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COAST ARTILLERY JOURNAL

FOUNDED IN 1892 AS THE JOURNAL OF THE UNITED STATES ARTILLERY

VOLUME LXXXVII

JANUARY-FEBRUARY, 1944

NUMBER 1

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PUBLICATION DATE: FEBRUARY 1, 1944



By Brigadier General
P. A. del Valle, USMC

DUAL FUNCTIONS *in the Solomons*

Contrary to the prevailing general impression, the marines never actually evacuated the Solomons en masse. Certain units were withdrawn, others came into the area. Thus came a time when some of our dual purpose units, the Defense Battalions, were functioning as antiaircraft and coast defense troops in the islands. While the period of which we shall speak was after the enemy had been cleared off the land areas as far west as the Russells, there occurred numerous air assaults; and the necessity to provide coast defense against possible sea attacks required employment of those marine units which were equipped to do so.

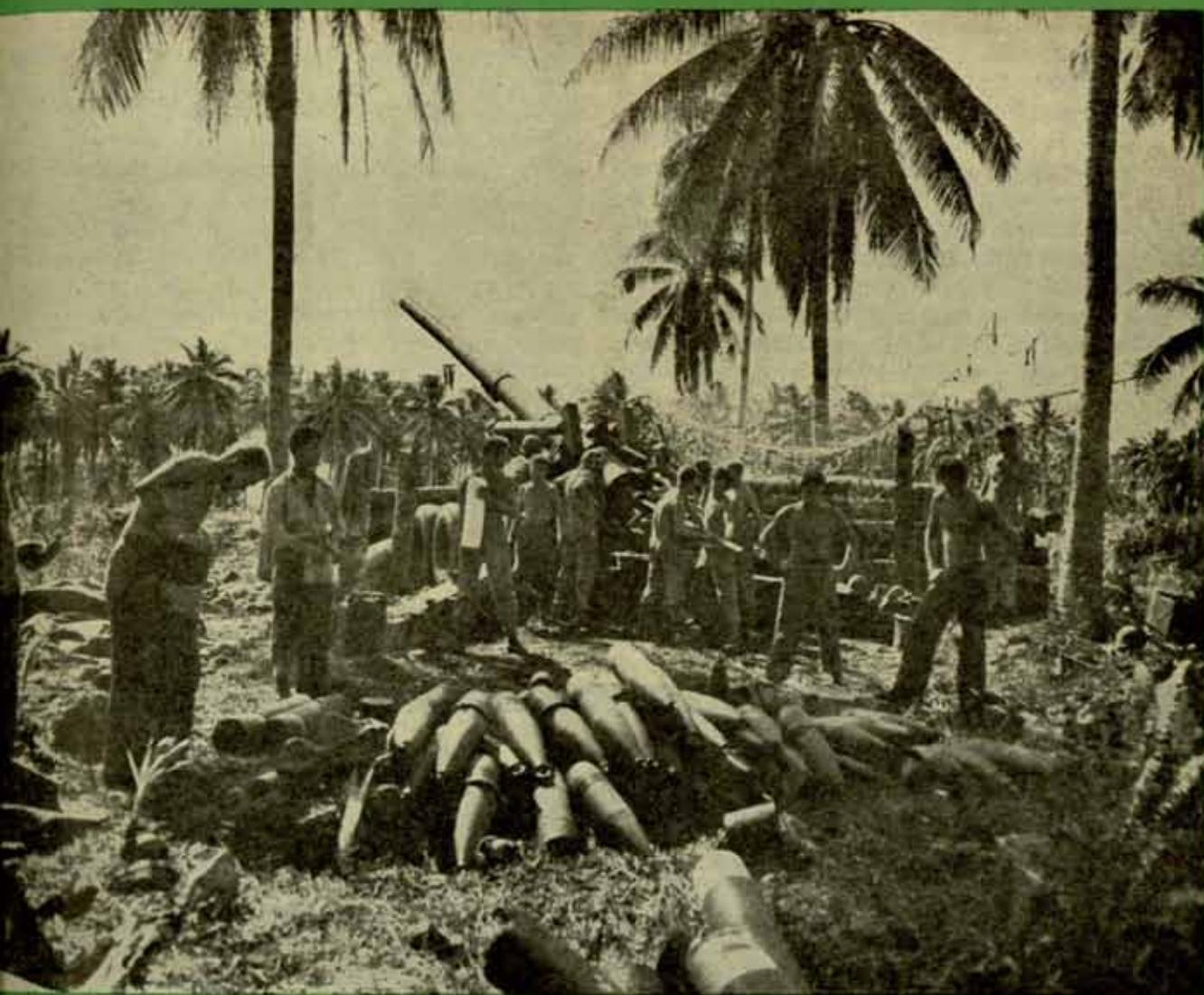
The problem presented was to provide antiaircraft defense for all airfields, anchorages, and other important installations; and so to emplace coast defense batteries as to deny the vital sea areas to enemy surface craft. The matériel employed was largely the same as that employed by Army Coast Artillery, hence no novelty is presented by a description of it. The methods of employment, the im-

provisations born of necessity, and the practical means taken to protect the personnel and matériel against enemy action may, however, be of interest. Some of the techniques employed cannot be discussed as yet, and these are probably familiar to most readers. But the human and logistical problems, and some of the solutions, together with personal experiences may well be worth relating. Almost immediately upon assuming command, the writer was confronted with a near-disaster. Heavy rains fell, both in the hills and along the coastal plain. This caused the streams to flood. A northerly gale accompanied by an exceptionally high tide blew tons of water shoreward, stopping the flow of the streams to the sea. This unfortunate combination created difficulties which seemed incredible. Only certain high spots along the plain were left above water. It

90mm gun on Tulagi, sited
for dual-purpose missions.

Marine Corps photo





155mm position in the Solomons.

Marine Corps photo

noticed that the native villages, then abandoned by Islanders, had been sited with this in view. Evidently, experiences of this sort had led them to select the best sites. Fortunately, my command post was on one of these sites. When the flood finally began to recede with the tide that night, we still had about fourteen inches of water. But many other installations, selected because of their strategic importance or convenience, were entirely flooded. Some of the canvas tents showed only the tops of the poles above water. Many ration and ammunition dumps were under water. Men's cots and belongings just floated away. An ambulance hospital unit with its sick and wounded had to be evacuated twice during the night. We huddled on the high ground, prepared to lash ourselves together with ropes and attempt to reach the foot hills.

Morning revealed to us the full extent of the damage. Roads and bridges were largely out. Boating was difficult, not only because of the high seas still running, and because many of the boats were piled up on the beach, high and dry. Amphibious vehicles were at a premium. Communication lines were down. We had to rely upon radio as the storm had played havoc with our telephone wires. Our gun emplacements were a mess. Heads (latrines) were flooded.

presenting a dangerous problem in sanitation. Galleys (kitchens) and mess halls were swept away. Everything seemed to be in the very worst possible shape, except the spirit of the men. This seems to me a wonderful thing. The very ones who had growled and kicked about the rations (Spam, Sheeps Tongue, Gold Fish, and Canned Willy) were the ones least downhearted in the disaster. They went about, waist deep, salvaging what they could with a grin and a quip, as though this were merely a routine discomfort, to be got over with as best we could. It will be very hard to beat men who are made of such stuff. And this goes for all of them, soldiers, sailors, and marines.

The gun emplacements were partly dug in, but mostly built up out of the plain with such revetment as could be got. This included sand bags, empty one way shippers (gas drums) filled with earth, and last, thanks to Lever Brothers, Inc., the ubiquitous coconut palms. The more provident had dug deep enough under the gun platforms to allow for certain drainage. Pumps were rigged and set to work to keep the platforms above the waterline. In most instances the ready ammunition at the guns was fairly well dug in at a sufficient height to protect it. Where it was not, it had to be removed and dried as best we could. Electrical equip-

ment at the guns caused us some worry, but the insulation provided proved excellent, and hardly any serious trouble developed in most cases. Local control was employed only in a few instances and for only a short time.

These incidents are recounted to give the general atmosphere in which our gunners worked their pieces against the frequent enemy air attacks which occurred during this period. Since we were scattered over several islands, the conditions were different in different places, but everywhere we had to contend with rains, dampness, steaming hot sun, and sharp drops of temperature at night. Transportation in some areas was extremely difficult, wherever there were as yet no improved roads. The unimproved trails were deep in a black mud which resembled peat. It was hard when dry, but bottomless when wet. There were batteries which could only be reached by boat and on foot, and some of the spotting positions were in very inaccessible places. Sometimes, it was found that the exact tactical location had to be sacrificed in favor of one to which rations, fuel and ammunition could be carried without excessive difficulty. Often a reconnaissance was made in dry weather on foot, and when the rains came, the locality was found to be nearly impossible for any vehicle. In one case, an anti-air-

craft battery was so emplaced, and during a wet season could be reached only on foot, and with difficulty. Obviously, a reconnaissance should take into consideration the supply problem and the effect of wet weather as well as the tactical employment of the weapons.

A case in point was spotting equipment which a company expert from a big staff had personally directed to be placed upon a topographically perfect location. In spite of the commander's unfavorable reconnaissance report, the location was selected and insisted upon. The rains came and it was found that even tractors could not get to it, and that cars with small containers could scarcely make it on foot. It was decided to attempt to rig a trolley on a cable, but no anchor could be found that would sustain the loads. Finally, the installation had remained idle for some time, it was brought down, with great difficulty, and installed in a place which, though it failed to measure up to the tactical advantages of the other, was practicable from the usual standpoint.

In these islands, many of the gun emplacements for anti-aircraft batteries were sufficiently near the coast to enable them to function in defense against surface craft landing attacks. This included weapons of all calibres



155mm position in the Solomons.



The big flood.

Official Marine Corps Photo

the .50 calibre machine guns, which can be formidable against small craft approaching a beach. The larger calibres could be used against larger landing craft and even ships within range. The bursting of high explosive shells about the upper works of any vessel, where so many protected personnel and instruments must be located, always be depended upon to exact a serious toll. A.P. shells are not an absolute necessity.

To provide for such dual employment, it was necessary to sacrifice a portion of the protecting parapets around the emplacements to enable the pieces to be depressed sufficiently. Since seacoast defense was coordinated under a single officer, it was necessary to tie in such batteries and pieces with the general plan. The various units being under central control in each locality, this presented no problem. At certain times, the seacoast control officer would arrange such drills and practices as seemed necessary and the commander would connect up his seacoast batteries with such of the antiaircraft guns and batteries as would be required upon the situation. Obviously, the antiaircraft components of this coast defense system would have to be excluded when engaged against their primary targets, unless a greater danger seemed to come from the surface rather than from the air. It appears to be a good general practice to place where this dual function as antiaircraft and seacoast defense can be exercised without sacrifice of the primary mission of the antiaircraft weapons.

The concealment and camouflage of the antiaircraft installations presented, as is generally the case, somewhat of a problem. This problem varied according to the terrain and the situation. On one island, there were batteries emplaced on the grassy flats adjacent to the airfields they protected. The grass was therefore planted along the sloping sides of the parapets. In some instances, garnished nets were employed overhead. But air reconnaissance showed that attempts to blend into the even verdure of the plain were not 100% successful. Some batteries simply used camouflages, plain or painted. After all, a tarpaulin might be used over a gun, an ammunition dump, a ration dump; or, it might be used over nothing, as a dummy. By ingenious use

of dummies and by correct spacing, enemy reconnaissance and photographic missions could at least be confused. It is impossible to conceal antiaircraft batteries when they are in action and our gunners and others appreciated this. But they simply stayed there in their exposed positions and shot it out.

In another instance, there was a battery emplaced in a jungle-covered smaller island just off the island on which the airfield was located. Even after the necessary clearing was done, this area offered the best concealment of any. Logs and stumps broke up the terrain so that it was relatively difficult to spot the battery from the air. Of course, air photos would show that the area had been cleared and thus indicate the presence of an installation, but the enemy had no idea just *what* was there.

Since each locality and each situation was different, there was no attempt to apply the same rules to all. Individual initiative was encouraged and seldom was confidence in the battery commanders misplaced. While all the art of the "camoufleur" must be at the disposal of the battery commanders, and frequent inspections made from the air, there is relatively little that can be done in some instances.

The antiaircraft defense was concentrated in the hands of one officer whose command post was on the main island near that of the commanding general. This control was geared to the fighter command at the airfield, as it was obvious that intercepting air forces must be clear before we could engage enemy targets. This arrangement worked very smoothly for both day and night attacks. Ships in the harbor would sometimes complicate things with their AA batteries, but on the whole, they fitted into the general plan fairly well.

Night attacks required considerable coordination and care, especially when using the searchlight system of the antiaircraft command in conjunction with the day fighters. The searchlights would pick up and illuminate the target. The fighters would then attack, the AA batteries of course withholding their fire. Quite often, there was no occasion for the use of our batteries. An illuminated enemy plane was usually a dead duck.

Most operations centers were well dug in and provided the maximum protection possible. In one instance, the commander preferred the relative roominess and comfort of a Quonset hut, concealed in a palm grove and somewhat removed from the batteries. One night, the enemy jettisoned his bomb load in haste over this particular area. Bombs burst across the gully a few hundred feet away. The operations personnel ducked when fragments of bombs, earth, trees, and rock fell about with a great clatter. Then they ducked again when the fragments of our own AA shells began dropping. Next morning, all hands turned to work and dug. Not only should the operations center be well dug in and concealed; but it should provide the maximum comfort for its personnel. It was often necessary to remain in operation all night, and cramped quarters with bad air are conducive to fatigue and inefficiency. Improvised blowers often were possible and were a great help. One group of batteries had used concrete (left over from Panama mounts) for its operations dug-out. It had two entrances and several compartments. A noisy, but efficient blower, salvaged from a wrecked amphibious tractor was installed in the overhead. Earth was piled deeply over the concrete and

the mound was camouflaged with green, live vegetation.

We soon found out that at present bomb release elevations, the bomb-release circle is so considerably widened that a minimum of four batteries must be emplaced for each locality such as an airfield. One marine AA battalion used a spare battery for this reason. Lacking personnel, the C.O. borrowed some field artillerymen from an army unit to man the extra battery. In a remarkably short time, these men became expert AA gunners and a friendly rivalry commenced as they began to hang up their score of enemy planes shot down against the scores of other batteries.

Before getting on to the coast defense batteries, I'd like to pay a tribute to the patience of the personnel who manned the lesser AA calibres. Exposed near the airfields which they defended from low flying attacks, they took a terrific beating during all attacks. Often they would have to await an opportunity to engage for a long, long time, especially toward the last. It's an awful bore to man your piece and sit and wait for weeks on end without seeing a target. To liven things up, we obtained the assistance of the fighter command which provided low flying, fast targets to keep their hand in. But the most effective device was to shift personnel gradually from the smaller to the larger calibres and vice-versa. Dual functions for the men as well as for the guns was the rule in the Marine AA units. It kept people on their toes and increased rather than decreased our efficiency.

COAST DEFENSE BATTERIES

The writer was in command of the field artillery in the initial landing and during the first four months of the Guadalcanal Campaign. At one period, it was necessary to obtain counter-battery artillery of adequate range to engage enemy batteries which harassed our positions, airfield, and ships. Accordingly, two 155mm gun batteries were sent. One came from an army coast artillery unit and the other from a marine defense battalion. These units were trained and organized as coast defense batteries, but in the absence of corps field artillery, had to emplace and perform as field artillery for the execution of counter-battery. The metamorphosis was accomplished in jig time. Field artillery methods supplemented coast artillery methods in fire control. Organizational and transportation deficiencies were not, in that situation, of major importance. In a fast moving situation, they might have been. As it was, these two batteries performed their new tasks admirably, illustrating the adaptability of our soldiers and marines.

In the nature of things, the campaign for the Solomons being strictly amphibious, and consisting largely of seizing airfields on various islands, there had to be plenty of AA and coast defense artillery of a mobile sort provided for the defense of the captured areas. It was possible, therefore, to employ these 155mm batteries as field artillery when not in use as coast artillery.

In the attack on New Georgia, one of my defense battalions thus employed all of its 155mm batteries. Prior to the attack, they were allotted the necessary men, reorganized, re-equipped, and provided with a fire direction center. Marine field artillery officers were attached. The unit was fitted into the general field artillery support plan of the task force commander. The remainder of this defense

battalion participated in its customary rôle of anti-aircraft artillery. But both groups were emplaced with an eye to employment as coast defense, should the necessity arise.

From these two instances, it may be derived that *marine coast artillery should receive training as field artillery*, *155mm field artillery should receive training as coast defense artillery*. Certainly, dual functions are the rule in amphibious warfare and nothing appears insuperable in the type of personnel we have to work with. Altogether, therefore, for certain organizational changes and certain items of equipment, there is much to recommend this procedure. As in the case of the AA gunners, dual functions keep men alert and add to their versatility.

The Marine Corps had developed a wooden temporary gun platform to use: (a) when materials for "Panama" mounts were not available; (b) where the importance of the installation did not warrant the use of concrete. While these platforms were designed with certain timbers and other materials carried by the batteries, ready cut, it was at least one instance where the ubiquitous cocoanaut logs were successfully employed to improvise in the absence of the regularly provided materials. This battery was in a temporary position, isolated and difficult to reach. We had rigged cocoanaut logs for crude rails for the guns to travel on. This contraption lacked the facility of installation of a Panama mount, but it worked. We calculated for the period probably required, the logs would not rot.

The Panama mounts were constructed wherever possible, since they were the best answer to the requirement of increased movement in azimuth. But they required a lot of time, especially where only hand labor was available. And now, with the M-1 gun, we shall have to devise something new. In the meantime, at the expense of more men and space, it seems logical to suggest that gun batteries consist of three platoons of two guns each, emplaced so that the required sector in azimuth is covered. This would be a dispersion to the other means of protection and would not lead the enemy to the conclusion that there were batteries rather than one.

During the early days on Guadalcanal, when Japanese surface forces frequented the waters between that island and Florida, a certain marine defense battalion was equipped with Navy 5-inch guns for coast defense. These had the disadvantage of immobility, but their pedestal type mounts permitted 360° of traverse. Another advantage was that the star shell provided as part of the ammunition. The batteries were able to fire star shell from one island to silhouette enemy ships against their light, enabling the batteries on the opposite side to see effectively. Illuminating projectiles of this type have many uses. Since their construction is relatively simple, the manufacture of limited quantities for use with 155mm gun batteries seems indicated.

One more recommendation seems pertinent in concluding this random commentary on the coast defense anti-aircraft units in the Solomons. The 90mm ammunition as now put up is too heavy a load in its boxes. It is a breaking job to move it about. I think all the gunners who handled it will agree that a smaller number of rounds in a lighter package is very desirable. The rest of the materiel was found to be first class—one heard nothing but praise by the using services.

By Colonel Frank L. Lazarus
Coast Artillery Corps

ANTIAIRCRAFT ARTILLERY *in* LANDING OPERATIONS

LST's loading at Palermo
for the invasion of Italy
VLA balloons overhead.



Signal Corps photo

United Nations troops are gaining experience in landing on a hostile beach in the face of determined enemy ground and air opposition—and they will gain much more experience in the offensives yet to come. Reports have come in from the landings we and our allies have made, and many valuable lessons are contained in them.

In this article we will discuss first the general preparations that should be made prior to the invasion of a hostile shore. Then we will point out some of the lessons that have been demonstrated in actual landings. Finally, to illustrate the points and bring out the functions of antiaircraft artillery, we will follow through a hypothetical problem involving a landing on a hostile beach.

Throughout this discussion it should be borne in mind that amphibious tactics and technique are, and must of necessity be, characterized by flexibility. The conditions of any tactical operation are different. Terrain, weather, the strength of opposing ground, air, and naval forces, and

the unpredictable aspects of human nature, give rise to so many variations that it is folly to advance any plan as an approved solution. This article should therefore be accepted for what it is intended—a discussion of the subject. It is not doctrine, and it is not a substitute for common sense.

In landing operations—as in all other forms of endeavor—success rarely follows faulty or slipshod beginnings. Victory or failure is very apt to be determined before the task force leaves the port of embarkation.

It is fundamental, of course, that the invasion of a hostile shore be well-planned down to the minutest detail, and suitable and adequate personnel, matériel, equipment, and supplies be included in the task force. It is equally essential for the invader to have detailed intelligence of the terrain and weather in the region selected for invasion, and of the enemy strength and dispositions not only in the landing area and immediate vicinity, but in locations from which timely enemy reinforcements could be dispatched. It is also important that units have the opportunity of training with the organization to which they will be attached, that the respective commanders get to know each other, and that

the entire force be rehearsed in the type of operation it is to execute.

All of these provisions may, however, be of small avail if the landing plan cannot be carried out due to the faulty grouping of troops on transports, or if weapons and equipment have not been stowed so that they are readily available when and at the time needed. Soldiers without weapons or ammunition are of little use, and weapons without soldiers are still less useful.

The AA (antiaircraft) Officer of the task force that is to carry out the landing operation and the AA Officers of subordinate units must work closely with Quartermasters of the transports to which their units are assigned in the preparation of loading plans and embarkation tables. In this way AA matériel and equipment will be stowed on the transports in a manner which will enable units to carry out their missions as and when planned. Commanders, especially unit commanders, must make certain that their troops are fully equipped in accordance with the mission to be performed and the orders of the Task Force Commander. The Movement Order will usually include the equipment to be taken. Showdown inspections should be held and unit S-4's should take steps to secure priorities for the filling of any deficiencies. If stiff opposition is expected on the hostile beach it will be well to take ashore only what will actually be needed rather than what "the book calls for." In any event, the requirements of the particular situation, rather than standard Tables of Equipment, should be the governing factor.

However, it is not sufficient simply to draw up elaborate loading and embarkation plans. Staff officers must be present during the loading to see that the equipment is actually stowed on the transports according to plan. These officers should be thoroughly familiar with the landing plan so that if the loading plan must be departed from in any way they can consent to variations that will not harm the efficiency of the landing operation. Moreover, since most of the loading is done by civilians who are unaware of the delicate contents of some of the crates, close supervision must be maintained to guard against rough handling and possible damage.

In general, the loading plan should be patterned after the plan of debarkation. If the landing is to be made on a beach, caliber .50 machine guns will undoubtedly be the first AA weapons ashore. (The caliber .50 MGs of the 90mm batteries can, if required, be used to augment those of the AW batteries.) Self-propelled machine guns and 37 or 40mm guns on half-tracks would be ideal for accompanying the assault waves. 40mm guns will be necessary a reasonable time thereafter (if self-propelled AW has not been landed initially), and directors may follow if it is expected that the AW (automatic weapons) will remain in position for any appreciable length of time. However, it will probably be best to leave directors aboard the transport, or have them follow in a later convoy to be landed when a port with adequate docking facilities has been captured. Normally, it will not be practicable to unload 90mm guns, directors, detectors, searchlights, and similar heavy equipment on a beach unless surf and beach conditions are favorable. However, if capture of a port is delayed and conditions necessitate, the heavy AA and detection equipment may be landed

on the beach; but only after there are facilities on the beach for moving it into position, and the AW defense has been completely organized.

At no time during the initial operations should more vehicles be taken ashore than are absolutely necessary. But it is essential that sufficient tractors and transportation immediately precede or accompany the weapons to haul them into position from the landing barges, and to enable them to change positions. 40mm guns, and certainly 90mm guns, cannot be manhandled or hauled through soft sand, and with the help of their organic wheeled prime movers, winch, tractor, bulldozer, or tank, whichever is available and feasible, will probably have to be used. Steel runways are also helpful in forming a firm roadbed over the sand. All vehicles should be combat loaded before they are put on the transport so that they can be landed ready for use.

One point in particular should be stressed, every weapon that goes ashore must be accompanied in the same landing barge by: at least one or two units of fire; maintenance cleaning material, and spare parts for several days' operation; operating personnel and two to three days' rations and water for them. With each weapon should also be tools for digging emplacements, sandbags, and such communications equipment as will be immediately necessary. Ordnance personnel should also be available, as their handling during landing operations is very apt to injure the mechanisms of AA weapons and fire control instruments.

Vehicles, radios and any equipment that may be damaged or impaired by salt water should be thoroughly waterproofed before they are loaded on the transports. Compasses, watches, maps and other small articles should be wrapped in oilskin or other waterproof material. The canvas covers of new gas masks are useful for this purpose. Even under the most favorable landing conditions, there is always the chance that matériel and equipment may experience some degree of submersion, and there is not much use landing equipment that will not function because of this.

It is, of course, important that AA units be loaded on the same transport as their weapons and that tactical unity be maintained. Depending on the landing plan battalions, batteries, or platoons should be loaded intact on one transport with the matériel, equipment and transportation; those that will require during the initial landing and defense of the beachhead. Insofar as practicable they should be grouped with the infantry or armored force combat team they are to support. This procedure is also followed in the landing of Landing craft and vehicles are all combat loaded. Men go ashore with their weapons, and tactical unity is preserved as much as possible in the transition from ship to shore.

Men going ashore with the initial waves should be cautioned to take a minimum amount of equipment with them so as not to be weighed down if their landing craft should capsize or if they fall into the water while climbing over the cargo net. Nothing should be tied around the neck so that it can become tangled and choke the wearer. Personal equipment should be slung in a way that allows it to be discarded quickly if circumstances necessitate.

If the transports do not have sufficient AA protection it is advisable to secure permission from the ship's captain



On the beach at Attu.

Signal Corps photo

set up and man the caliber .50 MGs and, if practicable, 40mm guns of AW units, for use during the voyage. It is sometimes possible to place these in the landing barges and lighters that may be carried on the upper decks of the transports. In this way the guns can be used throughout the voyage and are ready to go ashore as soon as the barges are landed into the water. They can also be used for protection of the barges on their trip from ship to shore.

In a landing operation it is necessary to prepare more detailed plans and instructions than usual for the employment of AA units. This is due to the restrictions which will normally be placed on communication between ships during the voyage, and because some AA organizations are usually split into batteries and platoons attached to infantry units on different ships. In addition, alternate plans must be prepared to cover changes or unforeseen developments during the landing operations. Naturally, every unit must be thoroughly familiar with all of these plans so that they can be put into effect with a minimum amount of instruction and communication. The designation of a plan by a code letter or number should be sufficient to apprise all AA units of what is expected of them.

Units must be told what they will need to take ashore, when it should go ashore, and how to coordinate their defense with adjacent AA units. They must be informed as to which landing force communications can be utilized and

which communications they themselves must install. It is particularly necessary to prearrange and make known to all concerned recognition signals, restrictions on opening fire, and rules for operation of friendly aircraft. Nothing is more ruinous to morale than subjecting troops and pilots to the blundering fire of friends as well as the deliberate fire of foes. Moreover, every possible administrative and routine matter should be anticipated and completed before the units even embark, for once they are scattered on several ships they are beyond reach and control of their higher headquarters.

Control of AA during the assault phase of the landing operation will of necessity be decentralized, each unit being under orders of the infantry unit with which it goes ashore. However, as the troops reach the beach and infantry units consolidate into regimental combat teams (RCTs) and divisions, control should become more centralized. The senior AA officer ashore will be the AA Officer on the staff of the Landing Force Commander, and he will take steps to consolidate the AA defenses of the various battalion beachheads into a coordinated defense.

Early warning is one of the most important considerations. Naval detection instruments will probably be the only source of this type of warning in the initial stages of the action, but as soon as possible a coordinated AAAIS must be organized and communications or warning signals

established. At first the AAAIS will be nothing more than air guards stationed at points of vantage or on the flanks of the beaches and equipped with radio or visual means of signalling. As the beachhead is deepened, jeeps equipped with radio can be sent inland and radio communication will be established with adjoining beaches. Finally all fire units will be linked by radio or telephone hot loop with an AAA operations room or information center, tied into every possible warning service in the area, including those of the navy and air forces.

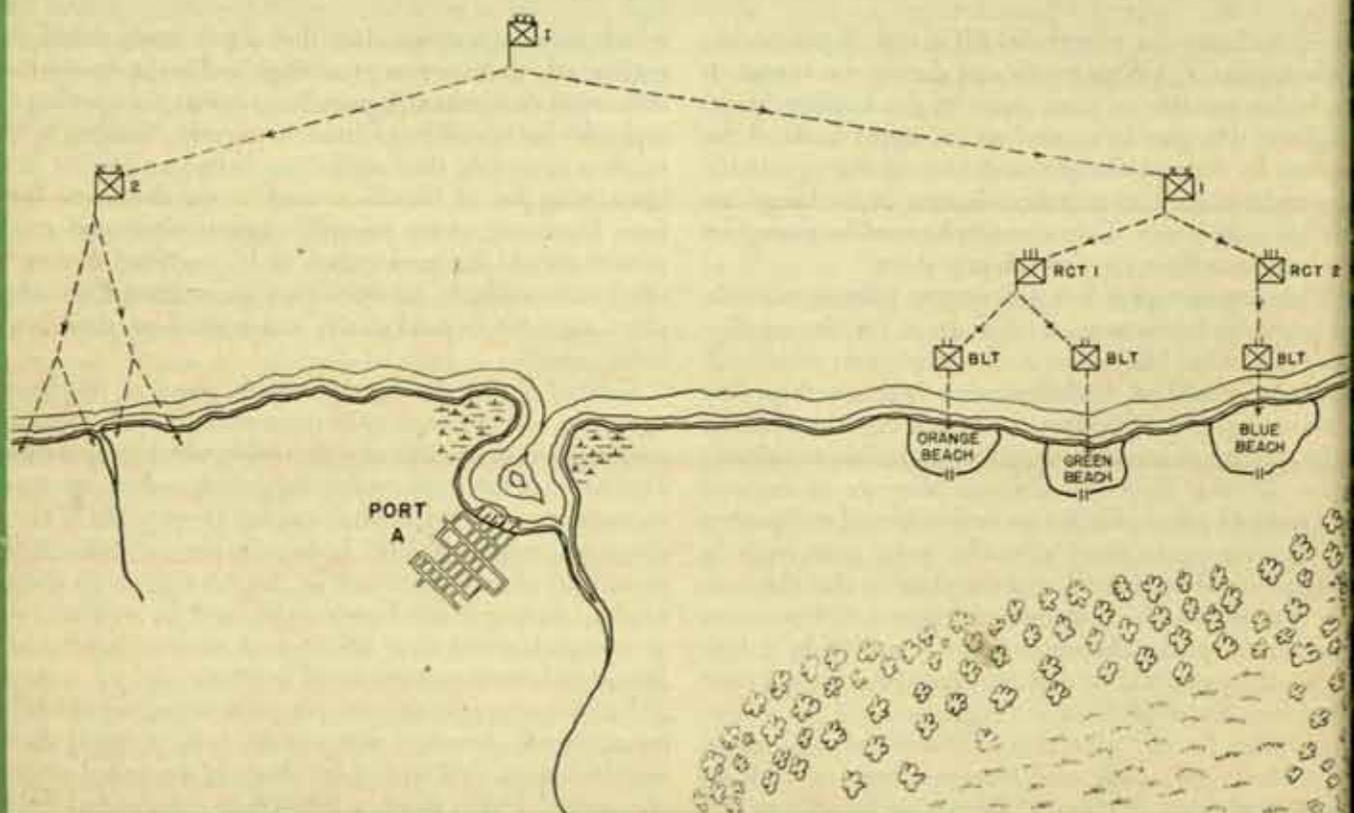
Inasmuch as a successful landing depends on surprise, or, failing that, on speed, it is vital that nothing interrupt the orderly procedure of debarkation and the advance inland. Obviously, this necessitates freedom, or at least adequate protection from enemy air attack. But it cannot be hoped that friendly aviation alone will insure troops against enemy air attack even though a landing will not normally be attempted unless the invading force can muster air superiority or at least equality at the point of landing. Planes cannot remain indefinitely in the air; they must return to base for refueling and reservicing. If they are carrier-based, they may well have to depart once the expedition has been landed, as naval vessels cannot run the risk of remaining longer than necessary within range of enemy land-based aviation and artillery.

Therefore, unless there are friendly airbases within fighter aviation operating range of the invasion area, AA will be the only consistent air defense of the task force, until such time as the force can capture or construct airfields in enemy territory.

If the landing operation commences a few hours before

dawn, as it normally will, the assault troops will be relatively safe from air attack. The caliber .50 MGs and at least part of the 40mm's of the AA units attached to the assault battalions, should be emplaced and ready for action by dawn. With the coming of daylight enemy air attacks undoubtedly commence. If the enemy engages in high or medium level bombardment at this time, the landing force will have to depend for protection on its carrier-based aviation, or on aviation from nearby friendly bases. However, there is not much likelihood of this type of attack against the beach while the first waves are landing. Troops will be scattered, and supplies and ammunition will not yet have been built up into dumps furnishing profitable targets. Enemy high and medium level bombardment attacks will more probably be directed against transports and naval vessels at this time, and the fleet AA and carrier-based aviation will have the task of repelling these.

Strafing, dive bombing, and low level attack will be principal enemy air activity during daylight. At night high or medium level bombing may be attempted, and mine-laying aircraft may sow mines in the water approaching the beach. Against these types of attack only heavy AA with searchlights or equipment for unseen firing will be effective—at least until such time as friendly night-fighter aviation or a fighter-searchlight defense can be organized in the area. However, there is little likelihood that these types of air defense will be available until the landing force has progressed substantially inland and airfields have been captured or constructed. As for heavy AA, searchlights, and detection equipment, they cannot be expected ashore in operation until a day or two after the commencement





An American convoy is bombed off Gela, Sicily.

Signal Corps photo

operation, and certainly not until friendly ground troops have established a beachhead line several miles inland from the beach. Even then, without an adequate early warning system, such a defense is apt to be of little more than deterrent value.

Thus, during the first stages of the landing operation the AA defense will be primarily an AW function, assisted by friendly aviation as may be available. As the landing progresses, ammunition, supplies and equipment will pile up on the beach, and men and vehicles will become more concentrated, at least until they can be moved inland. But at this time the leading elements of the invading troops will have penetrated inland, there will be more depth to the AA defense, and the enemy's air efforts will of necessity be dissipated over a wider area.

Meanwhile, the beach itself will become a less important target for attack as dumps and distributing points are set up further inland and the beach becomes nothing more than an avenue of approach to these inland depots. Finally, when an enemy port is captured and the beach is cleared of supplies it will lose all importance and AA defenses will be concentrated around the port.

During the early stages of the landing the most probable targets of enemy air attack will be the division dumps and distributing points, transports and landing craft approaching the beach, artillery and troops debarking and operating on the shore, and possibly the regimental combat team and division command posts. As the landing force penetrates inland, the employment of AA will be no different than is usual on marches and advances in the presence of the enemy. Once an enemy port has been captured, the most likely objectives will be: the docks, harbor installations and ships in the harbor, railroad sidings and terminals, and other installations of the port. The employment of AA will be the normal rear area defense of vulnerable points and areas, and AA will also have to be available for the protection of captured and newly constructed airfields. To illustrate more fully how AA might be employed in

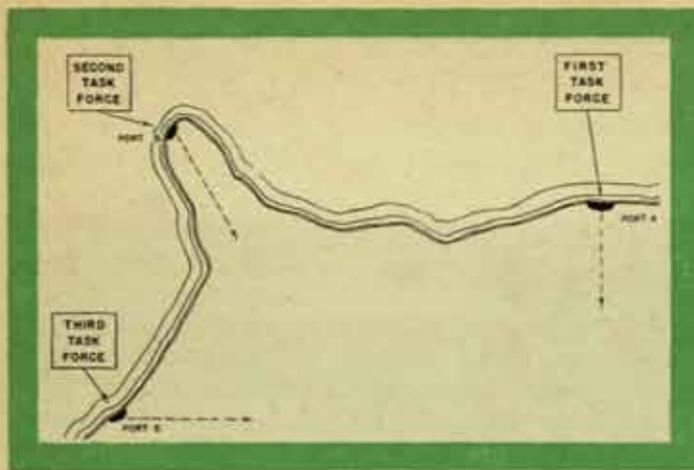
a landing operation on a hostile beach, we will assume a hypothetical situation and follow it through. However, the reader is again cautioned that the author's solution of this problem describes only one way that AA might be employed in a particular situation. It is not the only way, nor is it necessarily the best way.

The background of the landing operation which we will consider is this: three separate task forces will engage in a simultaneous invasion, each striking in the vicinity of a different port on the enemy coast. Additional forces will be held in readiness at friendly bases to exploit the success of any one or all of these task forces. (See diagram.)

Three airborne divisions will accomplish vertical envelopments of the hostile shore coincident with the landings of assault elements of the task forces. Their mission will be to seize enemy airfields from which planes could oppose the landings, demolish bridges, wreck rail lines, obstruct defiles, construct roadblocks, and generally oppose and delay the movement of enemy reinforcements to the areas where landings are being made.

Now, to demonstrate more fully the tactical employment of AA, let us narrow our discussion down to one of these task forces and still further to a corps, the I Corps, which is part of this task force. The mission of the I Corps is to lead the attack of the task force and capture Port A. This enemy port has a good harbor with docking and warehouse facilities that will make it a handy base for subsequent operations. After Port A has been captured the rest of the task force will enter the harbor and land at the port.

Inasmuch as Port A is defended by shore batteries, the I Corps has decided to land its assault waves on convenient beaches a few miles to each side of Port A and out of effective range of the guns protecting the harbor. From these beaches the Corps plans to push its divisions rapidly inland to reinforce the airborne troops operating in its zone of action. After the divisions have penetrated sufficiently inland and set up a defensive line isolating the port from enemy reinforcements, the port itself will be captured by attacks



from the flanks and rear. The remainder of the task force will then be free to enter the harbor of Port A and land, unopposed by enemy ground troops.

Assigned to the I Corps—in addition to three infantry and one armored divisions, three field artillery groups, and other supporting troops are three AAA gun battalions, two AA searchlight battalions, and five AAA AW battalions. Two AAA group headquarters are also assigned to I Corps to facilitate tactical control of the battalions.

Inasmuch as present Tables of Organization provide no AA Section for the Corps, the senior of the two AA Group Commanders in this case functions in the dual capacity of Corps AA Officer and Group Commander, and his Group Staff assists him in both capacities.

The Corps AA Officer and his staff will participate in the formulation of plans for the landing of the I Corps and will advise the Corps Commander and his staff regarding all phases of antiaircraft protection. Naturally, the Corps AA Officer, and the commanders and staffs of subordinate AA units, must become thoroughly conversant with the landing plan and must make detailed plans for the employment of their units. In addition they must secure all possible information of enemy capabilities for air and ground opposition, and the terrain and weather that will be encountered in the invasion area. Plans must be prepared for the employment of AA during the initial assault on the beaches and during the organization of the beachhead. Plans must also be ready for the AA protection of troops moving inland, for the defense of Port A when it is occupied, and for the protection of such airfields as may be seized or constructed. Every one of these plans must be flexible enough to provide for the uncertainties and changes which are characteristic of landing operations.

In the hypothetical operation we are discussing, the I Corps plans to land one reinforced infantry division (1st Inf Div) twelve miles to the east of Port A and another reinforced infantry division (2nd Inf Div) ten miles to the west of Port A where favorable landing beaches and routes inland and to Port A exist. These divisions will envelop Port A after moving inland to assist the airborne troops in their respective zones of action and establishing a beachhead line at a safe distance back of the harbor and beaches. The 3rd Infantry Division, 1st Armored Division and other Corps troops will constitute the Corps reserve and support force.

From the five AW battalions assigned to the I Corps, is attached to each of the Infantry divisions and one to armored division. These battalions should preferably ones which have had previous opportunity to train and operate with the divisions to which they are attached. The balance of the Corps AA and other troops remain off in a floating reserve and support force from which AA units of other arms can be sent to those areas where protection is most favorable, or where additional troops are needed. After enemy resistance has been subdued and Port A captured, such elements of the Corps reserve and support force as have not yet landed on the beach, will enter the harbor and debark at the port. However, if the capture of the port is delayed, then the entire Corps may have to be landed on the beaches which are considered most suitable for that purpose.

Let us now concentrate our attention on the 1st Infantry Division (reinforced) which is to make the landing on beaches about twelve miles to the east of Port A. The order of landing of this division is to be: first, two mental combat teams (RCTs 1 and 2)—each consisting of an infantry regiment, a battalion of light field artillery, and such other supporting troops as may be deemed necessary; then RCT 3, the division floating reserve; followed by the support force (headquarters personnel, light tank battalion, tank destroyer battalion, signal company, reconnaissance troop, etc.), the division artillery (less the three light artillery battalions with the RCTs), and the medical, supply, and service elements.

RCT 1 will land on beaches designated as Orange and Green, one Battalion Landing Team (BLT) making the initial assault on each beach. RCT 2 will land on the beach designated as Blue in column of BLTs. (See diagram.)

(A BLT or Battalion Landing Team is the basic tactical unit of landing operations. Normally it is the largest unit that can be transported combat-unit-loaded in the average size transport. In addition to an Infantry rifle battalion may include a battery or battalion of light field artillery, a platoon or company of engineers, a platoon of anti-air weapons, a medical detachment, and additional communications personnel. An AW battery or platoon, self-propelled if available, will normally be attached for the antiaircraft protection of the BLT if it constitutes one of the assault echelons.)

In this operation the 1st Division will assign one battery of its attached AW battalion to each of the assault BLTs (1 and 2), the third battery to RCT 3, and the fourth battery to the support force. The AW battery assigned to RCT 1 will be split—one platoon going with each of the two assault BLTs. The AW battery assigned to RCT 2 will accompany the leading assault BLT of that team. The AW batteries assigned to RCT 3 (the floating reserve) and the support force respectively, will be available for enforcing any of the beaches that may require additional antiaircraft protection. All of these AW units will have the mission of providing antiaircraft protection for the units which they are assigned and for the beaches on which they will land. They may also be given secondary missions of defense against enemy mechanized or waterborne attacks. In the landings at Salerno, U. S. 40mm AA guns were used effectively against enemy tanks and even for counter bat-



Bulldozer snaking a 40mm AA gun through the surf on the Italian coast.

Signal Corps photo

Moreover, these guns may be effective in cutting gaps in wire entanglements.

Some of the factors that will have a bearing on the assignment of AA units to a landing force are: the amount of AA available and the size and number of the beaches which must be defended; friendly aviation and fleet AA available to assist in protecting the landing beaches; strength and expected activity of enemy aviation; possibilities for passive defense—cover, concealment, darkness, weather, etc.; supply and ammunition dumps, vehicles, etc. that must receive protection; number of landing barges available for ship to shore movement; and the necessity for anti-aircraft protection of the beaches after assault waves have moved inland.

It must also be considered that when all the battalion assault teams of a regimental combat team have landed they will be consolidated into their regimental combat team and will then attempt to push inland as rapidly as possible. The AA units assigned to these RCTs must be available to accompany them in their advance; and other AA units must be landed to take over the protection of the beaches and any landing fields that may be captured in the advance. Therefore, if it is expected that the beach will have to be protected after the assault units have left it, the AA units should be landed as early as possible in the operation so that they may take over and organize a beach defense before the divisional AA units move inland. Now let us follow the operation of one of the BLTs. As previously pointed out, each BLT will normally be loaded on one transport. Shortly before H-hour the invasion craft will be lowered into the water and troops will transfer from the transports into them. These craft circle in the vicinity of their mother transport until all are loaded and ready. Then, the control ship signals its group of invasion craft to proceed to their respective rendezvous areas.

At the appointed time the invasion craft leave the rendezvous area and move at full speed toward the enemy shore. It is not felt that surprise would be defeated thereby, a smoke or air barrage may precede the assault to wipe out or

neutralize enemy shore installations. In any event the invaders may be accompanied by support craft, which are light barges equipped to lay smoke screens and pump high explosives into the beach.

The invasion craft travel in waves, the number composing a wave depending upon the width of the beach assigned to the battalion. Leading waves will consist of assault and support infantry platoons, and combat engineers who will remove obstacles and mines that may be on the beach or in shallow water. Succeeding waves will carry the battalion headquarters, heavy weapons, and reserve; anti-tank guns and artillery if attached; and ammunition and other supplies.

Due to the high silhouette of AA weapons and the exposed positions which their crews must assume in manning them, they will not normally go ashore with the leading assault waves, but will wait until the beach is relatively safe from enemy small arms and observed artillery fire. The caliber .50 MGs of the AW unit attached to the BLT will be the first AA weapons to go ashore, and the 40mm's will probably not be landed until sometime later with the light field artillery and additional ammunition. The larger type landing craft will be needed to transport the 40mm's.

Practically all landing craft are armed with caliber .30 or .50 MGs in armored turrets and these, together with the organic weapons of the combat units, friendly aviation, and the fleet AA, will have to furnish anti-aircraft protection for assault units until such time as AW units can be landed and set up their weapons.

In any event, during the landing of the first few waves, troops are well dispersed on the beach and supplies have not yet accumulated in large quantities, so there are not many remunerative targets for enemy air attack. Strafing would be the only profitable type of attack at this time, and the organic weapons of the combat units provide some protection against this. Moreover, tides and conditions permitting, the initial landings would probably be made under cover of darkness, starting just before dawn, and caliber .50 MGs

would at least be on the shore and set up before daybreak.

The AA plan for defense of each beach should be worked out so that the initial placing of the caliber .50 MGs will fit in with the subsequent emplacement of the 40mm's, and of the 90mm's if they are landed. Inasmuch as there is apt to be a minimum of cover and concealment on the hostile beach it is important to construct dummy and alternate positions, and to make certain that positions are well dug-in. If 90mm guns are brought ashore it may be well to set them up initially in two-gun fire units and increase these to four-gun units as the remaining guns are brought ashore.

In the early stages of the assault AA will be restricted more or less to the beach, and depth can only be added to the defense by using AA on barges beyond the line of heavy surf and breakers. The fleet AA may also be able to add some depth to the defense, especially if there are AA cruisers present, though such cruisers will probably be primarily concerned with the protection of the transports and naval vessels.

Caliber .50 MGs, and even 40mm's if possible, should be set up and manned in the landing craft so as to furnish protection during the movement from ship to shore. Special AA barges can also be used for this purpose, and to give depth to the beach defense. However, it should be realized that the sides of landing craft are high, and normally it will not be possible to employ guns set up in such boats at low angles of fire.

Inasmuch as adequate maps may be lacking for planning the landing and the AA defense of the beach, the preliminary selection of positions will have to be based largely on aerial photographs. For this reason the proposed dispositions should be flexible, and each AA unit charged with the protection of a beach should send a reconnaissance party ashore with the early assault waves so that it can check the positions selected and make necessary changes before the guns are landed. These parties should also lay out and install preliminary communications systems for their units.

Radio silence will be enforced until at least H-hour, and after that it will be restricted to a minimum, making it difficult for reconnaissance parties on the beach to communicate changes of position or plan to AA units still aboard ships or in landing craft. The reconnaissance parties must therefore meet their respective units when they come ashore and lead them to the selected positions. This will avoid much confusion during hours of darkness or daylight, even if the originally selected positions have not been changed.

In our discussion so far we have not mentioned the use of barrage balloons. These were used during the landings on

Sicily and at Salerno. They have still to prove their usefulness on the invasion beaches. However, if an AA battalion, VLA (very low altitude), were part of the assigned to the I Corps it is probable that a battery would be attached to each of the two assault divisions, and a third battery to the reserve.

The 1st Division, which is to make the assault on beaches to the east of Port A, would assign two platoons of its VLA balloon battery to RCT 1, thus providing a platoon each for the assault BLTs that are to land on beaches Orange and Green respectively. The third VLA balloon platoon would be assigned to RCT 2, and would accompany the lead BLT which is to land on Blue beach.

Each VLA platoon has fifteen squads and each squad has three balloons; the second balloon is used as a spare, or to fly in tandem with the first, if it is desired to reach greater heights than the maximum effective altitude for a single VLA balloon.

As with the antiaircraft, it is not contemplated that balloons will be landed until the beach is relatively safe from enemy small arms and observed artillery fire. At that time each third or fourth boat in a wave will fly a VLA balloon. Succeeding waves will also fly balloons. The balloons remain on the craft from which they are flown and will fly back and forth with the craft so that there is continuous balloon protection, or at least deterrent effect, over the water area between the transports and beach. After the beach is secured these balloons can be flown from anchored landing craft as to furnish protection against mine-laying aircraft ashore. Each transport might also fly a balloon for its own protection against low level and dive bombers.

The remaining squads of the VLA balloon platoon will be taken ashore when and as space is available in the landing craft. These balloons will not be raised until they are on the beach, otherwise they would become entangled with balloons being flown from the landing craft.

The remaining balloons of the platoon can be flown over each beach, spacing depending on the altitude at which they are operated. Initially, each squad would probably not fly more than one of its balloons ashore and it would be flown singly. As the defense of the beach builds up, additional balloons would be brought ashore and they could be flown in tandem if necessary. However, it would probably be better to keep the extra balloons in reserve, since casualties to balloons from friendly AA and enemy and friendly aviation are apt to be great. (One 40mm shell can do a VLA balloon, but fifty caliber .50 MG holes would cause enough leakage of gas to bring the balloon down in about an hour.)



With the AAA Troops On An Amphibious Landing

By Captain Jesse L. Lewis

The Group Headquarters and Headquarters Battery to which I am assigned was one of the first organizations of its kind to be activated. The greater part of the training time was spent in supervising the training of many separate battalions in both basic and advanced stages. The unit was ordered and sent overseas, where it was placed at the head of an AAATC—the first on foreign soil in this theater. At a time when most of the officers and the men had begun to think that the Group would never see action, orders came through for us to move to an invasion training center in preparation for taking part in an amphibious operation.

Upon looking at the plans for the operation, we found that the Group Headquarters was to land along with the AAA troops on D day in the assault waves. So far as we were able to determine, we were to be the first Group to take part in such an operation—at least in this theater. On this operation, an entire Group composed of Group Headquarters and Headquarters Battery, three Automatic Weapons battalions (towed 40mm Bofors), a Gun battalion, and a Balloon Barrage Detachment were assigned to one division, which was assigned a special mission.

Available shipping and cargo space necessitated plans for initial entry into action without any fire control equipment except forward area sights. It also appeared that during the movement from base to the landing beach gun crews would be separated from their weapons—guns being placed on one ship and the crews on another. Prime movers were not to be landed with the guns but at a later time.

As planning proceeded a beach was selected for a dress rehearsal of the landing and a practice landing made. At this dress rehearsal guns were left where they landed—some still in the water, and others just on the beach. The lack of prime movers robbed the guns of mobility and of ammunition, and the fact that gun crews were transported on separate vessels from the guns delayed manning the guns. Only a small percentage of the guns were landed for the dress rehearsal.

This practice landing taught the following valuable lessons:

- a. Units must be kept together. Crews must be moved in the same vessel with their guns.
- b. The unit must have its ammunition and its towing trucks immediately available upon landing in order to move promptly to a firing position and be capable of entry into action.
- c. It is of great assistance to have a tractor or bulldozer available on the beach to pull guns out of the soft sand.

As a result of the experience gained in the practice landing, ammunition, pioneer equipment, and sandbags were attached to the guns. It was not found possible to correct fully all the defects disclosed in this landing. In the

actual landing, crews were carried on vessels other than those in which the guns were shipped, and the crews were to be shuttled from their ships to the gun-carrying ships before landing. Arrangements were made for ammunition and to pull the guns into firing position. Prime movers had a lower priority in landing than had the guns. As to the tactical plan, the Group Headquarters and Headquarters Battery, two complete automatic weapons battalions, three gun batteries of the gun battalion, and the BB Detachment were to land on D day.

Two detachments of sixteen .50 caliber water-cooled machine guns, one from each of the two automatic weapons battalions, were to land with the Engineer shore regiment. One detachment was to land in the third, the other in the fourth wave and set up initial defense on the beach. The first of the 40's were to land in the fifth wave—well before daylight.

The shore area selected for the landing was divided into four parts and designated in order from left to right, Red, Green, Yellow and Blue beaches.

One AW battalion with two batteries attached was to land at and defend Red and Green beaches; the other AW battalion, with one battery attached was to land at and defend Yellow and Blue beaches. The first four batteries to land (two from each battalion) were to go into position in the sand dunes not far from the water's edge, each battery being assigned to defend one of the four beaches. The third battery of each battalion was to extend the defense to the flanks and the other batteries were to increase the depth of the defense. The battery attached to the battalion on the right was to penetrate farther than the others in order to defend a bridge.

The Gun Battalion, which was not expected to land until late in the afternoon, was to set up approximately in the center of the beachhead. The BB Detachment was to raise its balloons on the beaches as soon as possible after landing. It was expected that the enemy would approach along three main lines—one along the beach, one from the high ground to the right, and another from the high ground to the rear.

D-day arrived. We dropped anchor about ten miles offshore. It had been determined that the beach was of hard sand and had a good gradient, so we went over the side and into the landing boats with high hopes of getting into position easily.

Some of the troubles met at the dress rehearsal bobbed up again in the actual landing. Adding to our difficulties was the factor that is always absent from practice operations—enemy reaction. German 88's pounded the beaches and snipers and machine gunners were active. Fortunately, the sand dunes, as is usually the case on beach areas, gave good defilade and none of our guns were destroyed.

The enemy fire on Yellow and Blue beaches was especially heavy and effectually prevented landing of our matériel there. Consequently, a new landing beach was selected and labeled Red-Red beach. To this beach the guns were shunted with the result that sections from all three automatic weapons battalions were landing on the same beach.

The inclusion of the new beach necessitated a complete change in the plans for the disposition of the antiaircraft artillery. Changes in plans due to enemy reactions and other conditions are normally part of any landing operation and should be expected. That the officers and troops were able to work successfully under adverse conditions is shown by their placing twenty-five guns in position by 0900 D-day.

Air raids were very light that morning due to the excellent coverage furnished by the Air Force. By the time enemy raids started to come in we had an excellent defense set up. A few of the gun crews had opportunity to warm up their pieces on secondary missions. One crew stopped a tank at almost extreme range, but failed to destroy it. Other crews had good results knocking out machine guns and snipers hidden in buildings.

Enemy raids came in at the rate of about three or four a day for the first seven days after the landing. These raids, as a general rule, came in out of the sun and departed through a gap in the high ground to the rear and left of the beachhead. Our pursuit pilots became wise to the fact that almost all raiders made their exit through this gap. Taking position behind the high ground they would wait for the AAA to stop firing, and would then pounce on the raiders as they came through the gap. Many planes which escaped the AAA were knocked down by the Air Force—a good team play.

The raiding force, surprisingly enough, was usually three or four planes instead of the large numbers we expected. The planes were ME 109's and FW 190's, heavy bombers or Stukas were seen.

The AAA was on the job and each raid that came went back short. After the seventh day the raids stopped coming over and some three weeks after D-day we were still waiting for them.

As a whole, the operation was a success for the AAA, bringing home to the other arms which were involved the importance as a supporting arm. I, personally, have heard more than just a few high-ranking officers of other branches express their appreciation for the job the AAA was doing. To me, it was extremely gratifying to see the coöperation between the Air Force and the AAA. With the exception of one Spitfire which had come well below 3,000 feet we had very little trouble with firing on our own planes. In fact, on D plus 2, our planes were landing and taking off from a strip which had been prepared in the center of the beachhead. Pilots stated that they had no fear or apprehension on flying into the area or on landing. For two consecutive nights, friendly parachutists were landed in the area with no damage from AAA. Fire discipline in the AAA troops was excellent, and each officer and man who took part in the operation is to be congratulated.

The many difficulties encountered in this amphibious operation as a result of using towed weapons, have led the commanding officer and staff of the Group to believe that the self-propelled carriers are the matériel best suited for such work. Their advantages are many, the principal being: first, their greater adaptability to limited cargo space; second, their increased mobility; third, their readiness for action at all times; and fourth, their compactness and contained supplies.



The military value of an armored element is directly dependent upon its ability to utilize its inherent speed, mobility, protective covering and heavy firepower. Therefore, it is obvious that preventive maintenance in every unit must be brought to a high degree of excellence. . . . maintenance is a factor which all commanders must consider at all times. Where you find excessive breakage, you find faulty leadership. . . . the driver of each vehicle is the first echelon of maintenance. He must be fully trained and qualified to perform his maintenance duties promptly and intelligently. A failure on the field of battle usually results in needless risk of life and equipment.
—MAJ. GEN. A. C. GILLEM, JR., Commanding General of the Armored Command.

Antiaircraft Artillery in New Guinea

By Colonel J. B. Fraser, Coast Artillery Corps

The secret of the success of the Antiaircraft Artillery in New Guinea in breaking up the enemy's strafing attacks in so short a time is largely attributed to the fact that gun crews stuck by their guns regardless of personal danger and continued to pour a tracer stream into the Jap throughout his attack.

Soon after war was declared the Automatic Weapons Battalion which I commanded, along with several other AA organizations, was sent to the Southwest Pacific, arriving in Australia. Later the organization was ordered to New Guinea. We sailed from an Australian port and arrived at Port Moresby on May 3d, just four days prior to the Coral Sea battle.

When we arrived at Port Moresby the Japs were making daily strafing and bombing attacks against the installations here. Apparently they were determined to take Port Moresby which at that time was the last Australian outpost in that part of the Pacific. The Japs were on their way to Port Moresby when our Navy stopped them with that decisive victory in the Coral Sea. We considered it an honor to be the first American combat troops sent to the front in the Southwest Pacific and felt very keenly our responsibility. Realizing fully the task that lay ahead, young men became determined combat troops overnight, and put up a magnificent fight against each attacking plane that approached the area. The enemy's losses were so heavy that after the first three weeks his strafing attacks were discontinued entirely in the Port Moresby area, with the exception of one attack in July by three Zeros on a new airdrome that had just been completed. Out of the three Zeros, only one got back to tell the story. From then on the Jap resorted entirely to high-level bombing in the immediate Port Moresby area. The accurate shooting of our gunners had taken a heavy toll of the enemy and had fully justified my belief that gun crews who stick by their guns and pour a steady stream of lead suffer fewer casualties than those who cease firing and try to take cover. During this period we claimed only eighteen planes destroyed, but when our ground troops drove the Japs back across the mountains and at Buna they found numbers of enemy planes crashed on the mountains, which was definite proof that we destroyed many more than we had claimed.

During the first few weeks in New Guinea, our men learned to appreciate the true value of the .50 caliber machine gun and it proved to us beyond question that it is one of the most effective weapons we have against low-flying aircraft. The combination of the 40mm and the .50 caliber makes a splendid automatic weapons fire unit. We adopted the policy of opening fire soon after the enemy came within range. This very often prevented a "kill" but it definitely accomplished our mission. During the first few months we were on New Guinea, the Air Force relied heavily upon the AA for protection of their installations due to the fact that during that time the enemy had air superiority. Our all Air Force units put up heroic but losing fights against the enemy during those early days. The Antiaircraft Artillery

having been so successful in breaking up the strafing, was very highly regarded by the Air Force Commander, so much so that when he was asked by a visiting officer what he thought of the Antiaircraft, his reply was, "There is none better."

We learned valuable lessons during those early days in the preparation of gun positions. We soon learned that to get the best protection against anti-personnel bombs (daisy cutters) required digging down about half the depth required and building up the other half. Revetting should not be less than two and one-half feet high, preferably three feet, and not less than three to four feet wide. We also found that slit trenches should be dug in the vicinity of the gun pits. Four slit trenches dug from twelve to fifteen yards apart around a gun position afforded the maximum protection. With this dispersion, not more than one-fourth of the gun crew would be knocked out in case of a direct hit. We kept a sufficient number of men to fire the gun in the vicinity of the gun position at all times. They manned their guns continuously during a strafing or low-level attack, but since there is nothing automatic weapons can do against high-level bombing, the AW crews were ordered to take to the slit trenches if the high-level attack developed over their area, but immediately to man their guns after the attack had passed and be ready for any low-flying planes that might follow. Gun batteries manned their guns continuously throughout an attack.

The AW battalion that I carried to New Guinea had a most remarkable experience. It saw more action than any other battalion in the Southwest Pacific, experiencing in the first twelve months more than seventy raids and shooting down many more Jap planes. Twelve men had been awarded the Silver Star for gallantry in action and, although they had experienced many miraculous escapes, not one man had been killed by enemy action. God had truly been good to us.



Three-inch AA gun emplacement with nets rolled back for action.

Signal Corps photo.



40mm gun emplacement.

The .50 caliber airborne batteries played an important rôle in New Guinea. As our ground forces pushed across the mountains and up the north coast of New Guinea, these batteries were used mainly for the protection of temporary landing strips used by transport planes and also for the protection of forward fighter strips. A definite need for airborne units of all calibers in the Southwest Pacific theater was becoming more apparent the last few months I was in New Guinea. Last February we transported one complete 40mm battery (Australian) a distance of about three hundred miles across the Owen Stanley Mountains. It is believed that this was the first 40mm battery ever transported by air. The early part of April we flew another 40mm battery (American) across the mountains. A well-trained gun section can load a Bofors from "scratch" in less than thirty minutes.

Having been placed in command of all antiaircraft in

New Guinea, both American and Australian, soon after my arrival there in May 1942, I had the opportunity of seeing the AAA in that area develop from practically nothing to its very gratifying strength when I left there two months later. Additional AAA units had continued to arrive until my brigade had grown to be a rather sizable one. We had developed strong protection in the Port Moresby and Milne Bay areas and were developing the Buna area as well as having units at Wau and on up the north coast. We had developed a splendid air warning service and AAA. During this period we had shot down a good number of planes and had caused many raids to be unsuccessful. The manner in which Americans and Australians worked together under one command was very gratifying and the subject of much favorable comment by higher commanders. No officer ever had the privilege to command a finer group of officers and men than it was my privilege to command on New Guinea.



Jap 3-inch gun captured at Buna.



I call on each man and woman serving with the Army of the United States to unite in a campaign of Preventive Maintenance . . . to abolish the menace of mechanical failures . . . this is your responsibility. . . . —SECRETARY OF WAR STIMSON.

* * *

The difference in taking 5 or 10 extra minutes to make sure your vehicle will keep rolling, or letting it go for the maintenance section to repair for 5 or 10 hours may not only cost your life, but may mean the annihilation of a whole regiment or division. Any driver who wilfully or carelessly neglects his vehicle is as guilty of sabotage as though he had actually tried to destroy the vehicle.—LT. TRAVIS CRAMB, Motor Officer of the 30th Cavalry.

High Lights of Action, II*

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

EXPERIENCES IN BATTERY C WITH THE 1ST PLATOON

This platoon saw its initial action in the Tunisian campaign at the lower pass in the Kasserine Valley. We had moved into the valley, after a night march from Tebessa. There was a general feeling of excitement among the men due to their witnessing and hearing gun fire during the night as well as passing through a light barrage in getting into their positions. This excitement was reflected in their actions at the time of the first plane attack that day. There was a tendency to fire before the planes were within range and their fire was continued after the planes had passed out of range. The crews afterwards admitted that they had made a number of mistakes, but they were glad when their first attack was over and all felt sure they would do a better job the next time now that they had had their baptism of fire. This proved to be true for in a later attack that day their conduct was much improved. No damage was inflicted in either attack as the planes were driven away. Next we were attached to the — Armored Division CP. On several occasions early in the morning we moved up to the lower Kasserine Pass taking up positions there, covering units going through the pass. These moves were difficult in the blackout because of the condition of the road. All moves were made without accident and the objective was always reached on time.

We then moved to Maknassy where we were subjected to heavy enemy artillery barrages. On the whole, the men reacted exceedingly well.

While at Maknassy numerous enemy planes were seen. However, most were out of range. We did bring down three. The men by this time were cool, and the crews functioned excellently.

Shortly after coming north from Maknassy we moved to the support of the French Forces fighting along the coast. Only once were enemy planes sighted here, but they were out of range. The terrain over which we moved was very difficult, and again the drivers deserve much credit for the manner in which they handled the half-tracks under the trying conditions of narrow roads, blackout, dust, hairpin turns, heavy brush, and mountains. Summing it up, on the whole we had very little air activity. Our moves were made without accident even on the worst kind of roads. The men stood up very well under the shelling and were "in the ball" at the sound of a plane.

WITH THE 3D PLATOON

This platoon landed at Safi on Sunday, November 8, 1942. Our assignment was to defend the landing of the rest of the team from aerial attack. About 0630 a French Block 174-175 came in at about thirty yards above the harbor, strafing and bombing with the intention of trail bombing the harbor. The guns both opened fire on the target and although the men could see the bombs falling toward them, they stuck to their guns and brought down the plane. Four of the members of these crews received the "Silver Star" medals for valor for the quick action under fire which no doubt saved the port from great damage. On the night of November 10th, we drove blackout to Mazagan. No resistance was encountered here, so we passed through the town and camped about four miles northeast of the city. The following morning (Armistice Day) a French Lioré 451 flew down the center of our bivouac area at about 600 feet. We opened fire and brought it down. From Mazagan we moved with the combat team to an area east of Rabat and set up to defend the bivouac area. On November 27th we moved to defend a railroad bridge east of Meknes. We left Meknes on February 13th for Tebessa. On arrival we were assigned to Kasserine Valley. We even accompanied tank destroyers out to fight tanks. After this we moved to Maknassy protecting Field Artillery gun batteries in action. Here we were credited with two ME-109's and one FW-190. Very heavy counterbattery artillery was encountered while on this assignment. We next moved to El Guettar where we experienced heavy air attacks. From there we moved to Sbeitla and later became attached to Combat Command Headquarters on the march toward Kairouan. On April 13th we joined the — Field Artillery east of Sidi Bou Zid protecting their bivouac. Next we rejoined the — Field Artillery and moved to a position south of La Calle, and then we moved east of Beja protecting gun batteries in their incessant rôle of blasting out enemy positions hill by hill in the direction of the Mouse Trap beyond which there would be open country for tanks to operate in.

EXPERIENCES IN BATTERY D WITH THE 1ST PLATOON

We arrived off Mehdiya Plage on the night of November 7, 1942. En route to shore in a tank lighter we were attacked by a French plane; one half-track returned the fire, firing five rounds of 37mm and two hundred rounds of caliber .50 ammunition. The plane crashed into the water.

After several routine assignments we moved from Sbeitla to Ousseltia one night in early January. It was the most grueling, cold and nerve-wracking ride we have ever encountered, traveling over tortuous mountain passes where the half-tracks could just about make the grade, and hairpin turns that put our own famous "Hairpin Turn" on the Mohawk Trail to shame. At times the half-tracks had to back around in order to make the turns going around some of the corners. One happy-go-lucky Frenchman came up the wrong way, and in his old dilapidated truck, he charged around a corner taking a quarter of the body off his truck and tying up our convoy for several hours while we extracted the truck from our path. Everywhere night fires of the native troops flared forth the location of our allies. We, who had been carefully schooled in the utmost care of concealing all forms of light, gasped and silently cursed. Road guards struck matches with utter abandon, giving us our first example of what value a race who has suffered and knows the depth of despair sets on human safety.

The next morning unit leaders set out to reconnoiter the area we were soon to take. I was in a jeep with three other officers and we were trailing the Colonel of the regiment (to which we were attached) who was in his jeep. Far out in the middle of the valley we stopped at the Headquarters where the Colonel conferred with his commanding general. Soon we were on our way, and real speed was made. Our shovel dropped off our jeep, and we stopped. When we resumed our trip there was no one in front of us. We put on extra speed and charged straight down the road. After many miles we began to wonder if we were going right. There was no sign of anyone being around us and we halted. Glasses were brought out and the surroundings scrutinized. I picked up a movement on the forward hill, and the blue-gray uniform of the Italians was plainly visible. We did an about face and scurried back. After inquiring the correct way to go we arrived at our new bivouac area.

I made a selection of position for our AA guns, and got my first close view of the Ghoums who counted the kill by the left ears they strung around their necks. They appeared like children, but their prowess in night fighting was soon a well-known fact. We returned to our units and prepared to move. One thing that impressed me as a mighty fine way to handle a new situation was that the Colonel got us all together while we were out at our new position and had the Commander of the unit who was already in the area go over the situation and carefully explain all phases of the enemy positions. We were all quickly acquainted with the whole picture and we had our chance to ply him with any questions we desired. I have never seen this procedure followed as simply as it was there, and believe the value derived was very great even to troops who weren't on the front lines. We knew as much about what was going on as the commander, and this knowledge might sometimes save the loss of a great number of lives.

I strongly recommend that all unit leaders be acquainted daily or twice a day, as we were, with the latest developments or as the Colonel put it, "the big picture." Taking up our new positions we had several encounters with enemy planes. Six ME-109's, four JU-88's and numerous reconnaissance planes. Our fire was intense, and we kept them at their

distance, getting credit for shooting down several. Our first taste of enemy bombing was here, but they were wide of the target, and no one hurt. Soon our troops progressed well forward and we had to move along. This was a vital pass which, if the enemy could tie up the entrance on our side, would trap all our troops in the pass. We were asked to give it AA protection, also to cover the trains which were five miles in the rear of this spot. The first glimpse told me it was no spot in which we would have an advantage in a fight with planes. Nevertheless, I saw the importance of keeping the enemy from closing this entrance so picked my four positions to the best of our advantage. One gun was on a cliff on one side of the road and two were on a cliff on the other side. The fourth gun was in a field below the first gun. We were able to give the gun in the field little support if planes came low over the road. We occupied our positions and set up our camp.

Next morning six ME-109's roared into view and I made the fatal mistake of opening fire on them before they spotted us. Immediately they broke into pairs, and came at us from three directions. The leading two swooped on the lower gun strafing it, and we on the hills couldn't shoot at that low angle, so we had to wait until they came up. They came up and sprayed the gun I was with unmercifully. There being only a split second when we had them in our sights, we were at a distinct disadvantage. Then as there I realized that .50 caliber fire did not in any way frighten the Germans, they came right into it. Cannon fire of our 37mm made them change their course, but our lower gun was injured and all we had to fire was the .50. I was amazed and chagrined and thought we were up against suicide pilots, learning later that they had heavy armor protection on their planes. Our lower gun was completely out of action, and the one I was at was badly crippled, four men being injured.

Sure enough, they did, right after lunch. In the morning we were credited with bringing down two of the attackers by forward observers who witnessed the planes coming down up ahead. This time they came directly low over the road and dropped their bombs trying to destroy the road and close the passage into the pass. We opened fire when they came in range, and their bombs fell wide of their mark. They "unloaded" and scooted for home. All the crew were intensely nervous during the morning attack. One casualty and seven injured had shaken us, but there were three amongst us who were sufficiently maddened to hope for a chance to destroy a few Jerrys. No more came, however, and we retired that night to Sbeitla minus two guns and eight of our crew. By switching tires around we towed our trailers with us. Several days later we sent some men up and they got one track back, the other one wasn't able to be moved. This was later picked up and brought along. We all realized the fact that enemy planes would face our fire but not that they would be annoyed by it enough to make us their target. It was a sharp and critical lesson but one we had to learn sooner or later. One strong lesson we learned was the necessity for camouflage, a well dug-in position and holding one's fire. These in themselves were something the men might have scoffed at in the States and been reluctant to follow during the first days of action. Later they needed no urging.

When the Chips Are Down*

By Colonel Frederic A. Price, Coast Artillery Corps

The human reaction to excitement, to apprehension, to battle, to defeat, or to success is largely the same whether the party of the first part be officer or enlisted man. Because the officer is generally more schooled in self-restraint and his responsibilities of leadership act as a real brake upon the expression of inner turmoil, the enlisted man remains the more fertile field in which to study reactions to battle.

The psychology of the soldier should be studied by every officer. He, himself, as a soldier is subjected to the same hopes, the same fears, that govern the reactions of his men. So in studying the psychology of those men whom he leads it may well be that he will come to know himself better. The more familiar he becomes with his men's reaction to emergencies, the more effectively can he control them and incidentally control himself.

If you can interpret reaction you can read thought. If you can read thought you can often forestall trouble and guide consequent action through a mental "stitch in time."

* * *

What do your men think about most in Training Camp? Is it just a day-to-day matter with them? Repetition in training is the easiest for you—do you take the easiest way? Are you using your imagination to give an air of realism to training procedures? Will your men enter action in smooth transition from training? Many of your men come from positions where their value depended on the quality of their thinking. Many are now thinking ahead of you—are you meeting that challenge?

"We had long known that we were destined for overseas. Real action, however, seemed a long way off. Its reality was indistinct in the haze of distance.

"Training Camp AA firings had been impersonal matters. A sleeve target towed steadily far behind a plane was only a piece of cloth. The bursts we put up nearby were interesting, but not very exciting. The posting of platoon orders did give a certain lift to the morale factor of organizational esprit. Still the training period and actual warfare seemed to have little in common. Reality was lacking. Action seemed to have no meaning. The crack of your own gun became a friendly noise—a boy-and-big-fire-cracker effect that left one pleasantly exhilarated, tired and hungry.

"Was war to be like this? Were enemy cannon to sound different? Were enemy shells and bombs to mean anything more than those we experienced in our training courses?

"Not many of us, however, thought much of our possible reaction to actual battle. Most of us were mainly concerned with our physical comfort—our meals—dry clothes—our tanks, whether by night or by day—movies—dances—and love all, dates."

* * *

The efficient care of troops on shipboard is one of the hardest phases of command. The glare, the salt air, space confinement, all cater to laziness. Visits below decks have

* Written from interviews with several enlisted men.

many unpleasant features and the tendency is to just drift through the days from port to port.

Conditions on board ship soon bring to notice energetic and resourceful officers. Are you prominent as a result?

"We left the United States on the 15th of October. Destination unknown. Everyone was pretty much on edge. It was when we got to the top of the gang-plank and entered the side of our transport that the stark fact we were actually moving toward action seemed to hit the men. Up until now there had been the excitement of preparation—the trip by train—a short stay in the staging area—the companionship of buddies under familiar circumstances.

"Stepping from the bright sunlight into the half-dark of the ship's hold and the smell of cooking and of innumerable men in that confined space brought the only morbid thought of the voyage and of subsequent action. It took no clairvoyant to read the 'Abandon hope all ye who enter here' thought that flashed through the minds of many as they stepped inside the ship. Fortunately in our case a hard-bitten first sergeant jerked us back to sanity with one bellow, and we moved on to assigned quarters. Established routine acts as a sedative to fear.

"A few hours out of port something seemed to go haywire with part of the ship's machinery and we lay-to for awhile, until a report could be made to the Port of Embarkation we had just left. This was the best time to have our hard luck and get it over with.

"Waiting—the hardest job of all. The time when every effort should be made to keep men's minds and bodies engaged. At least the body, for when that is healthily stimulated, the mind has no inclination to wander off at an unhealthy tangent.

"Back to our port and the job of transferring to another ship.

"Our convoy had gone on. It had been comforting to see the ships of our original convoy stretched out ahead and behind us. One felt that as one of many our ship had acquired a certain degree of safety in its inconspicuousness.

"Now we were alone. Because no other ship was in sight we felt as receptive a target as a tender shin in a dark room. Men crowded the rail searching for something they didn't want to see.

"Rest periods are always necessary—but they should never be prolonged into inactivity.

"After a few days alone we picked up our convoy and tension relaxed. Then came the announcement that we had all been waiting for. North Africa! It was not the one most of us had bet on, but it had a romantic sound and any solid earth would be welcomed by both feet and stomach. Interest ran high. There was no fear apparent—we were still too far away from the dentist-chair of reality."

* * *

The first real test of your training and of your leadership comes when the nets go over the sides and your men follow on down. This is what you prepared for back in the States—

this is why you have kept your men in good physical condition during the voyage over. Did you think it would be like this? Did you put every bit of realism possible into preliminary training so that your men would move smoothly and efficiently now that they were being shot at instead of over?

"While lying off-shore awaiting our time to land, the crowded deck was a solid mass of spell-bound faces—up-turned one minute as Allied and Axis planes battled overhead, then turned shoreward as exploding shells from supporting Naval ships blasted shore installations.

"The first thrill of action—the first realization that the command 'target' meant something to kill or get killed by, came when a French bomber flew above our ship and our own gunners brought it down in flames. It exploded as it hit the water close enough to see broken parts hurtling through the air.

"Our battery commander was given his first proof of our training when we went over the rail and down the nets into the landing boats bobbing alongside. This was our farewell to the familiar, and goodbye to the feeling of mass security. From now on we were to be on our own. That climb down the nets was long enough for what seemed like a million thoughts to run like a movie film through the mind. It must have been the same brain reaction that a drowning man is said to experience—at least neither knew whether or not there was any return.

"It was good to put foot to earth once more. There was now no time to think—no time to realize whether or not we were afraid. Besides we were each one of a crew trained to do the individual jobs that made the unit function as such. Accustomed work brought momentary reassurance only. Somebody yelled 'aircraft' and immediately all hell broke loose. Five bombs struck a large building across the street. Walls crashed, stores just landed flew over our heads, and those of us who had not already hugged the earth voluntarily, were batted down by the blast.

"Tracer streams sprang from every direction converging on the fleeing bomber. A sudden blast of fire enveloped it and down it crashed. This was our baptism of fire. It had come too suddenly to give fear any time to take hold of us. We had wobbly knees and our stomachs felt as if we hadn't eaten for a week but a yelling lieutenant made us forget those things in his haste to get our guns moving. By the time we were a few miles away breath returned and the braggart reaction to fear arrived. The one who had hugged the ground the closest talked the loudest—though it seemed just then as if each was trying to out-talk all the rest."

* * *

Can you and your men take it? Do you know them well enough to be sure they can? Have you let your men know you so that they have developed real confidence in you? When the first 88 shell lands within sand-spattering distance or the first Stuka comes hell-bent-for-election down a straight line to one of your guns you will know the answer to a lot of questions. Some questions you've already thought about—many now have the answer before the question.

"A night convoy! We had had several in the states—men relaxed and half asleep depending on drivers to keep safely on the road. Nothing ahead to worry about except a sleepy

day of maneuver action, simulating the real conditions. This was different. We had had but little action and that was mostly from enemy night bombers. These hadn't seen or had a chance to fire at. We were still untrained in any give-and-take air-ground match. No one dozed tonight except as he became numb from the biting cold of a mid-winter night. A drizzle of rain added to the general discomfort and the truck began a series of nerve-wracking slips.

"Tomorrow morning we were due to hit a valley which led directly to German positions. Here we were to be attached to a field artillery outfit to provide them with protection against diving and low-level bombers. This would be the real thing. Could we take and give it back in bigger doses? Would we become jittery? How about our officers? They had trained us and we had trained them—a difference that we were to realize the next day. Just now we could think about nothing else but our own misery. We were cold, wet and apprehensive. One of the low-ebb periods just before dawn when inner resistance usually sinks the lowest.

"One last slither broadside to the road and the truck stopped—we were there. By daylight we were emplaced about the field artillery position where we were welcomed with little more than bored toleration—that was to change completely within the hour.

"Dawn came and so did the enemy. Word from a spotter was that eight Stukas were headed directly toward us. The low drone of motors coming up the valley soon developed into a perfect formation of eight Stukas coming in for a kill on the field artillery. 'Steady, hold fire until within range.' The admonition and command came just in time to break the horrible fascination of watching the first plane peel off and dive right at our gun. The gun on the right got in the first shot and then we clicked. The sky seemed to be filled with tracers as the planes came within range of the rest of our guns.

"Our own target swerved in the middle of his dive, banked and his bombs dropped harmlessly a few hundred yards away. Then the Spitfires came over and the Stukas tried to flee. It was too late for them—we got three and the Spitfires five.

"Our first action was over and we felt like veterans. We were scared stiff when that first Stuka peeled off and dove at us. That was the instant when our lieutenant's voice steadied us into accustomed firing routine.

"Steadied all but one. One man acquired as a late placement had not gone through the battle courses in training camp. He had had no chance to get accustomed to the sing of live ammunition nor to the blasts of ground mines exploding unexpectedly within dirt-throwing distance. The Stuka diving on us and the blasts of falling bombs were too much. His northern exposure headed south.

"Training cannot be made too realistic. Men must acquire beforehand familiarity with the sounds, the smells and some of the excitement of battle. The time to find out how men's nerves react to these things is back in training area."

* * *

In all the varied phases of combat what is most apt to "get the goat" of your men? When do they need your presence?

since most. When do officers and men really know the man the other is?

"We had been told about night bombing and its effect on the nerves. When we were first subjected to the experience we had it in a week-long dose that left its imprint on us for weeks afterward.

"We had moved into position to cover a bivouac area of Corps trains. Fortunately we had arrived in the early morning and so had time to emplace the guns and dig slit trenches for ourselves before dark.

"The Germans had evidently spotted this area and marked it for a series of night bombing attacks.

"Dirt had not yet settled from the first bomb about midnight before every foxhole had its occupant. We had arrived that morning after an all night convoy and it had taken all day to dig our guns and ourselves in. We were tired. There was no further sleep that night. For seven straight nights the Nazis flew over intermittently dropping a few bombs each night and no one had a full night's sleep all that time. It is not only the lack of sleep that puts the terrific strain on men's nerves from night bombing; it is also the anticipation of being bombed from something that cannot be seen that keeps nerves on edge, makes men irritable. The imagination becomes too active at night. This was when we appreciated having officers whose foxholes were no better than our own—who slept in the dirt with us and who had no more comforts than they provided for us.

"One plane at night does more damage to the nerves than ten in the daytime. When you can see and fight back at something that can be seen and recognized the excitement of battle keeps men tense and on their toes, but allows no time for nervous thought.

"Night usually brings a different story. The first bomb crashes one awake and the physical body just hugs the bottom of the foxhole while the mind wonders when the next one will come—where it will strike. All the nerve-racking effect of anticipation of the next burst—the unseen planes—the inability to fight back—just lying there and making it—makes night bombing the worst phase of all battle action. The one most apt to get your goat. We soon found that atheism is allergic to foxholes."

* * *

Is your first thought for the safety and comfort of your men? Do they think you are the best unit commander there is?

"North Africa showed us what men could take and still continue as an efficient gun crew. The major hardships of long night convoys with sleep impossible, being shelled by unseen enemy batteries that kept us jammed into foxholes hours at a time, night bombing from targets out of range—these were the worst of our real hardships. These were the factors that wore men down physically and drew

nerves taut until we jumped and snapped from sheer nervous exhaustion. These were troubles, however, that a few days of rest would cure, and which would provide material for endless kidding and joking for months afterwards.

"These were the things that cemented officers and enlisted men together into a mold of efficient unity. It takes real trouble to learn what sort of men your companions really are. These were the times when we realized how very fortunate we were in the officers we had. When we had to share and share alike, we soon learned what sort of fortitude each of us possessed.

"It is not the major hardships that cause the most discontent. When enlisted men believe that their officers are not doing all they can for the comfort and convenience of their men, then grumbling starts to gather speed.

"Letters from home are the greatest of all boosters to morale. Even the misery of a sleepless night in foxholes after a wet, cold day had to give way to the joy of receiving a letter from the States. There are always a good many men who are not around headquarters when mail is distributed. Many are on outpost or on other distant missions. If there is any way in which mail for such men can be delivered every effort should be made to do so. Men resent learning later that letters for them have been lying around the battery office or other headquarters waiting for the men to come and get them.

"The reverse of this is just as true. Mail collections should never lie around a headquarters longer than absolutely necessary.

"When morale did slip a bit it was usually due either to the lack of mail or to the 'C' ration blues. The 'C' ration is fine to sustain life but even life itself becomes monotonous without some variety to spice it. Half of the six cans a day are quite acceptable with their content of crackers, sugar, soluble coffee and candy. One wishes, however, that the exigencies of continuous action did not appear to necessitate this ration three times a day for many days at a time. The 'C' ration blues soon sounds more like a dirge than a torch singer's effort.

"We have been bombed, strafed, and shelled and are probably just as scared now of enemy planes as we were during the first raid. We have, however, gained a lot in experience which has given us confidence in our officers and in our weapons. North Africa has turned us into seasoned soldiers, into men who now react instinctively and rather impersonally to the demands of every emergency.

"There are days when our morale is on top of the world. There are others when we feel miserable and swear our last friend back home has forgotten us completely, but when we are doing what we were trained to do and can see results, then morale really does hit the top of the scale."



→ Six-inch seacoast gun.

↓ "Crash" firing against a terrestrial target, AA gun still in traveling position.



Canada

Canadian Army Photo

A blizzard means nothing to these AA gunners. They are smiling and alert at their 3.7 position.



← Sighting arrangements of the 6" gun.

Canadian Artillery

Canadian men and equipment both show the ruggedness and efficiency Americans have learned to expect from our neighbors across the border.

Right: Serving the 3.7 AA gun in normal firing position.

Bottom, right: A close-up view of the 3.7.

Bottom, left: Breech crew at an Atlantic Coast seacoast position.



Guns Against Aircraft

By Major General Joseph A. Green

Shortly after the termination of the North African campaign, when conditions permitted the publication of military data, the American public began to learn, on the radio and in the press, of the effectiveness of American antiaircraft artillery in that theater. Such information, showing a total of over 500 Axis planes destroyed by British and American antiaircraft, evidenced the effectiveness of this component of our armed forces. While less glamorous and less publicized than some other components of the fighting team, the fact remains that antiaircraft artillery is today playing an extremely important part in every theater in which American troops are engaged.

The airplane on the ground is one of the most vulnerable targets to air attack. If surprised before a sufficient number of fighters can be sent aloft, an airfield provides a target composed of helpless planes, easily damaged or destroyed, with the gas tanks in every grounded plane an inflammable target for incendiary bullets. This fact was forcefully brought home to a horrified American public when it first learned of our terrific losses at Hickam Field in Hawaii and at Clark and Nichols Fields in the Philippines. Ground defense of airdromes must be provided in sufficient quantity unless we are willing to risk disaster. In addition, other ground installations in the theater of operations, and also elements of the field forces—armies, corps, and divisions—all require adequate antiaircraft protection or support. The problems posed by time and space are of such magnitude that friendly air support, unless greatly superior to the enemy, cannot possibly do the job alone. Because of the recognition of the need for positive protection from the ground against enemy air attack, our antiaircraft strength has been increased tremendously during the past eighteen months. This expansion is still continuing.

Antiaircraft artillerymen and antiaircraft artillery units are trained within the Antiaircraft Command of the Army Ground Forces. The Antiaircraft Command, with its headquarters at Richmond, Va., was activated upon the reorganization of the Army early in 1942. It comprises a sizable portion of Lieut. Gen. Lesley J. McNair's Army Ground Forces. Since the activation of the Antiaircraft Command, several hundred thousand antiaircraft troops have passed through its training centers or are now in process of being trained therein. This latter group includes more antiaircraftsmen than there were troops in our entire Army a few years ago.

Most of the facilities for training antiaircraft personnel and units have been developed during the current emergency. Those facilities include eleven training centers located throughout the United States, two service schools, and two service boards. In addition to this, joint training facilities are operated with other arms and services. Of the eleven training centers, three are devoted to the training of loss replacements intended for shipment overseas—that is

to say, individual soldiers trained to fill different positions set up in the tables of organization of antiaircraft units. One training center—Camp Tyson, Tenn.—are located barrage-balloon activities, including the training of units at the Barrage Balloon School, and the Barrage Balloon Board. At another training center—Camp Davis, N. C.—are located the Antiaircraft Artillery School and the Antiaircraft Artillery Board, in addition to one of the unit training centers. The six remaining centers are devoted to the training of complete antiaircraft artillery units and hence are referred to as unit training centers.

In deciding upon the location of training centers, it is necessary to give first consideration to the possibilities of development of ranges that would permit the firing of guns of all calibers. At some centers—for instance, Camp Tyson on Cape Cod, Camp Davis near Wilmington, N. C., Camp Hulen near Corpus Christi, Tex., and Camp Calverton north of San Diego, Calif.—firing is conducted over water but in other locations it is carried on over land. Firing lines a mile or more in length accommodate many batteries simultaneously engaged in target practice. At each training center, hundreds of troops are to be seen on the firing line every day with other thousands receiving instruction elsewhere in the camp or nearby maneuver areas.

One of the many problems which have been met and solved since the United States entered the war has been the provision of a flexible antiaircraft organization suitable to modern warfare. The need for such an organization has long been realized but has become more apparent with the reports of the varied demands made on antiaircraft as the war continues. After considerable study, the battalion has evolved as the basic antiaircraft unit; it is administrative as well as tactical and can function as a separate unit when necessary. The four basic types of antiaircraft battalions designated according to weapons with which armed, are gun battalions, automatic-weapons battalions, searchlight battalions, and barrage-balloon battalions. A further variation in designation is provided with respect to the transportation with which the battalions are equipped; that is, mobile, semimobile, self-propelled, and air-borne.

While the separate battalion constitutes the basic antiaircraft unit, the control of antiaircraft artillery during combat usually requires higher antiaircraft artillery echelon command. To fill this need, group and brigade headquarters and headquarters batteries have been provided. These organizations being purely tactical in their function. These units—battalions, groups, and brigades—are capable of being associated together in various combinations to provide the proper balance of weapons needed for the job at hand, according to the dictates of the immediate tactical situation. Thus, in one case, a single automatic-weapon battalion may be assigned to a task alone, whereas in another situation a combination of heavy guns, automatic weapons, searchlights, and barrage balloons may be associated with

fighter aviation and an aircraft warning net in order to provide a complete defense against enemy air attack. In another case, antiaircraft units, particularly those armed with automatic weapons, may be operating in close support of our mobile ground forces in providing them with added protection from enemy attack from the air as well as from the ground.

Every antiaircraft weapon is so designed that it is capable of firing upon ground as well as air targets. This is necessary because much of the antiaircraft matériel assigned to a field army is now placed well forward with the fighting forces in the divisional and corps areas. Frequently it is to be found in close juxtaposition to divisional artillery. In the North African campaign, tanks as well as troops quite often were targets. Training for fire upon ground targets receives major consideration in the training centers of this command and pays big dividends. As an example, an airborne battery serving in the Southwest Pacific was flown to an airfield that had just been established in the New Guinea area. The enemy attacked the field with three rifle companies and, driving back our small force of defending infantry was about to capture the field when he ran into the machine-gun fire of the antiaircraft battery. This proved to be the turning point in the fight, and the Japs were forced to retreat.

To be able to place shell bursts about enemy bombers that are miles away, to fire upon their close-in planes that are traveling at speeds of from 300 to 400 miles an hour, or to bring planes into a searchlight beam requires not only intricate mechanical and electrical equipment but also troops that are competent to maintain this equipment and to use it intelligently. Antiaircraft troops must be highly trained. In the training centers and schools of this command, antiaircraft troops learn how to use effectively the weapons with which their battalions are equipped. This training follows a prescribed pattern covering several months. The early part of it is devoted to developing the trainee into a soldier, teaching him what he needs to know for individual proficiency, and conditioning him physically for combat duty. This in turn is followed by the training of the small combat team such as the gun crew, then the battery, with the final phases being devoted to the training of the battalion as a whole. Great emphasis is laid upon realism, and to the maximum possible extent training activities are conducted under field conditions.

Upon the completion of the prescribed training in the training centers, the unit normally moves to a maneuver area for further training with ground troops or to other areas for combined training with appropriate elements of the Army Air Forces. Many of the battalions, groups, and squadrons have received this postgraduate instruction in the Tennessee and Louisiana maneuver areas where divisions and corps are trained for battle under the watchful eyes of their commanding generals; others are to be found in selected areas on the east and west coasts of the United States where they are receiving combined training with the other commands of the First and Fourth Air Forces. The record account that antiaircraft units have given of themselves in the many theaters attest to the efficacy of this training cycle.

Supplementing the extensive training program referred

to above is the Antiaircraft Artillery School, which is the point of origin of antiaircraft artillery doctrine, of enlisted technical specialists, and of officer personnel for the expanding antiaircraft component. The school conducts courses in which large numbers of technicians, such as automotive experts, electricians, fire-control specialists, and radio operators and repairmen are trained. It also instructs and trains specially selected enlisted men who, upon being graduated, are commissioned as second lieutenants and assigned to service with antiaircraft units. Thus far, more than 18,000 such officers have been commissioned. A third group includes some 1,500 student officers who have been returned to the school for specialized training or for advanced military instruction that prepares them to assume duties of greater responsibility.

The quality of the school training of both officers and enlisted men has been tested in combat, and large numbers of them have satisfactorily performed their missions under fire. Included in the instructor personnel at the school are battle-experienced officers. These officers bring to the school not only an accurate evaluation of the training required but also serve to give the students first-hand experiences which contribute greatly to the quality of the finished product. The Barrage Balloon School at Camp Tyson, Tenn., serves in a similar capacity in barrage-balloon matters.

At the time the Nazi hordes ruthlessly attacked helpless Poland, our few antiaircraft regiments, both in the United States and its overseas possessions, were equipped with 3-inch antiaircraft guns and with caliber .30 and .50 machine guns on pedestal mounts that limited the guns to an elevation of only sixty-seven degrees. The necessities of war have brought forth startling changes. Today we have a highly perfected and battle-proved 90mm. gun; the dependable 40mm. gun with a cyclic rate of fire of 120 rounds a minute; the caliber .50 machine gun, with both single and multiple mounts that permit firing up to 90 degrees elevation; and an improved fire control.

For defense against low-flying hostile planes a large number of battalions have been equipped with quick-firing 40mm. and caliber .50 machine guns. This type of battalion has been especially effective in the defense of our own front-line troops. It is of record that the Germans in the latter days of the North African campaign, in their desperate efforts to stop the allied advance, threw practically their entire air power against the front-line divisions. A staff officer who took part in the campaign reported to me that, over a period of weeks, 900 enemy planes attempted to attack from low altitudes, the forward elements of the corps with which he was serving; that a very large number of them were shot down; and that the antiaircraft units carried out their mission so effectively that no great damage was suffered by the troops they were defending.

A few years ago, serious consideration was given to scrapping the caliber .50 machine gun. What a mistake that would have been, for this sturdy weapon has proved its worth on every battlefield and has exacted a heavy toll of targets engaged. Even the heavy gun and searchlight battalions are provided with some of these weapons for close-in defense. The self-propelled and the mobile and semimobile automatic-weapons battalions have them in large numbers.

Searchlight battalions are equipped with lights of 800-

000,000 candle power, the effectiveness of their beams being such that under normal atmospheric conditions they can readily illuminate targets at a distance of from eight to ten miles. Moreover, the mechanisms for controlling the movement of the beam have been so improved that it is difficult for an enemy bomber, once it has been illuminated, to escape from the light. He is blinded and is an easy prey for our own fighters or for antiaircraft guns on the ground.

In addition to their mission of illuminating targets for gunfire, searchlight units are now extensively trained in joint operations with the Air Forces to illuminate targets for night fighters, to operate as orbit points for fighter activities, to indicate rendezvous points for bombers, and to guide returning friendly aircraft which have lost their way. As a testimonial of the effectiveness of the searchlight battalion, a corps commander serving in the Pacific recently reported that he had been privileged several times to see our searchlights locate Nipponese bombers which were shot down in flames by our night fighters—"to the acclaim of thousands and thousands of spectators in the darkened coconut groves." The fighter-searchlight team has proved to be a most effective answer to night attack by enemy aviation.

Every reader of this article knows that the advent of the airplane with its power to wreck cities, sink ships, and strafe troops on the ground has revolutionized methods of warfare. It has been axiomatic through hundreds of years that as soon as a new weapon of war is developed other weapons are designed to counter its effectiveness. This is the reason that

ever since the first World War all the larger nations have bent every effort toward the design and manufacture of very best antiaircraft guns and related equipment that is possible to produce.

The problem of three-dimensional fire control, necessitating the continuous and instantaneous flow of accurate future position data from computer to guns, naturally gave rise to the development of highly technical equipment. The responsibilities for the development of this intricate equipment devolved upon the personnel of the Ordnance Department. Maj. Gen. Levin H. Campbell, Jr., Chief Ordnance, working in close cooperation with groups of American scientists and inventors such as those controlled through Dr. Vannevar Bush's Office of Scientific Research and Development, has produced antiaircraft guns and fire control that, to express it moderately, are at least the equal of those of any other nation.

Antiaircraft is now an established weapon on both offense and defense. It has definitely won its place. The Antiaircraft Command of the Army Ground Forces, with its realization of the importance of its mission, will continue to supply personnel with the high order of training required; to keep abreast of changing conditions and doctrine under which antiaircraft artillery troops are employed; and by constant evaluation of combat experience and intelligence, will continue to cooperate with the Ordnance Department in keeping our matériel developments well in advance of anything our enemies may produce.



From the Libyan theater, from North Africa and Russia, we have learned that maintenance . . . is not only important, but essential to success. In this war of movement and guns not only does victory depend upon the design, manufacture and fighting of armored vehicles, but upon the knowledge, determination and courage of men to keep them in fighting condition—despite weariness and the dangers of the battlefield.—LT. GEN. JACOB L. DEVERS, Commanding General of the Armored Force.

* * *

Maintenance begins with the first echelon. If there is good driving and good first and second echelon maintenance, there need be little third echelon maintenance.—LT. GEN. L. J. McNAIR.

* * *

Maintenance is a command responsibility. Commanding officers should take necessary steps to establish adequate and systematic maintenance procedures for . . . equipment under their command.—EDITORIAL IN *Maintenance Engineer*.

* * *

Machines, like men, must get care and protection. Without it they cannot long be expected to perform their assigned tasks. It is the duty and responsibility of every officer and troop unit . . . to perform, or have performed, adequate preventive maintenance. . . . —MAJ. GEN. E. REYBOLD, Chief of Engineers.



THE BUMP CHARTS

By Lieutenant John D. Neill, Coast Artillery Corps

For some time there has been a growing need in the Coast Artillery Corps for a practical training aid for teaching the recognition of naval vessels. With the cooperation of the Navy Department, Captain Howard R. Dressner and Lieutenant Albert L. Clark, while at the Coast Artillery School, devised such a training aid, called *The Bump Charts*. These charts have been prepared with a view to helping solve the observer's problem of recognizing vessels at a considerable distance. In seeking to help solve this problem of naval vessel recognition by Bump Charts, two important facts have influenced the nature of the figures:

1. Small details of a ship's silhouette are lost at a distance.
2. Prominent recognition features remain.

With this in mind, simplified silhouettes have been drawn in which all thin or small parts of the superstructure are eliminated and the most prominent features accentuated. The result is a step-like outline of the ship, the "bump." This device encourages and permits total form recognition, a simpler and more rapid means of recognition than the "taking-a-ship-apart" method. These simplified silhouettes appear in War Department FM 30-50—Navy Department NAVAER 00-80V-57, Recognition Pictorial Manual of Naval Vessels, 15 September 1943.

It is believed that after close study of these charts and

other training aids, the observer will become so familiar with the total form of a ship that his recognition will become instantaneous.

The Bump Charts consist of 11 pages, 18" x 25". Each silhouette is drawn to scale and painted in gray with a lighter gray background to represent the sky and a darker gray to represent the water. Owing to the difficulty of recognizing a ship in a bow-on position, the silhouettes, except those on the Basic Chart, present broadside views only.

The Basic Chart appears on the first page of the series. This chart contains a simplified silhouette of each type of warship. It reveals that although each type has innumerable individual differences, vessels of a certain type conform to one general outline. This general outline is shown on the Basic Chart in both a broadside and a bow-on view. Underneath each general outline appears a series of questions pertaining to the outline. If the observer is able to answer all these questions by looking at that particular type of ship, he may be sure that his recognition is correct. At the bottom of the page is a list of simple naval vessel nomenclature. This nomenclature is not necessary in using the Bump Charts but is included to aid the observer in transmitting what he sees to other personnel.

On the succeeding ten pages of the charts are 126 silhouettes of the five main types of warships: battleships, aircraft carriers, heavy cruisers, light cruisers, and destroyers. On one page, for example, are silhouettes of the battleships of the United States and Great Britain. On the following page, the battleships of the Italian, German, and Japanese navies are shown. Only those ships found in the Navy's operational list are represented, and the majority of these do not represent individual ships but classes of ships. The classes shown were selected either because of the number

of ships in the class or the fighting effectiveness of ships.

The Bump Charts with a Coast Artillery Training Bulletin will be distributed by the Coast Artillery School. Coast artillery organizations not receiving copies or needing additional copies may obtain them by request to the Coast Artillery School, Fort Monroe, Virginia.

In order that the charts may be kept up to date, the Coast Artillery School intends to issue at intervals an information bulletin containing changes that have been made



Bump silhouette of a U. S. Battleship.



Basic outline of cruisers.



Kongo, Japan.



Yamashiro, Japan.

the ships as well as a list of newly commissioned ships of the Allied and Axis navies. Accompanying this bulletin will be mucilage-backed plates of the outlines of new ships which may be inserted in blank spaces provided for them on the charts.

The Bump Charts are a training aid. They were constructed as such, and it is intended that they be used as such. An observer is trained in the total recognition of, first, the types and, second, the classes of the various ships, it is believed he will be able to recognize more accurately and more rapidly the ship he sees through his observation instrument. Memorizing, and consequently recognizing, 126 total forms is a difficult but not impossible task. It is suggested that the observer, after he has thoroughly acquainted himself with the Basic Chart, learn to distinguish the chief characteristics of design of one navy from another. For instance, practically every ship in the Japanese navy has a pagoda-like influence in its lines and a top-heavy appearance in its superstructure that is foreign to Occidental navies.

The observer will find that among all navies, even the

United States and British, there will be some characteristics peculiar to each navy whereby it may be recognized. After mastering these distinctions, the observer should study the differences between classes of ships of one navy. When an observer first sights a ship through his observation instrument, he should be able to discern three things at once:

1. Whether the ship is friendly or hostile.
2. The type of ship.
3. The class of ship.

The Coast Artillery Corps, the Army Air Forces, and the Navy, finding the Bump Charts a valuable visual aid, are adopting them for use in the teaching of naval vessel recognition. Although these forces have individual differences in their respective recognition problems, the Bump Charts will be of great assistance to all three in answering the vital questions:

Whose ship?

What type?

Which class?



A new British railway gun.

British Official Photo.



USS *Washington*, battleship.

Official U. S. Navy Photo

Maneuverability of Naval Vessels

By Captain Robert S. Rowe, Coast Artillery Corps

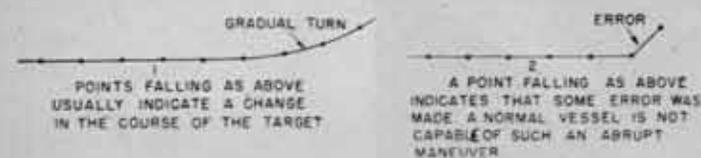
The scope of this article is to present facts about the maneuverability and capabilities of naval vessels so that Seacoast Artillery personnel may better understand the problem of fire control. The data contained herein pertains to the following types of naval vessels:

- | | |
|-----------------------|------|
| (1) Battleships | (BB) |
| (2) Light Cruisers | (CL) |
| (3) Aircraft Carriers | (CV) |
| (4) Destroyers | (DD) |
| (5) Submarines | (SS) |

It is recognized that variations will exist between vessels of the same type; nevertheless, an indication of the order of magnitude of the various maneuvering characteristics is presented.

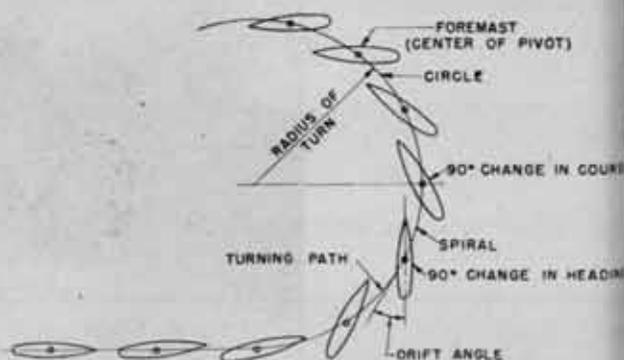
For various reasons, target practice conditions vary greatly from combat conditions. Targets likely to confront us in battle are of high speed (exceeding 25 knots) and capable of sudden maneuvers. There are, however, certain facts pertaining to the maneuverability of naval vessels which will aid the plotter in prediction on this type of course. In addition, observers can be of considerable aid by transmitting directly to the plotter any change in bearing of the target. It must be remembered that in making a study of this kind, broad generalizations must be made. The validity of these generalizations can by no means be assured.

Naval vessels do not respond instantaneously to a change in rudder. Because of this a vessel cannot change course by executing a "right face" or a "left face"; rather, the maneuver must begin by a gradual turn. The average rate of turn is about one degree a second.



When the rudder is put over, the ship begins to slip in a spiral path which becomes approximately circular when

the ship has changed course by 90 degrees. The "course" refers to the instantaneous direction of motion of the foremast, that is, to the direction of the tangent to the turning path at the foremast. The foremast is assumed to be the center of pivot when turning. The bearing or heading is the direction of the ship's centerline. It is therefore apparent that a change in bearing is not the same as a change in course. The difference between the bearing and the course is a varying amount known as the drift angle. The average drift angle for a battleship is ten degrees; the average drift angle for a destroyer is five degrees.



The after half of a ship responds most slowly to a change in course. Therefore, a certain amount of time is required for her stern to clear entirely the original course.

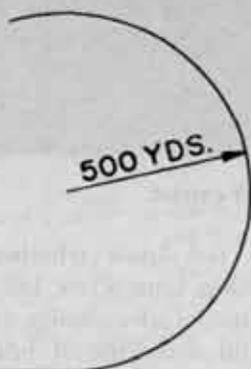


The radius at which a target may turn depends primarily on the rudder angle. The speed of approach of the attacking type ship has little effect on the radius of turn. The average radius of turn for battleships, cruisers, aircraft carriers and destroyers is about 500 yards.

A maneuver greatly reduces the speed of a target. In fact, any increase in the amount of rudder will cause a vessel to lose speed.



German submarine under aerial attack. Note sharp turns in the wake, indicating maneuverability of this type of vessel.



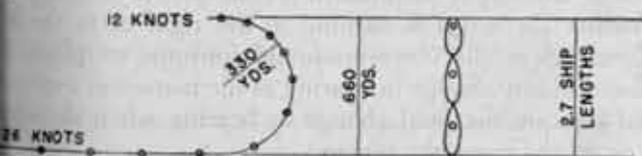
NOTE: A battleship may turn on a curve the diameter of which is only 2.7 ship lengths; but the resulting loss in speed is tremendous. In the above case the speed was reduced to less than half its former value.

On a continuous turn speed is lost only up to a certain change in course, after which there is no further reduction in speed. For the change in course at which the speed becomes constant for the different types of naval vessels, see the following tabulations:

Type of Vessel	Battleship	Aircraft Carrier	Cruiser	Destroyer
Speed constant after turning	360°	180°	90°	90°

AVERAGE NORMAL TURN

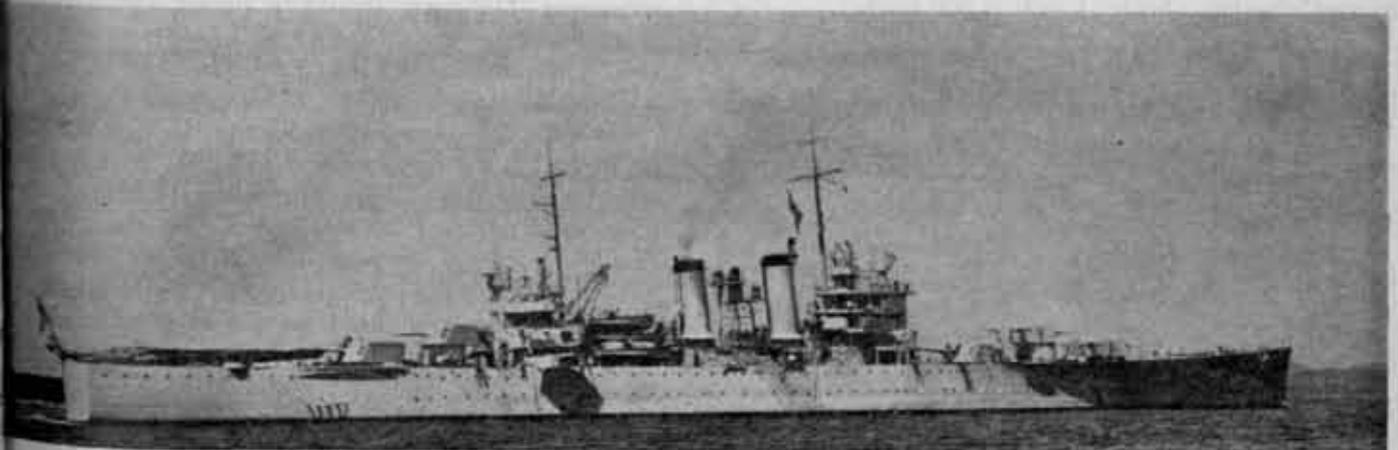
For example: A battleship may approach a curve at twenty-four knots, but after turning 180 degrees (rudder angle 35 degrees) the speed will be reduced to twelve knots.



Dotted points of a battleship (20 seconds interval) to show reduction in speed of maneuvering target. Scale: 1 inch = 800 yards.

It is of interest to note:

- (1) Naval vessels are able to fire while maneuvering. The accuracy while maneuvering is slightly impaired but not to any great extent.
- (2) When fired upon, naval vessels invariably can be expected to maneuver. An evasive action commonly used is maneuvering into the splash to offset the effect of adjustment.
- (3) After a maneuver has been completed, the vessel will continue on a straight course until another maneuver



USS Boise, light cruiser.



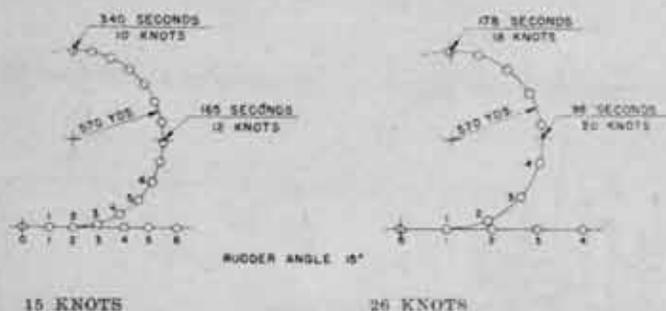
USS Saratoga, aircraft carrier.

is ordered; that is, a vessel normally will not maneuver on a sinuous course except while on convoy duty.

(4) The evasive action of a submarine is to "crash dive." The average time to crash dive is only thirty-five seconds.

Normal Turns: The following diagram illustrates the ability of a battleship to maneuver. The normal turns are plotted to scale for a particular approach speed and rudder angle. A change in rudder is not immediately apparent to an observer. It should be noted that naval vessels are able to change course by any amount, but only the time and speed for a change in course of 90° and 180° are shown on the diagram. All maneuvers start at "0" on the order to the helmsman to lay over the rudder. On the diagram, circles represent the probable position of the foremast while the vessel is maneuvering. The values indicated on the diagram are average values only and variations will exist between vessels of the same class.

Circles represent the position of the battleship at twenty-second intervals. (Scale: 1 inch = 800 yards.)



A maneuver may be apparent to one of the observers in the position finding system before the trend of plotted points indicates the turn to the plotter. When a point falls off the course established by previous plotted points the plotter

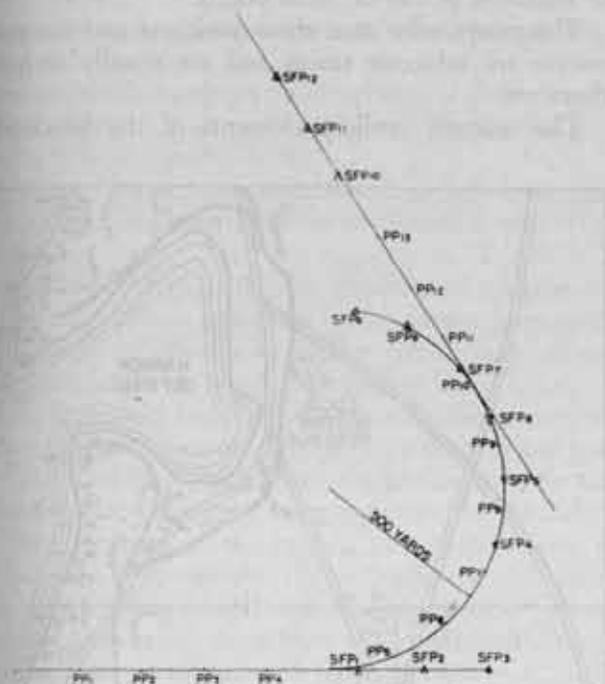
does not know whether the target is maneuvering whether some error has been made. In determining amount of any change in bearing of a ship, the observer should make use of bridges, breaks in the deck, or other athwartship lines which will indicate the angle change in direction of travel. The opening or closing of distance between masts, stacks, or turrets will also indicate changes in course. It is imperative that the observer inform the plotter immediately of any change in bearing of vessel. Initially it is sufficient for the plotter to know whether the target is turning to the right or to the left. Nevertheless, the observer should continue to inform the plotter of any change in bearing as the maneuver continues and indicate the final change in bearing when the vessel is again on a straight course.

When advice is received from an observer that the vessel is maneuvering, the plotter should draw a smooth curve through the plotted points in the direction of maneuver. The curve should be drawn with a radius about 500 yards and of sufficient length to permit prediction. The normal method of prediction may be used, but a correction must be applied to compensate for the loss of speed while the target is maneuvering. This correction may be applied to the set-forward distance "Y" by using a constant factor of about 80 per cent; that is, by multiplying the set-forward distance "Y" as received from the set-forward rule operator by .8. In order to locate the set-forward distance to be used, pivot the prediction scale with the origin at the last plotted point until the corrected set-forward distance intersect the curve. Continue to predict in the same manner until the maneuver is completed. When the change in course is indicated, draw a line tangent to the curve in the direction of the new course. Predict in the normal manner on the new course.

Although a 500-yard radius of turning is more likely to occur than any other, the plotter must be prepared for more or less drastic maneuvers. Solution of the problem lies in intelligent application of knowledge of the previously described characteristics and limitations of maneuverability. The following plot illustrates an example of prediction on a maneuvering course. This figure assumes a 155mm battery firing at a destroyer at a range of about 10,000 yards. The speed of the target is 25 knots and the battery is using an observing interval of 15 seconds and a firing interval of 15 seconds.



USS Hilary P. Jones, destroyer.



At pp4 word is received from the observer that the vessel is turning to the left. Immediately the plotter draws a

smooth curve through the plotted points with a radius of about 500 yards. The plotter places a prediction scale with the origin at pp4 and measures back two plotted points to obtain the distance "X" travelled during the measuring interval "M." In this case $X = 42$. This value is sent to the set-forward rule operator and a set-forward distance of 70 is obtained. This value is multiplied by the set-forward factor of .8 to correct for the loss of speed while maneuvering. The corrected set-forward distance of 56 is obtained ($.8 \times 70 = 56$). The plotter then pivots the prediction scale about pp4 until 56 intersects the curve. This locates sfp4. In a similar manner sfp5 to sfp9 are determined.

At pp10 the observer informs the plotter that the maneuver has been completed and the final change in course is 130 degrees. The plotter then draws a line tangent to the curve at an angle of 130 degrees, with the original course. The normal method of prediction is resumed on the new courses.

The above curves may need slight modification as the maneuver progresses as indicated by the fall of plotted points.



Anyone who doesn't believe in stressing motor maintenance or in providing liberally for it in armored and motorized units should take a trip to the desert and become converted. It is littered with millions and millions of dollars worth of tanks and motor vehicles, many of which could have been saved by high class preventive maintenance.
—MAJ. GEN. CHARLES L. SCOTT, Commanding General, Armored Forces Replacement Training Center, Fort Knox.

Mobile Seacoast Artillery in Beach Defense

By Lieutenant Colonel Donald G. Kimball, Coast Artillery Corps

The tactical doctrine and primary considerations governing the defense of a coastline by ground forces are contained in current War Department publications. This discussion, predicated upon these principles, considers the rôle assigned to the mobile seacoast artillery in this defense.

In coast defense, close and efficient coöperation between ground forces, and air and naval forces, is a requisite. Air and naval forces are depended upon to furnish early and expeditious warning of the presence of enemy forces, particularly to seacoast artillery units. The initial phases of resistance to sea and airborne invasion are carried out by naval and air forces at ranges beyond those at which ground forces are effective. Their mission is to prevent the enemy from gaining control of the sea and air, as no major invasion or minor raid may expect to achieve even partial success without first obtaining temporary air superiority and local control of the sea. When these latter conditions are realized by the enemy, for however short a period, the burden of defense rests upon the ground forces, which now must be prepared to perform their missions unassisted. At Salerno, the Germans demonstrated the capabilities of a strong beach defense organization unsupported by air and naval forces.

In modern warfare a major invasion requires the use of sea, air, and land forces, including tanks, artillery, and parachute and airborne troops. A determined raid, whether made for the purposes of obtaining information, destroying installations, or for its nuisance value alone, may also involve the use of all types of forces, though on a smaller scale. In all cases, the mission of the ground forces is to defeat the attacker at or near the beach.

The attacker takes advantage of his ability to choose the time and place of attack and other conditions favorable to him in order to effect surprise. Through these electives and by superiority in number, fire power, and support, he expects to succeed in his mission. In order to minimize the effect of these factors, the defender exploits the advantages of the position and terrain he holds by making maximum use of organization of the ground. This preparation is basically designed to halt and hold the attack at or near the beach and then drive the attacker back into the sea by an onrush of reserves.

The organization for beach defense to fulfill these requirements generally consists of:

A thinly held outpost line at the beach, comprising observation posts; rifle, automatic weapon, and antitank gun emplacements; and mine fields and obstacles.

A main line of resistance and reserve lines generally parallel to the shore line, organized in depth and composed of mutually supporting strong points sited for all around defense.

A proportionately large and highly mobile reserve in readiness at one or more points.

The troops who man these positions and comprise the reserve are subsector troops and are usually divisional character.

The seacoast artillery elements of the beach defense

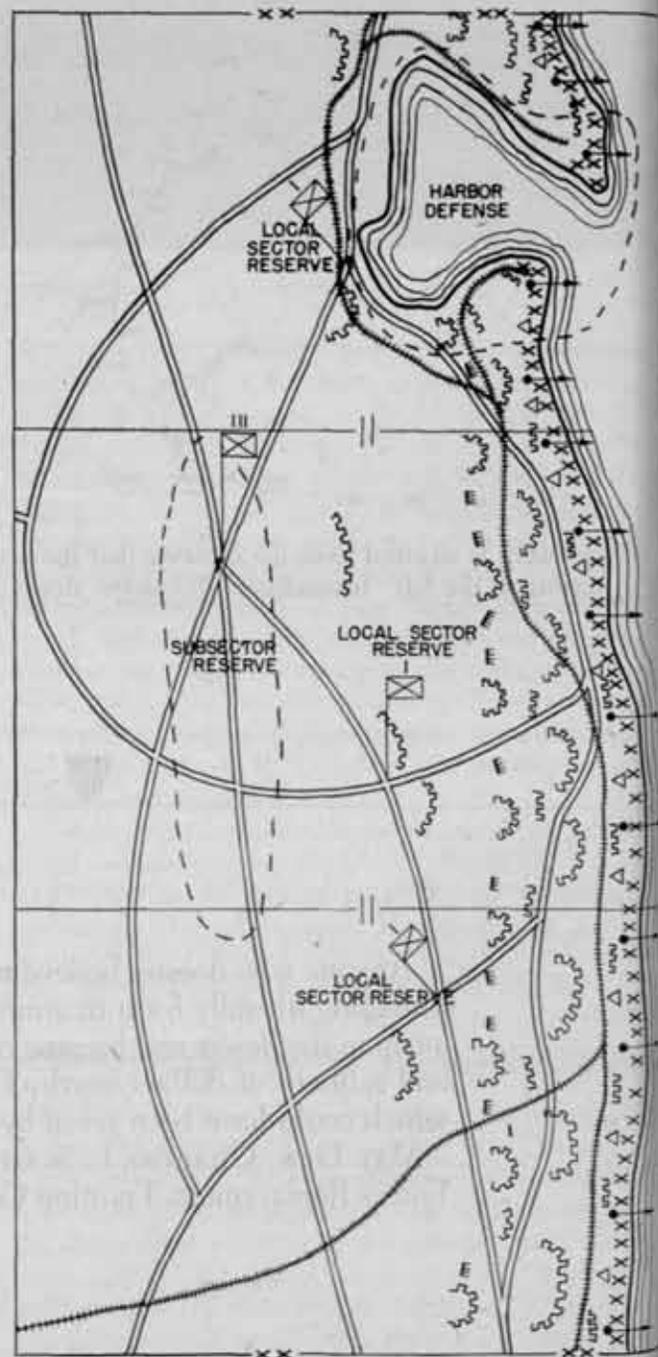


Figure 1—Organization for beach defense.

forces are introduced into the beach defense organization in accordance with the commander's decision. This decision, made as a result of a careful estimate of the situation to insure fulfillment of the seacoast artillery mission, must be made far enough in advance to permit units to engage the enemy as soon as he appears. Although mobile seacoast artillery may be employed to reinforce fixed harbor defenses and establish temporary harbor defenses, this discussion will deal principally with its rôle in the defense of portions of the coastline outside of harbor defenses. The missions of mobile seacoast artillery in beach defense outside of harbor defenses include:

Destruction or neutralization of vessels supporting a landing.

Destruction of transports or prevention of their close approach to shore.

Destruction of landing craft.

Enfilading beaches upon which landings have been made.

Destruction and neutralization of elements which have landed.

In the final analysis, the basic objective of seacoast artillery in beach defense is to prevent the enemy from setting foot on shore. All effort is directed to this accomplishment; the determination of target priorities is based upon this premise. In certain stages of contact with the enemy, seacoast artillery acts alone or in conjunction with air and naval forces since other ground forces are unable to close with the enemy. The measure of success attained by the defending forces at this time determines, to a great extent, the final outcome of the action. For example, the coordinated action of defending forces in sinking the loaded Japanese transports attempting to reinforce Guadalcanal brought about an earlier termination of Japanese resistance on that island.

Although the general mission of all ground forces in coast defense is directed toward the same end, the special missions for which the seacoast artillery is trained, and equipped to perform, cannot be accomplished by any other element of the ground forces.

To insure the performance of these missions, the seacoast artillery weapons must be in position and ready to open fire when suitable targets come within range. This requires that appropriate types of mobile seacoast artillery be disposed to cover water areas off all favorable landing beaches and areas from which shore defenses may be bombarded. Although no possible landing place should be neglected, heavier concentrations should be placed at more important localities.

All commanders in the tactical chain of command are concerned with the disposition of the mobile seacoast artillery and with the amount and type to be used in a particular situation. Coast defense forces are organized into sectors, subsectors, and local (or unit) sectors. Subsectors may contain one or more permanent or temporary harbor defenses established for the strong defense of important objectives. These harbor defenses support the beach and land defenses to the extent permitted by the characteristics of their armament. Each subsector commander is responsible for the employment of all forces within the subsector. The mobile seacoast artillery therein is organized into groups and battalions, the tactical chain of command being subsector, group, battalion, and battery. The exact organization de-

pends upon the amount and disposition of the seacoast artillery.

The principal types of mobile seacoast artillery employed in beach defense are 155mm guns and railway guns. Because of the special requirements of beach defense the tactical organization of the armament is based upon the primary consideration of location of armament, rather than on caliber or target assignment, as is usual in harbor defenses. No separate artillery chain of command is established for the purpose of coordinating the seacoast artillery and other types of artillery. Any necessary coordination of disposition and employment is accomplished through the normal subsector chain of command, and by mutual agreement among the artillery unit commanders.

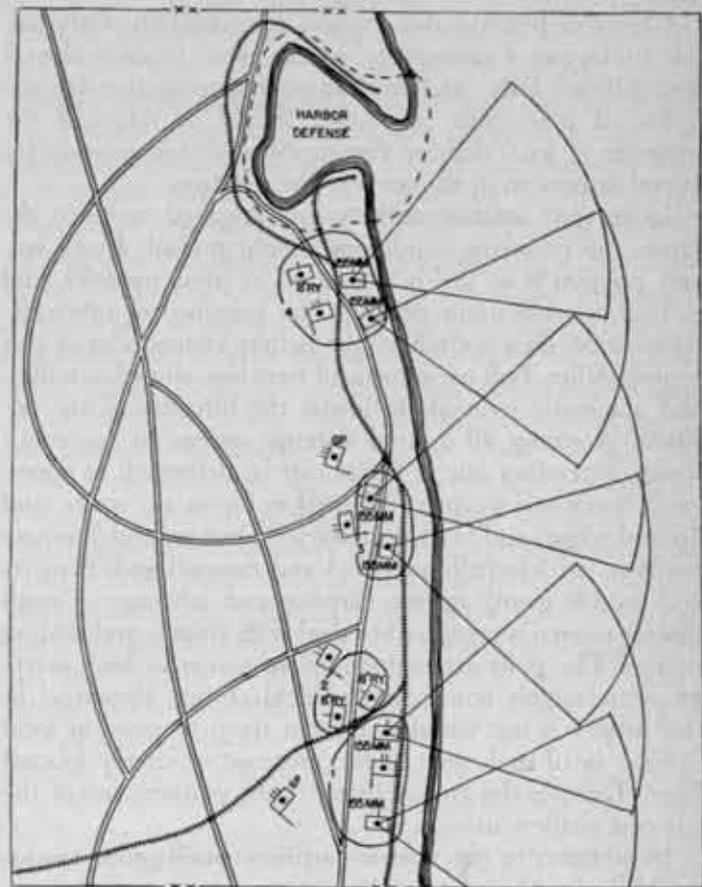


Figure 2—Tactical organization and disposition of seacoast artillery weapons.

Positions for seacoast artillery are selected through personal reconnaissance by all commanders concerned. Sector (or subsector) commanders determine general locations for the employment of each type of armament as required by the situation and dictated by the availability of armament. Group and battalion commanders seek locations for each subordinate unit, within these areas, from which suitable coverage of water areas and beaches in accordance with assigned missions may be given. Battery commanders then determine exact positions for each weapon and installation. Direct fire positions not less than about 500 yards from the shoreline are desirable for 155mm guns. Direct fire positions, essential for case II firing, permit guns to be maintained in action in spite of disruption of communications or failure of distant observation posts. Weapons are removed

far enough from the shoreline to insure against being brought into the pattern of naval gunfire adjusted on the water's edge. Positions chosen for searchlights are to provide maximum range over navigable water and for illumination of beaches.

In order that the seacoast artillery weapons may be most effectively disposed and the best use made of their range and hitting power, coordination of their fields of fire with field artillery weapons should be established. Normally this coordination is best effected by the seacoast artillery assuming responsibility for fire in the area extending from the maximum range of its weapons to about 4,000 yards offshore. Thus the two kinds of weapons, while mutually supporting, are assigned missions best suited to their capabilities.

Choice of position also requires consideration of the important factors of camouflage, concealment, location of road and railroad lines, and capability of organization for defense. If practicable, advantage should be taken of the presence of local defense forces. Sites should provide for lateral dispersion of elements of the batteries.

In an alert seacoast artillery unit engaged in beach defense, the following conditions should prevail. Every battery position is as highly organized as time, matériel, and tactical considerations permit. The presence of other defense forces does not relieve the battery commander of this responsibility. Full use is made of trenches, obstacles, mines, and automatic weapons to insure the integrity of the position. A strong all around defense system in successive bands, extending out as far as can be defended, is organized. Automatic weapons are sited to fire at air, water, and ground targets and to cover obstacles. Dummy and alternate positions are carefully prepared and camouflaged. Sentries and patrols guard against surprise and sabotage; a small mobile reserve is organized to deal with snipers and raiding parties. The guns are maintained in action as long as appropriate targets remain in the field of fire. Personnel of the battery is not withdrawn from them to assist in local defense until such time as the presence of enemy ground forces becomes the greater threat to the performance of the seacoast artillery mission.

In addition to the seacoast artillery intelligence service established within these units, provision is made for receiving and disseminating intelligence to and from adjacent units and higher and lower units. Liaison is established with

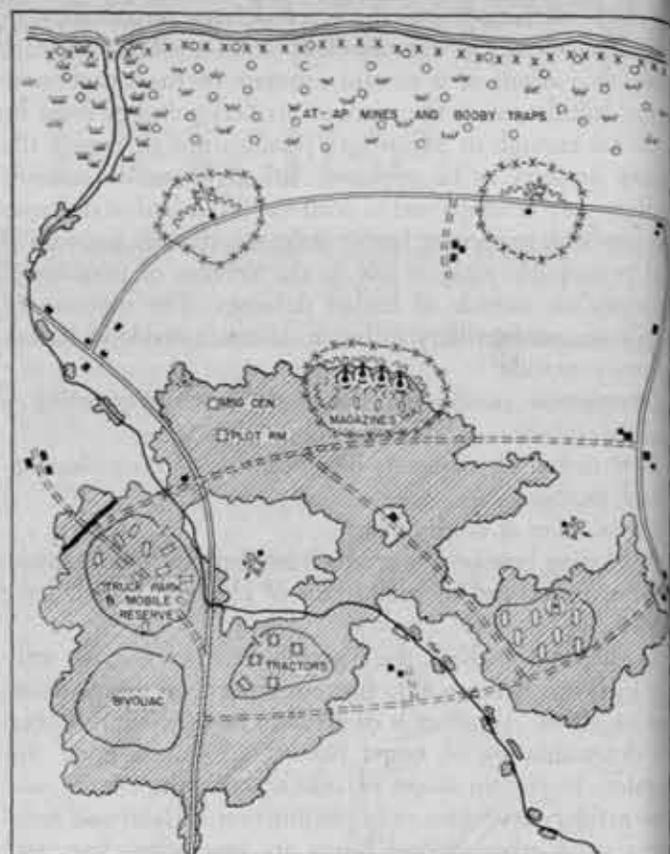


Figure 3—Organization of a Battery Position.

all cooperating units. This varies in extent from the informal liaison established by a battery commander with the adjacent infantry company commander to the comprehensive liaison which the subsector commander establishes with the naval district commander. All units engaged in coast defense are part of a team whose victories are dependent upon each member of the team playing his part and helping the others to play theirs.

Seacoast artillerymen realize that in a major action the weapons must remain in action to fire that final round at destroyer, transport, or landing craft which may turn the tide of battle. The entire organization for local defense is designed to permit that shot to be fired. Although at times tactical withdrawal of several hundred or a thousand yards may permit a battery to fight for another day, the only alternatives are victory or the destruction of their matériel.



From Africa, from Asia, from Europe, and from the islands in the Pacific, come the eagerly scanned reports of our fighting men. Our new Army has met the enemy; it has been tested in the fire of battle and, man for man, proved itself superior to the enemy. We have these youths in far-flung corners of the world upheld the Army's tradition of Honor, Duty, Country.—LIEUTENANT GENERAL HUGH A. DRUM.

WHAT'S THE SCORE?

With the recent publication and distribution of TM 4-235, *Seacoast Artillery Target Practice*, which contains instructions governing the conduct of target practices, other than small arms, for seacoast artillery units, there will be noted a decided change from previous regulations. Coast Artillerymen are confronted with a new set of rules.

No longer will Coast Artillerymen be harassed by the bugaboo of "shooting for score" as under the present regulations there is no need to shoot for the score. The score and scoring formulas are abolished with the idea that the rating of a seacoast artillery unit purely on a target practice score is impracticable and seriously detrimental to the best interests of training. Regardless of this, however, the regulations emphasize sufficiently the duty of responsible officers throughout command echelons to plan properly and to make certain through inspections and tests that the training of seacoast units is maintained at a high level. A detailed study will indicate that the manual emphasizes the following basic principles:

That the primary mission of seacoast artillery firing batteries is the destruction of the enemy by accurate fire.

That the measure of the effectiveness of a battery to carry out its battle mission is its ability to fire its assigned armament under any and all conditions.

That such reports as are required are for the benefit of the battery itself and for higher commanders in determining the battery's continuous readiness for battle.

That the Harbor Defense, Regimental, and Battalion Commanders must take a greater interest and responsibility in the training and preparation of batteries for firing.

That Harbor Defense, Regimental, and Battalion Commanders in addition to their interest in having batteries shoot also have some system of accurately determining what was done and of checking the battery's technical performance to determine what additional training or remedial action are required. A target practice is treated as a training operation intended to contribute to combat effectiveness—directly by giving practice to personnel, and indirectly by disclosing deficiencies in training and matériel. After a target practice, each responsible officer in the chain of command is required to determine whether or not the practice was conducted in a satisfactory manner and, if not, what deficiencies in training or matériel require correction. The manual stresses the fact that it is imperative for him to take prompt action to correct any deficiencies disclosed by the practice.

That proper planning for training and target practice so that the regulations can be followed is a prime importance. This responsibility is delegated to the harbor defense commander in paragraph 3b.

The manual points out (paragraph 3c) the importance of an analysis. Only by careful and detailed analysis of firings can the maximum value be received from target practice firings. However, the manual recognizes that under certain circumstances, time or other factors of necessity will not permit such analysis. Some leeway is given to local commanders. Inasmuch as training is a function of command,

the commander concerned in the field must have authority to make such modifications in standard procedures as he deems necessary in the pursuance of his training or battle mission. This extremely important point is covered in paragraph 3d which gives appropriate commanders authority to make such modifications as are necessary, except those pertaining to safety.

The types of service practices, regular, special, and battle, and the general discussion of these are presented in paragraph 4. It should be noted here that planning by harbor defense, regimental, and battalion commanders, the preparatory training of batteries, and service conditions are given great stress. Paragraph 4e, *Organizations To Fire*, in connection with paragraphs 10, 11 and 27d, are particularly important. Ammunition allowances are sufficient for four target practices a year. At least one practice must be fired each quarter with a period of at least two months between consecutive regular or special practices when conducted by an individual organization. Functional firings, calibration firings, and battle practices may be conducted without regard to dates of other firings except that they will not be conducted on the same day as regular or special practices. Some latitude is thereby given to appropriate commanders in conducting practices and utilizing ammunition to the best advantage in training.

Particular stress has been placed upon the regular practice which is conducted for the purpose of advancing training and providing a means of judging the state of training of a single battery as an artillery team. It is the test of the technical proficiency of the battery and all conditions are so set that complete records can be kept and a complete analysis and report can be made. Special and battle practices permit firings under conditions not possible for regular practices.

A new requirement is in the matter of critiques of service practice (par. 17). Each battery commander is required to conduct a critique of each practice within five days after the practice. It is pointed out that this critique is for the benefit of the battery personnel and that more benefit can be derived from it if held *immediately* following the firing.

Another change and probably the most drastic is in the matter of reports (par. 18) which are prescribed in chapters 3, 4, 5 and 6 for each kind of target practice. *Powder and Matériel Report* (Form 25), TM 4-235 (1943 regulations) has been eliminated. This year a special report is required for any unusual malfunctioning or failure of an important nature in matériel or ammunition occurs, (see par. 18b). Quarterly reports from Harbor Defense Commanders will show the number of rounds fired from each seacoast cannon. Powder pressure reports (Form 25) are required only when pyro-powder propelling charges are used.

In connection with target practice reports it will be interesting to note that there has been established at the Coast Artillery School a target practice section consisting of three officers and one master gunner, whose duties are to review target practice reports (past and current), study existing target practice files, study and recommend suggested revisions to TM 4-235 with the purpose of improving its ef-

fectiveness, to visit harbor defenses during target practices so that reports may be reviewed intelligently and justly, to advise the commandant and recommend necessary changes to instruction given in the various courses of the school and finally to report to the Commanding General, Army Ground Forces as to the status of matériel and efficiency or standard of training of seacoast artillery.

As to arrangement and content it will be noted that an improvement throughout the manual has been made. Chapter 2 has been expanded to cover drill and drill analysis. The purpose, principles of conduct, and records are discussed in great detail. In addition to listing the records required, comments as to their suitability for use with various fire control systems are given. The procedure to be followed in an analysis of drill is given in complete detail. This should prove to be extremely valuable to all battery officers and noncommissioned officers.

Chapters 3, 4, 5 and 6 give the detailed instructions for seaward firing, antimotor torpedo boat weapons firing, landward firing target practices, and submarine mines respectively. The instructions pertaining to seaward firings are especially worthy of detailed and serious study. The most important changes appear in Section III, *Analysis of Firing Practice* and Section IV, *Reports*. The score and scoring formulas have been abolished and target practice reports have been simplified. The emphasis is now placed on shooting under training conditions which approach as nearly as possible those which are likely to be encountered in combat. With this change in target practice regulations it may be said that seacoast artillery has reached the adolescent stage. It may now go out on its own.

For those who have read this far and who might be interested in the history of the score, reference is made to an excellent article *Scores of Yesterday* by Captain (now Brigadier General) Homer Case, CAC, which article appeared in the *COAST ARTILLERY JOURNAL* for May 1928. The last paragraph of this article is worth repeating:

"So the scores have grown more and more complex in the attempt to evaluate all the variables in a seacoast target practice. Yet the whole problem is not hard to state: If a battery commander, firing all guns of a well-calibrated battery at the maximum effective rate, reduces the dispersion to a minimum; if he places and keeps the center of impact of the shots as near the target as possible by the use of rules of adjustment mathematically sound; and if all personnel errors are eliminated, then he can do no more. The number of hits and the location of the apparent center of impact at the end of a practice of a few shots are then a matter of pure chance. The Coast Artillery has looked long for an equation that will satisfy these conditions."

And now we come to some of the reasons the writer has accumulated from many sources as to why the score was eliminated.

The score was derived from scoring formulas, which were theoretically devised to provide a method of comparing the efficiencies of all batteries. The test of almost fifty years has proved it impossible to have formulas which bring the performance of all batteries to a common standard. Variations between temperature and visibility conditions, siting of batteries, conditions of camouflage, available fire

control methods, and model and caliber of guns cannot be reduced to a common standard by mathematical formulas.

The experiences of this war and the many conditions under which seacoast artillery units have operated prove that training conditions should approach as nearly as possible those which are likely to be encountered in combat. Anything which makes training artificial is detrimental. Since the efficiency rating of a battery has heretofore been largely based on the numerical score, the natural (although inexcusable) result has been for officers connected with the practice to try to "beat the score." This, as is known to all coast artillerymen, introduced artificial elements (i.e., waiting for good weather conditions; prearranged, known courses that the target will pursue; and many other so-called favorable conditions) which reduce the benefits of training that should have obtained.

So it can be recorded that the score and scoring formulas were abolished because they did not provide an accurate criterion of the relative efficiencies of batteries and because they were detrimental to training for combat.

Paragraph 48 lists the reports which are required to be prepared and submitted upon completion of each regular practice. It will be noted that the reports are greatly simplified over what has been required in previous years. The graphical plot, Form 29, is radically different from the previously prescribed graphical analysis which was designed to present in chronological order the more important aspects of the practice as a whole. The present graphical plot presents graphically the fall of shots with respect to the target, the developed armament probable error in range and direction, the range and lateral deviations of each shot, and on the reverse side the comparison of spotting results. The *Battery Commander's Report*, Form 30, gives in a simple and good arrangement all data of interest about the practice and the results obtained. The *Battalion Commander's Report*, Form 31, presents in tabular form information by which the battery can be rated and furnishes the commander an opportunity to note deficiencies and state corrective action taken. For batteries manning guns larger than seven inches in caliber a target practice replot is required (see par. 42). Thus it is evident that the reports are quite simple yet sufficient to give full information on the technical proficiency of the battery.

Other items of importance which will be mentioned only in passing are the instructions which are included for firing by antimotor torpedo boat weapons, landward firing, and submarine mines. The section on 90mm weapons is interesting in that very few restrictions are laid down. Every practice will be considered a special practice so that the greater possible freedom of operation is granted to harbor defense commanders. The baby must learn to walk and it is only by giving a great amount of freedom that this can be accomplished. It is expected that the initiative and ingenuity of coast artillerymen everywhere will turn out many interesting target practices, the records and results of which will be of extreme value. To a certain extent the same situation is true for submarine mine practices.

This article must of necessity end with a word of caution—don't let the standard of training become lowered because there's no score to shoot for.

HITS

By Colonel O. D. McNeely, Coast Artillery Corps

Getting hits with the 40mm gun and M-5 director is concerning more antiaircraft artillerymen at the present time than any other problem. At most training centers there is a wide variation between the number of hits that should be obtained and those actually obtained. Another sour note is lack of consistency in hitting. Reports are circulated that some units obtain almost the theoretical possibles on certain courses or "shoots" while on other courses the targets escape unscathed. Most of this is due to local conditions such as: rushing into practices with both men and equipment unprepared, lack of consistent artillery training programs and tests and lack of definite objectives for each phase of this training. This latter is believed to be the most prevalent reason for the lack of consistency and hitting. It is believed that if the real requirement for a hit with this equipment is understood, and the artillery training planned in steps to obtain hits, a great improvement would soon be shown. No one will question that to get hits is our principal objective. Let us analyze a hit. It is a shot fired at the target with two conditions satisfied: it must be a line shot and must be fired with the correct range setting. This seems simple enough but the record of results seems to indicate otherwise. Of the two elements named, the first is considerably the more important. Without line shots correct range settings are most difficult to obtain and, in fact, are useless when obtained. Procuring of "line shots" can be further analyzed as shots fired with the equipment in perfect adjustment and the tracking perfect. It is in these two elements of training that most crews fail.

THE TRIAL SHOT

Theoretically each shot fired should cross very close to the crosshair intersection of the director telescopes at whatever range is set into the director. Under normal conditions they will, if the director and gun are in perfect adjustment and the orientation is correct. These conditions are difficult to obtain. Fortunately there is an easy method of checking this condition: the trial shot. In the initial stages of training the firing of trial shots and analyzing the results is of utmost importance. Until crews can care for their equipment and orient it correctly, there is little value to be gained by firing at moving targets. Only discouragement and loss of confidence in the equipment will result.

It has been found advisable to have trial shots checked by other than members of the gun crew. Both battery and battalion officers or responsible N.C.O.s should check each shot and help the crew analyze why it did not cross the crosshair intersection. Scopes, of course, must be collimated. The results of the shot as seen through each scope should be recorded by each observer on previously prepared sketches. The sketches should be carefully studied and corrections made in orientation unless it appears desirable to verify the results with further trial shots. It will be found that careful attention to the details of adjustment, leveling and orientation will result in "line shots." Then and only then should the fire unit be allowed to proceed with firing on a towed target.

TRACKING

The next phase to be tested is tracking. Perfect tracking is easy if the aided tracking devices are in perfect adjustment and the trackers are continuously checked. The method normally used is for the instructor to take one of the scopes to check the accuracy of the other tracker. This has several disadvantages. One is that the instructor must be an excellent tracker himself. Furthermore, only one tracker can be tested at a time. As steadiness is most important for perfect tracking, this can be partially determined by watching the tracker's movement of the handwheel. But by far the most desirable method is to mount another scope on either one of the present scopes or on the open sight shaft. Both trackers can be checked for steadiness and accuracy at the same time. A scope of sufficient power to check unsteadiness and inaccuracies in tracking is almost a necessity for training in this phase. Figure 1 shows such a scope and the method of mounting on the open sight shaft. A pair of issue field glasses as shown in Figure 2 will also make an excellent check scope.

A training device for the selection of men who have the natural aptitude for use of aided tracking, and for the more advanced training of trackers, has been suggested and possibly is now under manufacture. It consists of the aided tracking devices hooked up to dummy scopes and targets. A device records the steadiness and accuracy of the trackers on "canned courses" set into the trainer by cams cut for angular rates of target on different types of courses. Such a device would not only prove of inestimable value for the selection of trackers, but would also allow the evaluation and analysis of the errors of the trackers.

Further checking of the trackers can be accomplished during preliminary firing by recording the highs and lows on crossing courses and the rights and lefts on coming courses. This will also give somewhat of a check on their ability to "track off" intelligently. This subject of "tracking



Figure 1. The checking scope.



Figure 2. Field glasses used as a checking scope.

off" is one that must be approached with caution. No attempt should be made to "track off" until it is positive that the tracking is practically perfect. Even then it is questionable if tracking off is of any great value on crossing courses at high speed targets due to the errors of the director and their rapidly changing values. It is suggested by some of the experts that tracking some certain portion of the plane will give more the correct "track off" than depending on the deviation of single shots. All in all such discussions are too academic to enter seriously in the training of thousands of trackers and should be avoided until trackers are really proficient in accurate and steady tracking. The one thing that

must be kept uppermost in one's mind during this phase of training is to obtain "line shots." It is believed that at least 50% line shots can be obtained when firing at our tower targets. This will vary as to the type target used and the method of recording these line shots.

SLANT RANGE INDICATOR

Now we come to the problem of obtaining shots with the correct range setting. To the average artilleryman, this sounds like the biggest problem, especially as no range finding equipment is furnished. However, due to the principle of prediction employed by this director, getting correct range shots somewhere on the course is quite simplified. This principle is to set a range in the director that the target will pass through somewhere on the course. The more times the target passes through the set range the greater are the chances of hits. Therein lies the reason for training in correct range estimation and the changing of range setting, as a result of the observation of the traces. Even after training in range estimation schools and with such training aids as the Hunt and M-8 trainers many range setters still persist in setting in absurd values and other in changing the range settings just about the time they would have been effective.

A simple "range indicator" can be attached to the director that will to a great extent eliminate these wild guesses and uncalled for changes. It is based on the fact that altitude can be more easily estimated or measured, on target practice courses, than can slant range. The director, being accurately

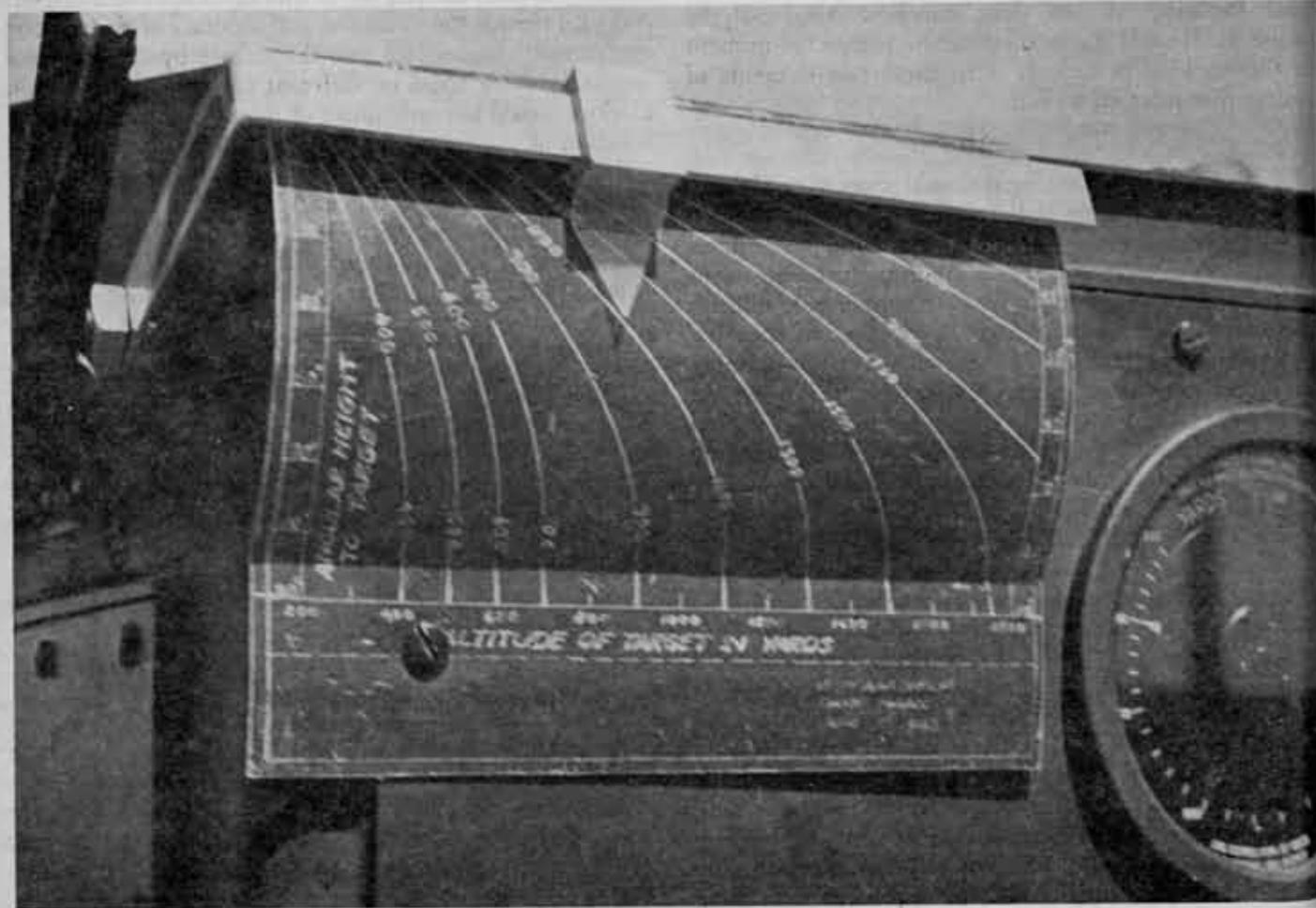


Figure 3. Range indicator, mounted.

leveled, is continually measuring accurate angular heights. Therefore the estimated altitude and the measured angular height will give continuous present slant ranges to whatever accuracy the altitude is determined. This device consists of the chart of slant range curves, plotted from altitudes and angular heights, which is attached to the director in some convenient manner enabling the movement of an arm over its surface in terms of angular height. A pointer on this arm can be set to the altitude. Such a device that is conveniently located for the range setter is shown in Figure 3.

The arm may be attached to the open sight or to the shaft, but must be capable of adjustment to the correct angular height. The chart in this case is drawn on paper and glued to a piece of tin previously bent to the proper arc and attached to the rear of the director by the same screws that hold the top and back cover.

With this device the range setter soon learns the relationship between angular height, altitude, slant range and the rate of range change on different types of target practice courses. His confidence in range estimation and range change will immediately increase and he will soon no longer need the device for guidance. Its use, however, will not end, as it will be found a very convenient device for record keeping. One of the few records of any value in analyzing the shooting is the record of the range setting and the actual ranges. These two plotted together give the range setter a true picture of what he has done right or wrong. Of course accurate altitudes should be set on the device if it is used for this record taking. To keep the range setter from using this accurate data, the device should be mounted on the side of the director. This requires a different design.

ANALYSIS OF FIRE

The correct analysis of what took place when actually firing at a towed target is one of the most effective aids to training. Short critiques should be held by the entire crew immediately after each course. With the great number of fire units to be trained it becomes impossible to let each one fire at its own target recording its own hits, etc. Whole batteries or even battalions must be fired on the same target, or few will get the chance. This situation makes it imperative that some form of records must be used that will allow some estimate of the accuracy of individual fire units without use of holes in the target. This can be done by recording the line shots as seen from near each fire unit and the shots fired with correct range settings. There must be an allowable limit to this latter, and it is believed that a plus or minus 50 yards would make an acceptable figure. Another value that might be used is the number of times the actual range passes through the set range. Then multiplying the percentage of line shots by the percentage of correct range shots will give the percentage of hits to which the fire unit is entitled. Of course the size of the target being used in comparison to the 180 square feet of the standard target must be considered in the final computation of hits obtained.

Example: A-6 target (6' x 30' flag)

- (1) Rounds fired: 12
- (2) Line shots: 3

(3) Correct range (± 50 yds): 2

(4) Per cent hits: $3/12 \times 2/12 = 1/24 = 4.16\%$

TRAINING OBJECTIVES

Going back to our original statement as to lack of definite objectives for each phase of training in firing, the following is suggested. Training in firing of the 40mm and director fire unit fall logically into five phases. These phases consider in addition to those given above, those required by the latest directives from Antiaircraft Command.

First Phase: Check of adjustments and orientation.

During this phase the crew should fire trial shots until it is reasonably sure of obtaining proper intersections of the tracers and crosshairs of the telescopes. This can be done only by careful attention to the details of adjustments and orientation. This phase does not require towed missions. Only a limited field of fire is necessary.

Second Phase: Checking of Trackers.

Trackers should be checked by using a slow deliberate rate of fire at a towed target (one shot every 3 or 4 seconds). This is a check not only of "line up" but also of steady, accurate tracking.

Third Phase: Checking of Range Setters.

Range setters should be checked by using slow deliberate rate of fire (one shot every 2 or 3 seconds). It may be found best to allow the range setter to call "FIRE" for each shot as this will insure that he is not confused by trying to follow more than one tracer at a time. Records are imperative for this phase.

Fourth Phase: Check of technical efficiency of entire crew.

This should be the required Record Service Practice. The rate of fire should be approximately one shot per second and the following records should be kept for each fire unit.

- (1) Number of rounds fired.
- (2) Number of line shots obtained.
- (3) Range set and actual range for each shot fired or plot of actual and set ranges.
- (4) Actual hits or holes obtained.

Fifth Phase: Check of combat and tactical efficiency.

This firing should be done from a position resembling a tactical position as closely as possible, using field fortifications, camouflage and some form of AAAIS. Each fire unit should be solely in charge of the Section Leader except for a Safety Officer, and should be allowed to fire at their own discretion, except for the rules of safety. Sufficient time must be allowed from the time of going into position until the target appears on course for the careful checking of adjustments and orientation and for the firing of trial shots.

All of the above applies to the firing of sub-caliber as well as service ammunition and in fact it is highly recommended that where possible each phase be first fired with sub-caliber. Sub-caliber will be found even more advisable than service ammunition for the second and third phase. Fewer targets will be shot down or destroyed, therefore less precious towing time will be lost, and less noise on the firing point will result in better instruction for the trackers and range setters.

Purposely nothing has been said about firing with the forward area sights as this training is a very large and important problem in itself.

BRITISH AA



The overhead
is terrific.



Waistline reducer.



There is a reason
for the biceps.



Wrist developer.



ALISTHENICS

Call it Manual of the Projectile, or what you will, our British allies have developed an exercise to "get the feel" of their AA projectiles. A new breech device calls for faster loading, and this is how Tommy prepares for speed.

British Official Photos



Slips don't count.



and carry.



Up and over.

Leads in a Nut Shell

By Major Kenneth G. Merriam
Captain Douglas G. Thompson
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The reader may be one of hundreds to whom gunnery for automatic weapons has been a confusing subject.

If the reader has been confused by the old theory, let him be reassured. With the advent of new types of sighting devices, a simpler and more powerful method of thinking about "leads" has come into being. This new method of thinking can be applied to the problem of operating any one of the existing devices for fire control of automatic weapons. It can also be used to diagnose the probable strong and weak features of any such device, existing or contemplated.

The simplicity and power of the new method of thinking comes about because of an improved selection of space references.

If, to achieve simplicity, so much depends on choice of references for defining a condition in a single plane, it is evident that one must be doubly careful when he deals with a problem in space. Experience has finally shown that the best procedure, when dealing with the automatic weapons space problem, is to use the line of sight as a reference line and the slant plane as a reference plane.

In Figure 1, the line of sight is the line connecting the gun (G) and the target (T_0) at the instant when a round is fired. The definition of the slant plane is a little harder to grasp. Please bear with it. The slant plane is one which contains the pintle center of the gun (G) and the path of the center of mass of the target (line connecting T_0 and T_p) during the projectile's flight from G to T_p .

Working with this selection of reference line and reference plane, it is easy to describe what a sight and its operator must do to aim the gun barrel so that it will form the proper space angle with respect to the line of sight. Sight and/or operator must accomplish four things:

1. They must locate the line of sight. This operation is called tracking.
2. They must locate the slant plane.
3. They must establish a correct travel lead angle in the slant plane. (See Figure 1.)
4. They must establish a correct superelevation angle. (See Figure 1.)

It is discouraging to reflect that, if only one of these four things is imperfectly done, there may be no hit. One thinks of a chain with four links. A flaw in any link may destroy the chain.

Yet, some tolerance exists. In this peculiar chain, a flaw in one link can sometimes compensate for a defect in another link. Also, even without compensation, certain slight defects are permissible. For example, the target is not a point. The target has finite size. An airplane has some length and some depth. Not much depth, but some. The shorter the slant range (distance from G to T_p in Figure 1), the larger the aiming tolerance will be. But, even so, it is discouraging to reflect that one yard subtends only one mil at a thousand yards. If aiming tolerances were usually two or three degrees instead of only a few mils, it would be much easier to knock airplanes out of the sky.

Of the four necessary operations, the first is performed

by the sight operator and the fourth by the sight itself. The second and third operations, performed by the operator with the aid of the sighting device, are the ones to examine closely.

Consider the second operation: locating the slant plane. Imagine a thin, but perfectly rigid, transparent shutter. Imagine it to be connected to the line GT_0 in Figure 1 by hinges, so that it can be rotated about this line. The problem is to rotate this shutter about the line of sight so that it will lie in the slant plane. If this cannot be done precisely, then the shutter must be brought close enough to the slant plane so that the distance between shutter and slant plane, at T_p , is not more than half the depth of the target. (Recall that the slant plane contains the center of mass of the target.) The tolerance is, indeed, small.

Consider the third operation: establishing a correct travel lead angle. For a given case, there is always a lead angle which will give a hit on the nose of the target. There is likewise, another lead angle which will give a hit on the tail of the target. Any lead angle between these two slightly different angles will give a hit somewhere between nose and tail. Because an airplane fuselage is fairly long, there is a satisfactory tolerance in the setting of lead angle.

Travel lead angles can be computed from a knowledge of (a) angular velocity of the line of sight and (b) length of line of sight; or from a knowledge of (c) target speed and (d) the angle between the line of sight and the course line. Devices which compute from (a) and (b) might be called "rate-range" lead computers; those which use (c) and (d) are known as "course-speed" lead computers.

It will now be profitable to introduce a brief discussion of how several existing sighting devices are designed to aid the sight operator to accomplish the second and third operations. One might select:

- (A) The M5 Director.
- (B) The Computing Sight M7 (Weissight).
- (C) The simple speed ring sight.
- (D) The Navy Mark 9 Reflex sight.
- (E) The Sights Correctional Mark V (British Stiff Stick).

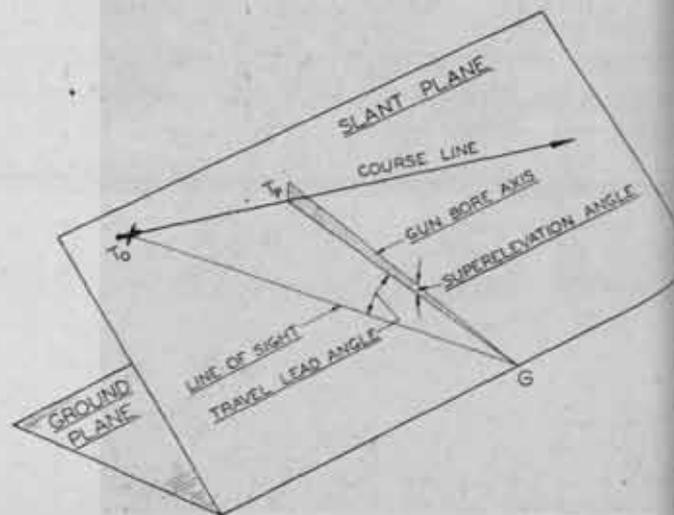


FIGURE -1

In the above group, (A) is an off-carriage, "Rate-range," instrument. All of the others are on-carriage, course-speed, devices.

Take, for convenience, one operation at a time. Begin with the second operation: locating the slant plane.

(A) computes the approximate slant plane location, using as data the range setter's estimate of range and the time rates of change of target azimuth and angular height—at the instant when the round is fired. In general, true slant plane location is obtainable only by the "track-off" procedure which must be based on stale tracer observation.

(B) contains a small linkage, geometrically similar to the triangle $T_0 G T_1$ in Figure 1, which can be adjusted to lie in the slant plane. So long as tracking is expert and so long as tracers are visible, this adjustment can be made quickly and effectively and, unless the target alters its direction of flight, the adjustment is still good for later rounds. By the property of "slant plane memory," the sight enables its operator to make good use of stale tracer information.

(C) and (D) provide ring references in the field of view. The rule is to carry the target so that the fuselage is aimed toward the point which forms the center for these rings. Unless the slant range is small, it is hard to do this with sufficient accuracy. Sometimes the little image of the target is as many as 20 target lengths away from this center.

(E) is essentially a mechanically operated speed-ring device, providing refinements in control and permitting trackers to "track on." The slant plane location is obtained by matching a straight edge with the target's fuselage.

With (C), (D), and (E), which are all based on the same gunnery principle, the slant plane location adjustment must be continuous. None of these sights possesses slant plane memory. Also, the assumption in each case is that the path of the target's center of mass is a true extension of the long axis of the fuselage. This is not always so.

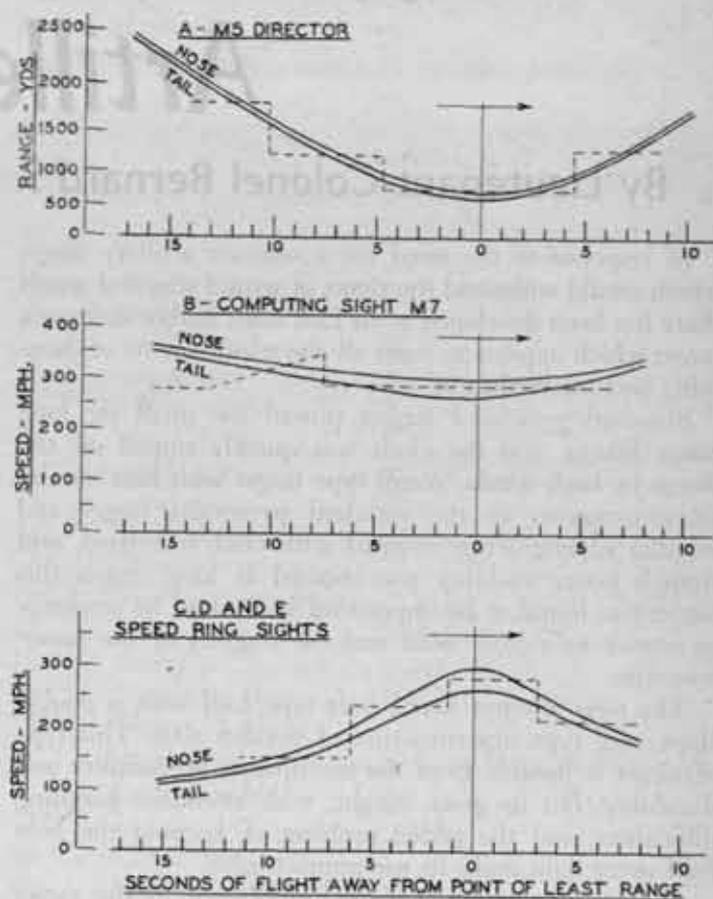
Continue now with the third operation: establishing a correct travel lead angle in the slant plane.

Figure 2 tells the story of leads in a nut shell. It tells the story in terms of "correct lead zones." Each zone can be defined as the area between two curves. The upper curve represents the correct relationship (between range, or speed, setting and time) to produce hits on the nose, while the lower curve is the same sort of thing but relating to hits on the tail. A basic assumption is that some recognizable point on the plane is being tracked with integrity.

It becomes evident at once that the sight operator's job will be to make settings of range, or speed, so that he will be in a correct lead zone as much of the time as possible. Because neither range nor speed can be estimated accurately enough to make it possible to stay in the correct lead zone continuously, the necessary expedient is to hold a constant setting until the zone has been cut (see horizontal dotted lines in Figure 2) and then to make a bold change to a new setting. Then, to repeat the process.

To compute lead zones, one must assume target speed, target length, and least slant range. In Figure 2, target speed is 300 miles per hour, target length is 15 yards and least slant range is 750 yards. But, regardless of assumed values, the shapes of the zones are always the same. Lower target speeds, longer target lengths, and shorter ranges make the zones thicker.

FIGURE - 2
ZONES OF CORRECT LEAD



Zones for rate-range devices, like (A), are thin for high target speeds. Zones for (B) are flat except for diving or climbing targets. Zones for (C), (D), and (E) are identical and are always of the shape shown.

The basis of the Kerrison system of range adjustment for (A) is evident. For (B), it is apparent that holding a fixed speed setting might not be the thing to do, and that the nature of the adjustment process would depend on whether initial rounds were diagnosed as overs or shorts. For (C) and (D), the rules, formulated for holding frozen radial distances in accordance with a simple fraction rule, are shown to be sensible. For (E), the adjustment of speed setting by arbitrary fifty mile per hour clicks, is seen to have rational basis.

The merit of these correct lead zone diagrams is that they show that the basic notion of lead adjustment is the same for all five devices, and that they convey the general idea of lead adjustment without having to resort to rules. The general idea, as stated before, is that the sight operator's job will be to make settings of range, or speed, so that he will be in correct lead zone as much of the time as possible.

The above brief treatment of gunnery for automatic weapons conveys the fundamental notions without use of equations and hence without the use of Greek symbols conventionally employed to represent angles. The reader is warned, however, that, when he decides to explore the situation in quantitative detail, he will still have to drag out the old tables of functions, knock the dust off the slide rule, and tolerate a few Greek symbols.

Meanwhile, the above is the story in a nut shell.

Sail Type Target for Seacoast Artillery

By Lieutenant Colonel Bernard S. Waterman, Coast Artillery Corps

In response to the need for a seacoast artillery target which would withstand the rigors of winter seas and winds there has been developed at an East coast harbor-defense a target which appears to meet all the requirements of durability and seaworthiness.

Standard pyramidal targets proved too small for long range firings, and the cloth was quickly ripped off the frame by high winds. A sail type target with base similar in construction to the standard pyramidal target and wooden superstructure covered with cloth was tried, and though better visibility was secured at long ranges this target was found to be impractical because of its tendency to capsize in a cross wind and the fragility of the superstructure.

The next attempt was a boat type hull with a double slope, roof type superstructure of wooden slats. This type of target is feasible from the standpoints of visibility and durability, but its great weight, with attendant handling difficulties, and the added problem of keeping the boat hull water tight make its use impracticable.

A practical solution was finally obtained in the target shown in the photograph. This target, designed by Major Howard L. Robertson, CAC, and Captain Justis B. Naylor, CE, is durable enough to withstand any conditions of wind or sea in which a towing vessel will dare to venture, is almost impossible to capsize, provides ample visibility for long range firings, is virtually unsinkable, is light enough to be handled with relative ease, and has no cloth to require continual replacement.

The flotation element of this target consists of three pontoons of 20-gauge galvanized sheet metal. Each pontoon is sixteen inches in diameter and has ten two-foot compartments. Thus the puncturing of a pontoon by driftwood or other flotsam will not materially impair the buoyancy of the target, since only one-tenth of the pontoon will take in water. Since most of the buoyancy is concentrated at the outer edges of the target instead of being distributed over the surface of a hull, a great moment of force in resistance to overturning is obtained. Each pontoon is held to the frame by three metal straps. An extra pontoon is kept on hand, and in event of damage to a pontoon it may be removed by loosening the straps, and the spare pontoon attached. The target may thus be continued in use while repairs are made on a pontoon.

Each of the outer pontoons is protected by a guard rail fastened to the securing straps. This prevents damage from bumping against the dock or the towing vessel.

The superstructure consists of three trusses made of $\frac{3}{8}$ " by $2\frac{1}{2}$ " or 3" angle iron, and three vertical masts of 2" pipe, supported by guy wires. The trusses provide rigidity. The masts fit into wells at the base of the trusses, and may

be readily removed by loosening the guy wires and lifting out of the wells.

The masts have clips which hold horizontal wooden slats 1" x 4" x 20'. For daytime use red slats are employed, and if the target is to be used at night, with searchlight illumination, the red slats may be slid out and replaced with white ones.

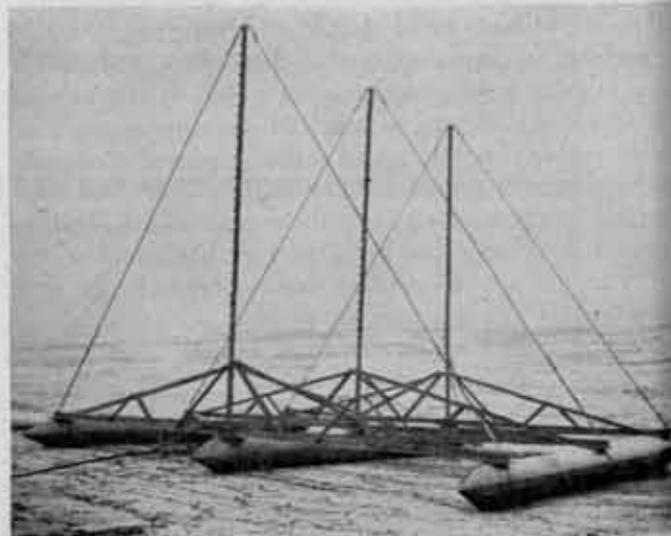
When the target is out of use for considerable periods the slats are removed, and the target may thus be left on the beach without fear of damage from high winds, since the vertical masts offer very little resistance to the wind, and will not be damaged.

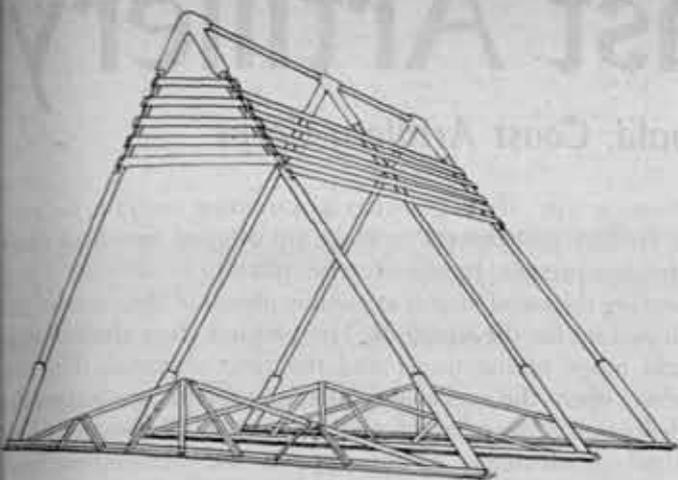
The target shown is twenty-four feet wide, twenty feet long, and fifteen feet high. The height may be varied readily by replacing the masts. Heights up to twenty-five feet may be obtained without danger of capsizing.

For ready maneuverability and minimum wind resistance the target should be no higher than the dictates of visibility for the range at which it is to be used require. A good solution is to make the masts tall enough to provide the maximum height which will ever be required, and then limit the number of slats to the height required for each individual shoot.

This target has been towed successfully at a speed of eighteen knots. Under normal conditions either a sixty-foot harbor boat with 225 h.p. and five foot draft or a standard mine planter has been used.

The towing bridle is of $\frac{3}{8}$ " steel cable. The method of attachment is as shown in the sketch on the following page. Attached to the bridle is a tow-line of 5" circumference. This arrangement has prevented any yawing of the target when towed by a mine planter up to the maximum speed tested of eighteen m.p.h.





Roof type.

If the visibility at certain towing angles makes it advisable to modify the type of superstructure, it can be changed from sail-type to roof type as shown in the accompanying sketch. However, it is believed that the sail type should provide adequate visibility at all towing angles within the limiting safety angles.

In constructing this sail type target, 224 man-hours were required with two special tools—a slip roll forming machine and welding tools.

Considerable thought and experiment have been applied to the desirability of using other than critical materials in the construction of this target. It is believed that critical materials must be used if adequate durability is to be obtained. A similar, though smaller, target using lengths of wood telephone pole in place of metal pontoons was successfully employed in a recent 3-inch shoot. Wooden pontoons might be used, but their construction involves a great deal more labor, and they will be much less durable than the sheet metal ponton.

The use of steel trusses also appears necessary in order to secure proper rigidity.

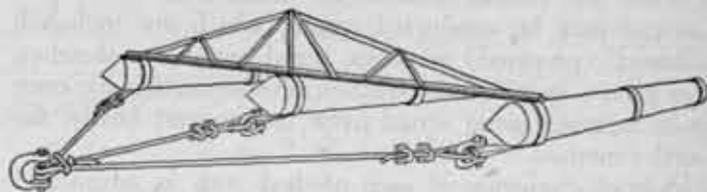
Continued use of this target has shown the advisability of weighting the rear end with three one-hundred pound

lead pigs, or to move the points of the bridle attachment a short distance to the rear in order to gain a steep enough planing angle to insure that the target will ride the swells instead of plowing through them.

A bill of materials is shown in the table following:

BILL OF MATERIALS
Seacoast Artillery

3 pcs.	angle iron	.....	2" x 2" x 22'4"
12 "	angle iron	.....	2" x 2" x 2'
6 "	angle iron	.....	2" x 2" x 3'8"
1 "	angle iron	.....	2" x " x 3'6"
2 "	angle iron	.....	2" x 2" x 8'3"
8 "	angle iron	.....	2" x 2" x 6'8"
6 "	angle iron	.....	3" x 3" x 23'8"
2 "	angle iron	.....	3" x 3" x 20'
9 "	Steel plate	.....	12" x 12" x 3/8"
3 "	Steel plate	.....	6" x 6" x 3/8"
3 "	Wrought iron pipe	..	3" x 3'5"
3 "	Wrought iron pipe	..	2" x 16'
12 "	Steel band	.....	2 1/2" x 3/8" x 2'9"
16 "	Board	.....	1" x 6" x 17'
96 "	Bent steel clips	.....	1 1/2" x 1/4" x 3 3/8"
3 "	Floats, 22 gauge		galvanized iron ... 20'6" x 16" dia. 252 sq. ft.
5 "	cable thimble		
4 "	U bolts	5/8"	
24 "	Cable clamps	3/8"	
10 "	Cable clamps	5/8"	
96 "	Bolts	1/4" x 3" with nuts	
6 "	Turnbuckles		



Bridle.



CPX-Seacoast Artillery

By Captain Aleck F. MacDonald, Coast Artillery Corps

One of the duties of an S-3 of a harbor defense unit is to prepare command post exercises for his unit. The following review of the various methods for conducting CPX's is based on information gained by personal experience and that gained by discussion with other officers. After trying many systems, the author has evolved a workable type of problem.

The necessity for training commanders, their staffs, and troops in the procedure for applying tactical principles is obvious. One of the methods for accomplishing this phase of training is the command post exercise. A command post exercise for seacoast artillery is a tactical problem in which the commander, staff and communication personnel of the various components of the chain of command are present, plus any additional necessary personnel. In general, it is held to test and train commanders and staffs in the proper application of tactical principles; to test communication systems; and to train officers, observers, and communication personnel in the proper methods of transmitting orders and intelligence messages.

The procedure of a command post exercise, generally, consists of sending intelligence messages up through the chain of command, the evaluation of the intelligence, the decision of the commander, and then the issuance of orders. In addition, intelligence reports must be consolidated and the information passed out to the units.

There are various methods by which a command post exercise may be conducted among which are included; "canned" (prepared) messages, timed pictures or sketches, war games, imaginative exercises, reverse-intelligence exercises, exercises using actual naval targets, and finally, the overlay method.

A brief discussion of each method with its advantages and disadvantages is now in order.

The "canned," or prepared, message is probably the most common method of conducting these exercises. A situation is drawn up, pertinent messages written in chronological order for all stations, sealed in envelopes, and distributed. Envelopes are opened at designated times and the information contained is transmitted through the chain of command or intelligence. The information is plotted and evaluated, the decision made, and orders initiated and transmitted down through the chain of command. The chief advantage of this method is that messages are sent up in a definite form. However, the disadvantages are many. The time required for accurate preparation of messages is quite large for an exercise of any size, the accurate synchronization to the minute of time is essential but often unobtainable due to congestion of the communication net, thus confusing the exercise. Also the possibility of misplacing envelopes which would also disrupt the exercise, is present. Lastly, this type leaves no room for individual initiative and practice in making reports as they would be made by personnel in action.

The "timed picture" method is similar to the prepared

message type, although better as a training exercise, because it enables participants to make up original messages from the data present. In this exercise, pictures or sketches representing the naval targets at various phases of the exercise are drawn up for the situation. The pictures show the azimuth and range of the target and the time observed. The observer opens the envelope containing the picture, makes a deduction as to what he sees, and sends his message. The chief disadvantage of this type is the tremendous time necessary to synchronize the picture for the various reporting stations.

An older type of exercise is the war game. In this type participants are gathered together in a room in which is located the necessary apparatus. This apparatus consists of a scale model of the fort, or harbor defense, and surrounding territory. The necessary model naval targets are maneuvered by the director of the exercise, and the commander and his staff receive intelligence and issue orders. This method is excellent because of the graphic and moving scene which can be presented. However, the apparatus, while not necessarily elaborate or expensive, does take considerable time to construct, and has the additional disadvantage of being in a closely confined space where communication difficulties are not present as they are in the actual harbor defense operation.

An imaginative exercise is one in which observers and subordinate organizations transmit to the higher echelon information and intelligence messages using as a basis their own imagination for a general situation which has been set forth by higher headquarters prior to the start of the exercise. This permits the lower units to have the greatest of freedom in devising reports, and some of the messages which come in are truly individualistic and imaginative. However, the lack of a controlled situation too often results in lack of continuity and in fanciful and unsatisfactory situations.

Similar in many respects to the imaginative method is the reverse-intelligence method of conducting a command post exercise. In this method, all intelligence emanates from the highest command post. This method is adequate perhaps, as a communication drill or as an exercise in transmitting orders but lacks realism because intelligence should normally be obtained from the lower, rather than the higher echelon.

A command post exercise in which actual naval targets are present is quite satisfactory. However, unless ships or boats are definitely assigned courses, the situation may be faulty. In addition, ships or boats are not usually obtainable.

None of the above systems seem to be entirely adequate. Some take too much time in preparation, others take away all the initiative, and materials are lacking for the others. The overlay command post exercise combines the major points of the good points of each while minimizing the difficulties.

The material necessary for the overlay exercises includes a map or chart of the defended area, overlay paper, and the means of preparing overlays. Do not be startled at the

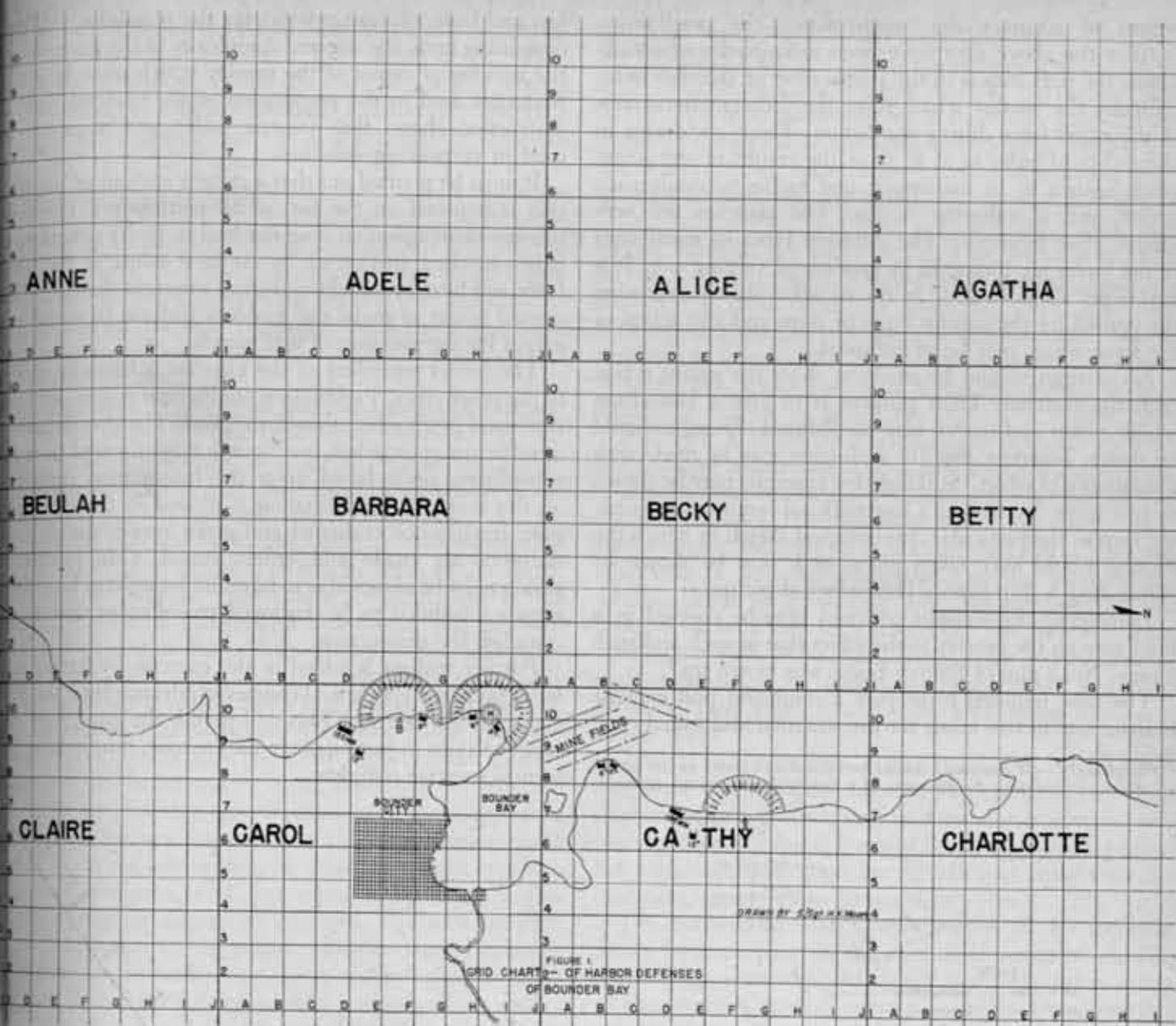


FIGURE 1
GRID CHART OF HARBOR DEFENSES
OF BOUNDER BAY

base. A duplicating machine, while desirable, is not necessary. Five to six copies of an overlay may be produced at a time by alternating sheets of overlay paper with sheets of carbon paper. The basic overlay is placed over the top sheet of carbon paper, another sheet of overlay paper is placed on top and the basic overlay paper is traced with a hard pencil. The copies turned out are very satisfactory. Each observation, battery commander's, group or group-command station that participates in the exercise must have a copy of the map or chart on which the prepared overlay is based. This map must indicate accurately the location of the station. An azimuth circle is constructed on the map for the particular position. Maps, or blue prints showing the water and land area, are supplied by the harbor defense or the unit conducting the exercise. All stations should be equipped with this type of map anyway, to facilitate normal reporting of targets.

A basic situation is devised according to the type of naval action desired. A naval raid, reconnaissance in force, bombardment, landing attack, or practically any other type of naval action which may directly effect seacoast artillery can be portrayed using this method.

The size, speed, and maneuvers of the naval forces to execute the desired tactics are determined, as is the time for the starting of the exercise. Then, after having determined the above data, the base course of the naval force selected is laid out on the overlay so as to permit the proper development of the situation. The times at which the naval force will be at various points on the course (say at five minute intervals) are plotted using a time-distance scale for the particular speed selected for the force.

After the enemy action and course have been decided upon, it is then necessary to estimate the counteraction which would be undertaken. A study of the course reveals at what points, and for what period of time, the naval force will be in the fields of fire of the different weapons. Then appropriate targets are determined. After estimating the time necessary for opening fire, the time of sinking or damaging of the selected targets is calculated. Charts which show the number of shots necessary to destroy appropriate naval targets at any particular range are prepared for the different types of armament of the command. From these and the rate of fire of the armament, the time necessary to destroy a target is calculated beforehand to eliminate any

reports of accuracy that might strain the possibilities.

After the above data have been assembled and coordinated, the next step is in the preparation of sketches to accompany the overlay which show the different formations of the naval force during the action. These are drawn in chronological order so as to show the results of the action taken against it, its maneuvers and tactics to evade such action, and its offensive action. The sketches are very simple. (See figure 2.) The different types of naval craft in the forces are indicated by symbols of varying size. It is best to put a small legend by the situation sketches showing the symbol for the various types of ships and any action of the force which may be so indicated.

No attempt should be made to show the entire action with the sketches. Their purpose is to give a basis from which action and events may be deduced. Enough should be shown, however, that the deduction may be made with a minimum of effort. Sinkings, for example, may be shown in two ways: by having a conventional symbol for a sinking ship in the particular chronological sketch in which the sinking would have taken place, or it may be shown by eliminating a ship from a chronological picture.

Damage to the seacoast positions may be covered in a brief note on the overlay to the effect that at such and such a time, No. 2 gun of Battery Blank was blown up.*

The time required to prepare a command post exercise is about one to two hours for the situation and initial over-

*Incidentally—all concerned should be trained and tested in the proper procedure of rendering the elements of a battery useless to the enemy.

lay, and from two to six hours for the remaining overlay depending upon the size and complexity of the exercise. The number of copies of the overlay which must be made. Materials used in the preparation of the exercise, such as destruction charts, time-distance scales, and maps can be used in succeeding exercises.

It must be pointed out that a certain amount of imagination is required on the part of all participants. However, this use of imagination does not lead to faulty situations if it is controlled, first of all, by the base course of the exercise force and next by the chronological situation sketches. This control serves to make the problem realistic in every respect except for the presence of real targets.

The actual procedure of the exercise is basically similar to the other types. Preliminary intelligence is sent out from command post to the subordinate units. Then, as the actual naval action approaches, intelligence flows upward from subordinate units based upon the information contained on the overlays. The situation is plotted in the command post, intelligence evaluated and given proper distribution. Decisions are made and orders issued. One precaution which must be observed is to have fire brought to bear upon targets scheduled to be destroyed in sufficient time to accomplish the destruction.

Further realism is added to the exercise by having batteries prepare hypothetical courses in advance from the base course of the exercise. This will permit the gun crews and range sections to participate in the exercise, thus making the tactical exercise complete.

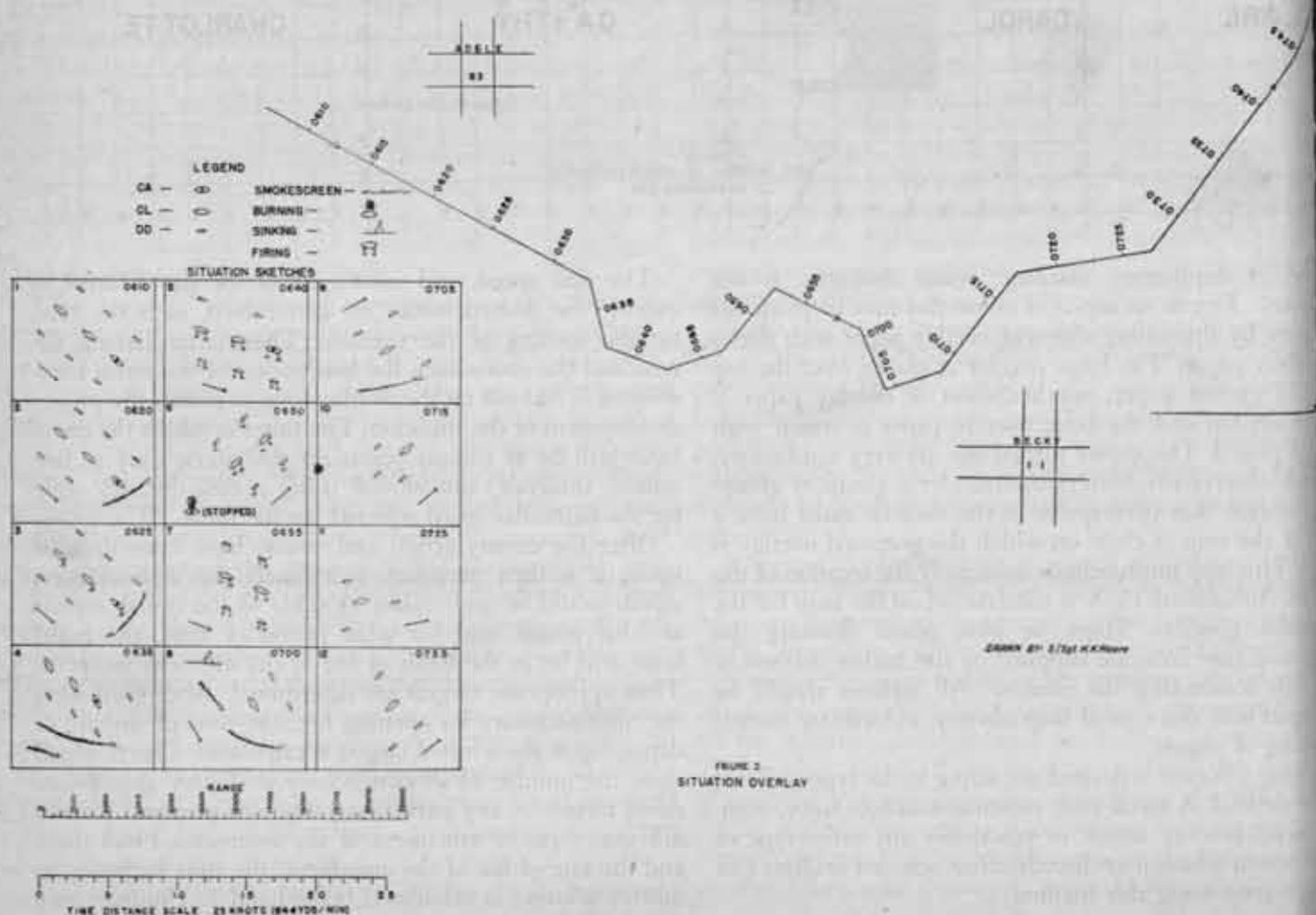


FIGURE 2
SITUATION OVERLAY

The duty of observers, either base-end or BC, is particularly important in this method as it would be in action. When the exercise starts, the observers who would be able to see the targets send in reports at predetermined intervals when the situation shows that it is necessary. The azimuth and range of the targets is obtained by use of the azimuth circle and range scale on their basic map for the proper time on the base course. Inaccuracies in plotting the situation are expected but, in all probability, they will not be much greater than those obtained with an actual target. Observers can report by reference to the course and sketches the number of units in the naval force, their type, and their maneuvers and actions such as launching barges or laying smoke screens.

A description of a typical exercise using this method: The S-3 of the Harbor Defense of Bounder Bay, has been instructed to prepare a command post exercise against a naval raiding force. He first secures a grid map of the harbor defense and adjacent water area (Figure 1). He overlays the map and draws in roughly an estimated course for the naval force, arranged so that all units of the harbor defense will have an opportunity to participate in the action. He then decides upon a time for starting the exercise, as well as the size and speed of the proposed naval force. In this case, it was desired to start the exercise early in the morning, at which time a raid is most likely, so 0600 was selected as a starting time. An enemy naval task force consisting of one heavy cruiser, two light cruisers, and six destroyers was estimated to be a proper size force which might be sent on this type of mission. It was decided to have this imaginary force move at an average speed of 25 knots. Upon the base course, he then plots points at which the force would be, each five minutes, by using a time distance scale for a speed of 25 knots. The time for each point is indicated on the course. He then starts his imaginary force on the course, and draws chronological situation sketches of the force for various time intervals on the course. On these he indicates the heading, formation, what action they undertake, such as firing or laying smoke screen, and also indicates the result of action which he estimates will take place against the force.

Sketch No. 1, Figure 2 shows the task force coming in. In No. 3, we see two destroyers laying smoke screen. He must infer that by this time intelligence would be received by the command post from the lower echelons, and the situation plotted. As a consequence of these reports, fire from a 5.5mm gun and a six inch gun battery is assumed to have been ordered and placed upon the destroyers laying smoke. At that range using that amount and type of armament, assuming a normal rate of fire, a destroyer would be sunk or put out of action in from six to eight minutes. This is calculated by the use of prepared destruction charts. The elimination of a destroyer symbol from sketch No. 5 infers that the destroyer was sunk during the period 0635-0640.

A description of a sample intelligence report is as follows: At 0610, the observer in station B picks up the fleet on his map, by use of his azimuth circle and range scale he obtains

the range to the force at that time. This report is made in the following manner, "Enemy naval force, 1 C A, 2 C L, 6 D D, Azimuth 225°, Range 30,000, Northeast, Time 0610." This report is transmitted to the harbor defense command post where it is consolidated with other reports and the course plotted, decision made, and orders issued down through the chain of command.

In No. 5 at 0640, the force is shown firing upon their targets. At 0650, the heavy cruiser is shown to be burning. In No. 8, a light cruiser is shown to be sinking. Then it is seen that at about 0705, the remaining ships, apparently deciding that enough was enough, start to retire. The retirement is covered with smoke for a distance and then the destroyer, which had been laying the screen, is eliminated.

After the sketches and overlays are prepared they are given proper distribution and a day is set for the exercise.

Reports come in, orders are issued and the situation proceeds to its close. The operations officer has taken care to assign targets promptly so as not to throw the overlay situation out of balance. After the exercise, journals and message blanks of the subordinate units are called for, and checked for form and accuracy. When this has been done, a critique is held on various phases of the action, stressing such deficiencies in reports, communication, and other points of interest as were found, and means devised to correct them.

The above exercise was rather small. No damage to installations was indicated, nor any airplanes used, although their use could be indicated in a similar manner to that used for the naval force. It might be added that this method has a possible application for AAAS and antiaircraft tactical exercises as well as for seacoast.

The enthusiasm, and comprehension of the situation, shown by participants in this method of conducting a CPX is gratifying, particularly so if they have ever had to undergo the routine "canned" message exercise. Every one can see the picture of action as it develops and exercise initiative, to a controlled degree, in the application of tactical principles. And the participation of all members of the command in the exercise serves to emphasize the coordination between all units necessary in seacoast artillery.

EDITOR'S NOTE: This article presents an interesting innovation in Seacoast Artillery CPX's. Such exercises should be held often in order to maintain an efficient communication system and to present personnel with the problems incident to a succession of possible outlines of action. Cause and effect—circumstance and decision—must be presented logically in such problems. The value and location of defended areas, the land and water conformation, must be considered and their influence given the necessary weight in the preparation of a CPX.

No method of conducting a CPX can be wholly satisfactory that does not allow freedom of decision by tactical commanders and the continuance of the assumed action based upon their tactical decisions.



COAST ARTILLERY IN ACTION



Commendation

With the Fifth Army, Italy: A resourceful Negro anti-aircraft battalion that accounted for two German bombers, even before the unit became the first American Negro combat force to land on European soil, has been cited by Lieutenant General Mark W. Clark, Commanding General of the Fifth Army, for "outstanding performance of duty" in its "baptism of fire."

The unit, the 450th Antiaircraft Artillery Automatic Weapons Battalion already had the distinction of being the first Negro combat body to land in North Africa.

These troops were aboard ships in Naples Harbor when German bombers began an attack on shipping massed in the bay. Aboard one vessel, the soldiers had been selected to man 40mm weapons that were part of the ship's armament.

Because of the position of the hostile aircraft, the main antiaircraft defenses of the ship could not be maneuvered to produce effective fire. An enemy bomber was picked up by searchlights and the American crew was soon pumping

shells at the target. Three hits were observed, the last which appeared to tear off the right wing of the Nazi plane. The bomber crashed into the sea.

On a nearby ship that was carrying other personnel and equipment of the battalion, M/Sgt. Johnson Clark jumped into a deck-loaded truck and opened fire with a .50 caliber machine gun mounted on the cab.

The second bomber, struck by Clark's shots and other fire, being put up from the ship, also crashed into the sea.

Thus, within a few moments, the Negro troops accounted for destruction of two Nazi bombers which definitely weakened the enemy's raid on harbor shipping.

In commending the Negro troops, Lieutenant General Clark declared:

"I am proud of the outstanding performance of duty of those soldiers in this baptism of fire. Their conduct was excellent and reflects the training and discipline of their unit. The Fifth Army welcomes such soldiers."—CAMP DANIEL BARRAGE.

Citations

Legion of Merit

TO: JOHN L. HOMER, Major General (then Brigadier General), United States Army. Home address: Carlinville, Illinois.

FOR: Exceptionally meritorious conduct in the performance of outstanding service while serving as Chief of Staff of the Iceland Base Command. During the movement of a Task Force and subsequent echelons of the Iceland Base Command to Iceland, he supervised and coordinated in a forceful and extremely efficient manner the thorough plans which he and a small staff had prepared. Through his astute direction and clear-sighted coordination, plans and policies regarding the complicated relief of the British Forces in Iceland and the concurrent augmentation of the existing forces were carried out in a practical and efficient manner. His able supervision of the staff of the Iceland Base Command contributed immeasurably toward the successful accomplishment of a difficult task.

TO: HOMER CASE, Brigadier General (then Colonel), United States Army. Home address: Marshfield, Missouri.

FOR: Exceptionally meritorious conduct in the performance of outstanding service. As a member of the Special Army Observers Group, London, England, and later as Assistant Chief of Staff, G-2, of the European Theater of Operations, from May, 1941, to June, 1942, General Case displayed marked professional ability, superior judgment, and devotion to duty, and rendered service of outstanding value to the Government in the establishment of intelligence, security, and public relations agencies for the United States Army Forces in the United Kingdom and European Theater of Operations.

TO: EDGAR B. COLLADAY, Brigadier General, United States Army. Home Address: Madison, Wisconsin.

FOR: Exceptionally meritorious conduct in the performance of outstanding service as commanding officer of

Alaskan station from October 4, 1941, to October 8, 1943. The sound judgment, technical ability and inspiring leadership displayed by General Colladay during the critical years when his station expanded into one of the most important bases in the entire theater contributed materially to the successful defense of Alaska and the Pacific Northwest region. He obtained marked success in fostering cordial relations between the services involved in the construction of the defenses of his station and overcame many difficult problems incident to the successful development of a strong military base in the face of enemy opposition, severe weather conditions and shortages of critical equipment, supplies and personnel.

TO: WILLIAM S. LAWTON, Colonel, Coast Artillery, General Staff Corps. Home Address: 1222 Grand Avenue, San Rafael, California.

FOR: Exceptionally meritorious conduct in the performance of outstanding services. As deputy chief of staff, United States Army Forces, Central Pacific Area, he was charged with the coordination of logistical and training plans for the Army forces which participated in the capture of the Gilbert Islands. Colonel Lawton demonstrated a high quality of leadership and organizational ability in handling these large responsibilities of the commanding general. In the solution of the various problems arising during this phase of preparation, his untiring devotion to duty, unflinching good judgment, and careful attention to details made him of invaluable assistance to the commanding general, Central Pacific Area.

TO: FRED F. SETTER, Technician Fourth Grade, Coast Artillery. Home Address: 2112 Market Street, San Francisco, California.

FOR: Exceptionally meritorious conduct in the performance of outstanding services from October 31, 1942, to July 21, 1943. As battalion mechanic and welder, Technician Fourth Grade Setter performed his duties tirelessly, with zest, ingenuity, and resourcefulness. Most of the work was accomplished, day and night, out of doors in the severe Aleutian weather. If a special tool or part was required for a job, he designed and built it on the spot, often culling scrap piles for material. His work was so skilled and thorough that Air Corps, Quartermaster and Medical units brought special complex instruments and parts to him that required precision welding. He cheerfully volunteered to do this additional work after duty hours. His skill and devotion to duty restored a great amount of Government equipment to use that previously had been improperly repaired or declared non-repairable.

Soldier's Medal

TO: RALPH F. BUECK, First Lieutenant, Coast Artillery Corps. Home address: Cleveland, Ohio.

FOR: Heroism at Key West, Florida, on 29 June 1943.

TO: JOHN M. NARDONE, Sergeant, Coast Artillery. Home address: Boston, Massachusetts.

FOR: Heroism at Key West, Florida, on 29 June 1943.

TO: LEONARD C. FIELD, Corporal, Coast Artillery. Home address: New Brighton, Pennsylvania.

FOR: Heroism at Key West, Florida, on 29 June 1943.

TO: ALBERT G. NEMERGUT, Corporal, Coast Artillery. Home address: Bridgeport, Connecticut.

FOR: Heroism at Key West, Florida, on 29 June 1943.

TO: ROBERT W. WATTS, Corporal, Coast Artillery. Home address: 601 North Gulf Street, Lamar, Missouri.

FOR: Heroism displayed at an Aleutian air base on September 21, 1943, as one of a group of enlisted men who attempted to rescue the crew of a crashed airplane. After administering first aid to one man, these enlisted men fought their way through flames, smoke and exploding ammunition and dragged two more men from the plane. They made a further attempt to remove a third man but were unsuccessful because of the intense heat. The courage displayed by Corporal Watts, with complete disregard for his own safety, reflects great credit on himself and the military service.

TO: KENNETH B. MAY, Private First Class, Coast Artillery. Home address: Bodcaw, Arkansas.

FOR: Heroism displayed at an Aleutian air base on September 21, 1943, as one of a group of enlisted men who attempted to rescue the crew of a crashed airplane. After administering first aid to one man, these enlisted men fought their way through flames, smoke and exploding ammunition and dragged two more men from the plane. They made a further attempt to remove a third man but were unsuccessful because of the intense heat. The courage displayed by Private May, with complete disregard for his own safety, reflects great credit on himself and the military service.

TO: QUENTON S. LOWMAN, Private, Coast Artillery. Home address: Cassatt, South Carolina.

FOR: Heroism at Key West, Florida, on 29 June 1943.





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

THE COAST ARTILLERY BOARD

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Jump firings—90mm guns. In view of the discrepancies in drift obtained with the 90mm Gun M1 on the Fixed Mount M3 in firings at Fort Story and Aberdeen Proving Ground, special jump firings are to be conducted by the Coast Artillery Board on four Fixed Mounts M3 at Fort Story. From these firings it is contemplated that any error in jump will be determined and corrected firing tables issued to troops in the field if necessary.

Gun accessories chest for 155mm Gun M1. A gun accessories chest has been proposed for the 155mm Gun M1. This chest has been tested by a 155mm Coast Artillery regiment and has been found to solve the problem of loss or damage to certain essential items of equipment for which no spares are provided. This chest rides on the trails just in front (toward the limber) of the tool chest and is held in position by cleats which fit just inside the trails. It requires no lashing or other device to hold it in place.

The Commanding General, Army Ground Forces, has issued a decision that due to certain existing conditions these chests will not be manufactured and issued by the Ordnance Department but that it is desirable that each seacoast battery construct such additional gun accessories chests as are required by it and that local Ordnance personnel assist in such construction. These chests will not be standardized.

Seacoast targets. The Department of Training Publications of the Coast Artillery School has in preparation a training bulletin on the construction, care, and use of seacoast targets. The targets normally used by Coast Artillery organizations are described in detail as are the missions for which they normally are used. The incorrect use of targets, faulty construction and improper handling while the targets are under tow have resulted in unsatisfactory performance or loss of the target on many occasions. It is believed that the information contained in the bulletin will be of material assistance to the using troops. It is hoped that the section on the employment of the JR boats will result in their more satisfactory utilization.

It is believed that an improved type of JR boat will be developed during the coming year. It will be longer, of

greater beam, and will have a slightly more powerful engine. It is expected that the new type of high speed target boat will be more seaworthy than the present type of motor controlled boat, and that it will be suitable for towing.

A redesigned M9 target is being produced by the Ordnance Department. It will be shipped as a kit which requires only a few simple tools for its assembly. This target when cared for in accordance with the training bulletin referred to above, should be eminently satisfactory.

Signal Lamp 12S-G-31 (Navy type). A service test of the 1000-watt, shutter-operated Signal Lamp 12S-G-31 (Navy type) in comparison with the 500-watt, key-operated Signal Lamp Equipment EE-80A has been completed. This service test included routine exchanges of messages between the Fort Monroe Signal Station and ships entering and leaving Hampton Roads, as well as the exchange of special test messages with signal stations at Fort Wool (2,000 yards) and Fort Story (31,274 yards).

The results of this test are summarized below:

a. The Signal Lamp 12S-G-31 (Navy type) was found to have an inherent slower rate of signalling than the Signal Lamp Equipment EE-80-A when operated by signalmen of equal proficiency with both lamps.

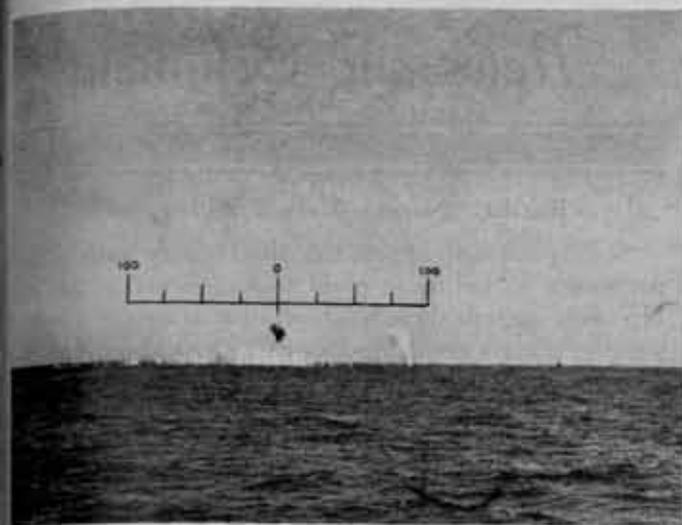
b. The muscular fatigue caused by operation of the Signal Lamp 12S-G-31 was conducive to signalling inaccuracies when long messages or a long series of messages were exchanged. This condition is not present when operating Signal Lamp Equipment EE-80-A.

c. The heat developed by Signal Lamp 12S-G-31 proved annoying to the operator when manipulating the lamp.

d. During daytime, particularly in bright sunlight, the Signal Lamp 12S-G-31 proved capable of signalling at greater ranges than the Signal Lamp Equipment EE-80-A.

e. Whereas current leakage developed when operating the Signal Lamp EE-80-A out of doors, the Signal Lamp 12S-G-31 proved weatherproof.

It was recommended that harbor defense and fort signal stations be equipped in the future with one Signal Lamp Equipment EE-80-A and one Signal Lamp 12S-G-31.



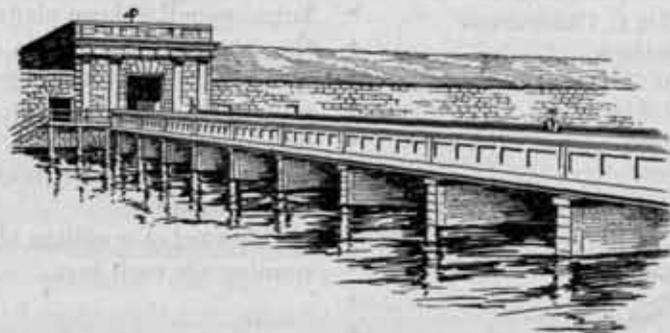
Ricochet firing with 155mm shell, .25 second fuze delay.

(Navy type). This recommendation was not favorably considered by the Commanding General, Army Ground Forces. At the same time, it was recommended that the signalling key circuit of the Signal Lamp Equipment EE-80-A be further weatherproofed against current leakage when used out of doors in damp weather. This recommendation received the approval of the Army Ground Forces.

Ricochet firings. Recent firings employing an increased delay element in the Point Detonating Fuze M51A1 used with 155mm, 6-inch, and 8-inch high explosive shell gave

an excellent demonstration of the lethal anti-personnel effect of ricochet fire. Instead of the standard 0.05-second delay element, 0.15- and 0.25-second delay elements were used, the latter proving more desirable due to the greater height of burst obtained. The accompanying photographs illustrate the burst pattern. Such fire would be a secondary mission for 8-inch armament. If employed, adjustment should be short of the leading landing ship. For 155mm or 6-inch armament, Case II pointing would be employed with the ricochet burst an invaluable secondary feature.

Accessories for use with Radio Sets SCR-808 and SCR-828. Recommendations are being forward that the issue of Radio Sets SCR-808 and SCR-828 for emergency transmission of base-end data include a special accessory kit adapting the radio set to seacoast artillery use. This kit will include 110-volt alternating current power supply units, a dipole antenna, a unit providing protection against lightning, and sufficient coaxial cable with suitable connectors for connecting the radio sets with the dipole antenna. To employ the alternating current power units it will be necessary to remove the 12-volt dynamotors normally issued and substitute therefor units of the alternating current power supply. The protection unit makes provision for short circuiting the coaxial lead-in when the set is not in use and provides the normal lightning arrester protection while the set is in use. The dipole antenna is provided with a flexible mount arrangement which, together with the coaxial cable, will make it possible to install this equipment in various types of base-end stations and plotting rooms.



Coast Artillery Journal

Fifty-third Year of Publication

COLONEL E. B. WALKER, Editor

LT. COL. ARTHUR SYMONS, Associate Editor

MASTER SERGEANT CHARLES R. MILLER,
Circulation Manager



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

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

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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 cooperation among all arms, branches and components of the Regular Army, National Guard, Organized Reserves, and Reserve Officers' Training Corps.

News and Comment

Realistic Nation-Wide Training Policy

At long last signs appear that this country is not going to perpetuate its failure to profit by experience in our military history. Up to the present there has been little evidence of a disposition to effect a military policy which would provide an effective and adequate force at the outbreak of hostilities.

It is extremely improbable that we will, a third time, be the protection of England, France and Russia while we are unprepared for combat. In our peacetime organization of our armed forces for war there were serious weaknesses in personnel, matériel, organization, and training.

That this may be changed is indicated by the following extract from *United States News*:

"Every Boy in Army or Navy: Plans for Postwar Training

"A year of compulsory Army or Navy training for every able-bodied boy who reaches high school graduation age is in prospect for postwar America. Plans toward that end already are being put into legislative form. They have the approval of military officials. Leaders of both political parties are pressing for action now while the country is awake to the fact that wars can occur.

"Such men want to see the training facilities, ships, aircraft and experience, gained at such a high cost in money and work in this war, put to use afterward to keep America ready at all times to defend itself. This was not done after the first World War. Then a spirit of "it can't happen again" swept away all training plans. It whittled down funds and scuttled ships. America was left with a skeleton Army and too small a Navy to guard its shores.

"The plans now developing envisage an over-all peacetime military force of some 2,500,000 men. That would be large enough to keep planes and ships moving and to cover the spots that are vital to America's protection in the postwar world. It would keep Army and Navy specialists busy training men for whatever type of fighting job they would best fit into in an emergency. And about half of such a force would be young men undergoing their period of compulsory training.

"Upward of a million able-bodied boys grow up into the training age each year.

"Army and Navy backing for such a program, however, does not mean that it will be adopted overnight. General Washington proposed a similar program in his first message to Congress. He repeated the request in every subsequent message.

"Congress ignored the requests of General Washington in the same way that it did the requests of Army officers after the first World War.

"Legislative realists are none too certain that such a thing will not happen again after this war. That is why

they are urging that the issue be pressed now, while the war is being fought."

For the security and protection of our freedom after the war there should be provided:

a. Nation-wide military training of American youth. Such a system, effective immediately on the change to a peace status would furnish an effective cushion to absorb national jolts inevitable in changing back from the war to a peace status. Such a system need not be expensive if it is applied to all youth alike.

b. Adequate training areas in the jungle, in the cold regions, in the desert, in the mountains, available for training throughout the year. Such areas to be of sufficient size to provide for combined training of all arms, branches and services under realistic field (combat) conditions.

c. A system of producing sufficient officers both in quality and quantity to provide for the forces trained.

d. Amalgamation of our high schools and colleges in the system of instruction and training.

e. Development of our young manhood and womanhood into individuals rugged both physically and mentally.

Each of these items deserves much consideration and study, and the over-all problem of coördinating and consolidating them into an effective and realistic military policy should enlist the best brains in the military and educational field.

Such measures if made effective immediately when the war ends should assist in absorbing the shock of returning to a peace status, and although we may not defeat Germany until 1945 and Japan until 1947, it is not too early to initiate the plans.

Danger—Gremlins at Work

At a time when the JOURNAL staff was congratulating itself on the absence of errors in the magazine over a long period, the November-December issue proved something about "Pride goeth before a fall."

In the article, *Slant Range Estimation*, Figures 1 and II were labeled "full scale," and then were reduced for printing. Full scale would have made the figures 10 3/8 inches high, instead of 6 1/8 inches, as shown. In the same article, in the first paragraph on page 45, the scale readings on the fiftieth-of-an-inch side are multiplied, rather than divided, to convert to hundredths of an inch. Captain William M. Leffingwell, CAC, noted these errors.

The excellent Frontispiece in the same issue, credited to Fort Eustis, actually came to the JOURNAL from the AAA School at Camp Davis. Since the photo was such a superlative picture of an explosion on an infiltration course, we feel that credit should be given to the proper organization.

The article *Antiaircraft as Field Artillery*, on page 42, contained two errors. The azimuth for Shot No. 1 in the tabulation should have been 2602 instead of 2601, and for Shot No. 6, the Q.E. should have been 103 instead of 101. These slips crept into the manuscript between Captain Haaland's original draft and the retyped copy which we submitted to the JOURNAL.

We hope that the Gremlins responsible for this crop of errors find other fields for their labors.

Holiday Hangover

We hope it was the Christmas season, with thoughts centered upon what to buy Aunt Susie or wangling a leave, but group subscription orders took a nose-dive since the last issue went to press.

The brightest spot in the picture was brushed in by the 535th AAA AW Bn., Lieutenant Colonel William H. Francis, Commanding, which organization gave the JOURNAL a Christmas present of forty-eight new subscriptions. The 536th AAA AW Bn., Lieutenant Colonel John H. Brubaker, Commanding, ran second with thirty new subscriptions, which isn't a bad total even in a busy month.

Captain Wilson C. P. Jones, Adjutant of the 30th Coast Artillery sent in six subscriptions for his organization, and Lieutenant Wallace E. Frohock, Jr., Adjutant of the 833d AAA AW Bn. accounted for nine.

The 556th AAA AW Bn., Lieutenant Colonel John T. Efford, Commanding, sent in seventeen subscriptions as the JOURNAL went to press.

Nazi Rockets

London, Dec. 14. Reports here today were that Adolf Hitler's reported long-range rocket gun was tested a few weeks ago along the Baltic coast and that a weapon expected to hurl the projectiles 250 miles proved a miserable failure. Guesses as to the size of the rockets which the Germans would seek to develop have ranged as high as 120 tons.

Any effective shelling of a specific target as far inland as London—about 80 miles from the French coast—is virtually ruled out by most unofficial commentators on grounds of extreme inaccuracy at such a range.—Associated Press.

New York, Dec. 22.—The Allies know enough about the new German "secret weapon"—a rocket type projectile—to regard it as "no bluff" and to have its workshop already under fire, it was reported here today by Allan A. Michie, of *Reader's Digest*, arriving by plane from Europe.

"As an example of the kind of information they (the Allies) are getting, the RAF made a night raid three months ago on a hitherto unimportant town of Peenemund," Michie said. "Later through agents they learned that 5,000 workmen, including hundreds of highly skilled artisans, were killed and many blueprints and much machinery destroyed. The secret weapon has not yet been used. You must draw your own inference.

"The Allied officials do not know all the details but they are reasonably sure of the broad outline of this secret weapon. It is a rocket type projectile weighing approximately fifty tons of which about forty tons is propulsion material and ten tons explosive. It can be shot from the French coast into England. It could and may cause havoc for a short time but at best it can only delay the outcome, not change it."—Washington Post.

Oldest Subscriber?

"42d renewal—Good Luck!"

MAJOR GENERAL WILLIAM H. WILSON.

New Director

A new type of antiaircraft gun-pointer which shoots down planes with its "electric eye" was demonstrated today in the presence of five United States Army generals at the Bell Telephone Laboratories, near Summit, New Jersey.

The device is said to be so deadly that in the South Pacific recently it accounted for twelve out of sixteen Japanese bombers with only eighty-eight shells.

Known as M9, the electrical gun-pointer device measures the plane's height, makes allowances for drift, muzzle velocity, gravitational pull, air density, and wind.

Major General Levin Campbell, Chief of the Army Ordnance Department, said that the gun-pointer was "one of the greatest advances ever made in the art of gunfire control."

The new weapon is a dream conception of its inventor, Dr. David Bell Parkinson.

During the Nazi invasion of the Low Countries, he said, he dreamed he was in an antiaircraft crew that brought down a plane with every shot. He awakened with the impression of an electrical control mechanism, and proceeded to work it out.—*Daily Mail, London.*

♦ ♦ ♦

B-17G

The Boeing Aircraft Company announces that it is now producing Model B-17G of the *Flying Fortresses*—eighth in the long line of Boeing B-17's.

Outstanding new characteristic of Model G is a "chin turret" located under the nose of the ship beneath the bombardier's plastic window. The craft also has numerous other refinements over its immediate predecessor, the B-17F.—*U. S. Air Service.*

♦ ♦ ♦

Sea Wolf

A new torpedo plane, the *Sea Wolf*—the most powerful of its type in the world—which was announced by the Navy recently, will be built from a design developed by Chance Vought Aircraft Division of United Aircraft Corporation. The new craft—a valuable addition to the Navy's arsenal

of weapons for smashing Japanese seapower—is to be manufactured in quantity by the Consolidated-Vultee Aircraft Corporation.

Announcement of the new torpedo bomber was made recently by Rear Admiral Ralph Davison, Assistant Chief of the Bureau of Aeronautics, who said:

"Carrying a crew of three, pilot, gunner and radioman, the *Sea Wolf* incorporates everything we have learned about planes of this type. It is powerfully armed with guns to defend itself. It is well armored. And it carries the deadly tin fish, which the Japs make futile effort not to catch, or a load of bombs which makes them equally unhappy.

"The performance of the *Sea Wolf*, its speed, range and ability to climb to operating altitudes, I cannot of course discuss in detail. Suffice it to say that there is no other torpedo plane in the world today to match it."—*U. S. Air Service.*

War Nerves

Psychiatrists who have watched and guarded the mental state of the Eighth Army are now in a position to take stock of their work. Perhaps the most important thing they have discovered is that when the soldier is properly trained, adequately armed, and competently led, when he believes in his cause and has good cover from the air, he does not, except in rare cases, suffer what used to be known as shellshock. Perhaps it is better to say he does not suffer from the nervous disorders caused through the noise, excitement, and strain of fighting.—*Daily Express, London.*

♦ ♦ ♦

New Antimalarial Drug?

First indication that the Army has a new drug for fighting malaria, and one sufficiently promising to be worthy of a trial under field conditions, appears in an announcement from the War Department.

The name of the new drug has not been released, but its existence was mentioned in a report that fifty enlisted men who volunteered to expose themselves to malaria in the jungles of New Guinea have been awarded the Legion of Merit for this courageous service "beyond the call of duty."—*Science News Letter.*



Two six-inch seacoast guns, captured from the Japanese in the Aleutian area. The gun shown on the right is marked "Armstrong—Whitworth & Co., 1900."

BOOKED FOR ACTION!

Artillery *GUN BOOKS* should accompany weapons at all times

Be Sure to Record

Field Service Modification Work Orders

Seasonal Changes of Lubrication and Recoil Oil

Follow instructions given in each Artillery Gun Book and Section VIII Cir. No. 215, W. D., 16 Sept. 1943.

ARTILLERY GUN BOOKS KEEP THEM UP-TO DATE

former boundaries, and the extension of this new line exceeds in many features the former "Westwall."

The new "Atlantic Wall" is a "war fortress" of a peculiar nature comparable only to the "peacetime fortress" of the "Westwall," and like the latter is a system of fortifications completely equipped in every sense. Defensive positions are generally permanent structures, that is to say, reinforced concrete and armor plate.

In comparison to the "Westwall" two points need to be stressed; (1) From a mere "natural" fortification, a "continental" fortification has grown. (2) Instead of mere "land" fortifications on a large scale, the "Atlantic Wall" is a "coastal" system on a still larger scale, containing all-around defenses which in fact constitute circular systems of defensive fortifications.

The local defensive sector, or coastal defensive sector, includes a mass of large and small positions; a number of defensive "nests" constitutes a strongpoint, and several strongpoints constitute a "center of resistance." Especially important coastal areas, in which, for example, harbors with U-boat bunkers are located, are fortified so that they can defend themselves against sea or land attack, and are so constructed that in the event of an encirclement they can hold out singly until the arrival of the strategic reserves.

The main structures of the defensive positions follow the contours of the coastline which thus defines the main line of resistance. Facing the enemy, the coastline and the sea become the battleground upon which the Navy with its small vessels sets up the outpost line, while the Air Corps serves in this instance as the reconnaissance unit.

Against the artillery attacks of naval vessels with their large caliber guns, there are batteries of medium and heavy coastal defense guns of the Army and Navy, the range of which extends across the Straits of Dover and beyond the English coastline, protecting our own vessels in addition to fighting off enemy attack. Against small amphibious attack and smaller boats, numerous defensive batteries have been installed.

Scattered around throughout the main defensive areas are the camps of the infantry supporting troops which protect against any sudden assault no matter whether such enemy forces strike from the sea or from the air. These positions are situated for mutual flank protection and support. In addition, wire entanglements and mine fields bar approaches or canalize them, and enemy armored vehicles halted by impassable beach obstacles and concrete walls run the risk of destruction by antitank guns from the front or flank.

Strong overhead covering protects our troops, their weapons, and their ammunition against air attack or artillery fire, and insures uninterrupted observation and fire control during the period of such an attack. As soon as the air or artillery bombardment has ceased and the enemy attack starts, then from firing ports and towers there breaks forth an annihilating fire on the enemy. More armed men rush forth from their assembly positions deep underground and throw themselves into combat with the invading or infiltrating forces in order to drive them back into the sea again. If the enemy should succeed, however, in gaining a foothold anywhere along the coast or should penetrate in-

From "Westwall" to "Atlantic Wall"

(Translated for the Command and General Staff School, Fort Leavenworth, Kansas, from an article by Colonel Dr. Rossmann, German Army, in Volkischer Beobachter, Berlin, Germany, 24 May 1943.)

Earlier in the war, an enormous German fortification, the "Westwall," by the mere fact of its existence, exerted great influence on the course of events.

The impression of its strength exerted such a deterring influence that the enemy did not dare to attack it, which is the highest kind of praise that can be paid to a fortification. The mere existence of the "Westwall" permitted the High Command to carry out campaigns in the East in such strength that quick overthrow of the Poles was assured. Thereby, the hopes which our enemies cherished for a second front were destroyed.

By May 1940 the time had come to demonstrate its other features. This fortification, the threshold of which no enemy soldier had ever passed, served as a cofferdam behind which the might of the German nation gathered, and when the appointed time arrived, poured its floods of armed men over the enemy lines. Thus the "Westwall" disclosed its offensive nature as an operations base for the release of irresistible forces.

In the territories which lie hundreds of kilometers west of the old "Westwall," the foundations of a new fortified position were laid by these troops which had burst their

To emphasize the importance of keeping Artillery Gun Books up-to-date, the above poster is being distributed to Coast Artillery, Antiaircraft and Ordnance Training Centers. The poster, which is part of a general campaign on preventive maintenance of military equipment, is printed in two colors.

land, then the strategical reserves would quickly attack and destroy them.

Like the old "Westwall" the new "Atlantic Wall" will fulfill its purpose whether it is attacked or not. The beginning of a "Second Front" on European soil will either be avoided or it will be hindered.

In addition to its basic defensive mission, the "Atlantic Wall" has a still more important purpose which is indicated by its name; this wall is the oceanic bulwark of the German nation, from which warfare on the seas is conducted, constituting the most dangerous attacking position that an insular maritime nation has ever faced.

The Next Outfit

During the Tunisian campaign, an antiaircraft unit dug into a position on a hill. That night at dusk, some engineers in British and French uniforms came into the vicinity and started digging gun pits to the rear of the AA guns, while the AA crew watched with some interest. The next morning, the engineering units with their guns placed turned them on the AA unit and drove it out, taking over the abandoned equipment. The "French" and "British" were Germans. Moral: NEVER TRUST ANYONE YOU DO NOT KNOW—ALL UNKNOWN PERSONS, WHATEVER THEIR UNIFORMS, ARE TO BE SUSPECTED.—*Air Force.*

U.S.S. General William F. Hase

The troopship U.S.S. *General William F. Hase* was launched at the Kaiser shipyards at Richmond, California, on 15 December, 1943. The ship was sponsored by General Hase's daughter, Mrs. John E. Wood, Jr. Miss Anna Moore, daughter of Major General George F. Moore, Coast Artillery's last commander, was Maid of Honor.

General Hase was Chief of Coast Artillery at the time of his death in 1935. He was awarded the DSM for service in France with the AEF, served as Chief of Staff of the Hawaiian Department after World War I, and was a fleet commander in the Philippines.

Pacific Prisoners Receive Parcels

Washington, D. C., December 23—Word has just been received in the United States that American prisoners of the Philippines began receiving during the first half of December, the food parcels and other relief supplies transported from the exchange ship, *Gripsholm*.

A cable was received today by the American Red Cross from Geneva stating that the International Red Cross delegate in Japan, Dr. Fritz Paravicini, was making every effort to dispatch in time for Christmas one food parcel for each United Nations military prisoner of war and civilian internee detained in Japan proper, and in Korea, Taiwan and Manchuria.



A Russian coastal battery.



Press Association Photo

Italian AA guns on the outskirts of Rome.

Artistry vs. Reality

The cover of the September-October issue of the JOURNAL was an artist's conception of an AA emplacement as viewed from an attacking plane. The drawing apparently does not satisfy our realists, from the evidence of the following letter:

— AAA Bn.
APO 464
26 December 1943.

Gentlemen:

I received the September-October issue the other day. There was our own 40mm right on the cover. It is a very pretty picture, but it violates several of the very things we have learned and teach over here. I even had a chief of section call me to ask me if I had seen it (all of our battery officers take and pass the JOURNAL around). Each time we build a gun position, we build them smaller and we are still in the process of getting them still smaller. After a few engagements, the men see the point, too. When we are unable to pull our wheels, we cover them with bags anyway, not only to make the pit smaller but to protect our rubber. Only one ammunition pit can be seen and there should be two at least. Here we find four is barely enough. That one ammunition detail is looking up at the plane when he should have his eyes on his work. The range setter

and numbers one and two are going to find close quarters when they pass the straight side of the square director pit. You can save bags and get a smaller pit if it is round.

I cut the cover off and put it on a poster with a sign. "How Many Things Can You Find Wrong With This Picture?" It has created more discussion and arguments than you can imagine. They are even trying to identify the plane making the shadow and to estimate its altitude by the distance between machine gun shells coming from the plane.

I realize that the picture was merely symbolic, but I could not resist the temptation to let you know how much discussion your cover caused.

FRANK J. EHRMAN,
1st Lt., CAC.

* * *
Flare . . . ?

By COLIN BEDNALL

The Air Ministry has revealed one of the greatest secrets behind the mighty bombing offensive launched on Germany.

The newly-revealed secret is the "Target Indicator"—a super-type flare dropped by the Pathfinders, which can be seen at night from the sub-stratosphere through almost total cloud.

Air crews know the Target Indicator simply as "T.I. Red" or "T.I. Green," according to the color—which is changed to prevent the enemy leading the bombers astray by setting fake indicators ablaze in open country.

The bomb-aimer no longer searches for what he thinks is, or should be, the target. He simply bombs the Target Indicator.

And this is seldom out of place. It is always dead on the target—the Pathfinders insure this.—*Daily Mail*, London.

* * *

. . . Or Navigational Device?

By JOHN H. COLBURN

Stockholm, Jan. 4 (AP).—The accuracy of a secret new navigation device which permits the RAF to bomb targets with precision regardless of weather conditions has amazed high German military officials who have observed how it was used in the systematic pattern destruction of Berlin, it was learned today.

A source close to German official circles said the baffled Germans were caught flat-footed by the Allied secret weapon which permits pattern and precision bombing almost on the scale of the United States Air Force in clear daylight.

(The United States Eighth Air Force announced December 28 the development of secret scientific navigation devices which permit American bombers to bomb accurately from as high as 25,000 feet targets obscured by either clouds or fog. The announcement said the new methods had been used successfully in missions involving a total of 8,000 bombers and fighters.)

Eyewitnesses said there is remarkably little wastage of bombs. There is only a small amount—perhaps not more than 200 yards—of overlapping as the attackers move from neighborhood to neighborhood.

An anonymous Swedish scientist said in the newspaper *Dagens Nyheter* that the RAF was apparently using a device which pierces fog and cloud. When rays are reflected from the earth, they form a pattern which the navigator can read like a map.

* * *

Bouquet by V-Mail

APO _____
22 December 1943.

Dear Col. Price:

Your letter of 14th September plus all issues of the *JOURNAL* that had not been received caught up with us over here. The Sept.-Oct. issue was also received and I can assure you that we are most pleased.

The personal interest shown by your letter is really appreciated and I do want you to know all of us over here in the unit read the *JOURNAL* from cover to cover and then circulate it among the enlisted men. The recent article (Sept.-Oct. issue) by Major von Kolnitz was most interesting since this unit occupied and defended many of the same installations and air fields referred to. No doubt occupied many of the same gun positions. Thanks again.

Sincerely,

ROBERT D. HARRISON,
Major, CAC.

Short Items of Interest

The *Daily Mail*, London, in a recent issue stated that English and American planes had dropped 4,000 tons of bombs on Germany in a single twenty-four hour period and that this weight of explosive requires 333 British freight cars, broken down into nine trains, to transport from factories to bomber bases.

* * *

Coast Artillerymen who were unable to bring their pieces near the battlegrounds because of road conditions shouldered rifles and aided in cleaning out the remaining batch of Japs who were left on the island (Attu).—*Captain McQuaide Overs and Shorts.*

* * *

In April, 1943, it was announced that Lockheed Lightning P-38's, single-seater fighter planes, were going to fly under their own power. Tiny Ascension Island, a mere point in the route between South America and Africa through which 5,000 planes already have been cleaned up, helped make that possible, the War Department disclosed December 29.

* * *

A sound-powered telephone operated without batteries proved one of the most useful pieces of equipment on Guadalcanal, according to a recent War Department report.



307mm seacoast gun, captured at Catania.



Italian artillery train.

Power in the telephone is generated by the human voice. It is capable of carrying its message as far as ten miles under favorable conditions and has a range of five miles under almost any circumstances.

* * *

Ferrying of aircraft across the North Atlantic has been greatly expedited by the installation of six long-wave radio communications stations under the A.A.F. Army Airways Communications System, linking the United States with Newfoundland, Labrador, Greenland, Iceland and Great Britain.

* * *

The 75 millimeter cannon, long familiar as an artillery field piece, has been installed in the B-25 Mitchell bomber and put into aerial combat against the enemy.

* * *

A method of brewing a sauce from copra cake comparable to that brewed from soy beans and wheat has been developed by the Japanese Army and commercial chemists.

* * *

More than 4,000,000 tons of cargo and hundreds of thousands of troops were moved through the port of Oran by the Transportation Corps, Army Service Forces, in the year following the invasion of North Africa.

* * *

Lieutenant Colonel James C. Mott, G.S.C., and Lieut-

enant Colonel James I. King, Infantry, who returned recently to the United States from Italy as observers, were enthusiastic in their praise of the American soldiers' skill with small arms and said their marksmanship is paying dividends in dead Germans and saving American lives.

✓ ✓ ✓

Colonels Promoted

The following Coast Artillery colonels were nominated for promotion to brigadier general on 22 January: Willis M. Chapin, Leonard L. Davis, George M. Badger, Lester D. Flory, Harry F. Meyers, Clarence H. Schabacker, Robin B. Pope, and Robert T. Frederick.

✓ ✓ ✓

Coastal Military Establishments Reduced

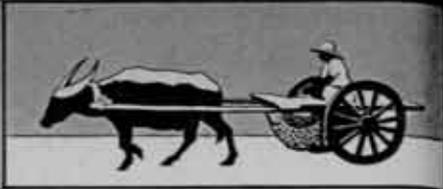
The War and Navy Departments jointly announce that the military establishments of the coastal areas are being reduced in order that soldiers can be sent to overseas stations where the principal need for them now exists.

However, a considerable number of units will be retained in training for overseas duty but supporting coastal defense and available in case of emergency.

Now that the battlefronts have moved farther from our borders and we have taken the offensive it would be a waste of manpower to maintain the same number of troops in this country in static defense positions.



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 Harbor Defenses of Manila and Fort Mills are part of this command and Fort Mills is headquarters.

The Harbor Boat lost P... of trips from Fort Mills the past quarter of a morning of A... to Fort Mills she rolled over on a few minutes... Wint in fifty work on... of all except time of ac... Hultquist, F. W. B... when they v... down... they managed boat. For two kept afloat before the... By slow stage while, the assistance our own harbor boats were missing boat. The survivors were... beach by a destroyer on the... and a small boat was sent as... for them. All survivors have now completely recovered and have rejoined the busy round of work at Corregidor.

A month after this near-tragedy part of the post engaged in a celebration when Colonel P. D. Bunker's regiment celebrated its twenty-third anniversary. It was 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

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... his Chief of Staff, made... Fort Mills... armament, in... Arthur having at... of the Philippine... Corregidor... upon his de... vity but... dently ap... and little... the vast... ing... been ac... ears, an ap... oor instruc... ers' In... e by batteries... and Lieuten... slackening of the... completely outdoors... ms and beach defense... tly all over the... craft... ine gun, and... being conducted by all regi... too early to comment on the record of... organization, but... observation of the first firings... k well of the preparedness of Corregidor for any... eventuality in these lines. General Moore, just completing a quarterly inspection of all phases of the training and installations in the Harbor Defenses, noticed a vast improvement in all cases over that displayed in his last inspection.

Frequent "conditioning marches" under full pack are 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

I SHALL RETURN!
MACARTHUR



MAJOR GENERAL GEORGE F. MOORE

"No name stands out more brilliantly than the heroic defender
of Corregidor—General George F. Moore."

—MacArthur.



BRIGADIER GENERAL BRYAN L. MILBURN, *Commandant*

By Lieutenant Colonel Charles H. Scott

Now being distributed to all soldiers at U.S.O. Clubs is a booklet, *We Are of the Future*, which is the publication of a speech made by Brigadier General Bryan L. Milburn, Commandant of the Antiaircraft Artillery School. His clear and simple statement of the ideals for which we fight was originally an address given at the Wilmington, N. C., U.S.O. last July 4th. The speech was so impressive that the Army and Navy Department of the Young Men's Christian Associations, one of the agencies of the United Service Organizations, requested permission to print it and distribute it to as many soldiers as possible.

The booklet ends:

"Our enemies have reverted to forms of government which are an expression of everything evil in government since history began. With them, the principal idea is for the people to serve the government; with us, it is that the government shall serve the people.

"They are of the past. We are of the future."

General extension of present courses as to scope and time and several new courses have been introduced in the advanced courses for student officers at the Antiaircraft Artillery School. Many courses for enlisted specialists have also been changed.

Generally the advanced courses were of six weeks duration, until the first of the year. Now the courses range up to fifteen weeks with more practical work included in the instruction.

The General Officers' Advanced Course is now twelve weeks long with a new class every four weeks. The same applies to the Officers' Searchlight Advanced Course. The Automatic Weapons Officers Advanced Course is now eleven weeks long with a new class every two weeks while the gun course is fifteen weeks in duration and starts every two weeks.

The new courses for officers are in detector work. The general Detector Course is twenty-two weeks long with classes beginning every four weeks. Detector Operation, Guns, is five weeks in duration with a class every two weeks, while the same for searchlights is three weeks and a new class every four weeks.

Four old courses for officers remain unchanged. They are the Communication and Motor Courses which are eight weeks long and a class every two weeks; Air Officers' Course which is one week long with a new group every two weeks; and the Stereoscopic Height Finder Course of four weeks with a new class every four weeks. Target recognition is now taught in many of the other courses.

In the Enlisted Specialists Courses, basic electricity has been included into three other courses as part of the pro-

gram. The three courses which will incorporate electricity are Automatic Weapons Fire Control, which is sixteen weeks long; Gun Fire Control, which is of eight weeks duration, and Searchlight Electrician which is sixteen weeks. All have new classes every four weeks.

New courses for enlisted men are Detector Repairmen, Gun, and Detector Repairmen, Searchlight. Both have a twelve week schedule and both admit a new class every four weeks. The Radio Repairmen Course is a prerequisite for these new courses. It is thirteen weeks long and a new class forms every week.

The Master Gunner, Automatic Weapons and Searchlight, and the Master Gunner, Gun, Courses remain twelve weeks with a new group every four weeks. The Stereoscopic Height Finder Course is twelve weeks long and a new class forms every six weeks while the Motor Course also twelve weeks with a new class every two weeks.

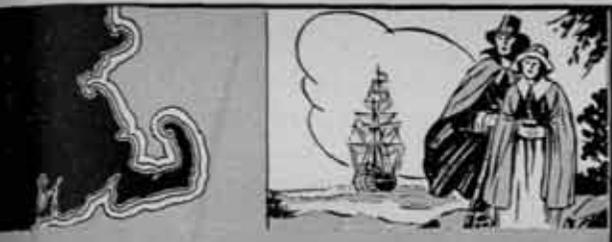
Many of the departments of the School have been moved to the northern end of Camp Davis in a move which centralizes most of the School's departments. This will expedite the training of officers, officer candidates and enlisted specialists. Aside from the instruction that takes place at Sears Landing, classrooms are now centered in the area with quarters close by. Among the departments to be moved were Tactics, Gun, Automatic Weapons, Searchlight and Instructors. Also moved was the Student Officers' Group headquarters, Air Liaison Office and AAA School Headquarters.

At the conclusion of the nation-wide tour of the British Antiaircraft Battery, a booklet, *Au Revoir America*, was printed for the British. It was prepared by the School's Public Relations Office and Reproduction Facilities.

After his recent visit, General McNair wrote a letter commending the AAA School's activities which was transmitted through General Green to General Milburn. Part of the letter follows: "The 90mm night firing by school troops was superior. The accuracy of this fire is convincing proof of the capabilities of matériel, and that erratic firing observed frequently in units is due to personnel and training failures. The accuracy of the 40mm firing by school troops was outstanding. . . . The organization of the firing points of the School at Sears Landing is outstanding." Two units of the School were particularly singled out for commendation.



The School troops demonstrate coordination.



New England Sector

MAJOR GENERAL K. T. BLOOD, *Commanding*

By *Captain Howard O. Husband*

The end of 1943 marks the completion of the most intensive artillery training and target practice schedule in the history of the New England Sector. Batteries in all the harbor defenses have been actively engaged in firing day and night practices to round out the busy training schedule. An example of the pace of artillery firing in the Sector occurred recently in the Harbor Defenses of Portland where six target practices, including both day and night firing, were completed in a two day period. In addition to the record and special practices on the schedule, batteries in new installations have conducted calibration and test firings. Results obtained in target practices during the year have indicated progress and an advanced state of training. Recently, a special joint Army-Navy motor-torpedo-boat exercise was conducted in the Harbor Defenses of Narragansett Bay. It was observed by visiting officers from the British Royal Artillery, and officers from the Army Ground Forces, the Coast Artillery Board, the Coast Artillery School, Headquarters, New England Sector, and the Navy. Boston Harbor was the objective of two recent motor-torpedo-boat "attacks" which were arranged with the cooperation of local Naval authorities. These exercises proved to be of great training value to both the harbor defenders and the Navy attackers.

In November, the Eastern Defense Command Chemical Warfare Service team conducted a short school of instruction in the Harbor Defenses of Long Island Sound. Upon completion of the course, the unit, aided by the local Chemical Warfare Officer and the Fire Department staged a spectacular night exhibition of incendiaries and control methods.

Harbor Defense and regimental schools are carrying on a continuous program of instruction. In the Harbor Defenses of Portsmouth, schools in intelligence, malaria control, hand-to-hand combat, and the various types of gunnery are conducted. An educational program which offers evening classes in mathematics, physics, shorthand, and bookkeeping has been instituted. Classes are well attended. Troop schools in hand-to-hand combat are operating in the Harbor Defenses of Long Island Sound under the

supervision of officers who have completed the course at the New England Sector school. New infiltration courses have been completed at Fort Terry and Fort Wright and have been put to valuable use. Competition in small arms firing has been keen.

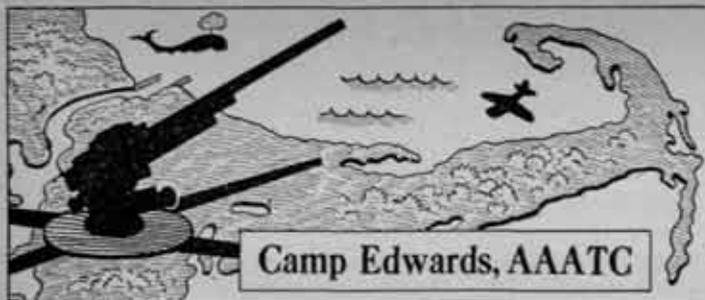
The winter training program at the Harbor Defenses of Portland will be augmented by a new orientation course which features the Weekly Newsmag, New Language Guide, G. I. Movies, and other current military publications.

Special Service activities have maintained the same vigorous pace as the Sector training program. Under the supervision of the Special Service Officer of Headquarters, New England Sector, a new radio show entitled "Mail Call" has been inaugurated. The program is sent to the command over the air waves from Station WBZ in Boston and Station WBZA in Springfield each Saturday. The new series combines military education with the best in soldier entertainment. Outstanding stars from the screen and radio have appeared as guest stars. The dramatic part of the program is based upon the Army experiences of a group of soldiers stationed at "Fort Liberty" and is generously sprinkled with G.I. humor. The initial broadcast on 11 December featured an address by the Sector commander, who reviewed the mission of the troops in this command. Morton Downey appeared as the guest star and rendered several vocal numbers. These programs are the result of the efforts of an all-soldier staff.

The Harbor Defenses have produced several highly successful all-soldier shows. Portsmouth's musical, *Direct Hit*, has been presented to soldier audiences with excellent results. The new theater at Fort Dearborn opened on 5 December with appropriate ceremonies. At Fort Wright, a combined WAC-Soldier show entitled *It's All Yours, Buddy* met with instant popularity. The show toured the harbor defenses and aided the WAC recruiting drive by staging a performance in New London. *Sad Sacks of 1943*, the all-soldier, all-WAC review presented by Fort Rodman has played to capacity audiences in its tour of the harbor posts. The social calendar has included post dances, G. I. movies, and U. S. O. shows.

Athletic and recreational activities round out the complete extra-curricular program. The Harbor Defenses of Portland is participating in basketball leagues for the harbor posts and an inter-service league consisting of twelve teams from Army, Navy and Coast Guard units. In addition, seventeen bowling teams including representatives from the WAC detachments have been organized. The Harbor Defenses of Portsmouth held an athletic smoker on 14 December with three college coaches as guest speakers. Movies of outstanding sports events of 1943 were shown. A successful basketball season is anticipated from form displayed by the harbor defense team which has been entered in the local U. S. O. League. At New Bedford, the Fort Rodman five has been entered in a local league. The Harbor Defenses of Narragansett Bay has organized leagues for volley ball, basketball and bowling.





BRIGADIER GENERAL JOSEPH E. HARRIMAN, *Commanding*

By Captain Richard J. Kane

The New Year brought to soldiers training at the Anti-aircraft Artillery Training Center at Camp Edwards some welcome additions to its firing range equipment, small arms firing ranges and bayonet assault courses that are sure to produce more accurate .50 cal. machine gunners and rougher, tougher fighting AA troops.

Foremost, and certainly the most appreciated from the Cape Cod weather point of view, are the new permanent building installations at the Wellfleet firing range which were constructed at a cost of some \$400,000 and are capable of housing one full battalion.

Comprising forty-three buildings in all, the Wellfleet installations are the ultimate in utilitarian design and construction, embodying as they do a new type exterior weather-proofing; built-in facilities in barracks and lavatories not heretofore found in Army installations of this type, and messhalls accommodating 280 men that would make the head chef at the Waldorf beam with delight, so complete are the kitchen appointments.

The buildings, occupying an area in the approximate center of the Wellfleet range which extends some four miles in length and one mile in depth fronting the Atlantic Ocean, consist of seventeen single-story barracks that will house fifty men each. In addition there are five messhalls; four company administration and supply buildings; five fully equipped lavatories; a Day Room; Administration building; Assembly Hall seating 400 men; three officers' barracks; an Infirmary; a Post Exchange complete with barber and tailoring facilities; a fire house with ultra modern fire-fighting equipment manned by expert civilian fire fighters; an ammunition magazine, and a commodious storehouse. Towering over the firing range is a seventy-five-foot water tower that has a capacity of 135,000 gallons, thus insuring enough water for all possible needs.

The drivers of heavy AA equipment will no longer be faced with the ever-present fear that their vehicles may founder in the sand and mud, as some five miles of hard graveled roads have been installed the length and breadth of the range.

Other improvements include permanently installed electrical, sewage and telephone facilities.

Opened on March 19th, 1943, the range is unusual in that it gives AA gunners a perfect three-mile firing line, and its terrain and heavily-wooded tactical area offers troops in training unrivalled opportunities to test their all-important field problems and maneuvers.

In physical appearance Wellfleet has all the wild, picturesque rugged beauty that has made Cape Cod the haven for thousands of vacationers yearly and whose fame has

been spread worldwide by such writers and painters as Joseph C. Lincoln and Alec Waugh.

The actual firing range is located on a sand bluff that drops precipitously seventy-five feet down to the rough waters of the Atlantic. Fifty yards to the rear of the beach the sand dunes dip and swell. To the rear of these sandy promontories are the barracks and tactical areas.

Next in training importance has been the development of two new bayonet assault courses that emphasize a new type of body assault and obstacle that American troops have encountered in this worldwide struggle. The courses feature twenty-two different assault figures and obstacles stretching over 275 yards in length.

Durability in construction has been the keynote. It is estimated that well over 6,000 troops can plunge and lunge their way through the courses without any appreciable repairs being required to re-fit the obstacles to another wave of attacking troops.

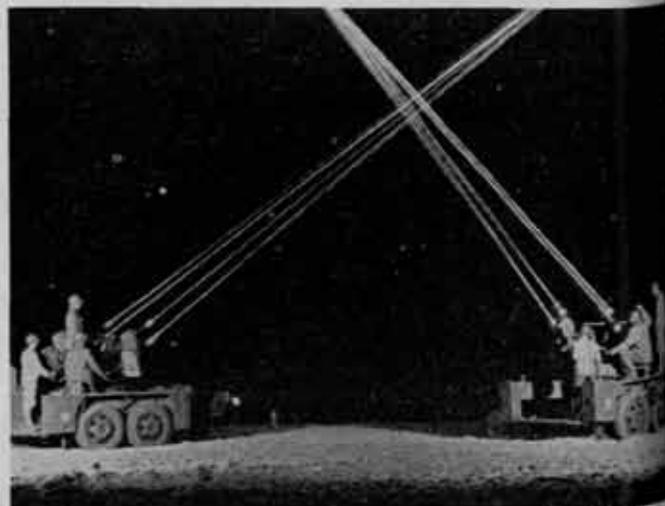
Mixing over-trench, wall climbs, and tunnel obstacles with dummy figures that stand erect or are lying in trenches and fox holes, the new courses inject into the training of AA personnel every bayonet element necessary to aid troops in offensive fighting or as protection against the vicious thrusts of savage and brutal enemies.

Machine gunners with "eagle" eyes and steady hands are having their innings these days as they try their skill on the two newly-constructed skeet ranges which have become a definite part of AAATC training so they can acquire knowledge and skill in "lead" shooting.

Marksmen using the ranges shoot with a standard gauge shotgun and National Association Skeet rules for amateurs and professionals are adhered to. The ranges are patterned after civilian gun club skeet courses and are built to standard specifications.

An innovation that has made its entrance on the Camp Edwards scene recently has been the introduction of the half-track ambulance. Capable of transporting nine patients when its winter tarpaulin covering has been stripped from its frame, the half-track ambulance is made feasible by moving the multiple .50 cal. machine gun mount and placing slings in the interior capable of supporting stretcher cases. The remaining five patients are placed atop the vehicle.

Its great value is in the fact that they can travel



Multiple ".50's" on trailer mounts streak the night sky at the Wellfleet range.



Chesapeake Bay Sector

BRIGADIER GENERAL ROLLIN L. TILTON, *Commanding*

By Lieutenant Alonza F. Colonna

Battle experience of American troops on fronts all over the world came home to Brigadier General Rollin L. Tilton's command at historic Fort Monroe and the Chesapeake Bay Sector during 1943 in a training schedule designed to prepare Coast Artillerymen for fighting under every possible condition against enemies on land or at sea.

Usually considered the birthplace of the Coast Artillery and the scene of much of its evolution toward the modern fixed gun emplacement, the area and its troops in November and December underwent almost continuous operations in a mobile warfare stressing the artilleryman's rôle in the jungle, on beaches and under infantry fire.

New infiltration courses at Fort Monroe and Fort Mifflin, added to those already in operation, made possible the training of all sector troops in advancing and seeking shelter under small arms attack.

Colonel Paul H. Herman's command at Fort Story, which underwent rigorous infantry maneuvers in the nearby woods, also was subjected to gas attacks from jeeps simulating the gas strafing of planes.

Units of Brigadier General David P. Hardy's command at Camp Pendleton completed field exercises begun in October which allowed all personnel to spend at least three

weeks continuously in the field, the exercises varying from deliberate occupation and improvement of a seacoast defense position to the occupation of a field artillery position and support with live ammunition of an imaginary infantry division.

All batteries of one regiment at the camp were used in a heavy bombardment of a burned out area in the neighborhood. Planes borrowed from the Navy were used for observation, and forward OP's equipped with improvised "trench periscopes" were established.

Announcing the completion of small arms firing for the calendar year in his command at Fort Monroe, Colonel Wilmer S. Phillips reported that nearly all personnel whose duties require the use of the M1 rifle had attained qualifying scores. The colonel also reported extensive and successful use of the M-9 M/G Trainer and the Navy Polaroid M/G Trainer in drills with machine gun crews.

Fort John Custis batteries took up a new type of training program in December with the allotment of funds permitting the railway guns to leave the post for a land firing maneuver. Several successful marches involving shuttle movements, entrucking and detrucking were carried out during the period.

General Tilton, taking part in nation-wide observance of the rôle of civilian employes with the service, honored one of the Coast Artillery's oldest workers in awarding a medal to Peter Washington, aged Negro, who has been employed continuously at Fort Monroe since 1888.

Fort Monroe, during the period also was assigned its first WAC's, when three WAC second lieutenants were placed on duty at the post and two reported to the Coast Artillery School.

Lieutenant Colonel W. B. Hawthorne, commanding Fort John Custis, welcomed a new 30-piece military band to the post during December, and at Fort Monroe, the Artillery band took a leading rôle in presentation of a second annual Army Emergency Relief Show.

In sports, the Fort Monroe football team closed its season in November, placing third among Virginia service teams, and most posts in the sector produced basketball squads for competition both in the sector and against service teams in nearby states.

ugged, pitted terrain that would defy the average ambulance.

As the tides of America's fortunes in battle have swung from the defensive to the offensive in all parts of the world, so has the training of AA troops at Edwards.

No longer do antiaircraft soldiers move out from the emplacement on maneuvers and problems that stress defensive tactics. Now the watchword is offensive tactics, and more offensive tactics, so that all troops are becoming inculcated with the will and driving force of victoriously defeating the enemy.

Maneuver after maneuver, and field problem after field problem, finds the tides of defeat constantly facing the "Battles of Cape Cod" relentlessly drive

them into the waters of the Atlantic or beyond the boundaries of the existent battle lines drawn by Brigadier General Harriman and his staff.

During several victorious onslaughts as many as two-thirds of the soldiers in training have been engaged in the maneuvers that are Cape-wide in scope and envelopment.

Every weapon in the AA arsenal is brought into high relief as the tides of "battle" surge onward, with ingenuity and adaptability paying high dividends to officers and enlisted personnel alike.

As the troops take maneuvers, field problems, gun and infantry drills, and snowy, bitter cold weather in their stride they keep ever in mind the watchful credo that General Harriman has coined for them . . . "Always Alert."



Fort Eustis

BRIGADIER GENERAL JOHN B. MAYNARD, *Commanding*
By Lieutenant Howard B. Leeds

"There is only one major task at hand in America today, and that is to deal a lasting, crushing blow to the Axis powers as quickly as possible. Totalitarianism must and will be destroyed. Therefore, in this life and death struggle there can be no turning back or compromise. . . . We must fight with everything we have and willingly endure any hardships to gain victory."

With these words of Brigadier General John B. Maynard, Commanding General, addressed to the troops of Fort Eustis in his Armistice Day address, and echoed in their every training hour, the men of Fort Eustis have intensified their training activities to equip themselves physically and mentally for future participation on fighting fronts.

The wind, snow and rain of winter on the Virginia Peninsula have not curtailed training activities. Rather, they have been increased in pace with the increasing tempo of the war. To the concentration on preparing men for actual battle conditions with long hours in the field, digging their foxholes and gun emplacements, learning to take care of themselves out-of-doors, have been added training in new problems which the United States Army is finding itself confronted with overseas.

One of the chief of these is a knowledge of mines and booby traps which in some combat areas have resulted in many casualties. The ground work for intensive training of soldiers in booby-traps and mines has been inaugurated. The subject of demolitions, mines and booby traps now constitutes an essential part of basic training.

A "booby-trap house" has been rigged up with dud explosives and a mine area marked off. A training course in mines and booby traps for officers and noncommissioned officers—one from each battery—has been conducted. Men in training are in turn being instructed by the commissioned and noncommissioned officers, graduates of the course. Eventually every man trained here will have to go through

the demonstration area and familiarize himself with the techniques, just as every soldier must go over the initiation course under machine gun fire before leaving this post.

The booby trap house has been so converted that practically all its furnishings (one part of a large room has foreign furnishings—German posters, uniforms, hangings, etc.) have been rigged up in booby trap style. Impulsive soldiers who sit on certain comfortable chairs, or reach for an empty whiskey bottle, or straighten out particular pictures or open innocent doors or closets, are treated to a multiplosive which serves as a grim warning of what would have happened had it been the real McCoy. And, to drive the lesson home, each victim of the mine field or "Booby House" is recorded as dead, his name is placed on a wooden cross, and he is "buried" in a mock grave yard.

In addition, the Mine School Staff further dramatized the study and invented the "minelin," a vicious character presenting devices whose sole purpose is to trick and fool American soldiers. Drawings were made and published along with stories, in the weekly camp newspaper, the *Sky Watch*, to make men conscious of the dangers they would face from mines and booby traps in combat.

As well as preparing men physically to be good soldiers, the Antiaircraft Replacement Training Center at Fort Eustis is entering into the Army's orientation program making its men well-informed on world news. In addition to orientation lectures and motion pictures, two pages of the *Sky Watch* are now being devoted each week to a summary of world news and information on our own and the enemy's strengths and methods.

The construction of the new bowling alleys will be completed sometime during January and should provide healthful amusement for many men.

Over a hundred Eustis enlisted men, natives of eight nations, recently became citizens of the United States.

The feminine portion of Fort Eustis' military population will be doubled within the near future with the creation of a new WAC unit here—the WAC Detachment, AART, whose personnel is arriving daily.

A Victory boxing tournament open to the entire military personnel of Eustis is scheduled for a mid-January opening gong.

Thanks to proper conditioning, proper preventive steps and prompt medical aid, Fort Eustis has shown fewer cases of colds and flu so far this season than many sections of the nation.

Grim warnings of what lies in wait for the inattentive soldier who neglects to absorb his basic training are contained in two signs posted in the Battery Area of B-3. Described in one sign is this none too gentle reminder: "NO FORGIVENESS NOR FORGIVANCE in training here—may mean DEATH or worse here." This warning is flanked on either side by the skull and crossbones. The other sign is even more forceful in import: "Those who forget—are buried by those who remember."



Do you notify the JOURNAL of change of address
every time you move?



Northern California Sector

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

By Captain Gerald C. McClellan

Weekly regimental parades have been instituted for troops stationed at Forts Funston and Miley as part of the training program.

Pointers learned through actual experience in France, England and North Africa were shown HDSF antiaircraft troops by battle-tested British AA gunners when a contingent of the Tommies visited here a short time ago. Lieutenant General Delos C. Emmons, Commanding General of the Western Defense Command, and other ranking officers in this area turned out to see the Britons demonstrate their wizardry.

HDSF troops went into action against "enemy" raiders several times during November and December as the Northern California Sector staged a series of exercises to test defenses up and down the coast.

The attacking troops were garbed in distinctive red uniforms and attempted to reach shipyards and other key points which a real enemy might try to sabotage in landing raiders from the sea.

In an effort to show every man stationed in the HDSF why the current war is being fought, an ambitious orientation program has been undertaken here.

William Winter, noted radio news analyst, and the *Why We Fight* series of motion pictures have been used to get the story across to the artillerymen. Mr. Winter made a series of talks here recently.

The movies are bolstered by lectures and each man is given an objective quiz to see how much of the instruction he has absorbed. Results of the tests have been termed "highly satisfactory" by orientation officers.

Twenty-five hundred new books have been added to the shelves of the Fort Winfield Scott library, making the collection one of the finest of its size on the Pacific Coast. Fiction, non-fiction and technical books combine to offer HDSF officers and men almost any kind of reading matter they may want. Also added is a sizable file of daily newspapers from all over the United States.

Additional books are also being purchased for the traveling collections, which are sent to outlying batteries and replacements, and additional orders each month will enable the libraries to keep abreast of new publications.

An energetic scrap salvage campaign during 1943 has resulted in hundreds of tons of ferrous and non-ferrous metals, paper, kitchen grease, tin cans, bones and meat cannings, textiles and shoes being turned back into the war effort, according to HDSF salvage officers.

Scrap metal savings alone have been enough for nearly 50,000 hand grenades, 7,500 thirty caliber machine guns or 250 two-ton bombs, it is estimated.

Food conservation measures, too, have produced outstanding results, with a six months program saving an estimated 400 tons of vital edibles. This has been established without sacrificing the usual balanced fare and without denying any man as much food as he wants.

Ranking visitor to the HDSF in the last two months was Brigadier General Joseph W. Byron, chief of the Army's Special Service Division. General Byron expressed particular interest in the motorized PX's operated by the Fort Winfield Scott Post Exchange System to serve outlying personnel. He also attended a USO-Camp Shows program.

The Army-Navy football game presented another occasion for the two services to display their amity in the Harbor Defenses. Members of each, commissioned and enlisted alike, backed their favorites and a play-by-play board was set up in the Officers' Club at Fort Scott to enable off-duty officers to follow the game.

HDSF chaplains prepared themselves for possible battle duty when they went through a rigorous training program. They underwent the experience of land mines and CN hand grenades bursting near them, and of advancing under HC-laden smoke.

They also received instruction in map reading and in the use of the compass, and on a night problem they were left in strange terrain to make their way home.

The basketball season opened with a number of batteries boasting strong quintets, and one headed by Captain Richard Vieille, former University of California player, won the championship in a "pre-season" league. Captain Vieille is battery commander of the E-Cronkhite outfit.

The heaviest earthquake to hit the Bay Area since 1934 shook the HDSF in October, but no damage was done. A few startled defenders rushed out into the night, but many others slept through the incident.



Signal Corps Photo

Lieutenant General Delos C. Emmons, Commanding General of the Western Defense Command, and Lieutenant-Colonel Thomas Metcalf, of the British Composite AA Battery, at the Harbor Defenses of San Francisco.



BRIGADIER GENERAL CORTLANDT VAN R. SCHUYLER,
Commanding AAATC

By Lieutenant Roger B. Doulens

A twelve-month of grim, intensive training ended December 31, 1943, at this center of multiplex antiaircraft artillery activities, and the "Reveille" gun on New Year's Day, 1944, awakened a camp whose keynote will be to "continue to track" until the enemy shall have been completely vanquished.

Through the year new techniques were fashioned; numerous developments in globally-wide combat zones were applied to training; there were changes in command; even amid the sternness of preparation for battle, there were a few happy days, and, most important, well trained antiaircraft artillery units moved out steadily for places in the lines across the seas or at strategic posts in continental United States.

As the year neared its end, command of the Antiaircraft Artillery Training Center at Camp Davis was taken over by Brigadier General Cortlandt Van R. Schuyler. The new commanding general took over the command on December 11, coming here from duty as chief of staff of the Antiaircraft Command at Richmond.

General Schuyler indicated upon assuming his office here that he planned no immediate changes in training policy.

Among other major developments of the year at Camp Davis were the development of anti-mechanized training for antiaircraft artillery units; construction of elaborate and highly efficient battle-conditioning courses; further development of aerial targets in conjunction with Air Corps troops and planes stationed here; a lengthy visit of the 1st British Composite Antiaircraft Battery for exchange of information with experts of the American Army, and a series of visits from high War Department officials and officers.

Anti-mechanized ranges were built for use by both 40-millimeter and 90-millimeter units. Cloth-covered frames, simulating tanks and other mechanized matériel in size, were constructed on networks of cables. These were operated by motor driven windlasses. The networks were so built that the targets could be moved laterally, in a criss-cross fashion or directly at the AA units. Thus, thousands of AA gunners were given invaluable training in rapidly aiming and firing at moving ground targets. All inspecting War Department officials and high Army officers were impressed with the efficacy of the system.

In conditioning men for individual as well as unit conduct in battle, the battle conditioning course was developed during the year. The course comprises a difficult obstacle course, which the units undertake after a several mile hike at fast cadence; an infiltration course, complete with land mines, barbed wire and other combat likeness—over which the units crawl in "waves" while machine gunners pour a hail of fire over their heads; a tommy gun range, with targets that "bob and weave," and a hand grenade course.

With the development of these various phases of train-

ing in addition to the always-improving antiaircraft artillery techniques, it is felt that the antiaircraft artillery has become a warrior of marked versatility.

Ever since antiaircraft artillery training began at this post, gratifying reports have been received officially and unofficially concerning individuals and units who have been trained here. Late in the year the camp command was especially elated to hear that the 450th AA Battalion had been cited by Lieutenant General Mark W. Clark, commanding the 5th Army in Italy, for "its courage and efficiency in the defense of Naples."

Aboard transports awaiting debarkation in Naples harbor the 450th unlimbered 40mm antiaircraft guns when a German attack began and made short work of at least one enemy bomber. The main antiaircraft defenses of the transports had been unable to get into play in time, but the 450th was credited with saving the day.

The 450th was officially credited by the War Department with being the first Negro combat battalion to go into action on European soil. However, it was not satisfied with its exploits in Naples harbor. About a week or so later, while installed on a ground position on the Italian peninsula, official dispatches again credited the 450th with further gallantry. It had bagged two enemy planes officially and captured four prisoners and a quantity of valuable enemy matériel.

The 450th was activated and trained at Camp Davis and was one of the first 40mm outfits to be set up in the Army.

During 1943 much greater use was made of Fort Fisher, N. C., often referred to as the "last citadel of the Confederacy." This historic post had been used as a firing point previously, but a large number of barracks were set up and many battalions received training there during the year. Fort Fisher is situated about fifty miles from Camp Davis at the mouth of the Cape Fear River, where that stream joins the Atlantic Ocean.

To several officers and enlisted men at this center of Antiaircraft Artillery Training during the year was given signal recognition for valor or for distinguished service in their country. They included:

Colonel Darwin D. Martin, Director of Plans and Training for the AAATC, the Legion of Merit, for his "exceptionally meritorious conduct" in developing antiaircraft defenses of Hawaii and surrounding islands after Pearl Harbor.

CWO Frank Sperl, of the Antiaircraft Artillery Battalion, for "outstanding initiative, resourcefulness, a high degree of skill and extraordinary devotion to duty" for development of antiaircraft matériel.

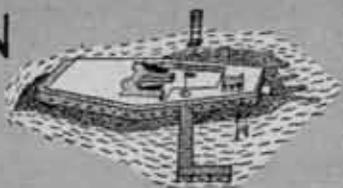
Private Herbert Anderson, Signal Corps, Soldier's Medal, for heroism in rescuing an unconscious fellow Signal Corpsman from a highly charged electric cable.

Corporal Stanley Reese, 430th AA Battalion, Soldier's Medal, for heroism in saving an unconscious comrade from a burning gun pit after a breech explosion.

Early in 1943, Colonel Adam E. Potts became Commanding Officer of Camp Davis. A Coast Artillery officer with a distinguished record, Colonel Potts took over the function of correlating the Fourth Service Command and Staff Complement activities with those of this antiaircraft artillery training center for which he is the military "host."

During the year Kitty Hawk, N. C., cradle of American

SOUTHERN SECTOR



Eastern Defense Command

BRIGADIER GENERAL CHARLES D. Y. OSTROM,
Commanding

By Colonel Royce S. McClelland

Brigadier General Charles D. Y. Ostrom assumed command of the Southern Sector on 21 October 1943, having relieved Brigadier General E. A. Evans, who assumed command of the Southern Sector after Brigadier General H. F. Loomis had been ordered to duty in another assignment.

An interesting and instructive joint field exercise was conducted involving a raid on the coast in which "enemy" forces were represented by personnel of an Amphibious Training Command, and friendly forces were represented by personnel of the Army and Navy. The purpose of this maneuver was to test the effectiveness and adequacy of all elements of defense. To achieve the maximum realism, the "enemy" was free to land on any portion of the coast within the territorial boundaries of the Florida Sub-Sector. During the problem Civil Defense Agencies worked in complete harmony with the armed forces, thus confirming the principle that integration of all agencies under a unified com-

mander is imperative in a defended area.

A study of these exercises indicates that deficiencies previously noted, had been corrected to a large degree. Particular emphasis was placed on the fact that in future operations of this type, defensive forces should be organized with sufficient flexibility to promote decentralization of control, at the same time retaining such contact as to enable the Sub-Sector Commander to strike a powerful coordinated blow when the hostile main effort has been located.

The months of November and December have been taken up in intensive training in target practice, which have included small arms as well as major armament. All troops have been put through infiltration courses. This training will be vigorously pursued.

A typical special target practice was one fired for the purpose of testing the alertness of a battery. The Battalion Commander had previous knowledge of the date of firing, but the battery officers and enlisted men had not been notified. The Battalion Commander and the Post Commander arranged for this practice to be used as a post alert. When the post alert sounded, all elements of the Temporary Harbor Defense took their alert positions, including the Tank Unit. Bilateral spotting for range sensing was used, as no suitable point for flank spotting was accessible, and axial spotting on the pyramidal target at 13,000 yards from the B.C. station is not feasible at this range. Sensings only were reported from the spotting board to the bracketing adjustment chart. This practice was rated as "Excellent," and from conversation with the officers and men subsequent to the practice, all agreed that this type of "Alert Practice" was excellent training and experience.

aviation—where the Wright brothers made their epic flight—became a sub-post of Camp Davis.

It was at Camp Davis this year that the Women's Army Service Pilots were trained as pilots of tow target planes, a new function for women fliers. On October 20 and 21 a demonstration was held by the "WASPS" to show a large delegation of nationally known newspaper correspondents and magazine writers how they are taking over part of this function of the air corps. The WASP show took place at the Camp Davis Air Field and at Sears Landing, AAATC firing point on the Atlantic Ocean. The press group gasped delightedly, not only at the proficiency of the young women fliers, but at the unerring aim of 90mm gunners firing at and knocking down aerial targets.

Antiaircraft Artillery troops toured a large number of cities and towns in eastern North and South Carolina in the autumn of 1943 and gave demonstrations to the citizenry of their equipment and training. State War Bond drive officials, who had requested the visits by the troops, credited their activity with the sale of many thousands of dollars of War Bonds.

Athletic teams jointly representing Camp Davis completed a notable record during the year. The basketball team, backed after scores of antiaircraft artillerymen had completed in a long intra-camp tourney, was undefeated in an

ambitious schedule with strong college and service teams.

In the spring and summer the camp baseball team was part of the Cape Fear League, a league of semi-pro and industrial teams centering in nearby Wilmington, N. C. The Camp Davis soldiers won the pennant.

Outstanding athletic activity and one which accounted for high week-end morale and developed unusual camp pride was the 1943 football team which was picked as the outstanding Army team in Southeastern United States and whose membership was represented on many all-star teams picked by sports writers.

The Blue Brigade defeated Wake Forest, Charleston Coast Guard, North Carolina State, Davidson, Fort Monroe, Daniel Field, and Presbyterian. They were on the short side of the score against the North Carolina Pre-Flight team and the Marine team from Camp Lejeune.

Climaxing a tour of AAA posts throughout the United States, the First British Composite Antiaircraft Artillery Battery, and its American Escort Detachment drawn from the ranks of this camp, returned to Camp Davis on the morning of November 24. After a convoy trip from Camp Stewart, Georgia, their last stop, the British stopped over at Fort Fisher for a few days for demonstration purposes before proceeding to Camp Davis. The British troops concluded their visit late in the year and returned overseas.

Camp Stewart



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

The past two months at Camp Stewart have been jammed with activity which was headlined by a three-weeks visit of the famed British Composite Antiaircraft Demonstration Battery and an inspection trip by Lieutenant General Lesley J. McNair and Major General Joseph A. Green.

A huge night antiaircraft demonstration that included a searchlight parade, with 57,600,000,000 candlepower in use, and a colorful night infiltration show was staged for the newsreels; and an antiaircraft "open house" was held for the press and radio that included demonstrations of all phases of realism in training from infiltration with live bullets and booby traps to night AA firing at high-flying targets.

Other major highlights of the two months period included the selection by postwide ballot of "the most beautiful girl writing to a Stewart soldier"; award of civilian merit ribbons to 820 civilian employes for six months or more of meritorious service; receipt of a Safety Award and some fifteen girl civilian pilots of Stewart's Liberty Field; award of the Legion of Merit to two officers and the Soldier's Medal to two enlisted men; winning of the camp rifle championship by the 357th Battalion; winning of the Colonel Ochs Trophy for boxing by the 508th Battalion; triumph in a splinting rodeo by the 492nd Battalion; victory in the "X for Axis" spot check motor vehicle contest by the 67th Group; a week's stand of a sure-nuff circus at the Sports Arena; selection of a gun crew of the 846th Battalion as the best on the post; cross country and fowl shooting sports contest; the selection of Skybusters as the official sports name of Stewart teams in a postwide contest; a Christmas edition of the *Shoot 'Em Down*.

The Stewart WACS were believed to be the first WACS to watch antiaircraft firing in the nation when they watched the British Battery blaze away at targets; the Headquarters Battery of the 96th Group scored the highest rating of any unit in the recognition of aircraft; two battalions, the 507th and 508th, shattered all existing Stewart records for anti-mechanized firing, the 507th scoring 98 direct hits and the 508th racking up 99 bull's-eyes out of a possible 198; and each unit also had a gun section which, during the record fire, secured 11 out of a possible 12 hits.

The British Battery spent a colorful three weeks at Stewart, arriving from Texas by train on November 1. Its stay was one continual round of antiaircraft demonstrations, exchange of AA ideas, dances, parties and sports events. The Battery made a tremendous hit both at Stewart and in nearby Savannah, Ga., where it was given several

dances and parties and staged a parade through downtown Savannah that amounted to a triumphal reception of smart-looking Tommies who were battle-scarred veterans of the Battle of Britain, Malta, the Near East and India.

Climax of the British visit was a colorful farewell parade for the Commanding General of the AAATC, Brigadier General Edward A. Stockton, Jr., with Lieutenant Colonel Ralph A. Metcalf leading the Tommies as they passed in review. The same day Lieutenant L. W. Salmon of the British Battery, representing Colonel Metcalf, took a review of Army Service Forces troops here at the invitation of Colonel William V. Ochs, Post Commander.

The impressive night antiaircraft display, with seventy-two searchlights involving a total of 57,600,000 candlepower, featured the tough night training of the troops. It showed troops crawling through the Infiltration Course by searchlight with live bullets whizzing over their heads and dynamite charges exploding all around them.

Mrs. Rosemary Hughey of Long Island, N. Y., wife of Staff Sergeant Richard Hughey, of the ASF Service Command at Camp Stewart, won the "most beautiful correspondent" contest hands down and came to Stewart for a three-day all-expense paid trip to see her husband and was officially crowned as the queen of Camp Stewart and "Miss Army Service Forces."

A petite, beautiful dark-eyed brunette who once turned down an offer of a screen test because she preferred to remain with her husband, Mrs. Hughey stole the hearts



The British Battery parades in Savannah.

Signal Corps



Northwestern Sector

BRIGADIER GENERAL JAMES H. CUNNINGHAM, *Assistant Sector Commander for Harbor Defense Matters*

The 1943 target practice season for Coast Artillery troops in the Northwestern Sector ended with a combined battle practice with Canadian units and units of the Harbor Defenses of Puget Sound, which provided an excellent test of the coordination of the two harbor defenses concerned under battle conditions. The average scores and general performance for all coast artillery batteries in Northwestern Sector during 1943 have indicated a great improvement over 1942. Much attention has been paid to decentralization of command, to surprise shoots and night practices. Infiltration courses operate in both harbor defenses.

An indoor training center in the Harbor Defenses of Puget Sound has been opened at Fort Worden. This center with all its aids is available daily to all units stationed at Fort Worden. Two enlisted men are on duty all the time to serve as training film operators, and to explain the various instructional aids found there. A complete training film library is maintained in the center, as is a film strip library, so that this material may be sent to any unit in the Harbor Defenses of Puget Sound as needed in training. The large room of the building contains orientation maps, a relief map, a sand table for instructional purposes, frames for charts, and tables that will seat eighty men for classroom work. There is also a small preview room for first showing of training films and for small conferences. It has proved especially useful for special schools and critiques of firing.

Two Soldier's Medals have recently been presented by

Brigadier General James H. Cunningham, with appropriate ceremonies—one at Fort Stevens, Oregon and one at Fort Worden, Washington.

The Soldier's Medal at Fort Stevens was presented to Corporal Thomas Macisso for heroism displayed in rescuing a member of the United States Navy from drowning. Corporal Macisso while serving on a mine planter dove overboard and rescued the drowning man from the Columbia River.

The other Soldier's Medal was presented to Private Joseph D. Lomedico at Fort Worden. Private Lomedico while in the Alaskan Defense Command displayed outstanding bravery in rescuing a pilot from a flaming plane; with three others soldiers, showing complete disregard for the heat of the burning plane and the danger from exploding gasoline tanks and ammunition, he succeeded in removing the pilot to safety.

A new Service Club, Guest House and Sports Arena were opened at Fort Worden on November 11, 1943, with an open house and dance at the Service Club and inspection by visiting civilians of the Guest House and Sports Arena. There are now excellent hostess houses at Fort Worden, Fort Casey and Fort Flagler for the convenience of the enlisted men and their visiting relatives and friends.

Similar improvements being made in the Harbor Defenses of Columbia include refinishing of the interior of the officers' quarters at Fort Canby and at the present time there are no finer officers' quarters or officers' mess in either of the two harbor defenses.

Colonel H. C. Mallory, Medical Corps, retired from active service at Fort Stevens last month and returned to his home in Ashland, Virginia. It was Colonel Mallory who established the underground hospital in Malinta Tunnel, Corregidor.

The Harbor Defenses of Columbia have made an unusually high showing in participation in United States Government Life Insurance program; at the end of August, 1943, the average policy per soldier in these harbor defenses was \$9,488.00, an excellent record. These harbor defenses also made an unusual record in collecting 865 tons of scrap metal since July 1, 1942.

the camp and was danced off her feet by beauty-struck GI Joes at a grand ball held in her honor.

The 820 civilian employees, who do vital work in both AAATC and Service Command offices, were awarded merit ribbons at imposing ceremonies held in one of the Post Theaters on December 8 in recognition of their important contribution towards winning the war.

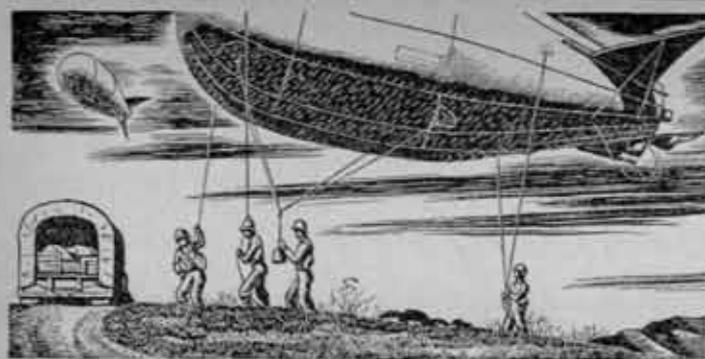
Liberty Field, whose tow target squadron furnishes the targets for Stewart AA Gunners to shoot at, won a distinguished Service to Safety Award, presented by the National Safety Council to all Army Air Forces installations. Mr. Robert A. Lovett, assistant Secretary of War for Air, in a letter to Major William A. McConnell, commanding Liberty Field, pointed out that: "Credit for the air safety record which inspired the award should be shared by you and your entire command."

The Field also received fifteen girl pilots, who are civil

service employes under the Air Transport Command. All have completed refresher flying courses at Sweetwater, Tex., and have civilian flying experience.

Captain Gilmour C. MacDonald and Captain Glenn P. Elliott won the Legion of Merit and were presented the honor at reviews, with General Stockton making the awards. Captain MacDonald won the Legion of Merit for his invention of a device which improved the accuracy of antiaircraft machine gun fire. Captain Elliott received his award for taking command of Fort Kamehameha, Hawaii, during the Pearl Harbor attack, when his gunners brought down three Jap planes and two probables.

Winning the Soldier's Medal for heroism were Technical Sergeant Robert E. DeHart and Corporal William J. Doucette, who took part in the rescue of an airplane crew forced down in the Atlantic Ocean near Camp Edwards, Mass. last summer.



CAMP TYSON

COLONEL WILLIAM H. DUNHAM, JR., *Commanding
Barrage Balloon Training Center*

By Captain F. R. Alexander

Offensive operations in the far-flung theaters of war are being reflected in the training program at Camp Tyson, the Barrage Balloon Training Center. All battalions on the Post have now been converted from Low Altitude balloons, used largely in static defense, to the more maneuverable VLA balloons.

The rapidly shifting war picture, plus the constant experimentation and ingenuity shown in operations with the barrage balloons, has given increased emphasis to the VLA balloon. Training is being stressed to take full advantage of this high maneuverability and embraces flying the balloons from simulated landing and assault craft, water-borne sites and barges on the Tennessee River, land sites, and flying the balloons from all types of motor vehicles.

Training in flying from static sites has been retained in the revised program and thus the troops are being given well-rounded experience in the operation of barrage balloons.

The Barrage Balloon School has erected a model of a ship's mast, and training is being given all tactical units in the use of balloons for ship convoy protection.

Camouflage and concealment under simulated combat conditions are stressed with both day and night exercises being held. Training of the troops at night has undergone considerable expansion. Balloon training and flying, marches under simulated gas attack, and combat problems during the night have become an accepted routine and further keys the training program to actual conditions in the war zones.

All tactical troops are now using the new rifle range opened last September. Covering 960 acres and having known distance firing ranges of 100, 200, and 300 yards and a transition range up to 500 yards, the new range allows extensive and increased instruction on the M-1 rifle hitherto not possible on the old 1000-inch course. Correction of sighting and windage, not possible of practical demonstration on the short range, is now being effectively taught the troops. Firing and instruction on the .30-caliber carbine is also progressing.

The troops have been learning effectively how to disarm all types of booby traps and personnel mines through the booby-trap training course. Houses and shacks armed with all types of lethal devices have been used during this training.

The Literacy Program of the BBTC has become an es-

tablished training activity and two hours a day, five days a week for eight weeks, has been devoted to classes under the direction of the Classification Section. A working knowledge of reading, writing, and arithmetic with all lessons being pointed toward military usage is taught. The Readjustment Program is proceeding, as well as the Special Clinic.

Some units of the Second Army arrived in Camp Tyson late in September fresh from the Second Army maneuvers in Tennessee; all the training facilities of the BBTC have been made available to the contingent.

The 101st VLA Battery returned in early October after two months on the Tennessee maneuvers and two months in the Louisiana exercises. Colonel William H. Dunham, Jr. was an observer during the closing days of the Louisiana maneuvers.

Thousands of persons in Washington, D. C. saw VLA barrage balloons during the *Back-the-Attack War Bonds Show* in September. The demonstration was given by Lieutenant Alfred F. Stauffer of the Barrage Balloon School and six specially selected soldiers from the XVIth class of the School.

One balloon was kept moored and another flown at close haul near the Washington Monument. High ranking officers of both American and foreign armed forces viewed the balloon demonstrations; thousands of civilians also had their first glimpse of the VLAs. The rôle and mission of the balloons, their tactics and technique, were explained and the explanation proved highly educational to spectators.

Military and civilian personnel of Camp Tyson heavily backed the Third War Loan Drive and subscribed \$86,400 or \$4,200 more than the camp's quota during the campaign. All civilian personnel on the Post have allotted at least 10% of their salary toward the purchase of War Bonds while an average of 13% of the entire payroll is allotted for Bond purchases.



VLA balloon at close haul from a jeep. Balloons may be moved in this manner if there are no obstructions.

Signal Corps Photo



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

Prominent in the list of recent notable events at this busy training center is the inspection made by Lieutenant General Lesley J. McNair and his staff on November 5. Arriving by plane, the visiting officers inspected the firing points, training activities, and installations of the camp. General McNair's time was crowded, but in answer to a request from the Commanding General, he included an address to the officers of the camp in which he convincingly directed attention to the obligations and responsibilities of leadership in battle.

To enhance the normal program of training activities, a number of improvements and innovations have been introduced in recent months. A test course has been established for testing and training intelligence personnel in scouting and observing. A six-mile course has been laid out, using azimuths, bearings, roads, fences, and a stream as guides. Along the course are placed simulated mine fields, gassed areas, machine gun positions, fragments of aircraft, booby trapped vacant buildings and many other similar things to test alertness and powers of observation. The object of the course is to measure ability to move about properly in enemy territory, to follow a prescribed course through rough and wooded country, to observe pertinent data, and to report accurately messages and observations. Day and night operations are conducted on the course, which is designed to be practical rather than tricky, stressing technique, not theory.

Facilities for another type of training have been provided by establishing a complete demonstration AAAIS Filter Center for all types of AA units. This room provides for a theoretical defense consisting of Searchlight, Gun, AW, and SP Battalions. Four different plotting boards are used, each appropriate for a particular type of defense. A complete Fighter-Searchlight Board provides demonstrations for Searchlight personnel and for others whose warning system may be linked with Searchlight defense. Together with this board, representing the same defense, a Gun Operations Board shows the application of AAAIS for Gun Battalions. A third board plots warning data for AW units, using OP data or radio detector data from Gun Searchlight units. The fourth is a long-range AWS board giving early warnings by means of OP or long-range information data. The purpose of this room is to familiarize

Group and Battalion personnel with all types of AAAIS plots and to enable them to establish appropriate equipment for any situation in which they may be operating.

Demonstrations were recently begun to show effects of and methods of handling explosives in demolition work. The program embraces the use of antitank mines and Bangalore torpedoes, electric and non-electric detonation, the comparative power of various explosives, and the handling of bazookas and hand grenades. Watching these demonstrations creates more clearly than endless words can do, an impression of the power of high explosive in clearing away obstacles and in mines and booby traps. The ultimate aim is to have a qualified demolitions man in every section.

In order to give special training in avoiding, locating, and neutralizing booby traps, a portion of a village has been constructed, using discarded tent frames and small buildings. In this area men can be trained to handle the problems and hazards accompanying the infiltration of towns and villages. Well salted with pull, pressure, and release type firing devices concealed in innocent looking places, particularly under battlefield souvenirs, the area teaches men to be keenly alert for hidden death.

The AAATC Record Section has again scored with a device to facilitate training. The latest addition provides a means of practice in the use of any type of forward area sight. Built to scale, it allows pointers to set leads on a plane silhouette produced by a shadow box. An ingenious contrivance rotated by the heat of the electric lamp in the shadow box creates the effect of moving clouds on the screen of the shadow box, lending an illusion of motion to the plane silhouette. For the use of gunners in SP Battalions, a model of the Mark IX sight is provided on this trainer. The effectiveness of the pointer's work can be readily checked and mistakes pointed out.

Gunners have a new opportunity for combining sport with learning their art in the use of the newly established skeet range. Firing at the tricky clay pigeons is a form of training that is extremely easy to take and provides a splendid training aid for AA gunners.

The sometimes troublesome problem of dining has been simplified by the opening of a Post Exchange Cafeteria. It is neatly and attractively arranged in a new building with an efficient service counter and inviting small tables. Not a large installation, it is nonetheless an excellent place for military personnel and civilians to visit for meals or between-hour snacks.

The fighting spirit of Camp Hulen men is well displayed in vigorous, widespread participation in numerous boxing tournaments. Competition within and between units is keen in the various weights, and many spirited bouts result, the overflow crowds of spectators taking a lively interest. A trophy is presented to the battalion winning the most matches within a group, and a tournament is projected between the champions of the various groups for camp-wide honors. It is hoped that the winners of the contests between group champions will be able to form a team to compete in the Golden Gloves tournaments in the spring.

Among other notable "extracurricular activities" of the camp are those of the AAATC band. It is divided into four groups, each of which devises an original show each month. Each group presents its show weekly at different recreation buildings. In addition, the whole band presents a weekly concert in one of the theaters.

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BRIGADIER GENERAL MORRIS C. HANDWERK, *Commanding AAATC*

By Lieutenant John Thornton

Lieutenant General Lesley J. McNair, Commanding General, Army Ground Forces, made his first visit to Camp Irwin in December. Camp Irwin, the firing range and maneuver area for Camp Haan, is in the Mojave Desert. Brigadier General Morris C. Handwerk, commanding the AAATC at Camp Haan, escorted General McNair on his inspection of the firing range and the firing units.

General McNair first visited the West Range, a sixteen-mile long valley in which are firing points for all types of primary antiaircraft weapons. The huge size of Camp Irwin is indicated by the fact that with one thousand yards of firing line allotted to each battery, five 90mm gun battalions have been emplaced along the line at one time.

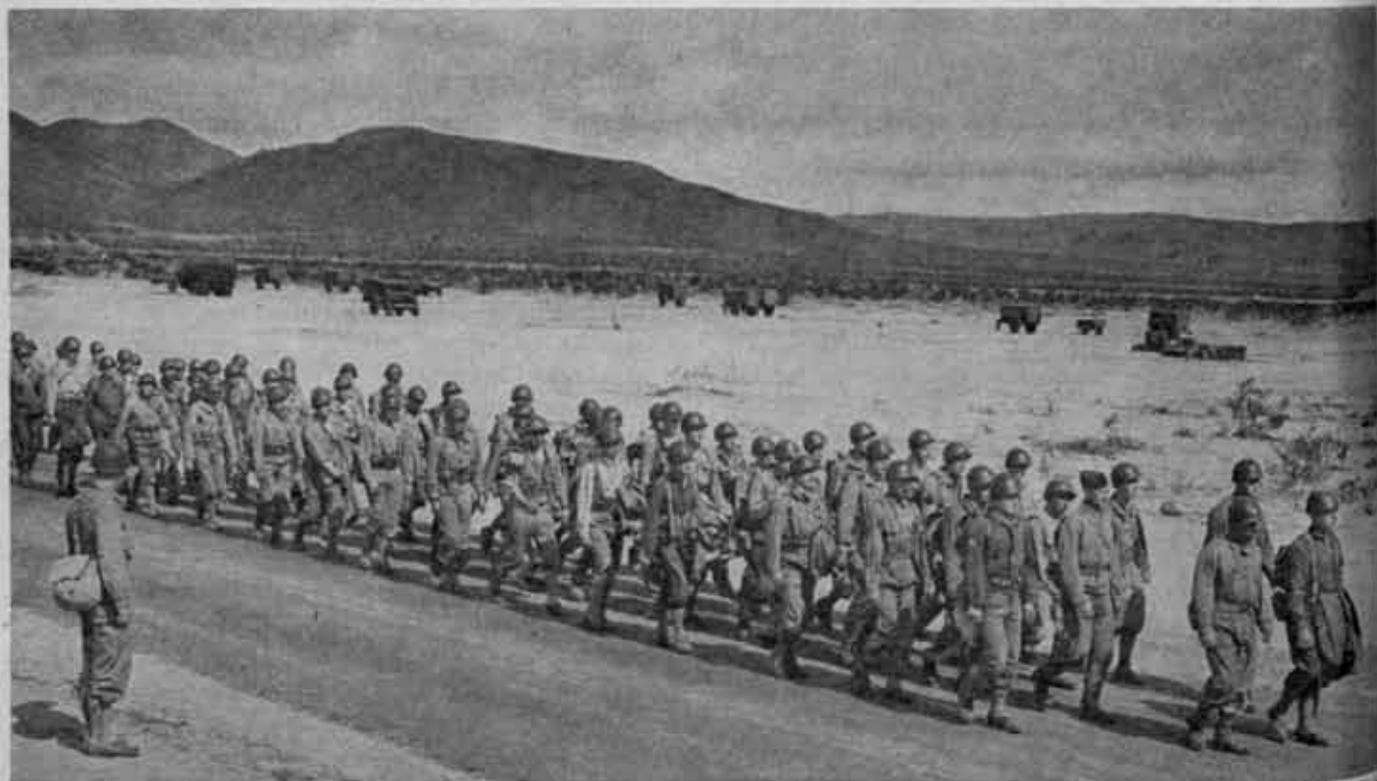
From the main control tower on the West Range, General McNair saw Camp Haan 90mm gun units fire at

every type of aerial targets, then switch immediately to a group of bobbing sleds towed by light tanks and finish with an impressive demonstration of terrestrial fire, a recently added field artillery rôle for 90mm guns. Immediately thereafter the visiting party was able to ride several thousand yards toward the East end of the West Range to a point where Antiaircraft Artillery Training Center units were firing on multiple targets. There they watched 40mm gun units shift in a matter of seconds from towed sleds in the air, to balloons, to mechanized targets, opening up on each with a withering curtain of fire—40mm guns, single and multiple machine guns and even anti-aircraft arms.

Still farther on down the valley the Commanding General of the Army Ground Forces stopped to watch a self-propelled battalion defend itself in convoy. This is a feature of antiaircraft artillery training at Camp Haan which provides target practice with the self-propelled unit armament, whether it be 37mm guns, or .50 caliber machine guns from turrets or trucks, and all the while the mobile unit is traveling along in convoy. The secret again is space. Camp Haan's self-propelled units move around a "city block" several miles around, pausing momentarily to fire the weapons when they reach the side facing into the mountains.

The East Range, a continuation of the West and Center Ranges, is six miles in length and provides an unequalled expanse for the training of automatic weapons units. The weapons may be fired from both sides of the road leading through the range, affording maximum use of the area and mission facilities.

When the visiting dignitaries had viewed the East Range with General Handwerk, they turned back toward the South again to inspect two battalions of a group on a tactical exercise in the region of an aerial bombing range. Five of these practice bombing ranges dot the area at Camp Irwin. The training center at Camp Haan, by close coordination



AAATC unit on 25-mile hike, Camp Irwin.

with the Air Force, offers its units the unique experience of establishing defenses of positions actually subjected to high explosive bombing attack by tactical aircraft.

Prior to departure from Camp Irwin on his inspection, General McNair moved in a southerly direction over the fifteen mile stretch to the Antiaircraft Artillery Training Center Headquarters at Irwin with its permanent housing areas. Here battalions operate in garrison on a limited scale. At Camp Irwin a limitless number of bivouac areas are available and units in training spend a majority of time in field bivouac.

Even in his extensive tour of the ranges of Camp Irwin, General McNair was only able to scratch the surface of the numerous installations which have been established in the past year for the training of antiaircraft artillerymen.

For example, a 90mm tactical firing range with a 180 degree field of fire has been established on the far side of Granite Pass facing the West Range, while a similar tactical firing lay-out exists on the Western tip of this same range for automatic weapons units, affording a 270 degree field of fire.

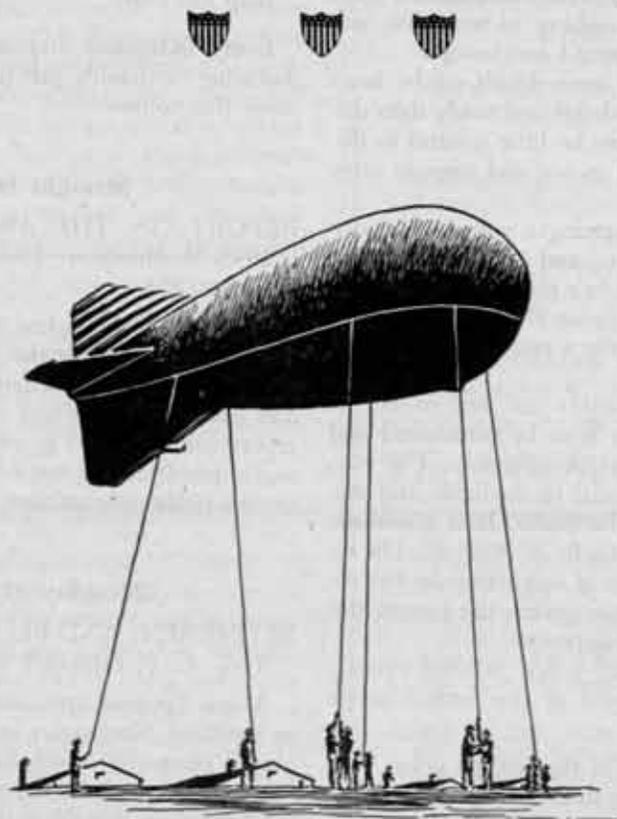
Combat firing, with equipment emplaced and gun crews actually firing their small arms at surprise targets, is a recent innovation in the Camp Irwin training cycle for Camp Irwin antiaircraft artillerymen. A combat range for 90mm gun battalions is located Southeast of Bicycle Lake and two combat ranges for automatic weapons units have been constructed several miles South of the training center headquarters building.

Nor has machine gun firing been neglected by any means at Camp Irwin. A balloon range and a separate machine gun range are located near the East Range, while the range most widely used for machine gun firing, South Range, is situated near the automatic weapons combat range about five miles from the headquarters.

Small arms training also is the object of great emphasis while organizations are at Camp Irwin. One hundred fifty known distance firing points for 100, 200 and 300 yards are located only a mile from headquarters. Units completed that portion of small arms training then move a mile East of the known distance range where transition ranges for both rifle and carbine are established. Rifle grenades and hand grenades are fired and thrown on specially constructed ranges in the vicinity of Tiefert Mountain.

With the training center headquarters building as the hub of a wheel, the ranges radiate out like spokes, with the West and East Ranges to the North, combat and machine gun ranges on the East and South and on the West, toward the Goldstone Lake area, are found the pistol, sub-machine gun ranges, the magazine area and the infiltration course. Closer in, almost adjacent to the permanent housing area is another anti-mechanized range, while a third is now under construction.

It was to be expected that General McNair would be forced to omit some of the facilities at Camp Irwin on a visit of a half day, for a 650,000 acre military reservation into which a 55 mile entrance road alone is required cannot be covered in an afternoon.





BOOK REVIEWS

The JOURNAL can supply any book in print,
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WAR AND PEACE

The Culbertson System

TOTAL PEACE. By Ely Culbertson. New York: Doubleday, Doran and Co., 1943. 344 Pages; Index; Illustrated. \$2.50.

Total Peace sets forth a plan, not only for maintaining the security of the United States, but also, in order to safeguard that security, a plan for obtaining conditions insuring total peace, i.e., peace throughout the world as far as human ingenuity can so provide.

Culbertson submits the most logical, sensible, and comprehensive plan for insuring world peace that has as yet been presented. He shows that we must look forward to 1945 and 1975 properly to plan our security.

Such a study as here presented could result only from a great amount of research, painstaking weighing of evidence and facts, and carefully drawn deductions and conclusions.

Although one may disagree as to some details, or be beset with doubts engendered by less knowledge and study than displayed by the author, there appears to be little ground to disagree on the main idea, the essential means and steps to carry out the plan in a practical world.

Essentially the plan consists in forming a voluntary association of nations—open to all nations, and the establishment of a world police force consisting of (a) national contingents, (b) international contingents, and giving the smaller nations the opportunity and method to exercise a real voice and influence in securing world peace.

How national sovereignty and rights are not to be relinquished; how a world peace force is to be constituted and employed is beyond the scope of this short review. The plan is based on the premise that force must be available and employed when essential to preserve the peace. It is a realistic plan, without the weakness of the League of Nations. The essential to its success is a spirit and act of acceptance by the nations. If the law of the jungle is not to govern the future, this plan appears to offer means of securing peace.

The reviewer cannot resist offering a few selected extracts which indicate the attitude and spirit of the author in approaching the problem:

"Power politics can be defined as the foreign policy of a state when based on the use or the threat of force.

"Actually in a world in which the dominating power factor in relations between states is force, power politics is an indispensable condition for the survival of a state.

"Democratic slogans and noble resolves are pitifully inadequate. Experts prattle about an 'international police force' without realizing its sinister implications if it is to be a real force.

"Today our greatest danger is not from outside; it is from within. And especially it is within our national leadership—officials, politicians (Republicans and Democrats), experts.

"For the first time in history, the battle for loot has become the battle for weapons. Today the American superpower towers above all other nations. Never before was a nation in such unique position to do so much good or to commit so many irreparable blunders. But the actual time in which the United States can use her present power is probably no more than five years."

Every individual and organization having to do with influencing or shaping our future peace plans would do well to study this volume.

Straight from Headquarters

REPORT ON THE ARMY: JULY 1, 1939 TO JUNE 30, 1943. Washington: The Infantry Journal, 1943. 271 Pages. Charts. 25¢.

General Marshall's last two biennial reports cover the present state of our preparation for this war, and a large part of the war to date. As the last authoritative word on how far we have come and how fast, in the task of overcoming our enemies, the reports are important to soldiers and civilians alike. The tables and charts from the original reports have also been reproduced in this pocket-size volume.

Monday Morning Quarterback

BLITZKRIEG AND BLUFF. By Major Erwin Lessner. New York: G. P. Putnam's Sons, 1943. 246 Pages. \$2.75.

Major Lessner, apparently an Austrian, takes great delight in detailing Nazi errors in strategy and higher tactics. Granting the *Wehrmacht* credit for team work, timing, hardness of blows, and speed, he nevertheless piles up incident after incident to prove that Nazi disregard for time-worn principles of war and for enemy possibilities has lost Germany the war. The failure to invade England (even the improper use of the

during the Battle of Britain), the failure to use Crete after it had been gained at great cost, the failure to find a suitable change in tactics in Russia, Rommel's tactics at Qattara, and the repeated mistake of leaving open flanks in various theaters are only a few of the counts in the indictment.

According to the author, the old efficient German staff is a thing of the past, subordinated to Nazi ideas of the superman. That the Nazi plans worked in Poland, France, and the other countries at the beginning of the war was due to a combination of weakness of opponents, morally as well as in a military sense: political softening; and the shock of a new type of warfare that won its objectives before a defense could be improvised. The supermen, not visualizing that inferior beings could possibly stand to the Nazi shock, made no provision for retreat, either in the literal or broad sense of the term.

One of the most interesting speculations in the book deals with the Russo-Finnish War. The Allies asked permission from Sweden to send troops to Finland through Sweden. Germany informed Sweden that granting this permission would be considered an unfriendly act, and Sweden refused. If Hitler had permitted the transit, the Allies would have been committed against Russia, and the whole face of history would have been changed. We can thank Hitler for that lapse.

TEXTS

What the Gun Shoots

AMMUNITION. By Melvin M. Johnson and Charles T. Haven. New York: William Morrow and Company, 1943. 351 Pages; Illustrated; Charts; Index. \$5.00.

Gun cranks and soldiers who are not satisfied to "squeeze the trigger and let the bullet come out" will find this new Johnson and Haven book a "must" for their libraries. The authors describe the development of ammunition from the first fixed charges right up to the present, and take in calibers up to 16mm. Types, characteristics, malfunctions, fire power and other items are discussed in popular language. Illustrations, charts and tables appear on almost every page. Pistol ammunition, sporting rifle ammunition, military rifle and automatic weapon ammunition—they're all described and discussed. There might be a few questions the book doesn't answer, but they would be difficult to find.

For Use This Year

BLITZ GERMAN. By Dr. Rudolf Brandl. Harrisburg: Military Service Publishing Company, 1943. 174 Pages; 75¢.

As the author points out in his foreword, the object of this book is not to teach grammatical, well-pronounced German—there are many books that will do that if time is no object. This book is designed to assist G.I. Joe and his friends to "get by" in Germany or in German-speaking territory—to make what is wanted known, to fulfill military assignments, and to scrape through the day-to-day contacts that the soldier has with the civilian population. Even with the use of this book, pronunciation probably will be atrocious, and grammar worse—but there will be spoken contact with a minimum of study by the soldier. The vocabulary and sample sentences, as well as the German-English appendix, have been well-selected to cover the things that soldiers will need to know. Military terms and the terms of day-to-day living are stressed most, and the chapters are laid out for ease in finding the words that might be necessary in

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different situations, military or otherwise. There is even a sentence or two of complaint about the telephone service.

The reviewer, even if he gets to Germany, will never use of the line, "My skin is unusually tender. Shave gently please." No German will ever get that close to him with a razor.

Book Maneuvers

COMBAT PROBLEMS FOR SMALL UNITS. Washington: *The Infantry Journal*, 1943. 244 Pages; Maps. \$1.50

Twenty-seven tactical problems dealing with the units of the infantry rifle company make up this helpful pocket book. The problems presented, and the solutions, are down-to-earth, outlining situations that follow practical rather than theoretical lines. A cast of characters is given in the opening pages of the book, and the same names are used all through the text, making it easy for the reader to follow the actions of seemingly real people in seemingly real activities. The solutions are offered in a way that makes it possible for the reader to solve the problems first, then to check with the solutions as the situation develops further.

Current Study

FUNDAMENTALS OF ELECTRICITY. Washington: *The Infantry Journal*, 1943. 126 Pages; Illustrated. 25¢.

Written by Westinghouse engineers in cooperation with *Science Service*, this paper-bound text is divided into lessons that are presented in simple language, and illustrated with easily-understood diagrams and pictures. A basic book for the man with little or no understanding of electricity, the text was based on a War Department outline for use in induction courses. From *Magnetism through Electricity, Motion and Electric Heat to Current Rectifiers*, the book follows a logical course to familiarize the uninitiated with many of the properties and applications of electricity.

Japanese Text

PHONETICS OF THE JAPANESE LANGUAGE. P. M. Suski. South Pasadena: P. D. and Ione Perkins. 1942. 122 Pages; \$1.75.

Definitely not a book for beginners, this work seems designed for classroom or other directed study. In an estimate one who knows absolutely nothing of the Japanese language the book seems to devote too much space and effort to the origins of the ideographs and the sounds, rather than placing the main emphasis on learning the ideographs and sounds. In other words, the criticism of the reviewer is that the book is too scholarly for the person who desires a quick working knowledge of Japanese—which might not be a criticism at all from the standpoint of teachers of Japanese.

Ideographs in Cards

KANWA SESJIBUN HYO: DRILL CARDS FOR 1,000 JAPANESE-JAPANESE CHARACTERS. South Pasadena: P. D. and Ione Perkins, 1943.

This set of cards, with alternating Japanese characters and open spaces for comparing the student's work with the original, is designed to aid the student in forming the characters, as

recognizing them. The reverse sides of the cards enable the student to drill on writing the proper character from the romanization. It can be seen that this method of drilling and checking progress would be valuable for the slightly advanced, serious student of Japanese.

The Soldier's Mind

MILITARY PSYCHOLOGY. By Norman C. Meier. New York: Harper & Brothers, 1943. 368 Pages; Glossary; Index. \$3.00.

As a relief from the popular books on military psychology and leadership, Dr. Meier has written a serious text on the subject. Platitudes, rule-of-thumb experience, and sentimental exhortations have given way to the scientific approach of a trained psychologist. Part II, *Applications and Problems*, is an applicatory examination on the principles taught in the book, and is designed especially for group or class use. Although any reader will extract much of value from the book, the student with more than average education and familiarity with psychological terms and processes is the particular target of Dr. Meier's approach.

The book takes up such subjects as classification, adaptation of civilian skills to military uses, mental preparation for conflict, leadership and coordination, leadership in combat situations, and suggestions for handling interviews. Bibliographies at the end of each chapter lead the way to further reading.

Foreign and Domestic

BASIC MANUAL OF MILITARY SMALL ARMS. By W. H. B. Smith. Harrisburg: Military Service Publishing Company, 1943. 213 Pages; Illustrated. \$2.00.

The subtitle of this book, "How to load, operate, disassemble, assemble American, German, Italian, Japanese, Russian, and other military small arms," just about tells the story. The reviewer, in a hasty count, found eighty-three different types of small arms were treated, with photographic and artist's illustrations. Most of the weapons mentioned are described with full specifications. The style of the book is such that no great knowledge of firearms is required to dig out the methods of operation, disassembly, and assembly. Austrian, Belgian, British, Danish, Finnish, French, Hungarian, Mexican and Spanish weapons are treated in addition to those of the nations mentioned in the subtitle.

Any officer or enlisted man who hopes to meet the enemy in any theater, any citizen interested in small arms, and gun owners of any type will want this book for instruction and reference.

Without "Hereinafter"

HOW TO WRITE A MILITARY LETTER. By Corporal David Klein. Harrisburg: Military Service Publishing Company, 1944. 133 Pages; Index. \$1.25.

There is much more to writing a military letter than correct margins and proper headings. Even if we give the military writer the benefit of any doubt about knowing his punctuation and spelling (the author doesn't), there is much to learn in this book about the choice of words, the meaning of words, and also a rather complete discourse on meaningless words. Although the book was written by a corporal, we have had letters written (or at least signed) by generals that made some of the mistakes the author points out.

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HISTORY

The Color of Canada

THE PAGEANT OF CANADIAN HISTORY. By Merriman Peck. New York: Longmans, Green and Co., 1943. 353 Pages; Bibliography; Index; Illustrated. \$2.50

There is more pageantry than history in this work, in the sense that the economic and political bases of history have been subordinated to the romance and color of the growth of the neighbor nation. The casual visitor to Canada even today is taken by the blending, not always harmonious, between the old and the new, the French and the English, and the industrial and agricultural. The author does much to explain the character of the country and its people, without explaining its political and economic growth in more than general terms. It stresses the pageantry, and does it well.

Aleutian Exploration

JOURNEY INTO THE FOG. By Cornelia Goodhue. New York: Doubleday, Doran & Company, 1944. 179 Pages. \$2.50.

Americans who five years ago never heard of the Aleutians now speak familiarly of Attu and Kiska. Interest in the islands between Alaska and Siberia equals our interest in Panama thirty years ago. This book outlines the exploratory ventures of Vitus Bering, the sturdy Danish officer of the Russian Navy, who gave his name to Bering Sea and Bering Strait, and who died on Commander Island, which also was named for him.

The author writes history like fiction—and good fiction, that. Suspense, bravery, adventure and politics are combined with the Aleutian fogs and the inadequate marine equipment of the early 1700's to spin out a story of exploration that reads with the best.

Bering died of scurvy and a broken heart on Commander Island, but only after he had sparked two great expeditions covering fifteen years, that provided the civilized world with the first accurate knowledge of the northern reaches of the Pacific. The tragedy of the expedition was not that men died but that they died needlessly because of the age-old barrier between theory and practice—the Academy of Sciences' practical seamen—of which each body could have offered much to the other if they had been able to cooperate.

PERSONAL EXPERIENCES

With the Fighting Men

THE PACIFIC IS MY BEAT. By Keith Wheeler. New York: E. P. Dutton and Co., 1943. 383 Pages; Illustrated. \$3.00.

Many of the war correspondents who are breaking out in a rash of books on the war could take a lesson or two from Keith Wheeler. Mr. Wheeler has avoided the faults that ruin many of the accounts of others: he has associated with the junior officers and enlisted men, rather than the politicians and generals; he wastes but few words telling of his censorious troubles; he does not set himself up as a military expert; he does not attempt to give advice on military or diplomatic

He sticks to his subject—how the Navy, and especially aviation, fights.

Mr. Wheeler reaches the heights in his accounts of the fighting in the Aleutians—air, sea, and ground. His descriptive powers make it possible for the reader practically to feel the damp, and the cold; he does it without any straining literary effect. He does very well, also, in his tales of carrier combat in other parts of the Pacific. As an ace reporter, he tells what he sees (with a little of what he feels). By sticking to his last, he has managed to turn out a long book without a boring paragraph. Our respect for the American fighting man reaches a new high after reading the book, and yet there is no Pollyanna "everything is perfect" attitude in his writing. We would use more books like this.

PT's in the Solomons

LONG WERE THE NIGHTS. By Hugh B. Cave. New York: Dodd, Mead and Company, 1943. 210 Pages; \$3.00.

There were many sideshows during the Guadalcanal campaign which were overshadowed at the time by the desperate fighting. The campaign of PT Squadron "X" was one of these sideshows, but to the battle, strain, and climate-weary members of the little squadron, their part in the big picture was every bit as tough as that of the Marines and soldiers on shore. Always outnumbered by Jap destroyers, engines and men showing the strain of too many hours without overhauls; men showing the strain of too much hazardous duty and the hot climate, the PTs harried the "Bougainville Express" night after night, taking losses and inflicting losses. The Marines and soldiers were grateful because the PTs, by "derailing" the Express, permitted them to sleep after weary months of fighting Japs by day, and being shelled by Jap ships at night. With the expenditure of a few PTs and a handful of men, the destroyer boats disrupted the Jap's entire naval schedule. It was a tough, but effective, way of fighting.

Navy Pilot

CARRIER COMBAT. By Lieutenant Frederick Mears. New York: Doubleday, Doran & Co., 1944. 156 Pages. \$2.00.

Lieutenant Mears (killed since this book was written) flew with the *Hornet's* squadrons, and for a time was attached to the famous Torpedo 8 which was all but wiped out. The author also participated in the early Guadalcanal and Tulagi actions. The book presents a good view of carrier life and tactics, and although it is easy to see that Lieutenant Mears attempted to be restrained in his writing, as befits the fighting man, the excitement and thrill of combat keep coming to the surface throughout the book. Midway and the Solomons are the high points of action, but the day-to-day life aboard a carrier makes reading just as interesting, because Mears was able to portray the character and atmosphere of his comrades.

Sea Saga

THE NAVY HUNTS THE CGR 3070. By Lawrance Thompson. New York: Doubleday, Doran & Company, 1944. 150 Pages; Illustrated. \$1.75.

The CGR 3070, the yacht *Zaida* in more peaceful times, served the Coast Guard Temporary Reserve with an unprofessional crew in the darkest days of the submarine menace. Her

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function, sail-powered and practically unarmed as she was to patrol a small area offshore as an observer of submarines and to pick up survivors of torpedo-blasted ships. A storm came along, disabled the little 58-foot yawl, and then blew her across the Atlantic for twenty-one days. In the three weeks she traveled her nine-man crew 3100 miles from her original position on a circuitous course that must have added as many more miles to her voyage. Coast Guard, Army and Navy all hunted for her—she was found several times and was lost again before any body could effect a rescue. When she was finally picked up on the North Carolina coast, her crew was in fair shape in spite of injuries to several members, and the *Zaida* herself was saved from a total loss.

Lieutenant Thompson's treatment of the CGR 3070 wanderings gives the reader a sense of suspense in the *Mutiny on the Bounty* tradition.

Tin Can Tale

CONDITION RED: DESTROYER ACTION IN THE SOUTH PACIFIC. By Commander Frederick J. Bell. New York: Longmans, Green & Co., 1943. 267 Pages. \$3.00.

Condition Red is a South Pacific naval term signifying "battle stations at once, hell's a'poppin'"—and the book *Condition Red* is the story of destroyers in general and Destroyer G in particular. As one of the "tin cans" of the navy—the tough, fast, hard-hitting little ships that are always on duty—Destroyer G took action against the Tokyo Express, escorted transports, rescued lost aviators, shelled the Japanese, and repelled plane attacks.

If there is any criticism of this book, it lies in the fact that the author missed an opportunity to place the events in chronological order, which might have prevented some confusion.

Commander Bell has written a good story. He has apparently kept well to the facts and writes at times with a twinkle in his eye.

This is a book deserving of a place on the naval shelf of the war's books.

From the Beach to Kasserine

ROAD TO TUNIS. By David Rame. New York: The Macmillan Company, 1944. 296 Pages; Illustrated. \$2.50.

The views of an Englishman concerning the United States Army are always interesting. David Rame's opinion, after serving our early days in North Africa, up to the time of the Kasserine disaster, is that our forces were inept and worse first, but that the American soldier had what it takes to learn from misfortune and to become a superb fighting man after taking his first drubbings. Inexperience in the realities of war rather than lack of technical knowledge and lack of intestinal fortitude, was our big trouble at first. Underestimation of the enemy also contributed to the hard going in the early stages of the North African campaign, in this writer's opinion.

Rame spent most of his time at the front with a Tank Destroyer company. This unit learned about camouflage, trenches, and security on the march the hard way—it had been taught, but the lessons didn't mean much until some men were lost. This is definitely not a "Gee-Whiz!" book, lauding the army—it seems more like a measured analysis, which in the end makes the army look pretty good after it gets its shakedown period in battle. It is one man's opinion, but an opinion predicated on first-hand observation.

MISCELLANY

THE ARMY READER. Edited by Karl Detzer. New York: The Bobbs-Merrill Company, 1943. 462 Pages; Illustrated. \$4.00.

Colonel Detzer's compilation carried on its jacket the line "Mass" reading for Army personnel and the Army-minded civilian. One hundred informative, authoritative and exciting stories tell the composite story of the great Army of the United States today." We cannot go along with that statement in full. Most of the writing is informative, much of it is authoritative, and some of it is exciting. But too much of it was written by civilians for civilians to ring true to soldiers. Other material is probably "good" in the same sense that spinach is good, but out of place in a compilation of the sort this purports to be. Colonel Detzer's editing, too, leaves a little to be desired, for instance the line, "Every American soldier gets three pairs of shoes—and no officer gets more." Hans Habe wrote it, but it should have been deleted.

On the credit side of the ledger, however, are more than a few fine pieces of military writing, some by civilians and some by soldiers, that deserve a place in the permanent literature of this war.

♦ ♦ ♦

Fun Book

CARTOON CAVALCADE. Collected by Thomas Craven. New York: Simon and Schuster, 1943. 450 Pages; Illustrated; Index. \$3.95.

For those of us old enough to remember when Walt Wallet and Skeezix on his doorstep, or the Little Nemo comic strip, the first part of this collection of the best in American cartooning will emphasize the march of the years. For those who were grown when Teddy Roosevelt was hunting in Africa, the remainder will be even more forceful. Mr. Craven used 1883 as the opening date in his collection and brings us right up to Flip Corkin and Albert the Sailor.

Cartooning fans, and even those whose interest merely brings forth a thin chuckle as they leaf through the pages of Collier's or the New Yorker, will find this book both a history of cartoon art and a history of America. The preoccupation with political graft at the turn of the century, the emphasis on rural settings for many of the gags, World War I, the flapper and Charleston era, the beginnings of the "sophisticated" cartoons, the New Deal jokes—all portray the history of our country and editorial reactions to the important incidents. The development of cartooning technique and the constant improvement in subjects indicate higher appreciative capacity among the readers. And thank goodness, the Buck Rodgers and Dick Tracy types have been omitted entirely.

♦ ♦ ♦

Don't Believe It

ALL TALES THEY TELL IN THE SERVICES. New York: Thomas Y. Crowell Company, 1943. 75 Pages; Illustrated. \$1.00.

The stories in this book were selected from the entries in the "All Tales They Tell in the Services" contest in Reader's Digest. They vary from the too-tall-to-be-funny to the could-be-anything variety. Some of the tales are a bit on the aged side, for instance the one about the battleship coming across the parade ground, but most carry a healthy chuckle and a glow of pride in the sort of troops who can invent such tales.

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Demobilization Advice

MARCHING HOME. By Richard Hart. New York: Arco Publishing Company, 1943. 182 Pages. \$1.89.

Billed as a "War and Post-War Handbook for Service Men and Families," this paper-backed volume does contain much good information for the soldier who is in for the duration, but its greatest value will be to the families of such service men. Good advice on the families' contacts with their soldiers, and the rights and privileges of families, is such as to relieve the soldier and his officers of many of the misunderstandings that plague the soldier and his officers alike. The information telling the soldier how to become adjusted to civil life in the post-war world is also good, but a little warped in spots. The reviewer still does not believe that service as a private makes a man servile, or kill his initiative, or make him lazy; or that service as an officer gives a man a superior attitude.

Marine Corps Novel

RETREAT, HELL! By William Martin Camp. New York: D. Appleton-Century Company, 1943. 530 Pages. \$3.00.

In this novel of a Marine on Bataan and Corregidor, Mr. Camp has laid on his propaganda with a trowel in layers too thick to swallow. The action portions of the book are exceptionally well done, with a few exceptions such as explosive .50 caliber bullets and .30 caliber tommy guns, but the action is overshadowed by the great weight of poorly handled "message."

Army Press

G.I. LAUGHS. Selected by Harold Hersey. New York: Sheridan House, 1944. 253 Pages; Illustrated. \$2.75.

To one who has been fed a diet of station and unit newspapers for the past three years, *G.I. Laughs* is emphatically more of the same—a fair cross-section, but with none of the best and very little of the worst. It is understandable, of course, that *Sad Sack*, *The Wolf*, *Male Call*, and some of the other super features of the camp papers and *Yank* are not available

to a book of this type due to copyright troubles. The fault of this selection is that it is so average, but on the other hand because it is average it does present a fairly true section. For our part, we would have preferred the best.

Navy Preflight

ELMORE. By Robert W. Gadbois and Theodore J. Flinn. Richmond: The Dietz Press, 1943. Illustrated. \$1.00.

A cartoon-and-caption book, detailing the experiences of a Naval Aviation Cadet from enlistment to graduation from Flight Preparatory School, *Elmore* is particularly well done. The cartoons, sparing of lines but superbly executed, present a vivid picture of Flight Preparatory School from the author and illustrator's point of view.

WHAT TO DO WITH GERMANY. By Louis Nizer. New York: Ziff-Davis Publishing Company, 1944. 201 Pages. Bibliography. \$2.50.

Mr. Nizer's program from Germany is divided into three main phases: trial and punishment of those Germans whose activities deserve it; economic punishment to strip Germany of her war-making power and to effect restitution of her ill-gotten gains so far as possible; and re-education under international control to bring Germany out of her power-drunk reverie.

The author makes a definite case for the mass guilt of the German people with historical references back to Caesar's time—he shows that not Hitler, and not the Nazis, are the root of Germany's perennial hell-raising, but the entire trend of German thought since the year 300. Hitler lost military campaigns with his "intuition," and his inept handling of persecutions and other internal affairs, alienated other nations at a time when he could ill afford it—Napoleon could have fooled America along for a few more years until it was too late to effect the partnership with Russia and Britain.

This book is controversial by its very nature. As the author states, any solution to a hard problem is open to attack. But the evident care in documentation, and the cold logic of the author make this book one that deserves thoughtful reading.

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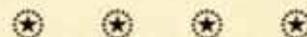
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