

# COAST ARTILLERY JOURNAL

NOVEMBER-DECEMBER, 1943

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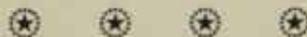
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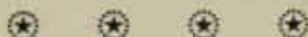
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PUBLICATION DATE: DECEMBER 1, 1943



## To Officers and Enlisted Men of the Army Ground Forces:

Our third War-Christmas is here. Our first one plunged us into a grim defensive battle on all fronts. With our meagre shipping we rushed our partly trained troops here and there in a desperate effort to close the gaps as best we could. We hung on. German submarines were sinking our ships within sight of our Atlantic Coast.

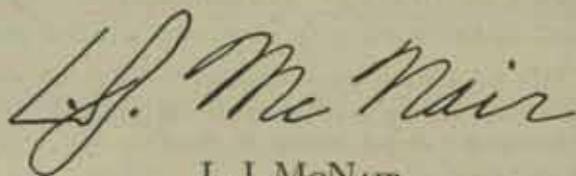
Our second War-Christmas found us invading Africa and striking back in New Guinea and Guadalcanal. We had the measure of the Japanese Navy, but German submarines still were inflicting heavy losses on Allied shipping. The worm was beginning to turn, but not too fast nor too fully.

This Christmas we really have much to cheer us. We are conducting successful naval operations in both the Atlantic and the Pacific. We have the mightiest battle fleet ever known, and it is growing. Military operations are in progress in nine theaters all over the world. Africa is rid of the enemy. We can strike on land and sea wherever we elect. We have the initiative. The enemy is on the defensive everywhere. Our superiority is becoming more decisive month by month. One third of our army is overseas, and shipments are being speeded. Victory may not be in sight, but it is certain.

The soldier's Christmas during war perhaps cannot be too merry in the usual sense, but everyone can be proud of America's war effort, and proud of being a fighter in the biggest and finest Army we have ever had.

I have watched our war Army in training for over three years. My admiration for the American soldier increases all the time. I believe in him, and am certain that, led properly, he is invincible in battle.

My best wishes to you all, and my gratitude for your devotion and fine accomplishments.



L. J. McNAIR,  
Lt. Gen., U.S.A.,  
Commanding.



To Members of the

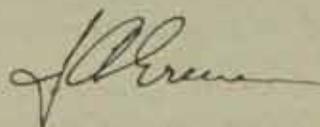
*Coast Artillery Association:*

As President of the Coast Artillery Association I extend the sincere good wishes and Christmas greetings of the Association to all Coast Artillerymen wherever they are serving throughout the world.

Since last Christmas many of you have been in action against the enemy. The year now ending has been most significant in this total war in which we unite with our allies to destroy forever the enemies of Christianity and to establish again Peace On Earth, Good Will Toward Men. Our foes are now on the defensive and we know that they, too, realize the inescapable doom that is surely theirs, as our attacks continually increase in weight and effectiveness.

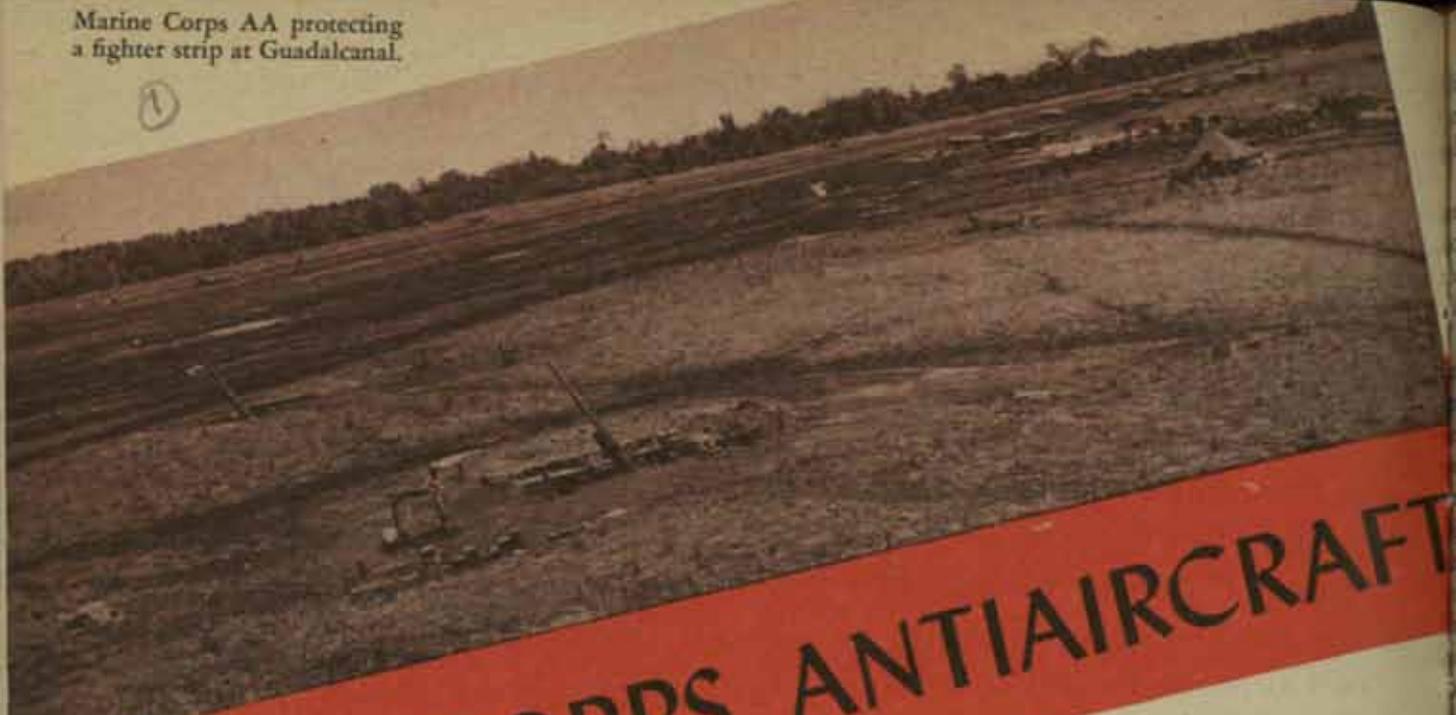
The important part that Coast Artillerymen have already had in many theaters of operation in successfully forcing the united will of allied arms upon our desperate enemies, is worthy of the finest traditions of the Coast Artillery Corps.

At this Christmas season we reaffirm our determination to devote all our skill and effort, in training and in action, to the sole purpose of complete and final Victory.



J. A. GREEN,  
Major General, U. S. Army,  
President.





# MARINE CORPS ANTI-AIRCRAFT

By

LIEUTENANT COLONEL H. R. PAIGE  
*United States Marine Corps*

The establishment in 1933 of a Marine Corps unit known as the Fleet Marine Force, the function of which was to seize and occupy advanced bases in conjunction with the Navy, opened a new phase of activity for the Corps. The specialty of the Fleet Marine Force was amphibious warfare, and every effort was put forth to further this specialty. Many of the principles developed in those efforts are in use in the present war.

It was apparent that, with the growing importance of air power, such an amphibious force must have some means of protecting the bases it had seized against attack by enemy aircraft. Also, such bases must be protected from attack by surface vessels.

Accordingly, in the fall of 1933, four marine officers were assigned to duty as students at the Coast Artillery School at Fort Monroe. These officers were First Lieutenants Rupert B. Deese, James P. S. Devereaux, Lewis A. Hohn, and Floyd A. Stephenson.

Shortly after their graduation in the early summer of 1934, two batteries of Coast Artillery weapons were formed at the Marine Barracks, Quantico, Va. One of these batteries was a 155mm GPF Seacoast battery, and the other was a .50 caliber AA machine gun battery. Lieutenant Hohn commanded the former, and Lieutenant Deese the latter. From this meager beginning, antiaircraft units in

the Marine Corps were to develop enormously in the next ten years.

These two batteries fired their first target practice at Fort Monroe in the fall of 1934. Shortly thereafter, in January 1935, they went to Culebra Island in Puerto Rico and participated in the Fleet Marine Force maneuvers.

Other than formation of antiaircraft machine gun batteries, little was done in the way of formation of antiaircraft units in the Marine Corps from that time until 1939 when two antiaircraft battalions, consisting of one battery of three-inch antiaircraft guns and one battery of .50 caliber AA machine guns, one battery of .30 caliber machine guns and one battery of searchlights, were formed.

In the fall of 1939, a unit peculiar to the Marine Corps designed for the defense of island bases and called a Defense Battalion, was conceived. Major Robert H. Pepper, USMC, (now Colonel), a graduate of the Coast Artillery School in 1935, had much to do with its planning.

The purpose of the Defense Battalion was to provide both antiaircraft and seacoast defense for small island bases. It originally consisted of the following:

- Three 5-inch naval gun batteries,
- Three 3-inch AA gun batteries,
- One searchlight battery,
- One .50 caliber AA machine gun battery,
- One .30 caliber machine gun battery,
- One Headquarters and Service Battery.

The first of these battalions was formed in the fall of 1939. One, commanded by Lieutenant Colonel Bert Bone, USMC, was formed on the West Coast at San Diego. Another, commanded by Major Robert H. Pepper, USMC, was formed on the East Coast at Parris Island, S. C. Since then, numerous similar battalions have been formed, and many of them have seen action. They have been considerably changed from the original, but for security reasons the figures are not given.

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*The opinions or assertions contained herein are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.*

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The first units to go outside the continental limits of the United States left in the spring of 1940 for the Pacific. Since that time, most of the activity of Defense Battalions has been in that area.

In June, 1941, however, a defense battalion, less the seacoast group, accompanied the U. S. forces which participated in the occupation of Iceland. In conjunction with the British, it furnished the antiaircraft protection of that island until relieved by Army troops the following year.

The types of islands occupied by Defense Battalions ranged from coral atolls covered with fine, white coral sand and no vegetation to large islands of volcanic origin, with heavy vegetation. The problems of establishing positions accordingly varied and difficult. In some places the water level was so close to the surface of the ground that digging in was next to impossible. In fact, it was reported that one atoll consisted of about twice as many small islets at low tide as it did at high tide. Another was so small that there was scarcely room to put in the defenses. The story is told that after being on this small, isolated spot for several months, its occupants developed what was known as "the thousand yard stare." The constant wind and fine sand is said to have actually "sand blasted" goggles so that they had to be replaced frequently. On other islands, positions had to be blasted from solid rock.

One battalion had the experience of going through a hurricane in which gusts of wind with a velocity of over 130 miles per hour were recorded. In spite of this, there was very little damage to equipment, although some very bulky fire control equipment was exposed to the wind.

Although it may sound somewhat incredible, this same wind demolished a recently constructed building with walls constructed of four inches of concrete.

Health conditions on the islands varied from excellent to bad. Some were relatively free from insects, while others were plagued with them. Diseases associated with the tropics caused difficulties.

The first notable action by defense battalions which took place after war was declared was the defense of Wake Island. Major J. P. S. Devereaux, who, as a lieutenant, was one of the four Marine students graduated from the Coast Artillery School in 1934, commanded the seacoast and anti-aircraft units in the defense of this island.

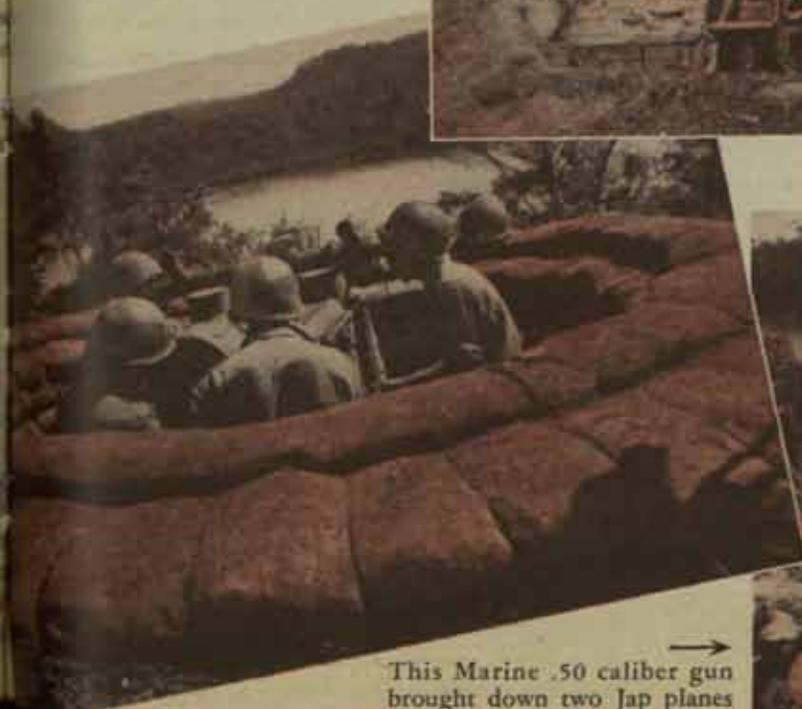
With a few naval guns, three-inch AA guns, and some machine guns, and less than 350 officers and men, this detachment of the First Defense Battalion held out under severe air bombardment from December 8th to December 22nd.

Casualties inflicted on the enemy consisted of several ships sunk and several planes downed. The true story of

→  
This Marine AA battery brought down twelve Jap bombers from a flight of eighteen, with eighty-eight rounds.

Official Marine Corps Photos.

↓  
A 90mm director used by the Marines at Tulagi.



→  
This Marine .50 caliber gun brought down two Jap planes





90mm gun on Tulagi.

the end of Wake Island will, unfortunately, be delayed until after the war, when those who were there at the end will be able to tell what happened when the little garrison was overwhelmed by a superior force.

Harassing attacks by submarines were endured by Defense Battalions on the various island outposts for the next five or six months. It is reasonable to believe that had these islands not been occupied, the Japs would have moved in. The cost of taking Wake likely caused the Japs to be much more cautious in approaching these other defended islands.

The Jap attack on Midway was the next occasion which brought the Defense Battalion into the limelight. The results of that battle are too well known to bear repetition.

On Tulagi and Guadalcanal, the Defense Battalion got its first real test in combined operations. Here, in conjunction with aviation forces, they made a remarkable record in downing Jap planes. Guadalcanal was a shining example of teamwork between anti-aircraft units and aviation units. Anti-aircraft furnished the close-in defense, while the aviation units took care of the Jap planes beyond gun range.

One aviation officer, upon his return from Guadalcanal, remarked, "I didn't think anti-aircraft was worth a damn before I went to Guadalcanal. I take it all back now. Those boys down there are O. K."

Then he proceeded to tell of how some Jap Zeros tried to strafe Henderson Field. Three started in, but none left. Anti-aircraft machine guns knocked down all three. According to his report, the heavy anti-aircraft guns were doing very well even at the exceptionally high altitudes which the Japs stayed. Anti-aircraft units were officially credited with the destruction of several scores of Jap planes.

Anti-aircraft units accompanied the task force in the attack on Rendova Island. One of the AA gun batteries took on a Jap squadron of bombers accompanied by a fighter escort of Zeros. According to a combat correspondent, the battery opened up right on the formation with phenomenal results; namely, twelve bombers and one Zero knocked down with a total expenditure of eighty-eight rounds of ammunition.

#### OFFICER TRAINING

With the expansion of the Fleet Marine Force, the necessity for training more officers in anti-aircraft and coast artillery became apparent. Because the quota of students allotted to the Marine Corps by the Coast Artillery School was insufficient to furnish the number of trained officers required, some other means had to be devised.

As a result of this need, the Base Defense Weapons Course was started at Quantico, Va., in 1934.

This course of nine months duration covered an amazing amount of territory. During this nine months period, the student officer was taught the technique and tactics of anti-aircraft machine guns, anti-aircraft artillery, seacoast artillery, and field artillery.

Shortly before war was declared, the requirement for increased output caused the Base Defense Weapons course to be shortened and divided into two sections. These sections were known as the Field Artillery Section and the Base Defense Section. The former was confined to field artillery only, while the latter covered the anti-aircraft and seacoast artillery weapons. The length of the course was ten to eight weeks of which were devoted to theory and practical work. The last two weeks were devoted to field exercises and target practice at posts remote from Quantico. Since it was not feasible to conduct anti-aircraft and seacoast firing at Quantico, it was deemed desirable to move the Base Defense Section to a post where classroom work and firing could be combined. Accordingly, early in 1943, the Base Defense Section was moved to Camp Lejeune at Camp River, N. C., where a firing area was available.

The advent of the 20mm and 40mm anti-aircraft guns made it necessary to increase the length of the course to 12 weeks, in order that the fundamentals of these additional weapons could be taught.

The present principal source of officers for the Base Defense Section is graduates of the Reserve Officers' Class at Quantico. These officers have been indoctrinated chiefly in infantry and infantry tactics and have a general service

background when they arrive at Camp Lejeune.

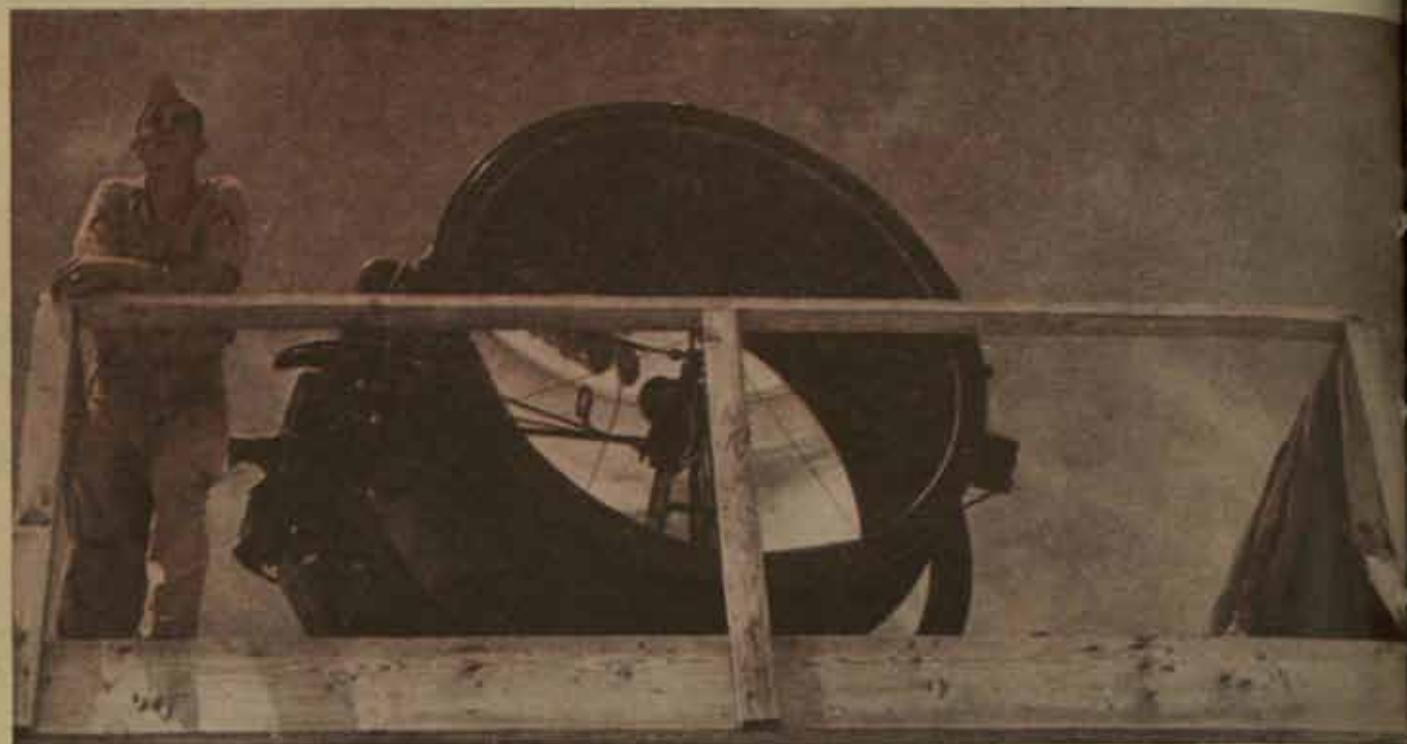
Students are selected primarily for their suitability for artillery duty, with much stress being laid on previous preparation in mathematics, particularly trigonometry.

The course opens by showing the student the organization of the Defense Battalion and its various smaller units. This is followed by a two-day course in artillery mathematics to refresh those students who have been away from mathematics for some time. From then on, the course in general is as follows:

Orientation	54 hours
Surveying	
Seacoast Artillery	116 hours
Firing Data	
Position Finding	
Spotting and Adjustment of Fire	
155mm Gun Matériel	
Calibration	
Drills and Firing	
Tactics	
Field Problem and Firing	
Special (Automatic) Weapons	140 hours
20mm AA Machine Gun Matériel	
.50 caliber AA Machine Gun Matériel	
40mm AA Machine Gun Matériel	
Fire Control Systems	
Tactics	
Field Problem and Firing	



.50 caliber machine gun in the Southwest Pacific.



Searchlight tower on a Pacific Island outpost.

#### Antiaircraft Artillery

239 hours

Director  
Guns and Mounts  
Searchlights  
Preparatory fire  
Orientation and Synchronization  
Command Procedure  
Aircraft Identification  
Tactics  
Field Problem and Firing

As each weapon is taught, it is followed by the firing of that weapon. The field problems are made as realistic as possible. Students are required to install guns in field positions and firing is conducted from these positions. Students live in the field on canned field rations part of the time. Fresh water allowance is kept to a minimum. Only salt water is available for bathing.

Upon graduation, students are ordered to combat units where their education continues under the supervision of the officers of those units.

Close liaison is maintained by the Base Defense School with the Army Antiaircraft School at Camp Davis and the Coast Artillery School at Fort Monroe. Needless to say, this liaison has proved most valuable to the Marine Corps.

#### ENLISTED TRAINING

In earlier days, enlisted-training took place in the combat unit after it was organized. A few enlisted men were sent to special schools for training on some particular piece of equipment.

Early procedure was to form a combat unit, train it, and conduct service firings. When it was considered trained, the unit was split into two parts, both parts filled with recruits, and the process repeated. Thus, it was necessary to train each unit twice, with a consequent loss of time.

In order to eliminate part of this loss of time, a training unit was formed, whose function was to provide basic antiaircraft training for enlisted men.

Prior to joining the antiaircraft training unit, these men are put through a rigorous course of recruit training at one of the Marine Corps recruit depots for a seven-week period. Here, they receive their basic training in infantry drill, infantry weapons, tactics, field sanitation, personal hygiene and discipline.

Upon completion of the recruit training, a certain number are sent to New River for training in Base Defense Weapons. This course lasts four weeks and ends with each student firing the particular weapon he has studied.

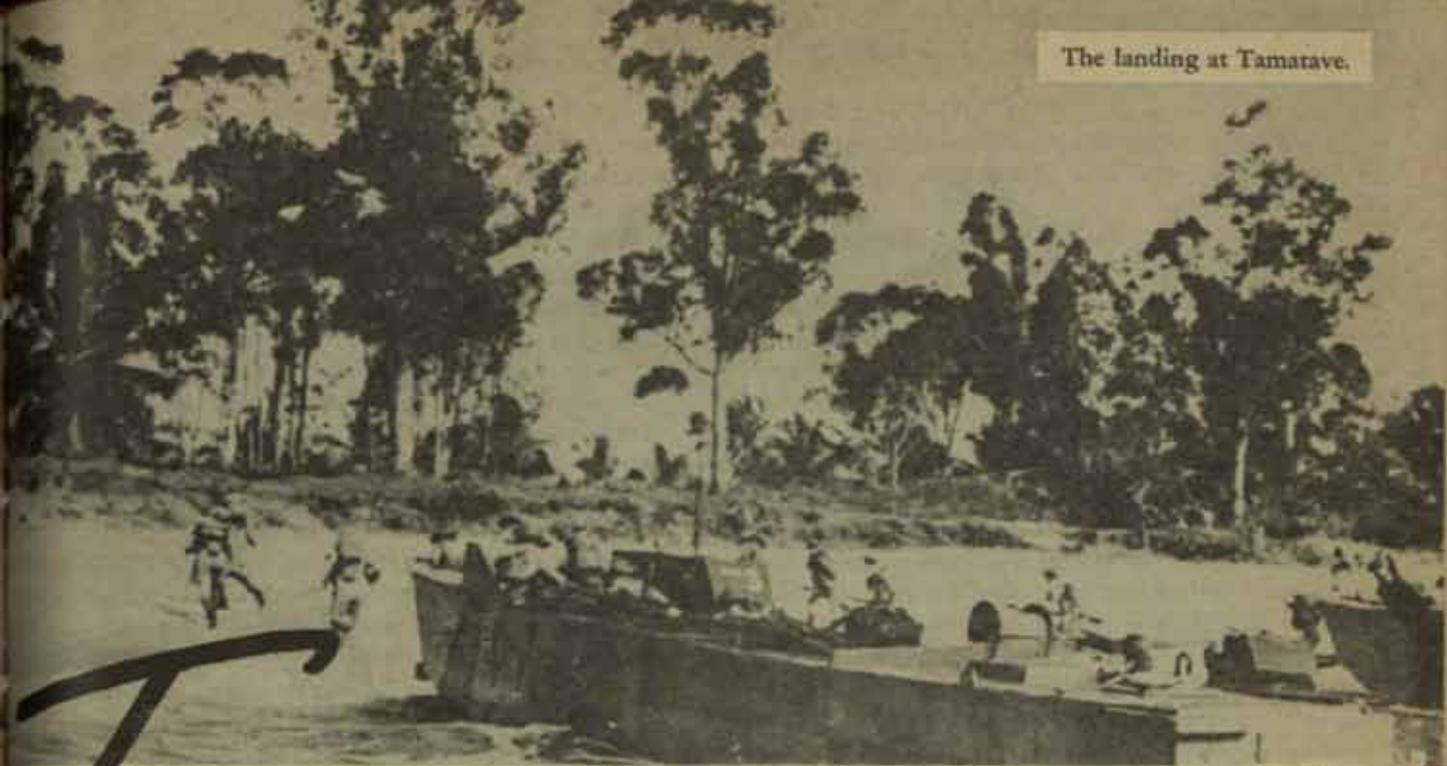
At present, the following basic courses are available to enlisted men:

- \* AA Machine Gunners Course (20mm and .50 c  
AAMG's)
- 40mm AA Gun Course
- 90mm AA Gunners Course
- 90mm Fire Control Course
- Searchlight Course
- 155mm Seacoast Gun Course
- 155mm Fire Control Course

In addition, advanced courses in fire control are provided for experienced personnel.

All the courses stress operation, firing, and field maintenance. They do not include major repairs. This is the job of the Ordnance personnel—each Defense Battalion having an adequate quota of these specialists within its organization.

Upon completion of the course, the enlisted personnel are absorbed as replacements in combat units already organized. A certain number of experienced men are then released from field units and form a valuable nucleus for the formation of new combat units.



Arms Photo

# Fun and guns IN MADAGASCAR\*

By  
LIEUTENANT COLONEL  
W. ODLING  
Royal Artillery

until arrival at Freetown; there and at Durban we picked up various reinforcements including field artillery units, a heavy antiaircraft battery and half a dozen Bofors guns. As one unit had no experience of combined operations, I visited it in its transport at Freetown, to fix up an exchange of officers until arrival at Durban. I found that the commanding officer had about twice my service; however he conveniently went sick, perhaps at the thought of serving under me, and we did not see him again, so that was all right.

After conferences and discussions formal and informal and checkings and counter-checkings of plans and landing tables all was ready and the last few days were spent in a competition in which before I had never taken part, that is the production of operation orders. The navy won easily with a score of about one sheet of foolscap per head of the force and realizing the inexperience in these matters of my enormous headquarters, which had only one typing finger and no typewriter, I decided to put in a small bid for a consolation prize and produced eight copies of a nicely spaced three-quarter sheet of foolscap, which I expect would work out at a total of about two thousand words, or one word per head for every gunner. Quite a lot of people thought this was rather unsporting and bad form.

Durban was a short hectic strenuous week. By day we stowed all the vehicles, guns and men of our reinforcements, who were not tactically stowed. That is to say they were re-loaded in an order that allowed for their unloading in the correct order. Most ships are stowed only with an eye to economy of space as these were. We also waterproofed all

It all started in rather a hurry in March. Accommodation on the Assault ships was very limited, so that for economy of space no C.R.A.<sup>1</sup> or staff was appointed. However at the last minute somebody thought better of this, so the senior member—that was I—was generously made a Local Lieutenant-Colonel, unpaid and off the establishment, while performing the duties of C.R.A. and presumably the duties of the twenty other odd members of a Divisional H.Q. C.R.A. But it is fair to say that after only four months' badgering the position was regularized. To start with, this arrangement was all right as there were only three gunner units: a composite light battery, a troop of Bofors and a detachment of bombardment liaison officers (B.L.Os.) for co-operation with the navy, all independent units—very. We landed in March, 1942, and had no alarms or excursions

\* Adapted from an article in *The Journal of the Royal Artillery*, by

W. Odling, under royal artillery.

vehicles, so that they could be landed over beaches. By night we accepted the hospitality of this truly hospitable town. I only heard of one wedding. And so away for the great adventure.

I am not going to write much about the battle for Diego Suarez. The gunners fired like everyone else a good deal of ammunition, killed a few, made a lot of noise and were complimented by the enemy to the extent of being shelled by them far too often and accurately. One battery claims a colonial sloop, a sort of young cruiser that was taken on at 2,000 yards over open sights with armor piercing ammunition. She was in shallow water, the crew abandoned ship and she still sits awash on the bottom. Solid shot with an angle of impact of 45° went right through from side to side. I feel now that probably 75mm S.A.P.<sup>2</sup> would be more effective than our solid shot for this sort of target. However they do not turn up very often—which is a pity as they are fun even when armed with 5½ inch guns. H.Q. R.A. borrowed a motor bicycle, covered a great mileage and even so killed nobody.

By the middle of the third day all was quiet and everyone very very tired, but there seemed to be an enormous amount to do. Prisoners by the hundred to be disarmed and locked up, the battlefield to be cleared, and captured guns of all shapes and sizes and in various conditions to be brought in, billets to be found, ships to be unloaded for all labor had disappeared into the bush. And most important a defense scheme had to be made in case the nippy Jap arrived uninvited in the middle. Luckily the "high-ups" were busy signing peace terms and producing protocols, so there was no need to ask permission to do anything. I thought that there was a justification for making an organization to deal with some of these matters and so H.Q. R.A. quickly, quietly and without authority came into being. The first two B.L.Os. to come ashore from warships were pounced upon and made respectively brigade major<sup>3</sup> and staff captain, two unsuspecting gunners were made clerks (one is a staff sergeant now), a typewriter was captured, the French

C.R.A.'s office taken over, the motorcycle retained and a bicycle borrowed and there we were, a useful organization that took on all sorts of jobs. We gradually were recognized and even given the dignity of a code name.

We then got hold of a field artillery "quad"<sup>4</sup> and four men and told them to go and bring in every artillery weapon they could find and line them up in front of the office. We also made a labor corps out of a heavy AA battery whose guns were in the bowels of a ship and told them to plant being stevedores. The Admiral in the meantime convened a committee to have a look at the coast defenses and recommend, etc., etc. One of the B.L.Os. was made secretary and I became the military member, this took a good deal of blame from one, who had always included in his litany, "From serving in concrete Good Lord deliver us." And so with several odd sailors off we went. Here for a digression wherever we went it was "Marshal Joffre this" and "Marshal Joffre that," and we soon found out he had been C.R.A. Madagascar (under a different administration) about 1905. After this he was always referred to as "my illustrious predecessor" and I found it a useful weapon to remind argumentative senior infantry officers that Madagascar C.R.As. were in the habit of becoming Commanders-in-Chief in eight years. I think he must have been a godfather of Maginot or else had shares in a concrete factory because the work that had been done in his name was prodigious. It seems that a certain number of batteries had been made before his time and that he added to them almost at will. The Joffre period guns were generally speaking much the same mark and age as the previous ones. To these had been added various more modern batteries, but in respect for the old man none of the obsolete batteries had been removed and many were manned. As we found out from correspondence, practice was limited to the odd round at reduced charge every few years so that in many cases the oldest batteries of all were in the best condition and this was accentuated by the fact that the modern batteries were of course the most sabotaged by the defenders.

The tour of the coast defenses took a few days and the

<sup>1</sup>Shell armor piercing.

<sup>2</sup>Corresponds to our S-3.

<sup>4</sup>Heavy truck.



Some of the French coast defense positions. The vehicle is a Bren carrier. Note the limited traverse and elevation of the gun.

report was written embracing all defense matters and duly sent to England. While waiting for its approval we set about putting the recommendations into effect by employing such equipment and any men I could get hold of. It is important to realize the shortage of men; I have already written upon the strength of my headquarters, so that borrowing men for captured equipment needed an enormous amount of charm and persuasion. One coast battery we captured intact and it was reasonably serviceable for bow and arrow shooting, after the telescopes of the sights had been taken to; this was manned at once by half a troop of a Heavy Battery. That accounted for one coast. On the other side was a modern battery of four guns usable for counter bombardment or close defense. It had been effectively used by the French, but had been badly sabotaged. There was a most elaborate control tower, underground galleries and an enormous deep magazine. A most complicated "buzz-box" employing a crew of eighteen men was beneath the control tower and knocked about a certain amount. None of the barrels of the guns was serviceable and the greater part was non-existent. I put the navy on to solving the workings of this infernal machine and a squad of gunnery experts settled down and set about it. They were given strict instructions to bring down each bit as they learnt it, so that in the event of their sudden recall to sea no knowledge would be lost. I gave a lot of bluff and self-cover that it was a similar system to that used in pre-1914 battleships and therefore quite impossible for them to understand—arguments requiring little reasoning—they got down to it, and nightly I heard from them that they were making progress and that it was nearly working. Then came the final report in the form of a signal flashed by lamp as their ship left harbor: "Regret recalled sea-machine nearly serviceable—drill unfortunately not gotten." I was wiser next time and a B.L.O. stood over the next naval party and wrote down everything they did. This apparatus was the most elaborate bit of "hokey" that could possibly be imagined; it was incredibly complicated and was designed to digest the range to the target, as read from a range-finder and then add to it all the other unknown factors, which could only be guessed at (as there was no means of finding them) and serving the answer on a plate to the guns. This could of course be done equally well by "firing off" the control officer's periscope the appropriate amount for line and ordering a false range by telephone. However, the real advantage to the machine was as in many other ancient and modern military devices; the extra eighteen men allowed an extra officer to the establishment and a higher rank to the battery commander. We economized, and got over the machine and the eighteen men.

The manning of this battery was the biggest problem of the day and its detachments included in the first two months, various times naval ratings, field artillery drivers, infantry, light antiaircraft gunners and South African Cape Mounted Rifles. Needless to say there were no drill books, so that each succeeding party had to be taught afresh, and each had to fire a practice.

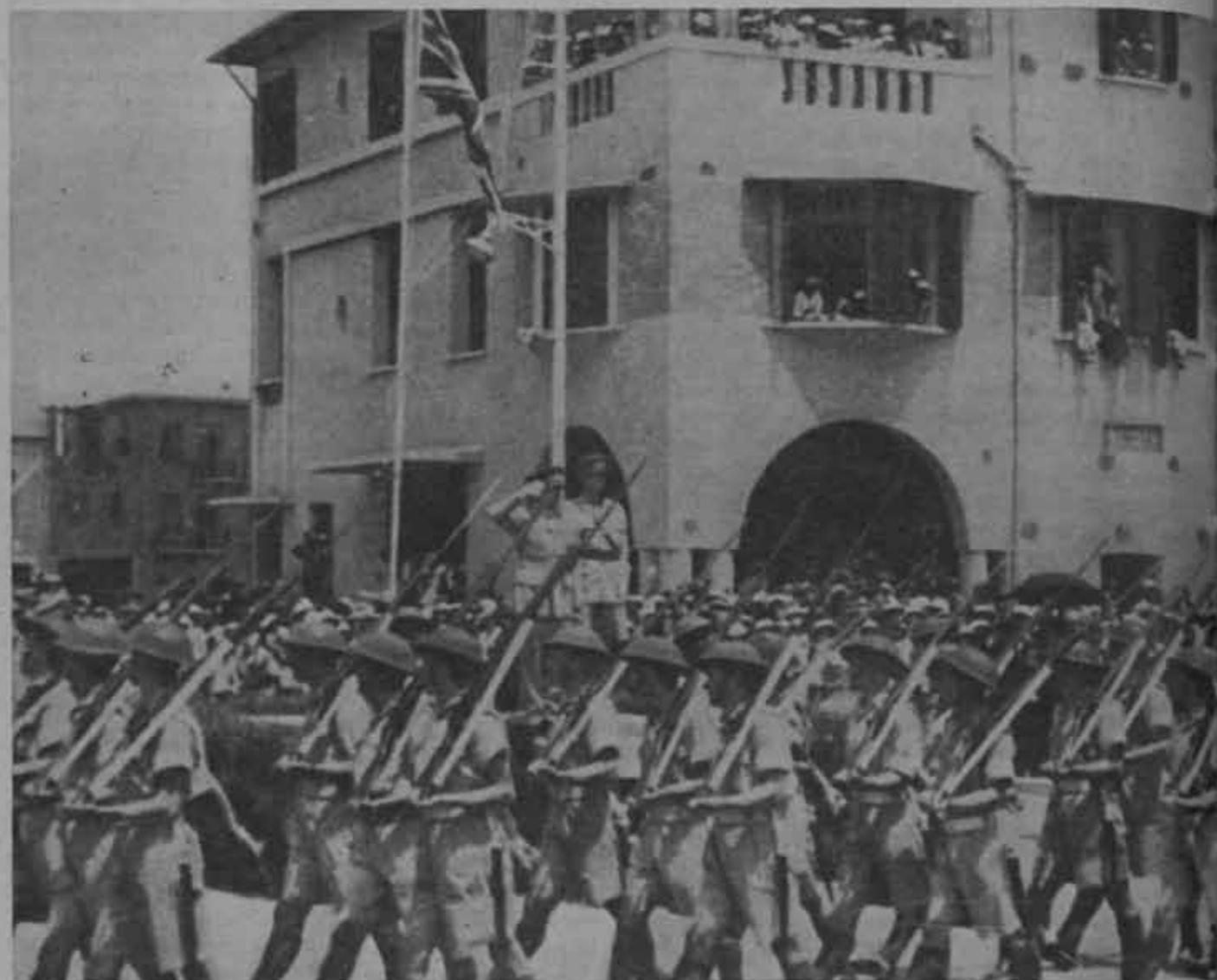
This coast defense business was interesting in many ways. In the first place there was not a British soul on the island who had ever served a day in a coast defense unit, so there was nobody to give advice or argue; nor had we any sort of a drill book or a sufficiently technical dictionary to

translate peculiar French words, with the result that the combination of a certain slight knowledge of gunnery principles, with a complete disregard for safety precautions and an insatiable curiosity would produce not only the expected bang, but also a splash—at times as surprising to spectators as ourselves. Secondly, a lot was to be learned about the principles of destroying guns. Many fortresses of about this size have changed hands this war (Tobruk, Hong Kong, Sebastopol), and many more I expect will be captured by one side or the other before it ends. As Coast Defense guns take ages to mount it seems most important to profit by the mistakes of others in this, our observations and conclusions for what they are worth, are therefore tabulated as an appendix.

We manned one other C.D. battery, which had an anti-M.T.B. rôle, with the usual mixed crew of all arms. Its armament was also a little diverse consisting in the end of two 75mm, one 47mm, two Bofors 40mm, two 2" mortars, one Bren gun and a searchlight made out of a French reflector, an electric bulb and a twelve-volt battery. However they all worked, and were scarcely more Heath Robinson<sup>8</sup> than the French arrangements for the same job, which consisted of four 1870 model 132mm guns, each weighing eighty tons, standing cheek by jowl, with muzzles pointing through embrasures in the wall of a concrete house built over them. These embrasures were so small that the guns could not be trained or elevated more than a degree or so, and shooting was therefore a question of bringing the target to the guns. The French employed 110 men on this battery, which we could not afford, but we did seriously consider keeping them loaded with a string to each firing mechanism and on alarm detailing one hardy soul to: "Take all four reins in the left hand." Standing as they did in their house I used to call them "the Elephant stable" and as it took a considerable time to get to them, I was always detailed to take vagrant generals, admirals and even occasional air marshals to see them, as it kept them amused and away from asking awkward questions for a few hours. Perhaps this was the real value of the battery to the French.

There were no French antiaircraft guns to take over. The two that there were, and their predictor had been shot up by the fleet air arm and further damaged by sabotage. They were useful pieces, not unlike our 3.7 inch, set in the most elaborate concrete fastness. It was interesting to see the effect of our dive machine gunning on these emplacements, which were sunken wells about ten feet deep with concrete walls. Bullets had ricocheted round and round off the concrete and must have been most unpleasant. From this lesson we lined all concrete pits with wood or sand bags. Armor piercing bullets had also achieved astonishing penetration into the metal. One bullet had hit the piece a glancing blow but nevertheless was embedded half its own length. The ammunition boxes were brass and beautifully made to hold two complete rounds side by side. One bullet had hit a box and going through hit the primer of a cartridge setting it off. The shell was not moved but the case split the whole length. The neighboring round was unharmed. I heard that this caused a most unpleasant fire, and only mention it as a tip that it may be worth while

<sup>8</sup>Heath Robinson has been described as the British "Rube Goldberg."



Victorious British troops at Tananarive.

keeping the primer end of cartridge cases stowed in gun pits so that they cannot be hit direct from the air.

We were lucky in our heavy antiaircraft arriving with more guns than was their due, and enough men to be fully mobile, but no vehicles, so that the units were able to man a good deal more than a normal share, as well as Coast Defense guns. After a few weeks of improvised manning of Bofors, light antiaircraft units also arrived and we soon had a tolerably large AA armament. Siting of them all took time as we determined to dig permanent positions and these of course had to be inside the perimeters which would be protected however small the garrison became. Luckily I had served just long enough in AA to be able to draw the correct sorts of cabalistic circles on maps that would convince anyone. We even had an enterprising barrage—safely over water. The trouble about these AA boys was that although generally they knew enough about AA drill, they appeared to know little else, and to be perplexed by their strange conditions and surroundings. It took a lot of time to convince them that if confronted with an enemy tank and a plane both within range, a proportion at least of their bricks should go towards the tank—this they might even hit. Training in the use of small arms and the production of

camp life amenities, sanitation, and so forth was also lacking. They were all young soldiers and I feel they could have taken their place adequately in Air Defense Great Britain, but they were not on arrival suited to the discomfort and improvisations of that corner of Purgatory called Diego Suarez.

There was a lot of difficulty over practice, the Air Force had no "sleeves" and we could not improvise a suitable sleeve with attachment. I found out the correct nomenclature of what was wanted and as the Air Force was under Army Command and there had been one "Rocket" already for cabling the Air Ministry direct, I cabled the War Office. A reply was vouchsafed to the effect that sleeves being at Air Ministry store should be obtained from there. I refrained from replying that the Air Ministry was 900 yards from the War Office and 9,000 miles from me, nor drew attention to this, that and the other, but cabled the Air Ministry, who replied that demands should be put through the local R.A.F. Squadron. Then continued an expensive exchange of cables, which did not in the least assist me in the war effort, and I never got my sleeves. What a pity is that cables cannot be signed, for then perhaps some time

\*"Blister," "Blast," "Skin," or "Gig."

might be fortunate enough to meet one of these arch-  
 tectonists and learn to recognize the type and even  
 perhaps tease him a little.

Attacking the place I had feared that the French might  
 have their Coast Defense batteries inland as static medium  
 range. Luckily they did not think of this even though  
 their guns had no overhead cover and all had an all round  
 traverse. Actually the archives made it clear that the  
 place had no coordinated artillery fire plan, which is  
 essential in a first class fortress. We did a lot of experiment-  
 ing in this matter. The first difficulty was to make sights  
 suitable for indirect fire, this was overcome by a bit of survey  
 having got the guns parallel and oriented to the local  
 terrain marking off degrees around the gun pit and fixing a  
 point to the carriage; for elevation a field clinometer or  
 sights marked on the shield worked admirably. For com-  
 munication each battery was given an armored O.P. and  
 wireless, and after a certain amount of pretty dangerous  
 experimentation and calibration had been carried out, the outfit  
 was complete. It seems to me that all C.D. batteries with-  
 out overhead cover should be provided with a mobile O.P.  
 for this purpose and a proportion of suitable shell. The  
 position of the H.A.A. batteries in the artillery ground  
 plan was not so easy. To begin with, range tables were  
 not procurable and the whole idea went counter to tradi-  
 tional principles. These objections were easy to overcome,  
 the greatest clearance was a far more difficult obstacle and  
 targets had to be selected with care. Again I feel  
 it a pity that more thought has not been given to  
 having some sort of reducible charge. The effect of  
 about forty rounds a minute per troop of air burst H.E. over  
 the target has to be seen to be believed.

## APPENDIX

### *Methods of destroying guns, with comments thereon.*

No actual blowing up of pieces was attempted any-  
 where, there was probably little time for this in most cases.  
 It seems that this expedient can seldom be relied upon as  
 guns are kept firing until the last minute, then it will be  
 impossible to clear the danger area of gunners and possibly  
 the battery, who have used the gun position as a rallying point.  
 Sights had in many cases been removed. This was not  
 such a hindrance as might be expected, as one tends  
 to distrust a sight that one does not understand, cannot test  
 with confidence, and with which one's own instruments  
 as directors will not play and to prefer an improvised  
 sight of one's own design.

The vitally important bits of the breech were often  
 removed, such as the striker. This did not matter in the  
 field as there were well over 100% spares of all vitally im-  
 portant bits in the Ordnance Depot as well as about 100%  
 in guns that had not been tampered with. This rule  
 was applied to sights.

Breeches had in some cases been buried complete com-  
 pletely close to the gun position. In every case they  
 were found—sometimes three feet deep. The less people  
 know of the whereabouts of missing bits the better.

Breech blocks had in some cases been knocked about,  
 but were easily repairable, in one battery the breech screws  
 were damaged, this we could not rectify.

6. A few breeches had been thrown in the sea, this  
 method also seems infallible.

7. Only one hidden part foxed us completely. The  
 breech screw carrier of a six inch gun. It was an enormous  
 chunk of brass. Of course there was no spare, nor could a  
 piece of metal be found large enough from which to make  
 a substitute or a lathe large enough to do the work. A sub-  
 stitute was nevertheless nearly completed from built up  
 pieces of metal shaped by hand, when the missing part was  
 found.

8. Only one battery had undone the nut securing the  
 gun and allowed the pieces to run-back, even so no damage  
 was done to the exposed piston rods. I believe that this  
 would have been the most difficult thing to rectify with our  
 facilities.

9. Searchlights generally were dealt with well—an easy  
 job. Other instruments such as predictors had all their dials  
 smashed making them look a sorry sight but causing little  
 damage.

10. Only one cam was removed. The handbook de-  
 scribed it as irreplaceable except from the makers in Paris.  
 This nearly bluffed us. However the Ordnance workshop  
 was keen to try to make a substitute and succeeded in two  
 days! This was a two dimensional cam—three dimensional  
 cams would be nearly impossible without a pattern.

### *Conclusions.*

1. Any fortress must be prepared to be assailed by an  
 overwhelming force and be captured. A unified weapon  
 destruction plan must therefore be made in advance to cater  
 for this contingency. The minimum number of people  
 must know this plan and there seems to be no useful reason  
 for it to be written.

2. Particular attention must be paid to the Coast Defense  
 Artillery as that is likely to be required most urgently by  
 the enemy.

3. Parts of the fortress may be overrun quickly, parts  
 slowly and for other reasons already mentioned no reliance  
 can be put upon the physical destruction of pieces. It fol-  
 lows that to prevent the enemy making use of the bits of  
 one gun to make up the deficiencies of another, certain  
 pieces must be removed from all weapons, whatever are the  
 chances of recapture. The removal of these bits must be  
 looked upon as essential and as the first string of the  
 destructive racket.

4. The selection of the pieces to be removed requires  
 careful thought and as many as possible of the following  
 characteristics should be considered in their selection:

- (a) They should be easily removable and transportable.
- (b) They should be most difficult to make anywhere and  
 impossible to make locally.
- (c) They should be parts not normally requiring spares  
 i.e. parts unlikely to be found superabundant  
 amongst similar captured equipment in another  
 theater of war.

5. Once selected all spare parts must be collected from  
 units and from Ordnance stores and dealt with suitably, also  
 all drawings and pictures of the parts in handbooks, etc.,  
 must be destroyed.

6. When this has been arranged a secondary plan may  
 be made for the destruction of pieces and range tables and  
 the removal of sights, etc.

# Those 88's

By Lieutenant Colonel G. B. Jarrett  
Ordnance Department

Should anyone think that the German 88 is a "secret" and vastly superior weapon, he needs but reflect on the performance of the British 3.7 inch AA guns that defended London in the dark days of the Battle of England.\* (The British 3.7 caliber is slightly larger than the German 8.8cm). The 3.7 inch performance is outstanding, both as to actual enemy planes shot down, and as to the aerial spaces denied the enemy over industrial targets because of intensive barrage work. The same is true of the American 90mm AA gun. This is a 100% product of American Ordnance engineering paralleling German post-World War I effort, and in the final analysis came out superior to the German product.

At this time it is most assuring to know that we have battle-tested proof that American developments in AA guns and fire control have surpassed all the highly efficient lethal developments in AA weapons achieved by the Germans in their years of massed war preparations.

The 88 has a number of unsatisfactory features, but lest we fail to give the devil his due let it be emphasized it is a powerful weapon and *does* fire deadly ammunition. A large part of its tremendously successful results lies mainly in the clever employment of the weapon by the commanders—Rommel for one. Otherwise it is definitely just a very good gun, not a secret weapon.

Some consideration of the factors which through the years blended into the performance of the present German 8.8cm Flak (Flak is an abbreviation for *Flugzeugabwehrkanone*), may throw enough light on the subject to indicate the nature and growth of the development; and may

\*According to an Associated Press dispatch from London, dated 21 September, Sir James Grigg, Secretary of State for War, disclosed that AA shot down 759 enemy aircraft over Britain between 3 September, 1939 and 31 July, 1943.

serve to point a pattern we may follow in laying the groundwork now for further advancement of design, and for foreseeing and checkmating the enemy.

As early as 1915 the need for ground troops to defend themselves against enemy aircraft became a reality. At that time these ground troops resorted to such elementary expedients as using a field piece for aerial fire, placing the wheels as high as possible and digging a circular pit, permitting a 360° traverse of the trail. Such a modification rarely gave 75° elevation. Later, the artillery wheels were removed and the axle shortened to lighten the whole set-up. Ammunition was only normal powder-train time-fuzed shrapnel, and the possibility of such a unit hitting an airplane in flight was quite remote.

As events progressed in World War I, the need for increased velocities in AA weapons became paramount. Planes flew higher and faster. AA guns had to get the projectiles up into the blue with less time loss, else the target was well out of range.

It is uncontestedly true that the Germans realized the need long before the War ended in 1918. They were well aware of some of the basic principles involved, and had made a definite step towards solving the problems.

The Germans, also before 1918, grasped the fact that the fire control of an AA gun was quite a critical matter, and that it was similar to a Coast Artillery fire problem plus another big dimension. Also, study revealed that the mass of velocity played a very important rôle. Further, the bigger the shell the greater was the danger area. Following this it was realized that H.E. was far more destructive than mere pattern of balls from a shrapnel shell. Before the Armistice of 1918 these problems faced Ordnance designers of all nations. History discloses that the Germans had done more active research than their enemies, increas-



The original German 8cm Flak, built by Krupp in 1917. Its basic features are retained in the present-day 8.8cm guns.



Originally a French 75mm gun, M1896, this piece has had its wheels removed and has been emplaced on a special AA carriage. It is being used in this war (presumably in an occupied country), as evidenced by the Nazi gun crew.

the chamber and diameter in the quest for greater range and danger areas, before November, 1918.

Before 1918 German guns appeared on special mobile mounts. These pieces had four trails which when set gave good ground support, for a higher velocity gun and a good carriage. Early fire control instruments appeared to help direct fire and reduce the human effort involved, thus realizing less error and time lag.

Devices were developed which were more accurate. The powder train fuze, with its variable burning time in the various altitudes, gradually gave way to the mechanical fuze.

The Germans had answers to the basic steps of these problems and were starting to do something about them. Their initial German answer to the basic questions involved taken to be captured French 1897 75's and use them as mentioned before. This was mainly due to the fact that the French Nordenfelt breech lent itself better to higher velocity loading than did the Krupp sliding wedge designs of that time.

The rest of their AA development is characteristic. It came from the designers whose sole object was to create more efficient instruments of warfare, in operation and in effect.



88 unit, with segmented tube. The adjusting collar, near the center of the outer jacket, is clearly visible.

The photograph of the 1917 Krupp 8cm AA gun does reveal it as the progenitor of the 8.8cm of today. One cannot help but note how the basic carriage design is carried through the present day mounts. Obviously modern refinements make the carriage of today more mobile and efficient. The biggest advances in the overall tactical advantages of this World War II 88 lie in the fire control, the rammer, the muzzle velocity, and newer shell designs with the latest fuze patterns. One must not forget that, with all the brilliant design for gun and fire control, the fuze must be reliable to a very high degree, else all the rest goes for naught. The German mechanical time fuzes are quite reliable, and doubtless are very expensive to produce.

The Flak 18, 36, and 38 are percussion fired, whereas the Flak 41 has an electric primer system. This system of electric firing is perhaps open to discussion: since many of the operations of any AA gun are governed by electricity, the firing of the piece by means of an electrical contact, too, is logical. However, if the current fails, then any hand operations are utterly impossible. These electric primers cannot be fired by percussion.

The primer in such German cartridge cases is inter-



An 88 in position behind Sidi Rahman. This type has the full-length barrel.

changeable with the normal percussion type. The electrical unit is similar to a squib, and set off by a contact point in the breech instead of a firing pin device.

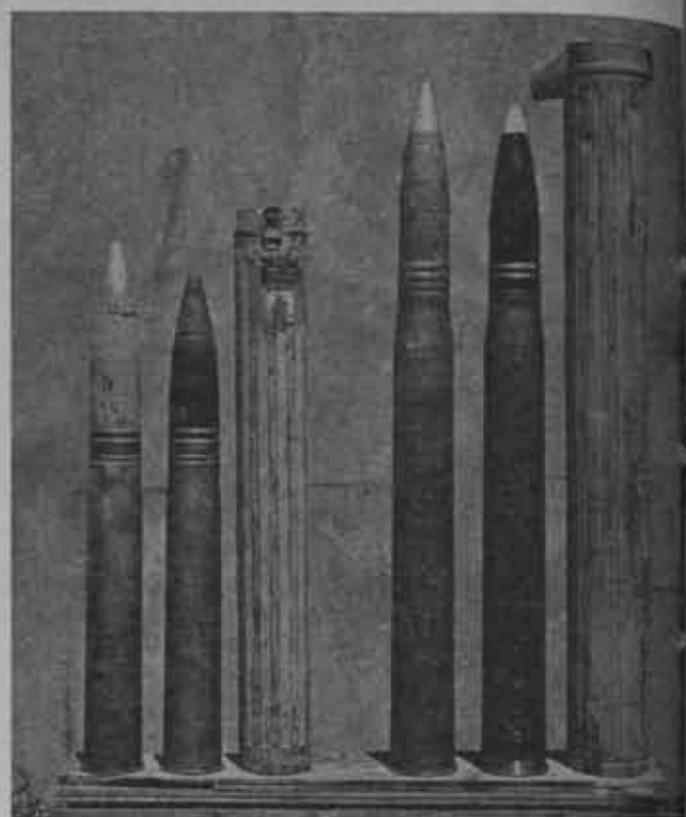
For many years all development agencies have recognized the need of a time fuze for AA work that was not affected by atmospheric changes as it traveled into the rarer layers of the air. The Germans pioneered in this field during World War I. Today most countries throughout the World have satisfactory mechanical time fuzes, a development initiated by the Germans. The powder train time fuzes are still used by many batteries for aerial barrages where in such a rôle, they are accurate enough and the cost is less. However, for accurate AA shooting where variance of fuze action might mean a miss, the mechanical fuze is a paramount necessity.

The German method of staking-in their mount to the ground does not permit extremely rapid set up of the unit, especially in hard ground. This is most certainly a disadvantage for a quick emplacement in A.T. use. The gun,

though known to have been fired in A.T. defense from the wheels in the Libyan desert campaigns, was not very stable, but perhaps stable enough. Another fact: in firing at all elevations, there is considerable whip to the barrel of the 88.

A point of interest is the German use of two kinds of gun tubes in their 8.8's. The designation of model number appears to lie in the mount, not in tube design. In one case, a three piece tube is used, and in the other a full length tube. This leads to some interesting speculation. Why? One theory is that the segmented unit was designed to overcome tool shortages and speed production. Another theory is that in the case of tube life, replacement of the middle section before general tube wear had progressed too much, would prolong barrel life by saving the muzzle section. Still another answer could be that by making this middle section (which contained the origin of rifling) out of a much harder steel, the accuracy life could be prolonged advantageously. Surely, some sensible reason must account for the extra work in making this segmented barrel. However, as creep sets in, during use, continual adjustments are necessary to keep joints tight. That these joints open up is known. The chamber section joins the middle section near the first cone of the chamber. Cartridge cases found on the battlefields have shown circumferential creases at this point, indicating that the tube sections do creep out of adjustment—perhaps past adjustment. In any case, it is not easy to justify such a barrel. The full-length one-piece barrel is of conventional design.

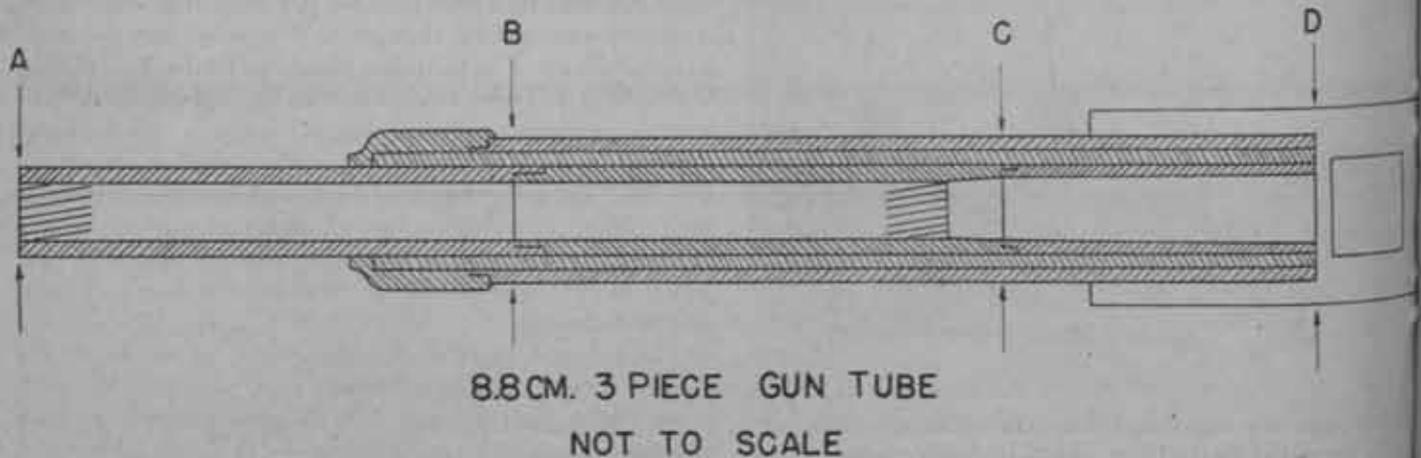
The Germans have produced three patterns of the 88 with a possible fourth type. All the 88's were fitted with AA fire control, and special telescope sights for antitank or tank use. All were typical high quality instruments. The earlier design is known as the Flak 18. The second model as the Flak 36, then possibly the Flak 38, and lastly, the Flak 41. The 18, 36, and 38 appear to have a common velocity. They are issued on two different carriages and also with a few minor improvements. The original version obviously is an AA unit while the later types are more readily adaptable to the dual rôle of antiaircraft and anti-tank work. In this latter instance, the German development of an excellent armor piercing shell with a bursting charge for the A.T. part of a dual rôle realized tank destruction on a paying basis. However, the real tactical value came from surprise and clever use of the unit against the enemy. The Flak 41, the latest version, appears to be an improvement



A comparison between the extra-high muzzle velocity shell of the Flak 41 and the standard shells for earlier models. All of course, are 88mm projectiles.

over the earlier 8.8's, where a velocity advance has been realized. This weapon has a much larger chamber and longer tube. This means not only that the A.T. range has been extended and likely the accuracy bettered, but also that for an AA rôle the ceiling of the gun has been raised. It takes less time to get the H.E. shell upstairs and into an enemy formation.

The Germans realized the high A.T. performance of the 88 with an AP-HE, C, and BC (capped and ballistically capped) projectile, and placed this weapon in their PzKw VI as the major weapon. It also is used in another vehicle which is self propelled. An H.E. shell was also provided fitted with a P.D. percussion fuze for anti-personnel use. Thus, the 88AA/A.T. gun (Flak 18 or 36) became highly mobile. In both the PzKw VI and the self propelled unit a muzzle brake was attached to shorten recoil of this 8.8cm.



within the confines of the vehicle. A special equilibrator was devised to offset the great weight of the brake on the carriage. When mounted on the PzKw VI, the operation of this 88 has been reported as difficult on flank shots. It is probable that because of this, the self-propelled unit was developed, for steadiness. In this instance traverse is obtained by turning of the vehicle. The Flak 41 version of the 88 is a 105mm tube, bored for only 8.8cm, whereby with its extremely long cartridge case it can possibly attain a very high velocity. As mentioned before, this cartridge case is nearly twice the volume of the other 88's. To realize excellent projectile performance from the Flak 41, a more streamlined H.E. and a heavier AP-HE, (C and BC) shells have been provided. Due to the design of this new AP-HE,

a special fuze has been developed. This fuze is for the small cavity design of AP-HE where the filler is a more violent explosive. The usual design HE shell P.D. fuzes were retained as they always had been satisfactory.

It will be seen from this discussion that far from the 88 being a "secret" weapon it is actually one whose origin and development has been thoroughly understood and appreciated in qualified circles. The British and our own developments have in most instances paralleled and in several cases surpassed that of the Germans.

The adroit use of the 88 and the publicity given to it by well-meaning, but strictly unqualified observers have given the gun a limelight entirely out of proportion to its uniqueness and value; with a corresponding glossing over of the superior qualities of our own design.



Signal Corps Photo.

American AA gunners in New Guinea.

# High Lights of Action

*EDITOR'S NOTE: The following excerpts are taken from the war experiences in North Africa of batteries in a separate antiaircraft battalion manning half-tracks mounting a 37mm AA gun and twin .50 caliber machine guns. These actual battle experiences afford the finest kind of text on which to base preliminary training. They give a fore-warning of battle conditions to those who may later take part in like operations. Note particularly the frequency with which positions were changed—the varied organizations to which AA units were attached—the changing missions with new assignments—the necessity for adequate training in all operations from primary AA defense through antitank and counterbattery work to acting as prime movers for matériel in units to which attached.*

## EXPERIENCES IN BATTERY A WITH THE 1ST PLATOON

My platoon was attached to the 1st Battalion — Infantry and assigned to a transport for the landing. On November 8, 1942 between the hours of 1300 and 1500 the half-tracks were landed on Red Beach near Fedala. Three half-track guns went immediately into action against enemy planes strafing the beach. The whereabouts of two other half-tracks which had been landed three miles down the beach were not known until 0900 November 9th. About this time we went into action against ten enemy bombers overhead. One broke formation and crashed into the hills in rear of the beach. Reunited, the four half-tracks of the platoon advanced with our Infantry Regiment toward Casablanca providing antiaircraft protection. During the night, the platoon was transferred to another Infantry Regiment and removed to the bivouac of that unit. At 0700 November 10th, three half-tracks went into action against two French planes, A-20 type, and both retired, one trailing smoke. It was later found at the Casablanca airport, hit with two 37mm shells and fifteen .50 caliber bullets. During the day, November 10th, the platoon used its half-tracks to move field artillery pieces of three batteries into firing positions, frequently under enemy artillery fire. No further activity occurred before the armistice, November 11th.

The platoon was next assigned to protect the docks in Casablanca. On November 29 we were sent to the Cork Forest near Rabat to protect an Armored Division. Later we entrained for Algiers to join in the protection of the dock area about Algiers. January 5th the platoon moved by rail to Souk Ahras to protect the — Infantry. On the arrival of all the guns, they were used to protect the motor pool. Next we were ordered to protect the rear echelon of the — Corps and then moved to the forward echelon for AA protection near Tebessa. February 6th the platoon was ordered to Sbeitla to be attached to the — Combat Team (— Corps) to protect the staging area. At Sidi Bou Zid on February 8th we protected the supply trains and on February 10th we were attached to the — Field Artillery (— Corps) two miles south of Faid Pass. Here we had the mission of protecting the gun batteries.

On February 14th the Germans broke through causing the loss of one 2½-ton truck, two half-tracks, and one weapons carrier. All personnel eventually reached safety after being behind German lines for some time. During the morning we were constantly firing at dive bombers and fighters and were credited with two planes. February 16th we assembled in Sbeitla protecting CP of Combat Command —. We were bombed and strafed by nine FW-190's and credited with two planes. February 20th we assembled with the Battalion in Tebessa for reorganization. On February 22d the platoon was attached to the — Field Artillery (— Armored Division) at Kasserine Pass. We fired at nine Stukas with a credit of one plane. Morale during the landing was very good, but the Faid and Sidi Bou Zid reverses unnerved several members of the platoon due to the coordinated firing of enemy tanks, planes, and ground weapons. About three-fourths of the men were very jittery, but they recovered after a good rest and the arrival of the remainder of the battalion at Tebessa.

By March 12th we were attached to the — Field Artillery and given the mission of protecting their bivouac area in Kasserine Valley. From there we joined the — Battalion — Infantry defending their bivouac. During the movement we protected the soft shelled vehicles and on arrival we protected the Battalion's CP. During the attack on Zannouch (between Gafsa and Sened) we accompanied the troops across country and then were assigned to the motor pool. While on the march toward Sened we were attacked by Stukas and were credited with one plane. After moving on Maknassy we occupied positions nine miles west of the town and were attacked again by JU-87B's while going into position. At one time near Maknassy the platoon was attacked by twenty-five planes (JU-87's and JU-88's, ME-109F's and FW-190's) but there was no damage done. The platoon was next assigned to the — Force at El Guettar. En route to El Guettar, flares and personnel bombs were dropped on the column of half-tracks, but there was no damage. At El Guettar we defended the trains of the — Force (— Corps), fighting off seventeen raids in two days without the loss of a man or of the vehicles we were protecting, and at the same time inflicting damage on the enemy planes.

The morale of the men was high because they were

what they were supposed to do with results to show for Consistent high night bombing and dropping of flares were encountered, but the men held their fire in order not give away their positions. We moved out with the trains a position fifty miles west of Gabes. After contact with the 8th Army, the — Force moved to Bir El Hafi where an assembly area was set up with the platoon protecting the maintenance unit. Next the platoon joined the — Field Artillery and moved to a position near Beja protecting the column. Consensus is that night bombing affects the men and in addition the men get very little actual rest during night movements. Most of the men feel that after coming over the "newness" of the vehicles they then attain a high degree of confidence in the multiple-gun mount half-track.

## 2D PLATOON EXPERIENCES

This platoon was separated from the First Platoon and transported on another transport for the landing. About 1700 November 8, 1942, we were landed at Red Beach. We were strafed on landing by a single plane and returned the fire without any visible effect. The half-tracks and trailers were brought ashore in the same order. All four trailers bogged down as soon as they hit the sand and the men worked far into the night unloading ammunition to get them loose. On November 9th the beach and crews were bombed three times by high altitude bombers, but the platoon suffered no damage or casualties. In addition we were three times subjected to strafing attacks and returned the fire. One of the enemy planes crashed into the hills in the rear of the beach.

Early on November 10th the platoon moved to Fedala and took up positions around the docks. At about 1930 we moved westward toward Casablanca accompanied by one company of the third platoon under orders to join the Infantry Regiment. The guns of the platoon were in position ahead of the Infantry on the outskirts of Casablanca under orders to precede the Infantry in the attack on the city, when the armistice was signed on the morning of November 11th, 1942. We were then attached to the — Coast Artillery (— Armored Corps) for the defense of Casablanca. Next we moved to the Cork Forest outside of Rabat to protect the rear of the — Armored Division, remaining there until December 23d. We then entrained for Oran, but en route received orders to turn eight half-tracks over to the French 1st Army. This included one officer and sixteen noncoms for training purposes.

The platoon was later reconstituted at Kasserine Valley and was attached successively to two field artillery regiments for the defense of their gun positions. During this assignment many very heavy dive-bombing attacks were encountered. There we moved to join the — Armored Division east of Sbeitla. At Sidi Bou Zid we were attached to the — Infantry (— Armored Division) to protect the command post east of Sidi Bou Zid. We moved with the Infantry to a position south of La Calle. Next we were attached to the — Field Artillery (— Corps) to protect our guns fifteen miles east of Beja. Then we were attached to a combat command (— Armored Division) for the big push through the Mouse Trap fifteen miles south of Mateur. The morale of the men sank at Maknassy due to the heavy artillery fire encountered, but having once

weathered this counterbattery fire their morale jumped back rapidly to a high level.

## 4TH PLATOON EXPERIENCES

Sniping was in full swing when we landed on Green Beach with the first half-track. We pushed through the edge of Safi out to the Battalion CP. Sniping still continued at our assigned positions so with a squad of Infantrymen we cleaned out the area around our half-tracks, searching all houses, confiscating weapons, and taking seven prisoners. At 1530 a French medium bomber swept over the area and up the dry wadi, so low that our weapons couldn't touch him. Our small arms fire however followed the plane. He was later captured when he attempted to land near an Infantry company.

Early morning of D-1 day, we saw a dense fog rolling from the hills down over the harbor. A French medium bomber, visible from the sea but invisible from land glided over the dock, dropped a bomb on a warehouse, gunned his motors and attempted to get away in a hail of fire from naval vessels, ground troops, and AA weapons. Two of our gun crews, not being able to see the target, fired ahead of the stream of tracers from other units and the sound of the motors. He was set afire before he left the harbor, then crashed and blew up about half a mile up the dry wadi valley. No more planes appeared during our stay at Safi. Since we were purely in a static position with no enemy aerial activity, we spent the most of our time in maintenance of our equipment and preparation for the day that we would be sent into the combat area.

December 23d we traveled to Rabat, French Morocco, where we entrained for Algiers. We spent five days en route and celebrated Christmas Day in some little out-of-the-way Arab station by eating "K" rations. Upon our arrival in Algiers we took positions along the waterfront just outside the city. During that time we saw a great deal of action in night firing, but practically no daylight action. On the 12th of February we left by motor convoy for Khroub, Algeria where we encamped for several days. The 18th of February we left for Tebessa, Algeria, where we joined the rest of our battalion. On the 20th we made a very difficult overnight move by road into the Kasserine Valley where we became attached to the — Field Artillery (— Armored Division). February 21st we were attacked by a flight of ten JU-87's and three were reported by the forward observers as being destroyed. One of our trailers was destroyed by a bomb which landed within ten yards of it. One half-track of the — Field Artillery was hit but not seriously damaged, and two men were wounded by shrapnel. This was the first occasion on which our men had come into contact with the much talked-about Stukas. They stuck to their guns throughout the whole attack. The Commanding Officer of the — Field Artillery was very warm in his praises of the new weapon which he had never seen in action before, and he was convinced that the great support given his unit by the anti-aircraft weapons prevented the enemy from returning and interfering with the effective job of breaking up the enemy attack that his artillery unit was doing. Later the artillery unit was commended very highly for the part it played in breaking up the Axis attack at Kasserine Valley.

We moved from Kasserine to Maknassy taking a po-

sition ten miles northeast of the town. Very little enemy activity was encountered in this sector. We next moved to Bir El Hari with the — Field Artillery. From here we proceeded to a position five miles west of Lessouda Mountain. The next move was to La Calle and from there we moved to a position twenty miles east of Beja. From here on it was one quick move after another for the platoons of this battery until they ended upon the Tunis-Bizerte road and the cease firing order was given on May 9th at 1113 hour.

All in all it was a great experience—many times very close to the enemy when escorting the Armored Infantry. Officers and men alike have learned much about a combat army, having operated with Armored Field Artillery, Armored Infantry, foot Infantry and in rear area defense of important ports. Things never to be forgotten include those terrible convoys on dark rainy nights when our trucks and drivers gave their all to keep up in the mud, the cold, the rain, the dust, and the dark trackless wilderness of central Tunisia. We will remember the 88's and Stukas, the sniping, the mines and booby traps.

#### EXPERIENCES IN BATTERY B

##### WITH THE 1ST PLATOON

We first arrived in Tunisia in mid-January. After several weeks of guarding a concealed bivouac we were attached to the — TD Battalion. With the Combat Command to which we were attached we attacked Sened about February 1. A night convoy in pitch black darkness and cold took us through Gafsa to the assembly area. In convoying infantry vehicles the next day we were attacked by fifteen JU-88's and ME-109's coming from out of the sun. Our guns shot down two of the planes. Later in the day our guns dispersed another twelve-plane raid causing the attackers to drop their bombs far from their objective. The third and last raid of twenty-four planes came after we had reached the infantry detrucking area and were in tactical position. Two of these planes were destroyed and others damaged. Through this day's harrowing experiences the men emerged with a new confidence in their weapons. We were complimented for our work by the Colonel. The next morning, in the half-hour from 8:00 to 8:30 we destroyed seven enemy planes as they raided our positions. The result of our heavy firing was to put three of our four guns out of action. The .50 caliber guns were warped from the heat and the 37mm guns had jammed tightly, making it impossible even to cock them.

A short while afterward we were assigned to Division

Trains and in protection of the bivouac. Assigned to the — Battalion — Infantry (— Armored Division) we moved to a position south of La Calle. Here we joined the — Field Artillery east of Beja. The morale had been very good throughout except for the times when the platoon had been split.

##### WITH THE 5TH PLATOON

This platoon landed at Safi, French Morocco, in the afternoon of November 8th. While tied up at the dock, prior to unloading, gun crews No. 2 and 4 fired upon and brought down a low-flying French bomber which came over about 1700. During the nights of November 8 and 9 the vehicles were unloaded and moved into position on the ridges to the north and east of the docks. At about 0600 on November 9, our guns No. 2 and 4 fired upon another French bomber which came in from the south to bomb the docks. This plane crashed within 500 yards of the first one. On November 9, gun crew No. 2 assisted in the capture of twelve enemy snipers by using the 37mm gun to destroy a stone block house. The platoon moved out of positions at Safi November 11 to take up protection of bivouac area outside of the city. We moved to the Cork Forest near Rabat protecting the — Armored Regiment (— Armored Division) bivouac. We then took over the defense of the bridges outside of Rabat. From here we entrained for Krou, where our half-tracks were unloaded. At Qued Seguin we joined a perimeter defense of the — Armored Division bivouac. Next we moved with the — Armored Engineers protecting their march to Bou Chebka. Later we moved to Sbeitla attached to the Maintenance Battalion. From there we went to Hadjeb El Aioun to protect the bivouac of the — Armored Infantry. Next we went to Lessouda in defense of a Combat Command Headquarters. Then we moved to Sidi Bou Zid to protect the supply trains of the — Combat Team (— Corps). During the withdrawal from this area, the platoon lost two half-tracks, two 2½-ton trucks and four 1-ton trailers. All personnel, however, reached safety. Enemy artillery and tank fire were responsible for these losses. After resting around Tebessa for a while, we joined a combat command on the march to Maknassy. After Maknassy we protected the — Armored Infantry on the move to Sidi Bou Zid protecting the new bivouac area. Next we moved to Qued Zarq with the same unit, and then to a position ten miles east of Beja to protect the vehicles of the — Battalion, — Armored Infantry. Morale was very good, but the counter-battery artillery fire bothered the men a lot.



We must press forward with all our energy to the winning of the war. Here at home we must produce the munitions essential to victory. We must push on with the building of escort vessels to protect our convoys. We must win our objectives on production of airplanes for the Army and the Navy and for our Allies, for no victory will be won without overwhelming superiority in the air.—HON. ROBERT P. PATTERSON.

# First Aid for AW Training

By Lieutenant Cameron Brown, Coast Artillery Corps

## TARGET!

The 40mm fire unit snaps into action. The director crew sets up the target and the gun crew mans the gun. The unit is a smooth working team, a perfect example of second pick-up, steady tracking and perfect timing. But the team is not effective in combat unless the range setter can set proper ranges. During weeks of practice, the unit received the training necessary for coordinated action. But how about the range setter? He controls the director, he regulates the director prediction. Will his judgment be sure? Will he instinctively set ranges of the proper length? Will he think clearly amid the distractions of actual combat? Too often the only test of his training has been at the firing point. Obviously the best available man should be selected for this vital position; the need for a yardstick to measure comparative capabilities has long been recognized.

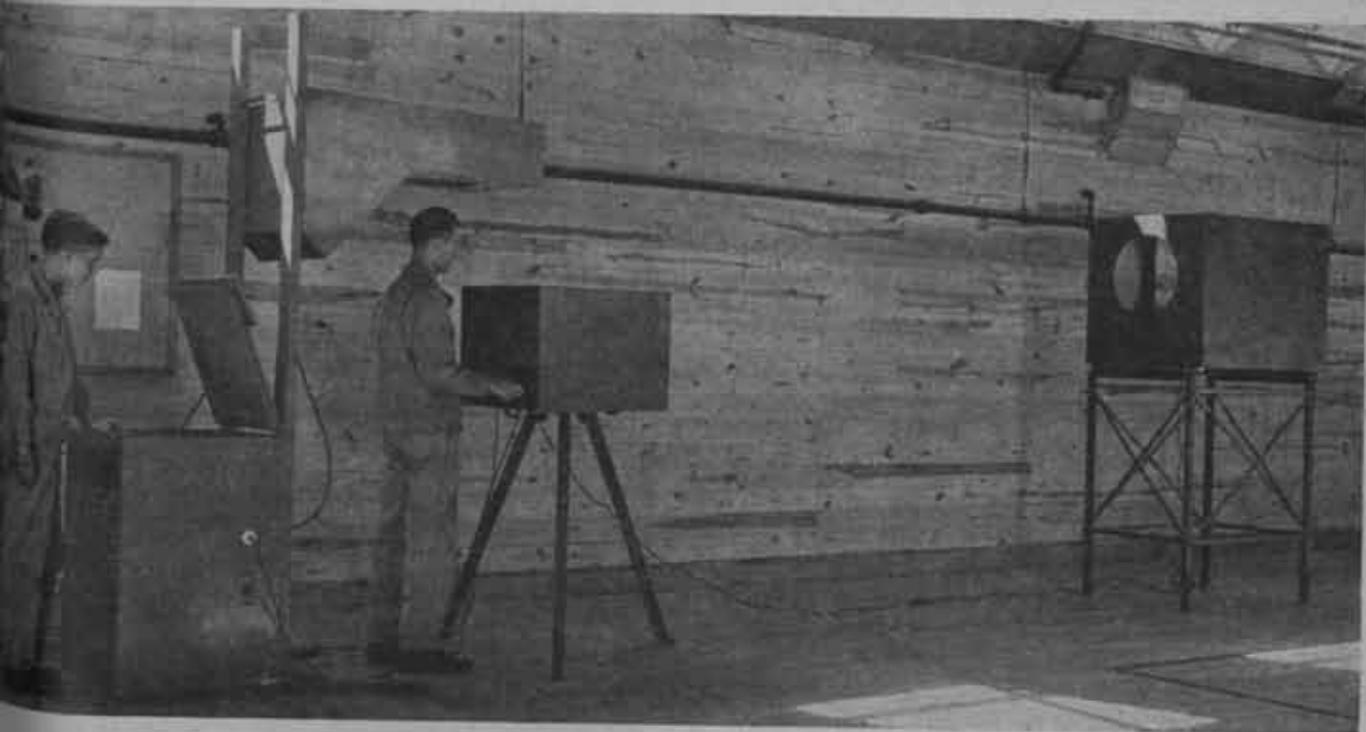
And now each Automatic Weapons Battalion will be equipped with the Director Trainer M8, a training device designed solely for the purpose of selecting and making accurate, dependable range setters.

The prospective range setter takes his position at the rear of a mock-up director equipped with a range dial and a range handwheel. Turn for turn, this range dial will project range settings corresponding to those on the M5 director. He sets in a range, turns on the control switch and the gun fires the first "round"; each succeeding "round" is fired automatically at one second intervals. He watches the target, in a box some fifteen feet away, and observes

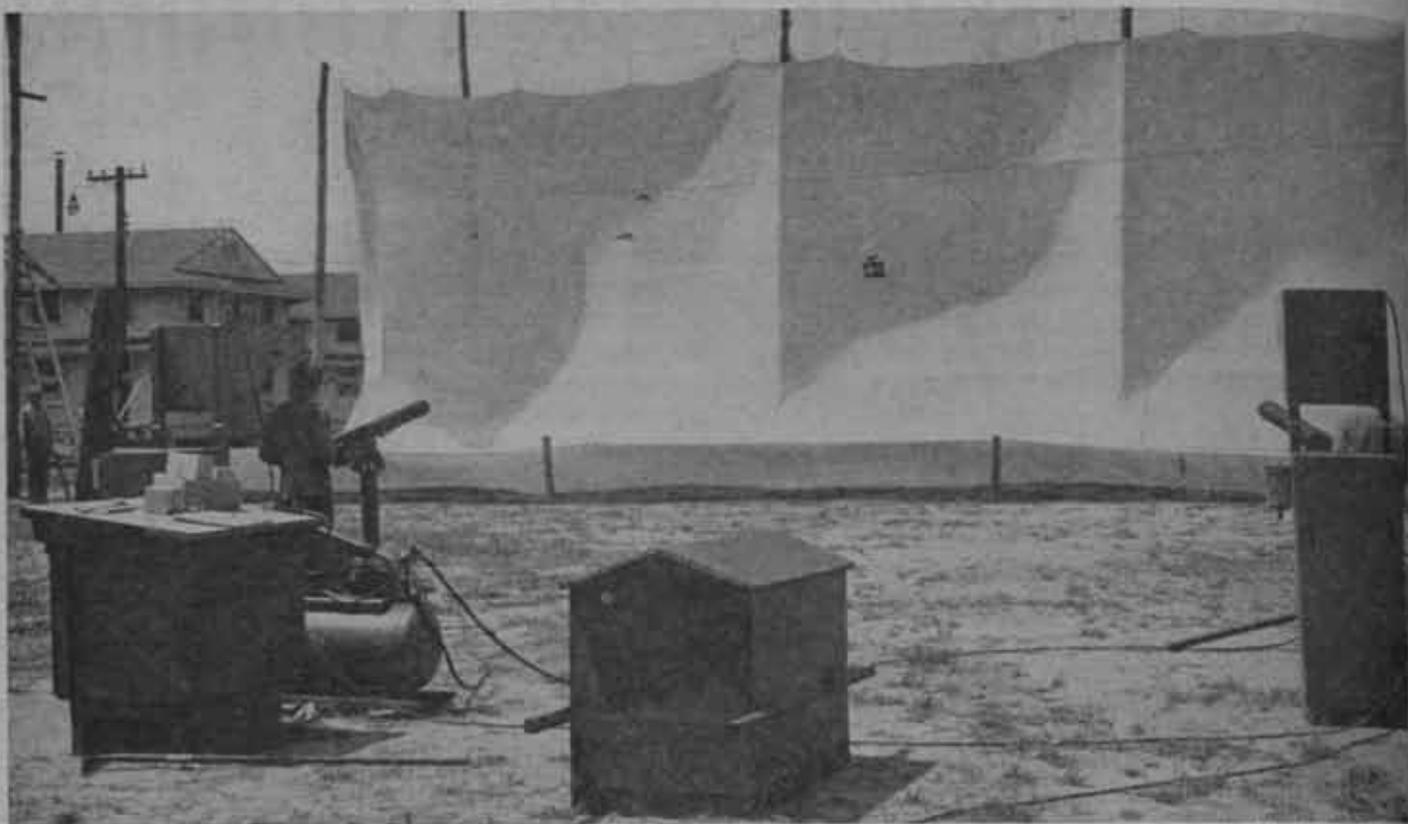
tracers silhouetted against, passing through or eclipsed by the target. If he has been properly prepared by lectures and explanations of his job, he can apply the rules of range adjustment to cause apparent explosions on the target. After the range setter has become accomplished in the range setting process, the transition from the trainer to the M5 can easily be effected.

Now for a description of the M8 trainer. It consists of a mock-up director, sound equipment, and a target box.

The mock-up director produces gun sound and selects a tracer corresponding to the range setting. As the range handwheel is turned, an electric contact or wiper moves vertically across the face of a brass plate. Curves of maximum and minimum hitting ranges for a fifteen yard target have been drawn upon the plate, and the area between the curves has been removed. The plate, mounted on fiber board, is moved mechanically at a constant speed from one side of the director to the other. If the range setting is short, contact will be made through the lower portion of the plate and the tracer will be seen to silhouette. Conversely, a range setting that is too great will cause contact through the upper portion of the plate and the tracer will be seen to eclipse. If the range is properly set, causing the wiper contact to come between the curves, a hit will be scored. Eight control plates are supplied with each trainer, furnishing a variety of courses and a choice of either low (120 m.p.h.) or high (300 m.p.h.) speed targets. The instructor may check range settings by observing the movement of both plate and wiper through a window on the



Director Trainer M8.



Signal Corps Photo

Machine Gun Trainer M9 set-up.

front of the director. Through this medium, it is possible to determine whether a man has grasped the idea of range adjustment and, also, whether he reacts rapidly enough to observed tracers. If he is selected for further training, battle sounds and high speed courses may be used to simulate combat conditions.

The battle sounds are provided by the sound equipment which consists of a standard phonograph pick-up, turn table and amplifier. Two speakers are mounted above the range setter; one, immediately overhead, transmits gun sound only, the other carries the recorded battle sounds. A panel on the side provides a volume control and various control switches.

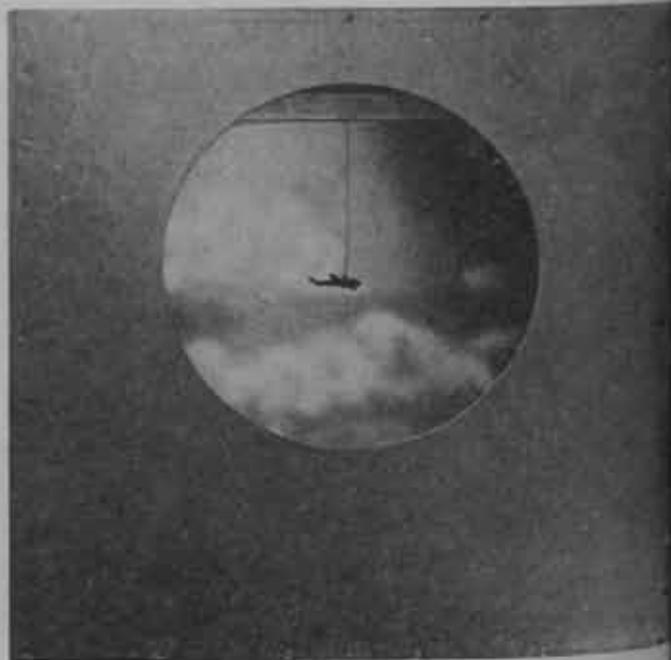
The target assembly furnishes a 1:135 scale model plane rotated to simulate a target flying a crossing course at constant altitude. The illusion of speed is imparted to the target by the rotation of a drum carrying a sky panorama behind it. The speed of the drum may be varied to coincide with the type of control plate being used. The simulated tracers consist of small "pen light" bulbs mounted on each end of three brass rods. When contact is made through the control plate, the proper light is released and swings past the target.

The illusion of change in apparent size of the target can be produced only by using the Director Trainer M8 in combination with the Hunt Miniature Range. The director and target units may be installed side by side facing a movable mirror—the sound equipment may be set up outside of the Range. The illusion of changing range may be obtained by moving the mirror backward or forward, enabling the range setter to adjust ranges by changes in the apparent size of the target as well as by observation of tracers.

After continued practice on the M8 Trainer, the range setter will learn to watch the tracers. He will realize the changing aspect of the target, and, above all, will instinc-

tively operate the range handwheel in the proper direction in the proper amount, and at the proper time.

Meanwhile, the training of machine gunners need not be neglected. Another device has been developed, the Anti-aircraft Machine Gun Trainer M9, which affords an opportunity to train machine gunners in individual tracer control and fire discipline regardless of weather conditions and without expenditure of ammunition. The gunner fires a compressed air gun, similar in appearance to the water-cooled caliber .50 machine gun, and brings the tracer stream-



Director Trainer M8 Target Box.



Signal Corps Photo

The "machine gun" and sound equipment.

near on a model target towed along a trolley wire. The scale model target may be a metal airplane, or, if the tracer's hits are to be scored, a paper target may be used. Parallax properties are not present at normal machine gun ranges, so the gunner should cover one eye to obtain proper perspective.

A machine gun sight may be mounted on the gun; this is used by the gunner to pick up the target. After the tracer is laid on the target, he changes over to individual control for the rest of the course.

Three types of courses may be utilized; crossing constant altitude, crossing, diving or climbing. They are obtained by pulling one trolley wire horizontally at a minimum height of fifteen feet and another from a minimum height of seven feet at one end to as high as possible at the other. One hundred feet is the ideal length for the horizontal wire.

The simulated ammunition consists of white plastic pellets about 5/16" in diameter. Ball ammunition is not

visible in flight, therefore these pellets represent tracers only. The time of flight and trajectory of the pellets are amazingly close to that of caliber .50 on a 1:30 scale.

A backdrop is placed behind the trolley wires at a distance of fifteen to twenty feet so that tracer "cutback" may be observed. The pellets will strike the backdrop and fall into a collecting cloth below.

A standard air compressor connected to the gun supplies the blast of air necessary to fire the pellet.

The M9 Trainer also includes a sound unit similar in outward appearance to the one used with the Director Trainer M8. However, in addition to battle sound equipment, it houses a timer and explosion sound unit. Through a set of three cams electric contacts are made which cause gun sound, recoil and pellet ejection. Two of the cams revolve at 600 r.p.m.; one produces properly timed reports, the other activates a solenoid in the spade grip handles of the gun to provide shock of recoil. The third cam revolves 120 r.p.m., each revolution of which causes the gun to fire one pellet.

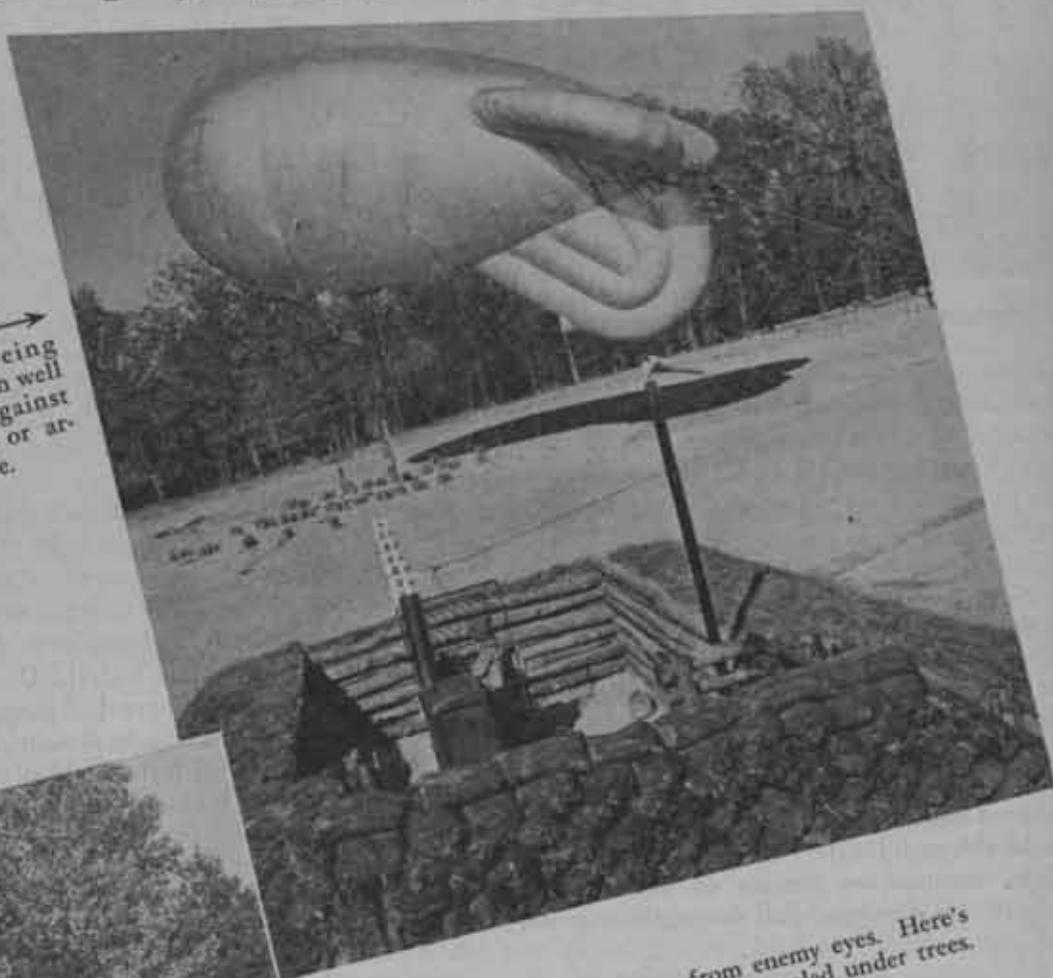
An added feature is the use of pellets and a target which become fluorescent in ultra-violet light. A small ultra-violet lamp is mounted under the muzzle of the gun in such a manner that its beam will be directed along the trajectory. With this equipment night firing may be simulated.

It should be apparent that both the Director Trainer and the Machine Gun Trainer have dual purposes, that of selection and pretraining of adequate personnel. The Automatic Weapons officer faced with the problem of selecting range setters and machine gunners will find them invaluable. After selection has been made, the men may be pretrained regardless of weather conditions, without expenditure of ammunition, and without the necessity of towed target missions by the Air Force.



# The MINE FIELDS

→ LA balloon being flown from winch well barricaded against bombing raids or artillery fire.



← VLA balloons are easily hidden from enemy eyes. Here's one with its supply of gas cylinders concealed under trees.



→ Composite showing LA balloons flying over vital railroad installation.



# GOES ALOFT

Signal Corps Photos

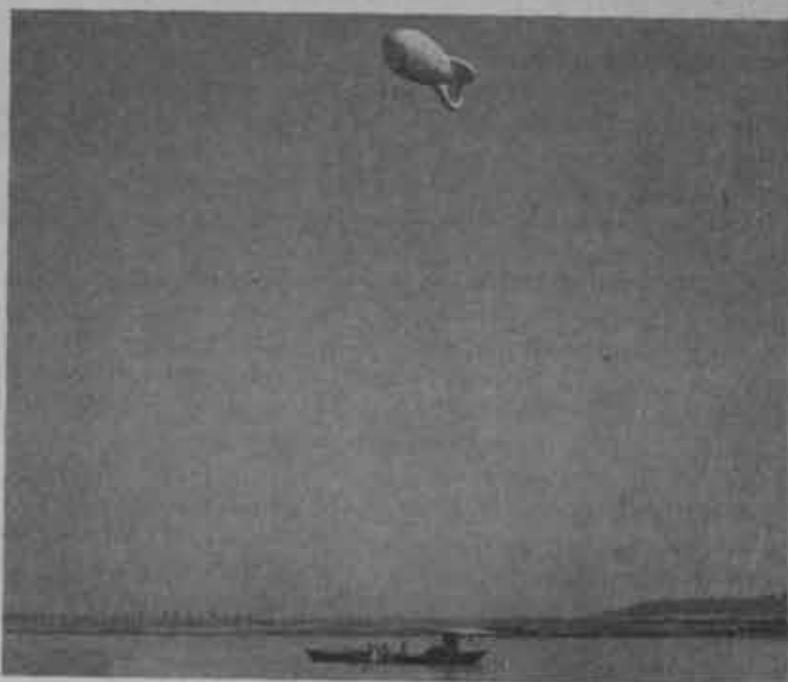


Two balloons flying at close haul. Note VLA's in background.

Aerial view of an LA balloon being flown from a barge on the Tennessee River. Note VLA balloon bedded down on ground.



Barrage balloons, ungainly and slightly ludicrous in appearance, have proved their worth in many theaters of war. The Coast Artillerymen at the BBTC, Camp Tyson, have developed tactics, technique, and matériel for this effective AA weapon.



LA balloon flying from barge in middle of Tennessee River. Barrage balloons can be used effectively to protect locks and dams.



VLA balloon being flown from mobile winch mounted on special truck.

# Attitudes in Aircraft Recognition

By Captain Samuel D. McClelland, Coast Artillery Corps

Most problems facing anti-aircraft defense have been met with solutions involving physical science. The gunnery problem is an example. We know the wealth of matériel designed to point the gun properly.

Aircraft recognition, however, requires only vision (or hearing), and memory, which are standard human equipment. The solution to the problem is one of training of the individual, rather than the design and use of instruments. The touchstone to success lies in psychological factors rather than precisely engineered equipment.

The attitude of the individual, whether enlisted or commissioned, to the whole recognition problem is of high importance. To plow ahead with training routines without pausing to consider these attitudes is to neglect the most important and most variable factor—the human subject. A prerequisite to the process of learning to recognize aircraft is a favorable attitude towards the learning in the mind of the trainee.

There are harmful attitudes we should be forewarned to avoid. The first of these is very akin to despair. There are about 150 front-line combat planes fighting every day. There are nearly 500 types which have some active part in the war. Unfortunately for recognition, the development of the flying machine depends on the nature of the air, of metals and motors, not on nationality. The planes of different countries are therefore very similar. To the untrained, all planes look alike. The trainee, when faced with this complexity of many planes, with such minor marks of difference, is very apt to throw up his hands mentally, and say "It can't be done." A plane is too hard to see. The study of them is impractical.

Radio communication, various other signals, a resolve to "Shoot 'em all"—these and other expedients replace a desire to tackle the problem. Such retreats are very comfortable in that, through them, the individual not only avoids labor and condones his ignorance, but also feels that at the same time he has put himself in an unassailable technical position. Closer thought will at once reveal that this resignation rests fundamentally on a failure to appreciate the true purpose of recognition training.

It is obvious that under many conditions aircraft cannot be seen, even though they are fairly close at hand. The circumstances for this are simple and many. The plane may be too distant, it may be in the sun's glare, it may be in the dark. It is hardly the purpose of recognition training to overcome such obstacles. No one could ever have conceived that the purpose be such.

Recognition implies as a first necessity that the plane can be seen well enough. The aim of instruction is to train the soldier so that he knows what he sees. Is he a trained soldier, who, clearly observing an approaching plane, doesn't know what he is looking at in terms of help or danger?

The circumstances when planes can be seen are very many, if we are to take cognizance of military intelligence reports. The great bulk of level bombing is done by day

and under conditions of good visibility, except for the R.A.F. heavy planes. Practically all dive-bombing and strafing are done by day. In the Pacific, night strafing is an unheard-of proposition. Most low altitude level bombing, of that small amount which has occurred, has been done during daylight. Even very high level bombers can be easily discerned in Pacific skies.

The men in battle report the enemy provides a very rapid air target, but at the same time a visible one. There is, by and large, ample opportunity to see the target in the vast majority of cases.

The fact that in virtually all attacks the target is plainly visible, opens the way for recognition. But training must first have provided the familiarity with air targets. No plane is fast enough to defeat recognition if the observer is proficient. Mental timelessness can always surpass mechanical speed if ignorance does not impede the process.

There is of course a share of combat time when the target will not be visible. Some means of target identification is necessary in these instances, but such is not the province of visual recognition. Various means of signal communication have been devised to meet this necessity. During conditions of limited visibility eccentric plane movement, restricted avenues of approach, the circling of local landmarks and various similar measures have been invoked. There is use for these, and no purpose is served in curtailing them where they have proved effective. However, the procedure makes no allowances for the approach of damaged or strayed friendly planes whose mobility is limited. In further, such a method is used to supplant visual recognition merely because ignorance exists, then efficiency of intelligence is sacrificed.

Although science has materially aided the anti-aircraft artilleryman in identification of aircraft by the development of mechanical aids, it would be dangerous to assume the individual responsibility for recognition of aircraft centers with a knowledge of operation of certain types of equipment. Furthermore, mobile units must of necessity be freed from the responsibility of caring for, or moving, an amount of bulky equipment. Battles of the present war confirm the necessity of highly mobile units equipped with light and simple but effective equipment.

With any system depending on radio communication there is imposed a most serious burden in the matter of security. In the light of experience in which one side has on countless occasions successfully intercepted the messages of the other and transmitted false communications, the problem of using radio signals as identification must contend with the fact that the air is free to all. This difficulty is more baffling when one reflects that it is coupled to a condition of wide dispersion of small units in a tactical field.

It would be rash indeed for any analyst to outline circumstances in which a familiarity with enemy aircraft would not be an important item of individual military intelligence. "Know your enemy" applies with incal-

to the flying foe. Minutes cannot be wasted when seconds are critical. The tactics of sudden attack are those of a duel. Sad is the experience of those who depend on a stereotyped operating procedure when within reach of air-losing power. The initial estimate and the final decision are often both in the brain of the actual gunner. How can he be secure in ignorance of the flying killer because of the remote existence of heavy truck-loads of radio equipment?

Especially pernicious in the matter of identification of enemy aircraft is the attitude of mind which says: "If a plane comes near me I'm going to let it have it, no matter what it is." Such a credo can and has done damage to our cause. It is symptomatic of the untrained recruit, and a crude insight will probably be found in other phases of his fighting. Belligerence does not win battles of itself, skill and craft are absent. Morale is not based on bravado or on deadly competence and lethal ability. The anti-aircraft artilleryman needs his flying support perhaps more than that support needs fear such selfish attack. He must have his planes to cooperate with them.

Methods of instruction which are haphazard and unorganized will find their character mirrored in the results achieved. They must be chosen to fit the ends required, and used with pace and judgment.

It is well to keep in mind the nature of the skill it is desired to develop in the soldier. Target recognition is not a matter of classification or a method of research. It is a single act of the mind—of the intellect and senses working as a whole.

In all visual perception we "see" more than is present to the eye. To look at an orange on a table before one is to experience more than the eye can bring. The roundness, heaviness, weight, taste, etc., very often are qualities of that unitary act. The magic of the human brain makes one obtain a response from many stimuli discretely and almost simultaneously received, in the act and prior to it.

Recognition implies that the object seen is actually present (and thus differs from recall when the absent object is brought back into consciousness). It also includes much of the past experience in the present act. In addition, it carries with it a note of *familiarity*, which is unique and characteristic. It is useless to attempt to describe familiarity—we know it by subjective experience—the difference between what is strange or neutral, and that which is "familiar." It is experienced everytime someone says: "Have you met Lieutenant So-and-So?"

An understanding of this is important in teaching recognition of aircraft. The soldier's visual perception of a plane in a battle, you hope, will be an act of recognition. It can only be such if his previous visual experience has been clear enough, and clear enough, for him to have become familiar with that plane and to have retained that familiarity. He must know the plane he sees is that plane and no other.

Of fundamental significance here is the fact that any recognition is specific and not general. Any categories such as "Enemy," "German," "British," "Light Bomber," etc., are abstractions, and cannot be the first act of recognition, to be followed by more specific particulars. Any number of final judgments may be made after recognition, but that

first act is merely an awareness of that flying "thing" which may be linked to hostile or friendly associations.

We are therefore not training for classifications of craft by country, for analytical systems based on plane structure, or for any other complex of aeronautical data. We are training for a mental act. It is simpler than all system, suffers from artificial complication, and is standard human equipment. It is always there for use. It might as well be trees or butterflies as planes.

The integrating power of the human mind is matchless. The following is a quotation from a work concerning color photography, which will help to illustrate this power: "Another frequent variation in subject color is caused by the color of the surroundings. For example, a person standing beside a sunlit red brick building is lighted partly by reflected red light, and his color therefore takes on a reddish cast. Likewise, a person standing among sunlit green leaves appears to have a much cooler color. Indoors, subjects' faces sometimes pick up color of adjacent walls, drapes, or furniture.

"The average person does not notice these color variations in the actual subjects because the mental part of his vision adjusts automatically for those changes. One's mind adjusts even to the extent of giving somewhat the same impression of subjects under artificial light as in daylight. Kokachrome cannot automatically adjust itself to variations in color of the lighting."

In any act of recognition, this integrating power is working, "automatically adjusting" as a camera manufacturer would put it. The mind does not bury the golden coin it receives from the senses, but *remembers* it, to use it again and again in recognition.

This is the power we must put to work. Although the final recognition is a single, unitary act involving the whole structure of the plane, yet the learning process may involve thousands of slight accumulating impressions. It is obviously incorrect, for example, to say that because we desire, finally, to recognize the B-17 as a unit structure, that we should not point out the unusual prominence of its huge tail fin. What the individual learns by seeing, even feeling, a model, what he sees in a silhouette or a picture—even what is seen in the memory and imagination when reading or hearing a story of Fortress exploits—all these are added to and reinforce the act of recognition. The error is in using a part-by-part analysis as a method of recognition in the field. As a training method, it is of value when it goes forward simultaneously with training in recognition of the whole plane.

This does not imply that systematic *method* is unimportant. But the recognition, and not the system, is the goal of the instructor. Unless you work *with the minds and eyes* of the soldiers, you are merely going through the motions.

In general, it is well to accept the *variety* and beware the *system*. By and large, it is a mistake to become the disciple of any system, as if it were a creed, becoming intolerant of all other, competing systems. Each has something of value to offer, none has an exclusive key to success. To concentrate on one alone, is to lose all the value of the others. Systematic methods should be used with a view to providing

interest and variety, rather than in an effort to find a "system" that will bring recognition with magical ease.

In all of this, the mental factor of *attention* or *interest* must go hand in hand. The concern with this idea that has given birth to America's million dollar advertising budgets, is equally important in training. We must hold the trainee's attention. Novelty, variety, colored pictures, battle shots, anecdotes, brevity, pointed and arresting facts—all the things which make good "copy," make good training.

The average American soldier is very much interested in aircraft. For him, air warfare is the most adventurous type of fighting. He reads the magazines, devours the newspapers. When he becomes disgruntled with his job, he wants to join the Air Corps. It is a tribute to the wooden nature of our instruction that we can so successfully, and with such scientific method—bore him to distraction.

It is therefore *sine qua non* that the students interest be aroused. A vivid and varied presentation is necessary. Many ideas for teaching recognition have been advanced. They can *all* be used. The only important thing is that the soldier see the plane often enough, with consuming interest, so that he will recognize it when he sees it again.

It is established that repetition reinforces memory and aids recognition. But this refers to a repetition in the mind of the student, rather than a repetition of business going on before him, of which he may or may not be very much aware. It is very difficult to maintain interest for a long time at one stretch. It is further true, that if considerable time separates the experiences, they will not commingle in the mind; they will not be mutually strengthening. One will have been too well forgotten before the next is experienced. Repetition, as a consequence, should be in the form of *short* periods of instruction, *frequently repeated*.

Plane nomenclature is a logical starting point. It provides a set of mutually intelligible terms for future discussion. It also provides a framework of plane structure in which all future discussion may lodge. A clear "pattern" in the mind, drawn early, will save much later confusion. This nomenclature can include a delineation of the bomber and interceptor, etc., as well as general plane characteristics.

In teaching nomenclature, do it functionally. When a plane part is mentioned (for example, the wing), its contribution to the plane's flight (its lift), should be brought out. Every part can be linked to action. What might become a dry catalogue of labeled sections of sheet aluminum may very well be enlivened into a graphic presentation of

the miracle of flight. And when it is known what a part does, the identity of that part is much better remembered. Understanding and association with the other components in the functioning machine will serve to reinforce recollection.

*Variety* is a source of interest, and all methods should be used to achieve it. It would be pointless to belabor this introduction with a detailed description of the many methods or of the class routine. Individual judgment must prevail in any case to merge the chances of the situation and the available time. Mobilization training time is exacting, but excellent results may be obtained if one keeps flexible and aims for interest.

The original state of mind of the men cannot be overlooked. Harmful attitudes cannot be supplanted by denouncing them. You must convince by the interest and enthusiasm which brings results. With attention and appeal the men will teach themselves. When recognition has been mastered, complaints vanish.

There is a great deal more to recognition training than proper attitudes and the right state of mind. What of the practical machinery of putting across the information? This has not been left to chance; is not to be approached haphazardly.

A careful study of current training memoranda published by the War Department and the Antiaircraft Command on this subject will provide you with the essential information on recognition training.

The Antiaircraft Artillery School has been given definite responsibilities in this program. A sufficient number of OCS graduates will be placed in the recognition course after graduation to provide five officers for each AW and Gun battalion and four for each searchlight battalion, and one officer for each Group and Brigade Headquarters.

These officers are given a full two weeks of instruction at the Target Recognition Section. The methods used are those that will be available at the training centers. These potential instructors are, however, taught a variety of approach and progressive techniques to make the issued materials effective. Plans should early be crystallized to make immediate, frequent, and continuing use of their abilities.

However, as Training Memorandum No. 12 points out this is not the be-all and the end-all of target recognition. The study is continuing in nature, and the initiative and inventiveness of the individual will continue to add valuable innovation and interesting variety.



Have We Your Latest Address?

# FOLLOWSHIP

By T/3 Robert G. Bardwell

Leadership is a quality that most people recognize and understand. A leader is aggressive, quick to understand and to act. He commands the interest and respect of his followers. Everyone knows the leaders. They are the Roosevelts, the MacArthurs, the Eisenhowers. But for every leader there must be followers. What are the qualities of a good follower? What is "Followship"?

In childhood, one of the neighborhood gang says, "Let's follow the leader," and he starts off on an involved series of difficult jumps and hurdles. After him go the followers. If they are experienced, they manage every jump and take each hurdle just the way the leader did, keeping hot on his trail and forcing him to work hard to invent more difficult maneuvers. If it's the first time they have played the game, they are likely to land in the ditch. A good follower will keep right on falling in the ditch until finally he learns how to get over it. What is it that makes him keep on trying? Well, for one thing, he probably wants to equal the feats of the leader and stick along with the rest of the gang. Perhaps it is egotism, or spirit, or enthusiasm. Whichever name you prefer, it is an inherent desire to succeed that stimulates all good followers, be it in a childhood game or in the adult battle for existence.

A man who is inducted into the Army from civilian life is in much the same situation as the child who is playing "Follow the Leader" for the first time. In civil life, most men are pretty much on their own except for a general control exercised by employers. In the Army, a man finds that he lives under constant control and leadership. He has to learn the Army version of "Follow the Leader," and until he learns how to handle himself, he is liable to land in the ditch for the first few weeks. He is confronted with a completely different way of living. His mind is confused with the great mass of new information he is expected to learn. Serial numbers, bayonet numbers, rifle numbers, parts of a gun, and countless other details form a seemingly insurmountable hurdle. His body just can't seem to coordinate. Close order drill, bayonet practice, the manual of arms, overnight hikes, all become a quagmire into which the new soldier seems destined to sink. It is then that the determination to succeed goes to work. Following the example of the leader, the new soldier tries the hurdles over and over again until, little by little, order comes out of chaos. He begins to learn the mechanics of his new profession. Soon he can execute the manual of arms as smoothly as the platoon sergeant. It is spirit, it is the desire to succeed at a job set by the leader that has started the pursuit along the way to becoming a good follower and a good soldier.

The mere desire to win, however, won't take him very far. A soldier soon finds that the Army is organized along the lines of a football team. One man can't buck the line

by himself. It is the concerted action of the whole team that gains the needed yardage and brings the touchdowns. A football team practices to perfect certain plays that have been devised by the leader, in this case the coach. Each man understands his function in the play and through practice he has learned how to carry out his part in the strategy in cooperation with the other men of the team. It is the willingness to work together with the other players under the direction of a leader that makes a player valuable to the team. If he is playing professional football, he is willing to work as a part of the team for financial reasons. If it is college sport, it is the desire to have his organization win that prompts his acceptance of even a minor berth on the team. This is commonly described as "school spirit."

In the Army, the same cooperation between men, and groups of men, is required in order for the "team" to win over its opponent. This need to work together according to a pre-arranged plan is the basis of all Army training. The new soldier finds this out very soon. In drill, if a single man fails to execute a command at the proper time and in the proper manner, the entire platoon will be thrown into confusion. In battle, the same teamwork is essential. Each unit must perform its assigned function in the strategy devised by the leader. This time the urge which prompts the follower is "school spirit" translated into a more universal meaning. This time the opposing team threatens his home, his family, his life. It is patriotism, the urge to preserve and protect his country and his ideals that causes a man to follow a leader and perform his assigned task in conjunction with others who share his feelings, since through experience he has learned that it is the most efficient way to achieve success.

Before a man can follow wholeheartedly, he must have confidence in the leader. He must have faith in his judgment, trust in his knowledge. This confidence is built up from experience too. In a football game, the players follow the decisions of the coach because they have faith in his judgment. They know that he calls the plays that will win the game. The same truth holds in the Army. In battle, a soldier obeys the commands of his leaders because he has built up trust in their judgment and knowledge. During basic training, so many of the things that a new soldier is expected to do seem to have little or no meaning. What difference does it make where he puts his thumb when he fires his rifle? A bleeding lip is often the answer to this question of the leader's knowledge. Through many experiences, he learns that the leader is the leader because he has already explored the field and has found the best and easiest way to reach the objective.

It is this all-essential confidence, combined with the urge to succeed in defense of his country, that prompts the soldier to follow when the leader says, "Forward!"



# Special AA Film Strips

By Lieutenant Colonel Charles H. Scott, Coast Artillery Corps

For the purposes of illustrative work in film strips and training and technical manuals, a staff of professional artists and designers made up entirely of enlisted men has been gathered by the Division of Training Publications of the Antiaircraft Artillery School.

By means of these film strips and manuals produced by the Division of Training Publications, the teachings of the Antiaircraft Artillery School are spread throughout the service. The film strip is fast becoming one of the major means by which both officers and enlisted men are taught the intricacies of Antiaircraft Artillery. Based upon the most modern principles of education, these film strips make for uniform instruction as well as accurate presentation in logical sequence. They are designed as an aid to the instructor and eliminate the need to prepare notes. The instructor, however, must be thoroughly versed in the subject as he will need to amplify what is projected upon the screen. A stop can be made at any time and a debated point cleared before going on with the strip.

While all frames must be technically correct they also must be made interesting. If the interest lags the audience will drop away from the subject and the purpose of the film strip is lost. Modern education has put great emphasis on keeping the student's interest high. In fact the film strip has been gaining ground rapidly in civilian schools. The technique developed by the Army, in such production work as done by the AAA School's Division of Training Publications, has brought this new educational method a long way forward and it is believed will greatly influence civilian teaching in the post-war era.

Humor is a major ingredient in arousing and holding

interest in the film strip. This is obtained in many creative ways much in the style of animated cartoons which are well loved by the motion picture public. Still, accuracy of the subject being depicted can never be sacrificed just for a laugh. The humor cannot be kept on a sustained scale; it must be interspaced and mixed cleverly so that it refreshes the viewer and makes him anxious to see more.

It is not by humor alone that the film strip holds attention. Many imaginary creations are brought into the strip which do not bring about a laugh but which make the picture mighty appealing. Even the dullest matter is enlivened by the introduction of little creative bits which keep interest on a sustained level.

To make each picture accurately perfect and clear and interesting taxes the creative and technical abilities of all concerned. Sometimes one rough sketch will produce the result, but in many instances it takes a great many rough sketches and brain power to hit on a proper answer.

After approval of the rough sketches photographs are made and the roughs and photographs are turned over to the art department. Art work includes retouching photographs, schematic drawings, cross section drawings, cartoons, background drawings, illustrations, titles and subtitles, lettering, etc.

All work is finally mounted and prepared for finishing, photographing on 35mm film by the Signal Corps.

By their power of illustration our artists are helping make it possible to teach AA soldiers better and quicker for the job ahead. Every training point they get across with their clever pens, pencils and brushes helps make for the greater proficiency of our antiaircraft artillery.



Finished film strip frame.

# Antiaircraft Artillery Training Literature

By Major James A. Scott, Coast Artillery Corps

In the past twelve months a complete revision of all anti-aircraft artillery training literature has been made to bring it in line with present technical teachings and to provide adequate information on the mass of new equipment that has been adopted.

In the revision certain principles have been followed which should be mentioned here. There is a minimum of repetition between manuals. The most apparent result of this decision is that there are considerably more cross references between manuals than before and, in the case of the Service of the Piece manuals, much less discussion of maintenance and matériel than formerly. Instead, references are made to the pertinent Ordnance Technical Manuals. There has also been an attempt to increase the interest and readability of the manuals by a more extensive use of illustrations. The drills for the various weapons and instruments have been set up in a narrative form rather than the tabular form that has been standard for a number of years.

A list of all Antiaircraft Artillery Field and Technical Manuals to be produced in the near future, and which it is permissible to publish, follows. The only expected additions to this list will be occasioned by the adoption of new matériel. All of these publications are classified Restricted, therefore a description of the contents is not included.

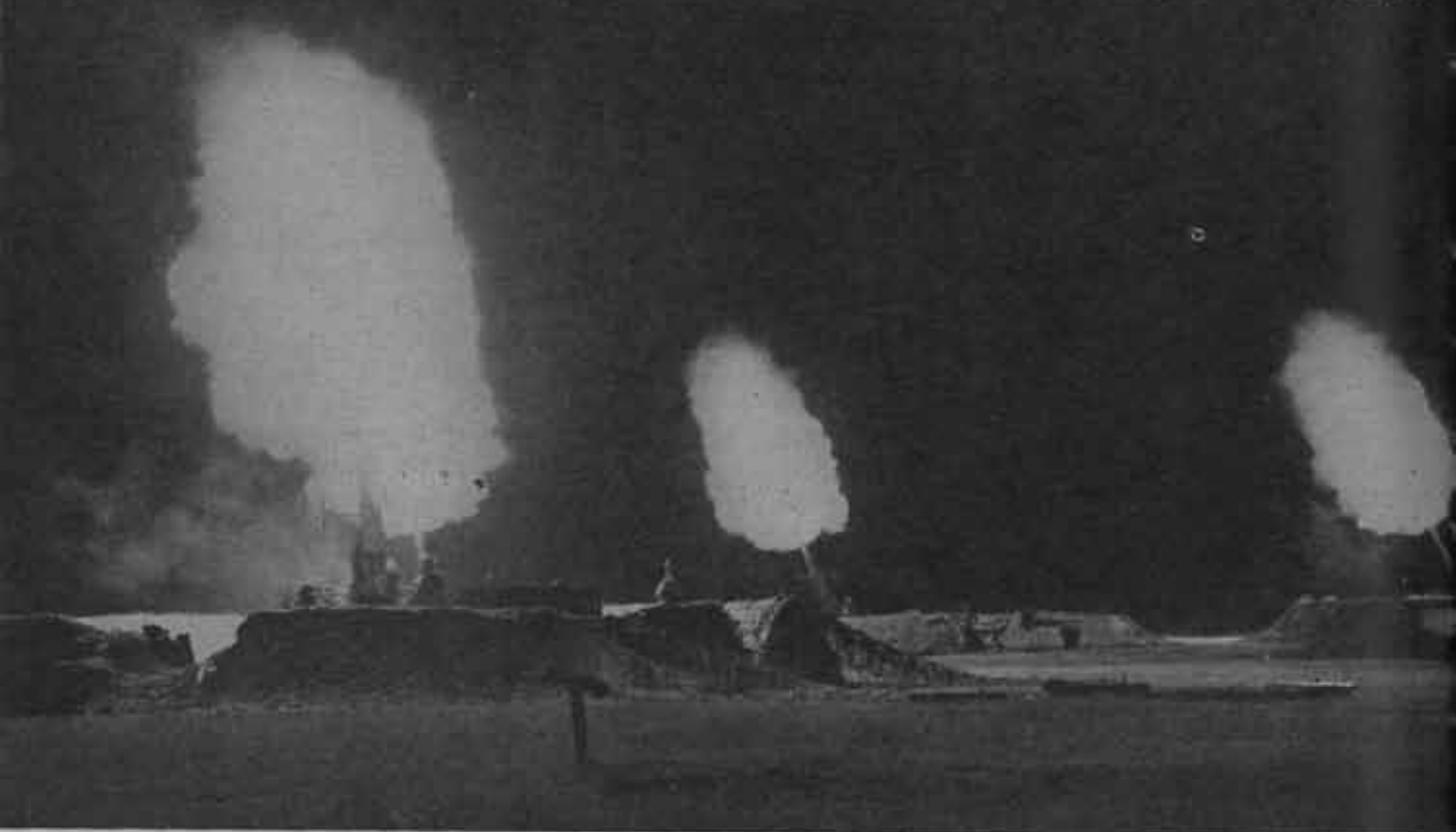
- FM 4-100—*Antiaircraft Artillery Organization and Tactics.*
- FM 4-101—*Employment of AAA with Armored Forces.*
- FM 4-102—*Employment of AA Automatic Weapons.*
- FM 4-103—*Employment of AAA with Airborne Forces.*
- FM 4-104—*Employment of AA Guns.*
- FM 4-106—*Employment of AA Searchlights and the AAAIS.*
- FM 4-110—*Antiaircraft Artillery Gunnery.*
- FM 4-118—*Antiaircraft Artillery Reference Data.*
- FM 4-119—*Examination for Gunners.*

- A revision of old FM 4-150.
- FM 4-120—*Formations and Inspections.*
- A revision of old FM 4-120.
- FM 4-121—*Fire Control, AA Guns.*  
This manual supplements FM 4-110 for the battery officer.
- FM 4-125—*Service of the Piece 3-inch AA Guns.*  
This manual has not been changed.
- FM 4-126—*Service of the Piece 90mm AA Gun on Mount M1A1.*
- FM 4-127—*Service of the Piece 90mm AA Gun on Mount M2.*
- FM 4-128—*Service of the Piece 4.7-Inch AA Gun.*
- FM 4-130—*Service of the Piece 105mm AA Gun.*
- FM 4-136—*Service of the Directors M4 or M7.*
- FM 4-137—*Instructions for Operation and Maintenance Dual 20mm Guns on 40mm M2 Carriage.*
- FM 4-138—*Service of the Director M9 and M10.*
- FM 4-142—*Service of the Height Finder M1 and M2.*
- FM 4-151—*Fire Control Automatic Weapons.*
- FM 4-155—*Service of the Piece, Caliber .50 AA Machine Guns.*
- FM 4-157—*Service of the Piece, Multiple Gun Power Turrets.*
- FM 4-158—*Service of the Piece, 37mm AA Gun.*
- FM 4-159—*Service of the Piece, Multiple Gun Motor Carriage, M15.*
- FM 4-160—*Service of the Piece, 40mm Fire Unit.*
- FM 4-175—*Service of the Searchlights.*
- FM 4-176—*Service of the Radio Set SCR-268.*
- FM 4-226—*Orientation.*
- FM 4-234—*Antiaircraft Artillery Target Practice.*
- FM 4-143—*Service of the Radio Set SCR-547.*
- FM 4-144—*Service of the Radio Set SCR-584.*
- FM 4-146—*Service of the Radio Set SCR-545.*



# AA in the Battle of Britain\*

## Part Two



Guns in central London blasting at Axis planes.

British Command

### BALLOONS IN BATTLE

At ten minutes to nine on the fine morning of the last day of August, 1940, the Germans gave a clear indication of their respect for the British balloon barrage—in their own language. They came across to Dover and shot down every one of the twenty-three balloons flying there in six minutes.

The Battle of Britain had been joined; and the Dover balloons—which had been deployed during July as a protection against dive bombing—represented the first line of our passive defense. And they still fly in full view of the enemy; proof of his failure, by this and subsequent attacks, to force us to discontinue the Dover barrage.

The attack began when two waves of about fifty enemy aircraft approached Dover at heights of from 15,000 to 20,000 feet. Six Messerschmitt 109s broke away from these formations and flew at the balloons. This first attack was more successful than any subsequently made, but nevertheless half the force was destroyed; two aircraft were shot down by anti-aircraft fire and a third by rifle fire from balloon crews.

There were no casualties among the balloon operators, and replacements were immediately put in hand. One crew raised a new balloon within forty minutes, by 11:30 eleven balloons were flying again over Dover, and by the same afternoon their number was increased to eighteen. At 7:30 in the evening the Germans tried again and shot fifteen more balloons down. But despite these losses, there were sixteen balloons flying over Dover on the following morning.

The protective balloons still fly over Dover. The attack on the barrage has proved too costly. Subsequent attacks appear to represent individual acts of daring by members of the *Luftwaffe* and are said to be frowned upon by the German authorities. The enemy has been convinced that the game is not worth the candle. The fact, however, that he has tried these attacks shows his high opinion of their value.

Moreover, the fact that enemy bombers are forced to fly high over their targets reduces their chances of avoiding our own fighters and makes them a better target for our anti-aircraft guns. In all these ways therefore the balloon barrage—flying night and day through the most severe aerial bombardments—has made a positive contribution to the safety of our cities, ports, dockyards and factories, and the fact that our industrial effort has remained so large.

\*Extracted from *ROOF OVER BRITAIN, the Official Story of the A.A. Defences, 1939-1942*, by special permission.

impaired is in no small measure due to the dogged maintenance of this form of passive defense.

The conception of balloons as a weapon of air defense originated before the last war. The general idea, then, was to build a stockade of nets in the skies and thus enmesh hostile aircraft on their way to a defended area. The Germans also tried a form of balloon or kite barrage as early as the winter of 1914-15. By March, 1917 they were forming balloon barrage detachments to protect important industrial establishments. Our aircraft did not often encounter the enemy barrage, but in January, 1918 a British F.E.2b was caught in such a net on the way back from Trèves. The pilot and observer were taken prisoner, but the pilot made a report of his experiences after the war, emphasizing the fearful mess which the balloon cable had made of his machine.

One of the earliest Allied barrages was in Venice, where there were seven stations each with ten balloons. These were inflated during each moonlight period and flown from heights at about 10,000 feet, at distances of just over 200 yards apart, around the city. In June, 1917 a Royal Flying Corps officer was sent to Italy to report on the scheme. And on September 5th of that year Major-General E. B. Ashmore, who commanded the London Air Defense Area, put forward his scheme for a London balloon barrage. He suggested an apron consisting of a row of balloons connected by a cross cable carrying weighted wire streamers. His scheme was approved by the Government, and he arranged to install two balloon aprons on the easterly borders of London each consisting of five Caquot balloons disposed in a straight line 2,000 yards in length, with the balloons anchored to the ground at three points and linked together by a cable from which wire streamers 1,000 feet long were suspended.

In October the Commander-in-Chief, Home Forces, agreed to the establishment of a Home Wing of five balloon squadrons with a total establishment of 3,587 personnel, at the same time giving his approval for "the installation of a line of twenty balloon aprons, approximately on the line, Sevenham—Ilford—Barking—Woolwich—Lewisham, subject to such modifications as experience may suggest." In April, 1918 seven of the aprons were in operation and the eighth was nearly ready.

The balloon aprons acted as a kind of stockade against enemy aircraft. Their position was carefully checked by our fighter patrols and the closest cooperation with anti-aircraft guns and searchlights existed. The stockade of balloons was, however, heavy and inflexible. It was difficult to operate, and its weight was a potential menace to the population it was designed to protect. Its value as a reassurance to the civilian population was, however, apparent. In the words of Major-General Ashmore reporting on May 27th, 1918: "In my opinion, the balloon aprons are an essential part of the defense; to do away with them would have the most possible effect. Our aircraft patrols would have to cover all heights instead of a comparatively narrow zone as at present. London would certainly be bombed from low heights at which considerable accuracy is attainable."

The success of the balloon aprons as a scarecrow is borne out by the records of the enemy. In March, 1918 a report made to General von Hoepfner to the effect that "the

aprons had increased enormously, and that they added greatly to the difficulties of the attack. If they were increased and improved much more they would make a raid on London almost impossible." In the same month a German prisoner stated that the aprons were "sufficient to keep all machines at their maximum height." All reports from German sources in fact stressed the nervousness felt by their airmen toward the balloon aprons.

When the barrage was hauled down in 1918, work on defensive balloons lapsed, though an establishment was always maintained for experimental purposes. The necessity of having to organize and maintain a barrage in any future war was represented by the Air Defense of Great Britain Command at various times between 1928 and 1935. Finally, the Air Staff decided in 1936 to establish a barrage in London, the question of provincial barrages being left open until some experience had been gained of the working of the barrage in the Metropolis.

A ring of balloons flying at a radius of about seven and a half miles from Charing Cross was first envisaged as a layout for the London barrage. The balloons were to be spaced ten to a mile, giving a total of 450 balloons at approximately 200 yard intervals. The stockade idea had been abandoned. The new barrage was conceived as flexible, each balloon being independent and mobile.

To this end a preliminary survey of the forty-five-mile circle round London was undertaken. But almost before it had started the idea of "perimeter siting" was abandoned in favor of "field siting." Balloons dotted all over a protected area would, obviously, force an attacking aircraft to fly above them all the time. If, however, the original idea had been carried out the aircraft need only have flown over the protecting screen when it would have been able to come in as low as it liked to make its attack.

At this stage the question of operational height had to be considered. A balloon has to lift not only its own weight



A barrage balloon site operated by W.A.A.F.s.

British Official



British Combine

AA searchlight in the London area.

but also the weight of its cable. The higher a balloon is to fly, therefore, the greater must be its volume to give it lifting capacity. No doubt the ideal would be to fly balloons at such a height that enemy aircraft could never fly over them, but this would mean a balloon so large that it would be extremely difficult to handle on the ground, particularly in a built-up area. It was therefore decided to operate balloons at medium heights, preventing accurate aiming and dive-bombing and at the same time leaving the upper air free for fighter interception.

It would have been uneconomical in peace-time to maintain a permanent strength of operators for the full London barrage. Moreover, the presence of so many balloons in and around London would have been too great a menace to peace-time air traffic. An auxiliary organization on the same lines as that of the Territorial army was, therefore, introduced.

The Balloon Squadrons were to be manned principally by auxiliaries able to do part-time or week-end training in association with a small nucleus of regular personnel and concentrated in four main depots in the metropolitan area to be defended. These centers were the first meeting grounds of the many who volunteered their services and who still maintain protective barrages throughout the country at the present day. They were used both as storage depots and for training the squadrons which would be deployed to their own war sites in the event of war. Today the centers are used as maintenance and supply depots for squadrons in the field.

Early in 1938 the recruiting of the first balloon squadrons commenced. A balloon training school was opened, and a nucleus of regular personnel was given an intensive course of training before being posted to the various centers. A balloon group headquarters under Fighter Command was formed to control and administer the barrage as a whole.

At the time of the international crisis in September, 1938 the organization was sufficiently developed to permit a partial mobilization of the barrage and some squadrons were deployed fully equipped to their war sites. They remained on a war footing for about ten days, but were eventually withdrawn after a useful exercise had been carried out.

The performance of the London barrage units had, indeed, been so satisfactory that it was decided to proceed with the establishment of barrages in many of the important provincial cities. The first to be chosen were Portsmouth, Southampton, Plymouth, Bristol, Cardiff, Swansea, Liverpool, Manchester, Glasgow, Newcastle, Sheffield, Hull, Birmingham and Coventry. And with this expansion came the decision to establish a separate Balloon Command.

Early in 1939 the provincial groups were established on a skeleton basis, and sufficient progress had been made by September to enable the barrage for the whole country to be mobilized.

The usual type of barrage balloon is a streamlined bag of rubber-proofed cotton fabric, specially treated, with a gas capacity of 19,150 cubic feet, a length overall of about sixty-three feet, and a height of just over thirty-one feet. It weighs approximately 550 lbs. and it is flown on a flexible steel cable. On the outbreak of war it took at least forty minutes for any single balloon to rise into the air; it now takes less than 20 minutes. Such is the progress achieved in a new and by no means easy technique.

Balloons rise because they are filled with hydrogen which is many times lighter than air. Now if one cubic foot of hydrogen gas rises, the ever diminishing atmospheric pressure will cause it to expand. In fact if it reached a height of 19,000 feet it would expand to two cubic feet. Increases in temperature also cause expansion, Allowance must therefore be made for gas expansion at operational flying levels.

The French made their balloons with elastic sides, but this did not work well in practice. The envelopes of British balloons have "false bottoms" filled with air which is expelled as soon as the gas chamber expands. This "false bottom" is known as the ballonet, and the flexible wall which separates it from the gas chamber is the diaphragm. When a balloon is inflated at ground level, the upper compartment is not filled to capacity with gas and the ballonet is filled with air through its wind scoop. The balloon goes up, the atmospheric pressure decreases, and the expanding gas presses the air out of the ballonet. As the balloon descends, the ballonet scoops back air when the gas contracts. So the shape of the balloon remains constant and the three air-inflated stabilizers, like two huge fins and a rudder, enable the balloon to ride head-to-wind always on an even keel.



British Combine

Height finder in operation.

These are the rudiments of a barrage balloon. But there is a highly specialized and constantly improving technique of flight—manipulation, close-hauling, bedding down, and so on, day and night, getting the best of the weather.

In the middle of January, 1941, the Air Officer Commanding, Balloon Command, was asked to consider a suggestion that the flying of balloons could be completely carried out by the W.A.A.F. At first this suggestion was received with some dismay. The fact that the manning of balloons for twenty-four hours a day, frequently in the most appalling weather conditions, required physical strength not generally possessed by women, was considered itself sufficient reason for rejecting it.

Nevertheless, the Air Officer Commanding examined the problem with the utmost care. Every aspect of the suggestion was explored, from the physical suitability of women balloon operators to the accommodation that they would require; from the amount of food to be issued to them to the type of clothes they would have to wear; from the strength of W.A.A.F. crews to the question of whether or not they could use lethal weapons.

The substitution of W.A.A.F. for airmen on balloon sites does not imply that the airmen, who have operated in all weathers and under aerial bombardment, have in any way been doing a "woman's job." In the first place, it requires a crew of sixteen airwomen to replace ten airmen. Secondly, it must be borne in mind that R.A.F. crews are incorporated in military defense schemes, whereas W.A.A.F. crews are not. Thus, in a number of areas it is not practicable for W.A.A.F. to take over sites. Lastly, it is only the great progress in and simplification of balloon manipulation, for

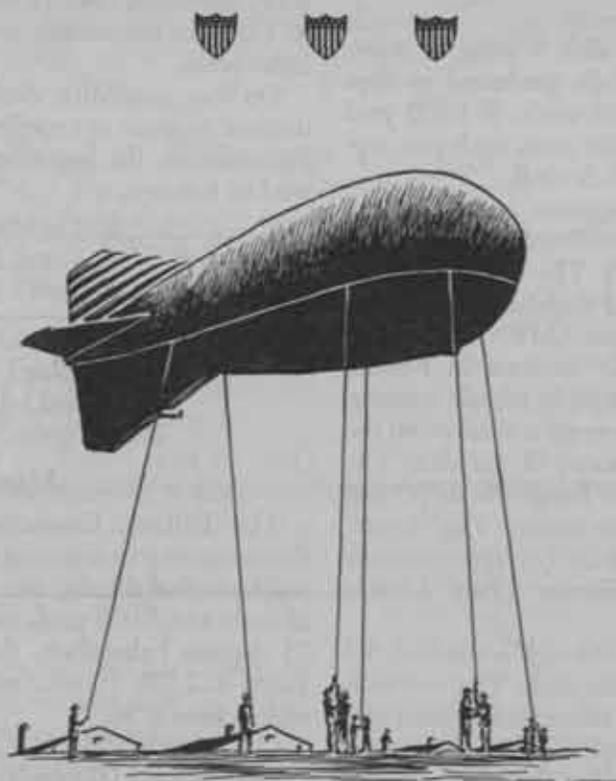
which the original officers and airmen of Balloon Command are responsible, that has made the substitution at all possible. Skill and intelligence will still be required, but the constant physical strain which was present in the past has been very much reduced.

The Balloon Operators of the W.A.A.F. will still have to endure the weather as well as attack from the air, but they have already shown that they can take it. Theirs is undoubtedly one of the hardest jobs undertaken by women in this war, but they have tackled it and succeeded at it.

To complete the circle of protection of harbors and estuaries, balloons are sometimes flown from surface craft moored on the water. Water-borne barrages not only afford protection to vulnerable areas and to shipping, but they also have the greatest value as a deterrent to mine-laying by the enemy.

Balloons in this war are not only scarecrows; they have been scientifically distributed and devised as part of the defensive roof over the country. While they fly the enemy is not only denied the possibility of accurate bombing, but is also placed in a position of the greatest vulnerability to attack by anti-aircraft and fighter defenses.

There has, then, been no lull in the effort devoted to the improvement of our defenses. If the *Luftwaffe*, baffled in the East, turns again to the West, it will find the opposition even stronger than that which baffled it here before. Meanwhile every part of the Air Defense of Great Britain can fairly claim its share in what history will undoubtedly pronounce to have been a victory.



# Ballistic Correction Rule

By Captain Wellington Yaple, Coast Artillery Corps

Although the Firing Tables offer a rapid and simple method of calculating ballistic corrections, their use in the field is at least inconvenient and troublesome.

Based on the firing tables, this rule has the necessary accuracy for trial shot fire, as well as extreme precision in fire for effect. Only a few figures need to be carried in the mind during the calculation. Corrections in drift, quadrant elevation, and altitude are taken directly from the Ballistic Correction Rule. It is an all-weather method.

## CONSTRUCTION

All figures are from the Firing Tables for 90mm Guns, AA, M-1 Shell HE M71, with fuze M43A3, as published by the Antiaircraft Artillery School, Camp Davis, North Carolina, December, 1942.

The rule is quite simply constructed of almost any stiff, light material. Celluloid is the most desirable. Three disks are needed, the largest being 14.2 inches in diameter, the middle disk 12.66 inches in diameter and the smallest disk 7.6 inches in diameter.

On the perimeter of the back or largest disk are two scales. Scale A is Range graduated in thousands of yards, from 1,000 to 11,000, in steps of 1,000 yards. This scale occupies 200 degrees of the perimeter, the graduations being equiangular.

Scale C is evenly spaced in the remaining 160 degrees and occupies 100 degrees of the perimeter. This scale, representing Powder Temperature in degrees F., is graduated from 0 to 100 in steps of 5 degrees F. This scale is in direct proportion to the angular displacement.

On the perimeter of the middle disk is scale B, representing Altitude in thousands of yards, graduated in steps of 1,000 yards, from 2,000 to 10,000 yards. A 1,000 yard step on Scale A is divided into 9 equal parts, each part representing a division of 1,000 yards on Scale B.

Scale D, MV due to powder temperature, is read through a window on the middle disk. The center of this window is 5.9 inches from the center of the disk. The index above the window is positioned at the observed Powder Temperature (Scale C). Red figures indicate minus  $\Delta MV$ . This scale is based on the assumption that a  $10^\circ$  increase in Powder Temperature results in 11.7 f/s increase in muzzle velocity.

Scale E, Density Factor, is read through a window on the middle Disk 5.7 inches from the center of the disk. The scale is read after matching the proper Range (Scale A) and Altitude (Scale B). Red figures are minus. The density factor is change in muzzle velocity in f/s approximately equivalent to a 1% change in density (Part 2 table XIV a).

Scale F, Drift Correction, is read through a window, 5.4 inches from the center of the middle disk. The  $-7$  mils already in the M7 director has been taken into account and this correction may be directly applied. Red figures are minus. The drift correction is read after the proper matching of the Range and Altitude scales. These corrections are taken from Part 2 table IV.

Scale G,  $d\%H$ , is read through a window, 5.2 inches from the center of the middle scale. A reading is given for each combination of range and altitude. This altitude correction setting in per cent compensates for 1 f/s change in muzzle velocity as given in Part 2 table XVa.

Scale H,  $d\phi$ , is read through a window 5 inches from the center of the middle disk. Every combination of range and altitude gives a  $d\phi$  reading. Figures on scales read through windows were entered on the large disk after the windows had been cut in the middle disk. All combinations of range and altitude on scales A and B were matched and figures were written through the windows. This correction in quadrant elevation in mils compensates for 1 f/s change in muzzle velocity as found in Part 2 table XVa.

Scale I, Density, is a logarithmic scale, graduated on a 100 degree sector, (the same as used for C scale) on the large disk and read through a slot in the middle disk. A matching logarithmic scale (Scale J) on which is entered the Density Factor and on which is read the  $\Delta MV$  due to density. Since these two scales serve only for simple multiplication, they may be omitted.

Around the perimeter of the small disk, on the middle disk, is Scale X, a logarithmic scale occupying a 180 degree sector, evenly spaced with Scale J. Decimals equal to  $d\%H$  and  $d\phi$  are entered on this scale. Above these figures are decimals equal to  $d\%H$  corrections.

On the entire perimeter of the small disk is a logarithmic scale, graduated from 10 to 800 on the first outer scale, 100 to 1,000 on the middle scale and 1,000 to 10,000 on the inner scale.

On four concentric circles inside this scale may be put decimal changes to expedite the finding of correct answers. For example, the logarithmic scales of the small disk will read as follows:

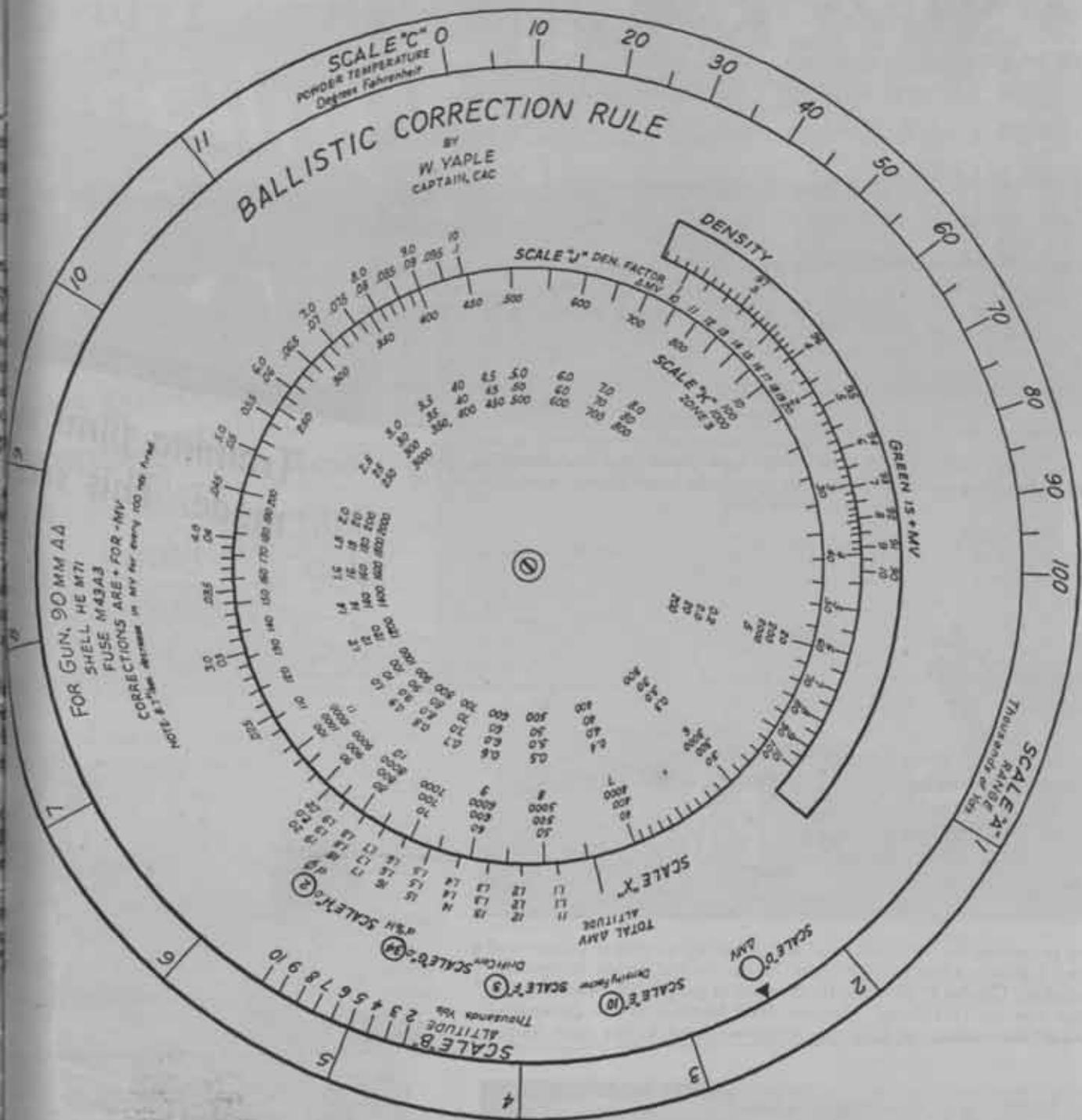
20 (in black) (total MV)	
200 (total MV)	
2000 (red) (altitude)	
<hr/>	
0.2 (black) ( $d\%H$ or $d\phi$ corrections)	
2.0 (blue) ( $d\%H$ or $d\phi$ corrections)	
20 (red) dH	
200 (green) ( $d\%H$ or $d\phi$ corrections)	

## MANIPULATION

The Ballistic Correction Rule is best explained by demonstrating its use on a practical example. The problem will be to find  $dA$ ,  $d\phi$ , and  $dH$  for a trial shot at 5,000 yards altitude and 5,000 yards range. The powder temperature is 75 degrees Fahrenheit, the battery developed muzzle velocity is 2,750 ft/sec., and the ballistic density for the eighth zone is 96.

(1) Muzzle Velocity Correction.

First match 5,000 yards Altitude (Scale B) to 5,000 yards Range (Scale A). On Scale E read Density Factor. It is plus 10.



Under the index on Scale I (Density), position the density factor (plus 10) on Scale J (Density Factor).  
 Under 96 (green) (Density) on Scale I read 40 (red) on Scale J. Since density is less than 100%,  $\Delta MV$  is plus.  
 Next set index above the window on Scale D ( $\Delta MV$  due to Powder Temperature) to the given powder temperature, 40 degrees Fahrenheit, on Scale C. Through the window read +6 f/s.  
 The difference between 2600 ft/sec and the battery developed MV or 2,750 ft/sec is a plus 150 ft/sec.  
 Therefore the total  $\Delta MV$  is a plus 196 ft/sec.  
 40 f/s due to decrease in Density.  
 6 f/s due to increase in Powder Temperature.  
 150 f/s difference between standard 2600 f/s.  
 MV and battery developed MV of 2750 f/s.

(2) Drift Correction.  
 Again match the Altitude and Range, Scale B to Scale A. Read the Drift Correction which is a plus 3m. The window at Scale G shows .034 for  $d\%H$  and the window at Scale H shows .02 for  $d\phi$ .  
 (3) Altitude and Quadrant Elevation Corrections.  
 Set 196 (black) (total  $\Delta MV$ ) on Scale K under the index of Scale X. Under .034 (black) on Scale X read 6.8 (in black) on Scale K. 6.7 is the  $d\%H$  correction. Under .02 (black) on Scale X read 4 (black) on Scale K. 4 is the correction, in mils, for  $d\phi$ .  
 The  $dH$  correction is obtained by setting the altitude, 5,000, (red) on Scale K under the index of Scale X. Under 6.8 (red) on Scale X read 335 (red) yards on Scale K, which is the  $dH$  correction. Since the total  $\Delta MV$  was positive, all corrections are minus except drift.



This is a comparatively simple shot for the cameraman. Just the camera set upon a tripod and focused on the crew at work aboard the Mine Planter while it is tied up at the dock.



Trying to control the action of two "actors" as big as a mine planter and an Army L Boat is a real job. The man "on the double" in the foreground is Lieutenant Charles E. Skinner, Jr., director of the picture, who is trying to keep tabs on everything. Sergeant Fred Detmers is the cameraman "panning" the camera to keep the action centered in his view finder.



Telling the skipper of an Army mine planter how you want his vessel to behave in front of the camera is a difficult job for the director even when you have a "handy-talkie" set like the one Lieutenant Ray M. Ritchie, Jr., technical advisor for the films, is operating here.

Here the cameraman must climb up on a small parallel to get a better view of the crew at work. Note that the mine planter is held away from the dock in this picture by a "camel." In the finished training film it will appear as if this scene was taken while the planter was at sea in the middle of the mine field. The prop men sitting on the piling will use that large wooden paddle to stir up a few waves and swells when the camera starts grinding.

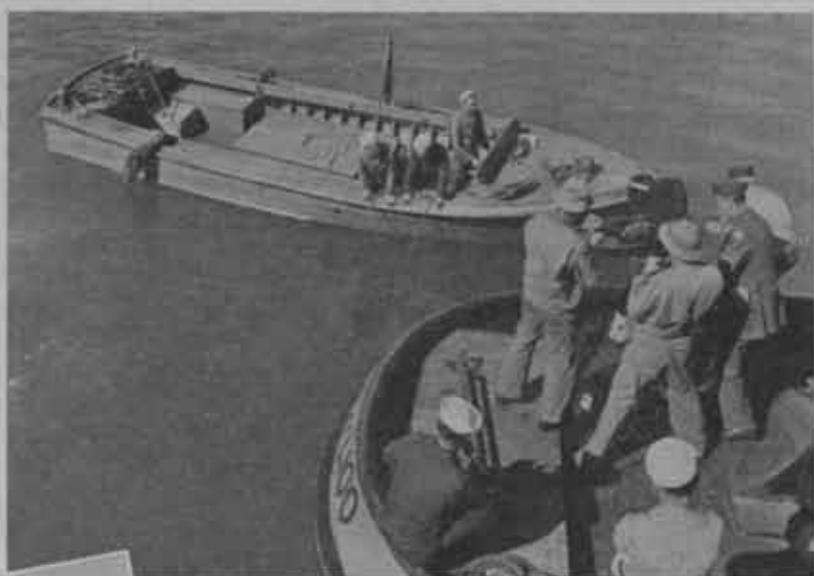
# A Tra

Training films don't  
made. This series



# ing Film Is Made

...t happen," they are  
...ctures portrays some  
...he problems that the  
...ast Artillery School  
...olved during the film-  
...ing of a series on Sub-  
...marine Mining.



↑ Here the camera is back on deck once more, but the camera boat has left its dock and followed a yawl boat into the mine field. Fortunately for the cameraman, the water is as calm as a bathtub.



↑ Some shots can only be filmed from a bird's-eye perspective, so the cameraman, the director and the technical advisor climb above the bridge of the mine planter. The director is the man with the megaphone striving to have his instructions heard by the crew below.

→ Even the bridge of the planter is not high enough sometimes. So the camera and its operator are hoisted high up on the mast of the ship.



# Antiaircraft As Field Artillery

By Captain Arne W. Haaland, Coast Artillery Corps

In forward positions, at any time, AA guns must be prepared to deliver fire as field artillery in support of other arms. This is especially true in the assault of highly fortified positions, and in the covering of a withdrawal, where all available fire power must be used. The anti-mechanized mission of AA guns is separate from the field artillery mission and will not be covered here.

The primary types of support fire which the AA commander must be prepared to deliver, are barrage fire (fixed and moving), and fire against point targets, either counter-battery or against strong points.

In taking up the methods of conducting support fire, it is not necessary to attempt to train officers and men as field artillerymen; this could be done if we had years at our disposal before we would have to engage the enemy, but in the few short months of training, before we must be prepared for action, we cannot take too much time from our primary mission; therefore, the antiaircraft artilleryman should be taught how to fire his guns as field artillery, using AA nomenclature and methods of training.

Fixed barrage fire is normally anti-personnel fire, with the purpose of denying access to, or movement in certain areas, such as road defiles, areas around anti-tank obstacles, or generally in support of infantry or the other arms. Moving barrage fire is primarily used to neutralize the fire power of the enemy, by forcing him to seek cover ahead of an advance, by causing casualties, and by destroying obstacles. Fire at point targets is normally delivered at the request of the infantry or armored force commander to clear out obstacles, strong points, or enemy artillery.

Because of the mission of barrage fire, it may be necessary to obtain bursts above the ground, in order to obtain the greatest anti-personnel effect. This calls for adjustment in height of burst as well as range and azimuth. With AA guns, a desirable height of burst is about twenty-five yards above the ground. With H.E., this will give from 100% air bursts at short ranges to 75% at long ranges nearing the maximum fuze range. In firing a moving barrage, fire is opened on an initial point or area and moves as prescribed by higher command.

In firing at a point target, time fuzed ammunition, armor piercing, or impact detonating ammunition will be used according to the type of target and the effect desired.

Adjustment of fire in range may be by either the Seacoast Artillery or Field Artillery Bracketing Methods. Personally, I prefer a combination of the two, as being more suited to antiaircraft artillery. This will be described in detail further along in this article. Remember that despite differences in matériel, the principles of gunnery apply equally well in shooting a slingshot or a 16-inch rifle. Use the methods and nomenclature to which you are accustomed, teach your men terrestrial fire with AA nomenclature, don't attempt to become a field artillery unit in order to fulfill a secondary or tertiary assignment. Remember that the field artillery "K" factor is only a means of applying a percentage range

correction. Remember that the "c" factor is only a unit of adjustment, and the fork which you have used may be just as good. Remember that it will be easier to train a unit using one set of methods and nomenclature, than using several, especially during the hectic days of the MTP.

There are several methods of calculating firing data. First, you can use the M7 director, within the limitations imposed by its construction, setting range on the present range counter, or using the heightfinder transmitter to position the director receiver. Second, you can use such terrestrial fire tables as are available. Third, you can make your own terrestrial fire table, using smoothed director data. Fourth, you can construct a plain or logarithmic slide rule to give range-elevation-fuze relationships. Fifth, you can construct a logarithmic range-elevation or range-elevation-fuze relationship tape, place it in a box, and you have a range percentage corrector, which has always been a standard seacoast gadget and will work just as well for terrestrial fire. For a description, see FM 4-15.

Spotting for AA Artillery in terrestrial fire will normally be from an axial OP, i.e., angle OP-Target-Gun is less than 300 mils. If the axial OP is at a distance from the target which is appreciably different from the firing range to the target, lateral spots must be multiplied by the factor  $r/R$  (range OP-Target divided by Range Gun-Target), which gives the correct lateral deviation to use in adjustment. Airplane spots or spots from stations beyond axial limits may be converted by some modification of the clock method. Range sensings of over or short are used in adjustment by any bracketing method. Shots with wide lateral deviations are sensed as doubtful in range. What constitutes a wide lateral deviation varies with the size of the target and the conditions of visibility. A suggested limit is five mils for a target such as a small house when visibility is good. The limit must be decreased as the size of the target and the visibility decreases.

Adjustment in range is by the bracketing method. I prefer a modified bracketing method involving parts of both the seacoast and field artillery methods, since the seacoast method does not use a varying unit of adjustment and the field artillery method does call for a varying unit of adjustment with which the Coast Artilleryman is not familiar.

In using my modified method, use a fork of 1% of range for accurate maps, 2% for centers of vertical aerial photographs from altitudes under 15,000 feet or maps of similar accuracy, and 4% for all other maps or aerial photos (to the nearest 20 yards). In trial fire (registration to the field artilleryman) correct by one fork until two successive spots give different sensings. If a hit is obtained at any time, verify with four rounds from the same gun. Adjust by the over-short rule, correction equals shorts minus overs divided by twice the number of shots used in the calculation. Hits are counted as both an over and a short and doubtful sensings are not included in the calculations. If using a 1% fork, and a bracket is obtained, go back  $\frac{1}{2}$  fork and verify.

Using a 2% fork, go back 1% and fire one round, then to the bracket obtained from this shot and either the preceding shot, or the shot before that, and verify. If using a 1% fork, go back 2%, fire one round, split the 2% bracket, fire one more round, split the 1% bracket, and fire verification fire; the data is corrected by the over-short rule and the battery is ready to open fire for effect. The net lateral correction is used to enter fire for effect.

To deliver fire at any target within a reasonable distance from the trial shot point, apply your trial fire corrections to range and azimuth and enter fire for effect, using a 1% fork as a unit of adjustment. The reasonable distance (transfer range) is defined by the field artillery as within 1,500 yards in range, and within 400 mils in azimuth. This corresponds to a Trial fire, which should be conducted near the range, grade, and azimuth at which the target is expected to appear in the field of fire. If it is desired to enter fire for effect without trial fire, use the proper value of a fork as prescribed for trial fire and adjust by the over-short rule.

Some suggested rules for calculating approximate ballistic data in a hurry, are as follows: (90mm AA Guns).

- 25f/s muzzle velocity equals 1% range
- 10 mph range wind effect (in yards) equals 1/3 quadrant elevation.
- 10 mph cross wind effect equals 1/2 range ÷ 1,000 (in mils)
- Drift equals 1/2 range ÷ 1,000 (in mils)

Example Problem:

At 0800, one dull morning in the hills of North Africa, you receive a message, informing you to be prepared to deliver fire at a road defile within range of your battery. You are told that the object of the mission is to trap the Germans at the defile and destroy them with massed fire power on command from higher headquarters. With the message, you receive a vertical photograph with scale and orienting marks, taken the day before from 10,000 feet altitude. Your point of fire is near the center of the photo.

You decide to conduct trial fire and since maximum accuracy is necessary to the accomplishment of the mission, it must be conducted at some point far enough away from the target, to prevent the loss of the element of surprise when fire for effect is delivered. You find a wrecked car on the photograph, which seems to be the answer to your search for a trial shot point and send an OP detail to the crest of a small hill in front of your position with instructions to find a position for observation of fire. You now

begin the computation of your firing data. You scale the range to the road defile, 11,100 yards, the range to the tank, 9,000 yards, the distance OP-tank, 7,000 yards. You measure the azimuth to the defile, 2,790 mils, and the azimuth to the tank, 2,612 mils, and put the photograph away. You wet your finger and hold it in the wind, and decide that the wind is northeast, about 15 miles per hour, which gives a 3 mph range wind and 15 mph crosswind. You make ballistic corrections to range and azimuth according to your rules, knowing the gun's muzzle velocity, arriving at a corrected range to the tank of 8,260 yards and a firing azimuth of 2,602 mils. In the meantime you have established communication with your OP, and alerted gun No. 1. Taking the elevation for 8,260 yards from your firing table, you order one round fired. The OP spots the burst as "Right 20, Over," which, converted by r/R is used as "Right 16, Doubtful." The gun is traversed to the corrected azimuth, and another round is fired. The results, as recorded, are as follows: Note—adjustment fork = 2%.

Shot	Range	Q.E.	Azimuth	Lateral Spot	Sensing
1	8260	108	2601	R 20(16)	O?
2			2586	R 3(2)	O
3	8100	104	2584	L 1	O
4	7940	100		Line	S
5	8020	102		L 1	S
6	8060	101		R 1	S
7				Line	S
8				R 1	H
9				L 2	S

You adjust the range at which you fired your verification fire by the over-short formula using the 1% fork, which gives an adjusted range of 8,090. You have obtained mixed sensings in verification fire so you consider trial fire complete.

You compute the total percentage correction applied to the photo range (minus 10.1%) and the total lateral correction applied to the photo azimuth (left 28 mils) which corrections are the total corrections to be applied to the photo data to the road defile. The guns are laid at the corrected azimuth and elevation, and such closing corrections as are desired are applied to the guns as calibration corrections; and you are ready to enter fire for effect with maximum accuracy.

The AA Artilleryman with range-elevation tables or tapes is prepared to deliver fast and accurate fire as field artillery without power plant, director, or height finder.



# Slant Range Estimation

By Lieutenant J. W. Mullin, Coast Artillery Corps

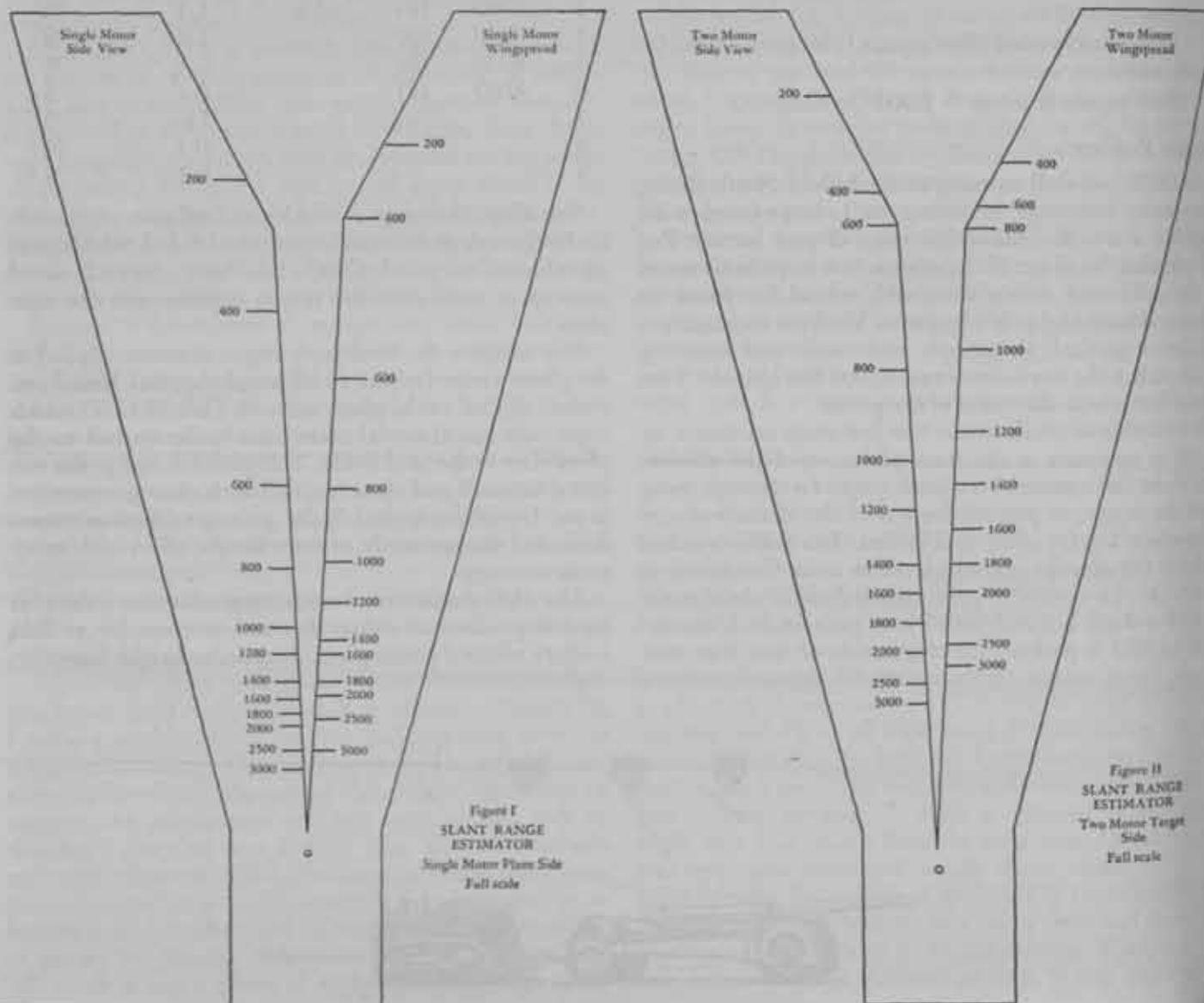
The quick and accurate estimation of the slant range is an important problem in automatic weapon firing using the M5 or M6 director. It is this initial estimation, that the range setter sets into the director, that may determine whether or not we get a hit on the target. The two methods discussed here offer a reasonable solution to this problem.

We are all familiar with the first method, that of estimating the slant range to the target with reference to the horizontal range to some known point. In using the Horizontal Range idea, you pace off or otherwise measure the distance to every prominent point in the field of fire of your gun. If you select and determine the distance to enough of these points, the range setter knows the distance to that old tree stump; and, when a low flying target passes over that point, he can set the slant range into the director with a fair degree of accuracy. This method is simple and fairly accurate; it should, however, be used in conjunction with the Slant

Range Estimator. The methods when used together give a very accurate estimation of the slant range.

The Slant Range Estimator (see figures 1 and 2) is made of plywood in the shape of a Y. In use the Estimator is held at a distance of 24" from the eye; the distance (24") is determined by a knotted cord that is attached to the base of the Estimator, the knot end of the cord being held as close to the eye as possible. The target is sighted in the prong angle of the Estimator. The Estimator is moved up or down until the wingspread or side view of the target just fits in the prong angle. At this point the slant range to the target is read on the appropriate scale of the Estimator. See figure 1.

The Estimator is founded on a basic geometric relation that the sides and altitudes of similar triangles are proportional. Let us assume that a target (wingspread 13 yds) is flying towards our gun. Assume that you held an object one inch wide at a distance of 24" from your eyes. At some



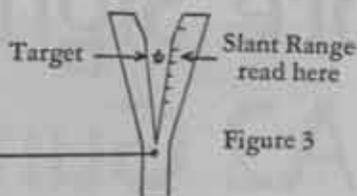
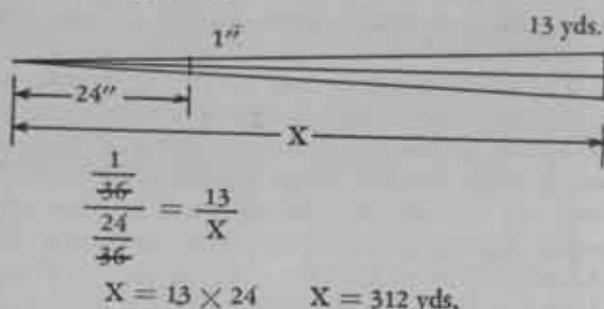


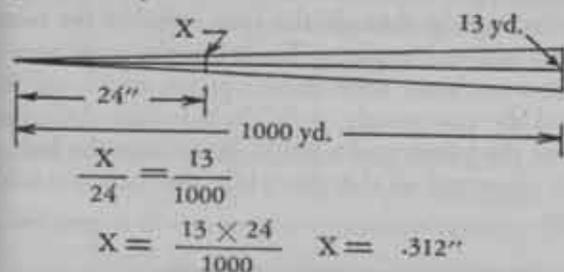
Figure 3

particular slant range to that target, the inch wide object would just cover that target. We solve for that slant range in the following manner.

- 13 yds. = wingspread of target
  - 1 inch = apparent size of target at X slant range
  - 24 inches = distance of apparent size of target from the eye
  - X = Slant Range of the target that has an apparent size of 1 inch 24 inches from the eye.
- The factor, 36, converting inches to yards, cancels out on the left side of the equation.



- Conversely, if we took a given slant range we could solve for the apparent size of the target at that slant range, as
- 1000 yds. = Slant Range to target
  - 24 ins. = Distance of apparent size of the target from the eye
  - 13 yds. = Wingspread of the target
  - X = Apparent size of target 24" from the eye for a slant range of 1000 yds.



The next step is to set up a table of slant range and apparent size of targets. Each apparent size is calculated as shown in the second example. The apparent sizes are correct to two places. It is impracticable to graduate the Estimator with greater accuracy.

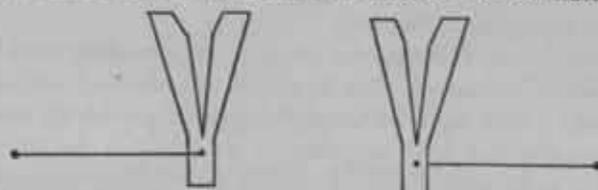
This table is set up for the type of targets that we in Automatic Weapons are most likely to encounter. The single motor targets are assumed to have a wingspread of thirteen yards and an overall length, side view, of ten yards. These figures are based on average length and wingspreads of single motor pursuit and dive bombers. The two motored targets are assumed to have a wingspread of twenty-two yards and an overall length of seventeen yards. These figures are based on average length and wingspread of two motor pursuit, light and medium bombers.

We are now ready to graduate the arms of the Estimator. One side of the Estimator is used for single engine planes, the reverse side for two engine planes. The ranges for the

SLANT RANGE YARDS	APPARENT SIZE IN INCHES FOR			
	SINGLE MOTOR PLANES		TWO MOTOR PLANES	
	Side View (10 yds.)	Wing spread (13 yds.)	Side View (17 yds.)	Wing spread (22 yds.)
3000	.08	.10	.14	.18
2500	.10	.13	.16	.21
2000	.12	.16	.20	.26
1800	.13	.17	.23	.29
1600	.15	.20	.26	.33
1400	.17	.22	.29	.38
1200	.20	.26	.36	.44
1000	.24	.31	.41	.53
800	.30	.39	.51	.67
600	.40	.52	.68	.88
400	.66	.78	1.02	1.32
200	1.20	1.56	2.04	2.64

side view of single engine planes are plotted on the left arm of the single engine plane side of the Estimator. The ranges for wingspread views of single engine planes are plotted on the right arm of the single engine plane side of the Estimator. The ranges for two engine planes are similarly plotted on the reverse side of the Estimator. An Engineers Scale is used to graduate the Estimator. The fiftieth of an inch side is used, dividing the scale readings by two to convert to hundredths of an inch.

The single and two motor sides and the side view and wingspread view arms of the Estimator must be clearly marked to avoid confusion. The scale graduations should be clearly and carefully made to facilitate quick estimation. A cord is threaded through a small hole in the base of the Estimator, as shown. This cord is knotted at the length of 24 inches. The cord is pulled through the hole when the target scale used is on the reverse side of the estimator, as



The Estimator may be made to any convenient size. The Estimator design shown provides the maximum space between slant range graduations of 1000 to 3000 yards. Remember that this Estimator is crude. It gives an approximate slant range and cannot be compared with any precision instrument. The theory behind the Estimator is simple and sound. It should be possible to build a precision instrument based on this principle that would give very accurate results.

EDITOR'S NOTE: The above device gives theoretically correct slant ranges when the target presents a head-or-tail view for a coming or going target or when it presents a side view for a target flying at right angles to the line of sight. The plane on all other courses would present a foreshortening visual effect. It is noted that a 45° angle of approach, when this effect is greatest, would reduce the apparent length or wing span by approximately 30%—this would result in an error of plus 30% in the range read. This must be compensated for by keeping the flat surface of the estimator parallel to the axis of the fuselage or to the line joining the ends of the wing tips, depending on which dimension is being used to determine slant range.

# Reflecting Bore Sight for 37mm M1A2 Guns

By Major Harold O. Johnson, Coast Artillery Corps

Experience has proved that the effectiveness of director-controlled automatic weapons fire is dependent upon the accurate orientation of the director and gun. Even though these units may be accurately oriented initially, there is no assurance that they will remain so for any length of time. Uneven settling of ground under gun or director, torsion in gear trains, slipping of clutches and other connections, erroneous adjustments and many other things result in improper orientation and excessive tracking-off during firing. In order to alleviate this situation, it is necessary to check orientation several times daily, between practice firing courses and between engagements with the enemy whenever excessive tracking-off has been necessary. This is no problem until the time factor enters the picture such as in combat when the process must be completed rapidly lest the gun be out of action or ineffective when the next target presents itself.

In order to boresight the gun with the M-5 director, the lockframe, backplate, and driving rod assemblies must be removed or disconnected. This is normally not difficult but it takes time. Moreover, the dust covers installed on the new guns hinder this procedure as they reduce the accessibility of the driving rod hooks. In many instances the tactical situation has necessitated the removal of the dust covers to expedite orienting.

Since it was felt that the orientation procedure could be simplified and much time saved, it was deemed advisable to make a bore sight on a reflecting principle which would not require the field stripping of the weapon for its use. Such a sight would merely involve the placing of suitable crosswires in each end of the bore and the reflecting of the line of sight which passed through them through an

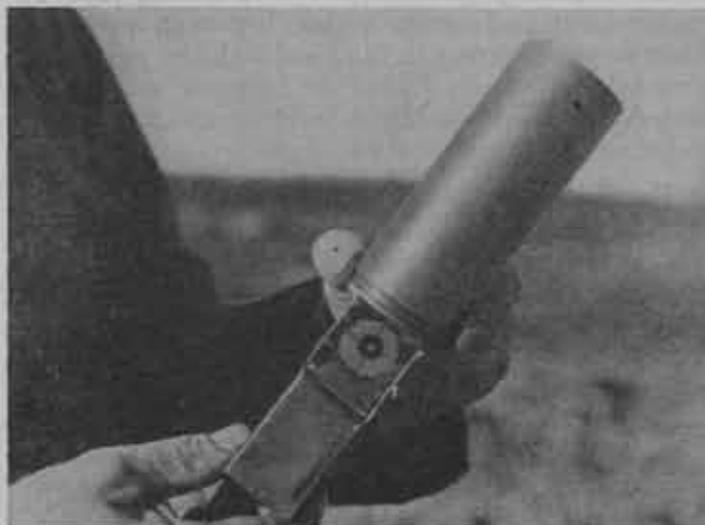
opening at the rear of the chamber. The sight described below is a workable application of this principle.

The sight seat is an expended 37mm cartridge case which has not been bent out of shape in any way. It has been shortened by cutting off about five inches from its base and a one inch hole has been drilled through the center of the base. Four holes each about 1/32 inch diameter have been drilled at quarter points around the case about one inch from the base.

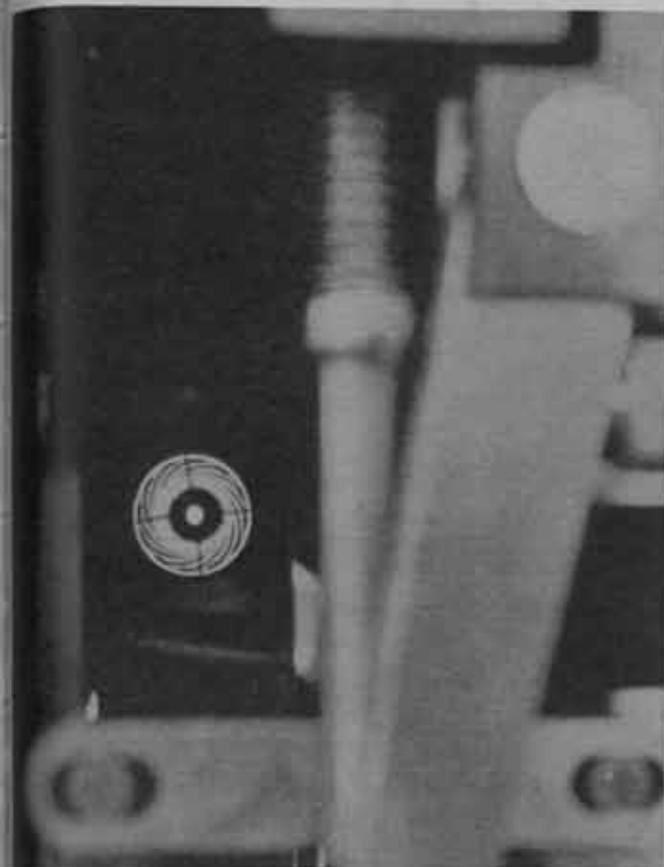
The handle extension and mirror seat is made from 23-gauge sheet iron. A slightly lighter or heavier gauge would be equally satisfactory. It is built from a developed surface which when bent into shape is a 1 1/4" x 1 1/4" x 3 1/2" prism with one side cut along its edges and bent down into the prism to form an inclined seat for the mirror. This seat should make an angle of 42° with the long axis of the prism. After bending into shape the edges are welded together.

The handle is made from the same material as the extension and may be either of uniform cross section along its length or taper from 1 1/4" to a smaller section at the end. It is welded to the extension about 3/4" from the rear of the extension.

The sight proper is shaped like a coin with a 1/8" hole drilled through its center. The outer diameter is 1/2". Four 20-gauge copper wires are soldered to this "peep" sight and are pulled tightly through the four holes in the cartridge case and soldered in place. To center the peep accurately in place a machinist must make a piston which will fit the inside of the case snugly. A 1/8" hole is then drilled in the center of the piston and a pin is driven into the hole. The peep is supported on this pin while the wires are soldered in place.



Two views of Major Johnson's bore sight.



The sight in place.

In soldering the handle extension to the cartridge base, the sides of the extension are not positioned parallel and perpendicular to the respective crosswires but are rotated counter-clockwise from this position as viewed from the rear. The purpose of this is to leave the crosswires horizontal and vertical in the gun after the device has been mounted according to the following instructions on the use of the sight.

A rectangular shaped mirror is cut  $1\frac{1}{2}$ " x  $1\frac{3}{8}$ " and, after applying suitable cardboard backing, it is crimped into place on the inclined surface of the handle extension.

The last step is to remove the projecting portions of the cartridge case flange on both sides of the device. This permits easier insertion into the gun.

When action is imminent or between practice courses, with the use of this sight, a boresighting check can be made

without putting the gun out of action. The sight may be removed in five seconds, and while this is being done the director crew can be "picking up" the target. The gun is already "primed" and ready for ammunition when the sight is removed. The importance of keeping the gun properly oriented at all times has already been discussed and this sight has demonstrated its effectiveness in this respect by its simplification of the orienting procedure.

The following instructions apply when orienting with the reflecting bore sight:

1. Place cross strings on muzzle of tube.
2. Prime gun and raise feed box cover.
3. Stand in front of the trunion block by the gun tube and grasp the sight by the handle with the open end pointing upward. Insert the open end up into the bottom of the trunion block and swing it forward until it rests on top of the breechblock. Swing rear of sight upward until the cartridge case is aligned with the axis of the tube and push the sight forward into the chamber. Rotate the handle of the sight clockwise about  $7^\circ$  so that the line of sight will clear the cartridge feeder pawl connector shaft.
4. Locate the orienting point and roughly align the tube on it by sighting along the crosswires outside of the peep. Bring the axis of the tube accurately on the O.P. by sighting through the peep.
5. Remove sight and cross strings on muzzle when operation is completed.



Orienting.



The end is not yet clearly in sight but victory is certain. In every emergency the courage, initiative and spirit of our soldiers and their young leaders and of our pilots and their crews have been an inspiration at the moment, and complete assurance of the final victory to come.—GENERAL GEORGE C. MARSHALL.

# SONG OF THE AAA

WORDS BY  
S/SGT. HERBERT L. MILLER

MUSIC BY  
W.O. HENRY JOHNSON

WITH SPIRIT

Handwritten musical notation for the instrumental introduction, consisting of three staves. The first staff is a treble clef with a key signature of two flats and a 6/8 time signature. The second and third staves are bass clefs. The music features a melodic line in the treble and a harmonic accompaniment in the bass.

VERSE

Handwritten musical notation for the first line of the verse. It includes a treble staff with the melody and two bass staves for accompaniment. The lyrics are: A. A. A. WE WILL FIGHT FOR WHAT IS RIGHT;

Handwritten musical notation for the second line of the verse. It includes a treble staff with the melody and two bass staves for accompaniment. The lyrics are: A. A. A. WE'LL GIVE FORTH WITH ALL OUR MIGHT; WITH

Handwritten musical notation for the third line of the verse. It includes a treble staff with the melody and two bass staves for accompaniment. The lyrics are: ACK — ACK GUNS — WE WILL PUT THE FOE TO SHAME,

YES, FOR- EV- ER WE'LL REMEM- BER YOUR GLO- RI- OUS NAME!

LET'S GIVE ALL AND LET FREE- DOM BE OUR CRY

MER- I- CA WE WILL CLEAR THE SKY, AND MARCH TO VIC- TO-

RY WHILE WAS MAK- ING HIS- TO- RY, AN- TI- AIR- CRAFT

CHORUS

HERE WE COME! WE'RE MEN

The first system of the chorus features a vocal line with lyrics "HERE WE COME! WE'RE MEN". The piano accompaniment consists of chords and rhythmic patterns. A double bar line is present after the first measure of the chorus.

OF THE ARMY, LET'S FIGHT WITH

The second system continues the chorus with lyrics "OF THE ARMY, LET'S FIGHT WITH". The piano accompaniment includes chords and rhythmic patterns.

HEART AND SOUL; WITH SEARCH

The third system continues the chorus with lyrics "HEART AND SOUL; WITH SEARCH". The piano accompaniment includes chords and rhythmic patterns.

LIGHTS A BLAZING, WE'LL REACH

The fourth system concludes the chorus with lyrics "LIGHTS A BLAZING, WE'LL REACH". The piano accompaniment includes chords and rhythmic patterns.

OUR GOAL. OUR GUNS

BLAST THE EN — — — E MY, THEY SET THE SKY A —

FLAME; — — — WERE THE AN — TI AIR — CRAFT AR-TILL-ERY

AND PROV — ING WERE WORTH THE NAME — — —

# Pointing 155mm Guns with Field Artillery Telescopes

By Lieutenant Colonel Donald C. Hawley, Coast Artillery Corps

Working with Master Sergeant William E. Belinski, 46th Coast Artillery, the author has developed an Azimuth-Deflection Conversion Device which possesses certain advantages over the method described in Coast Artillery Training Bulletin, Volume 2, Number 13, *Pointing 155mm Guns with Field Artillery Telescopes*. These advantages are: (1) Quickly and easily prepared for use on arrival in a new position, and requiring only seconds to change for use with a different aiming point; (2) Light and easily carried, with no extra tapes or equipment required; (3) Capable of being used through a complete 360 degrees of traverse without any break in continuity.

The device consists of a graduated circle, 16.4 inches in diameter, mounted on a disk of masonite pivoted at the center and rotating easily but not freely within a ring of masonite on which is mounted another graduated circle 20.375 inches in diameter. Graduations on the disk represent degrees of azimuth and are numbered clockwise; graduations on the outer ring represent mils of deflection and are numbered counter-clockwise; details of graduation and numbering may be seen on attached illustrations.

The construction of the Field Artillery sight, graduated in two halves, is such that azimuths 180 degrees apart have the same corresponding deflection setting; this enables the use of a circle, graduated in 320 parts instead of 640, and enables a smaller circle to be used than would otherwise be possible.

Pivoted at the center of the disk, and on the same pivot, is an arm of Plexi-glass, on which, at the correct distance from the center to match the location of inner and outer graduated circles, are mounted verniers which enable the inner circle to be read to .05 degrees, and the outer circle

to 1 mil. This arm rotates freely on the pivot, and enables the reading on either circle corresponding to a reading on the other to be accurately determined.

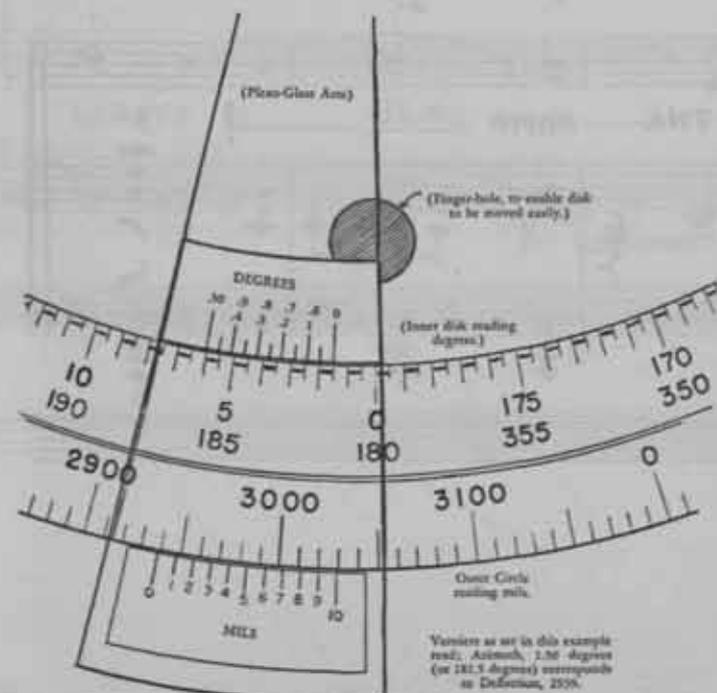
To minimize the probability of error in reading the degree vernier, the divisions of the main scale between and the next higher degree are marked with a red line, and the readings .6, .7, .8, and .9 are entered on the vernier in red.

This device is used as follows: The directing piece of the Battery having been laid on a known azimuth, the gun pointer puts out his aiming stakes in any convenient location and reports the deflection to them. The inner disk is then rotated so that when the inner vernier is set to read the azimuth of the base piece the outer vernier will read the deflection reported. By maintaining this relation and moving the arm to any other azimuth, the corresponding deflection is read directly.

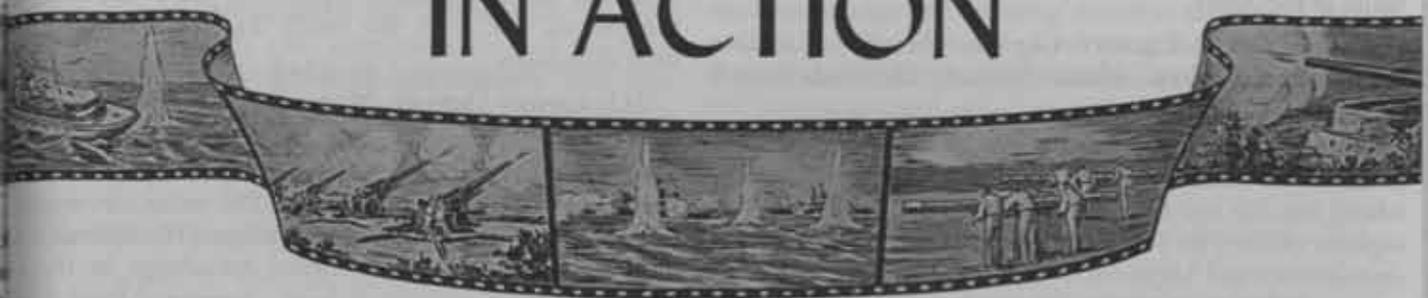
The dimensions and materials above given may be widely varied. The size given for the two circles was selected purely for convenience; if they are much smaller it becomes very difficult to graduate them correctly or to read the graduation; and if much larger they become cumbersome to handle. Masonite was selected for the material on which to mount the scales because it was hoped that it would not warp, and they were mounted on a plywood base because plywood happened to be available. If Plexi-glass or a similar material is not available the arm can be made of masonite or metal with a window cut in it, and the verniers marked along the edge of the window.

A variation of this device would be to mount the two circles permanently on a single base, and use two arms each reading on one of the circles, rotating freely but capable of being locked at a fixed angle with each other, in the same manner as those on the Crichlow Slide Rule. This was not adopted by the 46th Coast Artillery because we could not easily obtain the locking devices for the arms.

## AZIMUTH - DEFLECTION CONVERSION SLIDE RULE 46th COAST ARTILLERY



# COAST ARTILLERY IN ACTION



## Citations

### Silver Star

TO: JOSEPH J. MADDOX, Second Lieutenant, Coast Artillery. Home Address: 66 Westminster Drive, Atlanta, Georgia.

FOR: Gallantry in action near Milne Bay, New Guinea, on August 27, 1942.

TO: HAROLD J. BUCK, Corporal, Coast Artillery. Home Address: Fleming, Georgia.

FOR: Gallantry in action near Port Moresby, New Guinea, on July 26, 1942.

TO: CHARLIE DEATON, Corporal, Coast Artillery. Home Address: Duluth, Kentucky.

FOR: Gallantry in action in March, 1943, in Tunisia. After eight enemy planes had passed over Corporal Deaton's gun position strafing and dropping delayed action bombs, it was discovered that several of the bombs had stopped beside an instrument truck and had not exploded. Corporal Deaton immediately entered the truck and drove to a place of safety. A few minutes later, the bombs exploded harmlessly, but would have destroyed the truck had it remained at its original position. The devotion to duty and courage in this action reflect great credit upon himself and his organization and are in accordance with the highest traditions of the military service.

TO: WILLIAM A. OWENS, Corporal, Coast Artillery. Home Address: 111 West 52nd Street, Savannah, Georgia.

FOR: Gallantry in action near Port Moresby, New Guinea, on July 26, 1942.

TO: CHARLES J. SALGAT, Corporal, Coast Artillery. Home Address: Saginaw, Michigan.

FOR: Gallantry in action near Cold Mountain, Attu Island, on May 29, 1943.

TO: LEE D. JOHNSON, Technician Fifth Grade, Coast Artillery. Home Address: 937 Juniper Street, Atlanta, Georgia.

FOR: Gallantry in action near Port Moresby, New Guinea, on May 9, 1942.

TO: WILL A. MEANS, JR., Private, Coast Artillery. Home Address: 1119 Wade Street, Northeast, Atlanta, Georgia.

FOR: Gallantry in action near Milne Bay, New Guinea, on August 27, 1942.

TO: JOHN D. PITTMAN, Private, Coast Artillery. Home Address: Lancaster, South Carolina.

FOR: Gallantry in action near Port Moresby, New Guinea, July 26, 1942.

TO: FLOYD ROBINSON, Private, Coast Artillery. Home Address: Addison, Alabama.

FOR: Gallantry in action near Port Moresby, New Guinea, on July 26, 1942.

TO: MILES E. RODGERS, Private, Coast Artillery. Home Address: 132 East Como Avenue, Columbus, Ohio.

FOR: Gallantry in action near Port Moresby, New Guinea, July 26, 1942.

TO: CHARLIE G. WILLIAMS, Private, Coast Artillery. Home Address: Statesboro, Georgia.

FOR: Gallantry in action near Port Moresby, New Guinea, on July 26, 1942.



### Legion of Merit

TO: MARION S. BATTLE, Colonel, Coast Artillery Corps. Home address: P. O. Box 721, Lexington, Virginia.

FOR: Exceptionally meritorious conduct in the performance of outstanding service, particularly in his capacity as Chairman of the Industrial Employment Review Board of The Provost Marshal General's Office and in organizing and developing the Personnel Security Branch of that office. In handling the work of the Board and in daily personal conferences with national leaders of labor, important chiefs of industry and leading Government officials he has displayed uncommon tact and judgment. By his energy, devotion to duty, and masterful handling of delicate and controversial situations he rendered services of inestimable value to the war effort. (Colonel Battle went on terminal leave October 1, 1943.)

TO: JOHN W. POMEROY, Major, Coast Artillery Corps. Home Address: 122 26th Avenue, North, Seattle, Washington.

FOR: Exceptionally meritorious conduct in the per-

formance of outstanding service in improving numerous designs of ordnance matériel. Through his resourcefulness and proficiency, he developed a weapon which is of great value to the Army.

TO: GLENN P. ELLIOTT, Captain (then First Lieutenant), Coast Artillery. Home Address: 28 South Street, Carrollton, Georgia.

FOR: Exceptionally meritorious conduct in the performance of outstanding service on December 7, 1941, when, entirely on his own initiative, in the absence of superior officers, he proceeded to the command post of his organization and began in a superior manner the coordination of the effort of the command to meet the enemy attack. The extraordinary manner in which he assumed a command usually exercised by mature and long-experienced officers of field grade and the able way in which he conducted himself reflected initiative, intelligence, and judgment of a very high order. Captain Elliott's actions on this occasion were a source of inspiration and confidence to all who worked with him during this wholly unexpected attack. His resourcefulness greatly contributed to the control of a situation demanding prompt and efficient action.

TO: MELVIN R. COWD, Second Lieutenant (then Sergeant), Coast Artillery. Home Address: 42 Lisbon Street, Rochester, New York.

FOR: Exceptionally meritorious conduct in the performance of outstanding service in the development of a weapon of highly potent fire power. He designed and developed a method whereby two or more may be operated by one gunner. By this development he has considerably increased the firepower of a weapon without impairing its accuracy. His zealous devotion to duty has resulted in a valuable contribution to the armed forces.

TO: ANDREW A. KENNEY, Second Lieutenant, Infantry (then Staff Sergeant, Coast Artillery). Home address: Michigan.

FOR: Exceptionally meritorious conduct in the performance of outstanding services. As commander of a platoon (antiaircraft), Lieutenant Kenney established and commanded a 37mm gun position on E— Island under most unfavorable conditions. Because of his high qualities of leadership, initiative, and devotion to duty, the smartness and efficiency of the personnel of his platoon and the excellent condition of the armament were outstanding in the regiment.

TO: MAX L. WRIGHT, Second Lieutenant (then Acting First Sergeant), Coast Artillery Corps. Home address: 1202 Park Avenue, Englewood, California.

FOR: Exceptionally meritorious conduct in the performance of outstanding service on December 7, 1941. Immediately upon the beginning of the attack, Sergeant Wright, as acting first sergeant, organized the gun crews, getting each gun in action. The guns were being worked on by Ordnance personnel, and it was necessary for Sergeant Wright to reinstall a liner in one gun and to reassemble the breech block on another before they were ready to fire. Through his outstanding efficiency and superior leadership under fire, he set an example for his men, enabling them to open fire against the enemy shortly after

the attack began. Sergeant Wright performed his duties under extremely difficult circumstances in such an outstanding and meritorious manner that his battery was able to deliver the first effective antiaircraft fire of the Army in the present war, with the result that two enemy planes were shot down.

TO: ERNEST DABNEY, Master Sergeant, Coast Artillery.

FOR: Exceptionally meritorious conduct in the performance of outstanding service during the period from 8 September 1939 to 23 February 1941 when, as assistant band leader of the 69th Coast Artillery (Antiaircraft), he displayed great zeal and technical knowledge in the development of the regimental band. Appointed band leader of the Antiaircraft Training Center band at Camp Wallace on 23 February 1941, Sergeant Dabney organized and trained the band, and in addition, trained over 300 musicians and buglers for other units, then in their critical, formulative stage.

TO: HARVEY L. COLLINS, First Sergeant, Coast Artillery. Home Address: General Delivery, Anaheim, California.

FOR: Exceptionally meritorious conduct in the performance of outstanding service on December 7, 1941. In the absence of battery officers, First Sergeant Collins assumed command of his battery, gave orders for the issuing of ammunition and the employment of his men, organized the battery while under fire to perform its mission, and conducted himself while under fire in such a manner as to be an inspiration to his men. First Sergeant Collins has rendered loyal and conscientious service with a high degree of efficiency, setting an example of soldierly conduct for the men of his organization.

TO: JOHN A. HEISLER, First Sergeant, Coast Artillery. Home Address: Billings, Montana.

FOR: Exceptionally meritorious conduct in the performance of outstanding service on December 7, 1941. First Sergeant Heisler was at that time first sergeant of a Coast Artillery battery and was present with his organization. On his own initiative, after recognizing the planes as Japanese, he caused two machine guns to be set up on the battery grounds and began returning the fire of the strafing planes within the first twenty minutes of the attack, which resulted in two planes being shot down into Pearl Harbor. First Sergeant Heisler was continuously exposed to fire, and by his courage and superior leadership not only directed his men but inspired them as well.

TO: FLOYD STEWART, First Sergeant, Coast Artillery. Home Address: Lebanon, Tennessee.

FOR: Exceptionally meritorious conduct in the performance of outstanding service. On 7 December 1941, Sergeant Stewart distinguished himself by leading the men of his battery into action against the enemy. The organization of which he was a member was the first 3-inch antiaircraft battery on the Island of Oahu to open fire on the enemy. As a result of the leadership, ability, quick thinking, and prompt action of First Sergeant Stewart two flights of enemy bombers in formation were broken up.

TO: WALTER C. MEYER, Staff Sergeant, Coast Artillery.

Home Address: 504 Bergen Avenue, New York, New York.

FOR: Exceptionally meritorious conduct in the performance of outstanding services in supervising the construction of concrete gun emplacements and ammunition shelters, towers for anti-aircraft gun emplacements and concrete structures for a rifle range. Although handicapped, Staff Sergeant Meyer, by his resourcefulness, energetic leadership and technical proficiency, completed these projects in an expeditious and commendable manner, thereby contributing greatly to the efficiency of his organization and the defenses of the Hawaiian Islands.

TO: WILSON B. CUBLER, Sergeant, Coast Artillery. Home Address: K and Sedgley Avenues, Philadelphia, Pennsylvania.

FOR: Exceptionally meritorious conduct in the performance of outstanding service in procuring and repairing discarded electrical and mechanical equipment. By painstaking devotion to duty and with unusual mechanical skill, he equipped his organization with efficient electric motors, gasoline motors and other labor-saving devices, which have resulted in a great saving of money to the Government. At a time when such equipment was not available, his resourcefulness and skill contributed valuably to the efficiency of his organization.

TO: OWEN H. STIMPSON, Sergeant, Coast Artillery. Home address: Alex, Alabama.

FOR: Exceptionally meritorious conduct in the performance of outstanding service in the installation of a gun battery at its tactical position. As the chief assistant to the officer in charge of the installation, Sergeant Stimpson distinguished himself by outstanding practical ability and devotion to duty. The personal initiative, ingenuity, resourcefulness and untiring energy he consistently displayed were materially responsible for the rapidity of the construction of this installation. His exceptionally meritorious conduct and efficient performance of duty inspired his fellow workers to greater achievements. The remarkable accomplishments of this soldier in his assistance in the establishment of the gun position have singularly left their mark of association in the minds of all those individuals who are familiar with the original installation of the battery.

TO: JAMES J. SUROVICK, Sergeant, Coast Artillery. Home Address: Albion, Pennsylvania.

FOR: Exceptionally meritorious conduct in the performance of outstanding service as transportation sergeant of a Coast Artillery battery and ammunition train. In the performance of these duties he demonstrated superior technical knowledge and untiring devotion to duty. Charged with the responsibility of developing the organization of the ammunition train, his coordination of the efforts of the various assigned vehicles resulted in the establishment of a highly efficient unit. The thorough method of instruction he employed in the training of drivers and the diligence he exercised in the supervision of first echelon maintenance have enabled his battery's transportation section to achieve consistently a superior rating in the successful operation and maintenance of its assigned vehicles.

TO: WILSON R. STRINE, Private First Class, Coast Artillery. Home Address: 478 West Princess Street, York, Pennsylvania.

FOR: Exceptionally meritorious conduct in the performance of outstanding service in supervising the construction of a concrete underground dispensary, message center, and small arms ammunition shelter. At a time when it was necessary to expedite the construction of a shelter for the protection of the personnel and equipment of his organization, he demonstrated extraordinary faithfulness to his duty by laboring tirelessly with limited means. Neither long hours nor adverse weather prevented him from pursuing his task. His energy and attention to duty hastened the construction of installations essential to the welfare and efficiency of his organization.

✓ ✓ ✓

#### Soldier's Medal

TO: DOMENIC A. GILBERTO, Technician Fourth Grade, Coast Artillery Corps. Home Address: 71 Crary Street, Providence, Rhode Island.

✓ ✓ ✓

#### Order of Vasco Nunez de Balboa

TO: ENRIQUE M. BENITEZ, Colonel, Coast Artillery Corps.

FOR: Outstanding performance of his duties in connection with the Governments of Panama and the United States. (This is one of the highest decorations bestowed by the Government of Panama.)



# 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 problem 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

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*Target practice forms and information.* The responsibility for the preparation of target practice instructions and allied matters was transferred to the Coast Artillery School on October 1st. All requests for seacoast target practice forms and for information on muzzle velocity or target practice procedures should be addressed to the Commandant, Coast Artillery School, Fort Monroe, Virginia.

*Power rammer for 12-inch Barbette Carriage M1917.* The Ordnance Department has released for shipment to 12-inch batteries a new power rammer. Ramming and firing tests conducted on the pilot model of this rammer indicate that the "free stroke" adjustment should be between 99 and 100 inches; that is, with no projectile, the face of the rammer head should enter the bore to a point 99 to 100 inches from the face of the breech. This setting is satisfactory for the dummy projectile as well as the 1070-pound target practice and service projectiles. If other projectiles are fired, the "free stroke" adjustment should be not greater than, nor more than one inch less than, the seating of that projectile as determined from appropriate drawings or from measuring the seating of a rammed projectile.

This power rammer has automatic cut-off on both the ramming and withdrawal strokes. Also, a scale is provided for adjusting the stroke of the rammer.

Each battery equipped with the new power rammer should conduct a ramming test at each calibration or proof firing. The seating of the projectile should be measured after ramming, the gun should be then elevated until it strikes the stop, and the seating again measured. The seating should not change as a result of striking the stop.

*Shot tongs for 12- and 16-inch ammunition.* The Ordnance Department has been directed to procure and issue a new type of shot tong to 12- and 16-inch casemated batteries for use with the overhead trolley system for handling projectiles. These shot tongs will replace the Gilmartin type now issued to those batteries. The new type of shot tong provides positive positioning of the projectile in the tong for ordinary handling with the trolley system, and is designed so that if the projectile slips in the tong, it will be stopped either by the bourrelet or the rotating band and will be prevented from falling to the floor of the casemate corridors.

*Power extractor bar for 16-inch Gun Mk II M1.* The power extractor bar originally furnished to batteries equipped with the 16-inch Gun Mk II M1 was found to be too short to extract the dummy projectile. A new Bar C88001 is being issued in lieu of the old Bar B9016P. The characteristics of the new bar are as follows:

Twenty and three-eighths inches longer than the old bar from the lip of the extracting end to the rear of the threaded section.

13-inch threaded section as compared to 5 $\frac{3}{8}$  inches for the old bar.

Provision for holding the bar in place with a wrench while tightening the nut, thus allowing easier extraction of the dummy projectile from a gun with a considerably advanced forcing cone.

The new bar will allow extraction of the dummy projectile from a gun with a 9- to 10-inch advance of the forcing cone.

*War games and miniature ranges.* The Coast Artillery war game; which in 1922 was installed in practically every Coast Artillery post, provided a means of training officers, noncommissioned officers and certain enlisted men in the tactical use of the armament; the fields of fire of the batteries and groups; the effective fields of the baselines; the tactical handling of searchlights; the use of proper commands; correct telephone procedure and rapid and accurate indication and identification of targets. The war game board consisted of a relief map showing the land and water area of the harbor entrance in question, mounted on a substantial table, together with miniature searchlights, gun positions, ship models and other equipment. A war game board constructed for the harbor defense, duplicated where necessary for separate forts, serves for the entire harbor defense as well as for any constituent group or battery thereof. During the five or six years just prior to 1930, the majority of the war games was dismantled and not used, primarily due to lack of personnel, lack of funds for maintenance and, it is understood, to the need for the large rooms for other purposes.

Miniature ranges are intended to provide for the training of battery personnel, chiefly of spotters. So far as can be determined, no War Department or semi-official literature

on the subject of miniature ranges for seacoast artillery training. It is known that a few units have constructed and used various types of outdoor miniature ranges.

The use of the war game and, to a lesser extent, of miniature ranges, to supplement other means of conducting Coast Artillery training would be of substantial value at all times and especially during periods of rapid expansion. These training aids give each commander an opportunity immediately to supervise the execution of his orders, an opportunity which is not possible at artillery drill, since the individuals are widely separated; and they also permit tactical exercises involving the use of the various elements of the defense. The use of the war game board affords an excellent means of practicing the use of standard operating procedures required in the close defense against rapidly moving targets. In preparing instructions for the training use of this type of equipment, it must be emphasized that their use does not replace frequent drill using normal and alternate command posts and communications.

It has been recommended that the war game be developed as a training aid for seacoast artillery use and it is understood that the Coast Artillery School will undertake development work in the near future.

*Cleaning of boilers, U. S. Army mine planters.* The Commanding General, Army Ground Forces, has approved change to Army Regulations to make the periods for cleaning boilers of the vessels in the mine planter service conform more nearly with the regulations now in force in the Navy and the Transportation Corps. It is expected that AR 90-150, paragraph 53, will then read substantially as follows:

"Cleaning boilers—*a.* The boiler of each vessel propelled by steam will be cleaned and overhauled after approximately 700 hours of steaming in ships driven by reciprocating steam engines, and after approximately 1,000 hours of steaming in ships driven by steam turbines and in no case should boilers be operated longer than three months, total elapsed time, without cleaning. A period will be assigned in advance for this work so that the needs of the station served by the ship can be anticipated and arrangements made whereby it will be unnecessary to hire a vessel while the Army ship is withdrawn for this purpose. The boiler will be thoroughly cleaned of all scale or other deposits, and will also be painted and cleaned as necessary externally. A report showing the condition of the boiler after the inspection is completed will be prepared on W.D., T.C. (Q.M.C.) Form No. 131 (Report of Boiler Condition—Harbor Boats) and forwarded through proper channels to the Chief of Transportation.

*b.* As there is usually need for minor repair work in the engine and the deck departments which can best be accomplished during the period of quarterly boiler clean-

ing, and which cannot be readily performed while the steamer is in service and under steam, approximately 4 days should be allowed for boiler cleaning. Minor repairs will be effected by the crew during this period."

*Subcaliber gun for the 155mm Gun M1.* A 75mm subcaliber gun has been recommended for development for use with the 155mm Gun M1. The gun is to be mounted internally. The ammunition to be used with it is the 75mm Projectile M48, inert loaded, and the appropriate firing table is FT 75-AF-1, normal charge.

*Subcaliber Gun T6.* The Subcaliber Gun T6 for 8-inch Guns Mk VI Mod. 3A2 was tested recently. The gun functioned satisfactorily. The standard firing circuit and firing lock of the 8-inch gun are utilized. The Board concluded and recommended that the T6 should be standardized and issued on the basis of one per parent gun in service. In addition, it was recommended that certain auxiliary equipment be issued with the Subcaliber Gun T6, including necessary wrenches, a tool to extract the shell case, a wooden block for protection of the breechblock threads and a removable gauge washer for measuring head space adjustment.

*Flashless powder for motor torpedo boat guns.* During 1936, a series of tests was conducted to investigate the relative advantages of flashless powders. The result of these tests was a request that the Ordnance Department continue development with a view to reducing the visibility of guns when firing, either day or night, by maintaining the flash suppression and decreasing the amount of smoke or by endeavoring to combine a suitable reduction in smoke with a minimum increase in the flash. A flashless powder was adopted as standard after tests in 1941, although it was realized that, when used for horizontal fire, the dust and smoke under certain conditions would make it necessary to decrease the rate of fire in order to enable the gun pointer to see the target. The 90mm complete round, High Explosive Shell M71, furnished to anti-motor-torpedo-boat batteries is loaded with a propelling charge of the flashless type which produces considerable quantities of smoke. During the several tests of 90mm anti-motor-torpedo-boat matériel, each firing phase has demonstrated that the smoke problem introduces various handicaps for Case II firing and for spotting from the battery position. Fifty rounds of ammunition loaded with the old type flashing powder were used in making a comparative test. The Commanding General, Army Ground Forces, has concurred in the recommendation that the old NH type powder be used with 90mm anti-motor-torpedo-boat ammunition, pending the development of a flashless powder producing little smoke and that the complete rounds (High Explosive Shell M71, Fuze M48 and FNH powder) now issued to anti-motor-torpedo-boat batteries be replaced with similar rounds containing NH powder.



# Coast Artillery Journal

*Fifty-second Year of Publication*

COLONEL E. B. WALKER, Editor

LT. COL. ARTHUR SYMONS, Associate Editor

MASTER SERGEANT CHARLES R. MILLER,  
Circulation Manager



The JOURNAL prints articles on subjects of professional and general interest to officers of all the components of the Coast Artillery Corps in order to stimulate thought and provoke discussion. However, opinions expressed and conclusions drawn in articles are in no sense official. They do not reflect the opinions or conclusions of any official or branch of the War Department.

The JOURNAL does not carry paid advertising. The JOURNAL pays for original articles upon publication. Manuscripts should be addressed to the Editor. The JOURNAL is not responsible for manuscripts unaccompanied by return postage.

## The United States Coast Artillery Association

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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.

# News and Comment

## AA Marching Song Contest

The winning composition in the Antiaircraft Marching Song Contest, announced in the March-April issue of the JOURNAL, has been selected by a committee of judges who made their choice in coöperation with personnel from the Army School of Music. *Song of the AAA*, with music written by Warrant Officer Henry Johnson and words by Staff Sergeant Herbert L. Miller, was judged the best of the fifty compositions submitted. Both Mr. Johnson and Sergeant Miller are assigned to the Second AAATC Band at Camp Edwards, Massachusetts, Mr. Johnson as Leader. Mr. Johnson's home is in Tuscon, Arizona, and Sergeant Miller is from The Bronx, New York. Fortune came to the composer and author along with fame—the prize for the winning song was \$100.00.

The judges chose *Song of the AAA* because, of the fifty songs submitted, it best fulfilled the requirement that "the music should be an inspiring military march that will quicken the pulse when heard or sung."

*Song of the AAA* appears on page . . . in this issue of the JOURNAL.

## Combat Experiences

Subscribers who have been, or are now, in active theaters owe it to those who have yet to see action to give those non-veterans the benefit of their experiences. The man still in training needs the stories of your mistakes, as well as the accounts of those times you hit the jackpot, to polish off instruction. They want to know the things concerning which you say now, "I wish I had known that before I went across."

The JOURNAL is the logical place to publish your stories for the benefit of those who will follow. Personal and unit experiences in supply and in combat, illustrated where applicable with maps and photographs, are desired. The JOURNAL will clear all items with the proper authorities before publication.

When you come to Washington, stop in at the JOURNAL office and tell us what went on.

## Group Subscriptions

There has been a slight falling-off of group subscription orders since the last issue of the JOURNAL made its appearance. Individual orders, however, have been coming into the office at a merry pace, and the subscription department is not downhearted—yet.

Largest single group order came in from the 604th AAA Group, Colonel F. S. Swett, Commanding. The letter of transmittal, signed by Major J. M. Cahn, accounted for fifty-four new subscribers, to give the Group 100% standing. Runner-up was Colonel Raymond Watt, Harbor Defenses of Portsmouth, whose thirty-one subscrip-

brought his unit to 100% except for several officers DS. (No sooner was this sentence written than Major Vincent MacDonald, adjutant of the 245th CA, sent in every-two orders.)

From the 439th AA Battalion, Captain Earl J. Shiflet, adjutant, came twelve new subscriptions including seven from C Battery, and twenty-two renewals. Lieutenant Wallace E. Frohock, Jr., Adjutant of the 833d AAA AW Battalion, sent in nine subscriptions; Lieutenant Frederick A. Preller, of Battery D, 242d CA, sent in seven subscriptions from Batteries D, E, and G, and Headquarters Battery, Second Battalion. A repeat order from CWO Louis Savo, Adjutant of the Harbor Defenses of San Diego, accounted for seven more subscriptions from that live-wire outfit.

Lieutenant Carleton J. Stevens, Adjutant of the AAAT Officers' School, Camp Haan, submitted eight from the 48th AAA AW Battalion, and two from the 923d AAA AW Battalion.

The most unusual group order in a long time came to the JOURNAL from Captain Robert Dando, Jr., commanding Battery C, 501st AAA Gun Bn. It accounted for seven subscriptions from enlisted men of that organization.

Last-minute entries included an order for thirty-one subscriptions from the 902d AAA AW Bn., signed by Lieutenant Colonel Gordon W. Arlett, Commanding, and another order from the same unit, signed by Lieutenant A. E. Collier, Adjutant, for six subscriptions. These two orders bring the 902d into the 100% class.

Lieutenant Julius R. Pollarschek, Adjutant of the 642d AAA AW Bn., accounted for twenty subscriptions, and Lieutenant Correll A. Couch, Adjutant of the 932d AAA AW Bn., came in for a photo finish with nineteen.

**Election of Officers**

The terms of office of the Vice President of the Coast Artillery Association and of four members of the Executive Council expire December 31 of this year.

In order to conserve on volume of mail, separate ballots are not being sent to the members of the Association. They are requested to cut out the ballot to be found printed on this page, mark it as they desire and mail it to the Secretary, U. S. Coast Artillery Association, 631 Pennsylvania Avenue, N.W., Washington, D. C. Postal regulations do not permit the inclusion of a detached ballot within the pages of the JOURNAL.

All members of the Association are urged to vote. Although but one name has been listed under each office to be filled, members are free to write in the name of any other person of their choice.

There are many serious matters to be discussed at future meetings of our Association. In order that the operating management of the Association and of the JOURNAL may receive the help and advice of the Executive Council it is most desirable that a majority of the Council be on duty in or near Washington. In order to aid further in securing a quorum at meetings of the Council, it is believed desirable to give the Secretary-Treasurer a vote at such meetings by making him a regular member of the Council.

Due to the large number of members who are on duty

**INSTRUCTIONS AND INFORMATION**

1. Please record your vote by making an "X" in the appropriate square or indicate your choice by writing in the name of your candidate. Ballots received with signatures, but with no individual votes recorded, will be considered proxies.
2. Each candidate was considered in connection with the geographic location of his residence. It is considered advisable to have at least five members of the Council resident in or near Washington in order to facilitate the transaction of business.
3. Ballots received after January 31, 1944, cannot be counted.
4. Ballots may be collected by Post, Regimental, or other unit commanders and forwarded under one cover.

**BALLOT**

**UNITED STATES COAST ARTILLERY ASSOCIATION**

For Vice President (1944-1945)

- Major General John T. Lewis, U.S.A.
- \_\_\_\_\_

For Members of the Executive Council (1944-1945)

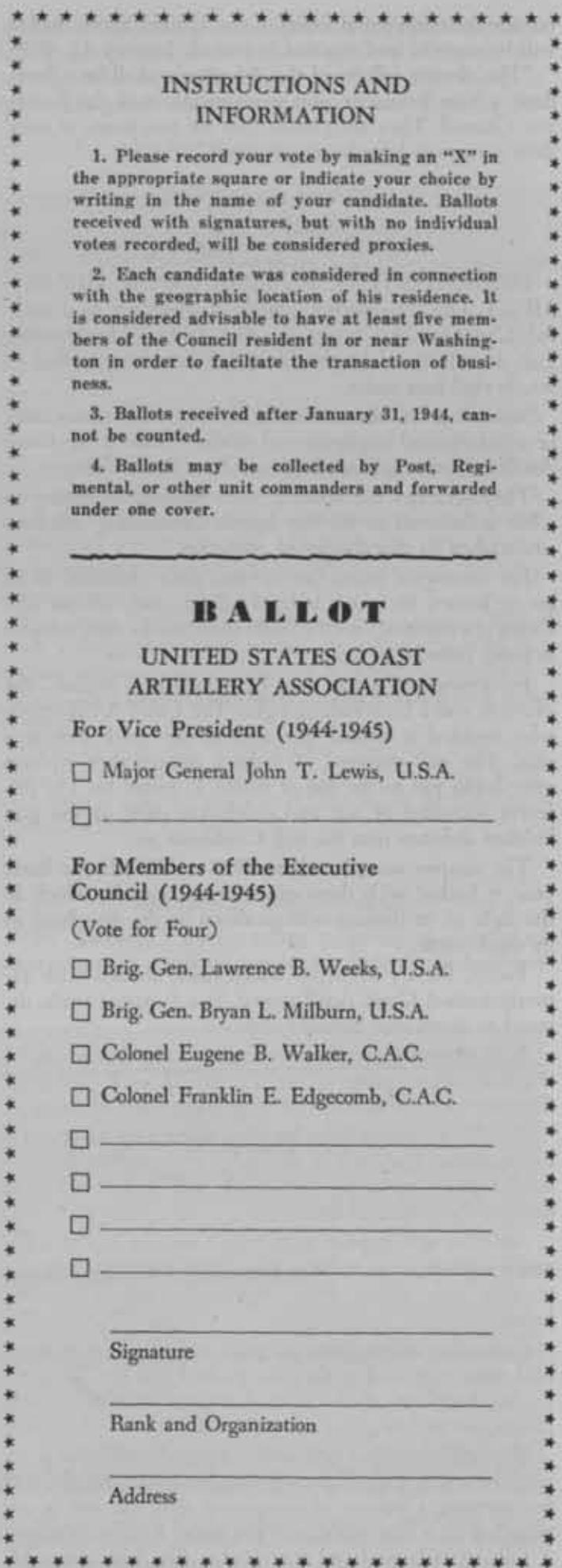
(Vote for Four)

- Brig. Gen. Lawrence B. Weeks, U.S.A.
- Brig. Gen. Bryan L. Milburn, U.S.A.
- Colonel Eugene B. Walker, C.A.C.
- Colonel Franklin E. Edgecomb, C.A.C.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Signature

Rank and Organization

Address



outside the continental limits of the United States, ballots will be received and counted to include January 31, 1944.

"The elective officers of the Association shall be a President, a Vice President, and seven members of the Executive Council. They shall hold office for two years, or until their successors have been appointed."

### An Old Friend Departs

HEADQUARTERS, PANAMA CANAL DEPARTMENT, Oct. 22—After a quarter of a century as a faithful Caribbean watchdog, the first 16-inch disappearing gun manufactured by the United States Army ended its lonely vigil here today.

Swarming over the revetment of Battery Newton a crew of iron-helmeted engineers and soldiers relieved the Coast Artillery Command's steel colossus from further duty.

They attacked the weapon with flaming electrodes in what is believed to be the largest dismantling job ever undertaken in this theater of operation.

For twenty-six years, the 624-ton piece crouched in its pit on Battery Newton's isolated hilltop, ready to roar into action at a moment's notice. Now obsolete, the steel weapon is being reduced to scrap.

Forty-nine and a half feet from breach to muzzle, the Newton was a breathtaking sight. The Coast Artillerymen who manned it looked like ants at the sleek monster's side. The gun survived 39 battery commanders without once being put to the test of battle. It reared on 140 different occasions of test and exhibition shots as the gun belched defiance into the still Caribbean air.

The weapon was silent from 1920 to 1936. In the latter year, it barked with three experimental rounds, which in the light of its demise, will go down in the gun book as its death rattle.

Today, Battery Newton, which once bristled with expertly trained Coast Artillerymen, is a funereal scene devoted to death and dismemberment.

A 20 ton crane stands at the brink of the revetment. In the hole below, wisps of smoke stained with bluish-red flame envelop the soldiers who are dismantling the gun.

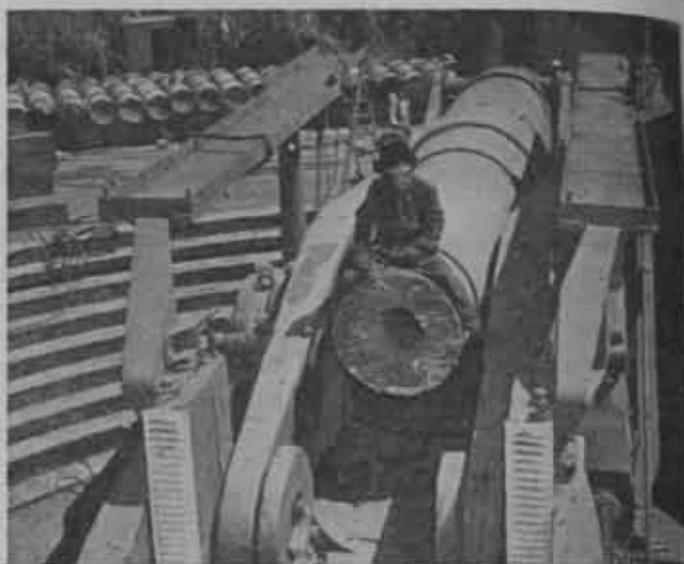
A hulk of 130 tons, the barrel is marked off in nine 15-ton sections. The wall of the tube is 23 inches thick at several points including the breach, and it does not yield easily to the process of dissection.

After the 400 ampere, quarter-inch electric arcs heat the gun's surface to a melting point, the crew goes at the weapon with 20-foot long, eighth-of-an-inch wide steel lances.

Conveying oxygen from six tanks connected to the manifold, these rods melt as they are pushed into the Newton's sizzling back and cut the marked sections with 200 pounds of concentrated oxygen pressure.

Gigantic wrenches and other unusual mechanical instruments play a great part in the dismantling of the 494 ton carriage, a portion of the project that will not be approached on a large scale until the barrel is fully dislodged.

Subject of legend and controversy, the Army's first 16-



Signal Corps Photo.

Take a last long look at a disappearing carriage.

inch disappearing gun was named in honor of Major General John Newton, Virginia-born hero of the War between the States, who was later Public Works Commissioner of New York City, and president of the Panama Railroad.

Old timers still debate whether the muzzle of the Newton was cut off in the United States before the gun, manufactured in 1902 at Watervliet Arsenal, Watervliet, New York, was shipped to the Caribbean Defense Area in 1917.

A War Department document in the gun book states that Ordnance Department records do not support the story.

However, a stubborn dissenter to this day is James R. Milliken, Armored Foreman of Panama Department Ordnance, where he has been employed for 26 years.

"The muzzle must have been cut," insisted Milliken, whose home is in Watertown, Mass. "The weight of the gun when made was 147 tons. Now it is stamped 130 tons. What could have happened to the missing seventeen tons?"

With pomp and pageantry worthy of a medieval spectacle, the death dealing monster that was destined never to kill a mortal thing, was borne down the Hudson River in a specially constructed barge, while thousands of excited onlookers, burning with war fever, lined the shores to see this symbol of American might pass by.

When it reached the Caribbean area, special railroad tracks were laid down on the hill leading to Battery Newton, and on these rails the massive black thunderer was hauled to its revetment.

### Change in Airplane Insignia

The red border enclosing the insignia for all United States military airplanes has been replaced with a blue border. The red border, caught at a flash in air action, sometimes resembled the Japanese insignia.

Several months ago a new type of insignia consisting of the white star on a circular field of blue, with a white rectangle attached horizontally at the right and left of the circle. Now the blue border encloses the entire device.

## Improved British Antiaircraft Fire Control

(By cable from London)

Secret improvements by a famous scientist to Britain's aircraft guns, indicated yesterday, may solve the problem of bringing down high-flying, high-speed German bombers as effectively as the menace of the south-land tip-and-run raiders was mastered.

The necessary experiments and investigations have been conducted by the Army's Scientific Research Group under the direction of Brigadier Basil Schonland, a 47-year old member of the Royal Society and Research Professor Geophysics at Johannesburg who went to England from South Africa in 1941 to help tackle the problem of the night bomber. General Sir Frederick Pile, Chief of the Antiaircraft Command has great hopes of the success of the measures devised.

All that is at present disclosable is that the new developments enable hostile aircraft to be more exactly located than ever before and insure the more accurate firing of aircraft guns. To secure this approach to perfection work had been continuing for months in laboratories, control-rooms and gunpits. Brigadier Schonland was a Signal Officer in the last war has the assistance of Dr. D. W. Ewer of Cambridge University. Brigadier Schonland's organization was so successful that it spread not only to the whole army, but his ideas were adopted by the Navy and the Royal Air Force. He and his fellow scientists work ceaselessly to meet every change in German weapons and tactics.

The British do not expect, when the present invention becomes operative, to bring down hostile aircraft for every shot fired. They will however be in a position to make night raiding show no dividends.

Speaking in a gun-operations room in London defense headquarters, Brigadier Schonland explained that efforts were directed to stopping raiders which dive across the whole London area from about 30,000 feet losing half their height in a plunge of several miles which greatly accelerates them and increases the difficulty of the gun-crews' job below. They drop bombs at random, only the size of the built-up area of greater London making this method practicable. They operate at greater heights than those of most fighters at the beginning of the war.

The predictors perform remarkable calculations whereby the antiaircraft guns are trained and the shell-fuzes are set. Details must be supplied to them of the raiders' height and speed, calculated by the height-finder and plotting instrument so as to give the future position of the plane at which the gunner must aim. The problem is being solved by bringing the shells to within effective distance of the raiders so as to crash some and frighten away the others.

What General Pile calls "A benign Gestapo" is busy when the guns are in action checking the relation of the positions of their shells and their targets in order to rectify mistakes and secure better marksmanship. Women of the W.A.S. form half of London's frontline antiaircraft troops. The real nerves of the organization are eighteen girls who operate the complicated fire-control mechanism at every gun-site, seven being allotted to each predictor.

A large map suspended from the ceiling shows every

gun-site in the London Area. Suddenly it becomes freckled with green-lit pin-points indicating when the sites are locating their targets. Red lights twinkling into existence beside the green ones show the guns are engaging the planes.

## Foxholes are Healthy

By STAFF SGT. S. E. STAVISKY

RENDOVA ISLAND—Life in a foxhole has its good points.

Out here, where bombs and shrapnel are as common as the tropical rain, a foxhole is surest guarantee for longevity, although of course, the surest guarantee is in itself a risky gamble.

A foxhole is not protection against a direct hit, but such hits are rare. Concussion from a bomb hit nearby the foxhole may kill or injure the occupants, or again it may leave them unscathed. At least, below the surface of the ground, you have better than a 50-50 chance against being killed by the blast. As for shrapnel, a coconut log covering over the foxhole makes the refuge virtually immune to the flying scraps of steel.

This week, to cite a case, a Jap bomber dropped a "daisy cutter"—antipersonnel bomb—into the bivouac area of the Marine command post. The missile felled a huge tree in the center of the camp and showered the surrounding tents with shrapnel.

Shrapnel from the "daisy cutters" burst out with such force, that one such fragment pierced the steel wall of the headquarters safe. Yet not a single Marine in the camp was injured.—USMC *Chevron*.

## Bazookas by the Thousands

The "Bazooka," whose rocket projectile is capable of penetrating the armor of any enemy tank which has been



Jap AA gunners look for cover as American parachute bombs drop over Boram Airfield, near Wewak, in New Guinea. Heavy-caliber guns were of little use at planes' altitude.



Jap AA gun, loaded and ready to fire, captured at Munda.

in action against United Nations' forces, now is being supplied in quantity by the United States to American and other United Nations' troops.

The Bazooka is a product of long experiment by the Army's Ordnance Department. It has been in action for several months on various foreign fronts, where it has proved as effective an instrument of destruction against thick brick walls, rock masonry, structural steel and railroad rails as it has against enemy tanks.

During the recent North African campaign, Bazookas of one United States Army division alone destroyed at least six enemy tanks.

The Bazooka launcher, or gun, is a metal tube somewhat more than 50 inches in length and less than 3 inches in diameter. It is open at both ends. Attached to the tube are a shoulder stock and front and rear grips for the firer, together with sights and an electric battery which sets off the rocket propelling charge when the launcher trigger is squeezed. There also are safety devices.

The launcher is operated by a two-man soldier team—one the firer, the other the loader. When the launcher is held in firing position, the loader is at the right and rear of the firer. The launcher may be fired from any position which may be used normally by a rifleman in combat.

After the loader has inserted the rocket in the launcher, he turns a contact lever to the "fire" position, signals "ready" to the firer, and then drops down and away from the rear end of the launcher and grasps a new rocket.

When the firer squeezes the trigger, the rocket propelling charge is ignited and flashes from the rear of the launcher tube.

The rocket itself is heavier than the hand grenade and is nearly two feet long. Its appearance is that of a small elongated aircraft bomb. Its components are an explosive head, propelling charge powder tube and finned tail, the latter providing accuracy in flight.

The Bazooka supplements, rather than supersedes, other weapons. It is standard equipment for certain classes of troops. Raiding groups, tank-hunting parties and reconnaissance elements have reported it highly effective. It has been used with success by landing parties in neutralizing pillboxes.

In defensive action, Bazooka teams may be recruited from among chauffeurs, truck drivers, ammunition bearers, orderlies, clerks and mess personnel.

### New Wrinkles

#### MAGNETIC TORPEDO

Another German "secret weapon," this one promising to be more effective than others which have been reported during the past several months, is a new torpedo which is thought to "combine magnetic guidance with acoustic detonation." Fired at a vessel from astern, the torpedo is said to overtake the ship and explode within the radius of its propeller vibration. With her propeller gone the ship is an easy victim for a point-blank torpedo. It is said that five merchant ships and three warships were sunk in a recent ten-day running battle with an Atlantic convoy, and it is presumed that the new torpedo was a factor in the results.

#### TORPEDO-TANK

The Russians report that Axis troops are using a new antitank land torpedo, which is mounted in a vehicle like a small tank and controlled from a distance. A reel of cable from the rear of the torpedo-tank leads back to an operator who may be in a shelter up to 1,500 yards distant. The operator guides the machine and sets off the 150 pounds of explosive carried by electricity. The Russians have found a very simple means of dealing with the new weapon. They get around and cut the control cable.—*Army Times*.

### On the Job

GUADALCANAL—Huge Marine Corps trucks which were lashed to the top deck of a United States Navy vessel recently played a part in frustrating a Japanese bombing raid. The truck drivers got credit for participating in shooting down one plane with the machine guns mounted on their vehicles.

As a result of the part they played in destruction of the plane, the Marine and Seabee truck drivers were authorized to paint tiny reproductions of the Rising Sun flags on the hoods of their vehicles, just as pilots put them on their planes to indicate a "kill."—*USMC Chevron*.

### Red Cross Message Service

Washington, D. C., November 1—Birth announcements be sent to servicemen through the facilities of the American Red Cross home service, where regular expeditionary force (EFM) message service is not available, Red Cross announced today.

If commercial channels for communication are open through EFM service but a family is unable to pay the cost of the message, local Red Cross chapters are authorized to assume the expense. Information regarding points to which EFM messages may be sent, may be obtained from local chapters of Red Cross or from local telegraph offices.

In cases of serious illness, death or other extreme emergency, a message may be sent through Red Cross to be delivered by the field director at the post where the serviceman is stationed, regardless of availability of EFM service. In cases of communication difficulties in the combat areas, no guarantee of the delivery of these messages can be made, however.

All messages to be transmitted through Red Cross channels should be sent through the local chapter.

♦ ♦ ♦

### New German Fighter

By the Associated Press

MOSCOW, Oct. 16.—The Soviet Army newspaper *Red Star* said today the Germans had introduced an improved Messerschmitt pursuit plane—the ME-109G—with a more powerful engine and better streamlining than its predecessor.

The newspaper said this is the fourth in the Messerschmitt series which has appeared on the Russian front and the plane is steadily modernized.

♦ ♦ ♦

### Battle for Manganese

Both belligerents—certainly the Russians—know from their technical advisors that if the Germans are forced to withdraw from the Nikopol area, which is just round the bend where the old salt trade route from the Crimea crossed the Dnieper, they will soon be staring with alarm at an impending manganese famine, and will not have more than a few months more to stare before one-half to two-thirds of the steel furnaces under their control will fail to supply further "battle scrap" on the present scale for the Axis salvage campaign. During each of the three years before the war Germany doubled her normal import of manganese ore to nearly 500,000 tons of high-grade quality, and all the countries which have since been enjoying the fruits of the "new order" could not raise between them more than about half this quantity, mainly of low-grade material. Nikopol was consequently secured as a real prize; pushing on last year to the Caucasus, the Germans tried to secure Chiaturi too. But in that they failed through the skill and bravery of the Russians, who knew that the loss of their two main sources of manganese might have been an embarrassing until the Ural deposits near Magnitogorsk could be fully developed.—Letter to *London Times*.

### Echoes from the London Blitz

Although weary with the strain of constant action in more than twenty successive nights of the blitz, London's A.A. defenders refused all offers of relief and remained at their posts for another seven weeks.

This was revealed yesterday by Sir Frederick Pile, Chief of A.A. Command, when he spoke to some of the gunners at the Mansion House.

"The gunners are worthy defenders of a great city," he said. "After they had been in action for three weeks day and night, I grew very anxious because I had never seen men so tired. It seemed that if it went on they must break.

"I arranged for personnel from other parts of Britain to relieve them. The men, however, wanted to stay, and, although many new units came to London during those 73 days, not one unit left.

"Even those units whose sites received direct hits were invariably in action ready for the next night's blitz.

"We left much of our equipment at Dunkirk, and there is no harm now in saying that at the time A.A. Command were relied on by the War Office to play a primary part in the defense against invasion, as well as to carry out their rôle as A.A. gunners.

"Unfortunately we had few weapons. All sorts of evil devices were produced.

"The original English Molotov cocktail was the product of a searchlight site in the eastern counties, while in the south-east corner of England you could not buy a kitchen knife. They had all been bought up out of the meagre pay of the troops, who were busy sharpening them to very fine points."

It was also revealed yesterday that the first salvo from the antiaircraft guns of one site in the Medway area of Kent brought down three German bombers during the battle of Britain.

On another day, after a series of raids, London's A.A. guns claimed at least twenty-six bombers destroyed and dozens more damaged, while the German formations had been broken up for the fighters to close in for the kill.—*London Express*.



British Combina

German four-barreled 20mm AA gun captured near Salerno airfield.

### Change in *Luftwaffe* Tactics

All the anti-aircraft defenses on the south and south-east coasts have been strengthened to meet the *Luftwaffe's* change from sneak raiding to high-level bombing.

In previous months the light A.A. guns on the coast successfully countered the tip-and-run raider. Now, after a lull, it is the turn of the heavy guns of the mixed batteries of Anti-Aircraft Command to deal with high-flying bombers and fighter-bombers using new methods of attack. How successful these mixed batteries have been in their engagements against the enemy is shown in reports from a south coast A.A. brigade where, early this week, two "category ones" were awarded them for airplanes definitely destroyed in a short night raid and other awards allowed for raiders so badly damaged that they probably never reached home.

At dusk on Monday night thousands of people in one south coast town watched another raider being engaged by all the anti-aircraft defenses in the area. Against a cloudless background and at a tremendous height the shell bursts made a long chessboard pattern in a narrow strip right across the sky. This raider, which was one of the highest targets ever engaged by our home 3.7 A.A. guns—it was so high that even the instrument detachments had difficulty in getting true data—was finally destroyed by a shell burst in a direct hit.

The gunners in the area have had the hardest time for some while. At one period during a night raid they were so busy that there was no time to clear empty shell cases from the gun pits. Here the rate of fire was so high that layers and ammunition numbers on the guns had frequently to be changed over in order to give every one in the detachment a bit of a rest.

"The searchlight men," said one gun sergeant, "gave us the greatest possible help throughout the raid. They just held the raiders in their beams and would not let them go, while we kept up a terrific concentration of fire."—*London Times*.

### Superbombers

By STERLING F. GREEN  
*Associated Press Staff Writer*

A new American super-bomber hauling more explosives and having vastly greater range than any existing warplane now is in actual production.

An unspecified number of the deadly new air giants has been delivered to the Army within the last several weeks.

An increased rate of output is scheduled for this month. Dwarfing the Consolidated Liberator and Boeing Flying Fortress, the new dreadnaught of the sky is reckoned capable of bringing the innermost production centers of Hitler's European fortress and the Japanese Empire within the sights of United States bombardiers.

The plane has been identified as the B-29 by the Army weekly, *Yank*, in a recent article, which declared:

"A new super Fortress, the B-29, is being built, which will have a greater bomb capacity and longer range than any existing bomber."

From previous guarded reports which have cleared military censorship, it appeared that officials do not expect to see the new airplane in combat before 1944.

### New Trends in Matériel

Mr. Duncan Sandys, Joint Parliamentary Secretary to the Ministry of Supply, speaking at Norwood last night explained why the production program of his department had been changed and would continue to change during the winter.

He also revealed that we were now using an improved type of armor-piercing shell against tanks. The first important development of this kind was the introduction of capped shot. Ordinary armor-piercing shot when fired above a certain velocity tended to shatter on striking the armor of the enemy tank. It was found, however, that by fitting a special steel cap it was possible at greatly increased velocities to hold together the nose of the shot sufficiently long to allow it to begin to penetrate the armor plate. These special steel caps had to have very blunt noses, and this resulted in an increasing resistance to the projectile during its travel through the air. To overcome this a further pointed cap of light construction was fitted in front of the armor-piercing cap. This ballistic cap was destroyed on impact. (A Coast Artillery development many years old. *EDITOR.*)—*London Times*.

### Artillery Coöperation With Navy

LONDON (BIS)—Bombardment Units, a new type of force, have provided a considerable part of the cover for Allied landings in the Mediterranean since Oran and Algiers. They are formed from selected officers of the Royal Artillery, trained by Combined Operations and are known either as forward observation officers or bombardment liaison officers, the two duties being interchangeable. They hold the rank of captain.

Forward observation officers are the eyes of the naval artillery. They go into action with the forward troops in landing areas. They may go with Commandos or they may be dropped by parachute or glider. Once on land, their job is to send wireless messages directing the fire of the naval guns.

The bombardment liaison officers, on the other hand, have to interpret the wireless calls and help the gunner officer to lay his guns on the target.—*New York Times*.

### "A Real Service"

COAST ARTILLERY JOURNAL

Gentlemen:

Enclosed is my check for a two-year renewal of the C. A. JOURNAL. While overseas for many months the magazine was really a source of great interest to all. In spite of the fact that I am now in the Air Corps, I still wish to keep my contacts with the C. A. After all I have been through combat with the AA and it's a real service.

Sincerely,

JOHN P. O'CONNOR  
Captain A. C.



# Coast Artillery Activities



Corregidor



**I SHALL RETURN!**  
**MACARTHUR**



## The Coast Artillery School

BRIGADIER GENERAL L. B. WEEKS, *Commandant*

After resembling a Hollywood movie set for most of the summer and fall months, the waterfront at Fort Monroe has returned to normal again following the departure of a Signal Corps camera crew. The camera crew had been working at the Coast Artillery School since 1 July filming all angles and aspects of the planting and firing of controlled submarine mines.

The many reels of black and white celluloid which the movie camera recorded have been taken to the Signal Corps Photographic Center in New York, where they will be edited and whipped into a series of seven modern training films designed to assist in the training to improve the efficiency of the Coast Artillery Corps' submarine mine batteries.

Scenarios for the training films were prepared by the Department of Training Publications of the Coast Artillery School, which department also arranged for the personnel and equipment appearing in the films. The director, cameramen, electricians, "grips," and other motion picture technicians were furnished by the Signal Corps. Members of the cast were drawn from the commissioned and enlisted personnel of the local Mine Battery and the officers and crew of an Army Mine Planter.

In order to increase the training value of the films, many of the tricks developed by commercial motion picture studios were utilized, while other original tricks were devised on the spot. Huge wooden parallels were erected on the edge of the dock to give the camera a high-angle view. Cameramen and equipment were hoisted high up on the mast of the mine planter for some difficult shots which could best be viewed from above. An authentic reproduction of a mine battery's plotting room, designed to conform to the idiosyncrasies of the camera, was built inside a studio so that the camera crew could continue its work when bad weather prevented shooting outdoors. A small boat was converted into a camera boat so that the camera could follow the mine planter and its auxiliary craft throughout the mine field. At all times the maneuvers of the mine planter were controlled from the director's seat by means of a "handy-talkie" set.

When completed, the series of films will be released under the general title of *Employment and Operation of Submarine Mine Batteries*, with the following subtitles:

- I—Preparation of Underwater Equipment
- II—Planting Control Buoys and Laying Shore Cable
- III—Planting Ground Mines
- IV—Planting Buoyant Mines
- V—Preparing and Planting the Distribution Box

### VI—Operation of the Mine Field VII—Maintenance and Renovation of Underwater Equipment

When Officer Candidate School Class 26 received its commissions at exercises in the Fort Monroe Theatre recently, it marked an important milestone in the history of the Seacoast Artillery OCS. Class 26 was the first OCS class to be composed entirely of men who have returned to this country from overseas service. As each of the graduates climbed the theatre platform to receive his letter of appointment from Brigadier General Lawrence B. Weeks, he wore proudly over the left breast pocket of his uniform the ribbon of the theatre of operations in which he had seen service.

In his address before presenting the letters of appointment, General Weeks called attention to the many widely-spread places from which the newly-commissioned second lieutenants had been drawn.

"This is the first class, as probably all of you know," the General declared, "which is composed entirely of men who have been on foreign service. A few years ago, no one in this country would have imagined that the United States Army would be stationed at so many widely-scattered places as they are now located. Just to read the list of places from which the members of this class have come to join us at OCS is a good lesson in geography. We used to be quite secretive about places of foreign station, but in his annual report, General Marshall listed and showed on the map all of the foreign garrisons. So I have no hesitation to read the list of places from which these men came.

"We have ten men from Guadalcanal in the Solomons, six from New Caledonia, five from Puerto Rico, five from the Fiji Islands, four from various islands in the Caribbean, two from England, two from Iceland, and one each from New Hebrides, the Dutch West Indies, Tonga, and Alaska."

And, as the General observed with a smile, "That is quite a spread of geography."

As guest speaker at the exercises, General Weeks introduced Lieutenant Colonel Henry G. Fowler, commanding officer of a Coast Artillery battalion which served on New Caledonia and later on Guadalcanal. Many of the men in the OCS class were enlisted men in Colonel Fowler's battalion.

"This is one of the happiest and proudest days of my life," Colonel Fowler declared. "If I speak mainly to those of you who served with us, I think the others will forgive me and perhaps I can convey to them something of the thing that their officers would like to say to them if they were here. My happiness and pride at this occasion comes from the grand job that your instructors say you have done. In doing it, you have done credit not only to yourselves but to the officers and men with whom you served overseas. The lads out there have been rooting for you all the time and know they are going to be very glad to learn that you have given here the best that you had."

Colonel Fowler then went on to illustrate with the experiences of his battalion that, "if you think and plan, go on to your men with the knowledge of what they expect from you and pass on to them the things you have learned, you will lead them and instill in them the will to do and the will to win."



BRIGADIER GENERAL BRYAN L. MILBURN, *Commandant*  
By Lieutenant Colonel Charles H. Scott

Air Corps officers are now among the many students at Antiaircraft Artillery School. They are taking the new officers' Course which will teach them the latest AAA as they relate to the Air Force.

The course was created for the purpose of orienting Air Corps officers with antiaircraft problems, and the capabilities and limitations of antiaircraft in modern warfare. The course is conducted on a bi-weekly schedule and lasts one month. It is under the AAA School's Department of Tactics. War experience has proved conclusively that an antiaircraft artillery unit cannot hope to engage hostile targets with the necessary accuracy and speed unless it has thoroughly mastered the technique of drill, and that precision snap of drill must be developed and perfected in training to the point that they become routine and automatic. "It was stated in a memorandum issued by command of Brigadier General Bryan L. Milburn, Commandant of the AAA School.

A crew should go through its movements slowly in the initial stages of drill and gradually increase its speed without losing anything in precision. Each man must understand thoroughly everything he does and why he does it. He must be precise. He must make his every move at exactly the same time and in the same way every time he does it. He must be at attention, both in mind and body. There is no talking or slouching." Officers should maintain close supervision to insure these essentials.

All members of an antiaircraft artillery crew must be impressed with the fact that while they are at their posts they are manning a lethal weapon for the single purpose of destroying whatever they shoot at. It is not a place of rest and relaxation."

But the memorandum pointed out the faults that might develop if a crew is left too long at its guns or instruments. Drills must not be prolonged to the point where the 'edge' wears off. They must be of short duration, with adequate rest periods during which the men 'fall out' and relax." The task of training AAA enlisted specialists in the fundamentals of electricity, formerly given over to civilian schools, has been taken over by the AAA School. These civilian schools were called on to absorb the great number of men who had to be trained in the early stages of the war. Then, direct training by the army in electrical subjects so necessary in AAA, has been made possible by increased facilities. Students not only receive class room instruction but also obtain actual experience in the field. On completing the course they are capable of teaching and training men in their respective fields. The skills acquired will also be invaluable to these soldiers when they resume their occupations.

Another new course at the AAA School teaches officers what to do to discover and make impotent land mines and 'booby traps.' It is under the Automotive Section.

The motion picture depicting the experiences of officer candidates at the AAA School is now ready for release. It is feature length and will be shown in theaters throughout the country. The title, at last report, is *There's Something About a Soldier*.

Many administrative positions at the School are now being held by officers of the Women's Army Corps.

The 20th AAA Group has taken over the assignment of providing men and materiel to be used in training various units at the AAA School. This function was formerly performed by the 108th AAA Group. The new group is well equipped with experienced men and materiel in all phases of the Antiaircraft Artillery. Colonel H. T. Benz, former commanding officer of the AAA School Brigade, commands the 20th AAA Group.

Some of the targets used for firing practice are now being towed by planes piloted by members of the Women's Air Force Service Pilots.

After completing their cross-country tour, the First Composite British Antiaircraft Battery will return here.

Barrage balloons have made their re-appearance at Camp Davis, being used for instruction purposes in various AAA School courses. This Camp was originally the home of the Barrage Balloon School, which was moved to Camp Tyson, Tenn.

Although he spoke no English when he first arrived, the first officer of the Peruvian Air Force to take the AAA School's advanced course recently completed his studies here. He is Captain Isaac Zapater, who was aided by Lieutenant P. K. Talbot as interpreter.



Up and over—Officer Candidates at the AAA School play rough.



## New England Sector

MAJOR GENERAL K. T. BLOOD, *Commanding*  
By Captain Howard O. Husband

The New England Sector's training program continues to progress with marked success.

Installations in the Sector were inspected recently by Lieutenant General George Grunert, Commanding General, Eastern Defense Command, and were found to maintain a high level of training and morale.

All units of the Harbor Defenses have been engaged in firing record and special service target practices. Complete records and analyses of these special practices have been made. Improved methods of fire control were used and battery personnel received valuable training in operating the newer types of armament and fire control equipment of current design. Interesting and informative results have been obtained. In the Harbor Defenses of Boston, several sunrise special service practices were conducted recently. The date and time of these practices were secret, known only to the Harbor Defense Commander and the officials. The procedure followed was for the Harbor Defense Commander and officials to arrive at the battery just before sunrise, advise the battery commander that the target was on course and to commence firing. The results of these practices were excellent. In one night practice in the Harbor Defenses of Narragansett Bay, a 155mm battery using high explosive ammunition pulverized the target. These practices have demonstrated the state of readiness which exists in this command.

Intensified programs of instruction and practice in the firing of small arms have been conducted by each of the Harbor Defenses. Troops were given careful preparatory training before firing on the range. Many men were successful in qualifying as experts, sharpshooters and marksmen.

An extensive program of schools has been functioning in each organization within the Sector. Schools are operating for instruction in the Renshaw System for identification of aircraft, armored vehicles, and naval vessels. Intelligence schools and schools in hand-to-hand combat and antitank warfare are part of the regular training schedule. In the Boston Subsector, an automatic weapons school is in progress for special training of personnel assigned to this armament. It is conducted under the supervision of Lieutenant Colonel Maurice M. Simons, Harbor Defense AA Group Commander. Another group of officers and noncommissioned officers from this subsector are attending the New England Sector Infantry Combat Training School.

Units in the Harbor Defenses of Long Island Sound

have been preparing for the months ahead with a rigorous program of physical hardening for both officers and enlisted men. "Rainy day" schedules are held to a minimum and road marches and bivouacs are carried on under adverse conditions. Field exercises, simulating actual battle conditions have been conducted by the majority of units using blank and live ammunition.

The New England Sector Combat Team has established the Sector Tactical Training School for instruction in rigorous field training. Emphasis is placed on practical exercises in the detection of booby traps, exposure to the fire of snipers, infiltration tactics, and platoon maneuvers. Demonstrations of expert scouting and patrolling, stream crossing expedients and squad formations are followed by over-night combat problems. A battle course with simulated artillery fire, and gas training are important features on the schedule. A final three-day problem concludes the course.

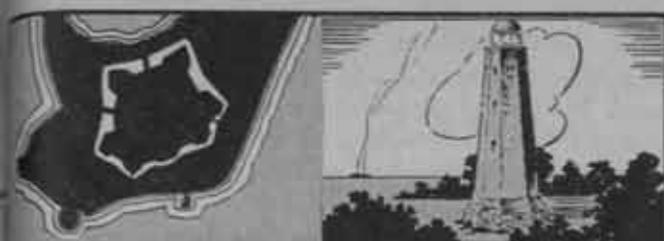
The United States Treasury Department requested the New England Sector to produce a War Bond Cavalcade for the promotion of the sale of War Bonds in the State of Massachusetts. The cavalcade consisted of a display of Army equipment and a soldier variety show. WACs from Fort Banks participated in the principal act and their performance was one of the reasons for the show's enthusiastic reception. The United States Treasury officially credited the unit with being directly responsible for the sale of more than \$15,000,000 worth of war bonds.

Under the supervision of the Special Service Officers, shows are flourishing in the various installations. In the Harbor Defenses of Boston, a stage show entitled *The Harbor Revue* is being presented. The cast of twenty-five is composed of talent selected exclusively from the harbor posts and is now touring all Boston harbor installations. The Harbor Defenses of Narragansett Bay has organized two all soldier shows known as *Shells-A-Poppin* and *Hin and Bits of Harlem*. Both have played to capacity audiences.

Even with all their tactical duties, the personnel of the Sector still find time to engage in an active athletic program. The baseball team of the Harbor Defenses of Portsmouth won the pennant for the last half in the local Sunset League but dropped the championship to another local service team in the final playoffs. Summer sports concluded in the Harbor Defenses of Boston when Fort Revere defeated Fort Heath for the baseball crown of the season at Braves Field. The nine representing the Harbor Defenses of New Bedford won the New Bedford City Twilight League. The team also defeated the winner of the Independent City League, and the winner of the Fall River League. The year's record showed forty-eight wins against eight defeats.

Golf tournaments and track also have held a prominent place in Sector sports schedules.

In the Harbor Defenses of Narragansett Bay, a new game has appeared which goes under the naive name of *Murder*. It is played in denims and steel helmets with a soccer ball and any given number of men. The details of the game are not definitely known but it seems to be a combination of soccer, football and lacrosse with just a dash of murder and related offenses of bodily harm thrown in. About five minutes of it is enough for normal men, but the troops play it for at least an hour at a time.



## Chesapeake Bay Sector

BRIGADIER GENERAL ROLLIN L. TILTON, *Commanding*  
By Lieutenant Alonza F. Colonna

Lieutenant General George Grunert, Commanding General of Eastern Defense Command and First Army, paid two visits to the Chesapeake Bay Sector during October to inspect installations in Brigadier General Rollin L. Tilton's command.

The general, in two visits of two days each, inspected at Fort Monroe facilities and went on to an inspection of Camp Pendleton, Fort Macon, Fort John Custis, Fort Story, Fisherman Island and the Little Creek Mine Base. At Camp Pendleton, where he watched a unit in the field, he expressed particular interest in the dual rôle of mobile units against targets on land and afloat, and rated "excellent" three of Brigadier General David P. Hardy's units which took part in a Case II target practice.

Early in September sector staff officers under General Tilton were redesignated with Colonel Francis L. Christian, former executive officer, assuming the duties of chief of staff and the remaining officers becoming members of the general staff corps.

The fall training program was launched with an unusual feature at Fort Monroe in the assignment of a light tank to Colonel Wilmer S. Phillips' command. The tanks are the first ever to be put in use at the post. Crews have completed a special course in their operation, and rapidly becoming proficient in their operation and maintenance. Another feature of the training program in Colonel Phillips' command has been the mine battery's special school for small boat crews, using the technique of the Engineer Amphibious Command and emphasizing safety at sea, inland rules of the road and other elementary navigational rules.

A battery at Fort Story, ordered with no advance warning to fire on a towed target, was given a non-routine test in which members of the various sections were subjected to smoke and gas attacks during the firing. In spite of the simulated battle conditions, the battery was described as accepting and responding to the situation admirably.

Two batteries at Fort John Custis were rated "excellent" during October, and the same organizations reported that 95 per cent of the personnel now have qualified as marks-

man or higher in rifle firing. During the same period, 1,000-inch ranges were set up on the surrounding islands to give the entire command an opportunity to practice rifle marksmanship.

A novel firing aid designed by Lieutenant Colonel Stephen Moravek was announced from Camp Pendleton where the colonel's adaptation of a mobile aiming rule has been put into use. The rule, incorporating a mirror for reflex sighting, is said to have all the advantages of an aiming point at infinity, and can be constructed easily by a battery mechanic.

The sector's recreational program during October was highlighted by tryouts at Fort Monroe for a Major Bowes radio program featuring the area which is to be staged in New York, November 11. More than sixty acts were brought to Fort Monroe from posts throughout the sector, appearing in two shows at the Y.M.C.A. and post theatre.

Another recreational feature was the formation of a Fort Monroe football team, which resulted in the appearance at the post of visiting teams boasting some of the nation's top gridiron stars. Also, in October, the recreation office announced formation of a basketball team which will play a schedule of 30 games in this area, and Sector Special Service Officer Captain Robert W. Bailey announced plans for a sector basketball league.

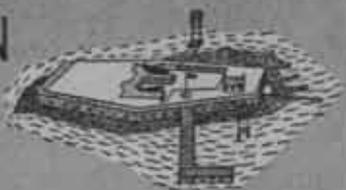
Heavyweight Champion Joe Louis' physical fitness tour brought him to the sector in August, drawing record crowds at Fort Monroe and other posts where he appeared.



One of the first tanks ever to be assigned to a Coast Artillery battery gets a tryout at Fort Monroe.



# SOUTHERN SECTOR



## Eastern Defense Command

BRIGADIER GENERAL E. A. EVANS, *Commanding*

*By Captain John Lindsay*

Brigadier General H. F. Loomis, who commanded Southern Sector from May, 1942, left Jacksonville in October.

Brigadier General E. A. Evans, who has been in command of the Florida Subsector, assumed command of Southern Sector.

A most interesting and intensive field maneuver was conducted by a Temporary Harbor Defense battery of the Florida Subsector. In addition to providing an opportunity for the battery to fire a special service practice as directed by TM No. 23, Headquarters Southern Sector, the maneuver provided a means to test the combat efficiency of the battalion, and its ability to operate as a Field Artillery unit.

At the beginning of the maneuver, the battery marched approximately sixty miles to take up a position in support of an infantry unit which was in contact with "hostile" airborne and amphibious troops. Along the route of march, road blocks had been constructed, to which were attached numerous booby traps filled with small charges of black powder. Each road block was covered by machine guns firing blank ammunition forcing the columns to deploy. The serals were further delayed by attacking aircraft dropping flour "bombs." Occupation of the first position was not completed until after dark. Fifth Columnists attempting to infiltrate the battery position to commit acts of sabotage, the coral rock terrain, heavy thunder storms, and "formations" of mosquitoes prevented the unit from resting during the night.

Throughout the next morning, numerous fire missions were requested by the supported infantry, and firing was simulated using dummy projectiles and a dispersion box. Around noon, "hostile" aircraft flour "bombed" the position to such an extent that the battalion commander issued orders to the battery to move to its alternate position some 1,000 yards away. During this movement, an infantry platoon accompanied by six light tanks struck the column on the flank and rear, while "enemy" aircraft strafed the unit on the road. Blank ammunition used by the combatants added considerable realism to this action.

Later in the afternoon, just as the battery completed occupation of its alternate position, orders were received in the midst of another thunder storm, directing a thirty

mile night withdrawal to a new position. During this movement, the gun column encountered a heavily protected road block which required approximately two hours to force. The battery completed occupation of its new position around 0400Q. The terrain in this area was likewise too rocky for the men to sleep on the ground, and those who slept, did so in their vehicles.

At dawn, another heavy flour "bombing" awakened the troops, and during the rest of the day, numerous fire missions kept the battalion alerted. Fifth Column activity continued, which, together with the proximity of hostile forces, necessitated a large internal and external guard. After nightfall, the battalion was informed of a possible enemy landing attack some sixty miles to the north, and at 0500Q was ordered to move to this area and occupy a position along the beach. Again heavy flour "bombing" attacks so delayed the battery that positions, from which this practice was fired, were occupied after dark. At dawn of the next day, the target was brought in over the horizon, and the battalion commander was informed that the pyramidal target represented an enemy destroyer. Explosives placed on the beach in front of the battery were exploded to represent fire from the hostile vessel. The battery was "bombed," gassed, and casualties were declared during the firing.

Two other important maneuvers took place in the sector. One was known as the "Joint Army-Navy-Amphibious Training Command Maneuvers," and the second as "Harbor Defenses of Key West Joint Army-Navy Maneuver."

The latter was on a large scale, starting with submarines surfacing and simulating firing on Key West to draw fire of the harbor defenses. Planes flew reconnaissance missions over the area and dropped pamphlets, while ships representing destroyers simulated firing on Key West. On the second day bombers dropped one-pound flour sacks on Army and Navy installations, ships continued maneuvering and firing, and small craft representing motor torpedo boats attacked shipping while a commando raid was carried out. On the final day an Infantry battalion Combat Team carried out a well planned attack.

The Joint Army-Navy Amphibious Training Command maneuver was also highly successful from the point of view of training. The joint operations headquarters of the Army and Navy was raided by a party which gained entrance. However a combat team platoon quickly captured the raiders and operations continued. Many other interesting incidents of a diversified nature took place, including defense against landing of scouts on the east coast of Florida, departure of such scouts from the beaches upon completion of their mission, and closed with defense against a full scale raid of the A.T.C.

Southern Sector aided the Fourth Service Command in the organization of committees of leading civilians for the Security of War Information in the larger centers. This campaign to control "Careless Talk" has been put across with a real punch in Jacksonville and vicinity as well as in other cities.







BRIGADIER GENERAL OLIVER L. SPILLER, Commanding

Brigadier General Oliver L. Spiller assumed command of the Gulf Sector, Southern Defense Command, on 21 July 1943. He succeeded Colonel L. B. Magruder, CAC, now retired. General Spiller has visited each installation in the sector and discussed problems with each commander concerned.

A program has been instituted to create realism, interest, and vigor for target practices through the use of many service conditions that parallel such action as is contemplated under battle conditions. The outstanding features of these conditions imposed are personnel casualties, matériel damage and failure (including fire control installations), interruption of normal communications, obscuration of the target by one or more base end stations, change of the field of fire from Case II to Case III method of pointing, change from normal method of fire control to an emergency auxiliary method, landing attacks simulated by troops not members of the firing batteries, gas attack (tear gas or phosgene), simulated impacts from enemy shells by improvised smoke puffs or high explosive charges.

At stated intervals a training inspection team, appointed by the Sector Staff, conducts training tests of a selected unit. The test involves a series of questions on basic subjects. These subjects are outlined on a card system which indicates what is wanted and how it should be tested. The officers selected by the unit commander and the enlisted men who go through the paces of the problem are judged on their demonstrated abilities by observation and additional questions. The inspection team rates the unit as a whole.

A critique is held after the test is completed and the deficiencies and outstanding features are discussed. The unit is then notified of its rating.

Once every quarter a test alert is conducted from Gulf Sector Headquarters. This alert is based on situations developed by a series of messages originating in Sector Headquarters and culminating in definite problems, the solution of which requires initiative and ingenuity by members of the lower echelons.

A series of field days have been quite successful among units of the Western Gulf Subsector. The events staged at these field days included, in addition to the athletic events, competition in tent pitching, platoon drill, obstacle course, grenade throwing, one mile squad hike with full field equipment, water demonstrations (use of barracks bags to sustain buoyancy if torpedoed or sunk while at sea). Each event has drawn large entries from all units competing.

The Special Service Officer of the Western Gulf Subsector recently introduced dramatics at Fort Crockett, Texas, and the first production, Claire Booth's *Margin for Error*, is now in rehearsal. This venture is meeting with much success and it is planned to put on a soldier musical as the next production. Many enlisted men have turned out for trials.

The training program instituted in the Eastern Gulf Subsector at present emphasizes problems in minor tactics dealing with the defense of a gun position by a group and with an attack by a small raiding force. These are made as realistic as possible, utilizing blank ammunition, smoke pots, and various chemicals. Likewise, obstacle courses are run at various intervals as part of the hardening program. A combination combat infiltration course is being constructed at Fort Pickens for further training of troops for combat. A fixed AA gun battery has been used in firing at a water-borne target. A 3" rapid-fire gun battery is being used to train junior officers in proper command procedure and fire adjustment methods. Actual firing is conducted bi-weekly as officers are rotated in the positions of battery commanders and range officers, with the other officers acting as officials. These firings are also utilized to good advantage by training spotters from the units within the Subsector.

Fort Barrancas topped all defense plants and other Army Camps in that territory when it was reported that Fort Barrancas had over-subscribed in the Cigarette Drive. The quota was set at 500,000 cigarettes. The result was 555,800 cigarettes.

Large percentages have been attained by the units of this command under the Class B Allotment Plan for purchasing War Bonds. It is hoped that each unit will attain the 100% goal.



# Southern California Sector

BRIGADIER GENERAL FORREST E. WILLIFORD,  
*Commanding*

Miss Margaret C. Macnair, who was cataloger at the famous Huntington library at San Marino, Calif., and at the University of California library at Berkeley before she donned the chic blue uniform of an Army librarian, has made her department function beyond the strict call of duty.

Say that an officer is preparing a thesis in which he wants to show the use various armies have made of public relations. The name, "public relations," is new. Little of value to him is found in references under that subject.

He knows, though, that Napoleon was the first great general to understand the value of public relations. So he takes his problem to Miss Macnair. She selects biographies of the little Corsican, with passages noted which show that Napoleon's methods of appeal to the public made possible the world's great nationalist armies. That is all the officer needs for a start.

Or, suppose a man is working on an orientation lecture. He wants to know the name of the present governor of Baja California (Mexico), and his correct title. Miss Macnair puts in a phone call to the San Diego Public library, and in five minutes has the information.

Many soldiers use the post library for rest or recreation. It is not unusual to find one or two of them sound asleep in the comfortable overstuffed chairs. Around the walls are colorful war posters of Greece, France, Luxembourg, Belgium, Czechoslovakia, England, Canada, New Zealand, and the Philippines.

Application forms for enrollment in the Armed Forces Institute are available there, as well as information on courses offered by that organization. Another function not usually found in libraries is a typewriting facility. Typewriters are available each evening in the main library, as well as books of instruction. Men studying to be Army clerks, or wishing to become adept at typing, make frequent use of this service.

Not that the paying (they don't really pay) customers don't fill the gallery at the post's fight programs, but just to give them a little something extra for their money the Special Service office has sponsored bike races.

Before the fight card starts, the boys, wearing GI brogans and mounted on GI two-wheelers, pedal 'round the parade ground. Battery K, which has been winning most of the activities hereabouts lately, also ran off with top honors in these events. Though no mechanical change is permitted in the steeds, riders are permitted to choose their own fuel. Battery K's mess sergeant has kept his recipe a secret.

Juke boxes in Ft. Rosecrans' post exchanges are the only ones known in this locality that offer a complete selection of all recordings. The boxes themselves, of course, can be loaded with only the normal supply of sound discs. But all a soldier need do if he doesn't find his favorite on the menu is to request it, and the PX will get it for him. Or the soldier may choose his own favorite in town, buy it there, and the Exchange will buy it from him.

Each outfit has its specialty in extra-curricular affairs,

and Battery D's is ball—either base or soft. More players for the post baseball team have been developed in Battery D than in any other outfit. So it was natural that D should cop the "Little World Series," which, in local language means the post softball series.

"Greetings!" said the notice.

Keith Boatright squinted at it.

"If you fail to report," the notice implied, "there's n telling what might happen to you."

"Now," said Keith Boatright, with a self-assured glint in his eyes, "here's one guy who's going to defy his draft board. Why, if I did what they want me to, I'd be AWOL from the U. S. Army." Keith Boatright received his first "Greetings!" in 1941. That time he did just what his draft board asked him to do. But when this second notice came Keith Boatright was a corporal in Battery A.

The boys of Battery K gave a shindig in one of the service clubs on a recent Sunday, and their guests were a Waves. The soldiers chipped in for refreshments. One of the cooks, just to be sure he wouldn't miss anything volunteered to stand at the refreshment table all afternoon and serve. Reports from both camps indicated a bright time.

Several outfits on the post have been evidencing mild jealousy over Battery K's winning just about everything it tackles. A dispute arose between battery reporter in the weekly newspaper, *The Cannon Report*, as to which battery had the best mess.

The official records had the last word. For the month of August, Battery K's mess was credited with 1,616 points. Battery D was its closest competitor, with 1,606 points, and Battery H third, with 1,603 points.

When final returns came in on results of the Third War Loan drive, the Post finance office announced that Fort Rosecrans' original goal had been more than tripled.

Estimates were made at the beginning of the drive, on the basis of payroll, which led to the belief that \$10,000 (maturity value) worth of Bonds might be purchased.

That figure, according to Post War Bond officer Captain Manning Fendrich, apparently did not take into consideration the enthusiasm that would emanate from the part taken by Colonel Peter H. Ottosen, Commanding Officer of Fort Rosecrans.

Colonel Ottosen called a meeting of his officers, explained to them the necessity for the drive, and imbued in them a spirit that carried over into every department under his command.

As the figures were totaled, it was discovered that cash purchases by all personnel—civilian and military—amounted to \$30,650. That includes only the Bonds delivered over the counter at the Post Finance Office, and does not count those purchased at the Fort Rosecrans post office or of the station.

That War Bond purchases here are by no means limited to the concentrated drives is evidenced by the Treasury Department's Minute Man flag, which flies daily beneath the National Colors on the post. The flag was presented to civilian employees at a recent retreat parade, in recognition of their consistency in making payroll allotments of over 10 per cent for War Bond purchases. The record for such allotments at Fort Rosecrans is 95 per cent of civilian employees, averaging about 12 per cent of their pay in allotments.



## Northern California Sector

BRIGADIER GENERAL RALPH E. HAINES, *Assistant Sector Commander for Harbor Defense Troops.*

Pan-American solidarity was demonstrated here in September when Major General Eurico Gaspar Dutra, Minister of War of Brazil, toured these defenses with members of staff and ranking officers of the U. S. Army in the Bay area.

The party visited Forts Funston, Miley, Barry and Ankhite and reviewed the Harbor Defense installations. Members of the party were joined by other high U. S. Army officers at a luncheon given by General Haines at the Harbor Defense Officers' Club.

Prominent Brazilian guests included Major General Paulo de Carvalho, member of the joint U. S.-Brazil Defense Commission; Colonel Jose Bina Machado, General Dutra's Chief of Cabinet, and Annibal de Saboia Lima, Brazilian consul to San Francisco.

Infiltration course training was established in September. Selected groups stationed in the Harbor Defenses of San Francisco and scores of men went crawling beneath a canopy of tracers while carefully controlled dynamite simulated shell fire near them. In addition to moving under fire, the men inched through barbed wire entanglements strung in mid-field.

New head nurse at the Fort Baker Hospital is 1st Lieutenant Beth A. Veley, a veteran of the Bataan and Corregidor campaigns, who escaped from the Philippines two years before Corregidor fell.

Fort Baker nurses have been drilling as part of their training program and have won the commendation of their superiors for their precision. Plans call for them to tackle a commando course at Fort Winfield Scott as part of their advanced training.

The American Red Cross recently awarded a certificate of appreciation to the Harbor Defenses of San Francisco for

"outstanding cooperation" with the local blood donor service. The certificate was presented to General Haines in an abbreviated ceremony at the San Francisco Blood Bank. General Haines made a brief radio talk after the presentation.

Construction of a guest house has been completed at Fort Miley for the convenience of relatives and friends visiting personnel there. The Mendell area at Fort Barry is now graced with a new service club. The club, constructed entirely of salvage materials, was built by the men stationed at Fort Barry.

Movie names headlined camp shows visiting these defenses, with Pat O'Brien presenting shows at Forts Baker, Barry and Winfield Scott early in October. In addition to playing four performances, O'Brien was entertained at the Fort Scott Officers' Club and ate at one of the batteries.

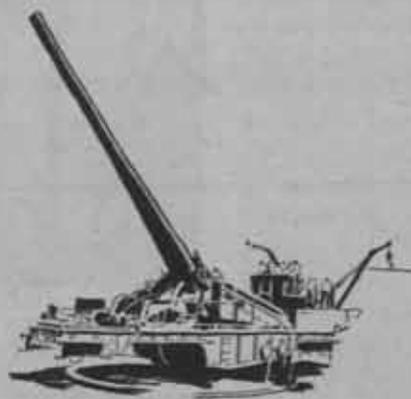
Other name entertainers to appear here were Allen Jenkins, who played Fort Scott, and Jane Withers, a Fort Funston visitor.

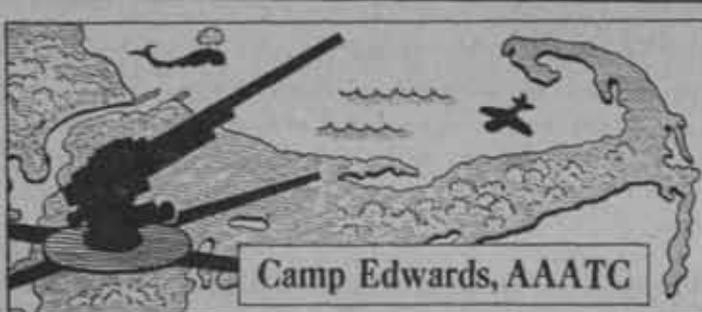
The Fort Winfield Scott library, closed for a time, has been reopened in new quarters near Post Headquarters. The book list has been completely revised by a staff of three librarians.

Birthday greetings were conveyed to Major General Walter K. Wilson, Commanding General, Northern California Sector, Western Defense Command, on the morning of October 7 when the HDSF Band serenaded him from the lawn of his Fort Winfield Scott home.



Infiltration course at HDSF. Signal Corps Photo.





## Camp Edwards, AAATC

BRIGADIER GENERAL JOSEPH E. HARRIMAN, *Commanding*  
By Captain Richard J. Kane

The outstanding event since the last News Letter was the change of commanding generals whereby Brigadier General Joseph E. Harriman succeeded Brigadier General Morris C. Handwerk, who assumed command of the AAATC, Camp Haan, California.

The Training Center was brought into the spotlight of national prominence when Secretary of War Henry L. Stimson, Lieutenant General Lesley J. McNair, commanding general of the Army Ground Forces, and Major General Joseph A. Green, commanding general, Antiaircraft Command, and their respective staffs paid a visit to Cape Cod to view the firing of the First Composite British Antiaircraft Demonstration Battery who are visiting the United States at the expressed invitation of Secretary Stimson.

To say that their visit was interesting and informative is putting it mildly. The visiting British unit went all-out in putting on a firing demonstration with their 3.7 AA guns and their 40mm weapons that brought expressions of admiration from their American comrades-in-arms as they blasted away at tow targets flown from altitudes of 5,000 to 15,000 feet.

But the genuine thrill of the day was provided by Camp Edwards-trained 90mm batteries who participated in the demonstration. In two out of three target runs they blasted sleeves loose from their accompanying plane, bringing them fluttering earthward to applause and cheers.

In a statement made to the press Secretary Stimson stated in part, "I have been taking a very special interest in the work of the antiaircraft forces of our army for a very considerable time because it has been a very difficult problem.

Antiaircraft in this country and the weapons and techniques are practically all new. . . . Our forces in America labor under special difficulties as they are so remote from invading planes that their practice has not been on enemy targets, but on targets that try to simulate them.

This British team was invited to the United States to help promote that spirit of comradeship and friendly rivalry that makes for quick education and training. . . . I myself see since the last visit I made to our armed forces a great improvement in technique and smartness and this is attributable to their good training and fine spirit."

Recreationally the British Battery enjoyed the famed hospitality of the Cape. Foremost was a stage presentation presided over by the lovely and gracious Gertrude Lawrence who acted as mistress-of-ceremonies in a two-hour show that featured AAATC talent that has appeared professionally in civilian life from Maine to California. The nationwide radio feature *Vox Pop* paid their respects to the visitors by originating that famed program from Camp Edwards,

featuring several British ack-ack men on the Columbia network airwaves.

Educational features were also included with visits to several armament factories a highlight.

In line with the announced AGF policy of incorporating into the training curricula both protective and defensive types of warfare the Tactics Department of the Training Center is now in the throes of teaching officer and enlisted personnel how best to deal with booby-traps and land mines.

Daily, picked groups of officers and men wend their way to converted firing ranges and go through the arduous job of locating cleverly concealed traps and mines that have been strewn over acres of sandy wooded terrain. To vary the training menu personnel is also taught the complicated processes of installing and detonating mines and traps of their own devising, thus providing an all-around knowledge of combatting what has become known as the outstanding "secret" weapon of this war.

Another operation that has reached a high point of perfection is the Centralized Officers Schools that made their debut on the Camp Edwards scene several months ago. As operated at this Training Center the Centralized Schools train officer-instructors in specialized AA subjects who in turn make this knowledge available to officers and non-commissioned personnel in the AAATC units.

When an instructor is ready to impart knowledge on his subject to a unit he is prepared to move in lock, stock and barrel with every instruction need that ingenuity and careful planning can provide. His instruction kit includes diagrams of every variety, charts that carry a dramatic or humorous punch, or actual AA equipment used in combat.



Signal Corps Photo  
One obstacle on the new Camp Edwards AAATC course. To take this one, the trainee climbs a tree, crosses hand-over-hand on the cable to a tree fifty feet away, and then descends by rope.

# Fort Eustis



BRIGADIER GENERAL JOHN B. MAYNARD, *Commanding*  
By Lieutenant Samuel D. Swann, Jr.

Through ceaseless and painstaking inspections, Brigadier General John B. Maynard, in keeping with the increased tempo of the war effort, has stepped up the already fast tempo of the training program of the Antiaircraft Replacement Training Center at Fort Eustis, Virginia. Any day or night, in all sorts of weather, any officer or enlisted man may expect to find General Maynard at his elbow with a probing question designed to check the soldier's knowledge of his work.

As the hours of daylight become shorter, the importance of night training is being stressed. Orders have been given for eight hours of night training a week. In this time the soldiers are given a chance to become adept at meeting the conditions in the dark.

A two week period of small unit training has been added to the training program. During this time, in the latter stages of training, organizations move out of their barracks. After a long convoy movement, they set up in the field for a period of two weeks. In addition to field fortifications, proper tactical disposition and camouflage discipline, great emphasis is placed on proper living and sanitation under all conditions. Here there are no mattresses, springs, beds, pillows and heated barracks with nearby mess halls. In their place is a pup tent, slit trenches and fox holes, outdoor plumbing, field range cooking and outdoor eating. Every man must put into actual practice, under combat conditions, all the things he has been taught in the previous weeks of training while in camp. This two weeks in the field has proven to be valuable training and the men all look forward to this phase of the training. Even though the bad weather and rain have started, the men take it in stride and chalk it up to good experience for the days of actual combat ahead.

Lieutenant General Lesley J. McNair, Chief of the Army Ground Forces, accompanied by a party of fourteen other high ranking officers, made a three hour field inspection on October 16.

In a three-hour morning inspection the party viewed, inspected and examined activities representative of the training program here as the six car convoy covered a circuitous twenty mile route that touched several battalions, the inspection course, the firing range, a number of specialist schools and the half-track maneuver area.

The 5th Battalion, AARTC, was also in the area and had camouflaged their half-tracks so that many were passed before it was realized that a vehicle was in the neighborhood.

After the inspection tour was over, General McNair and his party repaired to the Officers Club for luncheon and a general discussion of the inspection.

During the past two months there has been a progressive program of beautifying the post. The parade ground, from which the grass had been worn by drilling troops, has been seeded and should be a carpet of green as soon as the grass grows. The primary reason for such a step was to keep down the dust which swept into the nearby hospital buildings.

The Post Exchange Officer has inaugurated an Efficiency Contest to better the standards of service in these installations. According to observers, this has resulted in keen competition and has raised the calibre of service to all personnel purchasing material in these installations. The six points on which the contest was based were: accountability, stock keeping, personal appearance, courtesy, store cleanliness, and cash register accuracy.

The Third War Loan Drive revealed that military and civilian personnel of Fort Eustis had purchased \$144,364.20 worth of Bonds over and above the payroll reservations and allotments held by local personnel.

The weekly radio program *It's Open House at Fort Eustis* started its second year on the air with its half hour of music and fun. Every Wednesday, starting October 14, 1942, from 10:30 to 11:00 P.M., an invitation has gone out from radio station WRVA in Richmond, Virginia, to radio listeners throughout the eastern half of the nation.

The 10th Battalion, AARTC, softball team was crowned champion of Fort Eustis by defeating Headquarters Battery, AARTC, by a score of 8-2, Wednesday, October 6, 1943.

In the interest of national defense the AARTC here cooperated with the Camp Peary authorities and gave a course of instruction on the 40mm gun, during the week of September 30, 1943, to a group of seven Camp Peary Naval Construction Training Center personnel. The group, ordnance men, were trained so that they could transmit their knowledge to other Seabees taking "boot" training at Camp Peary.

In a recent "County Fair" shown to new arrivals a picked gun crew from C-12 gave a demonstration of unwrapping a 90mm antiaircraft gun from march order to the position of emplacement in two minutes and three seconds. This was claimed as a record as was the two minutes and seven seconds required to fold the gun back to march order. Both records were made without the use of the prime mover.



Half-tracks cross the parade ground four abreast.



# Camp Stewart

BRIGADIER GENERAL E. A. STOCKTON, JR., *Commanding*  
By Captain Walter H. Dustmann, Jr.

Camp Stewart's Liberty Field, which tows targets for the Stewart antiaircraft soldiers to shoot at, took the post limelight during the past two months when it was presented the Kepner Trophy for its over-all efficiency for a two months period.

The Trophy, named for Major General William Kepner, first commanding general of the First Division, was for all-around superiority that included flying time, maintenance, accidents and operational accomplishments.

The Field, too, was a standout in another respect. It received fifteen girl pilots for training. They are civil service employees under the Air Transport Command and have already completed refresher flying courses at Sweetwater, Texas.

The Hon. Malcolm S. Henderson, British consul at Atlanta, Ga., was a Stewart visitor, conferring with the Commanding General and the Post Commander on the scheduled arrival here on November 1 of the British Composite Antiaircraft Battery which is now touring the nation.

Transition Ranges for training of antiaircraft troops were fully activated early in September and all troops began receiving this realistic firing practice. These ranges, side by side, one for rifle and one for carbine, are scientifically designed to give each soldier a maximum of training simulating combat firing conditions. AAATC officers described them as a transition from small-arms firing to combat firing.

Toughness and practicality of the course is shown by the fact that a score of eight out of twenty-five qualifies a soldier.

The AAATC in September began placing greater emphasis on judo and bayonet, with Lieutenant Robert L. Williams detailed as a full-time judo and bayonet instructor. He now spends the mornings with units, supervising unit training and giving demonstrations. In the afternoon, he conducts regular judo and bayonet courses for picked officers and enlisted men. Lieutenant Williams is a recent graduate of the latest in judo-bayonet training at the Marine base, New River, N. C.

The 563rd Antiaircraft Battalion early in October won the camp's third "X for the Axis" motor vehicle maintenance contest. This battalion, under Lieutenant Colonel George H. Collins, also won the second contest and placed third in the first contest. The 563rd, in the third contest, lost an average of 2.84 points per vehicle to lead all battalions for the six-weeks scoring period. An expert spot-check maintenance team, under auspices of the S-4 Auto-

motive Section, ranged the camp, stopping all vehicles anywhere, anytime, and for every discrepancy noted giving them the stigma of an X, pointing out that it was an "X for the Axis."

A complete recreation center serving as social and athletic headquarters for eight Stewart units was opened early in September at W. 10th Street and Strong Ave.

Other highlights of the past two months at Stewart:

Major General Joseph A. Green, commanding the Anti-aircraft Command, came down for a routine inspection trip the latter part of October. . . . It was announced that the 14th and 15th Airborne Antiaircraft Battalions are in training at Stewart. . . . the 563rd Battalion won the second round in a War Bond contest by subscribing every man and received a handsome silver plaque. . . . The *Shoot 'Em Down* expanded from a four-page bi-weekly to a sixteen-page tabloid weekly, with added features, cartoons, training aids and other additions. . . . Army Service Forces troops at Stewart began an intensive military refresher course designed to increase their efficiency both as soldiers and as office workers. . . . The Exchange opened a large open-air PX Garden at the Main West Wing Exchange, complete with a juke-box. . . . Off-duty education classes for the Armed Forces Institute received a tremendous impetus in October with the arrival of Captain George Howard, Education Officer of the Fourth Service Command, Atlanta, Ga. . . . The AAATC conducted a food conservation program via the camp paper, with local conservation cartoons and editorials featured. . . . Stewart was tops in the Fourth Service Command, largest in the nation, in GI Insurance, having subscribed 99 per cent of troops on the post, with each soldier averaging \$9,191.36 in insurance. . . . Stewart's leather slingers lost a close match to the Charleston, S. C., Coast Guard, the score being four bouts to three.



Mess Sergeant Frederick D. Stevens' Jap Trap—a potent reminder that wasting food aids our enemies.

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BRIGADIER GENERAL MORRIS C. HANDWERK, *Commanding AAATC*

*By Captain Donald A. Carlson*

Out at Camp Haan, in the shadow of mountainous terrain, and at Camp Irwin, the AA firing range in the heart of the Mojave, the most significant note in the change of seasons has been a change of command. Brigadier General Morris C. Handwerk has come from Camp Edwards, Massachusetts, to take command of one of AAA's largest training centers and instill his personality into a training program already considered near the peak of proficiency. General Handwerk succeeds Major General Homer R. Oldfield, famous for his achievements with antiaircraft development in the Canal Zone. General Oldfield now is special assistant to General Arnold of the Air Corps.

The training of enlisted specialists, long a primary function of our training, has been accelerated further and centralized by General Handwerk, with highly-professional instruction in fifty-four types of schools. Thus, for example, men who once baked bread may now turn radio dials with the knowing confidence of skilled technicians.

On the lighter side you'll find newly-inaugurated bus service each week-end from Camp Irwin to Riverside, San Bernardino and the enchantment of Hollywood. Sixteen sports fields have been opened at Camp Haan.

A new small arms range made its bow at nearby Lakeside, offering fifty targets and three firing lines. Soon a skeet range will sharpen the eyes of our gunners and give them experience in leads.

The *Camp Haan Tracer*, official newspaper, selected private David Frank Scott, of Buckhannon, W. Va., as the special rookie to follow pictorially through his AA training. Scott, a forlorn inductee, was discovered on an incoming transport train—truly a lonesome guy—and every other week the *Tracer* has recorded his progress in the Army. And with the expected results—he likes the Army, his outfit and is learning to be an automotive specialist. A typical trainee.

The British Composite Battery were interesting and welcome guests here and at our desert firing range. Los Angeles newspapermen chronicled in detail their firing

demonstrations, AA men at Haan profited by many of their battle-tryed suggestions and the British themselves had a field day, particularly in Hollywood, where they were feted royally by motion picture stars of the British colony and civic authorities.

Participation in the Third War Loan Drive saw many of our AW, gun and half-track units parading and demonstrating to an appreciative public in Los Angeles, Riverside and San Bernardino.

Friday night boxing shows for the men are one of our most popular features. The sluggers get the glory, the medals and the men give the cheers.

The Long Beach Assistance League furnished nearly a score of fine day rooms for AA men in training at Camp Irwin. Functional swimming, under the direction of the Red Cross, engrossed many in the Officers' Club and Camp Haan pools and in nearby Lake Elsinore where the burning oil tests were made.

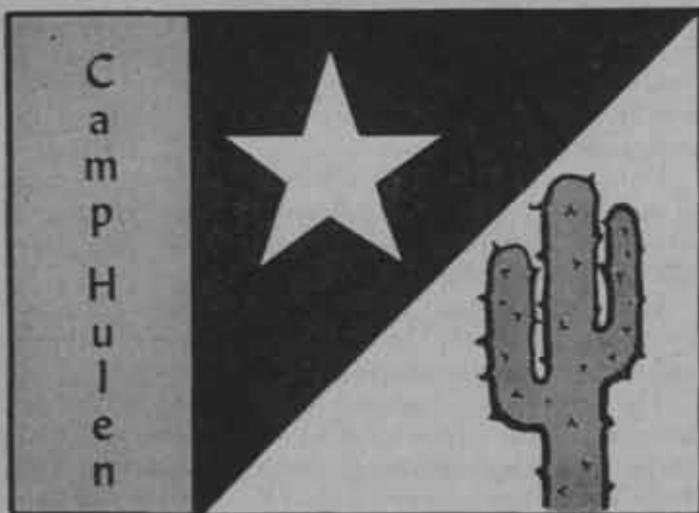
A long-awaited manual on judo-bayonet instruction, hand-to-hand combat and knife fighting was submitted to the War Department for approval having had the enthusiastic approval of Major General Joseph A. Green, Lieutenant General Ben Lear and a host of prominent officers of the AA Command who have witnessed the deadly effect of its teachings. Robert Seeger, civilian instructor, Captain L. F. Lawrence and Lieutenant Dennis Cavanaugh have developed a "fool proof" method of hand-to-hand combat that has been widely copied by other commands.

Chapel services, plain and impressive, are taking place on the far reaches of the firing ranges at Camp Irwin and are receiving the whole-hearted cooperation of the men of our command.

And if that were not enough variety in one of Uncle Sam's "new cities," the WACS from March Field, just across the road, joined our 568th Battalion in presenting a formal retreat parade. Martial music, crisp marching and an exchange of courtesies preceded what has become a popular pastime at this "bachelor" post—the WACS were entertained at dinner, dancing and an amateur show.



Red Cross instructors teach functional swimming at Camp Haan.



BRIGADIER GENERAL H. C. ALLEN, *Commanding*  
By Major Prime F. Osborn

Completely recovered from the hurricane alert which had all units in a state of siege for several days, this Training Center has settled down to routine training and conditioning again. Fall and winter months provide varied weather for the troops and give a real taste of the vagaries to be expected in the field.

Camp Hulen has received two valuable additions to its list of training aids in the form of two light tanks. In keeping with indications from the active theaters and current directives, the tanks are kept in constant use to show Hulen gunners just what form their acquaintance with the armored giants may take. Classes in field fortifications lay mine fields and build barricades to test the defenses of gun positions against mechanized onslaughts. The tanks are also used in their normal employment on tactical exercises giving them the mission of simulating roving enemy units attacking gun positions, command posts, and the like. The units learn at first hand how a tank appears at a distance, its avenues of approach, its strength and weaknesses. Valuable tracking practice is provided for gunners as the tanks lunge and dip across country. Further battle indoctrination, under supervision, is now given personnel by having them dig slit trenches in a practice area provided within the camp's limits. The men then occupy the trenches they have dug and the tank is run across each trench to demonstrate the security afforded by the emplacement.

The availability of the 40mm gun emplacements for the use of half-tracks is effectively shown in the photograph. The emplacements were constructed at the Well Point firing range for the 40mm guns and directors and according to exact specifications for those weapons and equipment. Inasmuch as the range is also used by half-tracks, it was important that the emplacements be able to accommodate those vehicles. Knowledge of this may be of considerable assistance in the field when one type unit is relieved of its

mission and the other type is assigned into the same area. The unoccupied emplacement in the foreground shows the fastidious care with which the emplacement has been sandbagged, sloped, and revetted. Training with perfect emplacements teaches men to demand them when left to their own designs in the field.

It is believed that one of the most effective posters to have appeared in aid of conscientious training and instruction is the one showing a casualty and stating, "Let's all be damn sure that no soldier's ghost will say . . . 'you neglected my training.'" This placard has been conspicuously placed at firing points, rifle ranges, drill areas, and other spots where it is a constant reminder to pupil and teacher, enlisted man and officer, that theirs is a mutual obligation to teach and be taught, to profit and to pay dividends in effective action and lives saved.

To facilitate the teaching of map reading, several training aids are issued to each battalion. One of these is a set of fifty maps, about one foot square, for use by students, and an enlarged map, about six feet square, for use by the instructor. This permits the class to see the various objects under discussion, both on the large map being used by the instructor and also on the hand maps which they have. One complete set is given to each battery. The large map can be made in a reproduction unit by cutting the original map into small parts and having each section blown up. Or, the map can be made by using a balopticon and tracing the projection.

In the garrison one conspicuous change has taken place. An addition has been built on to Training Center Headquarters to permit the more advantageous arrangement of the Commanding General's staff. Heretofore, all staff members have not been housed in the same building with consequent inconvenience and loss of training time. The addition, measuring 21 feet by 45 feet, will allow the Commanding General to have all his staff under one roof.



40mm emplacements accommodate half-tracks also.



# Fort Bliss



BRIGADIER GENERAL DALE D. HINMAN  
*Commanding AAATC*

*By Major E. F. Schermacher*

"Now men, the next and one of the most important preventive maintenance procedures which the driver performs on his vehicle is the weekly inspection and servicing the oil bath air cleaner. With the assistance of the instructors and mechanics we will proceed with this operation which is so vital to the continued and prolonged operation of your engine, especially in this training center where our truck is continually subjected to severe desert operations."

This is the type of instruction you will hear should you be within range of the public address system located at the Antiaircraft Artillery Training Center drill field at Fort Bliss, Texas.

Upon inspection you will find from seventy-five to one hundred fifty military vehicles of all types representing

every organization in the training center lined up on the four sides of the reviewing stand where the public address system is located. These men are collectively conducting a weekly preventive maintenance schedule No. 6 as outlined in TM 21-300, *Driver Selection and Training*.

Normally, all units are directed to have five vehicles with drivers and instructors and each group and brigade to have one vehicle with necessary personnel attend these preventive maintenance checks on Tuesday and Thursday of each week. Operations begin at 0800 and continue to 1630. This step by step execution of preventive maintenance was instituted primarily to teach both driver and mechanic how to service properly the many important units located on every part of his vehicle, and the direct bearing which every step and detail has upon the continued mechanical efficiency of each unit.

Information recently released from the Normoyle Motor Base where higher echelons of maintenance are conducted revealed that "the necessity for ninety per cent of all major engine and unit assemblies which enter this shop can be directly traced to the failure of the driver to perform first echelon maintenance." Fortified with this information, the program of weekly collective preventive maintenance was instituted to show the drivers and mechanics not only how to perform maintenance operations but how failure on their part to practice preventive maintenance could actually end in disaster and loss of life.

This training program has proved highly successful for in addition to training the drivers and motor personnel it was received so enthusiastically by the unit commanders that special classes were conducted for all officers. These officers actually performed the various operations themselves, being assisted by the instructors only to the extent of locating the unit to be serviced.



# Camp Wallace

BRIGADIER GENERAL HAROLD R. JACKSON,  
*Commanding AARTC*

*By Lieutenant Colonel E. R. Block*

With the Band rendering the prescribed honors for a General Officer, and with a battery of trainees proudly standing at *Present Arms*, Brigadier General H. R. Jackson received his first Guard of Honor after donning the insignia of his new rank. The General's wife and daughter were present to witness the impressive ceremony after they personally removed the insignia of a Colonel and substituted the stars of a General Officer. During the cere-

mony, a plane from the 18th Tow Target Squadron flew overhead, dipping its wings in a salute to the new General. This was the manner in which Camp Wallace AARTC greeted its new Commanding General on 8 October when the promotion was officially announced.

The Camp has been very much interested in getting its first glimpse of a real German soldier since the arrival of prisoners of war a few days ago.

The Replacement Training Center is very proud of its new 35,000 acre maneuver area located near Corrigan, Texas, about one hundred thirty miles to the north of the Camp. The area, more than seven miles wide and ten miles long, provides wonderful possibilities for extensive field exercises because of the varied terrain of the countryside. Diversified training in convoy driving and discipline is offered on the long drive to the concentration area as the route not only is over the road in the open country but it also passes through the streets of the city of Houston. Close column driving is required over part of the distance while the open column convoy is required over the remainder. The latter part of the route is under intermittent strafing of enemy planes, represented by our own 18th Tow Target Squadron, as well as flights of planes from nearby Ellington Field. Supplies of all description are shipped to a railhead at Corrigan from where distribution is made to units in the field in the same manner as would be done in the combat zone.



The JOURNAL can supply any book in print, at the usual Association discount.

## Background Material

### Brain Trust

**MAKERS OF MODERN STRATEGY.** Edited by Edward Meade Earle. Princeton: Princeton University Press, 1943. 516 Pages; Bibliographical Notes; Index; \$3.75.

The worth of this survey of military thought from Machiavelli to Hitler is such that it will rise above its misleading title. One of the outgrowths of a seminar held at Princeton, it is a series of introductions to the thoughts and careers of the important military thinkers from the sixteenth century to the present. Military thought, of course, embraces more than military strategy and tactics. Economics and politics, as Americans have learned in the past two years, are as important in contests between nations as are gunpowder and wheels. In keeping with this thought, Jomini and Clausewitz find themselves between the same covers as Karl Marx and Churchill.

The book is primarily a work of reference; military students, and especially officers, are more than likely to find here the names of thinkers that are entirely unfamiliar. Some of the ideas of these unknowns have percolated down to us, even though the names of their authors have become lost to all but researchers. Few of us have heard of Delbrück or Bugeaud, but their contributions to military thought were important. Most serious military students will want a copy of this book for their personal libraries.

### Classic Revised

**DECISIVE BATTLES OF THE WORLD.** By Sir Edward S. Creasy and Robert Hammond Murray. Harrisburg: The Military Service Publishing Company, 1943. 611 Pages; Index; \$3.00.

Mr. Murray has edited Creasy's famous *Fifteen Decisive Battles of the World* so thoroughly that his efforts are really a new work, and then added nine new battles. The new material alone comprises nearly 50,000 words. Creasy's numerous footnotes, and wordy passages that added little for the modern reader, have been deleted. Without treating Creasy's original work disrespectfully, Murray has managed to put it into modern pace and style.

Creasy's original battles were Marathon, Syracuse, Arbela, Metaurus, Arminius, Chalons, Tours, Hastings, Orleans, Spanish Armada, Blenheim, Pultowa, Saratoga, Valmy, and

Waterloo. Murray has added Tenochtitlan, Quebec, Ayacucho, Gettysburg, Vicksburg, Sadowa, Gravelotte, Sedan, and Mukden. The choice of what constitutes a "decisive" battle, of course, is always open to argument. Using the yardstick of "those few battles of which a contrary event would have essentially varied the drama of the world in all its subsequent scenes," Murray's choice of Tenochtitlan seems a trifle far-fetched, and even his justification at the head of the chapter does not explain the choice.

The military student who reads the military classics will want this new book.

### The Old Master

**NAPOLEON AND MODERN WAR.** Harrisburg: Military Service Publishing Company, 1943. 154 Pages; \$1.00.

One hundred and fifteen of Napoleon's maxims have been annotated by Colonel Conrad H. Lanza in the light of events since Napoleon's day, including the present war. Much of Colonel Lanza's comment is rather obvious to professionally qualified officers, and much of it might run counter to the ideas of those same officers. On the whole, however, the annotation is well thought out, and conscientiously executed.

### Without Eton

**THE DUKE.** By Richard Aldington. New York: Viking Press, 1943. 369 Pages; Appendix; Index; Illustrated; \$3.75.

During the eighty-three years of the Duke of Wellington's life, Britain saw some rough and exciting times, and the fact that she came through the period as well as she did was in large measure due to the efforts of the man who was her foremost soldier and an effective politician and statesman. As a soldier, Sir Arthur Wellesley left little to be desired. He won battles and wars in spite of incompetence above and below; he had the devotion of his troops; and his duty to his King transcended all other considerations.

As a politician, he was useful to Britain, but the very characteristics that made him the soldier undid him as an officeholder. He neither knew nor sympathized with the common people. As a general, he had a poor opinion of the common soldier as a man, but great regard for him as a fighting machine.

the common people and the private soldier, of course, were the same class. Added to this lack of touch with the masses is a staunch military honesty and straightforwardness that is always welcome in politics.

Biography, of course, is history. Mr. Aldington's temperate, hero-worshipping, life of Wellington is really the life of England. The causes and effects of Britain's policies, internal and external, are reflected in the Duke's long and full life. Mr. Aldington has done well.

### Old "Gid"

**GIDEON WELLES: LINCOLN'S NAVY DEPARTMENT.** By Richard S. West, Jr. New York: Bobbs-Merrill Company, 1943. 340 Pages; Notes; Index; Illustrated; \$3.50.

In his hard-headed honesty, his willingness to "stick his neck out" when he felt the situation demanded it, and his knowledge of practical politics, Gideon Welles, Lincoln's Secretary of the Navy, was in many ways a counterpart of one of our present Cabinet. The Navy's part in winning the Civil War is usually touched very lightly by most historians, but our sister service's work in blockading the Confederate States had much to do with the final victory. The Mississippi campaigns and the spectacular fight at Mobile Bay took the headlines, but the drudgery of the blockade paid off in the end.

In resisting encroachment on the Navy's functions by the Secretaries of War and of State, Welles found his most difficult task. The sniping by political enemies and by opposition newspapers, while occasionally embarrassing, did not deter Welles from his appointed task of modernizing and building the new navy. It is worth a note in passing that for the latter part of the war, the Army drafted sailors under the same terms as it drafted civilians for duty as soldiers.

Welles, who was considered "not quite bright" as a young man, finished his days as a respected and revered American. In an age of political corruption and ineptitude, he served his country honorably and efficiently.

### Bang! Another Redskin

**THE SHARPS RIFLE: ITS HISTORY, DEVELOPMENT AND OPERATION.** By Winston O. Smith. New York: William Morrow and Company, 1943. 106 Pages; Appendices; Index; Illustrated; \$3.00.

As far as is known, this is the first complete work on the Sharps rifle, the weapon that was used to a large extent on both sides in the Civil War, and in the winning of the West after the war. Mr. Smith has performed a painstaking job, and has filled a gap in the knowledge of our early arms. Most gun cranks, whether or not they have a Sharps rifle in their collection, will want a copy of this book both to round out their knowledge of American weapons, and for reference. They are lucky enough to acquire one of these early breech-loading rifles.

### Capsule History

**BRIEF HISTORY OF THE CHINESE PEOPLE.** By Carrington Goodrich. New York: Harper and Brothers, 1943. 232 Pages; Bibliography; Tables; Index; Charts; \$2.50.

This is one "short history" that is really short. By a marvel of compression, Dr. Goodrich has presented the significant events in the development of China and her people from pre-

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### Comment

PREVIEW OF HISTORY. By Raymond Gram Swing. New York: Doubleday, Doran and Company, 1943. 278 Pages; Index; \$2.00.

Raymond Gram Swing fans will welcome this collection of broadcasts and speeches, a discussion of the post-war world, and some hitherto unpublished material by the top-ranking radio commentator.

### Integrated Story

BACK DOOR TO BERLIN. By Wes Gallagher. New York: Doubleday, Doran and Company, 1943. 242 Pages; Illustrated; \$2.75.

Reading the piecemeal accounts of a campaign in the daily papers is not the same thing as reading the integrated story of the same campaign. To those of us who remain confused about the places, times, and personalities of the North African campaign from the first landings to Von Arnim's surrender, Gallagher's book should be a great help. His workmanlike handling of the time and area factors of the African fighting resolves much of the confusion. He fits Kasserine, Long Stop Hill, and Gafsa; Montgomery, Alexander, Patton, Clark, and Fredendall; and the First Army, Eighth Army, and Second Corps, into a completed jigsaw puzzle instead of scattered pieces.

Much of his material consists of those things that couldn't be told before, and it is spiced by tales of blunders by commanders of both sides. The mired regiment of Combat Command B, the British Fiftieth Division's error at the Mareth Line, and other errors, some unfortunate and some inexcusable, fill in some of the darker tones that were needed to complete the picture. Overshadowing all were the difficulties of supply, which were no less a problem than the enemy.

### Another View

THIS IS INDIA. By Peter Muir. New York: Doubleday, Doran and Company, 1943. 234 Pages; Index; \$2.50.

It was about time that somebody wrote the other side of the story of the Indian independence movement; Peter Muir has done it well. As an ace reporter, Mr. Muir used good reporting methods to come to the conclusion that there is more to the story than appears on the surface. Mr. Muir reports that the Congress Party's membership includes .004% of the population of India; that the differences in languages, castes, and religions would make it impossible for any native government to operate; that Gandhi and many of his followers are almost open in their hypocrisy; that a very large proportion of the troubles of India are due to the selfishness and greed of the better-off Indians themselves; and that Britain's rule has not been all roses, but that where it has failed to raise the status of the people of India, it has failed because of the people themselves.

The author bears down heavily on the inconsistencies and frauds of Gandhi's followers and the Congress Party, and

oves his points, if we can accept his facts. His straightforward writing speaks in favor of the facts he offers. Above all, he advises America and Americans to keep hands off. With no real knowledge of the problems involved, all we can do is com-  
plicate the picture without offering any real help to either side.

### The Goal

THE INVASION OF GERMANY. By Curt Reiss. New York: G. P. Putnam's Sons, 1943. 206 Pages; \$2.50.

This is Reiss' sixth book on the present war, with Germany his special field. His estimate of how to invade Germany is neither be dismissed nor taken too seriously. He knows Germany and the Germans, and thinks he knows enough about military strategy to point out a few "facts." He follows the middle of the road line in regard to air-power, believing our air attacks should be stepped up (by night bombing!), but not that an attack alone can win the war. He finds German morale still good, but not a guaranty of a fight to the last because he feels there is a great danger of the Allies making peace with an emergency German government before we really defeat her in military and economic sense. He thinks "international financial circles" will try hard to save Germany from industrial collapse because of investments and commitments, thus permitting her to start all over again in a few years. The book is controversial, full of statements either unadorned or founded on doubtful sources, and of opinions that may be better or not as good as the next man's—but it might be a few trains of thought.

### Civilian Primer

THE ARMY TODAY. By Kendall Banning. New York: Funk and Wagnalls Company, 1943. 255 Pages; Index; Illustrated; \$2.50.

Mr. Banning is justly famous for his books on West Point and Annapolis. His present undertaking is even more ambitious than the previous books, and in covering so much ground it was inevitable that errors and differences of opinion would crop up. Starting on the three Coast Artillery Corps chapters, the reviewer found some weird and wonderful methods of fire control, including aiming for "vulnerable parts" of enemy ships. However, the book is designed for civilians, and the points at issue are such that they will do no harm to the type of readers who would normally purchase the book. It does present a wealth of information about the army.

### Filipino View

OTHER AMERICA. By Carlos P. Romulo. New York: Doubleday, Doran and Company, 1943. 234 Pages; \$2.50.

A member of General MacArthur's staff at Corregidor, and a Pulitzer-prize winning newspaperman, Colonel Romulo has become one of the Filipinos best-known to Americans. More American than many people born in this country, and more Filipino with his heart and soul, the Colonel is well qualified for the task he attempts in this book—to explain the Occidental and Oriental mind to Americans. He explains what lies behind the differences in mentality of Oriental and Occidental. These differences are not necessarily fatal for under-

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standing between the two races if the differences themselves are understood.

The author is at his best when he explains why the Filipinos, of all the peoples of the Orient under foreign domination, fought against the Japanese. Americans, on the whole, were honest, kindly, and above all, considerate. The Filipinos were the only people in the East who showed progress (of a type that benefited themselves) under foreign rule. Other nations were not so fortunate in obtaining the loyalty of their Orientals because they did not deserve that loyalty, and the Orientals believed that no change in domination, even by the Japanese, could be for worse.

Colonel Romulo writes much that is worth thinking about.

## Selected Reading

THE INFANTRY JOURNAL READER. Selected and Edited by Colonel Joseph I. Greene. New York: Doubleday, Doran and Company, 1943. 675 Pages; \$3.00.

Colonel Greene has selected wisely from the wealth of material published by the *Infantry Journal*. The selection has been limited to articles that did not require illustration to present their full meaning, and that were not of a too-technical nature for digestion by the large numbers of civilians who might purchase the book. The work presents a fine cross section of military thought over a long period. Many high ranking officers of our present army did their thinking on paper in the *Infantry Journal* when they were captains and majors; it is interesting to check their ideas at that time against the realities of today.

The material in this *Reader* will be of interest to soldiers of all branches and to thinking civilians as well, for it is not concerned with articles on technical development that were alive then but dead now. Rather the book is a collection of written military thought on military subjects whose fundamentals remain alive throughout the years.

## Solid Background

THE FRAMEWORK OF BATTLE. By John G. Burr. Philadelphia: J. B. Lippincott Company, 1943. 249 Pages; Maps; Index; \$3.00.

Colonel Burr's book is frankly designed for civilians, to give the layman a broad, over-all picture of strategy, some tactics, and the methods of planning wars and campaigns. At a time when military "experts" are to be found at every dinner table and club lounge, this book might, with some study, provide a basis of authentic information as a background for the discussions. The type of "expert" who expects second fronts and military miracles to occur at the wave of a wand could learn much from Colonel Burr's patient explanation of some of the elements that make up a battle or a campaign.

The junior officer, especially the one who has never been exposed to staff work, might read the book with profit. He would learn that there is more to winning a battle or a war than meeting the enemy.

The book is more than mere abstract principles and information; it is based on battles of the present war and others, with each principle or explanation tied to an actual engagement. The maps are clear and easily followed. The suggested reading course in the last chapter is a none-too-gentle reminder to the reader that a perusal of this book does not make him a military expert.

## How to Do It

### Old Reliable

**COMPANY ADMINISTRATION AND PERSONNEL RECORDS.** By Lieutenant Colonel C. M. Virtue. Harrisburg: Military Service Publishing Company, 1943. 386 Pages; Illustrated; Index. Paper: \$1.50; Cloth: \$2.00.

A review of this standard text should not be necessary; practically every officer, and practically every enlisted man whose duties are administrative, knows the book in one of its previous editions. The present (thirteenth) edition is right up to date with all administrative changes that affect a company or similar unit, up to about September first.

♦ ♦ ♦

### Slipstick Instruction

**THE SLIDE RULE AND HOW TO USE IT.** By Sommers, Drell, and Wallschlaeger. Chicago: Wilcox and Follett Company, 1942. 157 Pages; Illustrated; Tables; Answers; Slide Rule. \$2.98. Paper Edition, without Rule, \$1.32.

The preface of this rather complete and thorough text states, "although the book has been carefully planned and may be used as supplementary material in some cases, it is not recommended as a substitute for a good teacher." The statement might be considered a bit too modest if construed too strictly. With this book, the requisite basic mathematics, and a large helping of determination, it should be possible for any intelligent student to learn to use the slide rule, at least as a useful aid. There is even a review of mathematics incorporated in many of the "Work Sheets," or lessons.

♦ ♦ ♦

### Pencil-Pusher's Guide

**MILITARY CORRESPONDENCE AND REPORTS.** By A. C. Howell. New York: McGraw-Hill Book Company, 1943. 179 Pages; Illustrated; Index; \$1.50.

Professor Howell has done a creditable job in preparing this manual for beginners in military correspondence. The book is designed as a course for students in English to use before they entered the military service. The author modestly admits that he has not been original in his solutions, since most Army manuals are limited to but one correct method of preparation, but it does include a wealth of material that has never before, to the reviewer's knowledge, been brought together under one cover. The book reproduces the forms, tells how they are to be filled out, and then presents information about the language to be used in the reports and forms. This last is the most valuable contribution of the book—a technically correct report often does not transmit the same meaning the maker of the report intended. Orders, field messages, and other material is included.

♦ ♦ ♦

### Gases and Liquids

**FLUID MECHANICS.** By R. C. Binder. New York: Prentice-Hall, Inc., 1943. 307 Pages; Illustrated; \$5.00.

This book is an excellent introduction to the fundamentals of fluid mechanics, and is recommended particularly for those interested in a general knowledge of the motion of fluids. Liquid and gaseous fluids are treated together in a form suitable for use over a relatively wide range of condition variables. The descriptions, exemplary problems and mathematics are clear, and the illustrative figures are unusually good. The

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problems for the reader are well selected and are generally of practical value; answers to these problems are tabulated in an appendix. A good list of references is presented at the close of each chapter.

## Teacher's Text

**TEACHER'S MANUAL.** By Nicholas Moseley. New York: Cornell Maritime Press, 1943. 198 Pages; Bibliography; Index; Illustrated; **\$2.00.**

Teaching is an activity that must be learned; not even an expert can teach his subject well if he does not know the basic elements of imparting his knowledge. Most books on teaching methods are long on theory and short on something the part-time teacher can put to immediate use—not so this book. Designed for military, marine, vocational, and industrial training, the book gives practical information on how to use the procedures and tricks that good teachers have employed with success. The twenty-two chapters include such subjects as, "A Preview of the Laws of Learning, Memory, and Forgetting," "Choice of a Method," "Teaching in Laboratory and Shop," "The Field Trip," "The First Class," "Providing for Individual Differences," and "Teaching Students How to Study." Down-to-earth language and situations make this a valuable aid to the service instructor.

## Murder, Inc.

**JUDO.** By T. Shozo Kuwashima and Ashbel R. Welch. New York: Prentice-Hall, Inc., 1943. 146 Pages; Illustrated **\$1.89.**

**COMMANDO JIU-JITSU.** By Irvin Cahn. Chicago: Wilcox and Follett Company, 1943. 162 Pages; Illustrated; **\$1.00.**

*Judo*, since its previous review in the March-April, 1939, *JOURNAL*, has had some new material added for members of the armed forces. The tendency of the new material is to break away slightly from the more formal aspects of this very ceremonious sport and get down to more murder and mayhem.

Cahn, the author of the second book, is a former pupil of Mr. Kuwashima, now instructing Marines in the none-too-gentle art.

Both books are well illustrated with photographs of the actual movements.

## Volunteers by Invitation

**THE CONSCIENTIOUS OBJECTOR AND THE LAW.** By Julien Cornell. New York: John Day Company, 1943. 154 Pages; Index; **\$1.75.**

Soldiers, obviously, find it very hard to understand the mental processes of the conscientious objector. Since there are C.O.'s whose objections to military service are not related to cowardice or lack of a sense of duty to their country, certain officers will have contact with them in the course of the officers' duties. If it is true that there are two sides to every question, reading this book will give the officer some sort of start in understanding the views of the objectors, which understanding is necessary for fair and impartial action.

Mr. Cornell is prejudiced on the side of the objectors; that is natural because he has been most active in defending them in the courts. Army officers, by their very training and idealism will in some cases be prejudiced against the C.O. Mr. Cornell even hand-picking his cases as he has done, leaves much open to argument even if we accept the facts as he states them. Even

his main quarrel seems to be not with the Army, but with Selective Service and certain lower courts. The reviewer, digesting Cornell's arguments as best he could, put down the book with but one clear new thought: some of these men are neither psychopathic cases nor cowards, but thinking individuals who have come to conclusions that are as dangerous to the nation as they seem illogical, but that are very real to themselves.

### One-Shot Math

**LIVING MATHEMATICS REVIEWED.** By Hobart H. Sommers. Chicago: Wilcox and Follett Company, 1943. 310 Pages; Tables; Index; Illustrated; \$2.50.

"The reason for writing this book was to provide adults with substantial review of the highlights of mathematics from arithmetic to calculus, without leaning too much on the textbook side. In this age of specialization we often forget that that specialist develops from having a thorough knowledge of fundamentals, therefore, this survey is for that group of people who wish to strengthen their mathematical foundation without working hours over hundreds of tedious problems." This from the preface.

Mr. Sommers has developed his book in logical sequence, with particularly good illustrations, and problems (with answers) that suit the material covered. The only real criticism of the work is the fact that the review is so intensive and compressed that the diet is apt to be rather rich for those who need a book most.

### New Edition

**THE ARMY OFFICER'S MANUAL.** By Lieutenant Colonel A. C. M. Azoy. New York: D. Appleton-Century Company, 1943. 385 Pages; Index; Illustrated; \$2.50.

This second edition of Colonel Azoy's book has corrected most of the errors in the first edition, but the author still insists that the Coast Artillery Corps is an "offshoot" of the Field Artillery. He has missed referring to the change in regulations concerning overcoats, to the fact that the blue dress uniform is no longer authorized, and to the formation of the Pharmacy Corps, in the appropriate portions of the book. Under "Rations," he makes no mention of the Field Ration system, under which all but an infinitesimal portion of our troops are now messing.

There is much that is valuable in the pocket-size volume.

### Infantry Weapons

**MILITARY HEAVY WEAPONS MANUAL.** Harrisburg: Military Service Publishing Company, 1943. 1,016 Pages; Illustrated; Index; \$2.50.

Primarily reprinted from official manuals and other authoritative publications, this huge book contains in one volume material on: The Rifle Company—Rifle Regiment; BAR Cal. .30; Bayonet; Automatic Pistol, Cal. .45; Machine Gun Cal. .30 HB Ground; Machine Gun Cal. .30 M1917; Machine Gun Caliber .50 HB Ground; 27mm Antitank Gun; 60mm Mortar; 81mm Mortar; and Grenades. Although it is basically an infantry book, Coast Artillerymen use many of the weapons mentioned. The convenience of finding all this information between two covers, and the low price for more than 1,000 pages, make this book another outstanding work by the publishers.

## Popular Technical Books

### Electricity

**ELEMENTS OF ELECTRICITY.** By Timbie. This text is used at the Coast Artillery School at Fort Monroe. **\$3.00**

**FUNDAMENTALS OF ELECTRICITY.** By Lester L. Williard. Designed for use with wartime courses and for self-study. **\$1.24**

**COURSE IN ELECTRICAL ENGINEERING (Vol. I), DIRECT CURRENTS.** By C. L. Dawes. The 3rd edition; by a Harvard faculty member. **\$4.00**

**COURSE IN ELECTRICAL ENGINEERING (Vol. II), ALTERNATING CURRENTS.** By C. L. Dawes. Companion book; also 3rd edition. **\$4.00**

### Science

**INTRODUCTION TO METEOROLOGY.** By Sverre Peterson. Used at the Naval Academy; 236 pages. **\$2.50**

**A START IN METEOROLOGY.** By Armand N. Spitz. Easy to read; written in simple language. **\$1.50**

**FUNDAMENTALS OF MACHINES.** By Burton L. Cushing. How they operate; with military applications. **\$1.24**

**ELEMENTS OF PHYSICS.** By A. W. Smith. 790 Pages; 4th edition; used at the Military Academy, West Point. **\$3.75**

**ELEMENTS OF ORDNANCE.** By Brigadier General Thomas J. Hayes. 700 Pages; used at the Military Academy; a standard work on the subject. **\$6.50**

**CRYPTOGRAPHY.** By Lawrence Dwight Smith. An elementary but serious discussion of the science of secret writing. **\$2.50**

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**ELEMENTS OF RADIO.** By Abraham and William Marcus. A basic book; for study without an instructor. **\$4.00**

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**MODERN RADIO SERVICING.** By Alfred A. Ghirardi. 1,276 pages of information, tips, and instruction for radio servicemen. Well presented, complete and well illustrated. **\$5.00**

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**PILOTING, SEAMANSHIP, AND SMALL BOAT HANDLING.** By Charles F. Chapman. Complete illustrated course in small boat work with many suggested questions and problems to be solved. By the editor of *Motor Boating*. Color and black and white illustrations. 315 pages; index. **\$2.50**

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## Whew! and Brtr!

WEATHER AROUND THE WORLD. By Ivan Ray Tannehill. Princeton: Princeton University Press, 1943. 184 Pages; Illustrated; Index; \$2.50.

Designed for the lay reader, this book is descriptive of weather and its manifestations, rather than a text for forecasters. Excellent pictures and patient text combine to tell of the different elements that make up the weather, and then the reader is taken to key points all over the world for descriptions and explanation of local weather phenomena.

## 40,000 Names

WEBSTER'S BIOGRAPHICAL DICTIONARY. Springfield: G.&C. Merriam Company, 1943. 1,697 Pages; Tables; Notes; Etc.; \$6.50.

More than 40,000 concise biographies of noted men and women of all countries, from all times, and in practically every field of activity make this a unique reference book. In addition to the short biographies themselves, the volume includes *Explanatory Notes*, *Guide to Pronunciation*, *Pronouncing List of Prenames*, and a series of tables listing the names of such groups as the Popes, the Members of the Supreme Court, American Ambassadors to different countries, the Prime Ministers of Great Britain, etc.

In a work of this size, which is an ambitious undertaking even for a publishing company with the background of the Merriam Company, inconsistencies are bound to appear. For instance, Generals Wainright and Mark Clark are included; Generals Eichelberger and Stilwell are omitted. The line must be drawn somewhere, however, and it is a matter of judgment where it should be drawn. It is startling, too, to find Julius Caesar and Irving Caesar side by side; but that is one of the delights of the book.

## Personal Experiences

### Book of the Month

THE BATTLE IS THE PAY-OFF. By Captain Ralph Ingersoll. New York: Harcourt, Brace and Company, 1943. 217 Pages; \$2.00.

Here we have some real war reporting. Captain Ingersoll is in the Corps of Engineers, but he is better known as editor of *PM*. When he combines his reportorial training with his military service and responsibilities, his readers can begin to understand that war is not the stories of individual glamor and glory that the newspapers feature, nor is it the dry-as-dust mechanical and technical operations outlined in the field manuals. This book is the direct result of Captain Ingersoll's experiences as an observer (a working observer) with the Engineers during several of the North African actions, and the less direct result of his years of experience as a newspaperman fighting the things America is fighting today.

Ingersoll finds the Army good—not as good as it could be if it were more experienced, and if the men really had the desire to kill Germans that the Russians have, but encouragingly good. It is well-trained technically, even though it might not have the killer instinct.

It is in his descriptions of the operations and installations in the field that the author proves he is a keen observer and top-notch writer. The description of "big" headquarters, the night of the battle, is particularly well done. The commanders and

the staff just wait around quietly—their planning is done, and the action is in the hands of the troops up front. Officers converse in low tones, sergeants work cross-word puzzles—the air is that of a hospital while the surgeons wait for the patient to come out of the anesthetic. There is nothing more they can do but wait.

To the platoon commander, "battalion" is "way back there somewhere," practically out of the battle. General Patton has a list of fines ranging from \$5.00 to \$25.00 for officers who neglect to wear specified equipment, including neckties. At the big headquarters, M.P.s take incoming cars at the entrance to the village and drive them away—no nearby motor park or other buzz of activity will point out the headquarters for strafing planes. The Rangers are merely shock infantry—better trained and tougher than most infantry. The French fought the Americans for honor alone, and hated to do it. These and many more pointed observations are expanded in this book, which does more to explain the North African campaign than fifty times its weight in newspaper articles.

### Royal Naval Reserve

**EAST COAST CORVETTE.** By Nicholas Monsarrat. Philadelphia: J. B. Lippincott Company, 1943. 153 Pages; \$1.50.

Lieutenant Monsarrat gives us a series of impressions based on duty in one of the Channel corvettes. Some of the items are as short as fifty words, others as long as three or four pages. As First Lieutenant of one of these small, fighting escort ships, the author is in a good position to know what goes on both in the forecabin and on the bridge; he depicts the life, the fighting, and the danger in short, swift, strokes. The efficiency and fighting heart of the British sailor comes out in deeds, rather than words. The corvette escorted merchant trips and did other chores in the storm-tossed and Nazi-infested Channel. Mines, reefs, wrecks, bombers, and E-Boats combined with storm and fog to make the life anything but boring. The author combines humor, insight, and patriotism to make possible a book that describes a vital activity, and describes it without conscious sentimentality or flag-waving.

### Sky Pilot

**MY FIGHTING CONGREGATION.** By Chaplain William C. Taggart. New York: Doubleday, Doran and Company, 1943. 176 Pages; \$2.00.

Chaplain Taggart saw service in Australia, Java, and other parts of the Southwestern Pacific area with the famed 19th Bombardment Group. This book, a result of collaboration with Christopher Cross, is something unusual in that it is a story of action against the enemy from a new viewpoint, that of the chaplain. Line officers are prone to forget that chaplains, too, have their duties to perform and their problems to meet. Those few officers who look upon chaplains as excess baggage can take a new view of the matter after reading of this padre's efforts—and results.

### Our Ball

**BRIDGE TO VICTORY.** By Howard Handleman. New York: Random House, 1943. 269 Pages; Index; Illustrated; \$2.00.

This is the story of Attu and the securing of the Aleutian Islands as stepping to Asia. Principally it is a story of the toughness of the American doughboy—a story of hard, close

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## Meet the Soldiers

HERE IS YOUR WAR. By Ernie Pyle. New York: Henry Holt and Company, 1943. 304 Pages; Illustrated; \$3.00.

Ernie Pyle, a more-than-competent newspaperman for many years, has built himself an enviable reputation during this war with his down-to-earth dispatches from the front. Syndicated in hundreds of newspapers, Ernie's column has depicted the little pictures of the war, and has brought the fighting man closer to the folks back home than the work of any other correspondent. Not claiming to be a military expert or writer, Pyle wrote about his hobby—people. Naming names, telling of the little things a soldier thinks about and how he lives, Ernie has done much to tell America what war really is.

This book is the material that went into the columns, expanded in places, and blended into a smooth account that the daily column, with its twenty-four hour breaks, could not match. Many readers clipped the columns and kept them in scrap-book form; this volume will make that labor a useless task. The frail little reporter who neglected the strategy and lived with John Soldier in the foxholes has produced some real war literature.

## Fort with Personality

THE SUZY-Q. By Priscilla Hardison with Anne Wormser. Boston: Houghton-Mifflin Company, 1943. 170 Pages; Illustrated; \$2.00.

The Suzy-Q, one of the Army Air Force's most publicized B-17's, was named for Mrs. Hardison, who was the pilot's wife. In this book she tells, at second hand of course, as much as can be told of the career of that hard-working aircraft, which saw service in many theaters of war, and under varied conditions.

## Winchell in Blue

TO ALL HANDS. By John Mason Brown. New York: Whittlesey House, 1943. 236 Pages; Illustrated; \$2.75.

Detailed by Admiral Kirk to act as announcer and commentator over the *Spelvin's* loudspeaker system during the Sicilian invasion, Lieutenant Brown "winchelled" for the benefit of the large proportion of the crew that could not see what was going on. Men below decks, men whose duties required concentration on gun sights or charts or radio dials, were kept informed of local happenings and world events by order of Admiral Kirk, who believed every man aboard had a right to know as much as was not dangerous to security. The book is essentially a transcript of Brown's programs, beautifully illustrated with many pictures and sketches.

Brown's good humor under trying circumstances, his obvious pride in everything in the expedition and about his ship, and (between the lines) his estimate of America's fighting men, both sailors and soldiers, makes for good and instructive reading.

## Lighter Moments

### The Bard in New Dress

THE TRAGEDIES OF SHAKESPEARE. New York: Modern Library, 1943. 1,157 Pages; Notes; Glossary; 95¢.

THE COMEDIES OF SHAKESPEARE. New York: Modern Library, 1943. 1,007 Pages; Notes; Glossary; 95¢.

THE HISTORIES AND POEMS OF SHAKESPEARE. New York: Modern Library, 1943. 1,047 Pages; Notes; Glossary; 95¢.

These three new Modern Library volumes will be appreciated by lovers of Shakespeare. There is a lot of book for the money, bound in a manner that will not detract from the appearance of the best of library shelves. The text material is complete and unabridged. Mass production methods have resulted in beautifully-bound, but inexpensive, classics.

### The Recreational Side

THE ARMY PLAY BY PLAY. New York: Random House, 1943. 176 Pages; \$2.00.

Five one-act plays, written by enlisted men, have been taking sophisticated audiences by storm in New York and other large cities. The proceeds of the tour of the plays, the five of which make up one evening's program, go to the Soldiers' and Sailors' Club. The moving spirit behind the contest that resulted in the plays, and behind their production, was John Golden, the Broadway producer. Since they were written by soldiers, and are being played by soldiers, the contest selections ring true army life and are good entertainment in their own right.

### Fur and Feathers

ANIMAL REVEILLE. By Richard Dempewolf. New York: Doubleday, Doran and Company, 1943. 269 Pages; Illustrated; \$3.00.

Foreign armies for many years were far ahead of our own in the use of animals for war—the horse and the mule were the great exceptions. Although we had a poor start, our dogs are now performing many types of important work; we have developed some new wrinkles in the use of pigeons that our enemies would like to know; and American army cats are living up to their reputations for cantankerousness and efficiency where the going is rough. Cats are making life pleasant for that home-grown fifth-columnist and saboteur—the rat. Camels and elephants work for our allies.

How foreign forces can equal the American array of mascots, mules, and Mr. Dempewolf devotes much space to the variety of living morale-builders that our armed services acquire in the field. The book sticks rather closely to the present war, but makes in the uses of animals and birds by the Americans, the Allies, and the Axis.

### Beware of Crooks

WINNER IN THE CARDS. By Michael MacDougall. New York: Ziff-Davis Publishing Company, 1943. 236 Pages; Illustrated; \$1.50.

If you are the sort of person who plays a little bridge or smiles indulgently when the wife plays bingo, and knows that "win, place, or show" means, you will find interesting and

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instructive reading in this exciting book. Yes, even Bingo can be rigged—and usually is. Carnival games, cards, dice, betting of all kinds, can be fixed so even the experts have trouble finding how it was done, so what chance has the poor casual player? In gaming establishments where the management is honest, the employees may be having a field day at the expense of the customers and the management. Even knowing your partners isn't always a guarantee of honest odds—most professional or semi-professional gamblers make it their business to obtain the proper introductions. Women, too, are becoming expert at the little game of fleecing those who take a chance. Reading this book might save you money if you are inclined toward a wager now and then, but Mr. MacDougall doubts it—he says the human urge to be a sucker is stronger than prudence.

### Navy Game

HOW TO PLAY ACEY-DEUCEY. By Jack Dillon. Chicago: Albert Whitman and Company, 1943. 33 Pages; Charts, \$1.00.

Acey-Deucey, for the benefit of bridge and mah-jongg players, is *not* a card game. Long a Navy activity second only to the chow line, it is gradually taking hold in the Army. It is played with something like a parchesi board, thirty buttons, and a pair of dice. The book includes a heavy paper "board" in three colors, and many valuable hints as to tactics, in addition to the rules.

### Chuckle Book

BEST CARTOONS OF THE YEAR 1943. Edited by Lawrence Lariar. New York: Crown Publishers, 1943. 128 Pages; \$2.00.

Lawrence Lariar, not a bad hand with a pen himself, has taken it upon himself to be the Grantland Rice of the comic cartoonists, picking the All-American team each year. It is possible that Lariar picked the best man for the job, because there can be few quarrels with his choices. Most of the cartoons in this year's selection have a war background—and not one of the hackneyed situations or gag lines appears. Short biographical sketches of the cartoonists add interest for pen-and-ink fans.

Some of the best include one by Colin Allen, featuring a Gypsy tea-leaf reader and a civilian couple, the gag-line: "I see a filing cabinet—a clerk is reclassifying cards—tsk tsk tsk tsk." Others are: a girl shipping a package by V-Mail; the sailor in a tattoo parlor (we won't spoil that one); and Hitler saying, "And if what I say isn't true, may I be struck dead this instant!" The only glaring omission—and one book can't hold everything—is the lack of any of Foster Humfreville's "Alfred the Sailor" series from *Collier's*.

### Verse and Worse

IT'S 'ARD TO STAY CLEAN IN THE COUNTRY. By Kay Grant. New York: William Morrow and Company, 1943. 64 Pages; Illustrated; \$1.00.

Kay Grant is an Australian, whose first book of poems, *It's 'Ard to go Wrong in the Cactus*, became very popular with our troops in the Southwest Pacific, breaks forth with another volume of her light, sprightly, and only slightly off-color verse. An estimate of the work boils down to this: if you're a Kay Grant fan, you'll like this one too.

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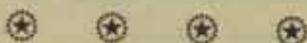
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