

# COAST ARTILLERY JOURNAL



NOVEMBER-DECEMBER, 1944

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

This is our fourth Christmas at war, and I should like now to reassert my pride in our war Army and my gratitude for its splendid accomplishments.

On our first war Christmas, while both our enemies roamed almost unchecked across the lands and seas they had marked for plunder, virtually none of our ground combat forces had yet left the United States. Today the story is happily different. Nearly all our ground forces are arrayed in massed strength in every corner of the world—not as green recruits thrown hastily into a last-ditch defense, but as a well-trained, highly skilled, mighty combat Army dedicated to the destruction of hostile forces, the liberation of conquered nations, and the establishment of lasting peace.

The cost of victory is never small, and we have had to pay a fair price so far. It is the lot of the ground soldier, and particularly of the Infantryman, to come to closest grips with the enemy, and both our enemies—strong, cunning, and resourceful—have clearly shown

their intention not to yield without having first exacted all toll possible of our men.

In the campaigns of the last three years, many of our ground soldiers, including General McNair, our greatest former commander, have given their lives in battle.

For them, there can never be another Christmas. For those of us who must carry on the fight for which they gave so much, no Christmas can be truly merry until we have finished the job they started.

I know that you American ground soldiers will finish that job, and finish it well. I have seen you grow old and wise in the ways of war, out-smarting our enemies, winning the admiration of your allies and the everlasting respect of your fellow countrymen. You deserve a fine Christmas. To those of you who are still waiting your turn to meet the enemy and hasten our victory, and to those of you who have already achieved so many great triumphs, I extend my sincerest congratulations and wish you the best Christmas a soldier can have.

LIEUTENANT GENERAL BEN LEAR,

*Commanding General, Army Ground Forces.*

## To the Members of the Coast Artillery Association:

Another War Christmas finds the Coast Artillery Corps engaged with the enemy in all theaters of a world-wide conflict. Last year at this time our offensive was gathering momentum; now our ground troops are fighting in the homeland of one of our foes and the other is feeling the force of continuing air attacks on what he considers his sacred soil. There is still much to be done before Coast Artillerymen can hope to spend a Christmas in the traditional manner—with their loved ones at home. With the help of all our own military services, of our home front, and of our Allies, we pray and believe that Christmas at home will not be too far off.

I have just returned from a visit to our AAA troops in one of the overseas theaters. They are doing a grand job, one that refreshes our faith in the American fighting man, in his spirit, and in his training. AAA is performing its normal missions with distinction, and has taken on other missions that were considered out of its province a few short years ago. These additional mis-

sions too, are being accomplished in a manner that reflects glory on the Coast Artillery Corps. Other combat arms have learned to appreciate the work of the AAA, and have been unsparing in their praise.

With the exception of a few units, our Seacoast Artillerymen have not had the opportunities for action and glory that have been offered the AAA. Theirs has been the more unspectacular task of watchful waiting, the more difficult task of remaining ever alert without the tonic of action to raise their spirits. Soldiers will not underestimate the importance of their contribution to our victories, even though the headlines have gone to those more actively engaged.

This is my last Christmas message to you as President of the United States Coast Artillery Association. To Coast Artillerymen everywhere, Antiaircraft Artillerymen and Seacoast Artillerymen, my heartiest wishes for as merry a Christmas as war affords, and for a bright and victorious New Year.

MAJOR GENERAL JOSEPH A. GREEN,

*President, United States Coast Artillery Association.*

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## CONTENTS



COVER. <i>The Flag at Leyte. U. S. Coast Guard Photo.</i>	
CHRISTMAS MESSAGES. <i>By Lieutenant General Ben Lear and Major General Joseph A. Green</i>	2
FROM THE FIGHTING FRONTS:	
NIGHT FIRING OF AW. <i>By an AAA Battalion Commander</i>	4
THE AW BATTALION WITH THE INFANTRY DIVISION. <i>By Major Paul W. Rogers</i>	5
SEACOAST ARTILLERYMEN MUST BE VERSATILE. <i>By Captains Thurman H. Hill and Louis B. Stebbens</i>	7
SUPPLY IN THE FIELD FOR AN AW BATTALION. <i>By Technical Sergeant Ray W. Kleinert</i>	8
FLUID FRONT FLAK. <i>By Captain Thomas M. Quayle</i>	9
FIELD EXPERIENCES WITH AMMUNITION. <i>By Captain J. P. Murphy</i>	11
ROCKET DEVELOPMENT	13
FLOATING HARBORS. (Pictures)	14
AXIOMS AND PRINCIPLES FOR BATTERY OFFICERS. <i>By Brigadier General E. W. Timberlake</i>	16
A TEST OF LEADERSHIP FOR BATTERY COMMANDERS	18
FACTS ABOUT FUELS AND LUBRICANTS	20
OFFENSIVE IN THE PACIFIC (Maps)	21
EUROPEAN THEATER. (Maps)	24
BOMBING OF AW FIELD FORTIFICATIONS. <i>By Lieutenant Colonel A. Lester Henderson</i>	27
THE RULES OF LAND WARFARE. <i>By Captains H. C. Sawin and Mac Harlan</i>	30
LEADS FROM TRACER HUMPS. <i>By Lieutenant Colonel Kenneth G. Merriam and Lieutenant Frank B. Aycock, Jr.</i>	34
A.G.F. PROFICIENCY TEST FOR AAA BATTALIONS. <i>By Lieutenant Colonel Raymond E. Wilmarth</i>	39
PORTABLE PANAMA MOUNTS. <i>By Lieutenant Colonels James A. Muller and L. G. Mabr</i>	41
CIRCULAR RANGE SLIDE RULE. <i>By Captain K. S. Jones</i>	43
WINTERING ON THE COLD COAST	46
EQUATIONS FOR TRIAL FIRE ANALYSIS. <i>By Lieutenant Colonel Everett D. Light</i>	49
A DIFFERENT TRAINING INSPECTION. <i>By Major L. M. Orman</i>	52
VGT ANGLE RULE. <i>By Captain K. S. Jones</i>	54
MISFIRE <i>By Lieutenant Robert I. Knight</i>	55
PRACTICE COURSE FOR CLOKE AND M1 PLOTTING BOARDS. <i>By Lieutenant W. W. Peterson</i>	56
SOME OF OUR SUBSCRIBERS ARE MISSING	58
COAST ARTILLERY CITATIONS AND COMMENDATIONS	60
TRENDS IN ANTI-AIRCRAFT ARTILLERY AND COAST ARTILLERY ORGANIZATION AND EQUIPMENT. <i>By Lieutenant Colonel E. V. Hungerford, Jr. and Major F. N. Seitz</i>	65
COAST ARTILLERY BOARD NOTES	67
NEWS AND COMMENT	70
NEWS LETTERS	78
BOOK REVIEWS	85

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# from the **FIGHT**



## Night Firing of AW

By an AAA Battalion Commander

After some eighty-five days of combat with the 29th Infantry Division in France, Belgium, Holland, and Germany, I find that we are still faced with a problem which to me appears most important and should be solved. Some methods of fire control should be devised to enable AAA AW battalions with the forward elements to fire on low-flying enemy aircraft at night. Since landing in France, the — has served this infantry division in such a manner as to warrant a commendation from the commanding general of the division, but the most serious threats from enemy aircraft to the division has occurred at night and we have been powerless so far as repelling these threats is concerned.

In our experience, there have been only four attempts by enemy aircraft to commit hostile acts on the division in daylight, while almost every night, enemy aircraft have passed over the division sector. North of St. Lo and again in the Le Mesnil Herman area, the enemy started a series of night bombing and strafing attacks. These night attacks lasted from 26 July until 2 August and usually occurred between 11 P.M. and 2 A.M. Several casualties and some damage to equipment resulted. In my opinion this would have been a serious threat to the division had the enemy been capable of continuing these attacks over a long period of time. Some of the planes came in to drop flares, others dived under the flares to strafe installations, some dropped bombs from comparatively low altitudes. Adjacent AA units opened fire on these enemy aircraft and a lot of uncontrolled wild firing resulted. The planes could not be tracked due to the utter blackness of the night against the glow of the flares and the AW crews that did open fire evidently were trying to track the sound of the aircraft. To my knowledge, the only result from this wild firing was a Bofors projectile through the division war tent resulting in one casualty. We were exempt from this as the division commander of our division had prohibited AA from firing at night. During this particular period, two enemy aircraft

came over in daylight and we were credited with two Category I claims.

As I write this article an aircraft is flying overhead and from the sound of the motor, I would say it is within range of some of our gun sections. It is a bright moonlight night, but the visibility is not sufficient for tracking. It is assumed that the enemy gets some good out of these night trips since he continues to come over every clear night. However, in this vicinity (along the German-Holland Border) he has dropped only two bombs in the past five nights, which hardly seems worth his trouble.

The only attempt this battalion has made at unseen firing was at Liege, Belgium. As an experiment, we were permitted to place barrage fire on 90mm bursts when they happened to occur within range of our weapons. Liege at the time was an inner artillery zone at night, the bridges there being protected by one battalion of 90mm guns and one AW battalion. On 19 September enemy aircraft came over at 2130 hours and they were engaged by 90mm fire. A few seconds later our Bofors started tracking these bursts and all guns of three batteries opened fire. The guns were set on automatic fire and fired in bursts of four rounds after which the layers would again pick up the 90mm bursts and fire four more rounds. The layers were instructed to track smoothly and to try to follow the trend of the 90mm bursts. Stiffkey sticks were used with four to six clicks set to the sticks. The results were that the enemy aircraft changed course immediately and apparently abandoned its mission. Several line-of-sight shots with respect to the 90mm bursts were noted. Enemy aircraft did not again attempt to attack that vulnerable point during our occupation of the positions.

From our experience in Liege, it is believed that firing of this type would have succeeded in breaking up the night attacks near St. Lo. At least we feel that it would have discouraged the enemy and also would have given our own infantry troops the feeling that the attached AA were

# ING FRONTS

making an attempt to do something to repel these attacks. The purpose of this article is to stress the fact that there is a threat against infantry troops from hostile aircraft at night, and that we feel some consideration should be given

to fire control for AAA AW weapons at unseen targets. I do not intend to imply that the type of firing conducted at Liege is a solution but it does fulfill the saying of "When the threat is imminent, right or wrong, do something!"

## The AW Battalion With the Infantry Division

By Major Paul W. Rogers, Coast Artillery Corps

This article is a brief narrative of experiences of an AW battalion which during most of its combat experience was attached to an infantry division.\* This division spearheaded many of the hot-corner assaults in Normandy and other localities.

The battalion was attached to the division some five months prior to D Day which permitted joint training in various amphibious exercises in England, as well as deployment with FA in firing from tactical positions. These joint operations permitted the entire staff of battalion and the batteries to become familiar with the planning, operation, and personnel of the division and subordinate units. This close association paid big dividends during combat in many ways. This leads to the observation that AA like other parts of the division should train together, prior to combat, and AA as an integral part of the division organization should receive serious consideration.

The battalion was detached some weeks prior to D Day and entered a period of intense AA training, reequipping and preparing to move. All AA in corps was brought under the corps AA officer for this last-minute training. Liaison was maintained with the division during the planning stage so that division missions and phase locations were known. Copies of field orders were exchanged and a battalion report center chosen on an estimate of the division's possible position when the battalion was scheduled to arrive. The AA battalions were divided into two parts, light scale and residue. The light scale consisting of the 40mm fire units (2 1/2-ton truck, 40mm gun and .50-cal. WC) but less the (16) M-16 half-tracks which were issued too late to be included on loading lists, and stripped-down battery and platoon CP's. The battalion CP consisted of the operations section, a portion of the communications section, a wrecker,

and mechanics from motor transport in addition to the battalion commander, S-4, surgeon, and enlisted personnel. This breakdown was due to limitations on vehicles and personnel made necessary by scarcity of boat space in initial lifts. The balance or residue was collected together under the S-4 for movement at a later date when ship space was available.

Upon unloading from LST's and arrival in the on-shore transit areas, dewaterproofing was completed while liaison was established with the division, and reconnaissance parties sent out. All batteries were in position by dark of the first day ashore and battalion CP was maintained in the transit area to facilitate contact until the following day. The usual air raids and trigger-happy personnel of the troops just landed provided the first initiation to the sounds of war. The battalion was moved up to vicinity of the divisional CP the following day.

Due to the number of attached field artillery battalions, the normal attachment was a platoon to a light field artillery battalion and a battery to a medium field artillery battalion, which worked well. The platoons and batteries were attached for rations and gasoline to the supported unit. Initial communication was through the field artillery switchboard to divisional artillery switchboard. This was followed by wire lines from AA battalions to the several batteries. This provided a secondary means of communication to the FDC in event of field artillery wire failure. Reconnaissance was conducted and the AA platoon or battery moved with the field artillery battalion supported without awaiting battalion orders. Overlays were submitted as soon as reconnaissance was completed subject to correction after going into position. This allowed the battalion communications section to start wire lines without delay.

As the campaign progressed and additional divisions entered the front, the division area was narrowed down and

the situation required more and more corps artillery units to enter into the division area. This resulted in considerable congestion of field artillery units as well as their attached AA units.

The AA in the division area varied from six to at one time twelve firing batteries, resulting in many duplications of effort. To control this situation, a plan of zone defense was proposed through the division commander to the corps commander. This plan contemplated an AA defense on a density of two fire units per thousand-meter grid starting with the most forward field artillery battalion and extending across the division area from boundary to boundary and to the rear as far as fire units were available. As the front moved forward, the most rearward unit was leap-frogged to the front. Corps AA units were coordinated as much as possible through corps AA sections. This plan also prevented revelation of vulnerable areas to the enemy which was formerly possible by the concentration of AA around field artillery units and other vulnerable points in the division area. Zone defense also permitted rotation of gun sections from comparatively quiet areas and relief of those subjected to artillery fire, and preventing battle fatigue.

The battalion prior to entry into combat had absorbed the varied subjects of AA gunnery, gun drill, identification of aircraft and the many kindred subjects. Their proficiency in these subjects was evidenced by standing in competition with other AA battalions in the group. However, after a short time in the field it was plain that unless training was continued in the gun sections, a decline in efficiency could be expected. The difficulties of gun section training are well known, but constant checking by battery officers and spot checking by battalion staff will insure coverage. Manning requirements make it essential that classes be held at the gun. The subject of gun drill was covered by having each relief during daylight hours spend the first fifteen minutes of their tour after the piece had been checked in gun drill. The .50-cal. WC machine gunners presented a problem due to their location away from the remainder of the gun crew. This was overcome by classes held in platoons on the machine gun for the men off duty. Training in the field is a must and should be vigorously followed up by all in chain of command.

Field maintenance presents many problems as ordnance service by personnel trained on AA matériel is often difficult to obtain on short notice. Stiffkey sticks are one of the most difficult items to keep in good working order. Cleanliness is highly important if smooth tracking is to be experienced. Directors and power plants have no place in the rapidly moving situation that employment with division artillery entails. Check sheets have solved daily maintenance to a large extent. These check sheets are provided one for each: 40mm gun, .50-cal. WC machine gun, M-16 turret, and M-2 half-track. Motor vehicles are covered by another check sheet. It is required that a battery officer check maintenance and orientation each day and initial the check sheets. Maintenance is on a master schedule so that battery and battalion officers may know when guns are out of action. This schedule permits one 40mm and one .50-cal. WC machine gun to be out of action at the same time per battery but they must be in different platoons. Ordnance contact

parties are secured as regularly as possible. Vehicle inspection teams equipped to perform the majority of second echelon repairs operate under the battalion MTO and keep the vehicles in good condition. Cleanliness is a must and considerable effort is made to keep all vehicles the cleanest possible.

Individual maintenance is always a problem. The twenty-man cooker presents a problem if cleanliness is not strictly enforced and checked. The battalion surgeon makes check each day at gun sections to insure that the cooks maintain standards of cleanliness of person, kitchen, and utensils and that the men scald their mess kits before using and clean them thoroughly afterwards. A creditable job has been accomplished as diarrhea has been negligible. Personal cleanliness requires follow-up and we insist upon daily shaving. Clean clothing through QM laundry is often difficult, but gun sections show ingenuity in keeping clothing clean if pressure is brought to bear on them.

The lack of targets due to Allied air superiority has been somewhat discouraging. Of a total of six engagements over defended area during daylight hours or when planes were illuminated by flares, two confirmed Category I and one Category II were secured while one Category I is being investigated. When fighter and fighter-bomber class are the normal targets and appear at such widely scattered intervals, alert crews and early warning is essential. It is required that the two trackers stay in their seats, the Stiffkey operator stands on the platform and the loader and firer stand either off or on the platform and have the telephone head and chest set. Telephones are connected to the gun junction box and through switch block to head and chest set. This permits the phone operator to maintain contact and omits the necessity of getting rid of the phone equipment when an alert is sounded.

Ground rôles for 40mm guns are not as plentiful as might be expected because of the flat trajectory, limited range due to the self-destructing feature, and the ease with which positions are spotted due to tracer streams and high silhouette. Engagement of targets of opportunity such as vehicles, forces of enemy infantry, and similar targets engaged from AA positions or when on the move, offer the only possibilities for employment of the 40mm gun. The multiple .50-cal. turret on the M-2 half-track is an effective weapon against unarmored or lightly armored vehicles and personnel but it is extremely vulnerable to artillery and mortar fire. The air-cooled machine gun barrels heat-up after sustained bursts of any considerable duration, causing jamming and failure. If 40mm guns or M-16 half-tracks are to be utilized in an operation with infantry or other ground troops, a rehearsal is recommended so that all officers and NCO's are familiar with the tactics of all branches involved. This will acquaint everyone with the limitations and capabilities of matériel and the special tactics to be employed.

In conclusion, combat experience has indicated the following points of emphasis, some of which have been covered in detail.

1. Combined training with division prior to entry into combat is desirable.
2. Close liaison is essential.
3. Training must be continued in the field for gun sections.

4. Follow up of maintenance is necessary to keep equipment functioning.
5. Field Sanitation must be of a high order if disease is to be avoided.
6. Alertness must be indoctrinated, especially when targets are few.
7. Communications must utilize wire lines carefully laid, preferably not on MSR, and tagged with notched or perforated tags to make night identification pos-

sible. Radio communication is often too slow where encoding and decoding is required. Present radio equipment supplied AA units does not give 24-hour coverage over a normal division area.

8. Mobile CP's and communications trucks are essential and it is felt special purpose vehicles might be investigated for this purpose. (Note: A dug-in foxhole with phone and large enough to take CP personnel is necessary when a truck is used.)

# Seacoast Artillerymen Must Be Versatile!

By Captains Thurman H. Hill and Louis B. Stephens  
Coast Artillery Corps

It is often thought that seacoast artillery is a static branch of the service, that all positions are always set up, and that standardized methods of performing missions always prevail. Our experiences with a seacoast battalion in the South Pacific have shown that seacoast artillerymen must be Jacks of all trades. Each day new problems confront us.

Our battalion, a detached regimental unit, consisted of two firing batteries and a headquarters battery. We were alerted for overseas movement shortly after the war started, moving to an eastern port of embarkation to join a task force which was being formed. There we received our supplies and completed our final preparation for movement, boarded our ships, and sailed for the South Pacific by way of the Panama Canal.

About the middle of February 1942 our task force reached its destination. Our first mission was to go ashore and select suitable positions for the guns, which we learned for the first time were 7-inch naval guns. The tactical layout of the island demanded that the guns be placed in groups of two, making four batteries of two guns each, in order to get complete coverage. The Navy arranged to give protection to the island until the guns could be emplaced.

The first problem that the book failed to mention was how to break down personnel, mess equipment, office equipment, and battery equipment designed for two batteries into four separate and complete batteries. We found that if you must, you can do things with less than you believed possible.

Headquarters and headquarters battery consisted of thirty-four enlisted men and three officers, excluding the battalion commander and executive. The three officers of headquarters battery, in addition to their normal duties, filled the jobs of S-1, S-2, S-3, S-4, communications officer, censor, personnel officer, and other duties on boards and courts.

The thirty-four enlisted men performed the laborious job of building and manning an underground harbor defense command post, erecting and maintaining the harbor defense communication system, supplying the four firing

batteries, running the personnel section, and building and maintaining their own battery area.

Much credit should be given to the communications section. This small group of men had to erect and partially maintain the communications net to the four firing batteries, a job of utmost importance in any tactical set-up. The batteries averaged five miles apart over extremely rough jungle terrain. Jungle country is not kind to field wire. If the wire is laid under the ground, the rain shorts it out in a little while; if the wire is strung above the ground, falling limbs and trees break it. Maintenance is a never-ending job. Later, on other islands, the lines of communication were much longer, as much as several hundred miles from the battalion.

It is most important that each firing battery train every man in field telephone communication and maintenance, because lines will go out continually. The communications section under the T/O will not always be able to keep the communications open, so any available man must be sent out to repair the net. It is a principle that a higher echelon maintain communications to the next lower echelon, but this is often impossible for a battalion and the battery is called on to install and repair the lines.

Our guns were to be mounted in permanent emplacements. Normally, this is a job for the corps of engineers, but we had no engineers. We had one marine officer and one naval officer as advisers; the seacoast batteries had to put in their own guns. All the officers and men in the battalion had to become proficient in the handling of engineering tools such as air hammers, air winches, concrete mixers, rock crushers, demolitions, picks, shovels, and various other tools, all of which we borrowed from a Navy construction battalion.

The island was a small atoll jutting almost vertically out of the sea. The ground was solid lava with about one foot of top soil. Our guns were emplaced on ridges with a height of site running up to 250 feet. This created a problem as to how to get this heavy equipment up 45° to 75°

slopes. We built improvised winches to get them into position. Seacoast artillery officers and NCO's, we concluded, should be able to substitute for engineers in building winches and hoists, pouring concrete, and digging necessary drainage ditches.

After our guns were emplaced, we were faced with the problem of setting them up for defense from attack by land, sea, and air. Foxholes and trenches had to be constructed. M1's, '03's, and BAR's, submachine guns, and .30- and .50-caliber machine guns with both AA and infantry mounts had to be manned. Gunnery of all types was included in the training program covering the small arms in which the men were required to be proficient. As the battalion was to act as an infantry force in defense of the island if the necessity arose, all officers and men were given training in the tactics and techniques of infantry.

Later, as the battalion moved forward with advancing operations, we were called upon to man 3-inch and 20mm and 37mm AA guns. It is therefore important that seacoast artillerymen know something about AA artillery. Seacoast armament, as we moved up, consisted of 5-inch and 6-inch naval guns and 155mm guns. We never knew when we left one island for the next what type of guns we would be called upon to man. It is important that officers and men familiarize themselves with all types of artillery.

Seacoast artillerymen must be versatile. They must not

only know their primary mission of defense against naval targets, but must also be prepared for the numerous other missions which may be assigned them. Know your seacoast artillery first. Basically, fire control, gunnery, and tactics are much the same for all guns. You will not always have TBA equipment, factory made. You will have to improvise plotting boards, range boards, deflection boards, and spotting boards. You will run into equipment foreign to you, equipment used by the Navy and the Marines, such as the Ford range keepers, or, as was the case of one battery, a New Zealand radar set, but if you know your seacoast artillery you should have little trouble in learning to use new or improvised equipment.

Our battalion was reorganized into a separate battalion about a year after we had been overseas, which added an additional firing battery and many needed men to headquarters and headquarters battery. Although the table of organization for a separate battalion calls for many more officers and enlisted men than we had when we left the States, it is still not too many. Our battalion has been reorganized almost two years now, and we have moved many times to different islands. We still find that seacoast artillerymen must be well versed in almost all phases of military operations. You can always depend on the fact that there will be times when you will be called upon to do things the book never outlined as your job.

## Supply in the Field for an AW Battalion

By Technical Sergeant Ray W. Kleinert, Coast Artillery Corps\*

The supply of a 40mm AW battalion in the field is done entirely by the S-4 section which is divided into four parts:

- a. Administrative.
- b. Rations.
- c. Class II and IV (all services).
- d. Ammunition.

The duties of the administrative section are varied. The S-4 officer contacts supply services concerning requirements, and passes the information to the supply sergeant, who requisitions and in turn passes on the information to the battery supply sergeants. The administrative section also submits reports, both weekly and monthly, to higher headquarters. The S-4 and supply sergeant must acquaint themselves with all types of equipment, keep files on initial issue of equipment to the battalion, and maintain standard nomenclature lists of the latest date. In the field, it is the duty of this section to know where depots of all branches of the service are located and what type of equipment is available there for issue. When requisitions are received

from a battery, they are consolidated by making a breakdown on paper from which a battalion requisition is made and then submitted to the issuing service. Upon receipt of the supplies, it is the duty of the supply sergeant to check the tally-out with the requisition in order to see that the amounts received agree with those requisitioned. Many times the issue is not complete and a back-order results, whereupon a new requisition is submitted, with the foregoing procedure to be followed.

Upon loss in combat of a major item, for instance truck, 3/4-ton, 4 x 4, it is necessary for the administrative section to contact the Corps ordnance officer who controls the issue of such major items. An allocation must be given to the using unit for such an item giving the reasons for the loss. Upon receipt of the allocation, the using unit takes the allocation to an ordnance battalion under which are several ordnance companies such as medium maintenance, heavy maintenance, automotive, and tank repair. The allocation is then recorded by the ordnance battalion to the company which has the particular item that is needed by the using unit. When this is done, the using unit picks up the item at the ordnance company which issues a tally

\*Sergeant Kleinert is battalion supply sergeant for an AW battalion

with the allocation number. The whole procedure can be done in about three hours upon loss of a major item, and replacement may be had depending upon the stock level that is maintained by the corps and Army ordnance depots.

The ration section is the busiest section of the S-4. Its duties are also varied and sometimes complicated. Upon going into the field, an emergency ration is maintained by the battalion consisting mainly of type "C" or "K" rations. Upon consumption of these emergency rations, they must be replaced by another issue for an emergency which may occur due to a long move or failure to receive rations. While in the field, ration returns must be submitted forty-eight hours prior to drawing. This allows for the depot to absorb the units in its allotment of rations. When the forty-eight hours is up the ration "crew" goes to the issuing Class I depot and may wait in line from one to four hours, depending upon the number of units drawing at the depot. Upon receipt of the rations, the "crew" breaks down the rations according to the strength returns that are submitted by the batteries. Much of the food is dehydrated, which is very simple to break down. Upon movement, rations are drawn by the ration sergeant who may not draw until the early part of the afternoon while the battalion may move at an earlier time. The sergeant is given a route map marked with the approximate location of the new area and follows up after the rations are drawn. Going into the new location a ration return is submitted to the nearest Class I depot forty-eight hours in advance of drawing.

The drawing of Class II and IV supplies (all services), is left to dependable men who can draw the equipment and check tallies upon issue. The location of depots is usually far in the rear and the men may be gone three to four days picking up the equipment, sometimes to no avail due to the lack of priority of the unit. This section also turns in all salvage of all branches and picks up the replacement if available.

The ammunition section is divided into two parts. The administrative portion is handled by the ammunition sergeant who keeps all records of authorized levels and expenditures. A very accurate record must be kept as the level goes down. When it drops below ten per cent it then requires an issue to maintain the combat load. A daily report is made from 0600 the preceding day to 0600 the following day, even if it is negative or the expenditure has

been merely ten rounds of caliber .30 ammunition for a rifle. All types of ammunition, HE, AP, ball, or tracer must be reported.

The second part of the ammunition section is made up of men with strong backs and the ability to count, with a corporal in charge. This section goes to the ASP for resupply of ammunition that has been expended. No more than the amount that has expended is drawn, as a combat load is maintained by a higher headquarters. The enemy situation regarding air activity controls the replenishment of the combat load and the work of these men. When not drawing ammunition, these men are used in the S-4 section for other duties.

When a 40mm AW battalion is attached to a division, the battalion's supply problems are simplified. All quartermaster supplies, Class I, II, and IV are delivered to battalion supply and then broken down by the various sections. The priority of a division is high with the result that the battalion may be able to replace all worn-out clothing and equipment. When batteries are attached to field artillery battalions, they are able to draw Class I and III supplies from the field artillery which results in less breakdown by the Battalion S-4. All other services are available to the battalion in the division and liaison with the G-4 of the division is maintained daily on all changes or additions that may occur. Requisitions are submitted to all services in the division in the same way as to depots, but are quickly issued and complete. Every effort is made by the division to complete the requisition in the least possible time. The division maintains "Supply Discipline" which must be followed to the letter and passed down the lowest man in the ranks.

Supply discipline must be emphasized at all times to the men and officers in the batteries. When a surplus of an item results, requisitioning should stop until gradually the surplus is absorbed. There may be a shortage of that item in the future. Also, the biggest headache that the supply section has is that the supply officer and supply sergeant often do not look ahead far enough upon the expenditure of certain Class II and IV supplies. They should never wait until their supply is exhausted and then begin to requisition and to complain that they cannot obtain needed items. Supply officers and sergeants in the batteries should study and place more emphasis on the responsibility for and care of property.

## Fluid Front Flak

By Captain Thomas M. Quayle, Coast Artillery Corps

A mobile antiaircraft artillery gun battery, during a very rapid advance, has problems all its own. In order to study these problems, we must remember that an AAA battalion is an entity of itself. In a one-month period my battalion was assigned as army artillery (organic), attached to a different army, relieved from attachment, and then attached to a corps. This corps was then attached to another army, and we followed. During this time, we were under three AAA assignments. Assignment of missions usually came from group

headquarters. At times, no one seemed to know or care who we were under. But a gun battery BC is not primarily concerned with the above items—his problems are more immediate.

In France, the road net is good. The Corps of Engineers does an excellent job of maintaining roads. They are either macadam or gravel base affairs, two lane. The country has been excellently mapped; I have yet to find an area which has not been mapped. But I have seen many officers who

could not read maps. The battery has about three enlisted men who are qualified map readers. Point one: learn how to read a map. Once a sergeant of AAA tried to explain to me that the western edge of a map was the right edge! Officers must live with maps. They must use a map when they go to a latrine during training. And they must proceed to the latrine along a grid azimuth—they must return by a back azimuth. An officer must be able to pin point his location on a map at any time during a campaign.

A typical move involves a call for BC's to report to battalion headquarters where they are given two facts: (1) the coordinates of their new position (2) an RC\* on the road. The BC then returns to his battery, gives the executive the information and tells him the situation. The BC then leaves on his reconnaissance—in a jeep. He travels light and fast. He finds the RC, reconnoiters a route from the RC to the position, spots the position he expects to occupy, goes to the RC, and meets the battery and leads it into position.

But, the author was engaged by an enemy 88mm gun while on one such reconnaissance. He has found his position to be occupied by the enemy. His battery had been split into three parts—to avoid road congestion. Batteries have had to pull into fields off the road at a minute's (literally) notice. The mission assigned to a battery is subject to change while the battery is on the road. I have reconnoitered a position, and reported to the RC only to be told that I was to go into another position. At this time, the battery was about fifteen minutes away from the RC. This means that a thorough, detailed, time-consuming reconnaissance is impossible. It has to be accurate and fast.

In reference to battery movement, guns, fire control instruments, men, and ammunition must arrive; all else is immaterial for the moment. The battery was loaded down with many nonessentials which were abandoned: wire camouflage netting, plotting boards, showers, bicycles, buckets, latrines, mess tables, empty gasoline cans—to name a few items. I also abandoned a "dolly" for an SCR 584. It broke on the road; a battalion only needs about two of them anyway. I have never used the thing. I carry 740 rounds of 90mm ammunition plus about 40,000 rounds of .50 caliber. This stuff takes room, and it is a vital *must!* Combat-loading plans are good, but they must be flexible. In the event of a breakdown, some stuff must move immediately, some must be picked up later, some must be abandoned. These are command decisions of the moment. I know of no improvements that can be made on American motor transport. It is far superior to any other.

I have seen trucks loaded with gasoline and ammunition jammed bumper to bumper along a road for five miles, about three or four miles from the front. Thank God for the AAF! The German Air Force could have raised hell, and good artillery could have turned such spots into an inferno. The armored force and the AAA have excellent road discipline. The enemy has poor road discipline, and he has paid dearly for it in blood, vehicles, guns, and ammunition.

Supply problems are Class I, III, and V items. Class III

\*An RC is a report center. It is a point at which the BC meets his battery on the road, and a point at which the CO may be found until a CP can be opened. It is the point where the BC informs the CO of the exact coordinates of his position, and the point to which the Battery Battalion messenger reports after he has been to the battery position.

stuff seems to be the toughest. We draw about 1,700 gallons from a dump in five-gallon cans. We carry it until we need it, then dump the cans into vehicles and leave the empties along the road for a salvage crew. The gasoline moves vehicles. The need for the stuff is enormous. This one battery used over 4,000 gallons in one week—800 five-gallon cans for one AA battery. Ammunition usage depends on how much action—four hundred rounds combat load is sufficient if it is replaced daily. Thirty thousand .50-caliber rounds are too many. Half of that is plenty.

Rations are K's, C's and 10-in-1's—no problem there. Water usage is about 300 gallons a day. The water comes from corps of engineers' water dumps or civilian sources. Halazone pills are used in the latter case.

The rules for engagement involve a problem. Because of our terrific air superiority, it is necessary to take drastic precautions against engaging the AAF. A BC must know the horizontal and vertical location of his target at all times. The rules for guns are well established and defined—we have very little trouble. But a gun battery has many .50-caliber machine guns. Engagement with these depends almost entirely on visual recognition, and too few people are qualified to distinguish friend from foe. Train AAA in visual, instant target recognition. Particularly the AW and .50-caliber MG sections. But every man in the AAA must be a TR expert. We have engaged Me-109's, P-51's, P-47's, and Ju-88's all in daylight at close range. I have seen a P-51 shot down, and the poor pilot bail out without an enemy shot being fired. Such instances are rare—but they happen! The only cure that I can think of is target recognition and common sense. (The latter is rare beyond belief.)

AAA is not a rear-area branch of the service. AA batteries in this battalion have moved because of enemy proximity. AA batteries have been engaged by 88mm guns. This battery entered the town of ——— while enemy trucks were still burning. The mission of corps AA is to protect the routes of the corps advance and to provide incidental AA protection to corps artillery and dumps. Our missions have been protection of river crossings and road bottlenecks. As this is written, I am surrounded by American Field Artillery. In this connection, during the AAUTP, an insufficient amount of time is spent on field artillery methods, and too much time is spent on emergency methods of fire control. We have fired as field artillery, but we never expect to use emergency methods of AA fire control.

A word about demolitions, mines, and booby traps. AA men have been killed by teller mines, S-mines and booby traps. During training have AA "deloused" the positions they expect to occupy. How many men learned how to use the mine detector during training? How many men can knock down a tree thirty inches in diameter with composition C? Can they use demolitions? We have used hundreds of pounds of the stuff.

To summarize and conclude: The AA training is correct, but methods could be improved. But a few people must learn the hard way. For example, map reading is not learned well enough—you can't learn it entirely from a blackboard. You can't learn target recognition from pictures and words—you must actually see the targets in flight. You've got to use maps and airplanes! An outfit will do exactly the same things in combat as it does on maneuver

shells make little difference, and when they do it's too damn late. Technically we've got the best AAA in the world; the equipment has capabilities beyond the men who use it. The reliability, serviceability, and practicability of the equipment is magnificent. It stands up under the terrific punishment of war. The errors are nearly all personnel

errors. Errors in tactics and technique can be corrected only by leadership. And leaders are trained—not born. Leaders need education, experience, and blood spilled in front of their eyes. They must know their men and their equipment. But nothing teaches a leader so much as the sight of American blood and broken American bodies.

# Field Experiences with Ammunition

By Captain J. P. Murphy, Coast Artillery Corps

The handling of bulk ammunition comes within the scope of so many persons who have no previous experience in this line that it well behooves the C.O. of an organization to take special precautions regarding this item when moving overland or by sea.

We moved as a battery, from one South Pacific island to another, a distance of over 1,000 miles, and carried three units of fire, 1,200 rounds, doing the loading and unloading with unit personnel. The ammunition we had was handled by truck and train and loaded on a ship in the U. S., unloaded and handled by truck to a dump on our first island, reloaded on trucks and reloaded on our ship for movement to our destination, unloaded and trucked to a dump and then reloaded and trucked to the guns when needed. This amount of handling is bound to damage a proportion of the ammunition, but if every effort is made properly to control each operation, the damage will be kept to a minimum, and the amount of work necessary to make it serviceable will be in direct proportion.

The 1,200 rounds drawn by the battery from the battalion dump was in good condition on the whole. It was trucked to the loading beach and unloaded in the sand, each shell being placed with its base down, and not piled in the dump, before being loaded on the trucks, each round was inspected to see if it had a rope or rubber grommet. The powder was shipped in clover leaves of three charges, about fifty per cent having wooden crates as originally shipped from the arsenal.

The Navy supplied LCM's to transport the ammo from the beach to the AP and each LCM was lined with rope slings to facilitate transfer to the AP. About twenty projectiles were placed in each sling, and at the AP the ends of the slings were drawn together, hoisted in the air and set with some roughness in the hold. This particular operation, repeated at destination, provided the most serious source of damage. The sling loads looked like the inside of grab bags when being hoisted. Shell grated on shell, grommets were torn off and rotating bands were severely cut, and the ammo was generally in about ten per cent worse condition. The powder in wooden cases was not damaged to any great extent, but each clover leaf that had no framework contained at least one damaged fiber case after the operation. This was the only rapid method of

loading in use, and we were in a hurry for more than one reason. It wasn't until we were under fire that the importance of the ammunition situation really dawned on us. Try removing a powder bag from a deeply creased fiber case and you will understand what I mean.

On the ship plenty of room was available, and the shells were stowed in excellent fashion, in one layer, bases down. However, when unloading, the conditions described for loading were aggravated by the urgency of the situation and an air raid which made it impossible for the transport to delay. A quick way to get gray hair is to watch your ammunition being lowered by net into a landing craft, hear it smack the bottom, and then watch the winch operator jerk his net out from under the loose ammunition. Shells can really do tricks when handled in this fashion, but it is not recommended.

Our first problem was to occupy positions, but for obvious reasons it was imperative that the beach be cleared of all property quickly. We had four 2½-ton trucks to move all battery property, sixty days rations, 1,200 rounds of 155mm gun ammo, and various other items of equipment which were made necessary by the mission. Ninety per cent of the loading and unloading was done by the personnel of the battery, and if I ever want intentionally to tire men, I will pick manhandling of ammunition as the best way.

A Marine Defense Battalion landed shortly after our unit, and displayed a system for unloading and loading ammunition which seemed to be an excellent solution to some of the problems. A palette (or sled) on which stood about twenty-five projectiles was used in place of the net. The cable from the boom had four ends, each one of which could be attached to a corner of the palette, and thus provide a means of keeping the palette flat while being hoisted. The primary advantages of this system were that the ammunition suffered much less damage, and could be loaded palette on palette and thus conserve space on ships and in dumps. One of the disadvantages was the inability to load the trucks at the beach without first removing the projectiles from the palettes, as there were no small beach cranes available to pick up these 2,500 pound loads. Another organization cut down on time by having an empty truck in the landing craft to receive the net loads of ammo, thus cutting out two handling jobs at the beach, and still

another borrowed amphibious 2½-ton trucks to take the load directly from the ship.

The fiber cases are waterproof and will hold up for a long time. In a test we removed the charge from a case, placed several rocks within, resealed the case in the usual fashion and submerged it in the bed of a stream. After twelve days we removed the case from the water and found that not one drop of water had managed to get inside.

We were fortunate that cases were as waterproof as they are, as in our first position we dug powder pits which flooded in the first rain. By the first rain is meant one of these daily downpours where it is doubtful if the ocean is straight up and coming down, or out where it should be. Hard ground without good drainage system from the bottom of the pits is just as bad as low ground. We learned the hard way that sandbagged powder shelters, above ground, were more practical if not quite as safe as the conventional type.

At the first opportunity we prepared racks for the powder to keep the bottom row off the ground by at least a foot, and to provide air circulation. In the battery dump the same thing was done, and canvas shelters (fireproof) were placed above the top layer for protection from the rain, falling coconuts, etc. It was an excellent dump, and we were proud of it, until one day we got to the bottom of a pile of charges and found that the termites that abounded in great numbers had grown fond of the dump as well, and had eaten through the bottom racks, the bottom layer of fiber cases, through the silk bags, out the opposite side of the cases and were ready to make a meal of the second layer. The only way we found to combat this trouble was to eliminate as many termite breeding places as possible and to turn the charges once a week, wiping the exterior of the cases clean.

Ammunition supply in battle is simple. Without any part of a train, all you need is a truck, a crew of men you can spare without touching the firing element (our cooks, etc., manhandled our ammo), a damn good ammunition sergeant, and places to get it and put it. That sounds simple, but it wasn't for us. We couldn't spare a vehicle for exclusive ammunition use, so the ammunition sergeant salvaged a dilapidated Jap flat-body truck; the motor sergeant made it run with several wooden parts cut and finished by the carpenter. Say "extra men" to a Battery Commander and you are saying "give me your eyetooth." There ain't no such animal as an extra man. More than one of our meals spoiled because our kitchen section was out getting ammunition. Our place to get the ammunition at the start was the divisional dump. (It was a Marine dump, and we had a Pfc. stationed there to look after our interest, which paid dividends.) This dump was located between a landing field and a fighter strip, and was a lovely place *not* to be at any time much less during an air raid. However, we went to the dump anyway, providing we didn't get lost in a blackout, get stuck in mud several feet deep, or find the only bridge across an unfordable river had been bombed or washed out.

One of the biggest problems was the number of lots of powder and projectiles. The shells had every possible number of squares, and they were also divided into two different HE types and an AP type. Four weights and three

different projectiles make for twelve different possibilities. The powder came from fourteen different lots, and each lot was further divided into damaged cases and undamaged ones. When one gun or one platoon fired a mission and the others did not fire, powder had to be redistributed and the shells rearranged on the ready-rack. Lots ran in quantity from ten to 200 rounds, and the ammunition corporals and sergeants really came into their own, keeping this mess straight, including the records involved. Our ammunition sergeant well deserved the Bronze Star Medal he received.

In firing we lacked smoke shells and found that this handicapped our spotting considerably. In some types of ground a delay fuze would send up a column of dirt in the air, and in others it wouldn't disturb the top layer of earth.

Time and manpower did not permit the scraping of the bourrelets and our main attention was given to repairing damaged rotating bands, keeping the grommets on until the last minute, and on one occasion cleaning and painting about 300 shells that had arrived with only a coat of rust on the surface. If time had allowed we would have given each shell "Target Practice Attention." The wood packing cases on powder clover leaves are excellent for making dining room furniture, latrines, floors, etc., and should be put to that use only when the powder to which it belongs has been fired. Attention to this matter will save a lot of transportation problems and damaged cases.

In a test during a target practice at a rear position, an effort was made to determine the increase in the temperature of a powder charge while waiting with a loaded 155mm gun for corrections to be applied to a trial salvo. The powder thermometer was first placed between the wall of the chamber and the side of the powder bag, and left for thirty seconds. Increases of .30°, .60°, and .80° were noted on three occasions when the gun had been fired only once from its cold state. The difference between these readings was not accounted for. The thermometer was left in the same position for one and a half minutes, after the second round had been fired, and an average increase in temperature of three and one half degrees was noted. The last test was made with the thermometer placed in the center of the powder bag, and the bag left in the chamber one minute, after the third round had been fired. This last test gave an average increase of .50 degree, at the center of the powder.

Obviously the powder temperature will increase when left in a heated gun, and for this reason care should be taken when trying to speed up fire by this loading-and-waiting system that excessive time does not elapse between the time the powder is inserted, and firing. Likewise relays and suspensions of fire after several rounds may cause some erratic results due to the increased pressure, and the wise range officer will keep this factor in mind when adjusting. A modification of the system is to load the projectile but not the powder and wait for the corrections to be applied and the order given to resume fire, before inserting the powder.

EDITOR'S NOTE: *The rate of absorption of heat by a grain of smokeless powder is under investigation by the Ordnance Department and it is hoped to furnish our readers with the results of such investigation in a future issue.*

# Rocket Development

Rocket projectiles, launchers and propellants are being produced in scores of war plants throughout the Nation.

Hundreds of thousands have been required, so that Army planes and ground troops could carry rocket warfare to Axis shipping, fortifications, communications and personnel. In the China-Burma-India Theater and in Western Europe, troop concentrations, railways, radio stations, and storage depots have felt the blast of American rockets.

Although officers of the Ordnance Department of the Army Service Forces pioneered the American use of rockets as long as twelve years ago, research and development since 1941 have been a joint undertaking of the War Department, Navy Department, and the Office of Scientific Research and Development.

Working with these agencies have been two National Defense Research Council groups: one with headquarters at the California Institute of Technology, Pasadena, California; the other at George Washington University, Washington, D. C.

The Ordnance Department's own Rocket Research Division at Aberdeen Proving Ground, Maryland, works closely with OSRD and NDRC.

Rockets may be used in four ways: Air-to-air, in which aircraft use rocket projectiles against other aircraft; air-to-ground, in which aircraft use rockets against ground or marine targets; ground-to-air, the antiaircraft use of rockets; and ground-to-ground, in which ground forces use rockets against ground targets. The use of rockets from naval craft against ground targets is a variation of the latter.

Rocket development in the United States has been aimed primarily at air-to-ground and ground-to-ground use. The Germans have experimented with air-to-air rockets, used by their fighters against large formations of Allied bombers, but without conspicuous success. Although we are on the offensive, however, and do not anticipate a need for large-scale antiaircraft defenses, air-to-air and ground-to-air rocket warfare has not been neglected by our scientists and experimenters.

## ADVANTAGES AND DISADVANTAGES

Rockets have advantages and disadvantages, the War Department emphasized. Principal advantages are great fire power and mobility. Because they have no recoil, they may be launched from light, mobile, inexpensive and easy-to-manufacture launchers—far lighter and cheaper than guns which would throw a comparable weight of standard ammunition.

The disadvantages of rockets are the subject of constant study in an effort to minimize or solve them. Rockets are inaccurate in comparison with guns. As a result, rocket fire is generally area fire. This inaccuracy, although it is being at least partially corrected, is the principal reason why rockets will only supplement standard artillery in this war.

Rockets also presented new manufacturing problems, chief of which is the propellant. This involves not only the propellant itself, which must have certain qualities of stability through a wide temperature range and a desirable rate

of burning, but also the problem of forming it into sizes and shapes suitable to mass-production techniques.

Arming devices present another obstacle. Artillery shells, for safety in handling, have a device which keeps the fuze from operating until after the shell is fired. The release of this device is called "arming" the fuse. New principles and mechanisms had to be worked out for arming rocket projectile fuses.

## U. S. ROCKETS

Most widely used U. S. rockets today are the Army's bazooka rocket and the 4.5-inch M8 projectile. The original bazooka, produced by Army Ordnance and NDRC in the spring of 1942 after a full year of experimentation, was a 54-inch tube with a handgrip and a simple battery attachment which ignited the rocket. The bazooka's length made it unwieldy in the jungle, so the folding bazooka, a 61-inch tube which breaks down into two parts for greater ease in carrying, was developed. The bazooka can be operated by one man, but the usual team is two, a loader and a firer.

The bazooka was developed primarily for antitank use. It fires a 2.36-inch projectile, highly effective against armor. Bazooka teams have knocked out even the giant German Tiger Tanks. In one case a GI bazooka man blew the turret off a Nazi tank from seventy-five yards. In a single day of fighting, two-thirds of a German panzer force was knocked out or damaged by bazooka teams and aircraft rockets.

The bazooka rockets themselves do not penetrate armor, but punch a hole through thick steel plate by a terrific concentrated and directed blast effect that throws hot fragments of steel around inside the tank. In some cases, rockets have blasted as much as six inches of armor plate.

The 4.5-inch rocket, launched from planes and vehicles, is the most widely used of the medium-caliber rockets. The 4.5 has an explosive effect equivalent to that of a shell from a 105mm howitzer; yet it may be launched from a launcher that weighs but a fraction of a howitzer. American planes may carry three-tube clusters of 4.5-inch launchers under each wing. Ground launchers, of which there are many types, may have many tubes or launching slides.

## OUR GROUND LAUNCHER

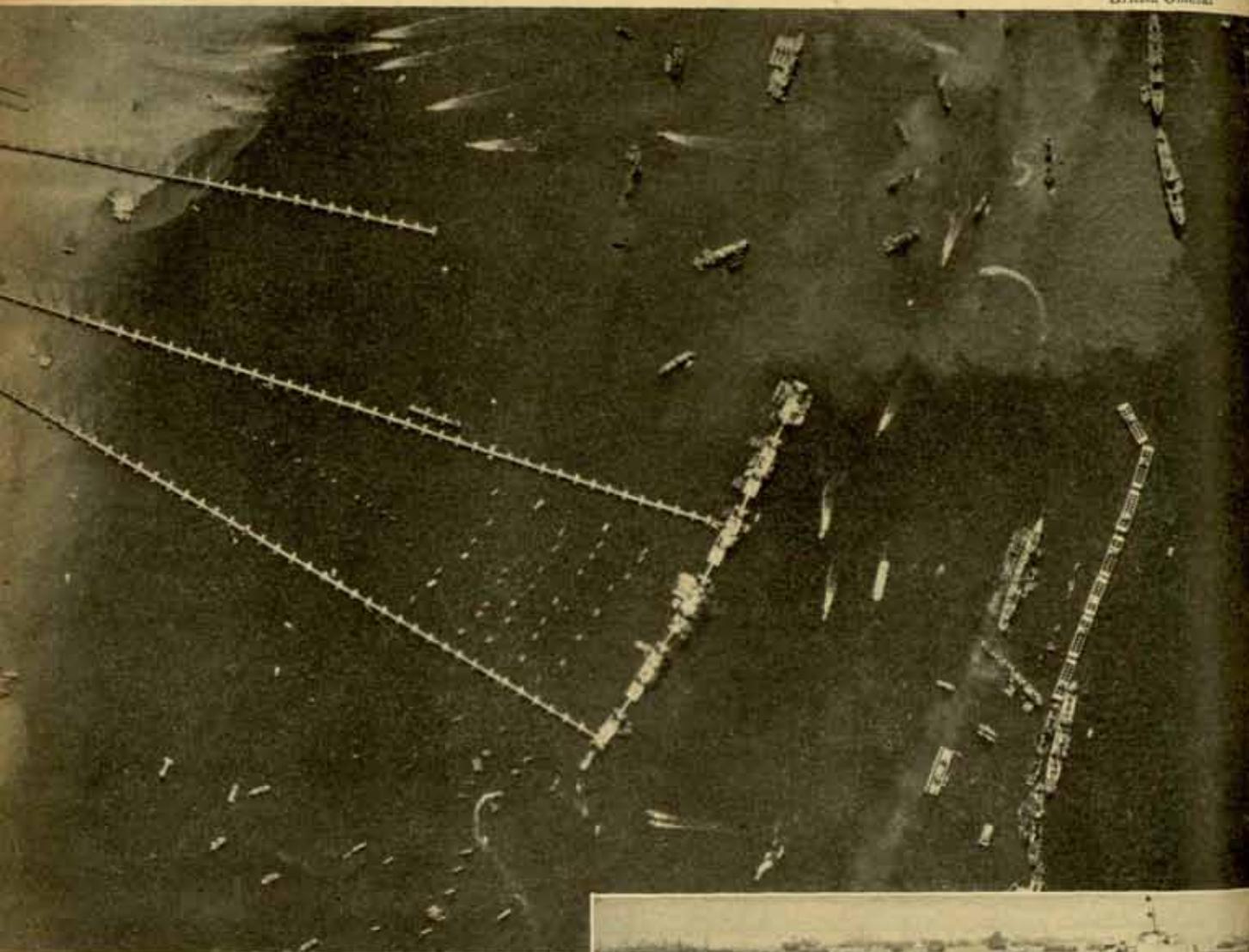
The only ground launcher which the Army has so far made public is the M12 artillery rocket launcher, consisting of a single plastic tube which serves both as a carrying case for its rocket and as a launcher.

The tube has three legs attached to it, and may be set up for firing from a foxhole, from against a tree, or in the open. The launchers may be wired into batteries to hurl salvos of 4.5-inch projectiles into enemy positions. The M12 is easily carried by one man. Several may be loaded into a jeep and rushed into action.

Launchers may be made of plastic or light metal, without any of the complicated recoil devices and breech mechanisms of standard artillery. They may consist of nothing but a rail or slide fitted with an electrical ignition attachment.

# FLOATING HAR

British Official



Below: An American vessel unloads at Omaha Beach.  
U. S. Navy Photo



Above: The wreckage of the American harbor after the storm.

Heavy seas beat against 23 freighters, loaded with concrete, sunk by the Coast Guard to act as a breakwater for the landings.

# BORS

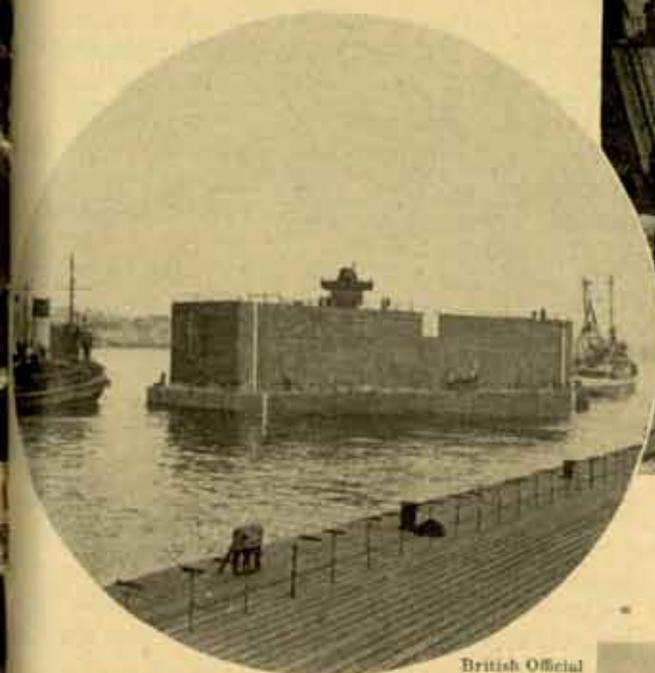
Military "experts," including the German variety, were amazed at the tonnage of matériel the Allies were able to put ashore in France without the use of a single major harbor. Prefabricated harbors, constructed in Britain and towed to the Normandy beaches, were the answers. Two installations, one British and one American, were set up, but the American harbor was wrecked by a storm.

erial view of a portion of the British harbor. Two parallel roadways lead to a wharf, which in turn is protected by a breakwater constructed of sunken concrete caissons.



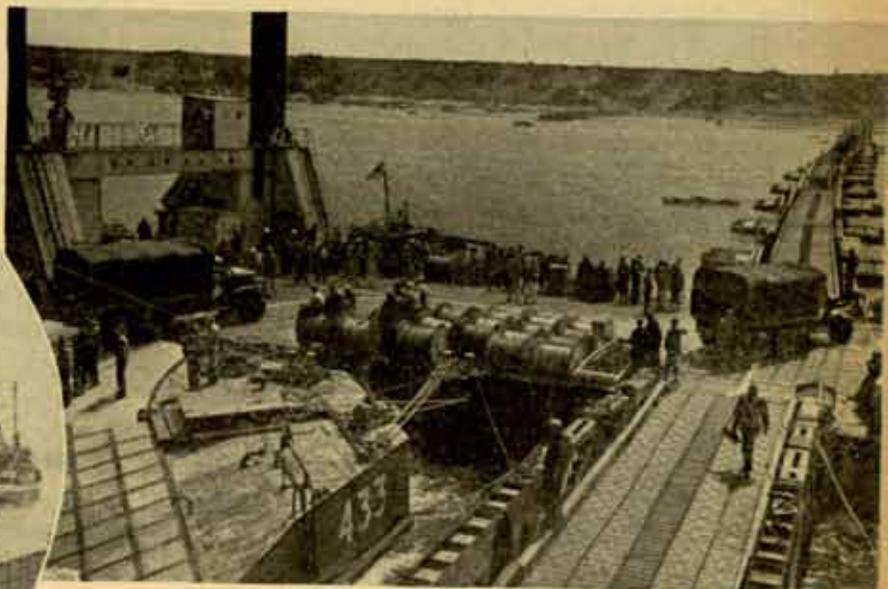
British Official

↑ The wharf section of the British harbor. The wharf consists of seven "spud pierheads," steel pontoons with a displacement of about 1,000 tons. Each pierhead is a "ship," complete with crews' quarters, etc.



British Official

↑ Above: One of the concrete caissons for the breakwater being towed across the channel.



U. S. Navy Photo

Above: The steel roadway leads to shore from the wharf section. This picture is of the American harbor.

Below: A side view of the steel roadway.

U. S. Navy Photo



# Axioms and Principles for Battery Officers

By Brigadier General E. W. Timberlake\*

The following principles and axioms collected from various publications, or learned through the school of experience, are republished in the hope that at least a modicum may be absorbed, retained, and thus become a part of your military character.

1. The measure of an officer is his ability to get results now! The measure of a soldier is his discipline and training.

2. The trained live, the untrained die. Your training mission is to be able to march and shoot, promptly and effectively in battle.

3. Take nothing for granted; follow through; check and recheck; correct on the spot. That which is not inspected is not respected.

4. Use all the means that you can lay your hands upon to get the job done.

5. In getting a job done, the order is 10%. The checking is 90%. Follow through! Never give an order that can't be obeyed.

6. Take your men into your confidence. Let all your subordinates know what is wanted. Give them the big picture and then hold them to it. Don't let them pass the buck.

7. The impetus of every activity comes from the top. There are no poor groups—just poor colonels. There are no poor batteries, just poor captains. The outfit reflects or smells of its commander.

8. The Eight Commandments of a Battery Officer:

- a. Put your men's interests first in all things. Give them every break.
- b. Establish a sense of unity in the outfit. All for one—*one for all*. Make yours "the best . . . in this man's army."
- c. Be the champion of your men. Fight for them. Defend them. Look after them.
- d. Know the names of all your men, and invariably call them by name.
- e. Talk to your men before battle. Make your problem theirs. Explain things to them. Give them the reasons why.
- f. Make the salute a greeting between comrades.
- g. Treat men as men. Don't pamper, nag or neglect them. Deal from the top of the deck. Always give credit where and when credit is due.
- h. Be friendly without being familiar.

9. There are two types of officers:

The "Come oners"—The "Go oners."

The Leaders—the Drivers.

There is no place in the American Army for the indignant, loud-voiced driver.

10. Concentrate on clear, concise, and understandable instruction. The GI is not a mind reader. Allot definite

responsibility in your orders and get them down to the individual who is to execute them.

11. Radiate confidence, know the answers, think and plan ahead. Smile, damn you—smile. Never let your men know that you are worried. Take a cut at the ball. Do something.

12. Keep control of your men. Resort to court martial is a tacit confession to your men of your weakness as a leader. A leader is responsible to and for his men in all things. He is boss.

13. Men do not think in battle. They act as they have been trained to act. The officer who leads his men into battle inadequately trained is little less than a murderer. Your probability of returning home with a whole body and clear conscience is far greater if you prepare yourself and your men now.

14. Wars are fought and won by men—not weapons; and in the final analysis, it is the knowledge and courage of the men who fight and the officers who lead them, that wins the decision. Look after your men! First, last and always.

15. "Nothing so annoys soldiers as a badly given order, badly understood, and which makes them walk more than they should." *Captain Elzear Blaze in Recollections of an Officer of Napoleon's Army.*

16. The eight principles of war as applicable to the Platoon Commander's job.

- a. Maintenance of the Object: Never forget your job. Remember you are here to turn out a team of fully competent soldiers. Stick to it night and day. Before you take time off—think. Is there anything you slacked on that you could make up now? Time lost can never be regained; keep on the job.
- b. Concentration: Are you using all the means available to you for the job? Are you wasting time on useless "palaver and bitching"? Are your NCO's doing their best; are they concentrating on the job? Do you find yourself for hours in the "fog"? Put all your excess time and energy on your job—that's where it does the most good!
- c. Economy of Force: Don't send a man to do a boy's job or a boy to do a man's job. Distribute your NCO's to the best advantage. Keep your men fit, a full-strength platoon each day. See that your men get a fair share of fatigue—training is the thing.
- d. Offensive Action: Don't dodge your problems; sink your teeth into them and tear them apart. Work hard! Think hard! Play hard! You are in this thing to win! Give it everything you've got! When the day is done, and you're getting dog-tired, the Commanding Officer is a grouch, the Adjutant is cracked, and the Battery Commander is a fool—forget it! Be a man and give that extra drive to show the world you are.

\*Published as a memorandum to General Timberlake's AAA Brigade.

- e. Surprise: Get a new idea; surprise the Commanding Officer with a bright suggestion. If you are shy and distant with your platoon—surprise 'em. Show them that you are human. If your crowd is slack—surprise 'em. Show them that you can crack down. Bowl them over with something new. If it makes sense, you can keep them interested every minute.
- f. Security: Keep your mouth shut; train your men to do the same. Your rank and appointment gives you the dangerous privilege of knowing information on which may depend the lives of thousands of men. If one dies because you talked, his blood is on your head, you have dishonored your rank and betrayed your country's trust in you. Be thoughtful! Be cautious! Be honorable!
- g. Cooperation: Do your job with regard to the jobs of others. You are a small cog in the machine, but if you don't click, the whole machine is out. Think before you curse the Supply Officer, he's human; think before you call the Medical Officer an idiot, he has only two hands and a small staff. Remember the Adjutant is a harassed, care-worn individual; when he wants information, get it fast and straight. Learn to work with others and they'll work with you.
- h. Mobility: Keep your mind open and agile. Don't become a slave to manuals and pamphlets. Learn to meet the situations as they arrive and be alert to change your plans accordingly. Remember a fast mind is often better than a fast vehicle—out of it comes the practicable application of all other principles.
17. Whether we like it or not, combat means confusion, intermingled units, loss of direction, late orders, misleading information, unforeseen contingencies of all sorts. Troops must carry out their orders under conditions of fatigue, hunger, unfavorable weather conditions, and the devastating psychological and physical effect of the fire of modern weapons. Not to take into account these grim realities in formulating a plan of action is fatal. To attempt elaborate and complicated maneuvers, requiring perfect coordination between many leaders and many units, is to invite disintegration and defeat.
18. We frequently hear this remark: "They will learn to take cover when the first bullet comes," or "Don't worry, those men won't do it like that when they are actually in combat."  
"Men who learn from the first bullet will only learn by fear, and that is the wrong way. They will scuttle to earth and figuratively put their heads in the sand like ostriches. Some will be wounded or killed by the bullet that is supposed to teach them. Fear leads to panic. Confidence, which is so essential to success, is never found where fear is."  
"Men must learn now to take cover. It cannot be too strongly emphasized. The purpose of training in concealment is to teach men and officers to conceal themselves and still keep the enemy in view. It takes training to lie quietly watching an enemy calm in the assurance that he cannot see you. It requires training to know the effect of backgrounds and it takes practice to learn how to use them."  
Colonel W. H. Wilbur in the INFANTRY JOURNAL.
19. A battery in the front line discovered is a battery in the front line destroyed.

## AAA MOBILITY AXIOMS

20. To be "Mobile Minded," the individual must:
- Be capable of quick decision.
  - Know when and where his well-laid plans are likely to go wrong and get there in time to make the proper adjustment.
  - Anticipate future problems intelligently.
  - Be ready to give the right solution to the unexpected situation.
  - Know his weakest points.
  - Keep his objective clearly in view, throughout the "Fog of Battle."
21. The following axioms will prove of immeasurable assistance in movements, if all personnel understand, absorb and apply them correctly:
- Plan your job.* Orders! Counter orders! Disorders! These are the result of indecision and unplanned action. Make up your mind quickly. Be definite, be consistent—get the job done.
  - Keep everyone informed. Don't keep information to yourself. Let everyone know about Report Centers, Rendezvous, Command Posts, Gun positions, Routes, Plans. Remember you may die and the battle must go on.
  - Issue marked maps. Map references given verbally will be misinterpreted. Don't take a chance; mark all maps to be used by subordinates. Remember that a person retains more of what he sees than of what he hears.
  - Don't put all your eggs in one basket. It may be a message, a courier, a vehicle, an order, or a gun. Any one of these may be halted by a blocked road, an unexpected breakdown, a well-aimed bomb. Have an alternate method ready, don't depend upon a single line of action.
  - Don't be a road hog. Others beside you have to use the same road. An infantry division has 1,700 vehicles. Don't block their passage. They have a job to do and a time to do it in. Have a rendezvous ready, off the road.
  - Keep guns off wheels and ready to fire. Guns on wheels are of very little use. Better a poor site than no site. Get guns in action first; adjust siting later if necessary. Everything else is dependent upon the length of time required to move the guns from one defended area to another.
  - Lose touch and lose the battle—keep touch and win. Communication is vital. You must have a Report Center and everyone must know its location. Faulty tuning of your radio or poor wire-laying may prove fatal to your mission.
  - Do something about it! The order hasn't arrived? The reports are not in? A vehicle is ditched? A gun is out of action? Don't wait. Do something!
  - Be one step ahead of the game. Go after information. Information breeds initiative. Don't be caught short! Anticipate.
  - Don't lose your head. Be hasty with caution. Others depend on you. You've got to get there and not die in the attempt. Speed of thought, speed of decision, speed of execution, first. Speed in m.p.h. second.

# A Test of Leadership for Battery Commanders\*

Officers and noncommissioned officers are, in general, selected and promoted on the basis of their qualities of leadership. Not all, however, possess equally high qualities of leadership. Some acquire the qualities and the habit of leadership readily. Others must work hard to obtain them. All should devote much time to improvement of these qualities.

With a view to aiding Battery Commanders to evaluate and improve their leadership the following test has been devised. The method of administering this test is not prescribed. However, it is preferable that the test be self-administered and that the grade attained be not divulged. In this way, the Battery Commander is more apt to make a more critical analysis of his own qualities and thus obtain the greatest benefit from the test. The grade attained should, however, be recorded by the individual taking the test and be compared with the grade attained in a retest which should be made three to six months later.

## THE TEST FOR BATTERY COMMANDERS

- (1) *Loyalty*: Are you loyal to your military superiors? Do you loyally carry out orders even when your own opinions differ from those of your superiors? (If you are not loyal to your superiors, your men will probably follow your example and not be loyal to you.) Are you loyal to the officers and men under you? Having given them general instructions do you back them up in their carrying out of those instructions? If your senior questions something done pursuant to your instructions, do you back up the men questioned and assume responsibility for your orders? If you are always loyal, score yourself 100. If you are generally loyal but are half hearted in carrying out instructions that you don't personally agree with, score yourself 50. If you are always finding fault with the instructions of your superiors and giving only lip service to their orders and instructions, score yourself 0.
- (2) *Attitude*: Are you cheerful and do you cultivate a calm and controlled manner or are you fussy or despondent or moody? If you feel you are able to "take" the bad breaks along with the good and maintain a spirit of cheerfulness in your battery, especially when the going is tough, score yourself 100. If on the other hand, you have been guilty of showing irritability or of communicating to your officers and men a "let down" feeling, score yourself 50.
- (3) *Courtesy*: Are you courteous at all times? Are you courteous to your subordinates as well as to your superiors? Have you ever "bawled out" an officer or

noncommissioned officer in the presence of the latter's subordinates? In dealing with your subordinates has your language been firm and decisive and yet free from sarcasm and abuse? If you have been uniformly courteous, score yourself 100. If you have on occasions lost your temper and given way to abusive and sarcastic language, or have been in general discourteous, score yourself 75 or 50.

- (4) *Personal Conduct*: Is your personal conduct above reproach and do you always set a good example? In answering this question, you will have to look at yourself objectively. Obviously, you are inclined to think well of your own personal conduct. Obviously, too you would not have reached your present position unless your personal conduct has been reasonably good. However, you may have faults which should be corrected. For example, are you invariably temperate in your eating and drinking habits? Assuming you pay your debts, do you do so promptly? Examine your personal conduct and if you think there is room for improvement score yourself less than 100 and down to 75.
- (5) *Professional Qualifications*: Are you professionally qualified for your job? You must be in order to have it, but are you as well qualified as you could be? Have you taken advantage of details as student officer at school if offered to you? Have you spent your spare time in professional study? Do you really know the things you should know and do you know how to apply them? Grade yourself from 100 down to 75.
- (6) *Unselfishness*: Are you unselfish? You may be selfish and not know it but, if so, you are probably the only one in the battery who doesn't know it. The two words "selfish" and "leader" just do not go together. So, examine yourself carefully. Think of the last time you went into bivouac at the end of a day's march. Did you get your wants attended to before you looked after the comfort of your men? Have you given up or delayed things you wanted to do in order to attend to the needs or comfort of others? Score yourself between 100 and 75. If you are less than 100, and most of us are, you have something you can start working on right away.
- (7) *Appearance*: Appearance and soldierly bearing of your men reflects your leadership. A soldier with a sloppy or worn-out uniform, run-down and dirty shoes, is a result of your lack of leadership. Do you insist on neat, serviceable uniforms? Do you follow up to see that shortages are filled, that shoes are repaired, that laundry and cleaning is properly

\*Abstracted from a Training Memorandum of the 37th AAA Brigade.

attended to? Score yourself between 100 and 75. Anything below 100 shows room for improvement.

- (8) *Knowing your men:* Do you know the name of each man in your battery? Figure your percentage score.
- (9) *Personal Interest:* Do you know the individual characteristics of each man in your battery? Do you stand ready to help any man with his personal problems and do the men know that you are? Do you extend sympathy to those who have suffered a bereavement? Do you congratulate those to whom some good fortune has come? You should be able to score yourself objectively and with considerable accuracy between 100 and 75.
- (10) *Consultation with Noncommissioned Officers:* Do you frequently consult your noncommissioned officers and accord full consideration to their views and opinions? If frequently, score yourself 100. If occasionally, score yourself 75. If seldom, score yourself 50.
- (11) *Promotion:* Have you evolved and do you apply a promotion scheme that is fair and just, that accords with Army Regulations and instructions from higher authority, and that recognizes merit, ability and faithful service? If you have, score yourself 100. If you endeavor to make proper promotions but without much forethought or plan, score yourself 75.
- (12) *Furloughs and Passes:* Have you a just and equitable plan for granting furloughs and passes, and do the men know what the plan is? Score 100 for such a plan which is known to the men. Score 75 if you grant furloughs and passes as fairly as you can, but without a specific plan.
- (13) *Punishment and Rewards:* Are you prompt in taking disciplinary action when it is called for, and do you weigh carefully the offense and the characteristics of the offender? Are you prompt in rewarding men who do good work either with praise or other rewards when appropriate? Do you make it possible for men to come to you with complaints and do you adjust their complaints whenever you can? Examine your actions on such matters over a period of several months and score yourself between 75 and 100.
- (14) *Interest in Battery Activities:* Do you take a personal interest in the mess? Do you take an interest in improving the barracks and the surroundings and in providing additional comforts to the extent practicable under the situation in which your battery is operating? Do you take an active interest in providing for recreation and athletics, and do you attend the athletic and recreational activities of your battery? Go back over a period of three months and list, at least in general, what you have done along these lines. Then consider what additional things you might have done. Compare the two and score yourself between 75 and 100.
- (15) *Keeping Men Informed:* Do you keep the men of your battery informed? Do you see that orientation periods on the progress of the war are well conducted, or do you slight them and find some excuse to omit them? Do you explain and have your officers and noncommissioned officers explain the purposes of the various training activities? When you have a tactical problem do you explain to all the men the situation and their part in the exercise and do you critique the problem for their benefit? Do you explain the need for realism and for thoroughness in training so as to fit officers and men for efficient performance in battle with minimum losses? Do you stress "combat mindedness" in all training? On each item in this paragraph score yourself between 75 and 100, and then record your average score.
- (16) *Performance in Target Practice:* (a) What score did you make on your last record antiaircraft artillery gun or AW target practice. If you made 75 or more, score yourself 100. If you made 50 or more, score yourself 90. If you made between 10 and 50, score yourself 75. If you made no score, but failure to score was not due to gross error, score yourself 50. If failure to score was due to gross personnel error within the battery, score yourself 0. If you have not participated in record target practice as a Battery Commander, omit this item entirely.
- b. If you are a searchlight battery commander and your percentages on detection, illumination, and carry average 80% or more, score yourself 100. If they average between 75% and 80%, score yourself 90. If they average between 70% and 75%, score yourself 75. If less than 70%, score yourself 50.
- c. If you are a Headquarters Battery Commander, omit this item.
- (17) *Performance in Gunners Examination:* Determine the percentage of men in your battery qualified as 2d class gunners, or better; score yourself with this percentage.
- (18) *Performance on Rifle Range:* Determine the percentage of men in your battery qualified as marksman, or better, and score yourself with this percentage.
- (19) *Performance in General Training:* If your battery has been rated on general training by the Brigade inspection team, score yourself with the percentage awarded by the team.
- (20) *The Court-Martial Rate:* Good discipline results from good leadership. Only a very small fraction of a unit constitute a disciplinary problem under good leadership. Chronic offenders or "ne'er do wells" are, as a rule, antisocial individuals or are suffering from a psychopathic disorder. The chronic offenders should be rehabilitated if possible. If all efforts fail, they should be brought before a general court-martial. If repeated offenses or failures to perform are due to psychopathic disorder, such in-

dividuals should be eliminated through Section VIII Boards. The court-martial rate over a representative period of time is a measure of leadership. If you have had no court-martial cases in six months, score yourself 100. For two cases or less, score 90. For five cases, score 75, and for more than five cases, score 50.

- (21) *The AWOL Rate:* The AWOL rate is also a measure of leadership. If you have had no case of AWOL in the last six months, score yourself 100. For three cases or less, score 90. For seven cases, score 75. For over seven cases, score 50.
- (22) *The Venereal Rate:* The venereal rate measured in cases per thousand per annum may fluctuate greatly in a small unit, but over a period of time the rate

is a measure of leadership. If you have had no cases in the last six months, score yourself 100. If one case, score yourself 75. If more than one case, score yourself 50.

After scoring yourself on each of the questions listed above add your score together and divide by the number of questions on which you have given yourself a score. The result is your composite score. Then set yourself the task of improving your score. You should also be able to add other questions that will serve to measure your leadership. Your honest answer to all questions may bring to light deficiencies of which you had not been fully aware up to that time. This knowledge coupled with a sincere desire to improve, the most precious quality a military man may possess, should be of inestimable benefit to you and the Army.



## Facts About Fuels and Lubricants

### The Product

GASOLINE (Unleaded and undyed)  
(U.S.A. 2-116)

MOTOR FUEL (All Purpose)  
(U.S.A. 2-103B)

MOTOR FUEL—72 Octane  
(U.S.A. 2-114A)

AVIATION GASOLINES  
(All Types)

OIL, Engine

LUBRICANT, GEAR, UNIVERSAL

GREASE, General Purpose, No. 2

OIL, Lubricating, Preservative, Special  
(U.S.A. 2-120, formerly AXS-777)

CLEANER-RIFLE BORE  
(U.S.A. 2-117, formerly RIXS-205)

### WHAT YOU SHOULD KNOW ABOUT IT

It's an unleaded gas for use in lanterns, stoves, and the like. Don't use it in vehicles except when preparing for storage or shipment.

A high quality gas with an octane rating of 80. For use in all vehicles in the combat zone, and all combat vehicles in the Zone of Interior.

Used in all non-combat vehicles in the Zone of Interior to conserve the supply of 80 octane gas.

They are designed for aircraft engines. Don't use them in vehicles or other ground engines.

For lubricating internal combustion engines (except aircraft engines) and certain artillery equipment. Cleans as well as lubricates. Turns black quickly, but its lubricating ability isn't impaired. Change on a mileage or hourly basis only—never a basis of color.

The only type available. Comes in three grades: SAE 75, 80 and 90. If it leaks, don't ask for SAE 140 as it isn't necessary and not available. Change the oil seals.

For lubricating wheel bearings at all temperatures. Don't use any other grease or grade.

For lubricating small arms. Provides day to day protection against rust and corrosion. Now available in convenient 2-ounce can which will fit into a soldier's cartridge belt.

For cleaning small arms bores. Dissolves primer salts and absorbs water. Has a little rust preventive ability, but should be followed by an application of the above preservative. Also comes in a convenient 2-ounce can.

# OFFENSIVE IN THE PACIFIC



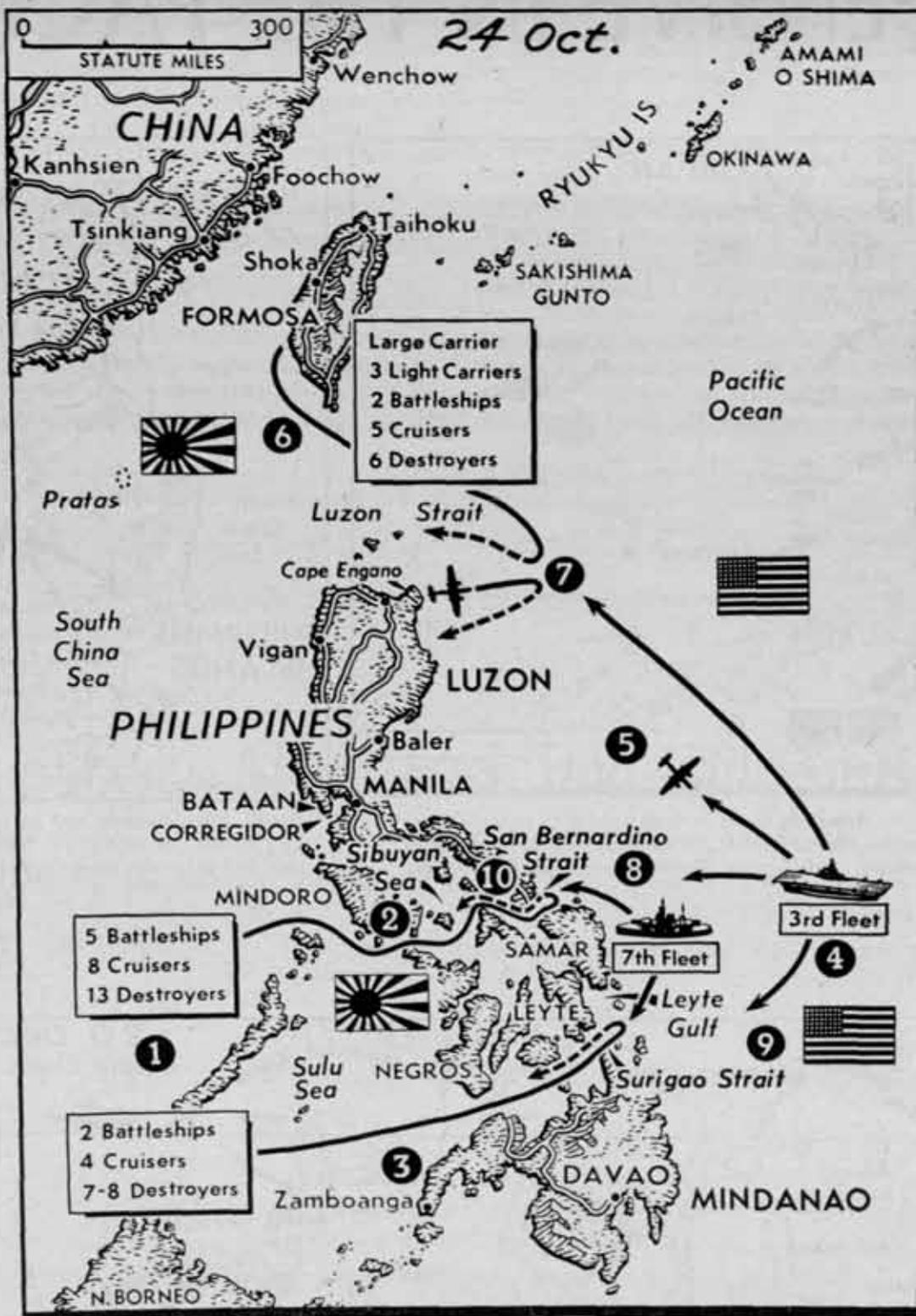
Arrows indicate American blows in week ending 13 October. Surface ships shelled Marcus Island; carrier planes raided the Ryukyu Islands, Formosa, and Luzon. Bombers attacked Balikpapan.



Pacific Fleet communiqué announced, on 16 October, air attacks on Nichols, Nielson, and Mariveles airfields, and on Aparri.



On 19 October Tokyo reported an American invasion at Saluan. The Japanese reported also a carrier plane strike on Manila; B-29 raids on Formosa; and an Allied task force shelling Car Nicobar Island.



21-24 October. Japs are defeated in Philippine Sea battle. According to the Oct. 29th Pacific Fleet communiqué (1) Jap Fleet Units were detected moving northward from Singapore 21 and 22 Oct., (2) one group moving through Sibuyan Sea and (3) another moving through Sulu Sea: (4) Third Fleet aircraft attacked the two Jap units 23 Oct. while (5) Jap shore-based planes attacked U. S. carriers with heavy enemy losses; also (6) on 23 Oct. a third Jap force was detected moving southward from Formosa; (7) Third Fleet units moved north to surprise the Jap Force early 24 Oct., scattering it before the arrival of Jap shore-based aircraft; (8) Seventh Fleet units attacked remnants of the Jap Sibuyan Force 24 Oct., chasing them back through San Bernardino Strait and (9) in a night action 23-24 Oct. destroyed the Sulu Force; (10) Third Fleet aircraft continued the battle against Japanese survivors attempting to flee westward through San Bernardino Strait. Boxes indicate size of Jap Fleet units at start of battle. Broken lines show Jap retreat.



As of 26 October, solid lines indicate American control of the Pacific. Broken lines show Japanese area of control at the peak of their power.



Battle lines on Leyte 30 October.

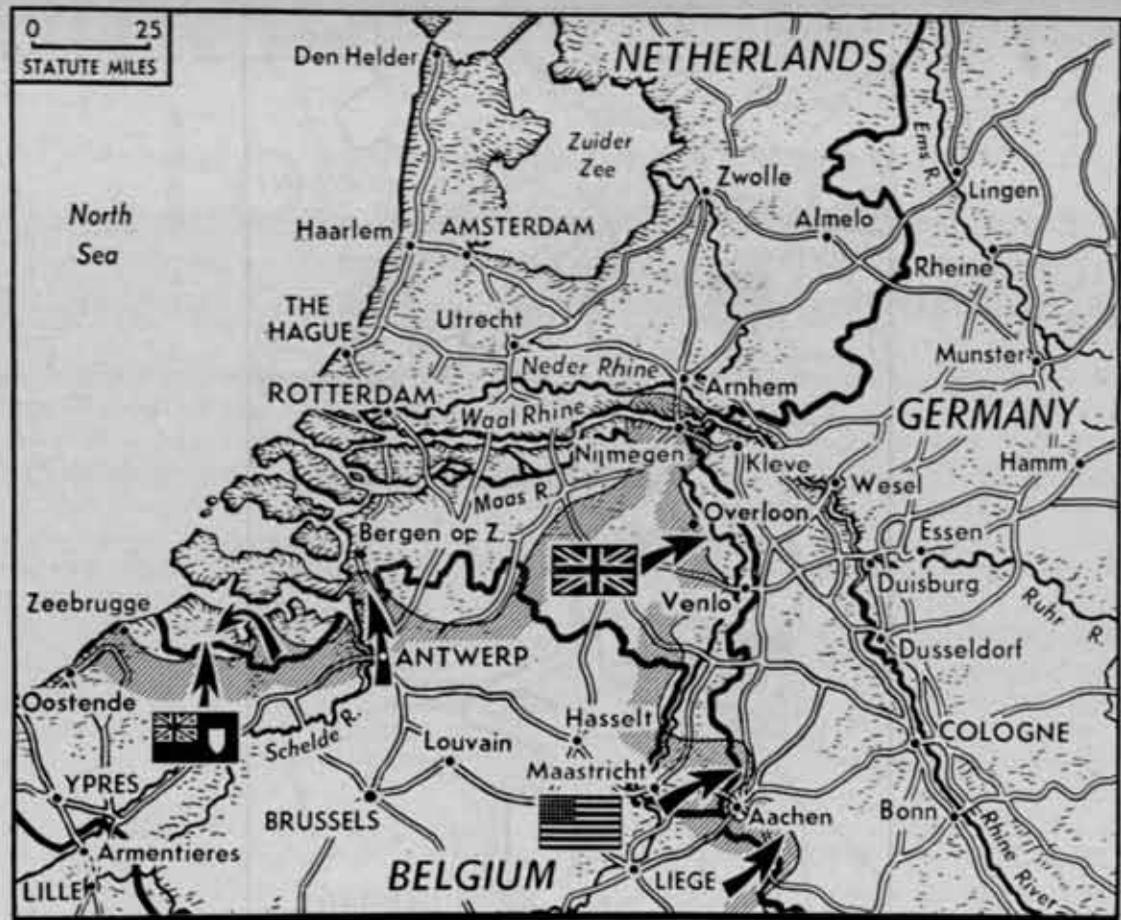
# EUROPEAN THEATER



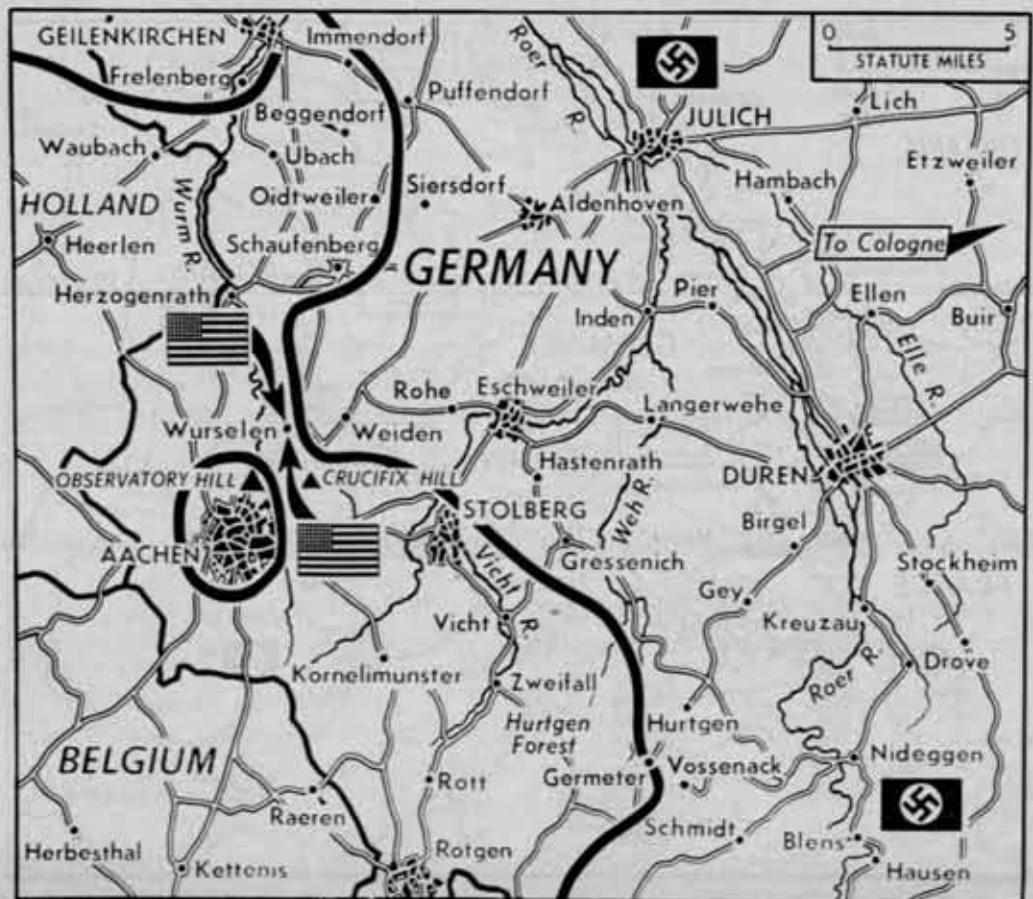
On 6 October, the three battlefronts in Europe were as indicated by the heavy black lines. Arrows show main drives.



The situation at Aachen on 12 October.



Arrows indicate the British, Canadian, and American offensives at the northern end of the western front on 14 October. Shaded line is battlefront.



Heavy line is approximate battlefront on 16 October. Aachen has been encircled.



The situation on 4 November. White arrows indicate potential drives toward the Rhine.



Marshal Stalin's estimate of German strength, in his speech on 6 November. Shaded lines are approximate battlefronts.

# Bombing of AW Field Fortifications

By Lieutenant Colonel A. Lester Henderson, Coast Artillery Corps

A windfall of condemned 100-pound bombs—outmoded for Air Force use but still packing their original punch—enabled our AAA Automatic Weapons Battalion to give various types of field fortifications a full-dress bombing test in experiments conducted March 7-8, 1944, near Muroc (Calif.) Army Airfield.

The noisy super-fireworks were witnessed by the entire battalion and the soldiers were able to see for themselves that:

(1) A dug-in fortification lined with sandbags can take much more punishment than one lacking the sandbags.

(2) Vertical sandbagging will give way before sandbagging that slopes slightly outward from the flooring of the fortification.

(3) A wall of sandbags two bags thick, above the ground level, is a relatively flimsy protection unless backed up with tamped earth, at least a foot thick at the top.

(4) A sandbag wall three bags thick—properly laid with tringers binding the rows together—can take enormous punishment.

(5) Trenching between an emplacement and a bomb blast reduces the destructive ground thrust of the blast.

(6) In general, the type of 40mm gun emplacement in use by the battalion is highly durable.

The tests were planned as a joint S-2-S-3 project.

The observations numbered above supported the conclusions drawn from parallel tests conducted February 25-26, 1944, by an AAA Group at this same station. In brief, these conclusions were that "Field Fortifications constructed under specifications laid down in TB No. 69, AAC, 1 Nov. 1943, which are of the dug-in type, proved adequate in deflecting 500-pound bomb blasts at a minimum distance of 20 feet to 30 feet and 2,000-pound bomb blasts 40 feet to 50 feet" and that "Built-up type of fortifications are satisfactory when they are reveted to at least 5 feet to 6 feet at the base and 3 feet to 4 feet at the top in order to deflect bomb blasts. . . ."

Effects of concussion could not, of course, be determined. Screens to record the area of shrapnel penetration were blown down by the concussion of the first blast.

Since the bombs could not be dropped on the positions, "nests" of various depths from 4 feet to 6 feet square were spotted among the fortifications. In these, "settings" of five, ten and twenty of the Mk IV 100-pound demolition bombs were detonated with nitro-starch and primacord, giving the effect of 500-pounders, 1,000-pounders and a 2,000-pounder.

For reference in describing the results of the bombing in detail the detonations may be numbered as follows:

Bomb No. 1—Twenty 100-pounders at ground level.

(Bottom layer of bombs was 1 foot below the surface, top lay 1 foot above.)

Bomb No. 2—Ten 100-pounders 2½ feet below ground level.

Bomb No. 3—Ten 100-pounders 4 feet below ground level.

Bomb No. 4—Five 100-pounders at ground level.

Bomb No. 5—Five 100-pounders at ground level.

Bomb No. 6—Ten 100-pounders at ground level.

Bomb No. 7—Ten 100-pounders at ground level.

The fortifications were of several types, some non-standard, so that a variety of results could be expected. They were dug in moist sand—probably as unstable a type of soil as might be found.

Chief target of bombs No. 1, No. 2, and No. 3 was a 40mm gun emplacement (Figures 1 and 2). Adopted as standard for this battalion, the emplacement is dug in 2 feet and built up 1½ feet. A sloping, reveted ramp curves around the director pit to permit changing of barrels and to facilitate the maintenance of camouflage discipline. Sandbagging was one bag thick except for that part of the director pit above ground level (3 feet) which was two bags thick. Dirt fill around the gun revetment was at least 3 feet wide and around the director pit at least 1 foot beyond the second row of sandbags.

Bomb No. 1, the 2,000-pounder, was centered 45 feet from the gun emplacement. Chief damage was the director pit, where sandbags tumbled into the entryway to the pit from the ramp. (Figure 3.) There was considerable jostling of all sandbagging, with slight displacement, and a 2 x 4 frame for an ammunition box at floor level in the ramp was all but smashed. The gun pit proper remained serviceable.

Bombs No. 2 and No. 3, 30 and 25 feet from the gun pit respectively, virtually wrecked the pit (Figures 4 and 5). The director pit remained standing, but ground-thrust reduced its diameter at floor level by one foot.

An L-trench 15 feet from bomb No. 1, dug in five feet with no reveting, was collapsed and filled with dirt after the blast.

A foxhole, dug in 3 feet and built up 2½ feet with a double wall of sandbags, well banked with earth, was filled with dirt by bomb No. 1, 15 feet away (Figure 6). The dug-in part evidently was smashed by ground thrust, but that part of the reveting opposite the bomb crater remained standing.

An L-trench, dug in and built up like the foxhole but with a single row of sandbags (Figure 1, beyond screen) weathered bomb No. 1, 65 feet away, but was caved in by bomb No. 2, 40 feet away, and No. 3, 25 feet away.

Located 25 feet from bomb No. 1, an experimental com-



mand post dug-out (Photograph 6, beyond foxhole) was destroyed by the 2,000-pounder (Figure 7). The CP was an 8-foot square hole, dug down four feet and built up two feet with a double row of sandbags. The unlined walls of the pit crumbled and the unbanked sandbag walls toppled into the pit.

Built entirely above ground level, a power plant emplacement 3 feet high, of triple rows of sandbags (Figure 8) lost one bag from bomb No. 1, 65 feet away. Bomb No. 2, 55 feet away, and No. 3, 100 feet away, did no additional damage to this sturdy fortification.

Later the power plant fortification was a "bazooka" target. Two rockets fired from twenty yards at the closed end of the U-shaped pit tore down the outer wall of sandbags, ripped apart the middle row, but left the inside row intact. (Figure 9.) A third rocket fired at one leg of the emplacement tore down two rows of bags and displaced the inside row. (Figure 10.)

An unlined foxhole sunk 5½ feet below ground level stood up well under bomb No. 1, 75 feet away. Eight to ten inches of dirt fell into the bottom but an occupant would not have been harmed. The ground thrust of bomb No. 2, 55 feet away, and No. 3, 104 feet away, however, caused the sides to shatter and fill the hole to within 1½ feet of the top.

A machine-gun emplacement 50 yards from the gun pit virtually escaped damage from the first three bombs, which were more than 100 feet away, and was utilized for ground thrust experiments with the other four bombs. (Figure 11.)

The pit was seven feet in diameter, dug down 2½ feet and built up one-half foot. It was lined with one thickness of sandbags, with two on the parapet. Depth of the connecting L-trench for the water chest was extended to 5 feet so that it could serve as a test of a sandbag-lined L-trench.

Bomb No. 1, No. 2 and No. 3 weakened one wall of this L-trench, which was vertical, but did small damage to the other side, which was built with a slight outward slope.

(It should be pointed out that this machine-gun emplacement would have offered little or no protection from anti-

personnel bombs. I have learned from scores of Japanese bombing raids in New Guinea that a revetment must be built up at least 1½ feet to protect the machine-gun crew from so-called "daisy-cutters.")

Bombs No. 4 and No. 5, both 500-pounders, were placed 25 feet from the machine-gun pit. A trench 3 feet deep, 1 foot wide and 12 feet long was dug six feet from the emplacement perpendicular to the line between the emplacement and No. 4. This trench was to absorb part of the ground thrust. After the double blast—bombs No. 2 and No. 3, No. 4 and No. 5, and No. 6 and No. 7 were set off in pairs—it was found that one sandbag was displaced from the top of the revetment on the "untrenched" side and none on the "trenched" side. Otherwise, the walls remained firm.

A similar trench 4 feet from the revetment between the pit and No. 6 was prepared before the final two blasts. These 1,000-pounders were located 15 feet from the pit. The trenching again apparently prevented displacement of sandbags from the top of the revetment on the protected side, while four toppled from the revetment on the unprotected thrust and the entire circle of sandbagging was bowed in. This bulging toward the inside of the pit reduced its minimum inside diameter by sixteen inches.

In all of the close-in bombing, several inches of fine dirt and sand settled on the parapets and floors of the emplacements.

Bombproof shelters at distances adequate for safety permitted the personnel to observe the blasts themselves and duck below the vision slits before fragments reached the shelters.

The terrific bursts of flame, billowing clouds of smoke, and the sound of shrapnel raining hundreds of yards from the explosion, served to point up the tests as an object lesson to the troops.

They learned from actual observation not only the destructive power of bombs of different sizes but also the value of that additional row of sandbags, that extra foot of earth embankment, as a protection against that destructive power.



British Official Photo

A British Hamilcar glider disgorges a Tetrarch tank. The Hamilcar was "built around" the Tetrarch for airborne operations.

# The Rules of Land Warfare

By Captain H. C. Sawin and Captain Mac Harlan, Coast Artillery Corps

## PURPOSE

Sporting events and contests of all sorts are governed by clearly defined rules. Football, for instance, never would have become more than an unseemly brawl of brawn were it not for the control exercised by carefully compiled rules administered by diligent officials. A boxing contest, un-governed by rules, would have no standing as a sport—it would still be an alley fight.

Contestants are assumed to know the rules of whatever game they enter and tacitly agree to abide by such rules when engaged therein. So it is in war. For war, viewed dispassionately, may be looked upon as a gigantic, albeit diabolical, sporting event. As such, so-called civilized nations have agreed that its conduct should be controlled by certain well-defined regulations duly accepted and (sometimes) adhered to by the participants. These rules, embodied in that great collection of other rules, called International Law, form the agreements that govern all intercourse between nations, both in war and peace.

The Rules of Warfare are in two parts—those covering war on land and those setting forth the etiquette of naval action. Here we are concerned only with the rules affecting warfare on land.

As nations have matured and wars have become something more than a pastime for acquisitive gentlemen of leisure, certain methods of warfare have been examined and found unwarranted or mutually unsuitable. So, from time to time, during interims of peace, representatives of leading nations have met in lengthy session to discuss war rules and have reached well-considered conclusions.

Most of the rules of land warfare now in effect have come out of meetings at Geneva, The Hague, London and Washington. Each of these sessions has spawned many regulations under which the signatories agreed to conduct future wars. Other rules of land warfare have been incorporated in peace treaties in which erstwhile warring parties have agreed that in the future they will fight in a more gentlemanly manner. These are the so-called written laws of war. There are other rules, presumably just as binding, that are called unwritten laws because they have never appeared in treaties or conventions but are the off-spring of custom and usage.

Let's take a brief look at some of the more important rules which opposing nations are mutually enjoined to observe, once war is declared.

## ARMED FORCES

The rules of war clearly define the participants and classify them as either combatants or noncombatants. The rules state that a combatant must have a distinctive uniform and insignia in order to qualify as a bearer of arms. All other citizens are classified as noncombatants.

## HOSTILITIES

To start a war legally a nation must inform its prospective adversary that an attack is about to be made and must set

a date for the event. However, in order to admit the element of surprise both the warning and the attack may be practically simultaneous. At the same time neutrals are to be notified of the action taken.

## CONDUCT OF FIGHTING

The rules for the conduct of the actual fighting are quite voluminous and set forth in some detail just how each combatant must proceed. Broadly, however, any form of destruction of life and property is permissible that will bring the enemy to its knees in the briefest possible time.

Despite the latitude permitted there are many prohibitions applied to the process of destroying the enemy. Among the more important ones are:

- No unnecessary cruelty.
- No pillage.
- No torturing to get information.
- No use of poison (toxic gases excepted).
- No explosives to be discharged from balloons.
- No killing, wounding or torturing of prisoners.
- No glass-filled projectiles or dum-dum bullets.
- No use of the Red Cross emblem to protect combatants.
- No bombardment of undefended towns, villages, or buildings.
- No destruction of buildings dedicated to religion, charity, or the arts and sciences.

Certain types of mines are taboo and each nation is to remove all mines it has laid as soon as hostilities have ended.

These are only a few of the more important "must nots" to be found in the rules of land warfare. Manifestly humanitarian in concept, they are, unfortunately, often overlooked in practice. Violations in the present war, as well as in wars of the past, have been frequent and widespread and, at one time or another, all participants have been guilty in greater or lesser degree.

## WAR PRISONERS

Elaborate rules have been devised to regulate the disposition and care of the captured enemy. Prisoners are not to be subject to violence, insults or public curiosity. The wounded and sick must be cared for. No prisoner is to be given the third degree in an endeavor to get him to talk. All his personal belongings are to be left with him. None are to be marched more than twenty kilometers a day on their way to a prison camp. They are to be paid at the same rate as those of the same rank in the captor's army except—and this is noteworthy—no prisoner is to receive more pay than that to which he is entitled in his own army. Officer prisoners are supposed to receive the customary honors and privileges of rank.

In general all prisoners of war are entitled to the same type of quarters, the same quality of food and clothing, the same medical care, and are to be governed by the same rules, regulations and laws that apply to those of equivalent rank in the army of the detaining belligerent.

It is plain that the rules are idealistic but in actual prac-

ice there is much slugging in the clinches and the reported treatment of prisoners by some belligerents is, mildly stated, quite unorthodox.

The repatriation and exchange of prisoners is well defined in the accepted code of war. In addition, where special cartels exist between certain nations more detailed rules are set forth. Such cartels tend to further ameliorate conditions under which war prisoners are cared for and exchanged.

Contacts between nations on prisoner matters are usually handled through agencies set up by the International Committee of the Red Cross. Typically, such an agency is made up of delegates appointed by neutral powers. These delegates have access to all places where prisoners are interned and may converse with prisoners without witnesses.

The rules of land warfare are set forth in explicit detail regulations for the proper care of the sick and wounded. Special provision is made for repatriation, without exchange, of prisoners who have incurable diseases or who have suffered wounds which cannot be healed within a specified time—usually one year.

#### SICK AND WOUNDED

Disabled soldiers left on the battlefield after an engagement are committed to the care of the army that has possession. Proper disposition of the dead is also the duty of the forces holding the area where the dead have fallen. The rules of war also provide that when circumstances permit local armistices may be agreed upon for the purpose of removing the wounded.

Marauders guilty of robbing or mistreating the wounded or dead are subject to heavy penalties, including death.

The names of incapacitated soldiers taken by the enemy are to be recorded and lists sent to the opposing forces. The dead must be interred or cremated and their personal effects, including one of the identity tags, are to be carefully preserved and later forwarded for the record. The remaining identity tag must in all cases remain with the body and is to be left at the grave upon burial. Careful records of burial places are to be kept and exchanged when hostilities end.

Medical units are not to be attacked when engaged solely in carrying out their duties. While medics are permitted to carry arms they are to use such arms only to protect themselves and the disabled when attacked by so-called marauders.

Medical and sanitary personnel are not to be treated as prisoners of war if captured. This also applies to civilian agencies that are sometimes authorized to care for battlefield casualties. In the army of the United States the American National Red Cross is the only agency so authorized. The rules of war specifically state that such personnel, when captured, are to be returned to their own forces as soon as possible but in the meantime are to continue with their usual functions under the direction of their captors. They are entitled to the food, clothing, pay and allowances ordinarily provided those of the same rank in the captor's army.

Medical vehicles of the enemy may be seized and used temporarily by the captor for similar purposes but such equipment must be returned to the enemy as soon as pos-

sible unless there has been a prior agreement to the contrary.

Of course, firing upon, or otherwise bombarding any Red Cross or similar installation is expressly forbidden.

#### SPYING AND TREASON

The rules of war carefully define a spy as a person who penetrates enemy lines for the purpose of getting enemy information clandestinely or under false pretenses. No soldier, properly uniformed, who penetrates enemy lines to get information may be charged with spying. Moreover spies are given a legal status under the rules of war and the right to employ them is a matter of international agreement.

A person is subject to seizure and trial for treason if he is suspected of aiding or giving comfort to the enemy in any way. Any one so charged is a war traitor. This opprobrium applies to any individual, combatant or noncombatant, citizen, neutral, or enemy, who engages in any activity that helps the enemy.

There is a distinct difference in the treatment of spies and war traitors, who, having regained their own forces, are subsequently taken prisoner. A spy so apprehended must be treated as an ordinary prisoner of war whereas a war traitor may be tried for treason no matter when or where captured. Furthermore, a war traitor need not be caught in the act in order to be charged with and tried for treason.

Those who assist or attempt to conceal spies or traitors are equally punishable.

#### TRAFFIC BETWEEN WARRING NATIONS

The rules call for immediate and automatic stoppage of all traffic and communication between territories held by opposing forces. There are exceptions but such exceptions may be authorized only by mutual agreement between the heads of state or the highest military authorities.

Ambassadors, diplomatic agents and those seeking communication with the enemy under flags of truce may be granted safe passage into hostile territory.

Detailed specifications for the reception of a so-called *parlementaire*, which is a French word meaning "bearer of a flag of truce," are set forth in the rules of war. A *parlementaire* must approach the enemy lines in a certain manner. Failing to do so he runs the chance of being fired upon. He may or may not be received by the commander whose audience he seeks. If he is conducted to the rear of the lines he is blindfolded and taken in a roundabout way. Any enemy attempting an abuse of the flag of truce may expect reprisals.

#### MILITARY PASSPORTS AND SAFE CONDUCTS

Frequently military passports are issued to certain persons who are thus permitted to pass through military lines without being molested. Documents also are sometimes given to persons who wish to enter and remain in or pass through occupied areas. Such permission may apply to the transport of specified goods as well as to individuals.

Military passports may be revoked by the issuing authority at any time.

Licenses to trade between or within the lines are also authorized.

Sometimes so-called safeguards, consisting of a detail of

soldiers, are provided to insure safe conduct. Such safeguards may not be fired upon.

Cartels, defined as agreements between belligerents to guarantee the safe conduct of certain kinds of non-hostile enterprise, are frequently entered into.

#### CAPITULATIONS

A commander of a fortress, an area, or a theater of operations may surrender to an opposing force by agreeing to terms of capitulation. These should invariably be in writing and should set forth clearly all the terms of surrender. Failure to execute any of the clauses in a capitulation is cause for resumption of hostilities in that area.

#### ARMISTICES

An armistice is a written agreement, usually between the highest authorities of the warring powers which suspends military operations for a definite or indefinite period of time. If indefinite, hostilities may be resumed at any time by either party giving notice to the other according to the armistice terms. An armistice may cover military activities on all fronts or only in local areas.

A General Armistice is broader in scope, embodying both military and political principles and usually precedes peace negotiations.

The most temporary form of armistice is a Suspension of Arms which is usually arranged for some local military purpose such as collecting the wounded, burying the dead or exchanging prisoners.

In the absence of provisions to the contrary an armistice does not prohibit the carrying on of military activities within a belligerent's own lines.

#### GOVERNMENT OF OCCUPIED TERRITORY

A territory is considered to be militarily occupied when it comes under the complete authority of a hostile force. Invasion alone does not insure military occupation. The occupied territory and its government must actually be under the control of enemy military forces who, in turn, must be prepared to maintain a state of law and order. When occupation occurs local government may have failed to function entirely and must be replaced by military government. Or possibly local government may function in part with the sanction and participation of the occupier.

Briefly, under military occupation, it is possible for the occupant to promulgate or suspend laws, to impose restrictions, regulate commerce, censor press and mails, control transportation, assess and collect taxes. But military governors are expressly forbidden to abolish the rights of citizens to action in the local courts of law.

#### RIGHTS OF CITIZENS IN OCCUPIED TERRITORY

The rules of war prohibit requiring citizens to take an oath of allegiance while living under military government. All personal and family rights; all religious convictions and family relations are to be respected. In return citizens are expected to carry on their usual peacetime pursuits, obey the rules set up by the occupier and refrain from acts of violence or from engaging in hostilities.

Certain services may be required of the inhabitants but they will not be asked to participate in any act of hostility

against their own country. Those in key jobs and the professions may have their services requisitioned by the military authority. They may be asked to volunteer for certain types of military work, such as building fortifications, for which they will be paid. However, they cannot be forced into such work.

Military occupants may not force citizens to divulge information about the enemy.

#### OFFICIALS

Some officials in the occupied territory may be asked to carry on their regular duties. They must take an oath to perform their duties without prejudice to the occupying army. They are paid out of the public funds of the invaded territory. They may be removed from office if found dangerous, and punished, made prisoners of war, or expelled from the occupied territory.

#### ENEMY PUBLIC PROPERTY

Property of the enemy in an occupied area may be seized or destroyed only when such action is imperative to the successful prosecution of the campaign. Public property may be put to use by the occupant and such properties as mines, forests, light and power plants, arsenals, docks, may be operated for his benefit or even may be destroyed if military expediency is served thereby. Certain property of municipalities, religious and charitable institutions is to be treated as private property.

Public funds and securities, arms, stores and supplies may be seized. Property having no military value is not to be appropriated.

#### ENEMY PRIVATE PROPERTY

Private property of any type, if it has a military use, may be seized. However, it is not to be taken or destroyed just for the sake of destruction. Any private property seized for military use must be restored or paid for when peace is declared.

Certain types of private property may be destroyed without recourse if deemed useful to enemy forces.

Upon the authority of the commanding officer in the locality under military government goods and services may be requisitioned by those in control. Such requisitions should be made through local officials when practicable and it is their duty to see that collections in bulk are made. Prices for goods requisitioned are fixed by agreement if possible but may be established by military authorities.

Contributions may be levied for the needs of the military or for the administration of the territory. Receipts must be given for all such contributions.

No general punishment may be inflicted on the populace because of the acts of individuals. However, reprisals are justified in cases where regulations are violated.

#### WAR LAW PENALTIES

A belligerent who violates the rules of war is subject to penalties but these are so difficult to enforce that the whole system tends to break down as a result. Only four choices of recourse may be resorted to by the offender. They are:

- a. Publication of facts in order to influence public opinion against the offender.

- b. Protest and demand for punishment of offenders by appeal through neutrals or *parlementaires*.
- c. Punishment of captured offenders.
- d. Reprisals.

Of these the most effective is the ever present threat of reprisals and this is about the only remedy that keeps some belligerents from going all out in their defiance of International Law.

In the present war nearly all of the offenses listed have been committed at one time or another by one or more of the Axis belligerents. Thus a long list of war crimes and criminals is being compiled for postwar action by the Allies. Experience in other wars, however, has shown that very few war criminals are ever brought to justice. This fact, no doubt, has been the most important factor contributing to the flagrant violations that are permitted or condoned by enemy leaders.

The laws of war specifically provide that reprisals will not be employed except as a last resort yet both the Germans and Japs have been guilty of exacting reprisals the violence of which has been all out of proportion to the alleged crimes committed.

#### NEUTRALS

The rules of war specify the inviolability of a neutral nation's territory. Warring parties are prohibited from moving troops or supplies across neutral lands. It is the duty of neutrals to protect their own frontiers. They may attack forces attempting to violate their neutrality and such attack is not to be construed as a hostile act.

A distinction is made between the transportation of war supplies across neutral territory by military expedition and commercially. The latter is permissible while the former is not.

Bodies of organized neutrals may not cross neutral borders to join warring forces but individuals and small groups are permitted to do so if unorganized and unarmed.

Citizens of belligerent nations may leave to join their own forces.

Officers of neutrals on the active list are not permitted to join the army of a belligerent.

Neutral states may not furnish supplies or loan money to warring nations. Neither can hostile expeditions be outfitted in neutral territory. Commercial agencies and individuals, however, may sell war goods to any belligerent.

Established lines of communication—telephone, telegraph

and radio—in neutral territory may be used by belligerents. However, countries at war are not permitted to set up communication lines in neutral territory for strictly military use; nor are they permitted to use such military equipment as may have been established prior to declaration of war.

Soldiers of warring powers entering neutral territory, either by accident or design must be interned by the neutral. Such internees must be cared for by the neutral. Compensation for such care is to be made when hostilities cease.

The sick and wounded of either side may be convoyed through neutral territory if granted such permission. The neutral is not obligated to give its permission for such convoys but if it does so for one belligerent it must do so for any or all.

Railway matériel belonging to a neutral, if sent into the territory of a nation at war, may be requisitioned or used by the belligerent, if necessary. Likewise a neutral may use such equipment belonging to a warring power if it enters neutral territory. Such use is to be compensated for by both parties.

International lawmakers have done a thoroughgoing job of making the rules of war but who enforces them? There is no enforcing agency per se. No international policemen follow the beat of war to see that the rules are observed or to arrest belligerents who flout the law. As yet no unbiased World Court has been set up to see that war lawbreakers are brought to the bar of justice.

What then holds enemy nations in line? What causes war lords to keep an eye on the book while planning and executing operations to annihilate the opposition? It's a neat bit of psychology that turns the trick—fear of *reprisals*. The old biblical law of retribution—an eye for an eye—a tooth for a tooth—prevents wholesale violations. And it works, at least in fair degree, as we have seen many times in the present conflict. Yes, it's the fear that others will do unto you as you do unto them that underwrites whatever success may be credited to the Rules of War.

*EDITOR'S NOTE: This fear of reprisals works to a limited degree among what we term "civilized nations," but with a nation of industrialized savages like Japan, the law of the jungle appears to rule, ameliorated only to the extent that the power of the opponent brings fear and respect.*

*That Germany and Japan have violated not only the rules of warfare but the dignity of man and have conducted themselves in an inhumane manner raises many questions as to making workable rules of war and international law.*



Save your fire for the enemy. Don't let rubbish accumulate where it can start a fire by spontaneous combustion. And in case The Other Guy does, be prepared to put his fire out in quick order by knowing how to operate every kind of a fire extinguisher that's installed around your post, camp or station.

# Leads from Tracer Humps

By Lieutenant Colonel Kenneth G. Merriam and Lieutenant Frank B. Aycock, Jr., Coast Artillery Corps

Under target practice conditions, it is now possible to evaluate all elements of the automatic weapons fire control problem.

By simple means, target's speed and least range can be measured. As soon as the last round is fired on a course, these values can be announced, over a public address system, to the fire units. At each fire unit, the value of speed, or range, set in the sighting device is known. By comparing the actual value of speed, or range, as heard over the public address system, with the value set in the sighting device, an instructor who knows his lead zone characteristics can predict the nature of lead output performance to be expected with perfect tracking. By comparing his prediction with the report of down course observers, who have been "reading lead output from tracer humps," the instructor can infer much about the fidelity of tracking and can decide whether the sight setting used was reasonable.

The technique outlined above has been in use since May, 1944. In January of this year, a method of down-course lead spotting was developed at the AAA School. While the down-course lead spotting problem, or what was informally called the "tracer hump" problem, was being solved, the recent findings relating to lead zones were published in an article in the February issue of the JOURNAL. The article was called "LEADS IN A NUT SHELL." After the "tracer hump" problem had been solved, it was seen that the lead zone and tracer hump stories could be fitted together and that the combined story could be valuable in training sight operators and trackers if target's speed and least range could be measured. Accordingly, an easy way to measure these two course characteristics was developed.

There will follow discussions of the tracer hump problem; the use of lead zone characteristics for target practice analysis; the technique of measuring target's speed and least range in target practice; and how to observe for line performance. From these discussions, the reader should see how all elements of the fire control problem can be evaluated in target practice.

## THE TRACER HUMP

It would be easy to tell whether a projectile crossed the course line ahead of or astern of the target if the tracer could somehow signal to the observer when it had reached the range to the target.

The projectile moves out toward the target in practically a straight line. After the projectile is a few hundred yards away from the gun, the observer's depth perception fades rapidly. The observer then uses the moving target as a reference. Subconsciously, he forgets that it is moving. Relative to the target, the observer always sees the correct location of the tracer, in a plane normal to his line of sight.

The trouble is, he can seldom tell when the projectile reaches the range of the target.

The problem, then, is to persuade the tracer to give the observer a signal when it reaches the range of the target. If the observer is properly located, the tracer will give such a signal in the form of what is familiarly known as the tracer hump.

The tracer hump can be seen only from points in a down-course direction from the gun. As seen from such points, the tracer forms a hook pattern. In the absence of depth perception and knowledge of point from which the projectile was fired, the hook pattern would appear as shown in Fig. 1.

The tracer hump is the point on this hook pattern which is most ahead with respect to the target.

If the observer's head were in the slant plane (see LEADS IN A NUT SHELL) and if there were no influence of earth pull, the tracer streak shown in Fig. 1 (a) would appear as shown in Fig. 1 (c). The tracer would appear in the field of view at A and move to B along the course line, then from B back to A again, and out of the field of view. Actually, the first condition above is rarely satisfied and the second is never satisfied, so that some form of hook is always visible from points in a down course direction from the gun. To the observer, the hook is least pronounced when the target is on the approaching leg with respect to the gun. For this case, although the value of "x" in target lengths is sensed successfully, both the "x" distance in yards and target length in yards give a fore-shortened view to the observer.

Four different approaches to the problem have been used; they all yield the same results, namely:

(a) Humps observed are almost meaningless unless the observer is located near a particular point. This point is on a line, passing through the gun and parallel to the course line, at a certain distance (b) measured down course from the gun. The distance (b), in yards, is given by the following expression:

$$b = S'D'_m \dots \dots \dots \text{Eq. (1)}$$

where  $S'$  is target speed, with respect to the ground, in miles per hour; and where  $D'_m$  is the least range from gun to target in thousands of yards. (Example: If  $S' = 160$  miles per hour and if  $D_m = 800$  yards (so that  $D'_m = 0.8$ ), then  $b = (160)(0.8) = 128$  yards.)

(b) The ideal location for the observer would be such that he would see the hump form at the instant when the projectile reaches the range of the target. For rounds fired successively on a given course, this ideal location is different for every round fired. The location described in (a) has been found to be the best average location; that is, sensing errors from the prescribed location of observer will be less, on the average, than for any other location.

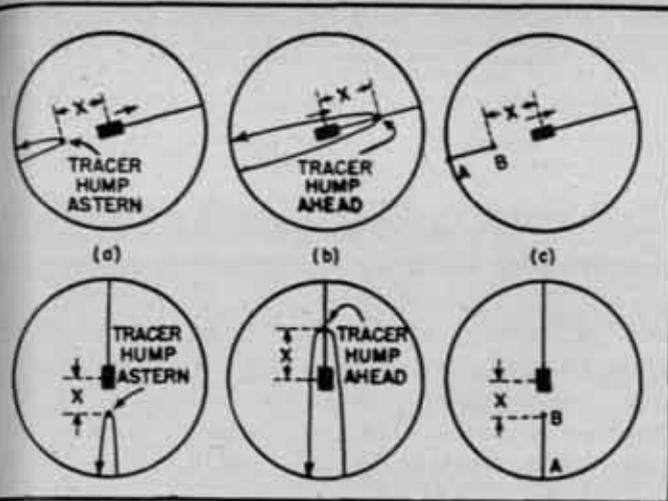


Figure 1.—Tracer hooks and humps. The three upper illustrations are for crossing courses; the three lower ones are for incoming courses.

(c) Lead sensings are obtained from the observed deviation distance, "x" (see Fig. 1). This "x" distance is expressed in target lengths.

(d) If, in target practice, the observer is located as described in (a), his lead sensing error, as given by the observed "x" distance, will never be more than two target lengths and will usually be less than one target length. Now S' and D' are never precisely known, even though they may have been measured for the preceding course. This means that the observer will not be located exactly as given in (a), and his head is likely also to be slightly out of the slant plane, despite his best efforts. Nevertheless, if he makes an intelligent effort to locate himself properly, his lead sensing errors, obtained by reading the tracer hump, are not likely to exceed two target lengths.

(e) Regardless of observer location in the down course direction, any slight lead sensing errors obtained from the tracer hump are always of the same sign. The hump will always appear ahead of where it would appear if the observer were ideally located.

For the average target practice course, this means that hump for opening and closing rounds will be seen about one target length ahead of where they would be seen if the observer could be ideally located. Humps for rounds fired near midpoint, with respect to the gun, will be seen correctly. The hump sensing error varies smoothly from about one target length for opening rounds to zero at midpoint to about one target length again for closing rounds.

2 (A) MATHEMATICS OF THE TRACER HUMP:

Expressed in the form of non-dimensional equation; the results of mathematical investigations of tracer humps behavior are:

$b_0 / St_p = 1 + Kt_p$  ..... Eq. (2)

$t_{II} / t_p = \sqrt{b/b_0}$  ..... Eq. (3)

$E = (St_p/L) (1 - \sqrt{b/b_0})^2$  ..... Eq. (4)

Where  $b_0$  is the down course distance in yards from the gun to the ideal location of observer (See (b) above).

S is target speed, with respect to ground, in yards per second.

$t_p$  is the time interval in seconds required for the projectile to move from the gun to  $T_p$ .

K is a constant for a given weapon (.123 for the 40mm., .170 for the cal .50, and .140 for the 37mm).

$t_{II}$  is the time interval in seconds from the instant when a round is fired to the instant when the hump is observed.

b is the down course distance in yards from the gun to the actual location of the hump observer.

E is the lead sensing error, in target lengths, resulting from using the tracer hump as a signal of where the projectile reaches the target's range. (Example: if the hump appears to be one target length astern when it is actually 2.2 target lengths astern,  $E = 1.2$  target lengths.)

$St_p/L$  is the linear lead required for a hit, in target lengths.

$b/b_0$  is a ratio expressing the relation between the actual and ideal location of the observer. If  $(b/b_0)$  is zero, the observer is at the gun. If  $(b/b_0)$  is negative, the observer is at an up-course location. If  $(b/b_0)$  is unity, the observer is at the ideal location. (See (b) above.)

From the above equations, much information other than that mentioned in (a) to (f), can be obtained. The plot of E against  $b/b_0$  from Eq. (4), with values of  $(b/b_0)$  ranging from zero to four, and using a value  $St_p/L$  equal to 20, which is about as large as  $St_p/L$  ever becomes in target practice, is shown in Fig. 2.

It is possible to show that values of  $(b/b_0)$  given from Eq. (1) will be:

$(b/b_0)_1 = K_1 \sin \alpha_T / (1 + Kt_p)^2$  ..... Eq. (5)

where  $K_1 = 1.86$  for the 40mm and 1.80 for the Cal .50 and 37mm and  $\alpha_T$  is the slant plane angle between the course line and the trajectory line.

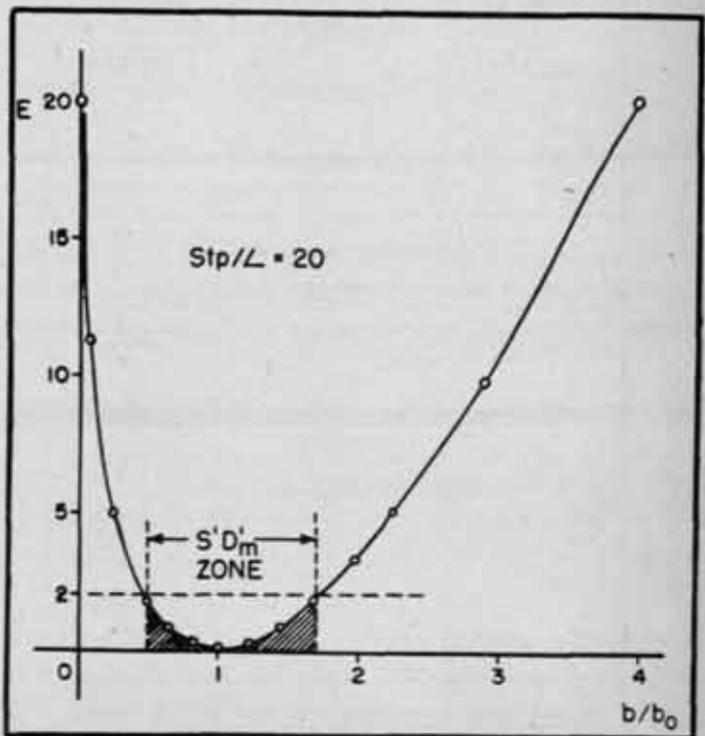


Figure 2.—"Hump sensing error" (E), for varying observer locations down course from gun.

Recognizing that the range of target practice variation for  $\sin \alpha_T$  is from  $\frac{1}{2}$  to unity, and for  $t_p$  is from  $\frac{1}{2}$  to 3, it can be shown that  $(b/b_0)_1$  cannot be less than .4 nor more than 1.7, regardless of weapon.

Now, considering  $(b/b_0)$  to vary between .4 and 1.7, Fig. 2 shows the mathematical basis for the statement in (d). Fig. 2, likewise, warns against the use of values of  $b$ , hence  $(b/b_0)$ , other than those given by Eq. (1).

#### USE OF ZONES OF CORRECT LEAD FOR TARGET PRACTICE ANALYSIS

For the necessary background relating to lead zones, the reader is referred to the earlier-mentioned article, LEADS IN A NUT SHELL.

In Fig. 3 are shown lead zones for a medium speed (150 m.p.h.) towed flag, 10 yards long, flown at least slant range of 900 yards. These zones were computed on the assumption that trackers were using the center of mass of the target as a reference.

Certain general characteristics of these zones are noteworthy. For example, the zone for any rate-range device, like the M5 director, is an almost symmetrical U-shaped curve, having a minimum ordinate equal to the least range,  $D_m$ . For any slant plane linkage device, like the Computing Sight M7, the zone is a flat U, with thickness greater than for rate-range device, and with least ordinate equal to target speed when the least range is equal to that frozen into the design of the sight. For any speed ring device (to include the Navy Mark IX sight and Stiffkey Stick), the zone is an inverted U, with thickness about the same as for the slant

plane linkage devices, and with maximum ordinate equal to target speed, when the least range is equal to that frozen into the design of the device.

Imagine, now, that in a rate-range device, like the M5 director, a range is set at a value about 25 per cent greater than the actual least range of the target. Figure 3 shows that if firing were opened early and continued at a regular rate, early rounds would be astern. A down course observer would see tracer humps move gradually ahead until the lead became correct. Then humps would move ahead still more, and become actually ahead of the target; then they would move astern until the lead became correct again. Finally, the humps would move progressively astern. The lead behavior pattern, with good tracking, would be ASTERN-CORRECT-AHEAD-CORRECT-ASTERN.

There would be two "fly-throughs"; that is, there would be two short time intervals during which lead would be correct.

Imagine, next, that in a slant plane linkage device, like the computing sight M7, a speed is set at a value slightly greater than true speed. There would be two "fly-throughs," with the same pattern: ASTERN-CORRECT-AHEAD-CORRECT-ASTERN. Humps seen by the down course observer would never appear very far from the target.

Imagine, finally, that in a speed ring device a speed is set at a value about 25 per cent less than true target speed in terms of radial off-set. There would be two "fly-throughs," with a pattern opposite to the two previously described, namely: AHEAD-CORRECT-ASTERN-CORRECT-AHEAD. As seen by the down-course observer, humps for opening, midpoint, and closing rounds may appear several target lengths away from the target.

If, therefore, one were able to measure target's speed and least range, he could establish fixed speed, or range, settings which would guarantee two "fly-throughs" for any kind of sighting device. And such "fly-throughs" would be for time intervals such that, if line conditions could be continuously satisfied, there would be at least two hits on every target practice course.

Further, with measured values of target's speed and range, it would be possible to locate the down course lead observer accurately.

To get complete control of conditions in target practice, then, it is plainly desirable to be able to measure target's speed and least range.

#### HOW TO MEASURE TARGET'S SPEED AND LEAST RANGE

(a) To measure the target's speed, establish a 500 yard base line, slightly in rear of and parallel to the line of guns. Set up poles at F, K, G, L, as shown in Fig. 4 (a). The distances from F to K, and from G to L, need not be more than 50 yards. The right angles shown in Fig. 4 (a) should be swung by transit.

Observers  $O_1$  and  $O_2$  have communication by telephone. Observer  $O_2$  has a stop watch.

If the towing plane is flying from left to right, observer  $O_1$  calls "STAND BY," when the plane appears to be about ten degrees to the left of the line KF. When the plane is directly over the line KF, observer  $O_1$  calls, "TAKE," and observer  $O_2$  starts his watch. When the plane is directly

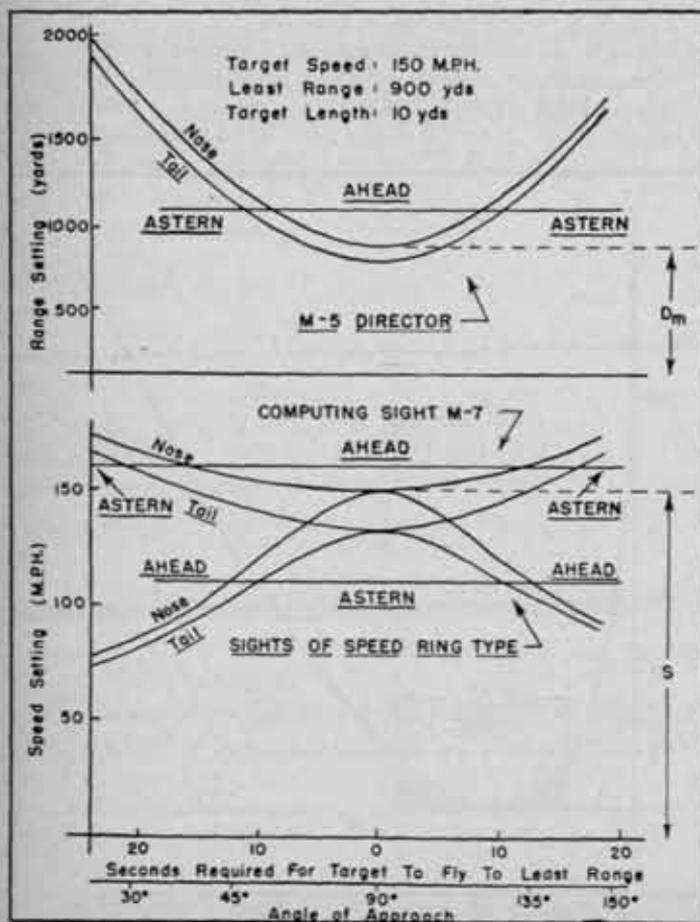


Figure 3.—Zones of Correct lead for a target practice case.

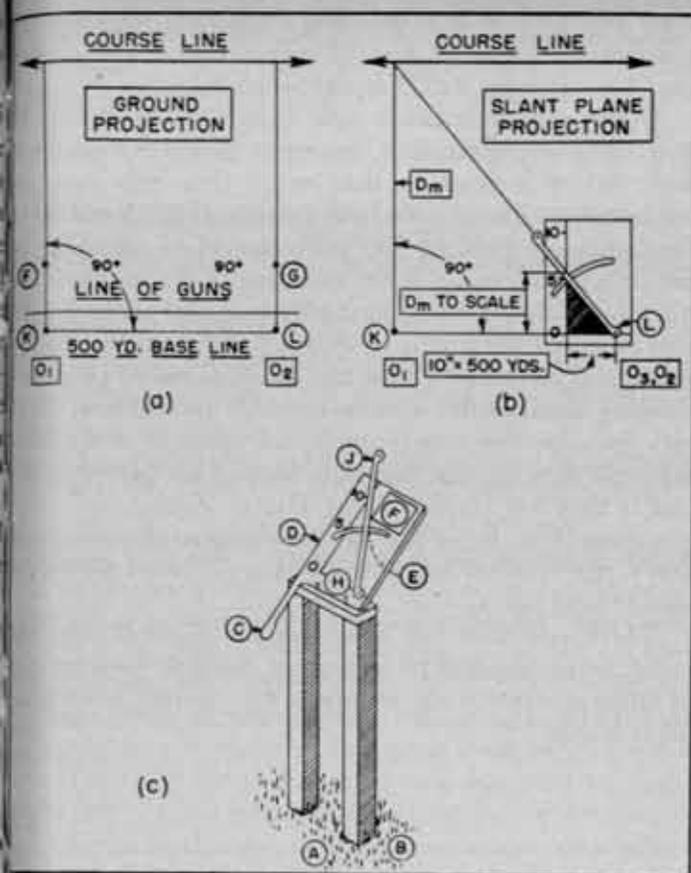


Figure 4.—Method for measuring target's speed and range in target practice.

over the line LG, observer  $O_2$  stops his watch and notes the time interval, say, 6.6 seconds. He consults a prepared table and finds the speed to be 152 m.p.h. (The table consists of two columns, one column listing time intervals from 5 to 15 seconds, for values  $2/10$  second apart. It is computed from the relation: speed in m.p.h. equals 1,000 divided by the time interval, using the approximation that speed in miles per hour equals twice the speed in yards per second, and the known base distance of 500 yards.)

If the towing plane is flying from right to left, observer  $O_2$  starts his watch when the plane is directly over the line LG and stops it when observer  $O_1$  sees the plane over the line KF and calls, "TAKE."

With a 20 mile per hour wind blowing parallel to the course line, target speeds in the two directions of flight will differ by 40 m.p.h.

(b) To measure the target's least range, the 500 yard base line is used in conjunction with a simple range board.

The principle of operation is shown in Fig. 4 (b). If the target is tracked by means of the tracking arm, and if tracking is stopped when observer  $O_1$  calls, "TAKE," then, because of similar right triangles, the least range can be read directly from the vertical scale on the board.

Three operators are needed to man the complete speed-range detail. In addition to observers  $O_1$  and  $O_2$ , Fig. 4 (b), is the tracker,  $O_3$ .  $O_1$  has no equipment other than field telephone.  $O_2$  has field telephone and stop watch.  $O_3$  has the range board.  $O_2$  relays the signal, "TAKE" from  $O_1$  to  $O_3$  by tapping  $O_3$  on the shoulder. Split second signaling is required, even for a base line as long as 500 yards.

The details of construction and use of the range board

are shown in Fig. 4 (c). A supporting framework is made by driving two heavy members into the ground at point L, Fig. 4 (a). A cross-member, connecting the upper ends of these two vertical members, is made level. Two nails are driven in this cross member so that they are lined up with the base line KL, Fig. 4 (a). (The importance of level and orientation of the cross member and nails is evident from Fig. 4 (b). The range board must be put into the slant plane and the lower edge of the board must be in line with the base of the big space triangle.)

The tracker,  $O_3$ , stands with left foot at A, right foot at B, left elbow resting on board extension at C, and left hand grasping the edge of the board at D. The board support is made at a height such that the tracker can comfortably sight two studs which are mounted on the tracking arm at H and J. The range board is slotted so that the tracking arm can be moved by a third stud which is actuated, beneath the board at E, by the tracker's right hand.

The tracker,  $O_3$ , lines up the studs, H and J, with the towing plane. He controls the angular height of the board with his left forearm, and the angular motion of the tracking arm, in the plane of the board, with his right hand. (The elbow extension is provided so that the board can be managed in a moderate wind.)

The dimensions of the board should be at least 18 in. by 24 in. so that the base of the reference triangle, representing the 500 yard base line to scale, can be 10 inches long, and so that the altitude of the reference triangle, representing least range of the towing plane, can be 20 inches long. Such an arrangement would make it possible to measure least ranges up to 1,000 yards, which is usually adequate in target practice.

The time-speed table, mentioned earlier, can be mounted on the board at F.

At the shoulder-tap signal from  $O_2$ ,  $O_3$  ceases tracking and pulls down on the stud at E with his right hand, thus locking the tracking arm. He carefully lifts the board from its support and reads least range from the vertical scale, which is graduated to the nearest hundred yards. By estimation, using the right hand edge of the tracking arm as a reference, the least range can be found to the nearest 20 yards. At the same time,  $O_2$  reads the target speed from the table at F.

$O_3$ , who is directly connected to the firing point public address system, relays the speed-range information to the fire units.

By this procedure, speed-range information, for the course just fired on, can be communicated to fire units immediately after the firing of the last shot on the course.

The procedure, above described, can be satisfactorily executed by enlisted men who have been coached for about four practice courses.

Because it is easy to see, the towing plane is used as a reference by all three members of the speed-range detail. The speed of the towing plane is the same as that of the towed target. Although the altitudes of plane and target are not the same, their least ranges differ by only a few yards.

If the plane does not fly exactly parallel to the line of guns, there will be little error in speed measurement, and the least range measured will still be correct with respect to point K, Fig. 4 (a). For this reason, point K should be

located near the middle of the line of guns, with point L on the right flank. By suitable design of range board, point L could be put on the left flank, if desired.

#### HOW TO OBSERVE FOR LINE PERFORMANCE

Line performance *must* be observed from the gun position. If the line observer's head is near the gun trunnion, his eyes will be near the slant plane. From such a position, a line observer can easily tell whether tracers are above or below the target when they appear to sweep past the target. Observers located several yards from the gun are probably not in the slant plane and are not likely to see the facts relating to line performance.

#### SUMMARY

To put the above-described target practice control system into effect, little extra personnel and equipment is required. For the speed-range job, three enlisted men, equipped with field telephones, stop watch, and homemade range board, can take care of the needs of a firing line. For observations of lead and line, organic personnel from each fire unit can be used.

To make key personnel at each fire unit familiar with

what lead performance to expect for perfect tracking and constant sight settings, a short troop school session, covering "Use of Zones, etc.," should be adequate.

To get the optimum benefit from the observation of lead and line performance, fire units should be spaced at least 200 yards apart, so that tracers from one gun will not be confused with those from another. If this is not done, then only one gun per 200 yards should be permitted to fire on a given course. A fire unit should fire no more frequently than once every third course, so that there will be time to digest the results of shooting. By providing an observer and recorder for lead and for line, round by round shooting performance can be obtained for cannon. Lead and line observers can form shrewd opinions of tracking fidelity if they are sure that sight settings are held constant and if they are familiar with "Use of Zones, etc." This is a great boon, for it provides information almost equivalent to that which would otherwise have to be gained by the use of check sights.

A little reflection will show that the essential new element in the problem of measuring shooting performance in target practice is the technique of "reading leads from tracer humps."



The M-1 Polaroid Trainer in use at the Harbor Defenses of New York.

# A. G. F. Proficiency Test for AAA Battalions

By Lieutenant Colonel Raymond E. Wilmarth, Coast Artillery Corps

Proficiency Tests have been conducted by the Army Ground Forces for some time, but it was not until March of this year that these tests were applied to Antiaircraft Artillery Battalions.

The AGF Proficiency Test for Antiaircraft Units is divided into three tests: Test I, Drill and Technique; Test II, Conduct of Fire; and Test III, Tactical Proficiency.

*Test I, Drill and Technique*, consists primarily of emplacement, march order, orientation, synchronization, operation, adjustment, and drill by the component members of the fire unit. Some of these sub-parts of the test are conducted against time and all are rated for accuracy and application of the prescribed drill. Elements are selected for testing by lot to insure that the result obtained by the test is representative of the unit as a whole and not a reflection of the best or worst elements in the battalion. Commanders are not permitted to augment crews with other members of the unit. Normally, no difficulty is experienced on this score. However, when the absence of personnel is occasioned by hospitalization or emergency leave a second drawing is conducted so that a full strength crew will perform the test.

*Test II, Conduct of Fire*, provides for the firing of AAA Guns and Automatic Weapons in both the primary rôle of Antiaircraft and the secondary rôle of Antimechanized Artillery. The Antiaircraft gun firing includes both the normal and emergency fire control procedures. It also includes visual as well as unseen tracking. Emphasis is placed on Trial Fire, in that one-sixth of Test II for AA Guns is based on the ability of one unit, selected by lot, to compute, fire, and determine and apply trial fire corrections in 30 minutes. The antimechanized firing for AAA Gun Battalions is based on the unit's ability to hit a moving target at ranges varying between 800 and 1,000 yards, the course of the target having at least one change in direction. The machine-gun section is also tested and rated on the accuracy of initial bursts, ability to fire continuously on a course, and the number of hits obtained. Test II for Automatic Weapons Battalions requires firing on rocket targets as well as standard towed targets. Test II for Searchlight Battalions includes a spread beam illumination test against low flying targets.

*Test III, Tactical Proficiency*, affords a battalion the opportunity to demonstrate how well and rapidly it can occupy a position and prepare for operational readiness. It stresses command and staff procedure; reconnaissance; movement to a position under cover of darkness; selection, occupation and organization of the position; installation and operation of communications; camouflage, concealment, and dispersion; security measures against ground and airborne attack; and medical installations and field sanita-

tion. The unit commander is provided with a situation and required to solve it by actual occupation of the positions under cover of darkness. The unit does not move until after dark. It must be operationally ready for action by dawn. In semimobile units additional time is authorized if organic motor equipment is not augmented for the test. The efficiency of the commander and his staff in translating the requirement into plans, orders, and movement is rated. The tactical solution of the problem is also graded.

The entire test is scored on a weighted basis. Tests I and III carry a weight of one, but Test II, Conduct of Fire, is given a weight of three.

Few units have experienced difficulty in Test I, Drill and Technique. There are, however, certain sub-parts to the test that require more training in preparation for the test. These sub-parts are night emplacements, march order and accuracy test for height finder observers in AAA Gun Battalions; emplacement of range section for AAA AW Battalions; and knowledge and procedure for antenna alignment and sight collimation in AAA Searchlight Battalions. Units that have not completed this training do not show up favorably in these parts.

Test II, Conduct of Fire, appears to be a good criterion for measuring the proficiency of a battalion. As a rule, the general proficiency of a unit tested is indicated by its ability to conduct fire. The majority of units tested pass this test satisfactorily, but there are very few that can obtain a high grade. The unit that exceeds 90 in Test II must take advantage of every opportunity for refinement in preparation of firing data; insure that all officers and key enlisted men not only know, but thoroughly understand the antiaircraft firing problem; and make constant checks and inspections of matériel before and during firing to maintain elements of the battery in a high state of operational efficiency. Most units do not obtain the maximum results from their equipment because there is no rigid adherence to the fundamental principles of leveling, orientation and synchronization. There can be no compromise with accuracy in leveling, orienting, and synchronizing AAA matériel. The unit that is satisfied with a "good enough" standard is seldom superior.

The Tactical Proficiency Test, Test III, has revealed a general lack of realism in field exercises. This has a direct reaction on the personnel who often acquire the attitude that "this is only playing a game." A little more imagination and leadership on the part of commanders would assist greatly in improving this condition.

Local security has presented a problem to many commanders because of the few men in some fire units. Irrespective of the number of men in the fire unit, the problem must be solved. Local security is a command responsibility.

Where manpower is low, the security must be increased by the use of simple alarm systems. Trip wires with suspended empty tin cans tied together in concealed brush, sentries stationed in well-concealed positions or trees from which a commanding view of the area can be had, or close-in defenses compressed to meet the size of the particular fire unit are some suggestions that have already been used with success. Many commanders think primarily in terms of mobile reserves to rush here and there to reinforce fire units being attacked. This is based on the fundamental thought that fire units can't defend themselves and always need reinforcement. This is the wrong approach to the problem. Fire units must have a plan that will work. No AAA Battalion has sufficient personnel that can be assigned to a mobile reserve capable of reinforcing all fire units simultaneously. A reserve to assist a hard pressed unit is always a part of any plan, but the basic plan should not be built upon the reserve.

In fortifying gun or automatic weapons positions a question has arisen on several occasions as to which should be done first, fortify the guns or dig the foxholes. Although it is desirable to provide the maximum protection to all personnel by the early construction of foxholes, it is imperative that the fortification of gun and range equipment be completed as soon as possible, so that the unit may render sustained fire on attacking enemy aircraft with as much protection as possible for both the matériel and personnel during the attack. The writer feels that no hard and fast rule can be applied in establishing priorities for construction of fortifications and foxholes. However, one fact does govern all command decisions and applies in this case as well. All effort should be expended in the accomplishment of that which most insures the success of the assigned mission. The accomplishment of the mission should be first, last, and always the unit commander's guide to command decisions.

In order that the maximum value be secured from field problems, unit commanders must explain to officers and men of the lower echelons the purpose for which the problem is being conducted. Each officer and enlisted man must know why he is doing the particular job assigned. The success of the unit depends on all officers and men doing their respective jobs promptly, properly, and proficiently. The old saying "A chain is no stronger than its weakest link" applies to the unit in combat, and "weak links" must be made strong or eliminated by training before combat.

When time is a factor in occupying and organizing a position, the unit commander must make an estimate of "his" situation. It may be impossible for him to complete all of the details required in properly occupying and organizing his position before H-hour. The choice made by the commander of the work he will accomplish during the time prior to H-hour is a command decision. This decision must be aimed toward the successful accomplishment of the mission.

The rating given a unit in Test III of the AGF Proficiency Test considers the judgment exercised by the unit commander in making command decisions and organizing the work to be done in accomplishing the mission.

The attitude of unit commanders toward these tests varies. Some feel that the tests offer an opportunity for the unit to demonstrate its proficiency in training for combat. These unit commanders seize upon an excellent opportunity to increase the morale of their organizations by inspiring the men to go all out in the performance of the test. A few unit commanders feel that the tests do not reflect the true proficiency of an organization's training for combat. These commanders, in many cases, are not thoroughly familiar with the test and later, after having experienced an AGF Proficiency Test, revise their opinion. There are also a number of commanders who now feel calloused to inspections and consider these tests as just a variation to the routine inspections they have been experiencing in the past. Generally, the units commanded by the latter do not show as high a state of training in the Proficiency Tests as do the others.

The AGF Proficiency Tests for Antiaircraft Artillery Battalions give commanders a yardstick by which the combat efficiency of a unit can be measured before it leaves the Training Center. They provide a check against units being sent out before their training has reached required standards. The AGF Proficiency Test gives the battalion a goal at which to shoot, the successful accomplishment of which insures that the unit meets the required standards for combat.

**EDITOR'S NOTE:** The value of such inspections depends to a large extent on the experience of the inspecting officers. These should be officers experienced in command and in field service, otherwise they may adhere too closely to an "approved solution" and not be qualified properly to judge modifications made necessary by the local situation.



Inspection is often considered the most important preventive maintenance service, because regular and thorough inspection frequently makes other preventive maintenance services unnecessary by detecting and correcting trouble in its early stages.





Figure 2.

a local meter gauge railroad. Due to the short length of this rail, it was necessary to make the mount in three sections; ten ties were used in order to put each rail joint over a full tie and adequately brace the rail ends against horizontal thrust. Due to shortage of other equipment, it was necessary to bend this rail to proper curvature with small hand operated benders. Later, rails for regular panama mounts were received; the mount was fabricated in two sections and the number of ties decreased to nine, as shown in Figure 1.

Experience showed that the mounts can be fabricated in a rear area by an Engineer unit having gas welding equip-



Figure 3.

ment and an air compressor with pneumatic saw and wood drill. The 60 to 75 pound rail can be bent using one or two 15-ton hydraulic jacks.

It is generally desirable to paint the timbers with creosote just prior to placing the mount in the trench, to retard deterioration.

It sometimes may be desirable to modify slightly two 180° mounts and join them together to provide 360° traverse and permit landward firing.



Figure 4.



Figure 5.



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# Circular Range Slide Rule

(For determining Range by Horizontal Base System)

By Captain K. S. Jones  
Coast Artillery Corps

This device has been approved by the Coast Artillery Board for emergency purposes. The advantages of the device are:

(1) Its small size and weight (a cardboard 14" x 14").

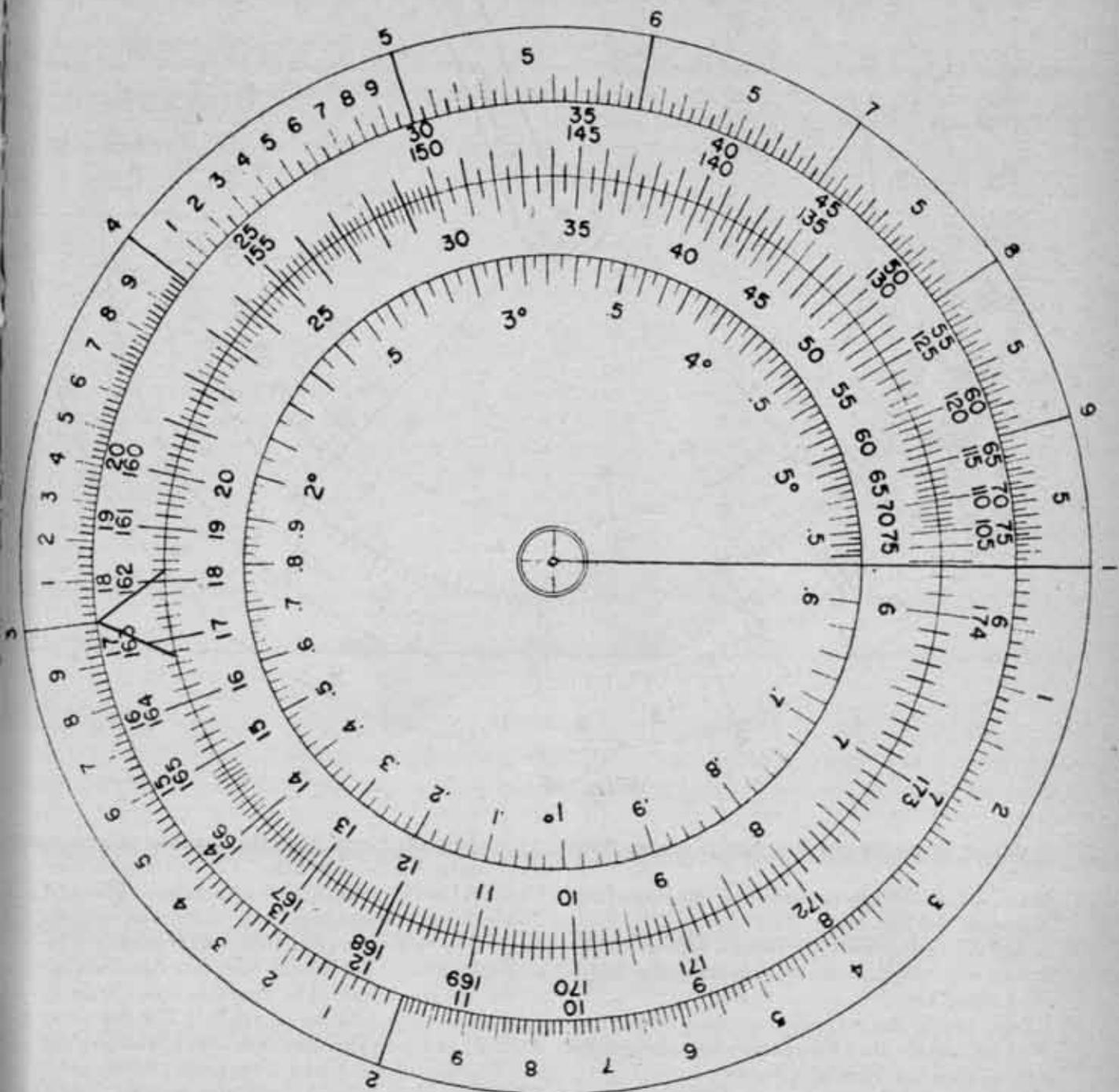
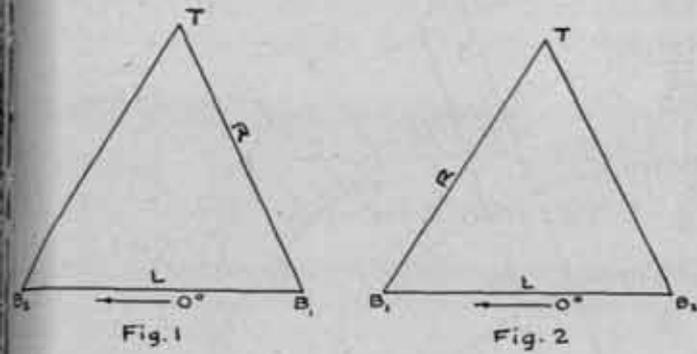


Fig. 3

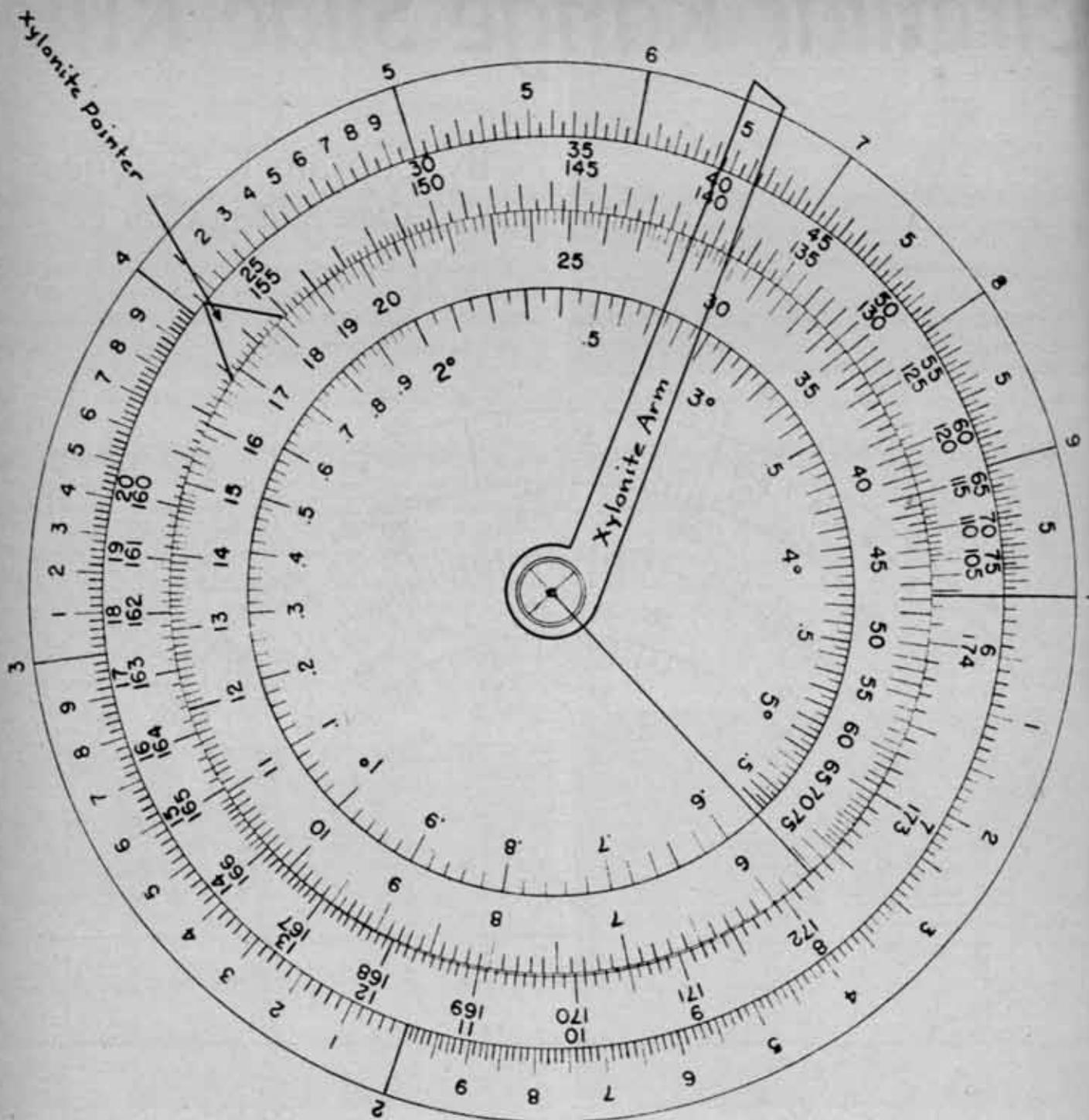


Fig. 4

- (2) It can be set up for any base line in two or three seconds.
- (3) If lost, a new one can be made in a few hours from Surveying Tables.
- (4) It has no mechanical interferences whatsoever.
- (5) It measures ranges accurately ten times the length of the base line.
- (6) Ranges can be determined, in tracking, within two or three seconds after the operator has received the Azimuth reading from B<sub>2</sub> Observer.
- (7) Training in its use may be accomplished in a very short period of time. The fire control method of Chapter 16, FM 4-15 may be used.

The Circular Range Slide Rule consists of four concentric circular logarithmic scales. The outside circular scale (Scale A) is a logarithmic scale of numbers. The next scale (Scale B) is a logarithmic scale of sines of angles (5.73 degrees to 90 degrees and their supplements). The next scale (Scale C) is the same as Scale B and revolves, pivoted at the common center. The innermost scale (Scale D) is a logarithmic scale of sines of angles (.573 degree to 5.73 degrees) and is on the same disk with C and revolves with it. The zero of the Scales is at 1, 90°, 5.73° and .573°. Under the revolving disk containing Scales C and D is a disk made of drawing paper of the same diameter as scale C and with xylonite pointer extending to Scale A.

The set-up is a Base Line  $B_1B_2$  of Length  $L$ . Observations of the target are taken from the Base End Stations  $B_1$  and  $B_2$  and the base line itself is the Azimuth Reference Line  $B_1B_2 = 0$  degrees azimuth in Figure 1, and  $B_2B_1 = 0$  degrees azimuth in Figure 2).  $B_1$  is located close to the DP of the battery.

Theory: Angle  $T = \text{Az. } B_2T - \text{Az. } B_1T$

$$\text{Range (R)} = L \sin \text{Az. } B_2T / \sin \text{angle } T$$

Operation:

- (1) Set revolving scale C to correspond exactly with fixed scale B.
- (2) Set Pointer of revolving disk (of drawing paper) at the number on Scale A representing the length of the Base Line ( $L$ ).
- (3) Fix this Pointer Disk to Scale C with a paper clip. The Board is now ready for any operation with a base line of length  $L$ .
- (4) Set Xylonite Arm (pivoted at common center) at Azimuth of  $B_2T$  on Scale B, and hold it in place with finger at end.
- (5) Revolve the two moving disks till angle  $T$  (on

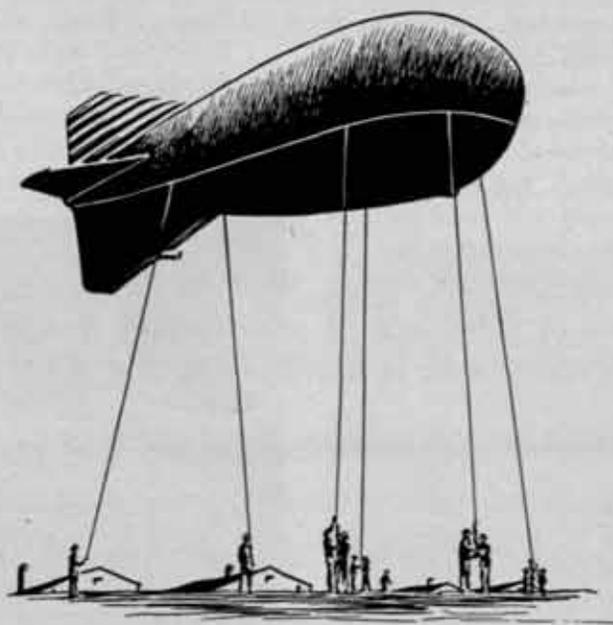
scale C or D) is under the xylonite arm opposite the azimuth of  $B_2T$  on Scale B.

- (6) Read the Range ( $R$ ) on scale A opposite the Pointer of the moving disk.

#### EXAMPLE

$L = 3,000$  yds.  $\text{Az } B_2T = 140.00$  degrees.  $\text{Az } B_1T = 111.55$  degrees. Then angle  $T = 28.45$  degrees. Zero the board as directed in Operation (1). Set the pointer of the moving disk at 3,000 on Scale "A." Fix the disk to moving disk C with a paper clip. The Board is now ready for any operation with a base line of 3,000 yds. (See figure 3). Now set the xylonite arm at 140.00 on Scale B and hold in place with finger. Revolve disks till 28.45 on Scale C is opposite 140.00 on Scale B. The Range as shown by the Disk Index is 4,050 yards. (See Figure 4). By computation this range is 4,048 yds.

The Target Angle ( $T$ ) changes slowly. A good operator can usually get the range as soon as he receives the azimuth of  $B_2T$ , using the azimuth difference (angle  $T$ ) of the preceding observations.



# Wintering on the Cold Coast

## Winterization Kits for Coast Artillery Vehicles Now Available

What the Common Cold is to men, the Uncommon Cold is to Coast Artillery vehicles—that paralyzing cold of steady, below-zero temperatures we so often have to cope with in this "global" war. Just how much time can be lost when vehicles are left to the mercies of the weather overnight, is well illustrated in the incident of two vehicle companies operating in a cold weather area during the early days of the war.

At the end of one particular day, one unit commander issued orders for each driver to drain the oil and coolant from his vehicle and to remove the battery. These items were then stored in a heated building overnight, since a temperature drop had been predicted. The other commander took no steps further than having the coolant in his vehicles checked to see that it contained sufficient anti-freeze for the expected temperature drop. Next morning, within a comparatively short time, the first unit was operating full force, the heated oil and coolant and warm batteries having enabled the drivers to start their vehicles immediately. The second outfit had only three vehicles in operation by early afternoon!

Naturally, the process used by the first unit, though very commendable in this instance, is not a particularly efficient method inasmuch as it takes considerable time and effort. And that's why the Army has developed an imposing array of winterization equipment to help you fight the Uncommon Cold. And now you can make things a lot easier for yourself just by filling out a few requisitions, for the winterization equipment that is available will help you get your vehicles going on the coldest mornings and keep them from struggling through the winter.

For general purposes this winterization equipment is grouped into two general classes. Class A items are termed "improvements to the basic vehicle which will be made on all applicable vehicles for future production." That means your Coast Artillery vehicles may already have them, but if they don't they can still be installed. For example, the brackets needed to install windshield and door porthole covers must be attached to the vehicle as permanent installations, and therefore are called Class A items. The covers themselves, however, are Class B items, or "items which may be quickly and easily installed and which are necessary for vehicles which are expected to operate in sub-zero temperatures."

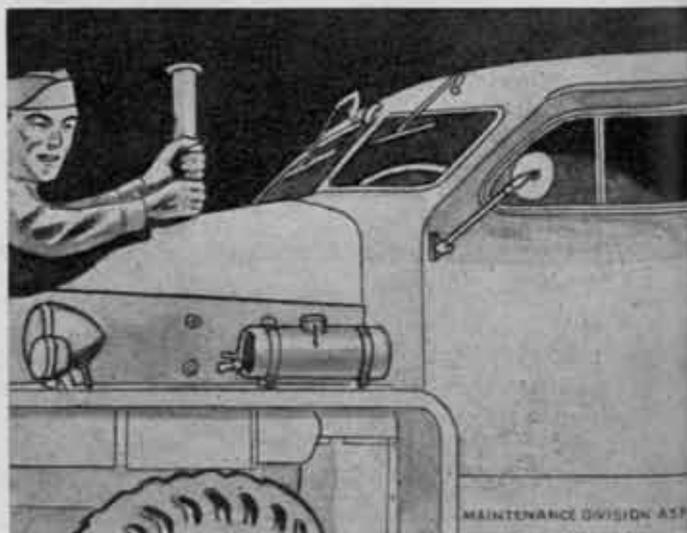
What you will actually order is one of the Winterization Kits, Interim Kits, or Auxiliary Cold Starting Aid Kits, depending on what vehicles you have. The Interim (or "quickie") Kit is simplest of all. It's the granddaddy of the other Winterization Kits, whereas the Winterization Kit is a much more recent development. The "quickie" kit contains an underchassis heater and a shroud, and all you have to do when you requisition one is tell the kind of vehicle it's to be used with. In general, these kits are used for vehicles for which no other winterization equipment is provided.

The Auxiliary Cold Starting Aid Kits, or "slave" kits, are more elaborate than the "quickies" but they are not so complete as the Winterization Kits. "Slave" kits contain heaters, auxiliary batteries, and other electrical equipment which is used as an aid to starting in cold weather. Their prime use is for servicing of groups of vehicles which have no specific winterization equipment of their own.

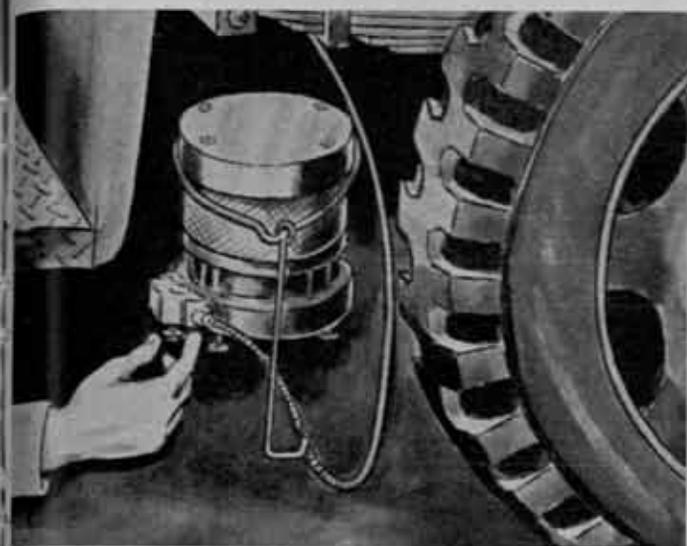
It is the Winterization Kit which will be of most value to personnel operating vehicles in areas where the temperature stays below zero consistently. These kits are usually very complete, and are designed for specific vehicles. Basic equipment included in a Winterization Kit consists of a battery heater, a cab and engine compartment heater, and radiator and louver covers—all of which are permanent installations and thus are always ready for use with a minimum of preparation. Depending on the vehicle, there are numerous other items found in the various kits. Therefore, when requisitioning one of them, you will have to look up the listing given in War Department Supply Bulletin 9-16 (SB 9-16), dated 2 March 1944, to find the number of the kit you must specify for your particular vehicle. Incidentally, this bulletin also lists territories for which winterization equipment will be furnished, so you will have to refer to it to find out if you're eligible.

Probably the best way to give an idea of the items you'll find in the various kits is to cite a few examples of the equipment available for a number of different types of vehicles. The GMC, 2½-ton, 6 x 6, for instance, is supplied with a Winterization Kit which contains the following items:

- Primer system.
- Battery and water heater.
- Auxiliary fuel tank.
- Battery heating tank.
- 180° thermostat.
- Radiator and hood louver covers.



Telescoping flue provides air for combustion in engine coolant heater.



Underchassis heater provides simple method of warming engine assembly.

Prior to installation of these items there are a number of preparatory steps that must be taken. One is the installation of the crank case ventilation system, which, incidentally, is included in the Winterization Kits for some vehicles. Full instructions for the necessary preparation are given in the winterization equipment manual.

Before operation of the vehicle it is necessary to warm the motor and the battery to a point where cranking is made easy. This is accomplished by means of the battery and water heater system. The type of heater provided in this case contains a small gasoline burner of the pot type which is fed by gravity from the auxiliary fuel tank. Air for combustion is furnished by the draft produced by a small flue, and installation of this flue, or stack, requires the cutting of a hole in the hood. This type of heater is lighted with a "torch" and may be burned continuously for periods of hours.

There is another kind of engine coolant heater used in some vehicles which operates in a different manner. In this type, the heater is controlled by an electrical switch from inside the vehicle, and the installation includes a fuel pump unit for supplying fuel from the vehicle's fuel tank to the burner, a blower for supplying air for combustion, an ignition transformer to provide automatic ignition of the fuel, and a motor generator unit (operated by a storage battery) to drive the blower and fuel pump and to supply current to the transformer. Since this heater is much quicker acting than the one mentioned above, it should be burned only for periods of 15 minutes at a time, according to instructions given in the manual. This is to prevent overheating. An added feature of this heater is its possible use in portable form as a winter aid in thawing out frozen brakes, tank treads or other parts, or in servicing vehicles not having heaters of their own.

When starting the 2½-ton 6 x 6, the primer system provides a rich fuel mixture which is injected directly into the intake manifold. In some vehicles addition of the primer system calls for installation of a new manifold, designed to accommodate the primer nozzles, along with a new accelerator rod and a new metering rod.

During operation, the engine temperature is controlled

by the 180° thermostat and the adjustable radiator cover.

Two items not supplied for the 2½-ton 6 x 6 are included in the winterization equipment provided for the 6 x 6 Diamond T Truck. One is the air-brake alcohol bleeder system, which prevents freezing of moisture in the air brake lines and valves by introducing alcohol into the air-brake system. The other is the set of metal louver covers for the fender shield and hood louvers.

Some winterization installations call for the use of an engine oil dilution system. This system enables the vehicle operator to dilute the motor oil with gasoline after operation, thus helping to keep the oil in a fluid state while the vehicle is idle. The crankcase ventilating system serves to take this gasoline out of the oil when the vehicle is next operated and the oil has become warm enough to flow as it should.

Items that provide for the convenience or comfort of the operating personnel may often be equally vital to efficient operation of the vehicle, so they are often provided as components of the Winterization Kits. Most common of these are windshield defrosters, hot water heaters for the cabs, and brackets and straps for stowage of various items when they are not in use.

Winterization equipment for a gun motor carriage is somewhat more elaborate than that so far mentioned. It includes a gasoline-driven motor with fuel tank, control box and heater box. Heat is forced to the exterior of each of the lube oil tanks and to the battery compartment through flexible tubing and ducts, and four shutter sections serve to retain heat in the engine compartment. The oil cooler is protected by a heavy fabric cover with a roll-up flap. Also included are air intake and outlet shutter assemblies. In this case, as is true of some installations, it is necessary to make some changes in the wiring system.

Miscellaneous equipment includes smaller items, such as plastic windshields for armored windshield slits, ice grousers, half-track idler scraper blades and brackets, and cut-out snowshoes for tracks.

Needless to say, the installation of winterization equipment, no matter how complete it may be, is not a panacea for cold weather operating problems. For, without the



Radiator cover helps control engine temperature while truck is running.

proper attention to other phases of operation, no equipment can be expected to perform effectively. Instructions in Ordnance Field Service Bulletin (OFSB) 6-11, "Cold Weather Lubrication and Service of Combat Vehicles and Matériel," must be faithfully followed in connection with the use of winterization equipment. This involves use of winter grade of gasoline and lubricants and checking of mechanical features to be sure they are all in proper working order.

Brushes, commutators and bearings on the generator and starter must be clean. The large surges of current which occur when starting a cold engine require good contact between brushes and commutators. Wiring must be cleaned, connections tightened, and all electrical equipment must be kept free of ice.

The distributor must be cleaned and points replaced and checked frequently. Spark plugs must be cleaned and adjusted and timing must not be unduly advanced or retarded.

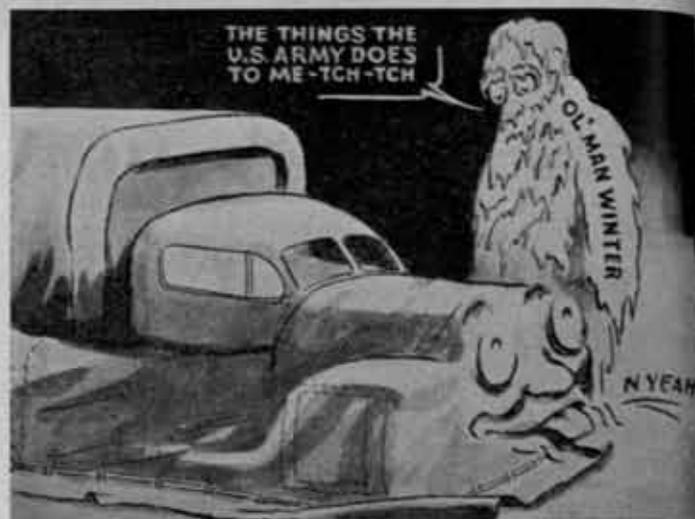
Batteries must be kept fully charged, and care must be taken not to add water until the battery is to be put on charge, since added water will stay at the top and freeze before it can mix with the acid, if the battery is not charging.

Brake bands have a tendency to bind when very cold. Vehicles should be parked with brakes released and wheels blocked instead.

Oil lubricated speedometer cables should be disconnected at the drive end when the temperature is below  $-30^{\circ}$ , as they often fail to work properly and sometimes break due to excessive drag caused by the high viscosity of the oil with which they are lubricated.

Operation of vehicles on hard, frozen ground causes strain and jolting which may result in screws breaking or nuts jarring loose due to the fact that low temperatures greatly reduce the shock resistance of metals. Therefore, these items must be checked regularly.

Storage of fuel requires special attention also. Due to condensation of moisture from the air, water will accumulate in tanks, drums and containers. At low temperatures, this water will form ice crystals that clog fuel lines and carburetor jets unless the fuel is strained. To prevent as



You may be numb as a mummy yourself, but your truck has a foot-warmer.

much as possible the formation of ice in fuel containers, they should be kept as full as possible, since the more fuel there is in the tank, the smaller will be the volume of air from which moisture can be condensed. Addition of denatured alcohol to the fuel tank each time it is filled will reduce the hazard of ice formation. Closures of containers should be kept tight to prevent snow, ice, dirt and other foreign matter from entering. Dispensing equipment must be kept clean.

There are many more important details covered in OFSB 6-11 with which you should be familiar. Even to knowing that you should park a vehicle so it does not face into the wind, when there is no shelter available, so as to reduce chances of freezing. So remember to give your copy of OFSB 6-11 a good going over.

Meanwhile, get your SB 9-16 and get busy! Give yourself plenty of time to get the requisitions through and the equipment on its way. And allow time for installation, too. After you've got your Coast Artillery vehicles "winterized" there's one more important thing to do—see that the equipment is used!



"As I write this we are subjected to terrific air and artillery bombardment and it is unreasonable to expect that we can hold out for long. We have done our best, both here and on Bataan, and although beaten we are still unashamed."—LT. GEN. JONATHAN M. WAINRIGHT.

# Equations for Trial Fire Analysis

By Lieutenant Colonel Everett D. Light, Coast Artillery Corps

Under combat conditions which prohibit daily trial fire, and with the provisions of current target practice regulations prohibiting trial fire on the day of a record practice, it becomes desirable to study all errors and correct as many as possible before firing. Large deviations are often caused by an incorrectly assumed muzzle velocity (MV) or matériel errors in azimuth ( $A$ ), quadrant elevation ( $\phi$ ), or fuze ( $F$ ).

The effect of these errors will appear as azimuth, range, and altitude deviations. The observed azimuth error can be corrected simply by application of a dA spot after conversion of the slant plane deviation to the horizontal plane. However, since MV,  $\phi$  and F all affect range and altitude, these latter errors are considerably more difficult to analyze. In the analysis of trial fire, the deviation of the center of burst from the trial shot point in the vertical plane may be expressed as a range and altitude deviation. Only one of these two deviations need be used in analyzing MV,  $\phi$ , or F errors by the following method since the firing tables give the effects on both range and altitude due to changes in MV,  $\phi$ , or F. At lower quadrant elevations range deviations are larger than altitude deviations for normal MV and F errors, but smaller for  $\phi$  errors. However, since normal errors in  $\phi$  produce relatively smaller deviations both in range and altitude than do normal errors in both MV and F, we can say that range deviations are relatively larger than altitude deviations at lower quadrant elevations and vice versa at higher elevations. In this analysis either deviation may be used at any angular height, the larger generally being selected only because of the accuracy gained from using the larger scale when errors are pictured graphically. Since horizontal range deviations are normally computed for making trial fire corrections, these deviations probably will be found most convenient for analysis of errors. Whereas, if altitude deviations were to be used, an additional computation would be necessary to determine the altitude of the center of burst (CB).

Selecting the horizontal range deviation for this discussion and considering that this deviation may be due to any or all of the three errors: MV,  $\phi$ , or F, we may write the equation:

$$dR = dR_{mv} \pm dR_{\phi} \pm dR_F$$

Where :  $dR$  = the horizontal range deviation of the CB from the trial shot point (TSP).

$dR_{mv}$  = that part of the horizontal range deviation due to an incorrectly assumed MV (MV error).

$dR_{\phi}$  = that part of the horizontal range deviation due to an incorrect quadrant elevation setting ( $\phi$  error).

$dR_F$  = that part of the horizontal range deviation due to an incorrect time of flight (F error).

Such an equation in three unknowns may have an infinite number of solutions. In order to arrive at a single solution we might write three simultaneous equations in

three unknowns, the data for which could be obtained from the results of firing three different trial shot problems. However, since this might seem too complicated to attempt at this point, let us consider each of the three errors in turn and try to eliminate one of these by another method.

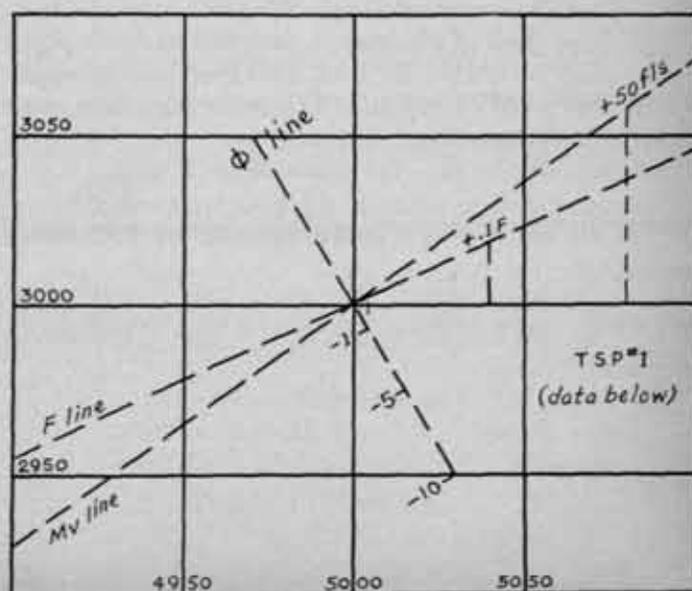
The developed muzzle velocity may be measured by means of a chronograph, but this is generally not available for use in the field. Lacking this we must assume a developed muzzle velocity considering the standard muzzle velocity for new guns and the normal decrease due to having fired a given number of rounds.

The quadrant elevation may be checked during trial fire using the gunner's quadrant to lay the gun in elevation after the round has been loaded and just before firing. This is a practical way to virtually eliminate any  $\phi$  error due to inaccurate gun laying.

Finally, the fuze error may be checked by measuring the time of flight using several stop watches, or making a camera record of the muzzle flash and burst with a recording theodolite. Experience has shown, however, that cameras are not available for all trial fire, and that results from several stop watches generally disagree up to several tenths of a second. Since it is this one or two tenths fuze error in which we are so interested, this latter method has not been found sufficiently accurate.

From the above brief consideration of all three errors and the means available for directly determining or eliminating one of them, it appears that the  $\phi$  error, using the prescribed method for laying the gun in trial fire, can be eliminated or at least reduced to a negligible quantity since the horizontal range effect for a small change in  $\phi$  is comparatively small for low quadrant elevations. For a comparison of the horizontal range affects of all three errors see the figure below.

Assuming normal errors: MV error of 50 f/s causes 79 yd. horizontal range deviation.



F error of 0.1F causes 40 yd. horizontal range deviation.  
 $\phi$  error of 1 mil causes 3 yd. horizontal range deviation.  
 Omitting  $dR_{\phi}$  from the equation above, it becomes:

$$dR = dR_{mv} \pm dR_{\phi}$$

Now we shall proceed to write two simultaneous equations in two unknowns using the results obtained from firing at two different trial shot points. Select two trial shot points at which a series of trial shot problems (at least 5 each) have been fired. Two such points have been chosen from FT 90 AA-B-1 (rev), and are shown below:

TSP No. 1	TSP No. 2
H = 3,000 yds.	H = 5,000 yds.
R = 5,000 yds.	R = 10,000 yds.
e = 550 mils	e = 472 mils
$\phi$ = 611 mils	$\phi$ = 679 mils
F = 9.76 secs.	F = 25.81 secs.
$t_p$ = 9.60 secs.	$t_p$ = 25.91 secs.

Averaging the ranges to the center of burst (RCB) of all problems fired at each of these two points we find:

$\phi_1 = + .6$ mil	$\phi_2 = + 2.6$ mils
RCB <sub>1</sub> = 5,119 yds.	RCB <sub>2</sub> = 10,159 yds.
then $dR_1 = 119$	$dR_2 = 159$

NOTE: (The  $\phi$  deviations are included for information only and are not needed in this analysis.)

A check should be made before averaging the RCB's to be sure that each includes only the horizontal range deviations due to muzzle velocity error and fuze error. Any mistakes made in the application of ballistic corrections, for example, should be discovered and the RCB corrected according to the horizontal range effect of such mistakes as shown in the proper differential effects table.

From FT 90 AA-B-1 (rev) we find the differential effects of muzzle velocity and fuze in Part 2 Table VII a and Part 2 Table XIII a respectively. For TSP No. 1 an increase of 100 f/s MV will increase R 157 yds., and an increase of 0.1 of a unit of fuze number will increase R 40 yds. For TSP No. 2 an increase of 100 f/s MV will increase R 257 yds., and an increase of 0.1 F will increase R 30 yds.

The horizontal range deviation from an incorrect muzzle velocity may be expressed as the MV error times the horizontal range effect of that error at the given trial shot point.

Or:  $dR_{mv} = dMV (157)$  for TSP No. 1 for example, where  $dMV = MV$  error, and (157) is the horizontal range effect as explained above.

Similarly  $dR_{\phi} = dF (40)$  where  $dF = F$  error.

Substituting these values in the basic equation:  $dR_{mv} \pm dR_{\phi} = dR$  and writing a similar equation for TSP No. 2 we have:

$$\begin{aligned} dMV (157) + dF (40) &= 119 && \text{TSP No. 1} \\ dMV (257) + dF (30) &= 159 && \text{TSP No. 2} \end{aligned}$$

Solving:

$$\begin{aligned} 30 \times 157 dMV + 30 \times 40 dF &= 30 \times 119 \\ 40 \times 257 dMV + 40 \times 30 dF &= 40 \times 159 \\ \hline 10,280 dMV - 4,710 dMV &= 6,360 - 3,570 \\ 5,570 dMV &= 2,790 \\ dMV &= .50 \end{aligned}$$

Since the unit of MV used in the differential effects table

is 100 f/s, the  $dMV$  in this example is  $.5 \times 100$  or 50 f/s.  
 Substituting:

$$\begin{aligned} .5 (157) + dF (40) &= 119 \\ dF (40) &= 119 - 79 \\ dF &= 1.00 \end{aligned}$$

Since the unit of F used in the differential effects table is 0.1 unit of fuze number, the  $dF$  in this example is  $1 \times 0.1$  or 0.1 fuze number which is equal to 1 corrector division.

Corrections of 50 f/s to the assumed MV and of 1 corrector division of F may be applied to future firings to correct for the MV and F errors just determined.

The above method of analysis assumes that the  $dMV$  and  $dF$  thus determined are constant for all TSP's, i.e., throughout the entire field of fire. In the case of  $dMV$  this is a correct assumption since developed muzzle velocity does not depend upon the direction in which the gun is pointed. In the case of  $dF$  there may be some question as to whether or not the fuze error may be related to  $t_p$  rather than being a constant error. However, tables of fuze corrections are included in FT 90 AA-B-1 (rev) for eliminating the variable fuze errors due to changes in MV and density. Any remaining fuze error may be assumed to be constant for the initial study. If there is reason to believe that the fuze error is variable, pairs of slightly different TSP's fired at various fuze ranges should be analyzed in order to determine the fuze error for each range. However, experience has shown that the fuze error is generally very small in magnitude, it being a question of whether to apply no fuze spot at all or a spot of one or possibly two corrector divisions. In this case an average fuze correction as determined in the example will suffice.

It should be evident that three simultaneous equations may be written to include  $dR_{\phi}$  if desired with the data from three different sets of trial shot problems. Solution can be obtained in a similar manner and though slightly more complicated, three equations should be no more difficult to handle. However, the simplicity gained from eliminating one of the three unknowns by an independent method or discovering the effect of one unknown and moving the CB correspondingly is worthy of consideration. If the fuze error can be determined and the RCB corrected, the equation may be written:

$$dR = dR_{mv} \pm dR_{\phi}$$

Where  $dR_{\phi} = d\phi (x)$  and solved as before using Part 2 Table VI a for the horizontal range effect of an error in  $\phi$  ( $x$  in the equation above).

If any of the errors assumed, actually does not exist, the corresponding term in the equations will be equal to zero. Suppose there really is no fuze error present, the  $dF$  will be equal to zero in the solution of the equations. For example:

Assume that two sets of trial shot problems were fired with an expected developed muzzle velocity of 2,690 f/s, whereas the actual muzzle velocity was only 2,650 f/s. From the firing tables, Part 2 Table VII a we may expect that this muzzle velocity error would cause a minus 63 yd. horizontal range deviation at TSP No. 1 and a minus 103 yd. horizontal range deviation at TSP No. 2. Under the conditions of this problem with no fuze error existing, and

with no  $\phi$  error present since guns have been accurately laid using the gunners quadrant just before firing, the above range deviations will be the total range deviations for these problems and we may expect the RCB's to be 4,937 and 9,897 yds. respectively. Then,  $dR_1 = -63$  and  $dR_2 = -103$ . Writing the simultaneous equations in MV and F:

$$dMV (157) + dF (40) = -63$$

$$dMV (257) + dF (30) = -103$$

Solving:

$$30 \times 157 dMV + 30 \times 40 dF = -30 \times 63$$

$$40 \times 257 dMV + 40 \times 30 dF = -40 \times 103$$

$$\frac{10,280 dMV - 4,710 dMV = -4,120 + 1,890}{5,570 dMV = -2,230}$$

$$dMV = -.40$$

$$dF = .40$$

or the muzzle velocity error is  $-.4 \times 100 = -40$  f/s.

Substituting:

$$-.4 (157) + dF (40) = -63$$

$$-63 + dF (40) = -63$$

$$40 dF = -63 + 63$$

$$40 dF = 0$$

$$dF = 0$$

The above example is given to prove that the use of simultaneous equations will give true values of any errors that do exist, and not merely divide the range deviation proportionately according to the magnitude of the differential effects for MV and F errors, thus giving only proportionate values for these errors.

Both examples used for illustrations in this discussion consisted of hypothetical problems in which the deviations were actually as expected. In actual firing it is to be expected that the horizontal range deviations will not always be due solely to MV,  $\phi$ , or F errors. Possible sources for additional errors are too numerous to mention. However, for this reason it has been decided that each trial shot problem should consist of five (5) rds. whose deviations do not vary by more than four (4) probable errors, and that at least five (5) problems fired under similar conditions at each TSP should be considered in making an analysis of MV,  $\phi$ , and F errors. But in spite of this, the range deviations may be due in some small part to the cumulative effect of other errors. This fact, however, will not render useless the equation method of analysis. In the first example using TSP No. 1 and TSP No. 2, if other unknown errors resulted in additional horizontal range deviations of + 5

and - 3 yds. respectively then  $dR_1$  would equal 124 and  $dR_2$  would equal 156, instead of 119 and 159 as seen in the first example. Substituting these values:

$$dMV (157) + dF (40) = 124$$

$$dMV (257) + dF (30) = 156$$

Solving:

$$30 \times 157 dMV + 30 \times 40 dF = 30 \times 124$$

$$40 \times 257 dMV + 40 \times 30 dF = 40 \times 156$$

$$\frac{10,280 dMV - 4,710 dMV = 6,240 - 3,720}{5,570 dMV = 2,520}$$

$$dMV = .45$$

$$dF = .45$$

or the muzzle velocity error is  $.45 \times 100 = 45$  f/s.

Substituting:

$$.45 (157) + dF (40) = 124$$

$$71 + dF (40) = 124$$

$$40 dF = 124 - 71$$

$$40 dF = 53$$

$$dF = 1.3$$

or the fuze error is:  $1.3 \times 0.1 = .13F$ .

Since in the application of these corrections they would probably be rounded out to the nearest 10 f/s in MV and nearest .1F the results are substantially the same as before even with the presence of other small unknown errors. However, if large unknown errors are permitted, the results will be distorted accordingly and these errors will be attributed to MV and F. In this respect the equation method of analysis will be the same as the ordinary graphical method.

In conclusion it may be stated that this equation method of analysis was first discovered nearly two years ago during the last target practice using three-inch guns and ammunition with the powder train fuze. With the prevailing low densities at the firing range (around 85%) considerable fuze spot was necessary and the usual rule did not seem to hold. Trial shot problems were fired at two different points, the deviations analyzed as above and dMV and dF corrections determined and applied. A third TSP was then fired and the TSP was found to be bracketed. Even with the inaccuracies arising from using only 5 rounds fired at each point, the results were amazingly good. But with the arrival of mechanical fuzes we believed that there would no longer be any fuze error and no further study was made on this subject. However, there are indications that a small fuze error may still exist and should be considered, when analyzing matériel errors.



The Germans knew that their whole position was hinged on Caen where every bit of dust was a diamond and every inch worth ten miles lost elsewhere. Those British writers who had been apologetic for the slow progress around Caen should have been bragging for it was the strongest defensive line on the French front where the bulk of the German armor had been concentrated.—GENERAL DWIGHT D. EISENHOWER.

# A Different Training Inspection

By Major L. M. Orman, Coast Artillery Corps

*EDITOR'S NOTE: In his thirty years of service the editor never saw a training inspection by any higher commander the tactical part of which was worthy of the term. Inspections that will fully establish the state of training of a unit are essential and such inspections furnish one basis for judging the comparative efficiency of officers.*

One of the oldest, most universal customs among all branches of the army is Saturday morning inspection. In this respect our Harbor Defense was no different from most other outfits. Each Saturday would bring someone around to peer down the muzzles of rifles and ask questions. One week it would be the harbor defense commander, the group commander would follow, and the battery commander was required to do the same thing if no one else was available. These inspections followed very much the same pattern that they do in your outfit differing only in that the amount of bucking depended directly on the rank of the inspecting party. After an individual officer had been around several times the battery was well-primed for his questions and all coached in them. This often led to a false impression of the training of the battery. In order to arrive at a truer picture of the training status of the battery a training inspection was devised for the batteries of our harbor defenses.

An inspection team was formed which consisted of the harbor defense commander, S-2, S-3, S-4, harbor defense surgeon, motor transportation officer, communication officer, radar officer and personnel officer. The captain of the battery knows when the inspection is coming and has the men in fatigues standing by in barracks. All of the above except the S-2 and personnel officer arrive at the battery at 0830 and give the signal to put the battery in condition of readiness No. 1 (or whatever else you call battle station in your outfit). Time is recorded to ascertain how long this required.

The first hour of the inspection is the artillery phase. This artillery drill includes assignment of targets, both surface vessels and concentration points. The battery is switched to all alternate and emergency means of fire control. Members of the team place themselves in the plotting room, B.C. station, and at the guns to observe and note all that occurs. Questions are asked to ascertain the understanding by the men of the jobs that they are performing. "Gas!" is given and action taken noted. Men are switched around. Short courses are run comparing target locator vertical base, and horizontal base. An analysis of drill completes the artillery phase.

The battery is next tested on its demolition plan for speed, completeness, availability of materials, and understanding by all personnel. While in the B.C. station the records of estimation of range which have been kept during the last few drills are checked by the commanding officer.

The battery is next ordered into close-in-defense. Points checked here are speed, completeness and adequacy of reserves. Personnel are then checked on an assumed situation

and observed to see what action is taken. Verbal messages are given for transmittal to the B.C. station. We certainly get some weird results here especially when the message has to be transmitted through several people. If possible machine guns are test-fired. During both the artillery and close-in-defense phases full battle conditions are assumed. Tear gas is used and the H.D. Surgeon declares casualties and notes aid measures taken.

The second half of the inspection begins with the assembled battery being required to identify several gases from field detonation sets. During this exercise the decontamination squad is putting on its protective clothing. Syrup (representing you know what) is spread over a small area and the squad is required to go through a full decontamination drill which the rest of the battery critically observes.

The battery is then divided into several groups. The supply sergeant and S-4 go into a huddle and check the supply section and give the battery the once-over from a conservation viewpoint.

The H.D. communication officer gives the communication section a grilling on its duties and checks on knowledge of S.O.I.'s, posting of line route maps and circuit diagrams.

The H.D. radar officer and battery radar section inspect the radar and its equipment and test operation thereof. The section is questioned to ascertain familiarity with duties and equipment.

The first sergeant is occupied by filling out a form similar to this one:

1. Battery strength \_\_\_\_\_.
2. % of battery qualified with basic small arms \_\_\_\_\_.
3. % of familiarization firing completed \_\_\_\_\_.
4. % of battery who can swim 50 yards \_\_\_\_\_.
5. % of expert gunners \_\_\_\_\_.  
    % of 1st Class gunners \_\_\_\_\_.  
    % of 2d Class gunners \_\_\_\_\_.

You may be surprised to notice that even in the hectic days of war we still use expert gunners exams and we still think that they furnish an artillery goal worth striving for.

The motor transportation officer gives the transportation section a thorough going over both as to condition of vehicles and as to knowledge of first echelon maintenance.

The remainder of the battery is divided into four groups and one inspecting officer goes with each group. One group is examined in identification of planes and ships through use of silhouettes taken from FM 30-30 and 30-50. Occasionally we were able to use a 35mm projector and the set of identification slides furnished by the Signal Corps. The second group is questioned by the HD Surgeon on field sanitation, first aid, and malaria control. A third group is examined on knowledge of small arms by requiring sights to be set and weapons to be field stripped. The last group is required to perform bayonet drill and checked for knowledge and aggressiveness.

While the team is at the battery the S-2 is visiting the OP's and checking everything from orientation of instruments to knowledge of silhouettes and the personnel officer is giving the service records the O.O.

In addition, collective protectors and emergency power plants are run to see if they are in working condition.

The C.O. then assembles the battery and the team and an on-the-spot critique is held. The battery is given a rating and progress made since the last inspection is noted. The C.O. then leaves with a true first-hand knowledge of the

training status of the battery and the battery has actually been through an inspection and learned some things at the same time.

Of course there are difficulties, and the inspection has to be revised to fit different types of batteries. And in the case of a small detachment it is sometimes a question as to whether it would be more economical of transportation to have the detachment come to headquarters rather than have the team go to the detachment but we believe that the results justify the difficulties.



Signal Corps Photo

This was once a pillbox in the Siegfried Line.

# VGT Angle Rule

By Captain K. S. Jones, Coast Artillery Corps

The object of the VGT Angle Rule is to determine in target practice whether the VTG angle is within the limits of  $40^\circ$  to  $140^\circ$ . The actual angle VGT, subtended at the battery by the vessel and the target, is measured by field glasses, provided with a mil scale, or an azimuth instrument, or other method.

The minimum safe VGT angle is determined by the VGT Angle Rule. If the actual VGT angle is greater than that determined by the VGT Angle Rule, then the VTG angle is safe. The Battery Commander, Group Commander or the Safety Officer can thus determine, at any moment during target practice, whether the VTG angle is safe.

To operate the VGT Angle Rule, set the length of the Towline (L) on the Towline Scale opposite the Range (R) on the Range Scale. The Radial Index Line then points to the safe VGT angle for an approaching target or a receding target, on their respective scales.

For example: If the range is 7200 yds. and the length of towline is 600 yds., set 600 (on the towline scale) opposite 7200 (on the range scale). The Radial Index Line then points to 58 mils on the scale for an approaching target and 51 mils on the scale for a receding target. (See Fig. 2.)

The VGT Angle Rule is a circular slide rule method of solving the equation,  $\cot \text{VGT} = 1.556 R/L \pm 1.19$  ( $R$  = range in yds.  $L$  = length of towline in yds.).

The outside scale is a logarithmic scale of ranges, one logarithmic unit being equal to 3000 mils (See Fig. 1). The next scale is a logarithmic scale of lengths of towline, and is pivoted at the common center and revolves, forming a slide rule with the fixed range scale.

The two inner scales are non-uniform scales of safe

VGT angles in mils, the innermost scale for a receding target and the next for an approaching target.

The above formula is derived as follows;  
For a Receding Target:

$$\begin{aligned} \cot \text{VGT} &= \frac{R + L \cos 40^\circ}{L \sin 40^\circ} \quad (\text{See Fig. 3}) \\ &= \frac{R}{L \sin 40^\circ} + \cot 40^\circ \\ &= 1.556 R/L + 1.19 \end{aligned}$$

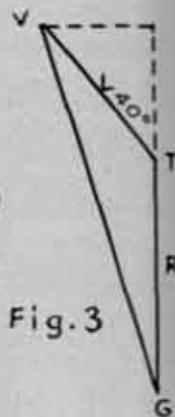


Fig. 3

Similarly, for an approaching target,  $\cot \text{VGT} = 1.556 R/L - 1.19$

It is very easy to construct a VGT Angle Rule. Proceed as follows:

- (1) Glue a sheet of drawing paper, 14" x 14", to a board and allow it to dry thoroughly. Then draw a circle, 12" in diameter, on the drawing paper.
- (2) Construct on this circumference a logarithmic scale, one log unit = 3000 mils (See Fig. 1) and mark 1000 yd. units as shown in Range Scale.
- (3) Draw two other circles (10" and 8" in diameter respectively) concentric with the first circle.
- (4) From the formula,  $\cot \text{VGT} = 1.556 R/L \pm 1.19$  (it will be more convenient in computation to use the

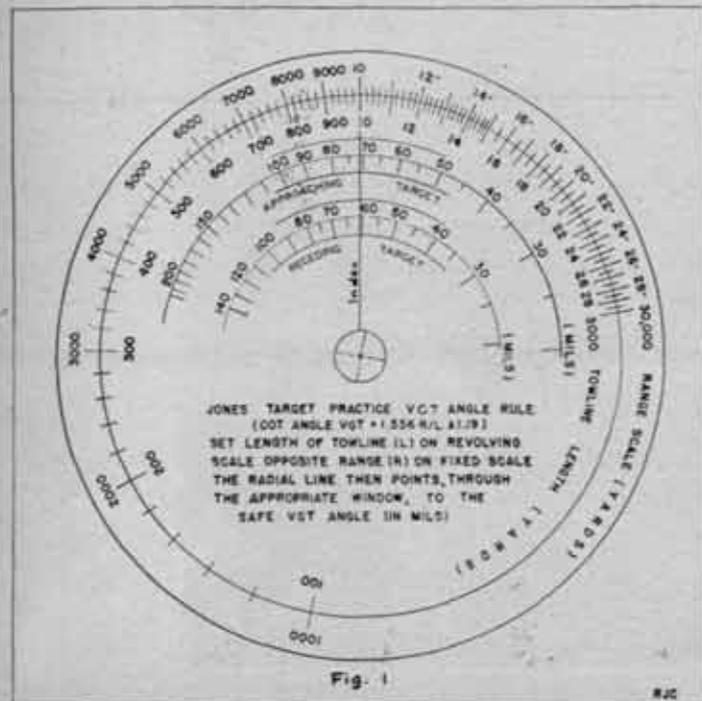


Fig. 1



Fig. 2

form  $R = \frac{\cot VGT \pm .7648}{L}$  (1.556), compute and tabu-

late values of  $R/L$  for values of angle  $VGT$  (at 5 mils intervals) from 20 mils to 200 mils for an approaching target and from 20 mils to 140 mils for a receding target.

- (5) Using the values of  $R/L$  (thus tabulated) on the Range Scale (assuming  $L = 100$ ) mark off radially their corresponding values of angle  $VGT$  on the 10" circle for an approaching target and the 8" circle for a receding target.
- (6) Cut from drawing paper a disk 12" in diameter and

construct on its circumference a logarithmic scale, identical with the Range Scale described in operation (2), except that 100 yd. units correspond with 1000 yd. units on the Range Scale. This is the scale of lengths of towline. Draw a Radial Index Line on this 12" disk from the center to the 1000 yd. mark. Then cut two windows in this 12" disk (See Fig. 2) so that the two mil scales may be read, the radial line being the Read Index.

- (7) Pivot this 12" disk at the common center, so that it revolves, forming a circular slide rule of the Range Scale and the Length of Towline Scale.



# Misfire

By Lieutenant Robert I. Knight, Coast Artillery Corps

How do you feel when you are in the B.C. tower firing a target practice, trying to beat your time expectancy and then over the order gun line comes the word, "misfire." I used to feel like popping a valve, (very perturbed), but not anymore because I believe I've got the electric primer misfire problem solved.

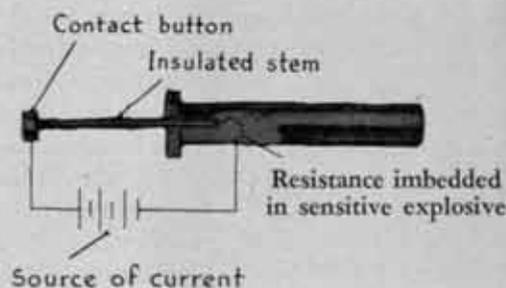
For many years a Virginia battery manning two six-inch guns M1903A2, has suffered through an average of five-percent misfires on each target practice using primers that were tested prior to firing and found OK. The firing circuit was checked and the trouble was definitely isolated at the primer.

In preparation for firing, primers are tested for continuity of circuit, correct resistance and proper fitting in the breechblock. The primers may test perfectly in all three, but during the process of testing for size by insertion in the breechblock, the insulated primer stem rubs against the firing leaf. This may rub a very small part of the black insulation off the primer stem which is left unnoticed, but when the primer is inserted for firing during the practice, it shorts out as illustrated in diagram. There are two ways of preventing this situation. First: after primers are tested for size in the breechblock, the insulated stems should be given an extra coating of quick drying lacquer by merely dipping the primer stem in a can of lacquer and making sure that the contact button is wiped clear and dry, then put all the tested primers in the primer pouch to segregate them from untested primers as soon as the insulating coat of lacquer dries. The second method of preventing electric primer misfires is to take a file and enlarge the gap in the firing leaf by about one-sixteenth of an inch so that when an electric primer is inserted, the insulated part of the primer stem will not be chipped or rubbed off by coming in contact with the firing leaf groove. This one-sixteenth of an inch widening of the firing leaf groove in no way detracts from the proper functioning of the firing mechanism when friction primers are used.

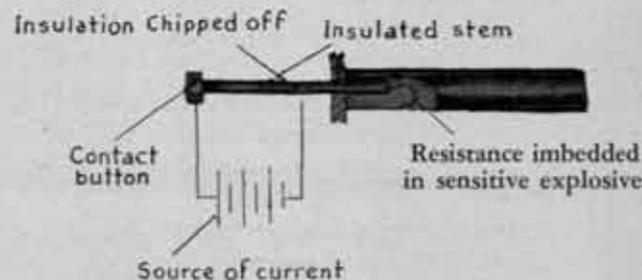
It is hoped that the above suggestions will be of some help to batteries that use this type of primer and have the

primer misfire problem to contend with. I've tried it over a period of several months basing my tests on 600 primers fired—it worked—it's swift—simple—inexpensive and worth consideration.

PROPER ELECTRICAL FUNCTION



IMPROPER ELECTRICAL FUNCTIONING RESULTING IN MISFIRE



When the primer is inserted for firing, the contact clip on the firing mechanism touches the contact button on the primer, and the circuit is completed through the resistance wire and the primer case to the breechblock; the primer is fired by the heat generated by the electric current passing through a resistance wire embedded in a sensitive explosive. If the insulation is rubbed or chipped off, the current will be shorted out through the primer stem to the firing leaf instead of passing through the resistance as intended, thereby resulting in a primer misfire.

# Practice Course for the Cloke and M1 Plotting Boards

By Lieutenant W. W. Peterson, Coast Artillery Corps

To train the plotting room detail on the Cloke and M1 plotting boards it is desirable to have at hand the tabulated azimuths from Observing Stations B<sup>1</sup> and B<sup>2</sup> to a series of points on a practice course. This article suggests methods for obtaining this data.

In general, for a practice course it is not necessary that the location of the course fall exactly in a predetermined position on the board. It is desirable, however, that the distance between successive points be comparable with what could be expected in tracking an actual target. While the exact position of the course is not confined, the distance between successive points is at least approximately determined.

In some batteries, however, it may be desirable to locate practice courses accurately due to the fact that real targets may be restricted to definite channels when entering or leaving the harbor. Thus the problem of making the practice course fall in a definite position on the plotting board is sometimes a practical one.

Whereas the Cloke and M1 boards are so designed that when the azimuths to a target from Observation Stations B<sup>1</sup> and B<sup>2</sup> are given the azimuth and distance from the DP to the target are readily determined, the converse problem is not so readily solved. That is, when the azimuth and distance DP to target are given, the azimuths from B<sup>1</sup> and B<sup>2</sup> to the target cannot as readily be determined.

We have, therefore, two problems: (1) to determine sets of azimuths for B<sup>1</sup> and B<sup>2</sup> armsetters which will give a course that will conform approximately to a predetermined track without regard to the position of the course on the board; (2) to determine sets of azimuths for the B<sup>1</sup> and B<sup>2</sup> armsetters which will give a course that will conform very closely to a predetermined track.

## SOLUTION OF FIRST PROBLEM

1. Draw course on the board—either straight or maneuvering.

2. Spot points 1, 2, 3, etc., on the course spaced equal to the distances (to scale) traveled by the assumed target during the corresponding time intervals. (Speed of target may be assumed to be reduced as target turns.)

3. Set plotting arm to pass through point 1, orient the platen against the base line stop, and using the rider, move platen until platen pivot is over point 1. (Gun push button will now be over corresponding point on the final course.)<sup>1</sup>

4. Bring relocating arm up against the master key.

5. Record azimuth readings of plotting and relocating arms opposite point 1.

<sup>1</sup>This set of azimuths will give a course parallel to the course first drawn, but with each point offset from it by the distance between platen pivot and gun push button.

6. Repeat the procedure for points 2, 3, 4, etc., until desired length of course is completed.

## SOLUTION OF SECOND PROBLEM

1. Draw course on the board in the final position desired.

2. Locate points 1, 2, 3, etc., on the course spaced equal to the distance (to scale) traveled by the assumed target during the corresponding time intervals. (Speed of target may be assumed to be reduced as target makes turns.)

3. Plot an auxiliary course parallel to the desired course but offset so that each point on the auxiliary course is at the distance gun push button to platen pivot from the corresponding point on the final course. (For method see below.)

4. Set plotting arm to pass through point 1 of the auxiliary course. Orient the platen against the base line stop, and, using the rider, move the platen until the platen pivot is over this point. (Gun push button will now be over the corresponding point on the desired course.)

5. Bring relocating arm up against the master key.

6. Record the azimuth readings of plotting and relocating arms opposite point 1.

7. Repeat procedure for points 2, 3, 4, etc., until course is completed.

Theoretically this set of azimuths will reproduce the course exactly as drawn in 1 above. Actually due to play in the platen and the arms, the points as plotted from the recorded azimuths will not fall precisely on the original ones. However, the exercise of reasonable care will make these discrepancies insignificant. The value of the difference between consecutive recorded azimuths should change smoothly, not suddenly. If upon examination of the tabulation of azimuths spots are found where such is not the case, one or two azimuths should be arbitrarily changed to fulfill this condition.

## PLOTTING THE AUXILIARY COURSE

There are two methods for plotting the auxiliary course described above.

The first method is suitable where the distance gun push button to platen pivot is less than about twelve inches. First, orient the platen against the base line stop, and move it out to a convenient position on the board. Using the platen push button and the gun push button, mark these positions on the paper and connect with a straight line. With a pair of triangles draw lines parallel to the line gun push button to platen pivot through each of the points on the course. On each of these lines lay off the distance gun push button to platen pivot in that direction. The points so determined form the auxiliary course.

Where the distance between the platen pivot and the gun push button is greater than about twelve inches, it will be inconvenient to draw the parallel lines with a pair of triangles. In this case the second method will give satisfactory results.

1. Set plotting arm at some convenient azimuth.
2. Orient platen against base line stop, and clamp in position.
3. Keeping platen tightly clamped to platen side, remove it, turn end for end, and replace so that platen extends on opposite side of plotting arm.
4. Reset plotting arm center.
5. Reset plotting arm to same azimuth as in 1 above.
6. Slide platen back against platen stop, and reset base line stop to bear against platen thus orienting platen 180 degrees from its position in 2 above and reversing the positions of the platen pivot and the gun push button.
7. Set plotting arm to pass through point 1 of the desired

course. Orient the platen against the newly positioned base line stop, and using the rider, move the platen until the platen pivot is over this point. Depress the gun push button thus making a mark at point 1 on the auxiliary course.

8. Repeat the procedure of 7 until all points on the auxiliary course are established.

#### APPLICATION TO SINGLE STATION POSITION FINDING SYSTEMS

The Cloke and M1 boards are suitable for plotting courses determined by single station position finding systems, the platen pivot being used to represent the observing station and the gun push button to represent the directing point. Practice courses for such systems may be constructed in the manner described above except that the relocating arm need not be used, and the azimuth and distance from the target (center of the board) to the observing station (platen pivot) are recorded.



YOU can help stretch our tire supply by removing tires at exactly the right time for reconditioning.



**TOO SOON**—Tread is raised slightly near center. Run farther before you remove for reconditioning.



**TOO LATE**—This is gross negligence. Tire is worn beyond repair. Instructions in TM 31-200 ignored.



#### TIRES WORN JUST RIGHT FOR RECONDITIONING

Note how the tread designs are worn down smoothly in the center and are just beginning to disappear. This is exactly the right time to remove these tires to have new treads put on. If a tire is removed too soon, it has to be returned to service for additional wear before it can be reconditioned. This wastes time. If a tire is removed too late, it is ruined. This wastes tires.

# Some of Our Subscribers Are Missing . . .

The JOURNAL tries very hard to keep in touch with its subscribers, but mail goes astray, subscribers fail to send in changes of address, and some headquarters neglect to forward mail. We have lost contact with the personnel listed below—if you know where they are, or if the missing men read this, please notify the JOURNAL.

Name	Last Known Address	Name	Last Known Address
Adler, Major Joseph M., Jr.	24th AAA Group	Green, Captain Judson C.	577th AAA AW Bn.
Allen, Lieut. Robert H., Jr.	Btry. C, 858th AAA Bn.	Guala, Lieut. Victor A.	Group 18, OCP, AAATC
Anderson, Lieut. Paul E.	Btry. B, 498 C.A. Bn.	Gulley, Lieut. Carl C.	AAATC, Camp Edwards, Mass.
Armstrong, Lt. Col. James F.	695th C.A.		
Armstrong, Colonel Marvil G.	862d AAA Bn.	Hamilton, Lieut. Myron B.	96th C.A.
Atkins, Lieut. Jesse B.	Btry. G, 204th C.A.	Hammell, Lieut. John G.	Hq. & Hq. Btry., 386th AA Bn.
		Hampton, Lieut. John W.	AFPO 302, N.Y.C.
Babb, Lieut. James C.	Btry. C, 69th C.A.	Hannert, Charles W.	621 Mae Ave., East Lansing, Mich.
Baird, Captain Ralph W.	605th C.A.	Hanny, Major Aellen B.	76th Sig. Hq. Co., Cons. Bn.
Barth, Captain Elmer G.	36th C.A. Brigade	Hansen, Major John H.	Hq. 1st Bn., 79th C.A.
Beal, Lieut. Harold J.	135th C.A. Bn.	Harbert, S/Sgt. Jackson	Btry. A, 15th AA Tng. Bn.
Berry, 1st Sgt., F. S.	Btry. A, 15th C.A. Bn.	Hardy, Major Paul	2d Bn., 203d C.A.
Bleggi, Cpl. E. P.	Btry. D, 14th Bn.	Harrison, Lieut. Gilbert N.	740th AA Bn.
Bloom, Captain George E.	Camp Chaffee, Arkansas	Hayes, Lieut. Clark W.	604th C.A.
Boess, Major John G.	470th C.A. Bn.	Herbert, Lieut. Achille C.	A-15, AAA RTC, Fort Eustis, Va.
Bolen, Lieut. William F.	198th C.A.	Henning, Lieut. Ralph R.	AAF, Train. Detch. Univ. of Chicago
Booth, Lieut. Wilmer L.	407th C.A.	Herrick, Brig. Gen. Hugh N.	Brooke General Hospital
Bormuth, Lieut. James G.	AFPO 12291-A, N.Y.C.	Hodgkins, Lieut. Earl W., Jr.	Trans. Corp., Seattle, Wash.
Bostwick, Lieut. David C.	792d C.A. Bn.	Horn, Captain William A.	Btry. E, 4th C.A.
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Bratsch, Pfc. William F.	Btry. K, 213th C.A.	Huff, Lieut. Arthur R.	Hq. 328th AAA SL Bn., Gen. Del.
Brinck, Captain Ralph	476th C.A. Bn.	Huffman, Major Walter	605th C.A. AA
Brosnan, Lieut. John R.	Btry. H, 79th C.A.	Hutchinson, Captain George W.	AFPO 948, Seattle, Wash.
Brown, Lieut. Donald W.	Hq. 385th C.A. Bn.		
Bruce, Captain Peter P.	Hq. 421st C.A. Bn.	Ireland, Lieut. Harry B.	436th Sep. C.A. Bn.
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Bullard, Colonel Abraham L.	Hq. 79th C.A.	Jameson, Captain Howard A.	Btry. D, 213th C.A.
Burnett, Captain Jackson W.	Btry. D, 570th AAA AW Bn.	Jefferson, Captain Roland N.	1st Bn., 203d C.A.
		Jones, Colonel Clifford	335 P. O. Bldg., Knoxville, Tenn.
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Carey, Colonel George R.	8th A.F. Comp. Comd.	Kaye, Lieut. Louis	Btry. K, 72d C.A.
Chapman, Major Ethan A.	Hq. Puerto Rican Dept.	Kaz, Lieut. George W.	Btry. C, 587th AA AW Bn.
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Coleman, Captain Frank L.	AA School	Laffin, Lieut. Eli F.	O.C.D., AA Sch., Camp Davis
Conelly, Lieut. Raymond J.	245th C.A.	Larson, Lieut. Goodman K.	61st C.A.
Coontz, Captain John B.	317th Bar. Bn. Bn.	Lembert, Lieut.	503d C.A.
Cooper, Lieut. Randolph G.	Valley Forge General Hospital	Liquori, Lieut. Guido	Btry. E, 252d C.A.
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Cravens, Lieut. Rutherford	127th AAA Bn.	Louis, Lieut. Sam	241st C.A.
Creasy, Major Roy Vogel	228th AAA SL Bn., AAFSAT	Lovejoy, Lieut. Charles R.	Hq. Btry., 422d C.A.
		Lowe, Lieut. Thomas J.	250th C.A.
Dashkoff, Lieut. Lawrence	AAA ORP AAS	Lynch, Captain Frank T.	198th C.A.
Davis, Lieut. Albin P., Jr.	TC NY PE		
Davis, Lieut. Donald F.	Officers School, AAATC, Camp Haan	McCaa, Lieut. Davis B.	77th C.A.
De Latour, Major Frank A.	89th C.A.	McCarthy, Lieut. Max R.	147th Gun Bn.
Derby, Captain Malcolm R.	370th AAA SL Bn.	McCuskey, Lieut. Donald W.	W. Va. Ordnance Plant, W. Va.
DiNardo, Cpl. Carlo	601st Tng. Gp., 63d Tng. Wn.	McKee, Lieut. Roland E.	Btry. F, 210th C.A.
Donohue, Captain James M.	93d C.A., Camp M.A.A.R.	McKinney, Major Marvin J.	10th Naval District, San Juan
Dunn, Lieut. Robert C.	250th C.A.	McLain, Major Edward W.	101st C. A. Bar. Bn. Bn.
Duvall, Colonel Ward E.	AFPO 835, N.O., La.	Massaro, Lieut. Jeremiah J.	AAA ORP AA Sch.
Dwinell, Captain John S.	AA School	Mattern, Captain Richard H.	Hq. AAATC, Fort Bliss, Texas
		Meier, Lieut. Robert A.	559th AAA AW Bn.
Ellard, Captain George E.	605th AAA Group	Mendenhall, Lt. Col. Clarence M., Jr.	Finney General Hospital
Ewing, Major Howard F.	4th Army Div. Hq., Air Grd. Sect.	Moore, Lieut. William P.	Btry. I, 6th C.A.
		Mothershead, Captain Charles I.	Btry. E, 99th C.A.
Fanning, Lieut. Starley J.	AAF Classification Center, Santa Ana	Mountain, Lieut. Harold S.	601st C.A.
Faulkner, Lieut. Kenneth O.	832d AA AW Sep. Bn.	Murphy, Captain Dennis V.	31st C.A.
Fischer, Lieut. Carl W.	97th C.A.		
Foster, Major Robert J.	38th AAA Group	Niles, Lieut. Jerome D., Jr.	25th Sep. C.A., APO 860, N. Y. C.
French, Colonel Forrest J.	10th AAA Group		
		Oden, Pvt. General Lee	Hq. Det. Sec. 2, Dem. Sub. Sec. Cp.
Gifford, Lieut. Horace S.	Hq. 216th AAA Group		Stewart
Giles, Lieut. Walter T.	AFPO 3929 N.Y.C.	Old, Lieut. Howard E.	2d Bn., 54th C.A.
Gill, Lieut. Hugh F.	400th QMC Truck Co.	Olufs, Captain Harold F.	368th AAA SL Bn.
Gorey, Lt. Col. George F.	1931 Center St., Berkeley, Calif.	Osmun, Major Eugene	22d AAA Gp.
Grabarz, Lieut. Wallace C.	Btry. B, 559th AAA AW Bn.		
Graham, Lieut. Rudy N.	77th C.A.	Packowski, Captain George W.	50th C.A.
Gray, Lieut. Bernard E.	Btry. G, 10th C.A., Prov. F.A. Gp.	Palmer, Lieut. Kenneth M.	Btry. C, 608th C.A.
Gray, Lieut. John T.	Btry. B, 442d C.A.	Pendergast, Lieut. Ferris E.	250th C.A.
Greco, Lieut. Frank	Hq. Btry. 2d Bn., 204th C.A.	Phillips, Major Frank M.	AAB, Albuquerque
		Ragland, Pvt. Edward T.	Ward 17-A, Kennedy Gen. Hosp.
		Ramsey, Captain Richard E.	198th C.A.
		Ray, Lt. Col. Henry C.	79th C.A.
		Rice, Lieut. William S.	EPRC, Hq. 4th Ser. Com.
		Ripley, Major L. H.	1 ADW, N.Y. Port of Embk.
		Robinson, Lieut. Arthur F.	IORP, IR 2-C, Camp Wheeler, Ga.
		Rodgers, Pvt. Charles T.	Btry. D, 585th C.A. Bn.
		Rotar, Captain Louis	AAF Classification Center, Nash-
			ville, Tenn.

Name	Last Known Address	Name	Last Known Address
Sale, Lieut. Robert D.	469th AAA AW Bn.	Stogsdell, Lieut. Charles N.	Btry. N, 2nd CA.
Saling, Lieut. Thomas F.	AAATC, Camp Haan	Stone, Captain Leon E.	197th CA.
Savage, Lieut. Walter D.	Hq. & Hq. Btry., AARTC, Fort Bliss	Strang, Lieut. John J.	Btry. K, 69th C.A.
Styles, Lieut. Harry L.	66th C.A.	Strickland, Lieut. Robert L.	APO 885, N.Y.C.
Schall, Lieut. Harold A.	77th C.A.	Stroud, Lieut. Robert L.	602d CA.
Schott, Major Carl H.	AAC Art. Off. Repl. Pool, Ft. Eustis	Sykes, Pvt. James M.	Camp Stewart, Ga.
Schultz, Lieut. John	550th C.A. Bn.		
Scott, Lt. Col. Roy L.	203d CA.	Terry, Lieut. Paul L.	Route 57, Box 98-F, El Paso, Texas
Sealey, Lieut. J. M.	Btry. G, 69th C.A.	Tibbetts, Lieut. Walter I., Jr.	6 Atlanta St., Wrightsville, N. C.
Searles, Lieut. John R., Jr.	AAFSAT	Tobias, Lieut. Seth D.	Dept. of Guns, AAAS
Sabanowitz, Lieut. Harry	544th AAA AW Bn.	Tuomy, Lieut. Justin M.	955th C.A., 613 Oak St., Minneapolis
Shelton, Lieut. Frank W.	Hq. 54th AAA Brig. Holabird Sig. Dept.		
Shinney, Lieut. Francis J., Jr.	Btry. A, 7th C.A.	Veazey, Major John W.	Gp. 1, 197th C.A.
Short, Captain Robert M.	61st Group	Viventi, Lieut. Romeo J.	Cas. Off. Pool, APO 4075-A, N.O., La.
Shotola, T/5 R.	Hq. & Hq. Btry., 266th C.A. Bn.		
Summs, Major James W.	522 B, Hq. & AB Sq.	Waller, Lieut. George M., Jr.	914 N. Octavia St., El Paso, Texas
Slower, Lieut. Archy F.	248th C.A.	Warren, Lieut. William A.	Fort Standish
Slusser, Captain Jack S.	Bldg. 725, Camp Davis	Weber, Lieut. James J.	302d AAA Bn. Bn. V1A
Smeltzer, Captain Paul T.	Btry. A, 399th C.A.	Welch, Captain John N.	202d CA.
Smith, Lieut. George E.	IRTC	White, Gardiner W., Jr.	Hq. Btry. AAATC, Camp Edwards Mass.
Smith, Lieut. Gilbert B.	Hq. 892d AAA Gun Bn.	Wildkatsch, Alfred A.	3059 No. Haussen Court, Chicago, Ill.
Smith, Captain Henry J., Jr.	APO 851, N.Y.C.	Wilson, Lt. Col. Auston M., Jr.	2418 39th St., N.W., Wash., D. C.
Smith, Lieut. John C.	Btry. E, 248th C.A.	Wiltsee, Captain Donald L.	APO 957
Smith, CWO Rorie W.	254th AAA SL Bn.	Wolfsie, Lieut. Sidney	Btry. D, 474th C.A.
Soapp, Lieut. J. F.	Hq. AAA Tng. Center, Camp Hulen	Wood, Lieut. Philip A.	75d CA.
Spencer, Lieut. John K., III	469th C.A. Bn.	Woodson, Lieut. Bob M.	605 C.A. AW
Stafford, Captain Carroll W.	79th C.A.	Wurst, Lieut. Perry E., Jr.	209th C.A.
Stanley, Lieut. Joseph W.	Camp Young		
Steele, Lieut. Henry G.	260th C.A.	Zumr, Lieut. Charles F.	489th C.A.
Seward, Lieut. Wilfred H., Jr.	Btry. A, 82d C.A.		



AAA at Biak

# COAST ARTILLERY

## Citations and Commendations

### Distinguished Service Cross

TO: MARION L. HITCHENS, First Sergeant, CA, 502 West Twenty-fifth Street, New Castle, Delaware.

FOR: At Los Negros Island, Admiralty Group, on March 4, 1944, he was engaging low-flying hostile aircraft with anti-aircraft fire when enemy ground troops directed heavy grenade and small-arms fire against our troops adjacent to his position. Faced with the alternative of remaining in the field fortification, or moving his machine gun into the open to engage the enemy on the ground, he moved his weapon to assist our ground troops. Finding his field of fire obstructed, he ran fifty yards into the open, under heavy enemy fire, to his other machine gun, pausing en route to throw eight hand grenades into an enemy pill-box. Upon reaching the machine gun, he moved it from its fortified position with the aid of two enlisted men, and, manning the gun alone, placed heavy and accurate fire on the enemy. By his quick and accurate judgment and courageous action, he, in addition to killing at least twelve enemy troops, contributed materially to repelling the enemy attack.

### Oak Leaf Cluster to Legion of Merit

TO: DALE D. HINMAN, Brigadier General, U. S. Army, 1103 Claremont Avenue, Norfolk, Virginia.

FOR: Services from April to November, 1943. As Commanding General, Antiaircraft Training Center, Fort Bliss, Texas, he instituted and supervised innovations in training that resulted in the continuous improvement of anti-aircraft units and also in increased efficiency of all officers and men. By an ingenious rotation of units between field positions and the camp area a substantial saving in housing requirements was effected, resulting in more units receiving training at Fort Bliss and better training for those compelled to live in the field. He installed fast-moving targets of opportunity along a mile-long road over which tactical columns could move and conduct firing practice with all types of weapons. He made provision for combined training with the First Cavalry Division; organized a centralized troop school for the training of officers awaiting activation of units and installed a system for processing all personnel sufficiently early in their period of training to eliminate those physically disqualified for combat service. (General Hinman was awarded the Legion of Merit in 1943 for outstanding service in connection with development of anti-aircraft defenses of areas to be controlled by U. S. Army Forces in the United Kingdom and in instituting a system of coordination between British and American anti-aircraft forces.)

TO: GILMOUR C. MACDONALD, Captain, CAC, 16171 Lesure Street, Detroit, Michigan.

FOR: Service in December, 1943, and January, 1944. Then Automatic Weapons Gunnery Officer of the Antiaircraft Artillery Training Center at Camp Stewart, Georgia, he with

another officer conceived a modification of the rocket target, M2. This device caused the rocket, when fired, to leave a dense smoke trail and greatly enhances its value to anti-aircraft troops in training by increasing the visibility of the rocket so that it more closely simulates a combat target. The modification also allows direct hits on the rocket to be detected by a disturbance of the smoke trail and permits the rocket to be used at night in conjunction with spread-beam searchlights. This device was so successful at Camp Stewart that it has been recommended by the Commanding General of the Antiaircraft Command as standard equipment for all Antiaircraft Artillery training centers.

### Legion of Merit

TO: KENNETH M. BARAGER, Colonel, CAC, 4970 Cresita Drive, San Diego, California.

FOR: Exceptionally meritorious conduct in the performance of outstanding service from May 25 to July 12, 1944. (Award made in the Central Pacific Area.)

TO: ORLEY D. BOWMAN, Colonel, AGD (CAC), Birthplace—Springfield, Ohio.

FOR: Service in connection with the organization and progressive development of the Office of Dependency Benefits. As Chief of the Processing Division from November, 1942, the date of its organization, to October 7, 1943, by his leadership, sound judgment, organizing ability and able grasp of numerous technical details in connection with the adjudication of applications under the Servicemen's Dependents Allowance Act of 1942, he rendered invaluable service to this new and vitally important Army activity. During his incumbency, approximately 3,000,000 family allowance accounts were put into effect based on adjudication actions by his division and the success achieved in accomplishing this huge task was due in large measure to his initiative in devising processes and procedures to meet changing conditions. From October, 1943, to September, 1944, as Executive Officer, he coordinated all divisions and branches in such manner as to contribute markedly to the successful and economical administration of the Office of Dependency Benefits and assist in maintaining the high morale and welfare of 6,500,000 Army men and women and nearly 13,000,000 of their dependents.

TO: HARRY S. TUBBS, Colonel, CAC, R.F.D. 1, Santa Ana, California.

FOR: Exceptionally meritorious conduct in the performance of outstanding services in the South Pacific area from December 11, 1942, to June 14, 1944.

TO: KENNETH G. WICKHAM, Lieutenant Colonel, CAC, 150-50 Thirty-fifth Avenue, Flushing, New York, New York.

FOR: Service as S-1 and Adjutant of the First Special Service Force from June 21, 1942, to January 29, 1944. He was

charged with many of the details of organizing a force to be employed on a special mission. With quick grasp of the requirements and keen insight into the problems, he produced, in the very short time available, tables of organization and arrangements for the administration of a force comprised of personnel of the United States and Canadian armies. As the integration of personnel of two armies into a single unit was without precedent, many problems arose that he solved in an intelligent, logical manner. He handled efficiently and expeditiously a vast amount of administrative work incident to five changes of station within the United States and three overseas movements made by the command. During operations in the Aleutian Islands when the force operated at a distance from its island base, he handled the administrative work with outstanding efficiency in spite of difficulties of communications and adverse conditions. During operations in Italy he commanded the rear echelon and base and by performing duties in addition to his normal exacting and complex work, relieved the combat echelon of all but the essential phases of fighting. Supervising all welfare, morale and recreational activities, his excellent arrangements provided adequate relaxation and recreation for combat personnel during the brief periods between operations.

TO: FRANK B. AYCOCK, JR., First Lieutenant, CAC, Currituck, North Carolina.

FOR: In addition to his normal assignment as an instructor in the Automatic Weapons Department of the Antiaircraft Artillery School, Camp Davis, North Carolina, from October 1, 1943, to August 10, 1944, he voluntarily and on his own initiative conducted scientific research in the automatic weapons gunnery problem which resulted in a major contribution toward the development and perfection of the down course method of spotting tracer fire and the adoption of an entirely new standard of proficiency in the emplacement and firing of the 40mm fire unit.

TO: FLOYD H. DIEHL, First Lieutenant, CAC, Gatun, Canal Zone.

FOR: Outstanding services for the period from November 22, 1942, to May 13, 1943, in North Africa. Hampered by the loss of the major part of his signal equipment in one action, and with little previous experience, by intense study and application, he trained his battalion communication section, thereby making possible their achievement of superior combat efficiency. By encouraging initiative and establishing confidence, he maintained communications intact, under extremely adverse battle conditions. Working under intense enemy fire and through unexplored mined areas, his devotion to duty, beyond that ordinarily required, has been emulated by the men under his command.

TO: ROLAND B. HUNT, Master Sergeant, CA, Presho, South Dakota.

FOR: Exceptionally meritorious conduct in the performance of outstanding services from February 18 to March 31, 1944. (Award made in European Theater of Operations.)

TO: SCOTTIE H. RUSSELL, Staff Sergeant, CA, R.F.D. 1, Post, Texas.

FOR: From December 22, 1942, to May 13, 1943, in North Africa, he, as platoon sergeant, drilled his men in the proper maintenance of equipment and the necessity for camouflage and concealment. Operating in rugged and mountainous terrain, sometimes with little protection from enemy artillery fire, he, by his ingenuity, initiative and courage, was always able to maneuver his platoon to well-concealed positions where they could offer the best antiaircraft protection for Infantry troops.

Constantly improving the morale of his men by personal example and words of courage while in battle, and providing recreational equipment for his men during rest periods between battles, he made an outstanding contribution to the success of his unit.

TO: ERNEST ZALOZNIK, Technician 3rd Grade, CA, R.F.D. 2, McDonald, Pennsylvania.

FOR: As electrician, fire control, and senior technician of an antiaircraft artillery battery's artillery maintenance section in North Africa, Sicily and Sardinia, from March, 1943, to February, 1944, through his individual performance, leadership and outstanding technical knowledge, he welded his section into an efficient and smoothly operating team. His complete grasp of the problems facing him and his indefatigable application of a thorough and widely varied technical knowledge in surmounting these problems, enabled his section to maintain the weapons and fire control material of the unit at a high level of efficiency and readiness at all times.

TO: WARREN J. OCC, Technician 5th Grade (then Private First Class), CA, Lyons, Michigan.

FOR: With complete disregard for his own personal safety, during the period from April 10 to May 13, 1943, in North Africa, he drove a message center vehicle for his unit in total blackout over rough terrain that was thick with land mines and booby traps. His nightly rounds covered from 100 to 150 miles and were for a duration of eight to ten hours. By his exemplary devotion to duty, keen judgment and foresight, he delivered all messages promptly and to the proper party. His service was invaluable to his battalion and the batteries of the battalion.

### Silver Star

TO: ROBERT A. COLE, Sergeant, CA, Posthumous. Next of kin: Mrs. Rosa E. Cole, Mother, 123 Wesleyan Avenue, Providence, Rhode Island.

FOR: In the vicinity of Soriari Village, Biak Island, on May 30, 1944, during an enemy air attack his gun section was prepared to go into action when he realized that the power unit was not functioning properly. Mindful of the fact that he was exposing himself to enemy fire from the air, he jumped out of the gun parapet and ran across open terrain to the power plant, approximately twenty yards distant. He made the necessary adjustments and was about to return to his gun position when killed by an enemy bomb. His heroic efforts to put his gun into operation at great danger to himself are in the finest traditions of the military service.

TO: ANGELO JOSEPH SPORTINI, Technician 5th Grade, CA, 230 Boston Avenue, Stratford, Connecticut.

FOR: At Oro Bay, New Guinea, on October 15, 1943, during an attack by enemy dive bombers he and four other members of his battery manned antiaircraft guns mounted temporarily on the deck of a landing ship. Although weapons and men were entirely exposed to enemy fire he continued to operate his gun, bringing effective fire upon the enemy. His disregard for his personal safety and his coolness and gallantry under fire contributed largely to the safety of the landing ship and to the destruction of five enemy airplanes.

TO: EDWARD BRUNO GODLEWSKI, Private First Class, CA, 42 Water Street, Perry, New York.

FOR: At Oro Bay, New Guinea, on October 15, 1943, during an attack by enemy dive bombers he and four other members of his battery manned antiaircraft guns mounted temporarily on the deck of a landing ship. Although weapons and

men were entirely exposed to enemy fire he continued to operate his gun, bringing effective fire upon the enemy. His disregard for his personal safety and his coolness and gallantry under fire contributed largely to the safety of the landing ship and to the destruction of five enemy airplanes.

TO: MARION LOWELL HATCHER, Private First Class, CA, Homer, New York.

FOR: At Oro Bay, New Guinea, on October 15, 1943, during an attack by enemy dive bombers he and four other members of his battery manned anti-aircraft guns mounted temporarily on the deck of a landing ship. Although weapons and men were entirely exposed to enemy fire he continued to operate his gun, bringing effective fire upon the enemy. His disregard for his personal safety and his coolness and gallantry under fire contributed largely to the safety of the landing ship and to the destruction of five enemy airplanes.

TO: JACK GOODING HEADLEY, Private First Class, CA, 53 Helen Street, Johnson City, New York.

FOR: At Oro Bay, New Guinea, on October 15, 1943, during an attack by enemy dive bombers he and four other members of his battery manned anti-aircraft guns mounted temporarily on the deck of a landing ship. Although weapons and men were entirely exposed to enemy fire he continued to operate his gun, bringing effective fire upon the enemy. His disregard for his personal safety and his coolness and gallantry under fire contributed largely to the safety of the landing ship and to the destruction of five enemy airplanes.

TO: ARTHUR AUGUSTUS MALERNEE, Private First Class, CA, Cleveland Avenue, Columbus, Ohio.

FOR: At Oro Bay, New Guinea, on October 15, 1943, during an attack by enemy dive bombers he and four other members of his battery manned anti-aircraft guns mounted temporarily on the deck of a landing ship. Although weapons and men were entirely exposed to enemy fire he continued to operate his gun, bringing effective fire upon the enemy. His disregard for his personal safety and his coolness and gallantry under fire contributed largely to the safety of the landing ship and to the destruction of five enemy airplanes.

TO: GEORGE S. CASWELL, Private, CA, Box 57, Mystic, Connecticut.

FOR: Near Soriari Village, Biak Island, on May 28, 1944, when a comrade was wounded while engaged in defense against enemy infiltration, he, without regard for his own safety, left the protection of his own gun revetment to administer first aid. In company with another soldier he made three trips across an area exposed to enemy fire in order to care for this wounded man.

### Soldier's Medal

TO: STANLEY L. LIND, First Lieutenant, CAC, 701 Parallel Avenue, Kansas City, Kansas.

FOR: In Italy, February 28, 1944, when a tent containing small-arms ammunition caught fire in the field artillery battery area, he, disregarding the danger from the intense heat and exploding ammunition, promptly rushed to the scene. After emptying a fire extinguisher on the flames he continued his efforts by throwing dirt on the fire until ordered to a place of safety by his commanding officer. His courageous action helped to prevent the fire from spreading, thereby averting damage to equipment and possible injury to personnel, and exemplified the highest traditions of the military service.

TO: THOMAS A. O'BOYLE, First Lieutenant, CAC, 5327 North Thirteenth Street, Philadelphia, Pennsylvania.

FOR: In Italy, February 28, 1944, when a tent containing small-arms ammunition caught fire in the field artillery battery area, he, disregarding the danger from the intense heat and exploding ammunition, promptly rushed to the scene. After emptying a fire extinguisher on the flames he continued his efforts by throwing dirt on the fire until ordered to a place of safety by his commanding officer. His courageous action helped to prevent the fire from spreading, thereby averting damage to equipment and possible injury to personnel, and exemplified the highest traditions of the military service.

TO: CARL A. SHEM, JR., First Lieutenant, CAC, 1071 Maplecliff Drive, Lakewood, Ohio.

FOR: At Live Grenade Range, Camp Pickett, Virginia, on May 10, 1944, a fragmentation grenade thrown by a soldier struck the parapet and rolled back into the firing pit. Lieutenant Shem, who was then serving in the capacity of instructor, without regard for his own safety and at the risk of his life, raced forward, removed the grenade from underneath the soldier, who was in a prone position, and threw it over the safety parapet which it barely cleared before exploding. His act not only saved the soldier from death or injury but also officers and men within range.

TO: CHARLES SOVITSKI, First Lieutenant, CAC, 3524 Fifth Avenue, Pittsburgh, Pennsylvania.

FOR: At Camp Livingston, Louisiana, on June 1, 1944, he and four enlisted men in turn were throwing live hand grenades from a firing trench on the practice range. A grenade, after being armed, failed to clear the top of the trench when thrown by a soldier, struck a sandbag, and landed on the floor of the trench. With complete disregard for his own safety and at the risk of his life, Lieutenant Sovitski retrieved the grenade and hurled it into the impact area where it exploded, thus saving the men from injury and possible death.

TO: JAMES J. MACARTHUR, Second Lieutenant, CAC, 1457 North Alden Street, Philadelphia, Pennsylvania.

FOR: Heroism on October 22, 1943, in Sicily.

TO: JOSEPH J. CARBONE, First Sergeant, CA, 336 Walnut Street, Camden, New Jersey.

FOR: Heroism on October 22, 1943, in Sicily.

TO: JOHN DI GEORGE, Sergeant, CA, R.F.D. 2, Box 160, Canastota, New York.

FOR: Heroism on October 22, 1943, in Sicily.

TO: CLARENCE M. WALL, Sergeant, CA, 903 Lamb Street, Utica, New York.

FOR: Heroism at Long Beach, California, on May 22, 1944, during a 90mm target practice in which an armed projectile accidentally detonated, causing death and injury to the gun crew. During the course of the practice, the gun in recoil knocked a projectile from the hands of an ammunition relay. The round fell to the concrete emplacement to the rear of the turret and the projectile exploded in the midst of the gun crew members and officials. As a result of the explosion a second projectile was dropped by another ammunition relay, who had been wounded, and it lay blackened and smoking in the midst of the crew. Without hesitation and with complete disregard for his own personal safety, Sergeant Wall leaped from the gun turret, picked up the round and calmly carried it forty feet to the edge of the emplacement and rolled it over a cliff. Having thus safely disposed of the dangerous round, he returned and proceeded to assist in the emergency treatment of the wounded.

TO: LAWRENCE WIENER, Technician Fourth Grade, CA, #40 Jelliff Avenue, Newark, New Jersey.

FOR: Heroism on October 22, 1943, in Sicily.

TO: VINCENT J. DIMINA, Private First Class, 24-33 Gilmore Street, Corona, New York.

FOR: Heroism on October 22, 1943, in Sicily.

TO: JAMES A. DORTON, Private First Class, CA, Broad Rock Road, Richmond, Virginia.

FOR: At Guadalcanal, Solomon Islands, February 12, 1944, he dived into the ocean and swam two hundred yards to rescue a drowning officer, who was caught in a strong undertow. He kept him afloat until a canoe arrived to take him to the beach. His courageous action was largely responsible for saving the officer's life.

TO: CARL B. FIELD, Private First Class, CA, R.F.D. 1, Bethany, Missouri.

FOR: Heroism on October 22, 1943, in Sicily.

TO: FRANCIS W. CUSICK, Private, CA, 11 Squantum Street, Milton, Massachusetts.

FOR: In Italy, in February, 1944, upon seeing a tent burning in the area of a neighboring unit, he and another soldier ran to the scene and attempted to remove ammunition stored there. Finding this impossible, they fought the blaze with fire extinguishers and dirt until ordered away from the growing heat and increasing danger from exploding ammunition. Their courage and determination to do all possible toward saving the ammunition is in keeping with the highest traditions of military service.

TO: LAWRENCE HIGGINS, Private, CA, Alverda, Pennsylvania.

FOR: At New Llano, Louisiana, on May 3, 1944, when two small boys were in danger of drowning in a swift-flowing stream in deep water, he, knowing full well the risk he was taking, unhesitatingly plunged into the flooded river and swam to the rescue. By the time he reached the position of the struggling boys, both had sunk beneath the surface. He dived, brought them up and swam with them to the shore.

TO: WILLIAM KUNDA, Private, CA, 6 Lent Avenue, Hempstead, New York.

FOR: Heroism on October 22, 1943, in Sicily.

TO: NATHANIEL E. STOKES, Private, CA, Williamstown, Missouri.

FOR: In Italy, in February, 1944, upon seeing a tent burning in the area of a neighboring unit, he and another soldier ran to the scene attempted to remove ammunition stored there. Finding this impossible, they fought the blaze with fire extinguishers and dirt until ordered away from the growing heat and increasing danger from exploding ammunition. Their courage and determination to do all possible toward saving the ammunition is in keeping with the highest tradition of military service.

### Bronze Star

#### COLONEL

WALTER R. GOODRICH, 2511 South Second Street, Arcadia, California.

#### LIEUTENANT COLONELS

ROGER H. HOLT, 1305 Lore Avenue, Gordon Heights, Wilmington, Delaware.

THOMAS H. LEARY, 22 Laurel Avenue, Schnectady, New York.

JOHN V. LONG, 4120 Fifth Avenue, San Diego, California.

JAMES M. MOZLEY, 431 South Gore Avenue, Webster Groves, Missouri.

DONALD W. SHIVE, 160 Twenty-fourth Avenue, San Francisco, California.

#### MAJOR

ARTHUR H. JONES (then Captain), 9 Walbridge Road, West Hartford, Connecticut.

#### CAPTAINS

SAMUEL SPENCER BINGHAM, 28 Lindberg Boulevard, Starkville, Mississippi.

BURTON CURRY, 25 Guilds Woods, Tuscaloosa, Alabama.

JAMES M. GOLDSTON, 337 Naples Street, Corpus Christi, Texas.

WILLIAM J. JAMES, 6433 Pennsylvania Avenue, Kansas City, Missouri.

JAMES O. MURPHY (then First Lieutenant), 1615 Jerome Avenue, Fort Lee, New Jersey.

PAUL F. SOLECKI, 27 Manor Avenue, Newport, Rhode Island.

DONALD S. STUCK, 1633½ McClung Street, Charlestown, West Virginia.

#### FIRST LIEUTENANTS

HENRY S. ANDREWS, 308 Marshall Street, Hampton, Virginia.

WILLIS F. COLE, JR., 1330 West 15th Street, San Pedro, California.

THOMAS R. CONNOR, JR., 13 Dwight Street, Boston, Massachusetts.

MARIO R. DALL'ACQUA, 69 Fairview Avenue, Port Washington, New York.

LEWIS D. HUMBLE, Monticello, Kentucky.

DAVID L. NORRIS, 605 Pendleton Street, Greenville, South Carolina.

BERNARD C. RICHARDSON, Box 4, Kirbyville, Texas.

#### SECOND LIEUTENANTS

RONALD MIDDLETON, 86 Kenwood Road, Methuen, Massachusetts.

NICHOLAS V. V. F. MUNSON, Olean, New York.

WILLIAM L. WILSON, 225 Madison Street, Staunton, Virginia.

#### CHIEF WARRANT OFFICER

DELMAR E. TUCKER (then Master Sergeant), 1312 Chestnut Street, Commerce, Texas.

#### MASTER SERGEANTS

ROBERT D. SULLIVAN, 226 East Twelfth Street, Tyone, Pennsylvania.

JOHN J. WATERS, 267 Harrison Avenue, Jersey City, New Jersey.

#### TECHNICAL SERGEANT

SIGI SANTAVICCA, Box 741, Dunlevy, Pennsylvania.

#### STAFF SERGEANTS

JOHN W. BAGGETT, Central City, Kentucky.

JOHN B. BRUNS, 1626 Park Avenue, St. Louis, Missouri.

CHARLES H. CARNEY, Bloomfield, Kentucky.

LOUIS P. GUILMETTE, Old Ledge Road, North Chelmsford, Massachusetts.

LEONARD M. HUTER, Nelson, Kentucky.  
HENRY L. LANGE, 3512 Ruthven Street, Pittsburgh, Pennsylvania.

CHARLES P. SETTLE, Springfield, Kentucky.

#### TECHNICIAN 3D GRADE

DWIGHT N. RITCH, 6 Illinois Avenue, DuQuoin, Illinois.

#### SERGEANTS

ANTHONY J. BRODZIK, 55 Holmes Avenue, Buffalo, New York.

WILLIAM E. BURGIN, 626 West Butler, Olney, Illinois.

JAMES H. BURNEY, Hickman, Kentucky.

MASON R. COMER, JR., Lowell, West Virginia.

HENRY D. DE MAYO, 69 Gem Avenue, Bridgeport, Connecticut.

ORVILLE B. ELLIS, Glasgow, Kentucky.

FRED G. HONAKER, Saxon, West Virginia.

RICHARD E. SMYTH, 1516 Hammersley Avenue, Bronx, New York, New York.

#### TECHNICIAN 4TH GRADE

PAUL C. MC SHANE, 56 Gurney Street, Roxbury, Massachusetts.

#### CORPORALS

WILLIAM L. CLACK, Eatonton, Georgia.

WILLIAM T. HEYDON (then Technician 5th Grade), 2604 Colorado Street, Kansas City, Missouri.

JOSEPH C. KEITH, 3322 Dumaine Street, New Orleans, Louisiana.

BERNARD W. SMITH, JR., Box 176 Merianna, Pennsylvania.

#### TECHNICIANS 5TH GRADE

ERNEST R. BRAGG, Sparksville, Kentucky.

JOHN P. GAVALAS, Washington Street, Northvale, New Jersey.

ANDREW F. SCHWEIGHARDT, 4 Hazel Street, Garfield, New Jersey.

HOWARD R. SCHNEIDER, 2753 East Chester Road, New York, New York.

JOSEPH SZEWCZYK, 7 Madeline Avenue, Clifton, New Jersey.

INAN VAUGHN (then Private), R.F.D. 1, Clinton, Kentucky.

ROBERT WIERSMA, Box 96, Friesland, Wisconsin.

#### PRIVATES FIRST CLASS

JAMES M. GAMBRELL, R.F.D. 1, Abbeville, South Carolina.

BENOIT J. HUTCHISON, 43 Hancock Street, Boston, Massachusetts.

#### PRIVATES

WALTER C. BELLROSE, JR., 1914 Grant Boulevard, Syracuse, New York.

RAYMOND F. BOOMHOWER, 133 Southern Avenue, Dorchester, Massachusetts.

ROBERT C. KEELER, 5315 Ravenswood Road, Port Huron, Michigan.

JASPER LAMB, Dawson Springs, Kentucky.

COLEMAN LANE, Ellisburg, Kentucky.

LOUIS T. SALVAGIO, 1420 Avenue I, Ensley, Alabama.

JAMES O. WARE, 13 North Franklin Street, Cortland, New York.

#### Air Medal

TO: JAMES S. SCHNEPEL, First Lieutenant, CAC, 155 South Broadway, White Plains, New York.

FOR: Meritorious achievement while participating in fifty-

six operational flights over Bougainville, Solomon Islands, for a total of 122 hours, from February 7 to April 3, 1944. While on these dangerous observation missions, he located many enemy gun positions, bivouac areas, roads and observation posts and accurately adjusted field artillery fire upon them.

TO: FLOYD A. HATFIELD, Second Lieutenant, CAC, 343 Garrity Road, San Antonio, Texas.

FOR: Meritorious achievement while participating in sixty-five operational flights over Bougainville, Solomon Islands, from February 7 to April 7, 1944. While on these observation missions, he located many enemy gun positions, bivouac areas, roads and observation points and accurately adjusted field artillery fire on them.

#### Unit Commendation

HEADQUARTERS, V CORPS  
APO 305, U. S. ARMY

SUBJECT: Commendation.

TO : Commanding General, 49th AAA Brigade.  
Through: Commanding General, First United States Army.

1. I wish to express to you, and through you, to the officers and enlisted men of the 49th AAA Brigade my sincere appreciation, commendation, and grateful thanks for the skillful and enthusiastic execution of the plan for the initial commitment of your brigade under the V Corps plan for the invasion of Western Europe.

2. The landing of your troops on D-day in the face of heavy fire and stubborn resistance and the effective ground support given to the assault infantry by your anti-aircraft weapons was characterized by brilliant leadership, outstanding offensive spirit and magnificent courage of all ranks. With singleness of purpose to furnish the most effective day and night AA protection of the beaches, beach maintenance areas and troop concentrations on the beachhead, your brigade has helped to bring the initial phases of the invasion operations to a successful conclusion to the great credit of your brigade, V Corps, and the First Army.

3. The 49th AAA Brigade has been relieved from V Corps. I accept this change of status with sincere regret.

4. To the officers and enlisted men of your brigade I send my personal thanks for the long, hazardous and arduous period of training prior to the invasion and for their splendid performance during current operations. The best of luck and good wishes to you all.

/s/ L. T. Gerow,

/t/ L. T. GEROW,

Major General, U. S. Army,  
Commanding.

1st Ind.

200.6 (A)

HEADQUARTERS, FIRST UNITED STATES ARMY  
APO NO. 230

TO: Commanding General, 49th AAA Brigade.

I am pleased to note and transmit this appreciation for an outstanding performance in battle, and to add my personal congratulations on a job well done.

Lieutenant General, U.S.A.,

/s/ O. N. Bradley,

/t/ O. N. BRADLEY,

Commanding.

# Trends in Antiaircraft Artillery and Coast Artillery Organization and Equipment

By Lieutenant Colonel E. V. Hungerford, Jr., and Major F. N. Seitz

The field has long felt the need for information concerning new items of equipment and changes in antiaircraft artillery and coast artillery organization before they are actually published in Tables of Organization and Equipment. To fill this need each future COAST ARTILLERY JOURNAL will include changes as they are approved by the War Department.

Through these columns Coast Artillerymen will have advance information of changes which will later be reflected in Tables of Organization and Equipment along with a brief description of the item (where possible) and reason for inclusion of the item.

THESE NOTES DO NOT CONSTITUTE AUTHORITY TO REQUISITION EITHER PERSONNEL OR EQUIPMENT LISTED HEREIN.

## ANTIAIRCRAFT ARTILLERY

### AAA Brigade and Group (T/O & E 44-10-1 and 44-12)

Administrative and supply section has been authorized for all brigades and groups. The administrative personnel composed of a captain, adjutant and S-1; one M/Sgt, sergeant major; one T/Sgt, personnel; and two clerks. The presently authorized supply personnel is increased by a captain, assistant S-4; one M/Sgt supply in the brigade only; and two clerks.

One additional typewriter, nonportable is authorized for the new section.

One tent, squad, M1942 is authorized the group only when AAOR is operated outside continental U. S. when authorized by Theater of Operations Commander.

### AAA Gun Battalions (T/O & E 44-15 and 44-115)

Items of equipment necessary for the secondary (field artillery) rôle are included as follows: Command post and direction equipment set No. 1, aiming circle M1 and protractors, fan, 1/25,000 scale, 26,000 yard range, in each battalion headquarters battery; Aiming circle M1 and compass M2 in each firing battery.

Electric lighting equipment, set No. 3 and tent, squad, M1942 are now authorized for each battalion headquarters battery outside continental U.S. when authorized by Theater of Operations Commander. It is contemplated these items are necessary only when the battalion operates an AAOR.

Hydrogen generator AN/TMQ-3( ) replaces the hydrogen generator ML-185. The new item is a very light portable generator utilizing calcium hydride charges. Pending availability of the new item, ML-185 generators will be retained. Army Service Forces Catalog SIG 4-1 will be properly amended to authorize appropriate expendable items.

Graphical firing tables are now authorized, five per bat-

tery. M26 graphical firing table is issued the battalions equipped with 90mm guns and M34 graphical firing table is issued the battalions equipped with 120mm guns.

### AAA Automatic Weapons Battalions (T/O & E 44-25, 44-75 and 44-125)

Revision of the self-propelled automatic weapons battery changes the organization to provide two automatic weapons platoons of four firing units each. Each firing unit is composed of an automatic weapons squad (M15A1 carriage) and a machine gun squad (M16 carriage). Radio sets are amended to provide a radio set SCR-528 in each M15A1 carriage.

Plotting Equipment AN/TSA-2 has been standardized for issue to all automatic weapons battalions. This item consists of plotting boards and other items essential for the establishment of an AAOR in an automatic weapons battalion.

Reproduction equipment, gelatin process, 18-inch by 18-inch is authorized all automatic weapons headquarters and headquarters batteries for the preparation of overlays. It is considered this item is essential to prepare overlays indicating positions of AAAIS observation posts.

### AAA Searchlight Battalion (T/O & E 44-135)

Three spare searchlight power plants are authorized each searchlight battalion.

Vibrator pack PP-68( ) has been added. This item delivers 110 volts from a 6-volt battery and is used for radio repair.

Four each Auger, post hole, 6-inch capacity and bar, crow, 60-inch and one demolition equipment, set No. 1, squad are included in T/O & E 44-138 outside continental U. S. when authorized by Theater of Operations Commander. These items are included for emplacement of matériel.

### Miscellaneous equipment changes

Plotting equipment AN/TSA-1 has been standardized for issue, one each to groups, gun battalions and searchlight battalions. This item consists of plotting boards, plastic arrows, raid stands and all items essential for the establishment of an AAOR in these units.

Chest set TD-1 replaces chest set TD-3. Modification of chest set TD-1 will permit the use of headset HS-30 and microphone T-30 when necessary.

Lamp electric portable command post is now authorized on the basis of one per command post tent. This item will provide suitable lighting for normal command post duties.

Telephone TP-9( ) has been substituted for an equal number of telephones EE-8. Allowances depend on the

organization. Telephone TP-9( ) provides efficient transmission and reception over long lines.

Mount, AA, machine gun, cal. .50, M63 is authorized for each truck and tractor mounted cal. .50 machine gun. The M63 mount is a light antiaircraft mount weighing approximately 145 pounds.

Outfit officers' mess is included in all battalion headquarters batteries and the group and brigade for the operation of officers' messes.

Mask, face, launcher, rocket is authorized, two per launcher rocket. This item will prevent facial burns from the rocket blast.

Submachine gun scabbards have been deleted as modification to the universal bracket on vehicles will now permit carrying submachine guns.

#### COAST ARTILLERY

##### *Harbor Defense Headquarters and Headquarters Battery (T/O & E 4-260-1)*

The form of the Appendix (Fire Control Equipment and Accessories) has been modified by combining certain columns, deleting others, and splitting one. Identifying letters have been added to the columns to facilitate reference to them.

Changes in items and in allowances authorized by the revised Appendix are covered below under the appropriate unit.

##### *Harbor Defense Group (T/O & E 4-62)*

Administrative and supply section has been authorized for the group. The administrative personnel is composed of a captain, adjutant and S-1; one M/Sgt, sergeant major; one T/Sgt, personnel; and two clerks. The presently authorized supply personnel is increased by a captain, assistant S-4, and two clerks.

One additional typewriter, nonportable is authorized for the new section.

##### *Harbor Defense Battalion (T/O & E 4-66)*

The revised Appendix splits the battalion CP column into seacoast and antiaircraft, thereby eliminating a number of notes. There is no change in equipment for the seacoast battalion, however the azimuth instruments and depression

position finder have been eliminated from the antiaircraft battalion. An antiaircraft observation instrument, a radio set SCR-694, and an additional radio set SCR-543( ) have been authorized for the latter battalion.

##### *Harbor Defense Mine Battery (T/O & E 4-69)*

Next publication of changes to this table will include in the Quartermaster section, 18 pairs of shoes, explosives, operations, men's (nonsparking) for wear by personnel in the mine loading room.

##### *Harbor Defense Antimotor Torpedo Boat Battery (T/O & E 4-77)*

Revised appendix provides two (2) azimuth instruments, M1910A1 for assisting in laying the guns and spotting shots.

##### *Harbor Defense Antiaircraft Battery (T/O & E 4-87)*

Revised Appendix provides a plotting board (M8C or M8D) for antiaircraft gun batteries for plotting unseen aerial targets.

##### *155mm Gun Group (T/O & E 4-152)*

The same administrative and supply section as provided for the harbor defense group is authorized this unit.

##### *155mm Gun Battalion (T/O & E 4-156)*

One searchlight electrician has been eliminated as one searchlight electrician is sufficient to maintain the eight searchlights.

##### *155mm Gun Battery (T/O & E 4-157)*

Gun data computer, M8 is included when authorized by the War Department.

The armorer has been deleted as it is considered that the artillery mechanic can maintain the small arms.

##### *Miscellaneous equipment changes*

Revised Appendix to T/O & E 4-260-1 provides a director, M5A2, authorized for each 37mm or 40mm gun regardless of its primary mission.

Lamp electric portable command post is now authorized on the basis of one per command post tent. This item will provide adequate lighting for normal command post operations.



Commanders who make sure that drivers pay attention to the "caution" plates on their vehicles and know the "permissible speeds" for every gear will avoid many maintenance woes. Scored pistons and cylinder walls, stretched or broken connecting rods, ruined bearings and damaged crankshafts are certain results of driving vehicles in the wrong gear.

# 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.

Items pertaining to Antiaircraft Artillery should be sent to the Antiaircraft Command, Richmond 10, Virginia.

### THE COAST ARTILLERY BOARD

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LIEUTENANT COLONEL ANDREW W. CLEMENT

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CAPTAIN W. P. G. HALL

**Bore Brush T3 for 6-inch guns.** The Board has recently completed the service test of a new bore brush for 6-inch coast matériel. This new brush, the T3, is similar in appearance and in operation to the Bore Brush M13 for 155mm guns. The brush may be used for cleaning and oiling the bore, but it must be thoroughly scoured after being used for cleaning the bore if it is to be used for oiling. If possible, a separate brush should be used for these two operations. The Board recommended that:

a. The Bore Brush T3 be standardized with a basis of one of one brush per 6-inch gun.

b. The presently issued brush, wire cleaning, 6-inch, for cleaning the bore, be declared obsolete when replaced by the T3 brush.

c. The presently issued brush, slush, 6-inch, for oiling the bore, be retained in service until the present stock is expended, at which time the T3 brush will be used for oiling the bore.

The above recommendations were approved by the Commanding General, Army Ground Forces.

**Motor Generator M2.** The Motor Generator M2 has been recently standardized as the standby source of power for the Gun Data Computer M1 in those batteries where the main battery power supply is direct current. The primary source of power for the computer in such batteries is the Generating Unit M6.

In some instances, it may be more desirable to provide a second Generating Unit M6, and also, the present plan would necessitate changes in the tables of equipment to provide for the Motor Generator M2. Consequently, since either the motor generator or the generating unit is satisfactory, action has been initiated to reclassify the Motor Generator M2 as limited standard and to standardize the Generating Unit M6 as the standby source of power for the Gun Data Computer M1 for these batteries.

**Power Unit PU-26.** The Coast Artillery Board recently tested the Power Unit PU-26 for use with special radio equipment and found that this power unit provided sufficient power for stable operation. The Power Unit PU-26 weighs 1,632 pounds packaged, as compared with the

Generating Unit M18, which weighs 4,297 pounds unpackaged. In addition, the Power Unit PU-26 is approximately one-half the size of the Generating Unit M18. Both power plants use approximately the same amount of fuel per kilowatt hour but the immense saving in space and weight realized from the use of the PU-26 is highly desirable, particularly in 155mm gun batteries which use the SCR-584. It was recommended that Tables of Organization and Equipment No. 4-157 be changed to include two Power Units PU-26 in place of the present Generating Unit M18 and that the Trailers M18 used to transport the M18 generator be retained for transportation of the Power Units PU-26.

**Towing equipment for JR boats.** The increase in use of the radio-controlled JR boat in harbor defenses for towing targets has brought about a requirement for suitable towing equipment for these boats. Although the Coast Artillery Board does not consider the JR boat a satisfactory towing vessel, there is no other vessel available in most harbor defenses which has a speed better than fourteen knots and which can simulate the speed and maneuverability of modern naval vessels. It has been determined that towing can be accomplished with the JR boat provided the boats are operated properly, adequate maintenance is performed, and use is made of the proper size propeller. Targets suitable for towing with these boats have been described in a newly published Coast Artillery training bulletin which can be obtained from the Coast Artillery School. This bulletin also describes the towing equipment recommended by the Coast Artillery Board. It has been recommended that the equipment include a winch with sufficient storage space for at least 2,000 feet of stainless steel cable, a brake, level wind and means for manually cranking the cable in and out. In addition to the winch a cable guide, cable clamp, deck protectors, and 2,000 feet of stainless steel cable similar to airplane tow cable were recommended.

**High speed automatic weapon and subcaliber target.** The use of the 40mm guns in an anti-motor-torpedo-boat rôle requires a suitable target for practice to be made available. In addition, a target which also could be used at

high speed for subcaliber practice or larger caliber batteries was considered desirable. No such target is at present issued by the Ordnance Department and most harbor defenses rely on local design and construction to meet target practice needs. The Board for some time has been collecting data concerning the design of suitable targets from organizations in the field and this data, together with data from the Department of Artillery of the Coast Artillery School were combined to formulate military characteristics for a suitable target. It was then recommended that the Ordnance Department be requested to design and build a suitable development model of a high speed automatic weapons and subcaliber target which would fulfill the proposed military characteristics. It is contemplated that this target will be capable of being towed by a JR boat or any other suitable vessel available for towing.

**Rectifier PEC-172.** The Board has concluded the service test of the Rectifier PEC-172, a constant voltage rectifier suitable for charging a 15-cell storage battery and capable of furnishing continuously 10 amperes direct current to the fire control telephone system. The operation of the rectifier is fully automatic and adequate forced ventilation is provided. The Board recommended that the Rectifier PEC-172 be adopted as standard and issued for use in fire control switchboards. This recommendation was approved by the Commanding General, Army Ground Forces.

**Protection for Equilibrators of 155mm Guns M1.** A report of Coast Artillery operations received by the Board from the field recommended that a protective covering be provided for the equilibrators on the 155mm Gun M1. Since this gun is also used by the Field Artillery, the above recommendation was forwarded to the Field Artillery Board for comment. That Board recommended that, due to the complications involved in the installation of a protective covering, development of such equipment be considered not feasible.

**16-inch Shot Tongs T1.** The Board has completed tests of a set of 16-inch Shot Tongs T1 to determine whether they are a suitable replacement for the presently issued Gilmartin Shot Tongs, which are unsatisfactory. The clamping action of the T1 tongs was tested by picking up a greased projectile with the center of the tongs in various positions from points just behind the bourrelet to just forward of the rotating band. The projectile was held firmly in place without slippage in all positions. A projectile can be picked up and deposited more rapidly with the T1 tongs than with any others tested by the Board. This saving in time is due primarily to the fact that the two bottom supports of the new tongs are automatically positioned for picking up the projectile, when the tongs are lowered over the projectile. To deposit the projectile, these bottom supports are released by manually turning one of the support handles on each side of the tongs outward.

The Board recommended that the 16-inch Shot Tongs T1 be standardized for use with the overhead trolley system for the handling of projectiles in 16-inch casemated batteries with a basis of issue of twelve shot tongs per gun. This recommendation was approved by the Commanding General, Army Ground Forces. Photographs of the T1 tongs are shown in Figure 1.

**High speed target towing vessel.** The Transportation

Corps, in conjunction with the Board, has developed design for a high speed, heavy-duty target-towing vessel which should be suitable for target towing for all types of batteries. It is to be capable of towing the M10 as well as the lighter weight targets. Production facilities, unfortunately, are now busy with more urgent requirements and production of the pilot model has been indefinitely postponed.

Until such a time as special towing vessels are made available, harbor defenses will have to make use of existing craft. Inasmuch as the JR boats are the only fast boats available, every attempt should be made to maintain them in optimum operating condition through observing the following general precautions:

a. Assign only skilled, specially trained personnel to these boats. They are essentially racing boats and require specialists to care for them properly.

b. When towing targets, use smaller propellers than are normally used.

c. Before assigning the boat a mission, give the operator sufficient time to bring the engine up to temperature slowly (over a period of 15 to 20 minutes). Similarly, the engine must be cooled off slowly by running at 500 to 600 revolutions per minute for 10 to 15 minutes before shutting it off. The positions of the recirculating valves should be adjusted according to the mission and the water temperature.

**Maintenance of diesel power plants.** The power plants installed in modern batteries are expensive diesel-electric installations which require expert care and maintenance if they are to be ready for any emergency. Much information is available as to the proper ways and means of operating this equipment in active batteries, but little is available as to the procedures to be followed with equipment in inactive or out-of-service batteries.

It is hoped that in the near future decisions will have been made which will fix the responsibility for maintaining the equipment and which will determine the frequency of operation of the out-of-service equipment.

With this information, a suitable standard operating procedure will be drawn up for the guidance of all concerned. Unless such authorized procedures are observed

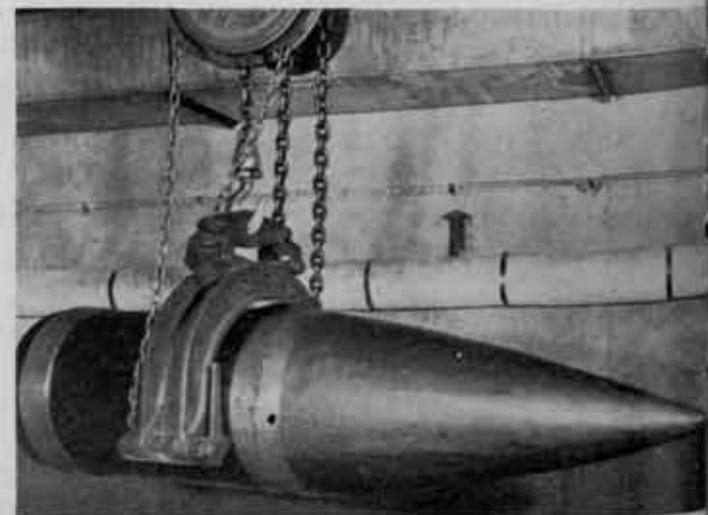


Figure 1.

carelessly, extensive damage to the installations may result.

*Out-of-level compensators, 16-inch barbette carriages.* In conjunction with the current development of electric drives for 16-inch barbette carriages, the Coast Artillery Board has recommended that automatic out-of-level compensating devices be procured for test. The problem of correcting for the range and azimuth effects caused by out-of-level carriage conditions in major caliber guns has been studied

for some time by both the Ordnance and the Coast Artillery Board. The problem of computing these corrections has been subordinate to problems of automatic operation, simultaneous computations of both range and azimuth and direct application of these corrections to the gun data receivers to allow for corrected Case III firing data. These problems appear to have been satisfactorily solved in the design stage and the Board will test the resulting mechanisms when they become available.



## Winter-Wise

Sixty-five below zero will either make you shiver or fix you so you can't shiver. In other words, you'll be *cold*. But in the Army it's no excuse for taking time off from your job. So if you have anything to do with operation of motor vehicles in below-zero weather, you'd better make up your mind to find out how to do it with as little trouble as possible.

As usual, the Army is doing everything it can to help you out. For "They" are furnishing the material needed to operate vehicles at temperatures ranging from 0° F. to -65° F. This material consists of winterization equipment and supplies for the vehicles and printed aids, such as manuals and technical bulletins, for you.

Number one on the list of printed material is the new technical bulletin, TB ORD 126, "Cold Weather Lubrication and Service of Combat and Transport Matériel." It contains all the latest dope on cold weather operation—tells you about the use of winter grade gasoline, a gasoline "designed to reduce cold weather starting difficulties," with information on storing it. This is important to know, because there are a number of little accidents that can happen to a tank of gasoline in low temperatures, and they're things you don't think of just by virtue of the fact that you happen to have a high I.Q. For instance, ice crystals formed from condensed moisture will clog fuel lines and carburetor jets, so you have to take precautions against them. This means keeping fuel tanks as full as possible and adding dehydrated alcohol to the fuel tank each time it is filled.

Then, there are a lot of pointers in TB ORD 126 on care of mechanical features. Electrical equipment must be kept free of ice, connections must be tightened, wiring cleaned. Batteries require special care. Cooling systems

need extra attention, especially in keeping antifreeze solutions at proper strength. The tendency of brakes to freeze must be avoided as much as possible by releasing them when vehicles are parked. And even simple items like nuts and screws must get extra attention, because metal is affected by low temperature—its shock resistance is lowered so that operation of a vehicle over hard, frozen ground tends to strain and jolt these items to the breaking point.

After a perusal of TB ORD 126, publications that should be referred to include War Department Supply Bulletin, SB 9-16, which lists authorized winterization equipment for automotive matériel, TB ORD 67, "Storage Batteries," and, of course, technical manuals and War Department Lubrication Orders for specific vehicles.

One thing that's pretty hard to teach in printed instructions is the technique of driving in cold weather areas. But the inexperienced driver who is at least forewarned of the driving hazards he is apt to meet can, by using common sense, soon develop his technique to the point where he has maximum control of his vehicle. The danger of skidding on ice, with its certain damage to tires and probable damage to other parts—the engine-wrecking strain of pulling out of deep snow—the necessity for using chains which may injure tires and chassis—these, and other similar situations, may frequently arise where ice and snow and cold are the order of the day. And they can cause great damage when the driver is inexperienced in handling his vehicle under these conditions and unaware that they require special operating procedures.

Yes, there's a lot more to winter weather than getting out your ear muffs and mittens. Better make a check-up now, so you'll be in the know—in the snow.



# Coast Artillery Journal

*Fifty-third Year of Publication*

COLONEL E. B. WALKER, Editor

LT. COL. ARTHUR SYMONS, Associate Editor



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

## Policy on War Trophies

No explosive items may be brought or mailed back to the United States from overseas as war souvenirs, to constitute a hazard for all who handle them. The acquisition of enemy equipment for souvenir purposes, in addition to conforming with certain specified prohibitions, will continue to be governed by principles of international law as it has been in the past. Within these limitations, the return of war trophies is authorized, in recognition of their morale value.

Souvenirs brought back must be small, since they must be included in a 25-pound limit on personal baggage.

Nameplates may not be removed from captured equipment as war trophies. They are removed only by authorized military personnel. Souvenirs may not include items whose value as trophies is outweighed by their usefulness in the service, or for research or training, or as critical scrap material. The theater commander determines what items are primarily of value for these military purposes.

Trophies which are mailed home may not include firearms capable of being concealed on the person.

International law prohibits taking war trophies from prisoners of war, or from the wounded or dead. It permits, however, the retention of small objects found on the battlefield, and the purchase of items from prisoners of war.

Any individual in the Army who brings war trophies home must have a certificate, in duplicate, signed by his superior officer, authorizing retention of the articles named on the certificate. Parcels mailed overseas which contain captured matériel must contain a certificate in duplicate authorizing the mailing of articles named on the certificate.

Merchant seamen overseas who desire to bring or mail back trophies of war may secure the necessary certificates from United States Army officers on duty at oversea ports. United States civilians on duty with the United States Army overseas also may secure such certificates, from Army officers under whom they are serving. Merchant seamen and civilians securing the certificates must indorse them with signed statements that the articles are not being taken or mailed to the United States for sale purposes.

Captured enemy matériel brought or shipped to the United States in violation of these restrictions will be seized by the Customs Bureau and turned over to the United States Army or the United States Navy, depending on the type of matériel.

## "Is-Our-Face-Red" Department

Save your ink, your typewriter ribbons, your pencils, your paper, and your telephone nickels. We know it, HOW we know it! No, Wake Island is not back in American hands—yet. We said it was on Page 48 of our last issue of the JOURNAL. A blurred caption on the back of a photo, combined with our wishful thinking, caused the error. The island was Wakke, not Wake.

At least one thing is sure—our readers don't miss much that is printed in the JOURNAL.

### M-1 Slide Rules

The M-1 Slide Rule is no longer available for purchase through the JOURNAL, as the demand no longer warrants quantity contracts, and individual orders can be made up only at a prohibitive cost.

The Crichlow Rule is still available at \$1.75.

### Election of Officers

The terms of office of the President of the Coast Artillery Association and of three 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. (or see Instruction 5). 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 elected, 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 have 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.

Due to the large number of members who are on duty outside the continental limits of the United States, ballots will be received and counted to include January 31, 1945.

"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."

### Group Subscriptions

Only two group subscriptions relieved the monotony of life in the Subscription Department during the last two months. Lieutenant John D. Halvaks submitted fifteen from Battery C, 501st AAA Gun Battalion, and Lieutenant Charles W. Strine sent in nine from the 189th CA Battalion. The 529th AAA AW Battalion sent in only one, but that was the one needed to retain its 100% standing.

### Valuable Plastic

A new family of synthetic resins, called silicones, is giving waterproofing, flame-resisting service in planes, radios and other machines operating at the front.

Tests show that a trolley car motor with silicone insulation could be kept in continual operation for 3,000 hours at 482 degrees Fahrenheit, which is equal to 400 years of service at the ordinary temperature.—*Science Service.*

## 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, 1945, cannot be counted.

4. Ballots may be collected by Post, Regimental, or other unit commanders and forwarded under one cover.

5. Locally prepared ballots, cast by those who do not wish to mutilate their JOURNALS, will be accepted if they are signed.

## BALLOT

### UNITED STATES COAST ARTILLERY ASSOCIATION

For President (1945-1946)

Major General Leroy Lutes, U.S.A.

\_\_\_\_\_

For Members of the Executive  
Council (1945-1946)

(Vote for Three)

Brig. Gen. Edward A. Stockton, Jr., U.S.A.

Brig. Gen. Edward A. Evans, U.S.A.

Brig. Gen. Rupert E. Starr, U.S.A.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature

Rank and Organization

Address



British Official Photo

The "Tempest," Britain's newest fighter, which helped "mow down" the robot bombs, accounting for more than 600 by October 17.

### AAA Against Robombs

Several battalions of U.S. AAA troops have been on 24-hour duty in England, fighting side by side with British units in an all-out effort to destroy the robot bombs.

An observer, recently returned, said, "The quality of U. S. ordnance equipment and the marksmanship of our troops is superb. The majority of the robot bombs were shot out of the sky. Only a relatively small percentage of these bombs were able to get through to the English mainland. However, when they did penetrate strong British-American air and ground defenses, they did considerable damage.

"One battery of 90mm M1A1 guns had fired 220 rounds in forty-eight hours. It was not unusual for gun tubes to become hot from continuous firing. While this imposed a heavy responsibility on ordnance maintenance companies, the records at General Eisenhower's headquarters showed that very few of the guns were out of action very long."

### AAA in the ETO

Antiaircraft artillery has proved itself fast, accurate and versatile time and again in frontline action in France, Belgium, Holland and Luxembourg, according to Lieutenant Colonel William B. Kintner, CAC, of Johnstown, Pennsylvania, who recently returned from overseas.

"An Antiaircraft Artillery battalion can and does throw a lot of lead in a hurry and did so frequently in the invasion of Normandy, France, and subsequent actions in Belgium, Holland and Luxembourg," said Colonel Kintner.

"The Luftwaffe, for the past several weeks, has been confining its activities to sporadic night forays," he said, "and our battalions got one of its biggest thrills when we got eight out of ten Messerschmitts and Focke-Wulfs that were making a night raid on our position near Wallendorf.

"In another instance, an antiaircraft battalion destroyed twenty-two German planes in fifteen minutes when a sizable formation divebombed a bridge across the Seine near Paris. They had dropped flares to illuminate their target and as they swooped in for bombing they were sharply silhouetted against the flares. We picked them off like clay pigeons.

"Repeatedly the antiaircraft battalions showed their versatility. At one time when our outfit was with the 1st Division in Belgium, an enemy reinforcing column of infantry was spotted coming up and our 40mm's and quadruple .50 caliber machine guns, mounted on half-tracks, blew it to bits before it could get into action.

"Our outfit was constantly on the move during the invasion, and moving up through the Ardenne Forest and the woods before Aachen, the going was really rough because of the deep mud. Batteries of antiaircraft, attached to Field Artillery outfits, accounted for many infiltrating Nazis and patrols."

### Postwar Reserve Policies

Appointment of two General Staff committees to prepare policies and regulations affecting the reserve components of the postwar Army has been announced.

One, the Organized Reserve Committee, is composed of three Regular Army officers and three Reserve Officers and is charged with preparation of policies and regulations affecting the Organized Reserve. The other, known as the General Committee, is composed of three Regular Army, three Reserve and three National Guard officers. It will consider policies affecting both Reserve and National Guard components.

These committees are in addition to the National Guard Committee announced last August to prepare plans, policies and regulations affecting the postwar National Guard. All three committees, formed under authority of section five of the National Defense Act, are giving priority to the study of postwar military organization.

### England Fights the Robots

New details of the scenes behind the battle against the flying bombs have been released during the week end.

Thirty-five miles of railway lines and 22,500 sleepers were collected from twenty different railway depots to make the improvised "mattress" for the static heavy antiaircraft guns. A month after Brigadier J. Burls, AA Command REME expert, had made a rough drawing of the platform, 600 guns were mounted and in action. Most of the 59,000 gunners, ATS, and REME craftsmen lived under canvas. Protection against blast and shell fragments called for over 3,000,000 sandbags. The Royal Engineers sank wells and tapped streams to ensure a water supply and specially equipped mobile bath vans were sent round the sites.

Searchlight beams helped night fighter pilots to make a high percentage of "kills." There were more than 500 lights one every two miles, and 20,000 troops were needed to keep them in operation.

The balloon barrage was the greatest in the history of the RAF. At the height of the flying bomb menace there were nearly 2,000 balloons in an area to the southeast of London.

Thousands of WAAF's—Air Ministry Staff officers, photographic interpretation officers and photographers, plotters, balloon fabric workers, and cooks—played an important part. Flight Officer Babington-Smith, a WAAF, was the first to notice unusual features in the photographs taken at Genemünde in May, 1943, and later was responsible for drawing the attention of the intelligence authorities to the neck of a miniature aircraft which was eventually proved to be a flying bomb.—*London Times*.

\* \* \*

### World War Cemeteries in France

Among the birthday congratulations received by General Pershing was a message from General Eisenhower assuring the World War commander that American monuments and cemeteries appeared to be in good condition despite several unwarranted depredations by the Germans, and informing him that a detailed report would be submitted later. General Pershing is Chairman of the American Battle Monuments Commission. The message also conveyed the greetings of men of the 1944 American Expeditionary Forces who "tread the ground over which you and their fathers 26 years ago."

In his reply dictated by General Pershing just a few hours before his recent serious illness, he sent his warmest congratulations to members of the AEF of 1944. He said his pride in their accomplishments was shared by every veteran of the old AEF and by all our people. General Pershing added he awaited the report on cemeteries and monuments with interest.

Those reports have now been received by General Pershing.

"I am happy to see that most of the sites have weathered the misfortunes of the past four years so well, with normal depreciation only slightly accelerated," stated General Eisenhower, in transmitting the reports to the commander of American troops in the last war. "The devotion of the caretakers has been admirable and has contributed in high degree to the gratifying conditions which prevail."

\* \* \*

### Another Old-Timer Retires

Many Regulars of the CAC, as well as a great number of Reserve officers who trained at Fort Monroe, will take stock of their gray hairs and their swelling middles when they learn that First Sergeant Peter Oblotski has retired. Sergeant Oblotski has been in Panama and in the Southwest Pacific during recent years, but his address will be Hampton, Virginia, after some civilian war work and a long fishing trip.



U. S. Navy Photo

"Omaha" Beach, in Normandy, before the floating harbor was set up.



British Official

The Polsten 20mm AA gun, Britain's newest.

### Staying With Us

Dear Colonel:

Thank you very much for your very kind letter.

I am very happy to know that my discharge from the Army does not effect my standing with the COAST ARTILLERY JOURNAL, and I am more than glad to continue my subscription as long as it will be possible. Somehow I got the impression that since I was "tossed-out" I wasn't entitled to subscribe.

My connection with the CAC dates back to October, 1926, my commission in the CAC dates back to June, 1931 (CA-Res), and since '26 I was quite active in National Defense activities, therefore a "soft spot" for the CAC will remain with me for days to come.

Sincerely yours,

ROBERT R. RACHMANOW,  
Ex-Major, CAC, AUS.

### Marine Artillery

By Technical Sergeant Donald A. Hallman, Sr., U.S.M.C.

The colonel listened in on a field telephone while Captain R. L. Frank directed artillery fire from the front lines on Guam. Here is what the colonel heard:

"We need artillery. Give us 100 rounds of 75mm at 5,500 yards. That should put it 150 yards in front of us."

Later: "They're crowding us. Bring the fire down seventy-five yards." (Artillery seventy-five yards ahead of your position is far too close for comfort.)

A little later: "Drop it another twenty-five yards."

A few seconds later: "They've grabbed our advanced emplacements. We're going to get 'em back."

Half an hour more: "Lines secure again."

Then: "They're coming in faster. Hear 'em. We're stopping them thirty-five yards from the command post."

And all this time, the captain was carefully calling artillery fire, shifting it here and there, to trap the advancing enemy in small draws and along the beach.

By Sergeant John Worth, U.S.M.C.

Sharpshooting Marine artillerymen dropped their shells a bare 100 yards in front of the American lines, frustrating repeated Jap counterattacks during the four-day battle for the midisland heights of Peleliu.

In one engagement, Marines encircled a number of enemy troops. The Japs were killed by shells accurately lobbed into the center of the ring.

The Marine artillerymen reversed the process when the Japs surrounded some wounded Marines. A pinpoint peppering of shells kept the Japs from closing in until corpsmen removed the Marine wounded.

A Jap field piece was spotted by front-line observers who flashed back the word to the fire direction center. Sights were adjusted and the field piece was knocked out with the third shell.

✓ ✓ ✓

### Staghound

The new Staghound I armored car, manufactured solely in the United States, has been shipped to India, the Middle East, North Africa, Italy, Australia and the United Kingdom for use in various theaters of war. Capable of a speed of 50 miles per hour, despite its heavy armor, the Staghound I is used for armed reconnaissance. It has a crew of five men including the commander, the gunner, the loader, the driver and the co-driver. Its equipment includes periscope and telescopic sights, jettison tanks and four guns, including a 37mm antitank gun, two machine guns, and an anti-aircraft machine gun.

One Staghound Cavalry Unit in Italy fought for an average of 2,000 miles per vehicle over precipitous roads and mostly in deep mud. On test, Staghound armored cars, under realistic conditions, have far exceeded the conventional performance of trucks and tracked vehicles.—British Information Service.

✓ ✓ ✓

### Temporarily c/o "The Queen"

I certainly wish to commend you on your fine publication professionally and technically. I sincerely enjoy receiving my copies. However, I wonder whether mention of the many thousands of us, formerly Coast Artillery officers, and now wearing crossed rifles of the Queen of Battles, the Infantry, has been made.

One finds many old friends with the ranks of the "gravel agitators" now. Some were simply detailed to this branch of fine fighting men and officers and others of us volunteered. Most of us have found a real job to do here, and many are overseas already with combat Infantry units.

We of the AAA have very fond memories of service which won't ever quite be forgotten. It's a pleasure to retain some contact with our old work through the COAST ARTILLERY JOURNAL. May I especially thank you for your article on Camp Davis as most of us will always remember a warm tie there at the School. Although termed "retreads" here, the

Infantry is gradually becoming another home to us. They're really a great bunch and I'm glad to be with them in their important part in the fighting.

Will you kindly bill me for renewal of two subscriptions follows: . . .

IRVING C. WHITEMORE, JR.,  
Second Lieutenant, Infantry, O1062454.

### Army Casualty Figures

The War Department has stated that U. S. Army casualties, excluding the Air Forces, during the operations in France, the lowlands and the German border region from the time of the initial landings through November 1, are as follows:

Killed .....	35,884
Wounded .....	145,788
Missing .....	18,677
Total .....	200,349

This includes casualties of the Seventh Army, which landed in Southern France, as well as the armies which came through Northern France.

### All Theaters

All battle casualties of the United States Army for all theaters of operations as reported to the War Department through November 7, follow:

Killed (including died of wounds) .....	88,245
Wounded (excluding died of wounds) .....	254,283
Missing .....	56,442
Captured and interned .....	55,210
Total .....	528,795

### Policy on Return of POW's

All military personnel who have been prisoners of war for 60 days or more or whose condition requires it, will be returned to the United States as soon as possible after being freed unless they specifically ask to remain overseas. They will be given priority in return over all other casual personnel, except sick and wounded.

The ruling, which applies to prisoners of war freed either before or after the defeat of Germany, is a manifestation of the War Department's policy of regarding the problems and future welfare of prisoners of war as matters of prime interest to the military establishment and to the country.

It is recognized that individuals frequently require assistance in overcoming the effects of prolonged captivity. A speedy return to their homes is a good start toward complete rehabilitation.

A recent example of the policy was the return to the United States of 1,015 American airmen who had been interned in Bucharest and were freed when Romania surrendered. A little more than a month after the surrender, the flyers were back in New York City preparing to start for their homes on 30-day leaves and furloughs.

Similar arrangements are being made for the return to this country of former prisoners of war who were held in Bulgaria.

The pay of prisoners of war continues to be credited to their accounts during the entire period of their absence, at the rates in effect at the time of capture. As soon as a soldier is listed as missing in action, an account is opened in his name and pay accrues on the usual basis. Credits include base pay plus any additional amount due for length of service, foreign service, flying and parachute pay, rental and subsistence allowance and quarters allowance for dependents.

Any allotment which a prisoner has in effect at the time of capture whether for family allowance, insurance premiums, bonds, or any other purpose, continues during his in-



The German gun.



Winnie.

British Official Photos

The cross-Channel duelists. The German gun was captured at Cap Gris Nez, after bombarding Dover and Folkestone for 510 days and nights. The British gun is one of two which were named "Winnie" and "Pooh," and were manned by the Royal Marine Siege Regiment. Winnie sent the first installment on the German debt on 22 August, 1940, addressed to the batteries at Gris Nez. The British guns are of 14-inch caliber.

ternment period and these sums are deducted from the amount due upon his release. There is no deduction for pay received by officers under the terms of the Geneva Convention from the country holding these prisoners of war and no deduction for work-pay received by prisoners of war from the detaining power.

Requests received from prisoners who wish to initiate or increase allotments are complied with whenever possible. In addition, adjustments are made by the War Department without any specific request of the prisoner when dependents furnish evidence of a need for further help.

The Prisoner-of-War Information Bureau, operating in Washington in accordance with the provisions of the Geneva Convention, receives reports from the central agency of the International Red Cross in Switzerland and from the protecting power, concerning the physical condition of prisoners and transmits them to the next of kin. An individual file is maintained for each prisoner to facilitate the prompt answering of inquiries.

In addition, the Bureau receives all official applications or inquiries from war prisoners concerning service matters, and routes them to the appropriate War Department agency for action.

The Soldiers and Sailors Relief Act, a statute initiated at the request of the War Department, protects prisoners of war as well as all other service personnel by staying law suits when the rights of the individual would be prejudiced because he is unable to be present. While there is no exemption from income taxes, legislation has been enacted to postpone filing of returns and payment of taxes by interned personnel. Similar legislation with respect to State taxes has been passed by many States.

### Army Reservation Bureaus

Army reservation bureaus have expanded their facilities to handle a larger volume of rail travel requests and expedite the movement of necessary traffic. The change was made effective on October 15, and forty cities now have reservation bureaus assisting military personnel to obtain Pullman space.

In the future the Army bureaus will take care of requests for reservations for officers and enlisted men on leave of absence or furlough, as well as military personnel traveling on temporary duty for recuperation. Before the new plan went into effect, the bureaus then in operation received requests only from officers, enlisted men and War Department civilians whose travel was on official business and directed by Army orders.

It was explained that the reservation service does not in any sense imply that a priority has been established on train space for the Army.

Because of the urgency of this travel, the railroads in cooperation with the War Department have voluntarily adopted the Army reservation bureau facility to handle the traffic as efficiently as possible. The bureaus will continue to obtain their Pullman space requirements through the carriers as do other branches of the armed forces, other government agencies and the commercial and traveling public.

In addition to processing requests from Army personnel, the bureaus will also attempt to obtain space for military and civilian personnel of the Navy, Marine Corps or Coast Guard at points where these branches do not operate a similar service.

Army bureaus also will render assistance to military personnel of Allied governments when traveling on official travel orders of their own governments or on invitational orders of the Government of the United States.

In all cases, the bureau facilities will be made available only to individuals or small groups, but in no instance for groups exceeding 14 persons, it was announced.

Military personnel and civilian employees of the War Department have been warned against using the bureaus to obtain train reservations for unauthorized persons. Therefore, personnel obtaining space through the bureaus may be required to exhibit official travel orders, furlough or leave credentials to railroad agents at the time of purchase or any place en route as evidence of their eligibility for the accommodations.

The forty cities with Army reservation bureaus are Asheville, North Carolina; Atlanta, Georgia; Baltimore, Maryland; Boston, Massachusetts; Charleston, South Carolina; Chicago, Illinois; Cincinnati, Ohio; Cleveland, Ohio; Columbus, Ohio; Dallas, Texas; Denver, Colorado; Detroit, Michigan; El Paso, Texas; Houston, Texas; Jacksonville, Florida; Kansas City, Missouri; Los Angeles, California; Louisville, Kentucky; Miami, Florida; Minneapolis, Minnesota; Montgomery, Alabama; Memphis, Tennessee; New Orleans, Louisiana; New York, New York.

Others include: Norfolk, Virginia; Oklahoma City, Oklahoma; Omaha, Nebraska; Orlando, Florida; Philadelphia, Pennsylvania; Pittsburgh, Pennsylvania; Portland, Oregon; St. Louis, Missouri; Salt Lake City, Utah; San Antonio, Texas; San Francisco, California; Savannah, Georgia; Seattle, Washington; Spokane, Washington; Tampa, Florida; and Washington, D. C.

### Loyalty Can't Be Bought

The following excerpts from letters to the JOURNAL need no comment:

"My original commission is in the CA-Res. Even though I'm an Infantryman now I like to keep up with my old branch."

LT. JOEL WAGMAN.

"Now on other duty, I find the JOURNAL an invaluable aid in keeping posted on trends in employment and matériel."

LT. C. J. DUMESTRE.

"Although now detailed in the Corps of Engineers I would still like to keep up with the CAC news."

CAPTAIN ROBERT S. MARVIN.

"You do the talking. I'm enjoying the JOURNAL and the mosquitoes."

1ST SGT. JESSE W. KING.

### Armor-Piercing Incendiary Bullet

A new armor-piercing incendiary bullet has been devised by the Army Ordnance and is being used by American airmen on all battlefronts.

The bullet is the most recent development in the continuing bid for supremacy between offensive weapons and protective armor. Early in the war, it was explained, the self-sealing gasoline tank, which prevented leakage of fuel and formation of explosive vapor, was adequate protection against tracer bullets. Last year, however, 50-caliber incendiary bullet, able to explode in a pierced tank, was introduced.

The enemy's answer to this was protective armor on airplane tanks. Research was expedited in the Ordnance Department, and the result is the new armor-piercing incendiary projectile, which combines penetrative ability with inflammatory properties.

### Battle Honor List

Six battles and campaigns have been added to the battle honors list of the United States Army. Bringing the number for the present war to twenty-six. Participants in the specially designated operations are entitled to wear bronze stars on the appropriate theater service ribbons.

At the same time, two previously designated campaigns were renamed, and time limitations for them were set.

The additions to the list are as follows:

ROME-ARNO—Italy, Corsica and adjacent waters from January 22, 1944, to a final date to be announced later.

NORTHERN FRANCE—From July 25, 1944, to September 14, 1944.

SOUTHERN FRANCE—From August 15, 1944, to September 14, 1944.

GERMANY—Germany, and certain adjacent areas in France, Belgium, Holland and Luxembourg, from September 15, 1944, to a final date to be announced later.

AIR OFFENSIVE, JAPAN—From April 17, 1942, to a final date to be announced later.

PHILIPPINE LIBERATION—The Philippine Islands and adjacent waters from October 17, 1944, to a final date to be announced later.

The changes in designation were from "Italy" to "Naples-Roggia," from August 18, 1943 (air), and September 9, 1943 (ground), to January 21, 1944; and from "Western Europe" to "Normandy," from June 6, 1944, to July 24, 1944.

The other eighteen battles and campaigns, previously placed on the battle honors list, are: Central Pacific; Philippine Islands; East Indies; Papua; New Guinea; Guadalcanal; Northern Solomons; Burma, 1942; India-Burma; China; Aleutians; Air Offensive, Europe; Egypt-Libya; Algeria-French Morocco; Tunisia; Sicily; Mandated Islands; and Bismarck Archipelago. Specific boundaries of areas are given in War Department General Orders.

Stars may be attached to the theater ribbons only after the commanding generals of theaters of operation or of defense commands have designated and informed the units concerned of the battle credits to which they are entitled.

In addition to the formal list of twenty-six battles and campaigns, provision has been made to give battle credit for antisubmarine operations, ground combat or air combat against the enemy in areas and at times which, by reasonable interpretation, are definitely distinct and disassociated from any of those on the announced list. The War Department may later designate certain of such actions or groups of actions by specific names.

To be eligible to wear the bronze star on theater service ribbons, an individual must have served honorably and must have been present for duty as a member of a unit, or attached to a unit at some time during the period in which the unit participated in battle and for which it has been awarded credit for such participation.

Individuals not members of or attached to units may wear a star if they served honorably under competent orders in the combat zone at some time between the limiting dates of the battle or campaign as established by War Department General Orders provided they served at a normal post of duty, or were awarded a combat decoration, or actually participated in combat.

### New Cargo Plane

A new "truck-horse of the sky," the Fairchild C-82 cargo plane, is now in production for the Army Air Forces.

The first war plane designed from the drawing board up solely for hauling military cargo, it is the product of the combined engineering staffs of the Air Technical Service Command, Wright Field, Dayton, Ohio, and of the Fairchild Aircraft Corporation of Hagerstown, Maryland. The specific function of this plane is to land heavy military loads safely on short, rough fields near battle points. It is expected to be especially valuable for Pacific island and jungle warfare.

Unlike any airplane now transporting freight, it has a twin-boom tail such as that of the P-38 Lightning fighter and the P-61 Black Widow night fighter. Wing span is 106 feet. It is in the 50,000-pound class.

Powered by two 18-cylinder Pratt and Whitney R-2800 engines, with a takeoff horsepower of 2,100 each, its takeoff distance is described by Air Technical Service Command engineers as very short for this type of airplane.

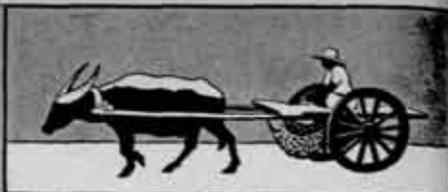
Engines are mounted at forward ends of the booms. Wings are of gull design. Landing gear is of the tricycle type. The after-end of the streamlined fuselage opens to the complete height and width of the interior, which is square.

In order to allow freight to be stowed directly from a truck, the bottom of the fuselage is the height of a standard truck body from the ground.

With a range exceeding 3,500 miles, the C-82 is expected to be used in the transporting of troops, paratroops, tanks, jeeps, heavy guns, and other weapons or military supplies to distant battlefields.



# Corregidor



BRIGADIER GENERAL GEORGE F. MOORE, U. S. Army,  
*Commanding Philippine Coast Artillery Command*  
 By Lieutenant Burton R. Brown

Change of command designation, tragedies, near tragedies, celebrations, and distinguished visitors have been as much a part of Corregidor during August and September as the rain. Orders from Headquarters, United States Forces in the Far East, have created the Philippine Coast Artillery Command with Brigadier General George F. Moore as Commanding General.

The Headquarters is part of the quarters.

The first trip to the past morning to Fort rolled off a few minutes. Winter work of all extent of Hultquist F. W. when they down with they ma boat. E kept aff before t By slow while, our own missing beach and a s have no busy ro

A me gaged i regiment

the regiment, complimented the regiment on its past and present achievement. On this same occasion the newly authorized regimental band made its first public appearance.

On September 3d, Lieutenant General Douglas MacArthur, Commanding General of the United States Forces in the Far East, accompanied by Brigadier General



made ent, in- iving at ilippine it much his de- ity but ntly ap- and little he vast n doing

been ac- an ap- instructors' In- batteries lieutenant- g of the outdoors defense over the n, and all regi- record of firings for any st com- e train- noticed a d in his

back are

We have returned! General MacArthur and President Osmena on Leyte.

especially gratifying to Colonel Bunker since this is the third time he has commanded this regiment and is justly proud of it. Lieutenant Colonel Valentine P. Foster, who was with this organization at its inception and served with it all during World War I in France reviewed the history of the regiment from his own personal experiences with it. General Moore, who in one of his previous tours at Corregidor, had also served in

made by all units. During these marches the organizations engage in gas defense and extended order problems. The improved physical condition of the personnel is very noticeable. Meanwhile several officers and non-commissioned officers are detailed for a short time with the Philippine Army to assist in their training. During this same rainy season, Mine Command of Lieutenant Colonel Kohn's regiment has worked day and night, in



COLONEL DEAN S. ELLERTHORPE, *Commandant*

By *Captain Herbert B. Warburton*

*under the command of*

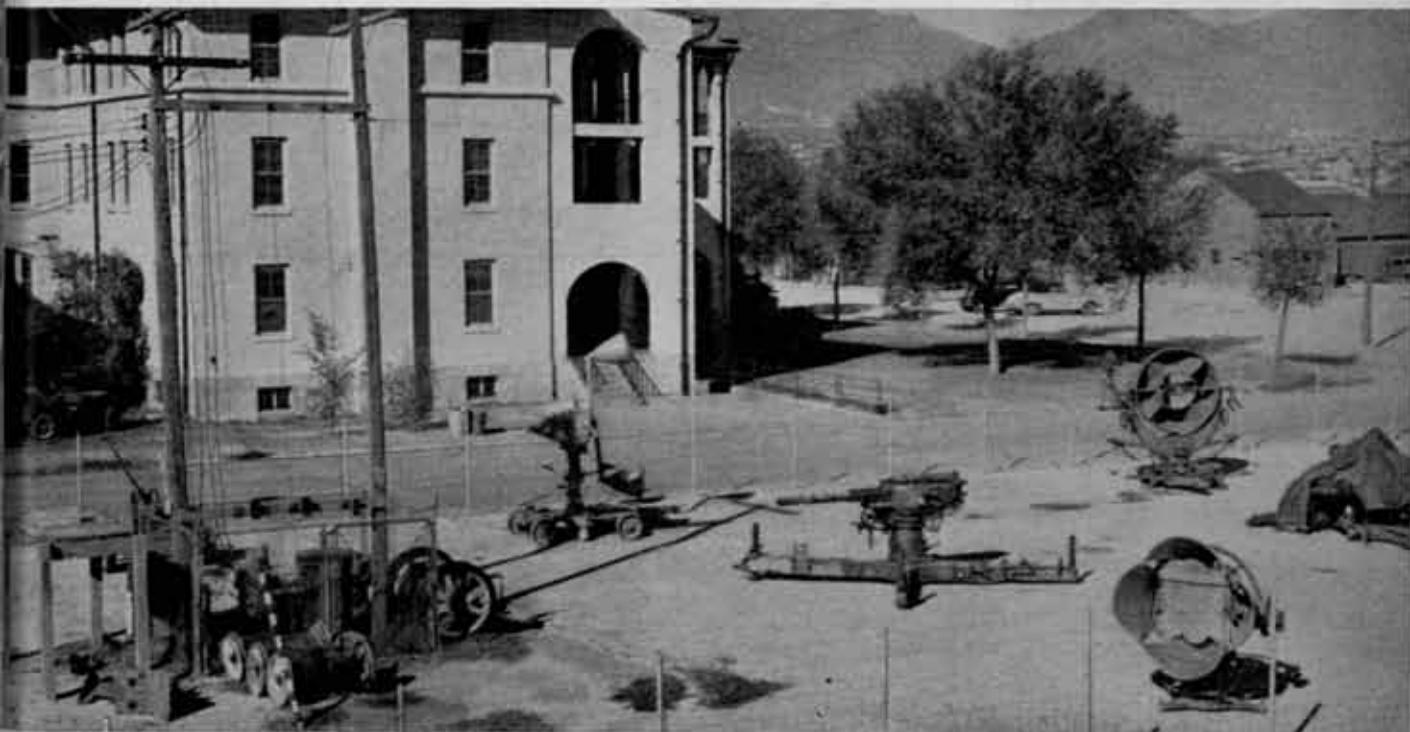
On 16 October 1944, the Antiaircraft Artillery School resumed instruction at Fort Bliss, Texas, following its move from Camp Davis, N. C. School now possesses a physical plant with modern permanent buildings, centrally located in beautiful surroundings. Firing areas, with almost year-round clear weather, are located within easy convoy driving distance at the Hueco and Orogrande ranges.

A feature, attracting much interest, which has been added to the school's equipment during the past six months is a display of German, Italian, and Japanese captured matériel. The matériel includes machine guns, light and heavy antiaircraft guns, height finders, directors, sound locators, and searchlights. The German quadruple-barrel 2cm light antiaircraft gun and the 1942 model 88mm antiaircraft gun together with a combination height finder and director are of particular interest to students and visitors.

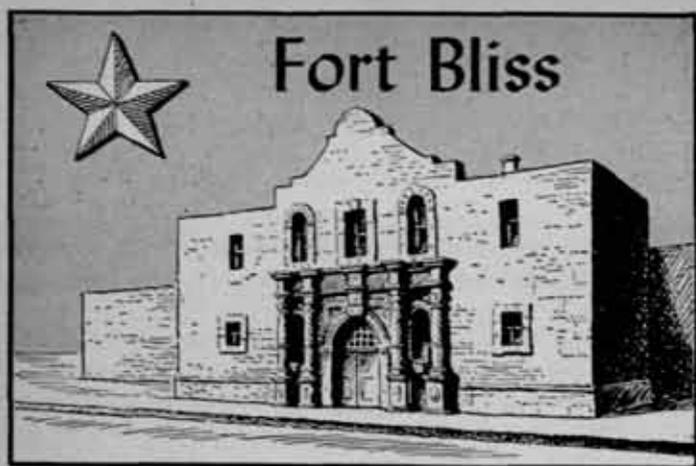
AAATC Seminar II, sponsored by the school, begins its tour of Antiaircraft Artillery installations located away from Fort Bliss. Included in the schedule is a presentation to be

given to cadets at the United States Military Academy, late in November. The Seminar was designed early in 1944 for the purpose of keeping Antiaircraft Artillery officers informed of the current combat employment of antiaircraft artillery weapons, and trends of employment in rôles other than antiaircraft artillery. The present Seminar, under the direction of Lieutenant Colonel Herman R. Smith, who observed the initial operations in Normandy includes Lieutenant Colonel Francis V. J. Haggerty, Guadalcanal, Bougainville, and Munda; Lieutenant Colonel William R. Kintner who returned from Normandy; Major David W. Mahaney, North African Theater; Captain Arthur Croxson, Jr., who also returned from Normandy, France, and Belgium; Captain Lawrence B. Kelly who returned from New Guinea, and 1st Lieutenant Lester P. Albon who returned from Normandy, France, and Belgium.

On Saturday, 28 October 1944, the Commandant introduced the first of a new series of orientation programs under the supervision of the Tactics department and the Instructors Course. The object of the program is to reach all personnel with uniformly presented, current orientation material, supplemented through the week with bulletin board displays of situation maps and news flashes. All school enlisted and officer personnel attend the same, or simultaneously conducted programs, depending upon the nature of the subject matter to be discussed. In general outline the programs will consist of résumés of the week's news, its relationship to the war as a whole, and information about new employment of weapons, experiences of observers returned from combat theaters, and related items of particular interest to military personnel.



Captured enemy matériel used in instruction at the AAA School.



BRIGADIER GENERAL JOSEPH E. HARRIMAN,  
Commanding AAATC

By Captain Richard J. Kane

Recent improvements in the training facilities at the Antiaircraft Replacement Training Center, Fort Bliss, include a new skeet range and an up-to-the-minute hand-grenade course. Combining as it does the pleasure of skeet shooting as a sport with the important technique of learning how to correctly gauge a swiftly moving target, this particular part of the AARTC training is proving highly popular with all trainees.

An innovation, to achieve the goal of insuring the absolute safety of all trainees during the throwing of fragmentation hand grenades, has been introduced through the installation of bullet proof glass observation windows in the safety and control tower. From their vantage point twenty feet above the ten throwing bays, control officers can follow the activities of every man during each moment he is in the throwing bay, and can observe the full field of fire at all times. In addition, proficiency in throwing technique is advanced through rear area instruction on modern practice courts.

Following completion of familiarization grenade firing, the trainees are formed in squads and negotiate a grenade assault course under tactical control and conditions. Practice, frangible, and live grenades are thrown from various stations which are designed to approach realistic combat situations.

Two new obstacle courses have also been constructed here to supplement the original one. Through these enlarged facilities, located as they are to make them easily accessible to all AART battalions, maximum results in this phase of the conditioning program can be attained.

To achieve more efficient instruction, the M-8, M-9 and Hunt trainers are being concentrated under one roof. Such a consolidation will provide for more effective use of training time and a conservation of instructor personnel.

In line with the branch immaterial phase of training now given in all replacement training centers, greater stress is being placed on scouting and patrolling. To aid in the instruction of these subjects, a combat patrol course has been

constructed in the canyons and on the slopes of the rugged Franklin mountains.

The course is approximately a half mile long and laid out in such a manner that the trainee—spectators are in a natural amphitheater above all the action. From such a vantage point, the soldiers in training first watch a demonstration of battle-tested method of combat patrol operations executed by squads led by veteran cadremen, then each soldier negotiates the course himself as a member of an infantry squad. During the negotiation of the course, a running commentary is made by the officer in charge to impress upon all who are watching the high lights both good and bad of every movement, and the effect of every decision on the part of the leaders. In order to impress upon all trainees the absolute importance of the proper issuance and understanding of the orders of leaders to their subordinates, the actual issuance of orders to the squad leaders by the platoon leader and the subsequent orders to the squads by the squad leaders is broadcast to the trainee-spectators by means of public address systems. Heightened as it is with bursts from hidden charges and the chatter of overhead machine-gun fire using live ammunition, the training is made very realistic and gives the men most valuable insight into combat patrols.

As a respite from the rigors of the training cycle, one of the outstanding contributions to the recreation part of Army life was made by the men themselves, through the medium of a bang-up all-service show. Written, produced, and staged by the soldiers themselves, and using all GI talent in the cast, the productions, entitled *All Is Not Bliss in Texas* evoked much enthusiasm among the appreciative audiences.

Replete with humorous incidents manufactured through the satirizing of a rookie's introduction to Army life, the breezy, fast-moving offering was highly acclaimed here and would be sure to click before any congregation of service people.



The grenade course at Fort Bliss.

# Southeastern Sector

MAJOR GENERAL DURWARD S. WILSON, U.S.A.,  
Commanding

Ideal fall weather with warm days and cooler nights stepped up the training activities of the Harbor Defenses of Chesapeake Bay, under command of Brigadier General William L. Tilton, and in addition to the normal armament practices during the past quarter, small-arms firing was completed for practically the entire command and new cold weather programs initiated.

Despite the hurricane which visited the Atlantic Seacoast on 13 and 14 September, the Harbor Defenses maintained complete control of the situation and had things well in hand when the wind reached a velocity of 98 miles per hour on 13 and 14 September. Considerable damage to temporary buildings in all installations of the command resulted, but no lives were lost and practically all barracks, mess rooms and other structures have been restored to normal. While seacoast firing practices occupy the major spot on the training program, considerable time has been devoted to anti-aircraft firings with the 40mm and 90mm guns. During the past two months seven 40mm practices have been held and one 90mm practice.

Aerial spotting, using the familiar clock method, will be used during the next quarter and its efficiency as compared to other methods of spotting will be determined.

The Noncommissioned Officers' School conducted at Fort Monroe for the entire harbor defenses has proved a success not only with unit commanders but also with the men who attended. This class, which is the fifth, is composed of mess and supply sergeants. These men, whose duties are so highly specialized, are given an opportunity to refresh their knowledge in basic military subjects, and to be the answer to the recurring problem of keeping specialists well trained in the "School of the Soldier," despite their assignments.

A full scale improved orientation program designed to reach every man, even in the outposts, has gotten underway and is proving a source of great benefit as well as entertainment to all personnel. Discarding the outmoded lecture method of instruction, discussion groups are formed and individuals given an opportunity to express themselves on current trends of the war, and other subjects. Full time officers are employed in this new program.

Plans for the readjustment program immediately following the defeat of Germany have already gotten underway and while as yet in the embryo stage indicate a smooth well-organized transition.

Major General Phillip Hayes, Commanding General of the Third Service Command, spent a week at Fort Monroe during the first part of October, visiting various service command installations, especially the new convalescent hospital which was opened at Fort Story, Virginia.

A class of the Army and Navy War College made a visit to the Harbor Entrance Control Post at Fort Story, Virginia, on 19 September for instruction and demonstration.

Off-duty entertainment continues to be the greatest morale builder for the command, and War Department theaters are becoming more popular every day. USO shows and local talent productions are also playing an important part, and attracting huge audiences.

The Temporary Harbor Defenses of Beaufort Inlet, under the command of Lieutenant Colonel Samuel S. Neill, has been experimenting with a high-speed seacoast target. It is light in weight, capable of high speed and rough treatment. It is floated by means of airplane wing pontoons joined by angle iron.

The target has been towed at a speed of eighteen miles per hour. Rigidity has been eliminated due to its tricycle-type structure which permits it to ride in the waves with very little stress. With pennants or bunting on the mast, it serves as an excellent target for 90mm guns.

The Harbor Defenses of Charleston, under command of Colonel L. W. Goepfert, have been threatened with frequent hurricanes and tropical storms moving into the coast from the South Atlantic. Due to excellent storm intelligence, despite these storm threats and the vigorous preparations for care and evacuation of equipment involved in situations of this kind, units of this command have completed an unusually strenuous schedule of firing, including anti-aircraft firing, AMTB using an alternate system of fire control, night firing, utilizing gun commander's action, and AMTB employing a maneuvering target. Excellent results were obtained in firing with an alternate system of fire control corresponding to the system outlined in Coast Artillery Training Bulletin, Volume III, No. 10, August 1944. Anti-aircraft training during the period included the firing of .50-caliber machine guns, and 40mm and 90mm guns at towed sleeve targets. Training has been conducted in firing .50-caliber machine guns utilizing OQ2A target planes. The interest and enthusiasm displayed by personnel indicate that maximum training results are obtainable from the utilization of this type target in firing problems where it can be used.

The Harbor Defenses of Key West, under command of Colonel Sherman E. Willard, recently conducted a practice alert which brought into play seacoast targets, air targets, landward firing, local security of installations, and the dispatch of a mobile reserve to meet "hostile landings." The mobile reserve proceeded to Stock Island, a distance of seven miles, to repel the "hostile" landing party. This problem was very interesting and realistic in that fifteen men from headquarters battery actually acted as the landing party. Their mission was to infiltrate through the defense and take over communications, power plants, etc., in Key West. The entire problem was well executed by all concerned but the "attackers" were able to penetrate the defense. The defense was caught by surprise when the attackers used smoke to cover their movements. A critique was held upon completion of the problem and errors noted pointed out to all concerned.



Part of the hurricane damage at Fort Story.



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

The Indianola firing range continues to operate at capacity speed each week in regular "defense plant" fashion. Supporting the firing schedules of Camp Hulen and Fourth Army units, the firing points are taxed to the utmost. Each week some 300 officers and enlisted men of Fourth Army divisional and nondivisional units, those equipped with antiaircraft weapons, receive advanced training in AA machine gun firing. These units fire their own weapons and with the fifties on vehicular mounts, ring and pedestal mounts, and are taught also nomenclature, theory of leads, and maintenance of equipment. Firing is done at rocket targets and towed sleeves. Officers selected by the Fourth Army units to act as instructors precede each group to Indianola, and Hulen officers and men give these instructors a thorough course in the fundamentals of AA machine-gun firing. Thus when the main body arrives at the firing area they are taught by their own officers with Hulen personnel in supervisory capacities. These units live in a pyramidal "tent city," have their own post exchange, and other facilities and, aided by a permanent camp detachment from the Fourth Army, conduct their own administration.

Hulen soldier-sportsmen await the duck hunting season by occupying themselves with some of the finest fishing ever enjoyed in these parts. Whether they fish from the swimming pier within the camp or seek the out-of-the-way spots to cast their lines, the fish leap at the bait. Plentiful supply of shrimp, minnows, and crabs make the search for bait simple; mullet can be cut up if all else fails. Until the first "norther" sweeps across the coast and drives the fish to deeper waters, fishing is little trouble. Redfish and speckled sea trout abound; sheepshead, drum, dogfish, mullet, and flounder are there for the taking. The sport is made particularly attractive to the soldier because no elaborate equipment, no multicolored flies, no fancy rods and reels are necessary. A bamboo pole, a stout line, and a supply of goodly sized hooks, plus the bait, will land as nice a mess as one could ask for. For the soldier whose busy days permit no sporting there is night time floundering. A lantern, a gig, and a container for the fish will suffice to catch as much as one man can carry. No fishing license is required. If the GI prefers to be a spectator he has a standing invitation to sail out to the gulf fishing grounds on one of the boats of the Palacios fishing fleet and see how shrimp are caught and prepared for shipment to world markets.

The Orientation Center has been moved to a new location opposite the training headquarters building. Formerly a unit dayroom, the new home has many advantages over the former building. Conspicuous among these is the wall space available for exhibits. The wall at the west end of the building contains a full color map of the world measuring 7' x 16'. This map is flanked by flags of all the allied nations faithfully reproduced in full color, also. Along the north and south sides of the room smaller panels contain interesting details of the world history in the making: large scale maps, pictures of enemy and allied uniforms and insignia, recent news and wirephotos, and the like. Scattered about the room, invitingly placed, are comfortable seats, chairs, reading lamps, and writing tables. The orientation subcenter at the Service Club is still active, and Special Services personnel are kept busy furnishing the latest information and material to both places.

Several signs have been placed in and about the camp defining certain well known distances in terms of kilometers and versts. While it is not contemplated that our British and Russian allies will be traveling Hulen highways, it is felt that a certain familiarity with such units of measure should be universal. The kilometer, as the unit of measure in Europe, should be as familiar as the mile to our men. One simple and direct way to illustrate such comparisons is to post distances to well known points in kilometers and the Russian verst.

Recent entertainment has been provided by an all GI production entitled *Our Corn is Greener*. Setting for itself the same spartan limitations imposed by Special Services on its biweekly orientation shows, scenery and effects were simple. The show, a series of dancing, magic, and musical numbers woven together by expert "em-ceeding," played two nights to capacity houses. Later some of the acts, the "mobile" ones, were taken to Indianola and shown to the units there. The Station Complement returned the entertainment favor by more recently putting on their show entitled *Our Corn is Cornier*, a variety program by the post civilian employees for the entertainment of the military and civilian personnel of the camp. The show was directed by Miss Nelda Martin, Service Club hostess, assisted by volunteers from other camp offices.



Trainees at Hulen become familiar with foreign measurements of distance.



## Northwestern Sector

BRIGADIER GENERAL JAMES H. CUNNINGHAM, *Assistant Sector Commander for Harbor Defense Matters*

During the Fall the harbor defenses of the Northwestern Sector are continuing to carry out target practice schedules which include surprise shoots and night practices. Officers' schools are being held in both harbor defenses with particular attention to landward firing by Field Artillery methods, the Army Orientation Course, current developments in the various theaters of operation and to technical Coast Artillery subjects. Tactical exercises, involving the use of Navy and Coast Guard units, were held in both harbor defenses, with particular attention to anti-motor-boat defense.

Two officers and two noncommissioned officers from the Harbor Defenses of Puget Sound and one officer and two noncommissioned officers from the Harbor Defenses of the Columbia recently completed a six-week school in leadership and command training conducted by the Northern California Sector at Fort Cronkhite. These officers and men are now serving as instructors and assistant instructors at the Northwestern Sector Leadership and Command School being held at Fort Lewis, Washington, to train ad-

ditional officers and specially qualified noncommissioned officers of both harbor defenses and other sector troops.

The Sector Commander, Major General Robert H. Lewis, accompanied by the Commanding General, Ninth Service Command, Major General William E. Shedd, an old Coast Artilleryman, visited the Harbor Defenses of Puget Sound on 4 October 1944.

Two six-inch brass cannons, over 160 years old, have been mounted on concrete bases in front of Headquarters, Harbor Defenses of the Columbia. The cannons were originally at Fort Santiago in the Philippine Islands, and were removed before the fall of Corregidor. It is believed that they were cast in Spain. They bear the date 1783.

Both harbor defenses were reorganized on 18 October 1944, transforming the regiments into battalions. On 16 October, the final regimental review of the 14th CA was held at Fort Worden. Each organization of the 14th CA was represented in this review, a platoon from each battery stationed at posts other than Fort Worden was taken there for this ceremony. Short talks were made by Brigadier General James H. Cunningham, who formerly commanded the regiment and by Colonel Philip F. Biehl, the regimental commander at the time of the reorganization.

The Harbor Defenses of Puget Sound has two football teams this year; one team is composed of military personnel stationed at Camp Hayden and the other team at Fort Worden consists of military personnel from Fort Worden, Casey, Flagler and Ebey and Navy personnel from Fort Worden. These two teams are members of a league whose other members are Navy and Coast Guard personnel in the vicinity.

At a recent automotive inspection made by representatives of Western Defense Command, the two harbor defenses in the Northwestern Sector attained the highest rating of the harbor defenses in the Western Defense Command.



## The Coast Artillery School

BRIGADIER GENERAL L. B. WEEKS, *Commandant*

The Department of Enlisted Specialists has changed its name to the Department of Engineering. The renamed department remains under Colonel C. O. Gunn as Director. The new name is more descriptive of the present and future functions of this department than the former title. This department, in general, teaches all technical subjects to both officers and enlisted men enrolled as students in the

school's various courses. Requests from graduates of the Department of Engineering courses and the Officer Candidate School for a record of their grades indicate that civilian schools will allow credit to our graduates for the instruction received at the Coast Artillery School, where such instruction closely approximates a similar course in a civilian school. Such courses as Electricity, Radio Communication, Surveying, Gasoline Engines, and Diesel Engines, offered in civilian institutions may be closely paralleled by similar courses given at the Coast Artillery School. The Enlisted Special Equipment Course continues to graduate technically trained students from the regular classes. Courses are available on all equipment which may be used in Harbor Defenses. In addition, special cadres have been trained for overseas assignments. Representatives of the course have recently returned from observation trips to the Pacific Coast and to the European Theater. Valuable information on the employment of special equipment in a seacoast rôle was obtained.

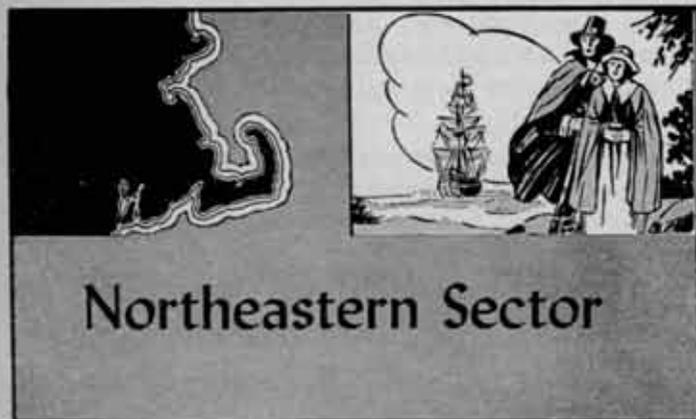
In furtherance of the policy to have all technical subjects taught by the Department of Engineering, the Department

of Artillery will give all instruction in applied gunnery and the practical use of all fire control instruments including directors. At present the Department of Artillery is teaching a Stereoscopic Observers Course to a class of enlisted men who began their studies on 30 October.

During the month of October the Department of Training Publications has been working on the following new field manuals: FM 4-8, *Employment of Seacoast Artillery in Land Operations*; and FM 4-31, *Service of the Gun Data Computer, M8*. In addition to these field manuals revision is now under way on TM 4-245, *Preservation and Care of Seacoast Defense Matériel*. New Training Bulletins to be published in the near future will be: *Coincidence Range Finding*; *Diesel Electric Plants for 6-inch, 8-inch, 12-inch, and 16-inch Gun Emplacements*; and *Central Control*. Also during the month of October the following Coast Artillery publications were printed and distribution initiated: FM 4-91, *Service of the Piece, 90mm Gun M1 on 90mm Mount M3*; C2 to TM 4-205, *Coast Artillery Ammunition*; TM 4-210, *Seacoast Artillery Weapons*; *Coast Artillery Training Bulletin, Training of Spotters and Miniature Range*; *Coast Artillery Training Bulletin, Ma-*

*tiériel Improvements*; and War Department Training Circular No. 59, *Spread Beam Lens Kit for 60-inch Portable Searchlight*. The remaining parts in the series of film strips on Fire Control and Position Finding for Seacoast Artillery, *Fire Adjustment by the Magnitude Method*, *Fire Adjustment by the Bracketing Method*, and *Lateral Fire Adjustment*, have been forwarded and are now being distributed. Preparation of a series of four film strips on the *Diesel Power Plants for the 6-inch, 8-inch, 12-inch, and 16-inch Gun* is under way. Film Strip 4-1, *Characteristics of Naval Targets*, is being revised to bring the pictures of naval vessels up to date. Four more illustrated Instructors' References have been approved for production on *Fire Adjustment—General Principles*, *Fire Adjustment by the Magnitude Method*, *Fire Adjustment by the Bracketing Method*, and *Lateral Fire Adjustment*.

On Saturday, 28 October, the Coast Artillery School was honored by a visit from Major General Harry F. Hazlett, Commanding General of Replacement and School Command. Major General Hazlett conferred with Brigadier General Lawrence B. Weeks, Commandant of the Coast Artillery School.



## Northeastern Sector

MAJOR GENERAL FULTON Q. C. GARDNER, *Commanding*  
By Lieutenant G. W. Caturani

Training in antiaircraft machine gunnery has recently received new impetus through the concentrated program designed to give all enlisted men and company grade officers an opportunity to work with the M-1 Polaroid Trainer. In these schools, each soldier is allowed to fire a gun at planes in actual battle formations projected on a large screen. The benefits derived from this instruction have already been reflected in preliminary and record practices.

The Harbor Defenses of Portsmouth designed and has constructed a mount for the .50-caliber machine gun as a subcaliber weapon for use with the 40mm gun, which has proven most satisfactory. Like the Glover Mount, this mount requires no counterbalance and does not interfere with the tactical use of the weapon.

A continuous program of orientation has met wholehearted approval of a preponderant majority of soldiers within Northeastern Sector. At Headquarters, Northeastern

Sector, a full half hour is daily devoted to a summary of the news, and periodically guest speakers, usually radio commentators or newspaper editors, furnish valuable background material. One afternoon weekly the officers attend a showing of the latest Combat Bulletin supplemented by most recent films on the Battle of China and the War in the Pacific. The same evening these films are shown to the enlisted personnel at the barracks. Following the Wednesday afternoon athletic session, soldiers of Headquarters Company indulge in an informal discussion after the latest "Army Talk" has been read by a moderator.

The Harbor Defenses of Narragansett Bay has incorporated into its Noncommissioned Officers' School curriculum a night field problem involving map reading, use of the compass, and patrolling, followed by a night bivouac under battle conditions during which tents are pitched and camouflaged in total darkness. Recent recreational development has been the establishment of a weekly music appreciation hour during which both classical and semi-classical records are played.

Joint Army and Navy motor torpedo exercises during the past month in the Harbor Defenses of Portland, Portsmouth, Narragansett Bay, and New Bedford have furnished valuable data in the employment of special equipment, searchlights, and illuminating flares. The very close cooperation of the Navy in these exercises has been an invaluable contribution to the development of tactics of Anti-Motor Torpedo Boat Defense.

The Harbor Defenses of Portland won the 1944 Northeastern Sector Baseball League Championship with a record of six victories and two losses, while the Harbor Defenses of Boston garnered twin-sports honors by capturing both the baseball and softball championships of the First Service Command.



# BOOK REVIEWS

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

## TEXTS

### Desert Fox

**INFANTRY ATTACKS.** By General Field Marshal Erwin Rommel. Washington: The Infantry Journal, 1944. 265 Pages; Maps. \$3.00.

In 1937 an unknown German lieutenant colonel named Erwin Rommel wrote a book about his experiences in the World War. The book, *Infanterie Greift an (Infantry Attacks)*, detailed the experiences of a mountain infantry battalion with which he served. The descriptions of small-unit engagements, complete with maps and sketches where necessary, indicate that his own methods and policies as set forth in our manuals differ widely from the truths that Rommel learned in the last war. Aggressiveness, reconnaissance, use of terrain, collection of information about the enemy, and sharing this information with subordinates, all contributed to the success of Rommel's battalion.

It was the same Rommel, of course, who was so successful in Africa for a relatively long period. There are those who say that Rommel was less than a great commander, even in North Africa, but in truth he did not do so badly. The germ of his North African strategy and tactics appears in his handling of companies and the battalion in the World War. The style of his writing is much less ponderous than we have learned to expect from a German soldier; the book makes good, as well as instructive, reading. It does not seem to have suffered in the translation.

### Old Masters

**VERIES ON THE ART OF WAR.** By Marshal Maurice de Saxe. Edited by Brigadier General Thomas R. Phillips. Harrisburg: Military Service Publishing Company, 1944. 122 Pages. \$1.00.

**FREDERICK THE GREAT: INSTRUCTIONS TO HIS GENERALS.** Edited by Brigadier General Thomas R. Phillips. Harrisburg: Military Service Publishing Company, 1944. 104 Pages. \$1.00.

**THE ART OF WAR.** By Sun Tzu. Edited by Brigadier General Thomas R. Phillips. Harrisburg: Military Service Publishing Co., 1944. 99 Pages. \$1.00.

These three volumes appeared together with Vegetius's *Military Institutions of the Romans* and Napoleon's *Maxims of*

*War in Roots of Strategy*, which was first published in 1940. Breaking the original volume down into its component parts has the advantage of providing small, almost pocket-sized volumes that are easier to handle. *Roots of Strategy* has been one of the military best-sellers since its original publication. The value of the works of the old military masters need not be treated in a military journal.

### Which Rifle

**THE AMERICAN RIFLE FOR HUNTING AND TARGET SHOOTING.** By C. E. Hagie. New York: The Macmillan Company, 1944. 174 Pages; Illustrated; Index. \$1.95.

This book should interest the hunter of big game, the hunter of "varmints" or the hunter of tin cans and black bull's eyes. Containing chapters on the various types of rifles and ammunition it provides practical information to the man who is doubtful of "which gun to take."

The discussion of ballistics avoids strictly accurate scientific expressions, thus is not very technical. A closer adherence to the technical would improve one or two spots, but it furnishes a fundamental background for discussion of modern rifles and trajectories and killing power.

For the novice it furnishes many sound pointers. The chapters on dressing and care of game will give pointers to many an old hand and should prove invaluable to those who are new in the big game field. This chapter alone will make the book worth the price to many.

### One View of History

**THE ART OF WAR ON LAND.** By Lieutenant Colonel Alfred H. Burne. London: Methuen and Co., 1944. 224 Pages; Index; Illustrated. 10/6.

Colonel Burne finds that war is a tug-of-war, with a rope of four strands: the quality and capability of the commander, the quality and capability of the troops, morale, and resources. Added to these are weather, terrain, and luck. The eight principles of war: maintenance of the objective, offensive action, surprise, concentration, economy of force, security, mobility, and cooperation, enter into the picture.

After this introduction, which includes also some definitions

of military terms, Colonel Burne proceeds to describe some battles which illustrate his points. Twelve battles, beginning with Kadesh in 1288 B.C., and ending with the Tunisian campaign, were chosen not particularly for their importance, but for aptness in fitting the points of the introduction.

As an old soldier, and one with a mind of his own, Colonel Burne has the privilege of coming to his own conclusions about battles and principles, and he takes advantage of that privilege. The result is a valuable and challenging book that will both impart information and stimulate thought. For instance, the author believes that fighting on interior lines is not necessarily an advantage, and is often a disadvantage.

Especially interesting is his estimate of the American effort in the Tunisian campaign. It is much different (and lower) than our newspapers have led us to believe.

## HISTORY AND BIOGRAPHY

### Completed Series

LEE'S LIEUTENANTS: A STUDY IN COMMAND (Volume III). By Douglas Southall Freeman. New York: Charles Scribner's Sons, 1944. 779 Pages; Index; Bibliography; Illustrated.

Students of the military and lovers of biography alike have been waiting for the third and final volume of this series. Volume III, *Gettysburg to Appomattox*, traces the decline of the Army of Northern Virginia, a decline that may be attributed to the loss of some of the better leaders (and a lack of provision to train and replace them), as well as the inevitable starvation of the South's manpower and resources.

Jackson's death was a heavy blow, but not necessarily a fatal blow if the rest of the leadership had held up. Longstreet apparently did not render the service at Gettysburg of which he was capable, and other top-rank leaders permitted personal quarrels and private ambitions to interfere with their activities. There was no lack, on the part of a few of Lee's Lieutenants, of the sort of "intuitive warfare" that we associate with Herr Hitler.

Other deaths, too, thinned out the leaders of all ranks. A loss of thirty-seven per cent of Lee's general officers in less than a month (*Wilderness to Cold Harbor*) would have been a severe blow even to an army of formally trained soldiers, which the army of the South was not. Officers may be trained in ninety days, but there must be a solid core of professionals for the citizen officers to cling to. Four years of war comprised a good officers' school, but the best students seemed to be killed before they could put their talents and experience to good use.

The North was weeding out its incompetents as they failed in their tasks, bringing better leadership to its armies by a form of natural selection. The South, with limited officer reserves, was losing its best leaders at the same time. The balance had to swing, and swing it did, in favor of the side with the greatest reservoir of professionally trained leaders.

### Politics and War

FIGHTING JOE HOOKER. By Walter H. Herbert. New York: Bobbs-Merrill, 1944. 296 Pages; Notes; Index; Illustrated. \$3.50.

Chancellorsville was Joseph Hooker's big chance—and he fumbled. After fighting with distinction as a division and corps commander, Hooker (by scheming and knifing, it is true)

was given command of the Army of the Potomac, following a succession of incompetents. Vacillation and a temporary loss of his resolution brought about a missed opportunity that lengthened the war and gave Hooker's enemies, of whom he had made many, their chance to add him to the list of former commanders of the Army of the Potomac. It is still a question whether, given a few more chances, Hooker could have made the Army of the Potomac a winning team, but the state of the North was such that no man could be carried too long.

General Stoneman, who had known Hooker for many years, said, "He (Hooker) could play the best game of poker I ever saw until it came to the point where he should go a thousand better, and then he would flunk."

Hooker fed and clothed his soldiers, and gained their loyalty. With his superiors, it was a different story. He criticized his superior officers, connived, schemed, went over their heads, and did many other irritating things that all the books decry. The result was that at the times Hooker needed loyalty and friendship, it was lacking.

As a general, there is no question that Hooker was good within his limitations. As a leader, there were few better within the same limits. But as a member of a team, he was sadly deficient.

### Once Over Lightly

WAR THROUGH THE AGES. By Lynn Montross. New York: Harper and Brothers, 1944. 904 Pages; Reading List; Index; Illustrated. \$5.00.

Once more the fact is driven home that being engaged in war is almost the normal situation for the human race. Mr. Montross begins his history of warfare at Marathon and ends it with the fall of Cherbourg. In almost a third of a million words, he found it possible only to hit the highest of the highlights of the wars and their most important battles, with running biographies of the generals and admirals compressed almost to the limit.

The book was designed frankly for laymen, with the purpose of imparting enough of the flavor of the history of warfare to enable the military hobbyist or the part-time armchair strategist to soak up some background and to place war and wars in their proper perspective. The author does a fine job of explaining the interplay of economics, politics, diplomacy, and warfare, but the book is so compressed that it should drive careful readers to their encyclopedias and to reference libraries.

The maps of the battles have been simplified in the interest of omitting confusing detail, but in some cases they have been a bit oversimplified. On the whole, the book is a valuable contribution in that it is a survey course in the history of warfare that opens wide vistas (and many side roads) to the reader who doesn't know where to begin his reading. The "Peace at any price" pacifists and extremists on both sides of the preparedness argument might learn much from the wars that have kept the world in a ferment since earliest civilization.

As a fiction writer whose novels and stories lean to the expensive perfume and negligee type, Mr. Montross has proved himself a careful historian and competent military student.

### Leaders of Today

GREAT SOLDIERS OF WORLD WAR II. By H. A. De Weerd. New York: W. W. Norton & Company, Inc. 298 Pages; Bibliography; Index; Illustrated. \$3.75.

Major De Weerd has chosen Gamelin, De Gaulle, Wavell, Rommel, Montgomery, Hitler, Churchill, Timoshenko, Mas-

Chiang Kai-shek, and Eisenhower for his portrait of leaders of the present war. Forestalling the storm he would be raised, the author states in his foreword, "Despite the inevitable imperfections of such an account, there is something to be said for attempting to evaluate the military leadership of the war while it is still going on. It will be many years before a final estimate can be made of the leaders treated in this book. . . . So much has happened since 1939 that it will come as a shock to some to recall that in those days General Gamelin was regarded as the 'finest professional soldier in the world.' (The book) may contribute to a better understanding of the present and future stages of the war."

Four chapters of this book appeared in *Great Soldiers of the Two World Wars* (1941).

In spite of the book's interim character, which results in the omission of such leaders as Marshall, Arnold, and Tedder, name but a few, Major De Weerd's estimates are so searching, and his writing so dispassionate and fair, the volume is as good as could be written today. The author hints that when the final returns are in, probably in ten or more years, a more complete book will be produced. Meanwhile, it will be interesting to compare De Weerd's estimates with the judgment of history.

### Where We Came In

**MILITARY OCCUPATION AND THE RULE OF LAW.**  
By Ernest Fraenkel. New York: Oxford University Press, 1944. 248 Pages; Bibliography; Index. \$3.50.

In this timely book, which deals with the occupation of Germany after the last World War, Mr. Fraenkel outlines some of the pitfalls which will obstruct the path of those who deal with Germany in the near future. Military men have learned to use history as a tool, and the history of the occupation after the last war has many sharp edges. The failures of that occupation were largely responsible for the present war.

One of the worst features of the occupation was the conflict between the occupying powers—every split meant a wedge for the Germans to drive further in nullifying their defeat. Added to this conflict, which was the result of the differences in war aims and the concepts of law held by the different occupying powers, was the conflict between the military and civilian occupation authorities. The Germans could understand military power (it was about all they could understand), but the civilian authorities had no power except as it was backed up by the military. Naturally the military and civilian powers worked to cross-purposes in many instances, which helped nobody but the Germans.

Another error was the foundation of the new rule on the old bureaucracy, which placed back in the saddle the same elements that had brought on the war. The fear of Communism and other forms of radicalism was responsible for this, but it brought on a worse form of radicalism—the Nazi state.

The differences in the Anglo-American conceptions of law and those of the French and Germans brought on more difficulties. The Germans, accustomed to a police state, where juries were practically unheard of, and violations were either black or white, could not understand the procedures where technicalities could free criminals.

All these conflicts, combined with the unwillingness of the occupation authorities to permit the weak German democratic government to function without interference, resulted in the end in the fall of that government and the rise of Hitler.

If we are to profit by the mistakes of the last occupation, this book is as good a starting point as any.

# LEE'S LIEUTENANTS

## A STUDY IN COMMAND

By DOUGLAS SOUTHALL FREEMAN

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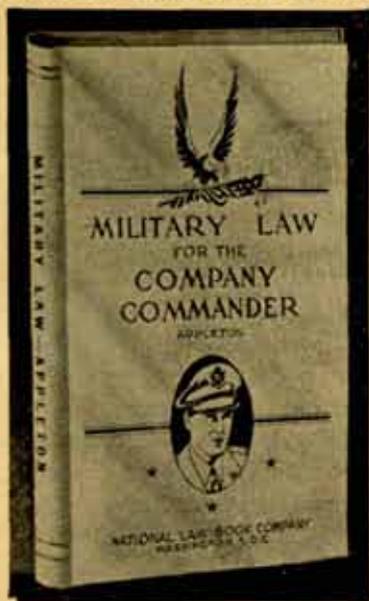
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## MILITARY LAW FOR THE COMPANY COMMANDER

By JULIAN J. APPLETON, B.S., LL.B.  
*Assistant to the Staff Judge Advocate  
Camp Sibert, Alabama*

Foreword by  
BRIGADIER GENERAL HAIG SHEKERJIAN



It includes all necessary FORMS such as SPECIFICATIONS, RECORD OF COMPANY PUNISHMENT, SPECIMEN "FILLED IN" CHARGE SHEET, REPRIMAND AGAINST AN OFFICER, etc., as well as a CHECK LIST FOR COMPANY PUNISHMENT and the COMPLETE TABLE OF MAXIMUM PUNISHMENTS as revised to date.

In simple language, this book defines, among other things:

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- ✓ How to proceed in administering Company Punishment.
- ✓ How to prepare "fool-proof" Charges.
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- ✓ The precise scope of each of the Punitive Articles of War.
- ✓ The proper disposition of charges.
- ✓ The correct form for the record of Company Punishment.
- ✓ How an Officer is punished under A.W. 104.
- ✓ How to properly prepare Joint Charges.

**\$2.50**

### College Text

AMERICA—A WORLD POWER. By David Saville Muzzey and John A. Krout. New York: Ginn and Company, 1944. 380 Pages; Maps; Appendices; Index. \$2.00.

Consisting of seven chapters from Muzzey and Krout's *American History for Colleges*, plus an added chapter by G. Nye Steiger on "The Far East and the Second World War," along with an introductory chapter on foreign relations, this book was designed to fit the Army's need for a three-month course in the history of the United States from 1898 to 1944. Special emphasis is placed on the participation of this country in world affairs.

The book is on the college level, and may be found useful in history courses other than those sponsored by the Army.

### New Slant

BASIC HISTORY OF THE UNITED STATES. By Charles A. Beard and Mary R. Beard. Philadelphia: The New Home Library, 1944. 489 Pages; Index. 69¢.

We who learned our history from battle to battle and from date to date were born thirty years too soon. Except to students of the art of war, it matters little today who won at Cold Harbor; the guilt or innocence of Aaron Burr is a fact that adds little to our understanding of America today. What did matter is how the Civil War changed our economic and social structure, or how the system of landed proprietors affected the growth of our political institutions. The Beards, probably our most noted historians, have produced a history, from Cabot to Churchill, that explains why America is what she is in terms of economics, politics, and sociology. Covering so much ground, the book is obviously a condensation—the story could have covered many volumes. But it is a condensation that seems complete in itself, and that opens the door to further reading on points or incidents that prove interesting. The reader need not agree with the Beards' conclusions, and probably will not in every instance. But the conclusions are food for thought.

A book of this caliber, on good paper, with a good cloth binding, excellent from the standpoint of bookbinding as well as in content, could sell for \$3.00 easily. The 69¢ price is hard to believe.

### Hawaiian Background

REVOLT IN PARADISE. By Alexander MacDonald. New York: Stephen Daye, 1944. 288 Pages. \$3.00.

This purports to be the story of Hawaii's political and economic history up to the present time, with special reference to the changes brought about by the war and the resulting military government. Mr. MacDonald seems to find that on the whole the military government has done the islands a lot of good in bringing about certain political and economic shifts, and that the future of the Territory is much more promising as a result.

## PERSONAL EXPERIENCES

### Another PT Book

DEATH WAS OUR ESCORT. By Ernest G. Vetter. New York: Prentice-Hall, 1944. 323 Pages; Illustrated. \$3.00.

Commander Vetter has written the story that Lt. (j.g.) Edward T. Hamilton lived as a member of a PT squadron.

Hamilton's story is part travelogue, part biography, but mostly adventure story, of a type that would not be believed as fiction. We have several books about the PT squadrons, but none that is able to give us the feel of the jungle and the seamy side of the tropics nearly as well as this one. The jungle and the coral reefs were as much the enemies of the PT men as the Japs. The successful engagements of the boats take almost a subordinate position in relation to the never-remitting struggle against jungle existence. The almost unbelievable success of the boats against the Japs imparts a Wild West flavor to the portions of the book that deal with naval action—the Japs always went to the sharks. But the swamps, the reefs, the insects, the crocodiles, the sharks, and the rest of South Sea scenery made the men's lives most unattractive. The wild stories about Captain Harper, the gunboat commander who would rather fight than obey orders, hardly provide enough comedy relief to lift the jungle gloom.

The story of the march back, after PT 120 was sunk, should rank with Captain Bligh's journey as a story of resolution and the will to live. Twelve men began the march through Jap-held territory; three lived to finish it. Fourteen days of hell provide the material for one of the great adventure stories of the war.

✦ ✦ ✦

### This Is the Army

COMING, MAJOR! By Ezra Stone and Weldon Melick. Philadelphia: J. B. Lippincott Company, 1944. 267 Pages; Illustrated. \$2.00.

Ezra Stone, who at times would like to forget he was Henry Aldrich on the radio, had a large part in the management of *This Is the Army*. This book, a sort of military-theatrical *See Here! Private Hargrove*, tells of the trials and troubles of those who began the first camp theatricals, and then of the *Army* tour. The tour of the great army hit was no picnic for the soldiers in the traveling company, but like most tribulation-packed ventures, there was a lot of fun to it in retrospect. The book is amusing, albeit a bit insistent about the value of Army theatricals. It should be most interesting to any who saw either the original show or the movie version, and of course Henry Aldrich's will not want to miss it.

✦ ✦ ✦

### Fighting French

HALF PAST WHEN. By Hassoldt Davis. Philadelphia: J. B. Lippincott Company, 1944. 283 Pages; Illustrated. \$3.00.

The Fighting French of De Gaulle have had a hard row to hoe. Davis, an American who was with the De Gaullists in Africa, first as a propagandist and later as a second lieutenant, writes of his intense admiration for these men who fought for France under conditions of lack of matériel, lack of understanding, and lack of encouragement, and who fought over terrain as tough as any in this war with only their love of France to drive them.

The accomplishments of these Frenchmen who were always outnumbered and ill-equipped rank among the great deeds of the war. Using surprise, fortitude, and contempt for death as their great weapons, they kept alive the idea of opposition to the Japs while the Germans, the Italians, and even their own people hunted them.

As inconvenient as the Western Desert is for fighting a war, the territory these Free Frenchmen fought through was infinitely more so. Their families often left behind in Occupied France,

# BRAVE MEN

By ERNIE PYLE

The NEW book by America's best-beloved war correspondent. He is the writer of the men in the lines—and their folks. This book, like *Here Is Your War*, is based on the complete and full texts of Pyle's dispatches from July of 1943 to the liberation of Paris.

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hostages for the Germans who know how to wring the greatest value from them, these patriots fought on, with nothing to look forward to except the dim hope that France might be free again.

Davis's writing has a bit of Hemingway flavor to it, and more than a bit of Halliburton, but his style seems fitting for this book of high adventure.

COMBAT CORRESPONDENT. By Jim Lucas. New York: Reynal and Hitchcock, 1944. 219 Pages. \$2.50.

Jim Lucas's combat stories have dotted the pages of our daily newspapers for a long time. As a Marine combat correspondent he has been with the attacking Marines over a wide area of the Pacific. Since even Marine combat correspondents are Marines first and correspondents after that, Lucas has fought with rifle and Tommy gun as well as with a typewriter, and knows more about fighting men and less about brass hats than the civilian specimen of correspondent. His book contains no criticisms of strategy or tactics, no first-name references to generals or admirals, and no fulminations against the stupidity of military minds who fail to run the war to suit the opinions of the reporters. Quite refreshing, coming from a correspondent.

Lucas begins the book with his enlistment and his training. The waiting for an assignment and the usual snafu is detailed with humor, rather than with bitterness. But the meat of the book is in the accounts of the fighting, including the story of Tarawa as Lucas saw it. He really saw very little of battle (nobody else saw much more) because he was too busy keeping his head down while the bullets were popping. What he did see he tells well, with sympathy and understanding, and with a minimum of hysterics. The same goes for his stories of other battles—the book tells what he saw, not what somebody else says they saw.

Newspaper correspondents please copy.

### The Coming of Dawn

THE ISLAND. By Captain Herbert L. Merrillat. Boston: Houghton Mifflin Company, 1944. 276 Pages; Index; Illustrated. \$3.00.

If you read this book without thought of the period it covers, ten to one you'll be shocked when you finally realize that everything happened between 7 August and 9 December, 1942. The First Marine Division brought honor to the Marine Corps and to the United States during this four-month period, fighting some of the bloodiest battles under the nastiest conditions in American military history. Books, stories, and poems have been written about Guadalcanal, but here is the first real, chronologically arranged account to make sense to military students.

Although Captain Merrillat wrote his account (from firsthand knowledge, incidentally) in the form that logical military writing demands, he loses none of the flavor of the individual deeds that wrested the Island from the Japs. He tells of the Schmidts and the Basilonas as well as the regiments and the battalions. There are maps, simple and clear, so we can follow the action. The tenseness that resulted when our four cruisers were lost, laying the Island open to reinforcement and bombardment from the sea, loses none of its effect at Merrillat's hands. He has written both stories, the official history and the popular account, in one book, without weakening either.

And he does admit that the Marines were glad to see the Army arrive to give them a hand, especially the 164th Infantry. That is something that has been missing in most of the accounts

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## INTERNATIONAL

## New Edition

THE WAR IN MAPS. By Francis Brown. Maps by Emil Herlin, Vaughn Gray, and Lucas Manditch. New York: Oxford University Press, 1944. \$2.00.

This third revised edition brings the book up to 1944. The revisions have been extensive. The maps are from the *New York Times*; military students, military experts, and military "experts" seem to agree that the *Times's* situation maps are among the best. Mr. Brown's text is especially well written.

✓ ✓ ✓

## Some New Ideas

BASES OVERSEAS. By George Weller. New York: Harcourt, Brace and Company, 1944. 424 Pages; Index. \$3.50.

Mr. Weller believes, "The indecisiveness, irresponsibility, and unacquisitiveness of American foreign policy—not attributable singly to any president, any cabinet, any party, or the War Department, but to a people which is satisfied with too little"—has been responsible for much of the blood and the money which we have spent in our wars of this century. While we are fighting for democracy, revenge, or the liberty of ourselves or others, both our enemies and our allies may be fighting these abstractions, but they are also fighting to consolidate their positions, to expand their possessions in a world where a nation either expands or dies, and to protect themselves from future conflicts they believe inevitable.

Mr. Weller believes that we cannot escape future wars because the world is too small and our sphere too large—that the realities of the future demand that we retain many of our bases overseas both for military and political reasons. Citing Corregidor as an instance where America gained much from a relatively small expenditure, he believes that if we had had more such bases, placed strategically in relation to our potential enemies and our friends, our position in the Pacific would have deterred us the discouraging time up to the conquest of New Guinea—that our dearly bought stepping stones would have been already ours. Other countries, less idealistic and less naïve, have their bases; we should have ours. They will save lives and money in the end.

The book is well-written and well-documented. There is much to think about here.

✓ ✓ ✓

## Beams and Motes

FOREIGN POLICY BEGINS AT HOME. By James P. Warburg. New York: Harcourt, Brace and Company, 1944. 296 Pages; Index. \$2.50.

Here is a book that kicks many shins, and steps on many toes. Written by a former international banker, it advocates all the things we thought international bankers were against. It is scathingly critical of our foreign policy, of our internal politics and economics that in part dictate our foreign policy, and of tempering with fascism. There is no hysteria, no burning writing; the book is a statement of the case as the author sees it. The author was with OWI in Europe for a time and was the subject of much publicity over a dispute in OWI policy.

Our treatment of the Negro, religious intolerance, unemployment, "runaway" capitalism—all these factors and many more, according to Warburg, reflect upon the workings of our foreign policy, and the situations must be cleaned up here in

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This extremely valuable book describes and illustrates all the rifles and machine guns in use by the armies of the world. Captain Johnson is a small-arms expert, an inventor of rifles and machine guns, and the author of a number of books on small arms. The Fighting Forces edition of this book can be sold to members of the Armed Forces only. A cloth edition will be available to civilians at \$5.00. The Fighting Forces edition sells for 25¢ with the usual discounts for quantity purchases.

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the United States before our foreign policy can take the direction it should to insure a real peace.

It is interesting to note the number of parallels between this book and George Weller's *Bases Overseas*, although the books are dissimilar in their aims.

♦ ♦ ♦

### New Technique

**EUROPE: AN ATLAS OF HUMAN GEOGRAPHY.** By Marthe Rajchman. New York: William Morrow and Co., 1944. 118 Pages; Index; Illustrated. \$2.00.

With the aid of many maps, graphs, charts, and diagrams, and with few words, Miss Rajchman presents a picture of the geography, resources, industries, populations, communications, and other sociological factors of Europe that should do much to help us understand why that explosive continent is as it is. Instead of reading pages of dull statistics or duller description, with this new technique of illustrated "geo-sociology" we can understand at a glance why, for instance, certain European rivers are more important than others (and not in relation to their size), how the population densities vary from area to area, or the relationship of the distance from Warsaw to Moscow with the distance from Kansas City to Knoxville.

In a few hours of comparing maps and charts, and reading the short text passages, the reader will have a better idea of what Europe is, and what makes it tick, than he might acquire from several years of study in the conventional manner. This is a broad statement, but it is an unusual book.

♦ ♦ ♦

### Explosive Questions

**INTERNATIONAL AIR TRANSPORT.** By Brigadier General Sir Osborne Mance and J. E. Wheeler. New York: Oxford University Press, 1944. 106 Pages; Notes; Index; Map. \$1.00.

**INTERNATIONAL TELECOMMUNICATIONS.** By Brigadier General Sir Osborne Mance and J. E. Wheeler. New York: Oxford University Press, 1944. 86 Pages; Index. \$1.00.

These two paper-bound booklets were prepared under the auspices of the Royal Institute of International Affairs as part of a project to study some of the questions that will arise when the time comes to decide upon the relationships among nations at the end of the present war. Both communications and transport are knotty international problems, problems that are already causing concern, and in some cases, mutual suspicion. It is only by examining the present and past structures of the two industries, drawing conclusions from the examination, and then acting to remove causes for friction, that we can be assured they, at least, will not contribute to future wars.

Sir Osborne's study has been thorough, objective, and his conclusions are temperate.

♦ ♦ ♦

## MISCELLANY

**OF MEN AND BATTLE.** Pictures by David Fredenthal, Text by Richard Wilcox. New York: Howell, Soskin, 1944. 125 Pages. \$3.00.

Since the reviewer is one of those untutored folks who "don't know anything about art, but know what they like," he wishes

to go on record as saying that many of Fredenthal's drawings are too unfinished and sketchy to satisfy the literal and photographic-minded. This criticism may not be worth much, because experts have found the artist's work excellent. Among the experts are the editors of *Life*, who picked Fredenthal to make the drawings for their war art program. And even though many of the pictures leave a sense of something missing, many others impart something that even photography would miss.

Mr. Wilcox's text is something else. He manages to express the loneliness in the midst of thousands, the fear mingled with courage, and the eternal weariness of the fighting man, and does it with such frugality of words that we marvel at his literary skill. Wilcox's writing could stand alone.

♦ ♦ ♦

**HANNIBAL'S ELEPHANTS.** By Alfred Powers. New York: Longmans, Green and Co., 1944. 272 Pages; Illustrated. \$2.75.

Written from the standpoint of one of Hannibal's elephant keepers, this historical novel of the Carthaginian's Italian campaign adds little to history, but it is an interesting and well-told tale. Boys of the fourteen- to sixteen-year-old group, particularly, would profit from more books of this type. It is hard to imagine any normally curious youngster finishing this book and not going to the encyclopedia, at least, to learn more about the great Hannibal. There is just enough of the basic history to impart a taste for more, and the story would have been good even if Hannibal had never existed. It is packed with adventure, and yet is neither improbable nor overdone.

♦ ♦ ♦

**PLEASE DON'T STREAMLINE MOTHER WHILE I'M GONE.** By Philip Reisman, Jr., and Donald McKay. New York: Whittlesey House, 1944. Illustrated. \$1.00.

Sergeant Reisman (U.S.M.C.) has written the verse, and Donald McKay has turned out the drawings, for this hilarious little plea to slow down with the postwar gadgets until the fighting men can come back and see once more the things they saw before they left home. It's all in fun.

♦ ♦ ♦

**NO MEAN CITY.** By Simeon Strunsky. New York: E. P. Dutton & Co., 1944. 285 Pages. \$3.00.

Mr. Strunsky, writer of the *New York Times's* "Topics of the Times," thinks New York City is quite a place. Those of us who think "New York is a nice place to visit, but I wouldn't want to live there," will get an argument from Mr. Strunsky. In good, measured English, devoid of the hysteria and gloss that characterize the writings of the Broadway columnists, he sets out to prove that New York is none of the things its detractors say it is. Crime is no worse, poverty not as bad, politics not as rotten, and transportation is not nearly the problem that outsiders say they are. Foreign groups are not as solidly arrayed, living conditions are not as bad, and recreational facilities are not as expensive, as we have been led to believe. New Yorkers, says Mr. Strunsky, are normal Americans, who live much as do the people in Lincoln, Nebraska, except for the few who are mistaken for the many.

People who think they know our largest city may learn a few things from this book—not which restaurants serve the best borscht, but that there is more to New York than Broadway, Coney Island, and Union Square.

# BOOKS

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## Volume LXXXVII, 1944

Jan.-Feb., 1—March-April, 2—May-June, 3—July-Aug., 4—Sept.-Oct., 5—Nov.-Dec., 6

2-22 Indicates Page 22, March-April Issue.

### AUTHORS

Allen, Ralph F.	5-32	Mountain, Earle	4-49
Block, Frank B.	5-38, 6-34	Muller, James A.	6-41
Brown, Louis Shattuck	5-32	Mullin, John L.	3- 2
Chapman, William	3-38	Murphy, James O.	5-24
Coughlin, Wilmsans K.	2-22	Murphy, J. P.	6-11
Conrad, Robert J.	2-32	Neill, John D.	1-31, 3-32
DeBevoise, Clyde W.	2-46	Nelson, R. E.	3-46
Dobson, M. E.	2-40	Orman, L. M.	6-52
Edset, Brynjolf	5-10	Parker, Percy P.	4-31
Evans, Jac	5-21	Parmakian, John	2-51, 3-52
Fieldshaw, Aaron, Jr.	5- 4	Patla, Tadeus	5-46
Frank, John P., Jr.	2-25	Peterson, W. W.	6-56
Gerasimov, V.	4-26	Price, Frederic A.	1-23
Griffith, Richard M.	3-38	Quayle, Thomas M.	6- 9
Hopper, Bradley M.	2-36	Raley, James	3-26
Hopper, Ralph W.	5-57	Roddy, Francis J.	3- 8
Jacobs, Harold R.	2-17	Rogers, Paul W.	6- 5
Keane, P. A.	1- 4	Roussell, Ralph "Pat"	5-18
Kennedy, John L.	3-36	Rowe, Robert S.	1-34
Kelly, Harold M.	4-40	Sawin, H. C.	6-30
Kramer, Henry G.	3-11, 4-19	Seitz, F. N.	6-65
Kramer, J. B.	1-19	Slater, John E.	5-53
Kramer, Joseph A.	1-28, 6- 2	Starr, Leonard E., Jr.	4-49
Kramer, Linscott A.	4-14	Stephens, Louis B.	6- 7
Kramer, Mac	6-30	Sullivan, M. F.	3-14
Kramer, Harry	4-22	Thompson, Douglas G.	1-48
Kramer, George M.	4-46	Thompson, Louis H.	3-41
Kramer, A. Lester	2-14, 6-27	Thompson, Maxwell H.	3-20
Kramer, C. D.	2-10	Thornton, John	3-26
Kramer, Thurman H.	6- 7	Timberlake, E. W.	6-16
Kramer, Victor G.	5-50	Tolman, Jay W.	3-44
Kramer, George A.	2-31	Tubbs, H. S.	3-45
Kramer, Joseph E.	3-30	Tusher, William	3-28
Kramer, Wallace A.	2-44	Twitchell, Donald E.	5-58
Kramerford, E. V., Jr.	6-65	Vance, Charles S.	3- 5
Kramer, J. M.	2-40	Waterman, Bernard S.	1-50
Kramer, K. S.	6-43, 6-54	Wegener, Charles	2-39
Kramer, U. S.	2-40	White, William J.	3-50
Kramer, Donald G.	1-38	Wilmarth, Raymond E.	6-39
Kramer, Ray W.	6- 8	Ziervogel, Frederick H.	4-18
Kramer, Robert I.	6-55		
Kramer, Frank L.	1- 9		
Kramer, Ben	6- 2		
Kramer, Jesse L.	1-17		
Kramer, Everett D.	6-49		
Kramer, Anthony	5-56		
Kramer, Aleck F.	1-52		
Kramer, Milton H.	2- 2		
Kramer, H. D.	3-32		
Kramer, O. D.	1-43		
Kramer, Frank	2-35		
Kramer, Kenneth G.	1-48, 6-34		
Kramer, James S.	3- 2		
Kramer, L. G.	6-41		
Kramer, Sir Bernard Law	2-29		

### TITLES

#### A

AA Battalion in SWPA, An, <i>Henderson</i>	2-14
AA on the Southern Front, <i>Ziervogel</i>	4-18
AAA with Amphibious Forces, <i>Thompson</i>	3-20
AAATC in the South Pacific, <i>Tubbs</i>	3-45
Ack-Ack at Anzio, <i>Mullin</i>	3- 3
AGF Proficiency Test for AAA Battalions, <i>Wilmarth</i>	6-39
All Roads Lead to Berlin (Maps)	5-26
Amphibious Training (Pictures)	3-25
Antiaircraft Artillery in Landing Operations, <i>Lazarus</i>	1- 9
Antiaircraft Artillery in New Guinea, <i>Fraser</i>	1-19
Attack Team Strikes, The, <i>Menacker</i>	3-35
Automotive Maintenance Program, Mater	2- 2
AW Battalion with the Infantry Division, <i>Rogers</i>	6- 5
Axioms and Principles for Battery Officers, <i>Timberlake</i>	6-16

## B

Ballistic Correction Rule, <i>Nelson</i> .....	3-46
Blinker Spotting System, <i>Hopkins</i> .....	2-44
Bombing of AW Field Fortifications, <i>Henderson</i> .....	6-27
Book Reviews .....	1-84, 2-85, 3-81, 4-84, 5-87, 6-85
Both Ends of the Tracer Stream, <i>Vance</i> .....	3- 5
Bracketing Adjustment Board, <i>Starr and Mountain</i> .....	4-49
British AA Calisthenics (Pictures) .....	1-46
British AA Rockets (Pictures) .....	3-16
British Against Germans, <i>Montgomery</i> .....	2-29
Bump Charts, The, <i>Neill</i> .....	1-31

## C

Cable Laying: A Solution, <i>Buck</i> .....	2-25
Calibration of 90mm Guns for Firing on Ground Targets, <i>Hines</i> .....	5-50
Can You Use Film Strips? <i>Neill and McKee</i> .....	3-32
Canadian Artillery (Pictures) .....	1-26
Chart for Artillery Met Stations, <i>Twitchell</i> .....	5-58
Christmas Messages, <i>Lear and Green</i> .....	6- 2
Circular Range Slide Rule, <i>Jones</i> .....	6-43
Coast Artillery Action in Norway, <i>Bjorset</i> .....	5-10
Coast Artillery Board Notes .....	1-58, 2-59, 3-57, 4-57, 5-64, 6-67
Coast Artillery Citations and Commendations, .....	3-53, 4-53, 5-59, 6-60
Coast Artillery in Action .....	1-56, 2-56
Combat Reports for Tired Training, <i>Raley and Thornton</i> ..	3-26
Corridor (Pictures) .....	3-18
CPX—Seacoast Artillery, <i>MacDonald</i> .....	1-52

## D

Date to Remember, A (Pictures) .....	4-24
Different Training Inspection, A, <i>Orman</i> .....	6-52
Dual Functions in the Solomons, <i>del Valle</i> .....	1- 4

## E

Efficiency Reports, <i>Herron</i> .....	2-10
Emergency Time Interval Device, <i>Barnard</i> .....	2-42
Employment of SCA in Island Warfare, <i>Fowler</i> .....	3-11
Equations for Trial Fire Analysis, <i>Light</i> .....	6-49
European Fortress, The .....	2-33

## F

Facts About Fuels and Lubricants .....	6-20
Farewell to Camp Davis, <i>Slater</i> .....	5-53
Field Experiences with Ammunition, <i>Murphy</i> .....	6-11
Fighter-Searchlight Team .....	4-28
Fire Adjustment for Rapid-Fire Batteries, <i>Wegener</i> .....	2-39
Firing on Water-Borne Targets, <i>Denning</i> .....	3-36
Floating Harbors (Pictures) .....	6-14
Fluid Front Flak, <i>Quayle</i> .....	6- 9

## G

Graphical Analysis for AW Fire, <i>Cooper</i> .....	2-36
Gun Commander's Action for 155mm Guns, <i>Ballough</i> .....	2-22
Guns Against Aircraft, <i>Green</i> .....	1-28

## H

High Lights of Action (Part II) .....	1-21
Hits, <i>McNeely</i> .....	1-43

## I

Improving the Panama Mount, <i>Conti and Bailey</i> .....	3-38
Improvising Infinity, <i>Cooper</i> .....	5-57

## J

Journal Newsreel, The (Pictures) .....	2-20, 5-48
--	------------

## K

King's Men, The (Pictures) .....	4-44
----------------------------------	------

## L

Leads from Tracer Humps, <i>Merriam and Aycock</i> .....	6-34
Leads in a Nut Shell, <i>Merriam and Thompson</i> .....	1-48
Looking Down on Cassino, <i>Roussell</i> .....	5-18

## M

Maneuverability of Naval Vessels, <i>Rowe</i> .....	1-34
---	------

Maps .....	5-26, 6-21
Mess Economy, <i>Lofaro</i> .....	5-56
Misfire, <i>Knight</i> .....	6-53
Mobile Seacoast Artillery in Beach Defense, <i>Kimball</i> .....	1-38
Mobility Plus (Pictures) .....	3-38
Monroe Beach Club Burns .....	4-43

## N

Narrative of 3d Battalion—CA 1942-43, <i>Fowler</i> .....	4-13
News and Comment .....	1-60, 2-62, 3-62, 4-60, 5-68, 6-70
News Letters .....	1-68, 2-71, 3-70, 4-69, 5-77, 6-70
Night Firing of AW .....	6- 6
Not Good Enough (Pictures) .....	3- 5

## P

Polaris Orientation Chart for the Northern Hemisphere, <i>Parmakian</i> .....	2-51
Portable Panama Mounts, <i>Muller and Mober</i> .....	6-4
Practice Course for the Cloke and M1 Plotting Boards, <i>Peterson</i> .....	6-58
Prevention of Fly-Borne Diseases in Islet and Atoll Warfare, <i>Baer and Allen</i> .....	5-30
Preview of a Training Film (Pictures) .....	4-57

## R

Report from Italy, <i>Hall</i> .....	4-11
Rocket Development .....	6-13
Rocket Target, The, <i>Sullivan</i> .....	3-11
Rocket Targets for AA (Pictures) .....	2-1
Rôle of Tactical Air Power, The .....	5-43
ROTC Medal Winners .....	2-41
Rules of Land Warfare, The, <i>Sawin and Harlan</i> .....	6-34

## S

Safe Leads for AA Gun Target Practices, <i>Parmakian</i> .....	5-52
Sail Type Target for Seacoast Artillery, <i>Waterman</i> .....	1-38
Salerno to Rome, <i>Bradshaw</i> .....	5- 5
Seacoast Artillerymen Must Be Versatile, <i>Hill and Stephens</i> , 6- 6	6- 6
Self-Propelled AAA in Amphibious Operations, <i>Roddy</i> .....	3- 1
Sight Displacement Rule, <i>Beebe</i> .....	2-40
Sinking a Jap Transport, <i>Murphy</i> .....	5-23
Some of Our Subscribers Are Missing .....	4-51, 6-58
Something New Has Been Added, <i>Bowman</i> .....	5-23
Soviet Employment of Searchlights, <i>Cherednicbenko</i> .....	4-26
Stepping Up AW Speed in Panama, <i>Tusher</i> .....	3-28
Submachine Gun Course, <i>Dudley</i> .....	4-40
Supply in the Field for an AW Battalion, <i>Kleinert</i> .....	6- 8
SWPA Deflection Board, The, <i>Thompson</i> .....	3-41

## T

Target Practices for Seacoast Searchlights, <i>Parker</i> .....	4-31
Ten Percent Hits with the Director, <i>Aycock</i> .....	5-38
Test of Leadership for Battery Commanders, A .....	6-18
Tracer Trainer for the M5 and M6 Director, A, <i>White</i> .....	3-54
Trainee Commencement, <i>Hoffmann</i> .....	3-34
Training Aid for 155mm Batteries, <i>Jones, Jarvis, Bishop</i> ..	2-44
Training Camp in Cornwall, A, <i>Daniels</i> .....	2-13
Training in Slant Range Estimation, <i>Tolman</i> .....	3-44
Trends in Antiaircraft Artillery and Coast Artillery Organization and Equipment, <i>Hungerford and Seitz</i> ..	6-66

## U

Unhappy S-2, The, <i>Harris</i> .....	4-23
Use of a Deflection Observer, <i>Patla</i> .....	5-44

## V

Versatile "90," The, <i>Metcalfe</i> .....	3- 5
VGT Angle Rule, <i>Jones</i> .....	6-58

## W

War Department Lubrication Orders .....	5- 3
We Had To Do It .....	4- 4
What is Your Dead Time? <i>Hoffmann</i> .....	2- 1
What's The Score? .....	1- 1
When the Chips are Down, <i>Price</i> .....	1- 1
Wintering on the Cold Coast .....	6- 6
With the AAA Troops on an Amphibious Landing, <i>Lewis</i> ..	5- 5

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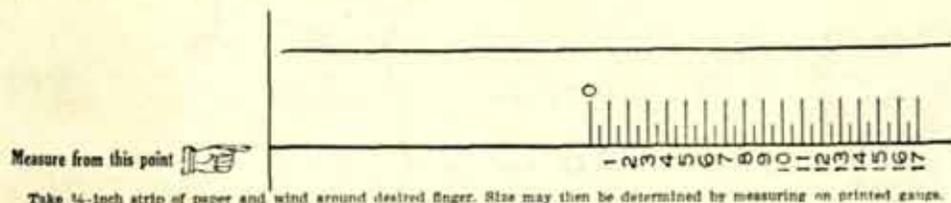
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