What the enemy will aim for will be military objectives. Those who live near these must be protected. Otherwise civilians will probably only be killed incidentally, and it would be better, provided, of course, normal not-too-expensive precautions have been taken, to wait to equip the whole population until it is absolutely necessary, and when the capital expenditure involved will at least be spent on the most up-to-date material.

Even with this economical outlook, however, the French have spent far more money so far than has Britain, and her efficiency is far greater. The central Government pays 90 per cent of what it considers the cost should be, while the local authorities pay the remaining 10. The latter, if they like, can embark on more than normally elaborate schemes and bear the extra burden themselves. Some in the danger zones have done so.

The French, like the Germans, have collected data by actually dropping bombs from the air, although not in the same expensive manner as the Germans. In particular have they tested the strength of the Maginot Line. They have come to the conclusion that a dugout to be really safe against high explosive bombs must be protected with 6 ft. 6 in. of reinforced concrete. They consider, therefore, that the expense involved would make it quite impossible to protect the whole population against direct hits with explosive bombs. They have provided shelters for the staffs of certain essential services, and in some towns for people caught in the streets during a raid. They have also equipped underground stations for refugees, and so on. Otherwise they expect the population to go indoors, which is the best protection against splinters, and hope for the best that their house is not the unlucky one which suffers from a direct hit.

Competitive Examination for Admission to L'Ecole Superieure de Guerre

The examination consists of two parts: written and oral. About 350 candidates whose applications have been approved by their various commanders up to include the Corps Area, are given the written examination in November. The examination is prepared and corrected by the faculty of the École de Guerre. Candidates take this examination at their stations.

Of all the candidates who take the written examination, about 120 are selected. These candidates are ordered to Paris in groups during the following February to take the oral examination. About one-third are weeded out by the oral test.

Each candidate spends a week at Paris. During this time he appears before separate boards of officers for each of the following arms: infantry and tanks, cavalry, artillery, engineers, aviation. The candidate is given a simple tactical situation for the arm. He studies this situation for about thirty minutes and stakes it out on his map. He is then called up by the board for a period of about thirty minutes. During this time, the members of the board quiz him on his knowledge of organization and tactical principles as applied to the problem in hand.

In addition to the oral tests in tactics of the arms, the candidate is given an oral quiz in the language he has selected. He also takes a test in equitation.

About 85 officers are finally selected. They are ordered to a series of tours in branches other than their own during the following six months which include the summer maneuver season. They finally report at Paris about November 1 to begin their two-year course at the École de Guerre.

The examination system of selecting students seems to work very satisfactorily for the French. Unit and higher commanders exercise an initial selection in approving only the applications of officers of experience and promise. Those who have energy, ambition and intelligence, and above all, a capacity for long, hard work, are selected by the written examination. From this group are chosen, by means of the oral test, those officers who are best able to think rapidly and express themselves clearly. The result is that the student finally selected has a very sound and uniform tactical instruction, he has had considerable experience with troops, he is of high mental caliber and possesses a broad general culture, he has shown a capacity for hard, sustained mental effort.

Passive Resistance

Increasing demands that measures be provided for safeguarding the civilian population against the effects of air attack indicate that the various means for passive defense should be made an integral part of the defensive organization of our country. Preparations for passive defense cannot be improvised on the spur of the moment. They must be provided for in time of peace.

C. S. Metcalf, in a recent article points out quite distinctly that the need for such measures is not related to any belief that war is imminent. He stated that the wise householder takes out a fire insurance policy on his house, not because he is expecting his house to be burnt down, but rather because he appreciates a risk of fire always exists.

The various types of attacks were discussed by him,

especially the importance of the time element and the fact that only a few minutes will elapse between the warning of a raid and the arrival of the attacking planes. It is essential that the public know exactly what to do, as any delay in putting a scheme into operation might result in large casualties. The importance of civilian coöperation was stressed as well as the responsibility of the general public in making the means available to success. It was contended that this can be done in Great Britain by enlisting in the undermentioned services:

(a) Air raid wardens, selected men and women, preferably over 30 years of age, of good character, and who are locally respected. Their duties comprise supervision of the issuance of civilian gas masks; to furnish general instructions and advice to the public; and to report damage in the area of which they are in charge.

(b) First aid and medical services, composed of men and women volunteers to staff the first aid posts, casualty clearing hospitals, and to form first aid parties for the collecting of casualties.

(c) Rescue and demolition services, made up of men capable of doing manual labour and rescue work for people trapped in damaged buildings. They should be capable of dealing with unsafe buildings and the clearing of blocked and damaged roadways.

(d) Decontamination services, the function of which is to neutralize and clear up ground and material which may have become contaminated by liquid blistering gases. Men between the ages of 30 and 45 are most suitable for this service.

(e) Dispatch riders, men or youths who are able to ride a motor cycle or cycle, and whose duty it is to maintain communications in the event of the existing means of communications breaking down or being overloaded.

(f) Auxiliary firemen to augment the existing fire services in order that the large numbers of fires which may result after a raid can be kept in check.

The various services provided in Great Britain are evidence of the importance placed on passive means of defense against air attack. The steps taken there might serve as a guide in our development of this important defensive means.

Spanish Civil War Observation

Elmer Peterson, of The Associated Press, has published a summary of the reports of correspondents and observers, deducing therefrom several military lessons of the Spanish Civil War. He concluded that the Spanish Civil War has done little to advance military science as it might be applied in a major armed conflict. It is his opinion that the Spanish War has done no more, in fact, up to the present, than permit the testing of certain types of guns and equipment.

In his summary of the most important general and specific lessons, he lists the following:

That modern warfare, unless victory is obtained through surprise or overwhelming strength, will continue to depend on the human equation for success. Especially is this true when scientific defense is placed against scientific offense; resulting in a stalemate.

That civilian populations will be more directly involved in future wars through air raids; but that the resistance of such civilian populations, in the way of courage and stamina, depends on a variety of factors, including heredity, health, pride of race, political ideals, intensity of purpose, and conviction.

That modern antiaircraft guns, properly handled, can provide an effective defense; especially in the method of parallel barrage in which the guns, electrically controlled and synchronized, place a curtain of fire in front of advancing airplanes.

That high speed bombers, well armed, being practically flying fortresses, are of increasing effectiveness; that fighter airplanes must have greater speed; that speed in military airplanes does not diminish the necessity of well-trained pilots.

That the Spanish conflict has, if anything, strengthened the emphasis on the human element as opposed to modern weapons of destruction and defense.

British New Antiaircraft Gun

Late reports have indicated that the British were convinced that their 3-inch 16-lb. gun was not sufficiently effective against the latest type of aircraft and that they were experimenting with a gun of about 5-inch caliber similar to our naval antiaircraft gun. It has been recently reported by the press that the British have put a gun of about 3.7 in. into large scale production. This gun is reputed to be a high-muzzle velocity, very effective weapon, and it is understood that it is to be used extensively in the defense of the English great industrial areas.

British 3.7-inch high muzzle-velocity AA gun.

Seacoast Targets

The English press has recently reported that the first of the tests of the new high-speed target towing motor boats was very successful. The new boat is equipped with two 500-hp. engines, is a very seaworthy craft and can maintain a speed of about 30 knots an hour. Its use to simulate wartime conditions for seacoast target practice should prove a boon to seacoast artillery training. A high-speed target is essential for training if war time conditions are to be approximated.

Shadow Factories

The importance that the British Government ascribes to industrial mobilization is signified by their creation of what are termed "shadow factories." It was realized that there were not sufficient reserves of plants and machinery in the country for the manufacture of war-like stores and essential equipment. These factories were built with the understanding that they would lie idle except for the time required to train the personnel for management and operation. They were to be kept in such shape that they would be instantly available in event of an emergency.

Effect of Bombs

Whereas the airplane seems a weapon of doubtful value in Spain, and the effect of its bombs problematical, competent observers attribute much of the Japanese Army's masterly advance in North China to the successful use of airplanes.

In Spain the bombing frequently seems fortuitous and uninstructed. As in the bombing of the *Fearless*, six bombs all missed their mark. Sometimes the bombs themselves seem of archaic design. One was dropped right into the tanker *Stanbridge*, according to the observer, while it was discharging a cargo of oil at Gijon last month. The bomb messed up the officers' quarters but did not sink the ship, which sounds like a poor sort of bomb.

On the other hand, the Chinese bombs meant for the Japanese warships, which fell instead in the International Settlement, did much material damage and provided plenty of horror for the newsreel men to film in ideal conditions. The bombs were all right but their droppers were not adequately instructed.

On September 18, the Chinese made another attempt to bomb the Japanese warships at Shanghai, but instead hit the Ewo cotton mill owned by the British firm of Jardine, Matheson and Co., thus providing more evidence that the training of personnel is every bit as important as the provision of Shadow Factories for the emergency production of airplanes and bombs.—*The Aeroplane.*

Balloon Barrage

The JOURNAL has recently carried several items calling attention to the activities of the British Government in an effort to reinforce the aircraft and antiaircraft defenses of London with balloon barrage groups. Press notices state that heights of 40,000 ft. have been reached. This appears to be somewhat of an exaggeration but reliable sources report that heights of 25,000 to 30,000 ft. have been reached and that balloons connected in tandem vertically have been used successfully to these heights.

Even though balloon barrages were used successfully in France and England during the late war, there has been a great deal of doubt in this country as to their real value. Some sources state that their greatest asset is their psychological effect as the enemy aviators continually feared encountering them. They do give physical protection and it is believed reasonable to assume that their use in the vicinity of concentrated activities of great military value might be justified.

Autogyro

The British Air Ministry is reported as having purchased five new autogyros of the cabin type. This form of aircraft is to be used for observation purposes, staff reconnaissances and also as a means of transportation behind the lines, to bring together senior officers and commanders at one place in a minimum of time.

Germany is directing its attention to slow flying airplanes and is reported as having abandoned experiments with autogyros. The cruising speed of the slow flying airplanes, which they are working with, varies from 30 to 130 miles per hour. It is claimed that it requires, in still weather, only 150 yards for the take off run and that it can be landed within a length of 65 yards in calm weather.

The mechanical features of the slow flying planes are reported as superior to those of the autogyro but these mechanical advantages seemed to be outweighed by the increased scope of usefulness of the latter.

Picture Credits

We are indebted to *Life* for the excellent photographs used on the cover and frontispiece of this number. *Pencil Points* kindly furnished the engravings of the murals at the Coast Artillery School which are used throughout the issue.

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Coast Artillery Board Notes

Any individual, whether or not he is a member of the service, is invited to submit constructive suggestions relating to problems under study by the Coast Artillery Board, or to present any new problems that properly may be considered by the Board. Communications should be addressed to the President, Coast Artillery Board, Fort Monroe, Virginia.

THE COAST ARTILLERY BOARD

COLONEL WILLIAM S. BOWEN, C.A.C., *President*
MAJOR GORDON B. WELCH, Ordnance Dept.
MAJOR FRANKLIN E. EDGECOMB, C.A.C.
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CAPTAIN CORTLAND VAN R. SCHUYLER, C.A.C.
CAPTAIN CHARLES E. SHEPHERD, C.A.C.
CAPTAIN EDWIN W. CHAMBERLAIN, C.A.C.

GENERAL. Since the publication of the November-December issue of the COAST ARTILLERY JOURNAL the Coast Artillery Board has studied numerous subjects that, because of their secret or confidential nature, cannot be reported at this time.

CABLE INSTALLATION FOR FIXED ANTIAIRCRAFT GUN MOUNTS (PROJECT NO. 1075). The Coast Artillery Board completed its study of permanent cable installations for fixed antiaircraft gun batteries in December, 1937, and recommend that the standard systems M3E1 and M4A1 be regarded as suitable for such batteries when using M2 directors. It was further recommended that the extension junction boxes be redesigned in certain particulars when the use of any other director was contemplated. As thus modified, permanent cable systems should be installed at all fixed antiaircraft gun batteries as directors are provided.

SEACOAST DATA COMPUTOR T-5 (PROJECT NO. 1100). The computor with self-synchronous data transmission system and two 155 mm. guns equipped with data indicators were received late in September, 1937. During October and November the Board conducted extensive tests of the computor culminating in subcaliber and service firings. These tests disclosed that the performance of the computor could be considerably improved by certain minor changes in design of the lever mechanisms. It is planned to conduct further tests after incorporation of the changes in the pilot model.

EMERGENCY FIRE CONTROL SYSTEM FOR THREE-INCH ANTIAIRCRAFT GUNS (PROJECT NO. 1103). Certain features in connection with this project have been discussed in previous issues of the COAST ARTILLERY JOURNAL. The project has now been completed and therefore a brief resume of the equipment used, the tests conducted and the conclusions reached by the Board are included herein.

1. *Description of the System.* The system is intended to provide a simple, relatively inexpensive means by which an antiaircraft gun battery can continue to function effectively, in the event that part or all of its standard fire control equipment is a casualty. The emergency equipment is particularly designed with a view to simplicity and ease of procurement, so that in case of mobilization a complete set of emergency equipment can be furnished each antiaircraft gun battery.

The system tested is built around two instruments, a lead computor and a tracker. The lead computor is an instrument which, when supplied with altitude readings, and oriented with respect to the course of the target, contains means by which values of vertical and lateral leads can be read. These values are transmitted by telephones to the tracker. The lead computor is operated by a crew of six men, one of whom acts as observer. Approximate formulas are used in determining the resulting deflections, but the data produced appears to be sufficiently accurate for emergency use. Two types of lead computors were tested. The telescopic computor (Figure 1) has a tracking telescope, an orienting bar, and a target speed measuring device. The simplified computor (Figure 2) must be oriented by eye, has an open sight for tracking and requires that target speed be set in by estimation only.

The tracker intended for use with the emergency system has not yet been constructed. Since its design apparently offered no particular problem, it was decided, for purposes of economy, to test thoroughly the principles of the lead computor before proceeding with the construction of a tracker. The instrument contemplated for this purpose should be comparatively simple. It will include two tracking telescopes and the necessary differentials and charts, scales or cams to provide for determining superelevation and fuze range, combining vertical and lateral leads with present position data, and applying spotting corrections where necessary. The resulting firing data will be indicated on suitable dials and will be transmitted by telephone to the guns. (The Case III telephone transmission system was described in the November-December issue of the COAST ARTILLERY JOURNAL.) For the purpose of the instant tests a suitable tracker was improvised by using a director M1A1, without the deflection computing features. The instrument, as thus used, computed fuze range and

superelevation and applied the deflections as telephoned from the lead computor. Spots were applied as in normal operation.

For purposes of comparison, the telephone data transmission system was employed in about one-half the tests and the standard (M2) self-synchronous system was used in the remainder.

Altitudes were obtained either from a height finder M1 or from altimeters M1920. Tables of Basic Allowances now provide for equipping the antiaircraft gun battery with both of these altitude-measuring devices, consequently at least one of them should always be available for use with the emergency system.

2. *The Tests.* The tests consisted of nine separate target practices of approximately forty rounds each, fired at various altitudes and angular heights, and on various types of rectilinear courses. Another phase of the investigation consisted of tracking tests on high-speed targets, to determine the accuracy of performance of the lead computors and the telephone data transmission system against fast-moving planes. Records were obtained by which data from these elements of the emergency system could be compared with data supplied by corresponding elements of a standard (director) system, operating on the same target courses.

3. *Analysis of Results.* The Board made a careful study of the records of target practices and high-speed tracking tests. It was found that:

a. Two and two-tenths per cent of hits were obtained.

b. Three and five-tenths per cent of all bursts were laterally and vertically within eleven yards of the gun-target line (within target column, except for range deviations).

c. Nineteen and five-tenths per cent of all bursts were laterally and vertically within forty yards of the gun-target line (within target plinth, except for range deviations).

d. The telescopic lead computor was more accurate than the simplified lead computor. Both instruments were much more accurate on crossing courses than on incoming courses.

Figure 1 — Telescopic Computor

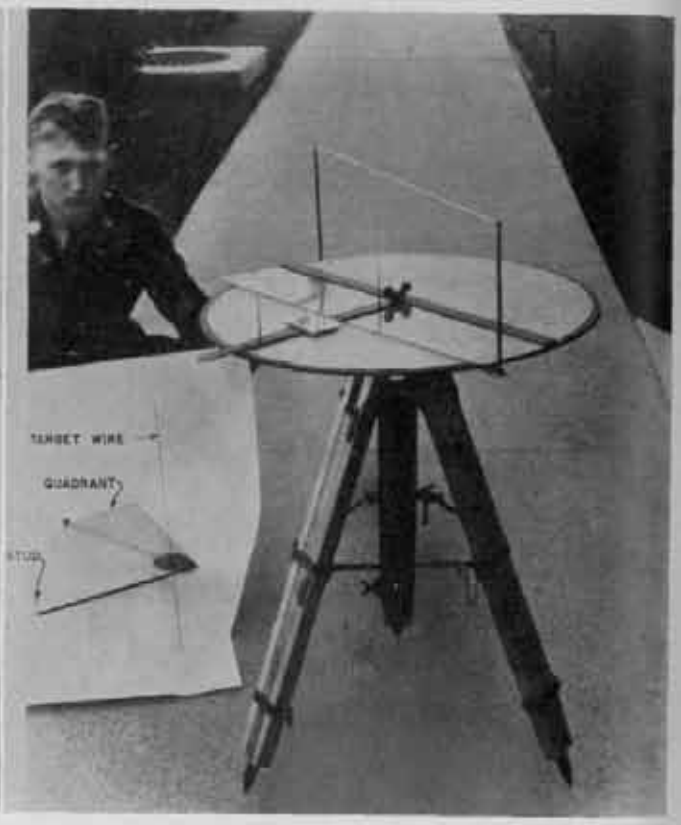

Figure 2 — Simplified Computor

e. The Case III telephone data transmission system functioned satisfactorily.

f. By comparison with results obtained in target practices of Regular Army batteries during the current year, the emergency system may roughly be considered as being one-sixth as accurate as the standard (director) system. By a few simple modifications in the data transmission system, it seems likely an accuracy of about one-third that of the standard fire control system should be secured.

4. *The Board concluded that:*

a. A fire control system based on a lead computor and tracker, employing Case III pointing methods, is suitable for emergency use by three-inch antiaircraft gun batteries.

b. Study of the lead computor principle should be continued in an attempt to improve the accuracy and serviceability of the present telescopic lead computor.

c. The development of a tracker should be pressed.

d. A telephone data transmission system of the type used in these tests is suitable for emergency use.

e. The system should be given a service test at an early

date in an advanced target practice by one or more units of the Regular Army.

5. *Present Status of Development*. In accordance with the conclusions and recommendations of the Coast Artillery Board, the Chief of Coast Artillery has taken the following steps to insure the early construction of a complete emergency system.

a. The Chief of Ordnance has been asked to expedite development of a suitable tracker.

b. The Board has been directed to proceed with a further study of the lead computor principle.

c. Further study of Case 1½ pointing equipment has been dropped for the time being, pending an extended service test of the present emergency system.

d. Two old-model Vickers directors (Directors M1) are being shipped to the Board for modification into improvised trackers, with a view to holding firings at an early date with the emergency system by various units of the Regular Army.

e. Consideration is being given to the inclusion of instruction in the lead computor principle and emergency methods of fire control, in the courses at the Coast Artillery School.

Winches for Antiaircraft Gun Prime Movers (Project No. 1106). The Coast Artillery Board has been engaged for some time in conducting field tests to determine whether or not, by equipping all antiaircraft gun prime movers, with winches, it would be possible to dispense with the medium tractor as an item of equipment for antiaircraft units. Tests conducted to date have not given conclusive results. The present 7½-ton prime mover has a decided tendency to bog down in loose sand and mud, even with no towed load. Under such conditions, the services of a tractor are needed to extricate the truck and place it in a position from which its winch can be used to tow the gun across the same ground.

In an attempt to meet this situation, the Board improvised a set of traction devices by using traction plates provided for 155 mm guns. A prime mover equipped with these improvised devices showed a decided improvement in mobility, although considerable difficulty was experienced due to the excessive weight of the traction plates, the small clearance between truck body and traction plates and the tendency of the devices to run off the wheels. In order more thoroughly to test the possibilities of such expedients, the Board has asked the Chief of Coast Artillery to take steps to secure a set of modern traction devices, suitably designed to fit the two rear sets of wheels of a prime mover. It seems quite possible that, by equipping all prime movers with winches and furnishing each gun battery with one or two sets of traction devices for emergency use, the need for a medium tractor in antiaircraft units will no longer exist.

Electric Brakes for 3-Inch Antiaircraft Gun Mounts (Project No. 1110). The Coast Artillery Board completed its study of electric brakes for mobile antiaircraft gun mounts in November, 1937. As a result of this study, the Chief of Coast Artillery requested the Chief of Ordnance to equip all such mounts building or to be built with electric brakes. In studying the mechanical problems involved, the Chief of Ordnance found that it might be practicable to supply four-wheel instead of two-wheel brakes for these mounts. In case detailed design study confirms the practicability of this installation, it is expected that all mobile antiaircraft gun mounts manufactured in the future will be equipped with electric brakes on all four wheels.

Switchboard BD-74. During November, the Coast Artillery Board made a study to determine the advisability of providing a new circuit combination for the BD-74 fire control switchboard. The proposed new combination contained the following circuits:

80 transmitter battery supply,
3 simplex,
40 jack,
1 lamp battery,
1 fuse alarm,
6 trunk,
1 night alarm,
1 operator's telephone.

It was expected that this combination would replace the present A, B and C combinations. The chief points of difference between the proposed combination and the A, B and C combination was the reduction in the number of simplex circuits provided, the increase in the number of jack circuits provided and the addition of trunk, night alarm and operator's telephone circuits. The Coast Artillery Board concluded that such a combination was a desirable replacement for the present A, B and C combination but believed that an additional improvement could be made by eliminating the three simplex circuits and replacing them with twelve additional jack circuits. There is normally little use for simplex circuits in a harbor defense but there is considerable use for jack circuits. The substitution of the jack for the simplex circuits would provide a total of fifty-two jack circuits in the new combination. Simplex circuits would still be available in combinations D and E should a particular installation make their provision desirable. The Coast Artillery Board recommended that the proposed combination, so modified, be considered as a replacement for present combinations A, B and C of the BD-74 switchboard.

Recent Developments in Design of Elbow Telescopes. In a recent investigation the Board conducted comparative tests of two pilot models of elbow telescopes designed by the Ordnance Department with a view to their possible use as replacement for the Elbow Telescope M2, now standard equipment on most antiaircraft directors. The principle objections to the present standard telescope are:

a. Focus of the eye-piece can not be changed by the observer.

b. Illumination of reticle is unsatisfactory.

c. Instrument is not suitable for use as a "night glass" (i.e., an instrument designed especially for observation at night or under other conditions of poor visibility). One of the pilot models tested by the Board (the telescope T-10) was found to be quite satisfactory, except for its excessive weight. After further study, the Ordnance Department stated that by using aluminum alloy castings for the bracket and telescope proper, an instrument could be constructed which would retain the desirable optical characteristics of the T-10 telescope and yet would be considerably lighter in over-all weight than that instrument. Construction of a pilot model of this new telescope is now being undertaken. The following data are furnished for comparison with the Elbow Telescope M2:

	M2	New telescope
Over-all dimensions, inches	5x4x2	15½x8½x3¼
Weight, pounds	3.4	10 (estimated)
Power	8	8
Field of view	8° 45′	8° 45′
Exit pupil, mm	3	7
Diopter adjustment	no	yes
Eye distance, inches	⅜ (approx.)	1¼ (approx.)

Note: The eye distance of the new instrument is such as to permit of its operation by an observer wearing a gas mask.

Coast Artillery Orders

(Covering the Period November 1 to December 31, 1937)

Colonel F. J. Behr, to home and await retirement. Previous orders revoked.

Colonel L. B. Magruder, from 7th, Ft. Hancock, to recruiting, New York City. Previous orders revoked.

Lieutenant Colonel F. E. Emery, Jr., from Org. Res. 3d Corps Area to 2d, Ft. Monroe, revoked.

Lieutenant Colonel C. R. Finley, from instructor, C.&G.S. School, Ft. Leavenworth, to 62d, Ft. Totten.

Lieutenant Colonel R. E. Haines, from Hawaii, to General Staff with troops, Boston.

Lieutenant Colonel E. K. Smith promoted Colonel, December 1.

Lieutenant Colonel J. P. Smith promoted Colonel, December 1.

Lieutenant Colonel C. H. Tenney, from Virginia Polytechnic Institute, Blacksburg, to office of the Assistant Secretary of War, Washington, D. C.

Lieutenant Colonel E. W. Turner, from 6th, Ft. Winfield Scott, to 7th, Ft. Hancock.

Major E. R. Barrows, from 7th, Ft. DuPont, to 5th, Ft. Hamilton.

Major H. D. Cassard, from Hawaii, to 1st C.A. District, Boston.

Major B. L. Flanigen promoted Lieutenant Colonel, December 1.

Major E. H. Freeland promoted Lieutenant Colonel, November 1.

Major E. F. Gallagher promoted Lieutenant Colonel, December 1.

Major W. J. Gilbert, from 5th, Ft. Hamilton, to Hawaii, sailing New York, Feb. 10.

Major A. V. Rinearson, Jr. promoted Lieutenant Colonel, November 1.

Major J. C. Ruddell promoted Lieutenant Colonel, November 1.

Major F. C. Scofield promoted Lieutenant Colonel, December 1.

Major F. L. Topping, from 1st C.A. District, Boston, to Hawaii, sailing New York, February 10.

Captain G. W. Ames promoted Major, December 1.

Captain Granger Anderson, from 13th, Ft. Barrancas, to Hawaii, sailing New York, February 10.

Captain C. S. Denny, from 9th, Ft. Banks, to Hawaii, sailing New York, March 25.

Captain P. B. Denson, from Hawaii, to 9th, Ft. Banks.

Captain C. O. Gunn, from Hawaii, to 13th, Ft. Barrancas.

Captain P. A. Harris, from Hawaii, to 7th, Ft. DuPont.

Captain R. R. Hendrix, from 6th, Ft. Winfield Scott, to Hawaii, sailing San Francisco, December 21, then to the Philippines, sailing February 5.

Captain A. L. Lavery promoted Major, November 1.

Captain P. S. Lowe promoted Major, November 1.

Captain W. C. McFadden, from 7th, Ft. Hancock, to the Philippines, sailing New York, January 6.

Captain W. B. Merritt, 52d, Ft. Hancock, to instructor, C.A. School, Ft. Monroe.

Captain Lloyd Shepard, resigned.

Captain L. A. White, from 62d, Ft. Totten, to Hawaii, sailing San Francisco, May 7.

First Lieutenant C. G. Calloway transferred to Quartermaster Corps, November 11.

First Lieutenant V. H. King from Hawaii, to 51st, Ft. Monroe.

First Lieutenant W. J. Ledward, transferred to Field Artillery, December 22.

First Lieutenant R. M. Nelson, from Hawaii, to 51st, Ft. Monroe.

First Lieutenant H. S. Tubbs, from Hawaii, to 2d, Ft. Monroe.

First Lieutenant W. E. H. Voehl, from Hawaii, to 2d, Ft. Monroe.

Second Lieutenant W. S. Blair, from 51st, Ft. Monroe, to Hawaii, sailing New York, March 25.

Second Lieutenant H. J. Katz, from 51st, Ft. Monroe, to Hawaii, sailing New York, March 25.

Second Lieutenant R. H. Mattern, from 62d, Ft. Totten, to Hawaii, sailing New York, December 8, then to the Philippines, sailing February 5.

Second Lieutenant E. H. Thompson, Jr., from 51st, Ft. Monroe, to Hawaii, sailing New York, March 25.

The Contributors

The career of that distinguished Coast Artilleryman, Brigadier General ROBERT S. ABERNETHY, is familiar to most of our readers. Therefore we touch only on the highlights of a personal history that is closely interwoven with the past forty years of the Corps. General Abernethy graduated from the Military Academy with the class of '97 and was then commissioned in the Artillery. With the exception of a hitch as captain and major of Infantry during the Spanish War period and one as a colonel of Field Artillery during the World War, all his service has been with the Coast Artillery.

General Abernethy has been decorated with the Silver Star (2 Oak-Leaf Clusters) and the Purple Heart (Oak-Leaf Cluster). He is a graduate of the School of Submarine Defense (1906) and the Army War College (1912). At present he commands the San Francisco Port of Embarkation.

✓ ✓ ✓

Captain WILLIAM H. BOUGHTON, 105th Infantry, New York National Guard, has served the military forces of his native state for over twenty years. During this time he participated in active federal service on the Mexican Border in 1916 and overseas during the World War. While a member of the AEF he took the course at the Lewis Machine-Gun School (British) and the Musketry and Bayonet School of the American Expeditionary Forces. He was discharged from his war service with the grade of sergeant and reëntered the New York National Guard as a first lieutenant in 1921, being promoted to captain five years later. He has held assignments as company commander, regimental adjutant, and assistant plans and training officer of the 105th Infantry.

In civil life Captain Boughton has had fifteen years of experience as a sales manager of wholesale electrical supplies. This background probably accounts for the excellence of the article in this number. At present he holds a position in the personnel bureau of the Adjutant General's Office, State of New York.

✓ ✓ ✓

Major E. T. CONWAY, Coast Artillery Corps, reappears in our pages after an absence of over a year. He is the author of "AA Machine-Gun Fire Control" published in the September-October, 1936 issue of the JOURNAL.

Major Conway's knowledge of machine-gun fire control is exceptional, and brought him a three-year detail as a member of the Coast Artillery Board. Upon the termination of that assignment last year, he was detailed as a student at the Command and General Staff School, Fort Leavenworth, from which he will graduate with the class of 1938.

Captain GORDON GORDON-SMITH is an attaché of the Royal Yugoslav Legation at Washington. He has had varied experience as a war correspondent and represented the New York *Tribune* during the 1915 Serbian campaign. He is the author of numerous magazine articles and books; among these being *From Serbia to Yugoslavia*.

✓ ✓ ✓

Major CHARLES S. HARRIS, Coast Artillery Corps, is a North Carolinian. After graduating from the University of North Carolina (A.B. '17) he entered the army as a 2d Lieutenant, CA-ORC, August 15, 1917. He received his regular commission as 2d Lieutenant, Coast Artillery Corps in October, 1917, and has since risen by easy stages to his present grade. He is a graduate of the Coast Artillery School (Battery Officers' Course, 1924; Advanced Course, 1933), and the Chemical Warfare School Field Officers' Course (1934).

We touch briefly on the highlights of Major Harris' service. During 1924-1927 he served as instructor in antiaircraft and heavy artillery gunnery at the Coast Artillery School. He commanded Battery B, 63d Coast Artillery at the time (1932) that organization won second place in the Knox Trophy competition. The Coast Artillery Board had his services as its antiaircraft member during the period 1933-1935. Other than that he has had the usual tours of troop and foreign duty including a hitch in the Philippines and one in Hawaii. At the moment Major Harris is on duty with the 69th Coast Artillery, Fort Crockett, Texas.

✓ ✓ ✓

PETER B. KYNE, nationally known novelist and creator of Cappy Ricks, has had a checkered military career. Enlisting as a private in Company L, 14th Infantry in 1898 at the age of 18, he got an excellent worm's-eye view of the Philippine Insurrection. He saw overseas service during the World War from the vantage point of a battery commander of the 144th Field Artillery, California National Guard. After demobilization he signed up with the Officers' Reserve Corps as a captain of Cavalry. He has sired some thirty novels, innumerable short stories and a few scenarios. He makes his home in the city of his birth —San Francisco.

✓ ✓ ✓

Captain WILLIAM H. PAPENFOTH, Coast Artillery Corps, not only commanded the battery (B, 69th) that

won the Knox Trophy, he also wrote the story in this number telling how that feat was achieved.

Captain Papenfoth's service began as a private, Coast Artillery Corps in 1915. By the summer of 1918 he had progressed through the grades of corporal, sergeant, and sergeant major. He won his commission as 2d Lieutenant, CA-ORC, in June, 1918; and received his appointment in the regular establishment July 1, 1920. He is a graduate of the Battery Officers' Course, Coast Artillery School (1923). Captain Papenfoth is on duty with the 69th Coast Artillery (AA), Fort Crockett, Texas.

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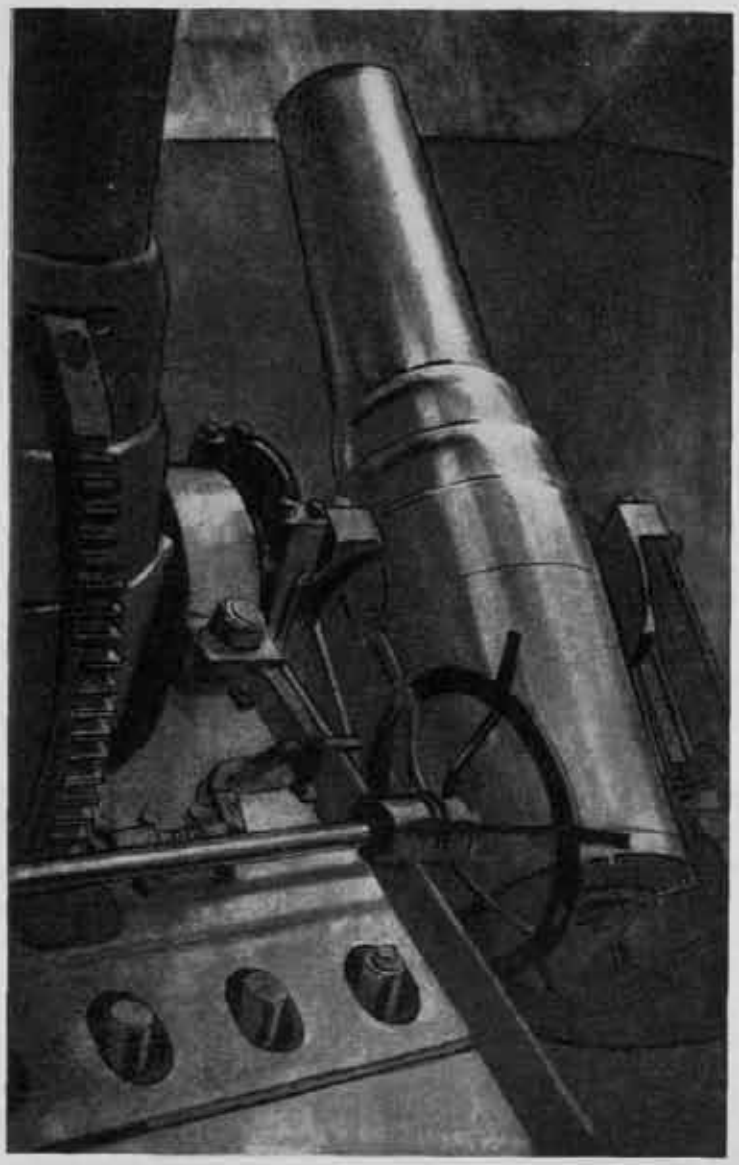
The biography of FLETCHER PRATT appeared in the September-October, 1937, number of The JOURNAL. Those of our readers who occasionally forsake Army Regulations and Training Regulations for more worldly literature will probably have noticed his articles in recent numbers of *Esquire*—"Knights in Armor," December, 1937, and "The Clothyard Shaft," January, 1938.

✦ ✦ ✦

We take for granted that you read "The Will of the Leader" which ran in four installments, beginning with the November-December, 1936, number. The author of that success, Major RICHARD G. TINDALL, Infantry, returns to us with a hot-off-the-griddle account of what the French and German armies have up their tactical sleeves for 1938. At last report Major Tindall was still holding down his post as an instructor in tactics at the Command & General Staff School, Fort Leavenworth.



Book Reviews

MILITARY HISTORY OF THE WORLD WAR. By Colonel Girard Lindsley McEntee. New York: Scribners, 1937. 566 pages; 459 maps and diagrams; illustrated; index; $7.50.

This is the first comprehensive guidebook to the World War. It begins with a terse account of the treaties and war plans that furnished the background for 1914 and ends at the point where the soldier gave way to the makers of the peace treaties. Virtually every tactical and strategical happening of importance is mentioned. There is an analysis of the first year of the war, followed by accounts of the battles on the Western front, the Eastern front, the Italian, Serbian, Turkish, Mesopotamian, East African, and other far-flung sectors. Included are accounts of the naval concentrations, the principal battles at sea, the transport and convoy situations, the problems of logistics on land, and the complex ramifications of the supply systems comprising ammunition, equipment, and food. In fact, nothing of any importance has been omitted.

The *Military History of the World War*, is written, as good history should be, without bias. It is unemotional and contains no propaganda. The author has striven to tell only the story of what happened. That he has succeeded is attested by the fact that his work has been adopted as a textbook at the United States Military Academy.

A remarkable achievement is the feat of printing ingenuity that succeeded in spotting virtually every one of the 459 maps and diagrams on the same page with the accompanying text.

Few military histories can show a bibliography as arresting as the one that accompanies Colonel McEntee's book. He has spent years in compiling the maps from official archives, including the German. Consequently the maps show every detail of German strategy as well as of the Allies.

The prospective reader can take no better guide than the evaluation of another historian, Colonel W. A. Mitchell, Professor of Military History at West Point, who says:

> Colonel McEntee's book contains more valuable information concerning the World War than I have ever seen elsewhere in one volume. It shows a knowledge of the World War equalled by few if any historians. The book is remarkable.

Colonel McEntee was retired in 1934 after 33 years of service. During that period he served three tours in the Philippines, was with Funston at Vera Cruz, and during the World War served overseas as a staff officer of the 7th Division, AEF. He is a graduate of the Signal School, the School of the Line, the Command and General Staff School, and the Army War College. He is a military history lecturer of note and has contributed many articles to military magazines. He is the author of *Italy's Part in Winning the World War*, published by the Princeton University Press.

No military library can be called complete without a copy of the *Military History of the World War*.

* * *

HISTORY OF MILITARISM. By Alfred Vagts. New York: W. W. Morton & Company, Inc. 513 pages; 33 illustrations; notes; $4.75.

Dr. Vagts, a newcomer to the rank of American historians, has turned out a remarkable social and political history of armies, in which battles are more or less disregarded. His long experience as an historian in pre-Nazi German universities has furnished stout mortar for a military-literary edifice that is truly monumental. Moreover, the practical knowledge gained by four years' service as private and officer in the German army has stood him in good stead in evaluating the theory and practice of the systems whereby man has waged war. He writes easily and ably—at times brilliantly—and with the occasional flash of a sardonic humor lightens what easily could have been a first-rate soporific.

His thesis is that the use of armies is governed by two distinct and separate ways of thinking—the military and the militaristic. The military way limits the use of men and materials to the winning of a war or the defense of a country. On the other hand, the militaristic way seeks "ends not identical with the winning of victory." At times, these ends resolve themselves in the pursuit of "enterprises for sheer glory or the reputation of leaders."

The central theme is developed over the time-period spanning the breakdown of the feudal system to the rise of the present-day armies of the totalitarian states. Included are dissertations on the military aspects of discipline, various theories of warfare, the philosophy of war, and the government of armies. In short, the book is as complete a survey of armies from within as could be compressed within the covers of a 512-page volume.

In discussing the military way, the author makes the point that all army functions not related to battle are nonessential and lead away from the true purpose of war. The real soldier, according to Dr. Vagts, subordinates all to winning. In his military economy there is no place for glory or for the schoolboy conceit of being a good loser. Nor does he allow his honor to incommode him on the battlefield.

For example, there is the ungentlemanly conduct of the American revolutionists in potting first the Redcoat officers (at Cow Pens, Bemis Heights, Bunker Hill) be-

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fore settling down to the business of dealing with the rank and file. The British spoke bitterly of such methods, characterizing them as "uncivilized." The concept of "honor" involved was somewhat beyond the comprehension of the Colonist leader, for he was out to win a war and independence. To him the British officer was no fellow sportsman with whom he was temporarily on the outs—he was an enemy to be exterminated. The sporting idea still lingers, marvels Dr. Vagts, as witness the sparing of opposing higher headquarters during the World War. To the shocked warrior in the trenches this tenderness was carrying *noblesse oblige* a bit too far.

Among the manifestations of the militaristic way, Dr. Vagts sees the uphill struggle to fasten an educational system for leaders on the earlier armies, inter-branch efforts to better themselves when appropriations are being made, and the struggles within European armies between the officer "class"—*i.e.*, the nobility—and the son of the burgher lately admitted to a commission. Herein the United States is given a clean bill of health, the author pointing out that our method of selection of cadets for West Point is the best guarantor against the building-up of an hereditary officer caste. In fact, Americans can take comfort that their leaders have seldom pursued the militaristic way, and that, says Dr. Vagts, is characteristic of a true democracy.

And yet, one could debate with Dr. Vagts over the question of a "useless" battle. He says that battles have been fought at times merely for the glory involved—one might counter that the general fought at an inopportune time merely because he didn't know any better.

One could also take issue with him on his evaluation of the horseman in modern war. The cavalry, claims the author, is "long-anachronistic" and "merely exists for diversion or to satisfy peacetime whims." Moreover, the following statement will find plenty of disagreement from American leaders who can hardly be dubbed "militaristic":

> After some early actions [in the World War] whatever remained of the cavalry proper waited for years for its employment, but no sector of an army was so utterly crushed that the cavalry had a chance to ride it down. If further evidence of the futility of cavalry for modern warfare is required, it is furnished by the insistence of the Allies in the treaty of Versailles that the *Reichswehr* contain a large percentage of horsemen.

The work is buttressed by a documentation for which the adjective abundant hardly seems to suffice. For all that, the mass of references and quotations are skillfully handled. There are a few factual inaccuracies, but these are unimportant. *History of Militarism* bids fair to remain for some time a textbook on the development of armies.

GENERAL PHILIP KEARNY. By Thomas Kearny. New York: G. P. Putnam's Sons, 1937. 469 pages; 19 illustrations; $4.00.

A biography of an American cavalryman and soldier of fortune. He saw service on the western frontier, in Africa

as an observer with the French, during the Mexican War, and served under Napoleon III in the Austro-French war. He met his death as a brigadier general of Union cavalry at Chantilly, Virginia.

The bibliography and index give an able summary of the references extant on the Peninsula campaign.

BACKGROUND OF WAR. By the Editors of *Fortune*. New York: Alfred A. Knopf, 1937. 296 pages; Index; $2.50.

This book, which appeared between March and August, 1937, as a series of six articles in *Fortune* magazine, is in many ways an excellent preface to *If War Comes*—that superb analysis of potential aggressors and their possible moves written by Majors Dupuy and Eliot. Taken together, these two studies constitute a complete background or "estimate of the situation" for the military reader.

Background of War is not merely another book added to the growing list of feverish war prophecies; it is an easily read examination of six foci of fear: the ambiguous foreign policy of Great Britain; the Fascist invasion of Spain; the left government of France; the domestic pressure in Germany; the militarism of Russia; and the new armaments developed in these countries and our own since the World War.

Unfortunately, Italy and Japan are omitted from this otherwise complete study of danger zones.

The authors think that National Socialism maintains an on-the-surface complacence among the German people because it has put the nation to work and made it feel that the work is for a glorious, patriotic purpose. As for desiring war—"Hitler . . . got his bellyful of fighting during the last war." Göring, too; he is held together by a steel brace. "Neither von Blomberg, the War Minister, nor von Fritsch, who is the silent power in the *Wehrmacht*, thinks that Germany is ready in terms of officers, men, guns, and ammunition to risk a fight—just yet, at any rate. But there are more radical elements in the Nazi party: Göbbels, for example." And Rosenberg who wants to carry through the *Drang nach Osten*.

"Industry in Germany, needs the shot-in-the-arm of war orders." And symbolic victories, such as the remilitarization of the Rhineland, must be kept up to preserve Nazi popularity. "This must lead the Nazis toward gambling on, say, the *Anschluss* with Austria, or the repatriation of the German portion of Czechoslovakia. . . . Will the Nazis make a mistake and pick a moment to bluff when England or Russia is not in the mood to back down? . . . Dictators don't dare to back down."

The French *Front Populaire* is styled "A government of the Workers, by the Intellectuals, for the Bourgeoisie [which] keeps the French Republic from vanishing from the Fascist earth . . . a government which exists to save France from the fate of Spain." It is an occupation of government offices which "aims to exclude the Fascists from power . . . *without* seizing power for the workers

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and thus risking a possible invasion by Hitler and perhaps even Mussolini."

The political and economic ups and downs of France, since 1918, are, like those of Germany, described with marvelous simplicity for the non-politically minded reader.

"The Soviet Union has more live soldiers and dead generals than any other nation on earth." The authors' astute estimate on Russia's warlike preparations is that phantoms of invading capitalist armies, like those of 1919, beset Soviet leaders, and that these preparations therefore are primarily for home defense. However, Soviet doctrine is: "If we are attacked, the war will be waged on enemy territory, not ours."

The chapter "Who Dares to Fight" is a brief survey of land armaments, with these conclusions based primarily on the war in Spain: "Such improvements in weapons as have been made leave the relative positions of attacker and defender about what they were and subject aggressors to the risk of stalemate and long war. . . . And no dictator-ruled country will risk a long war if it can avoid one."

This also looks sound: "The effect of the development of air power has been to force the scattering of troops in small units for self-defense. The effect of mechanization and the use of machines with small crews like tanks has been the same. Small units must rely on themselves. In consequence the advantages in modern warfare will lie with peoples whose social institutions, economic practices, and political forms produce quick-witted, self-reliant soldiers. The institutions of the modern dictatorships are less likely to produce such men than the institutions of the democracies." W. G. J.

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THE KAISER ON TRIAL. By George Sylvester Viereck. New York: Greystone Press, 1937. 500 Pages; Illustrated; Index. $5.00.

Anyone familiar with Mr. Viereck's antecedents, his ante-bellum activities, his post-war literary endeavors, and his unique relationship with the wood-chopper of Doorn will know in advance what manner of trial Wilhelm II receives in this book. With a fine display of impartiality Mr. Viereck has the Public Prosecutor arraign Wilhelm before the High Court of History on the old question of war guilt. This arraignment is essentially a recapitulation of the more lurid charges leveled against the German Emperor by the Allied propaganda machines and long since shrugged away on the count of military expediency —an excuse, incidentally, that is not altogether unknown to Germany. Nevertheless, the old canards are hauled out again and to rebut them the Public Defender summons legions of witnesses from the living and the dead. The Public Prosecutor, not to be outdone, has recourse to the same device but unfortunately his witnesses usually turn out to be stooges for the defense. All in all I should say that the prosecution is allotted twenty or twenty-five of the

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500 pages devoted to this trial, which is certainly an indication of the author's bent.

But here is the strange thing, and it is a thing that may cost Mr. Viereck his entrée at Doorn. His Public Defender succeeds, and much against his creator's wishes, in making Wilhelm II appear the consummate jackass of all time. Somehow I think that poor old Wilhelm would prefer to have the High Court of History convict him as a ravening lion rather than laugh him out of court as a posturing, ineffectual nincompoop.

But do not misunderstand me: this is not the verdict of Mr. Viereck—not by a mile of wienerwurst. For this gentleman is in a veritable lather to show old Bill as a master diplomatist, a big-time strategist, a champion of labor against capital, a profound scholar, a philosopher of parts, and so on and so on. That none of these many talents came to flower was not the fault of Great Man Hohenzollern—there was dirty work at the crossroads. In fact there was an interminable amount of dirty work at an endless succession of crossroads and all of it had just one purpose—to thwart Germany's All Highest. It began with Bismarck and it didn't end until lying advisers forced the Anointed of God to scuttle into Holland in order the save the Fatherland.

Now as a matter of fact there was a plethora of skullduggery in Wilhelm's court from the time he took over the Number One job until the day he decided he had had enough. Bismarck had no stomach for him and did his best to humiliate him and circumvent him. The one supremely

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courageous act of Wilhelm's entire reign was kicking him out. But though he kicked him out he was unable to curb the intrigues that the old man hatched in retirement.

From that time on Welhelm picked one dud chancellor after another. First came Caprivi who promptly refused to renew Bismarck's shrewd "reinsurance treaty" with Russia thereby making certain that Germany would have an enemy to the east as well as the west.

Caprivi was eventually succeeded by the sparkling Bülow who is more famous for his memoirs than his achievements. Mr. Viereck contends that even Bülow's brilliance was spurious; he insists that his vast reputation for erudition was built by memorizing bits of unusual knowledge culled from learned books and springing canned epigrams at opportune moments. In all things he was superficial. His long tour as Imperial Chancellor is noteworthy for the gradual encirclement of Germany, the sabotaging of Wilhelm's treaty of Björkö, the fateful *Daily Telegraph* interview in 1908, and the first-class job he did in selling his Imperial master down the river.

Next came Eulenberg, the life-long friend of Wilhelm. He turned out much worse than any of his predecessors. In addition to a dozen other weaknesses and a general shallowness, this prince of the blood was sexually "queer." In due course an enterprising journalist blew the lid off of a major scandal that left the world wide-eyed. Wilhelm and his family were not involved but it was *finis* for the "queer" chancellor.

And then with his uncanny ability of picking blank files, Wilhelm pounced on Bethmann-Hollweg for the vacant chancellorship.

Now whatever else may be said, these mistakes were Wilhelm's and Wilhelm's alone. Even Mr. Viereck admits that; but he seems unwilling to admit that that is a telling count against his great man. Indeed, he appears to be of the opinion that the faults of these and other imperial appointees exonerate the All Highest from everything that followed. In particular does he bear down upon Holstein, that shadowy and sinister figure in the Foreign Office who pulled the strings and made the incompetent imperial chancellors dance. But Wilhelm knew of Holstein, the man with the hyena eyes. He knew that Holstein had repeatedly evaded presentation to majesty. He had every means of learning that this *geheimrat* was a poisonous scoundrel. That the Anointed of God did nothing about all this does not speak highly of the quality of the oil used in his anointment.

Let there be no question about it: Mr. Viereck gives us the facts of Wilhelm's reign and by and large those facts are straight. It is when Mr. Viereck endeavors to interpret those facts in favor of Germany's one-time War Lord that he parts company with his reader. But the reader is free to make his own decision—to cast his vote as a member of the jury hearing the case of *The World vs. Wilhelm Hohenzollern.*

Whatever else may be said of Mr. Viereck, let it be said here and now that he can certainly handle the business

end of a pen. Few contemporary writers are more skillful. In this book he has lost none of his literary cunning—it is history that trips him. To most readers *The Kaiser on Trial* will be a Grade A irritant but at the same time it will hold their interest from cover to cover. When you get through you may agree with this reviewer that the All Highest wasn't around when they rationed out the gray matter and that is about the only charge on which the High Court of History will find him guilty. C. T. L.

* * *

MASSACHUSETTS: A Guide to its Places and People. Federal Writers' Project. Cambridge: Houghton Mifflin Co., 1937. 670 pages; index; 89 ill. 16 maps in text, 1 in pocket. $2.50.

This excellent volume is one of a series of State guides produced under the WPA by a corps of writers, researchers, historians, and others under the supervision of State Director R. A. Billington. Written in Baedecker style, it is primarily a guide for the tourist, but it has a wider field of usefulness than merely that. To the stay-at-home native it will tell lots of things he doesn't know, and to the Bay Stater who is temporarily or permanently exiled by business or professional duties from The Commonwealth (there is only one Commonwealth, so far as he is concerned) this book pinch-hits for a visit back East.

In addition to the touring-guide features of the book we find workmanlike articles, meaty and concise, dealing with such subjects as the history and the government of the Commonwealth, its labor, architecture, literature, and art. And there are pages sparkling with references and instances of that "fierce individualism" that characterized our forefathers.

This book is admirably arranged in three main sections, devoted respectively to (a) The general background, (b) Detailed descriptions of the cities and larger towns with tours in each and (c) a mile-by-mile description of the longer tours within the State. Anyone who contemplates visiting or touring through Massachusetts needs no other guide than this and, having and reading it, will gain much additional pleasure from his tour. The excellent rotogravures will save him enough in picture postals to more than pay for the book.

Most of us will believe, at first, that more space or emphasis could be given to certain items. For example, four lines are allotted to the historic occasion when General Washington issued letters of mark to the schooner *Hannah* thereby founding the United States Navy. This summary treatment robs us Army blokes of a beautiful chance to pin back the ears of our Navy brothers for, let it be known that this craft was manned first by the Army—salty Continental soldiers from Salem and Beverly. A second example: one who has made repeated trips of many miles just to feast his eyes on the gorgeous lawn and blue spruces of Miss Helen Frick's home in Pride's Crossing might be pardoned for thinking that the whole village deserves more than two lines.

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✦ ✦ ✦

THE GREAT ADVENTURE. By Edwin C. Parsons. Garden City, New York: Doubleday, Doran & Company, 1937. 335 pages; 18 Illustrations. $2.75.

Eureka! An airy story without a harlot in it (except by inference). Even the liquor remains more or less in one chapter. There, the use of fire-water is discussed in a business-like manner—and without the usual flourish or benefits of hiccups. An even better chapter perhaps is entitled "Guts vs. Erudition." In that is a derisive account of how the author and his buddies, after fighting one or more years for France, were all found physically (if not mentally) unfit to fly for Uncle Sam—even though they comprised that famous body of flyers known as the Lafayette Escadrille.

They were the gallant volunteers—Thaw, Lufbery, Rockwell, Parsons, and many others—who fought for the mere fun of pulling a trigger. If at times the short biographies of those aces assume the style of pulp-paper stories, the reader can be assured that they were some of the very men who supplied the motif for a thousand penny dreadfuls. As a matter of fact, some parts of *The Great Adventure* itself appeared at one time or another between the covers of various magazines.

While intended as a strictly factual chronicle, the author could not forbear slipping in one or two well known quips of the AEF. He did not, however, include the favorite doughboy story about the artillery observer who yelled frantically over a telephone, "Hey! Five planes coming hell bent into our lines. Shoot at the last one. It's a Boche!"

Not that that particular story applies to any members of the Escadrille. Those debonair lads were among the first winged knights of the war. Their tilting ground was five thousand feet up in the air, where to be overthrown had but one conclusion—death. Those who fell deserve an epitaph, and Edwin Parsons has given them a good one.

The effect would have been much better if continuity had not been sacrificed so ruthlessly. The first part of the book is tops and it stays that way until the author drags in his once-printed short stories. From then on the narrative just won't stayed glued together.

However, *The Great Adventure* is a saga of the first American lads who fought in the clouds. If that doesn't appeal, then the reader is not air-minded. E. D. C.

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