

COAST ARTILLERY JOURNAL



14th AA Command

SEPT.-OCT., 1946

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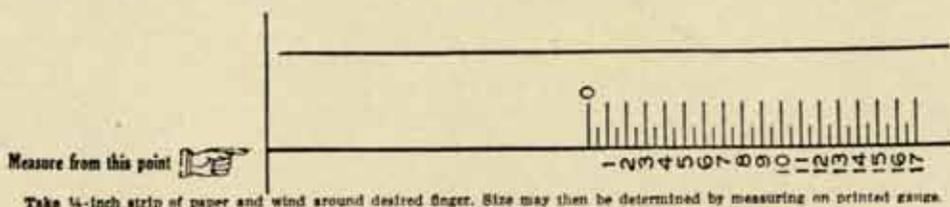


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THE COAST ARTILLERY JOURNAL

COAST ARTILLERY JOURNAL

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ACTIVITIES

14th ANTI-AIRCRAFT

The Coast Artilleryman's "long way back" from Down Under began unostentatiously with the arrival in Australia of two regiments of Coast Artillery troops in early December of 1942. These units, destined for the Philippines to bolster the meager garrisons of General MacArthur, were at sea when the Japs struck at Pearl Harbor. Quickly the convoy was rerouted to Australia where the enthusiasm with which Uncle Sam's legions were greeted was tempered by the sober realization that an invasion of the Australian continent was imminent. These units were immediately dispatched to critical points in northern Australia and to the small islands lying offshore. Soon other contingents of Coast Artillery troops—principally antiaircraft—appeared in Australian harbors, and by the time the New Guinea Japs had inched their way to the top of the Owen Stanleys, the number of antiaircraft troops was considerable.

These units were widely separated. Darwin, Townsville, Cooktown in northern Australia were all defended. Other units garrisoned small isolated islands along the routes being followed by Jap bombers from newly won bases in New Guinea. Still others were engaged in tasks—such as manning boats supplying the meager garrisons between Fremantle and Darwin—far afield from antiaircraft artillery. For equipment, these units were provided with outmoded 3-inch guns with M-4 directors, cal. .50 machine guns, 37mm guns, searchlights, and SCR 268s. There wasn't a Bofors in the lot! From such modest beginnings the number of Coast Artillery troops was eventually to increase to more than 75,000 and were to be equipped with the world's finest matériel before the Japs were to call it a day.

Even before the arrival of the earliest reinforcements, certain problems cast long shadows before them. The very nature of the geography, terrain, and climate in which the war was to be fought posed logistical problems which were

to continue throughout most of the war. The lack of suitable communications, the continuing requirements for amphibious lift, the lack of all except the most primitive population centers, the forbidding and unyielding terrain—and a host of related problems inherent in fighting a war in an uninhabited backward portion of the globe pointed up the difficulties which were to be encountered later in administration, training, supply, and inspection of widely separated units in isolated localities.

All units faced the same problems. Effective communications stopped at the tide line. Amphibious lift was required for bringing in rations, equipment, supplies and personnel. Command supervision was a time consuming task dependent upon air travel and the vagaries of the weather. The Philippines with their communications systems, ports, towns, and airfields were still over the horizon. No one dared estimate how long our forces would require to execute General MacArthur's recent pledge to return. Each ship bringing additional antiaircraft and 155mm units to the Theater made the solution of the problems facing an ever-increasing number of group and battalion commanders just so much more urgent.

The desirability of centralizing the administration, training, and supply responsibilities of all Coast Artillery units in the Theater under a single agency was obvious. A central authority responsible for preparing units for combat and for supervising the training and equipping of a growing number of independent units—was a necessity. With General MacArthur's arrival in Australia from Bataan in March, 1942, these functions were the responsibility assigned to the Antiaircraft Officer of his Headquarters. Major General (then Brigadier General) William F. Marquat, who had fought the bitter Philippine campaign with the Commander in Chief, and who had accompanied General MacArthur to Australia. While the number of antiaircraft

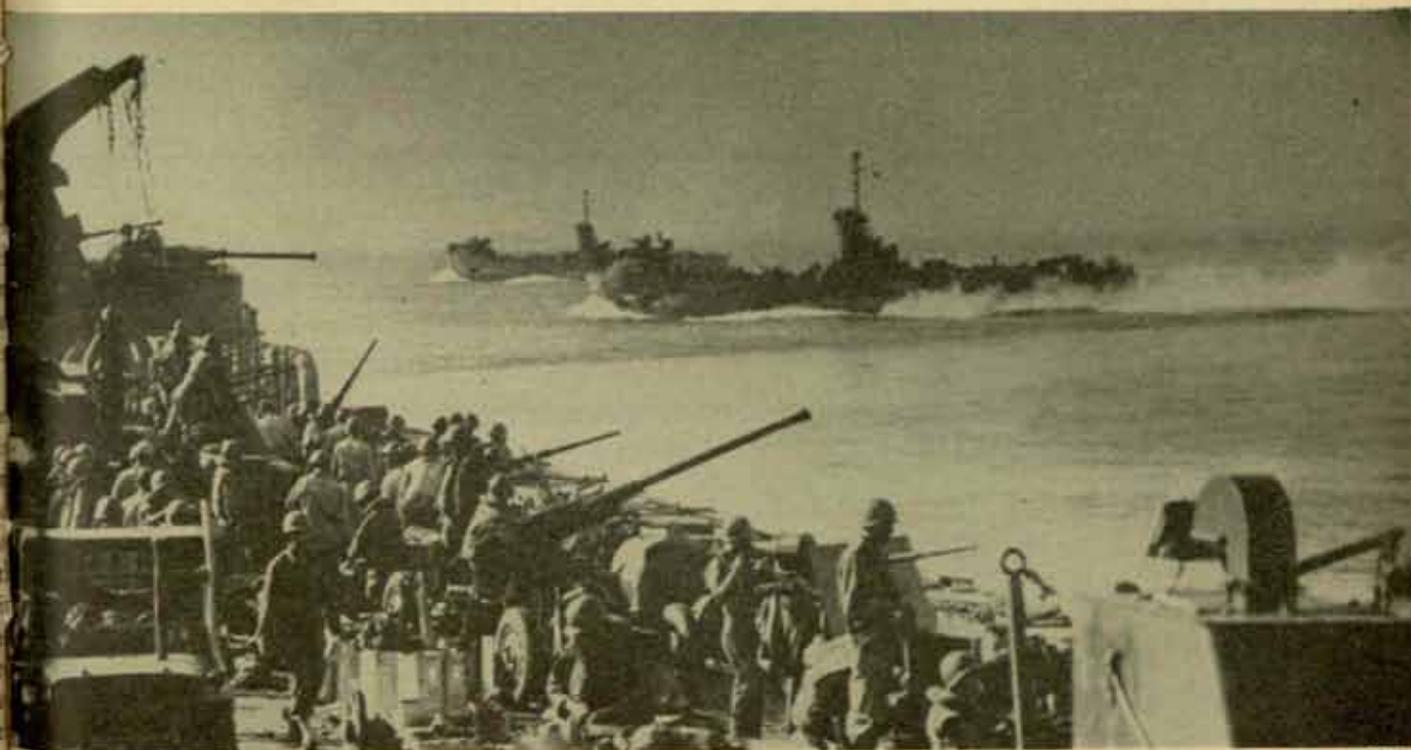
OF THE RAFT COMMAND

By Colonel Carl F. Tischbein, GSC

aircraft units remained small, effective supervision was readily maintained by the small staff of the AAO, GHQ. However, as the number of organizations reaching the Theater increased, it became apparent that the staff was too small to cope effectively with the situation. So by virtue of USAFFE General Order No. 73 issued on 15 November 1943, the 14th Antiaircraft Command under the command of Brigadier General Marquat and with headquarters in Brisbane, Australia came into being as a partner of the other major Theater commands in the fight against the

Japs. All seacoast artillery and antiaircraft troops in the southwest Pacific area were assigned the 14th AA Command. General Marquat at the same time retained his former assignment as Antiaircraft Officer, GHQ.

The directive setting up the 14th Antiaircraft Command indicated its general responsibilities toward its subordinate units. The most important of these included a general administrative supervision over all assigned organizations; a responsibility for the supply of technical matériel to units; a responsibility for the technical training of units, and their



Signal Corps Photo

Soldiers stand ready as the armada of American ships heads for the shore of Lingayen Gulf, Luzon Island, during the landing operations there.



Signal Corps Photo

Guarded by anti-aircraft, an LST unloads its cargo at Blue Beach, Mindoro, P. I. 14th AA Command Units like this kept the skies clear of Japs.

preparation for combat. These essentials led to other responsibilities which will become apparent as this narrative unfolds.

The necessity for continued training and the desirability of uniform instruction and centralized supervision were recognized from the start. The early anti-aircraft units were equipped with obsolescent equipment, and with the arrival of modern matériel for these units, training in the new equipment was essential. The first centralized training effort was instituted by a brigade which set up a training center at Townsville, Australia. Other training requirements also existed, some of which persisted to the end of the war. Thus many units found themselves in isolated positions where no target practice facilities existed; others needed brushing up on their technique prior to an operation; and all units in general needed the advantages of periodic refresher training.

With the formation of Headquarters, 14th AA Command, the functions enumerated above became an important responsibility. The training activities at Townsville continued while at the same time action was instituted to displace the center of training activities further along the axis of advance. During the early fall of 1944 the training center at Townsville was closed and a new training center at Finschhafen, New Guinea opened. The new site was near the current location of the Headquarters. At the same time it was on the principal supply route and at an important supply base. Amphibious lift to bring coast artillery units to Finschhafen for training thus became more readily available—but still far from ideal. It was, therefore, feasible to bring some units from outlying islands to Finschhafen for refresher training. Over 30,000 anti-aircraft and sea-coast troops received training at this center. Training facilities included an over water anti-aircraft range, a small-arms range, an antimechanized range, and a landward firing range where typical terrestrial fire problems were conducted often with the enthusiastic assistance of a field artillery battalion being staged at Finschhafen. A seaward firing range with tow target facilities was available for local 155mm coast artillery units.

The training conducted at these training centers reflected the type of training which judgment and Theater experience indicated as the most desirable to meet local problems. Great stress was laid on the fundamental necessity for accurate orienting, synchronizing, and levelling of equipment. A precise rhythm fire at an established rate of 12 rounds per minute and a disciplined volley fire were required. Maintenance of equipment under adverse tropical conditions and prompt repairs were stressed. Detailed inspections by experts from local technical services at which they pointed out deficiencies to the using personnel, and a meticulous follow-up system by higher commanders were means used to indoctrinate units with the absolute necessity for keeping after their equipment in the soggy climate of the Theater.

The training burden assigned the Headquarters was heavy one. To meet this requirement the Headquarters was authorized to augment its strength by integrating group headquarters and headquarters battery with its grades and ratings into the Headquarters structure. For administrative purposes and for purposes of record the group retained its identity, but for all practical purposes it was an integral part of the Headquarters. Additional assistance was obtained from the numerous teams of technical experts sent out to the Theater. Just prior to the end of the war the Headquarters strength was increased by an authorized allotment of grades to carry most of the instruction teams sent to the Theater.

In order to keep all units abreast of the latest techniques and at the same time to check on the state of training of units, the Command kept itinerant instruction teams habitually in the field among its units. By this means a uniformity in technique and procedure was maintained. Instruction teams were directed to look for new ideas, innovations, and suggestions among units, and were required by periodic reports to comment on the techniques and procedures in force. In June, 1945, the first of an anticipated series of seminars attended by all members of all instruction teams was conducted in Manila. The purpose of this meeting was to achieve absolute uniformity in technique to be taught, the revision of current training literature, and recommendations concerning changes in operating procedures. The end of the war prevented full value being received from the results of this conference.

Coincident with the closing of the South Pacific area and the integration of the Coast Artillery units thereof into the 14th AA Command in mid-1944, a training center for 155mm battalions was established and operated by a 155mm group under directions of the Headquarters at Milne Bay, New Guinea. This training center functioned in accordance with policies in effect at the Finschhafen Training Center. A small number of anti-aircraft units based at Milne Bay received refresher instruction at this training center similar to that given at Finschhafen. Troop units also assisted the local base personnel in operation and maintenance of the base when not actively engaged in training. Of the units situated at Milne Bay and Finschhafen about 25% were at all times actively engaged in training; the remaining units under their own officers were on special duty with the local Base authorities.

The opening of the Philippines Campaign brought with

at the opportunity of again moving the center of training activities forward. While the Headquarters was moved to Manila in June, 1945, a desirable training center location was found about 75 miles away at San Marcelino hard by Lingayen Gulf. Here a broad, sandy valley surrounded by mountains was ideal for training purposes. In addition, the area lent itself for a staging area for antiaircraft troops in any future move against Japan. The end of the war, however, brought to a halt further action for use of this training center. The physical plant for housing troops in training and the essential training and recreational facilities were almost complete when V-J Day arrived. Thereafter the area was used for experiments and test work in connection with projects originating within the Command.

From the earliest days of the war, pioneering in the improvement of matériel—gadgets—gadgeteering if you will—was prevalent. Countless gadgets to make their fire more effective were invented by men in position. Their ability to turn out gadgets from the available meager tools and stock on hand is a tribute to the inventiveness of the GI. Gadgets which later appeared under the more prosaic title of "modifications" were often the handiwork of soldiers on lonely beaches on isolated islands where the chance for action was too often remote. Other pioneering effort was found within the battalion where, for example, a suitable loading ramp originated of welded piping and airstrip metal. This ramp was successfully used in loading antiaircraft equipment into C-47s and was later adopted by the Air Forces and used throughout the Theater for loading heavy cargo into planes.

The minds which were engaged in pioneering were also active in suggesting changes and improvements in techniques and procedures to combat the special conditions ex-

isting in the Theater. Techniques so meticulously worked out in the United States needed modification in many instances for local use. In addition, the changing tactics and techniques of the Japanese air arm required thorough analysis and suitable action. This was the province of the Research section. Suggestions and ideas from the field received earnest consideration by this section which, in effect, constituted a miniature Antiaircraft Board. This section also worked on problems being currently considered in other theaters. These included target location and survey by radar tracking of a liaison plane; the use of radar in mortar location and experimentation in the use of the moving target indicator. In addition, it worked on projects originating within the Headquarters. Such was the study of evasive action technique which was instituted upon instructions from the Commanding General.

The flying tactics of the Japanese led to the conclusion that valuable information might be gained from a detailed study of the action taken by Japanese aircraft when under fire. It was also aimed at meeting the problem of preventing bursts from appearing behind the target, and, incidentally, to answer the Commanding General's comment that, as yet, he had never seen a Jap aircraft "back into a burst!" Briefly, by means of cameras and specially constructed recording devices, data were obtained for study of the action taken by the Nip when under fire. From this study it was apparent that the Jap customarily dove with an accelerated throttle to avoid future bursts. From this knowledge it was determined to anticipate his actions by entering a spot correction in the director prior to the first salvo burst—his first warning of hostile fire. To accomplish this, a limited number of directors were modified by the introduction



14th AA Command troops dig antiaircraft machine-gun posts in the ruins of Dulag, Leyte Island, P. I.

Signal Corps Photo



Signal Corps Photo

"D" Battery of the 211th goes into action at Tacloban, Leyte Island in the Philippines.

of a percentage prediction spot. Another modification to compute for random evasive action by targets was designed. The decline in enemy air activity and the early termination of the war prevented conclusive tests from being made at actual targets. The limited number of engagements, however, in which the percentage prediction spots were introduced led to favorable results and comments.

One of the ever-present matters engaging the attention of the Headquarters was morale. A large number of units were in isolated areas far removed from the stimulant of battle or from the customary environment in which the GI normally finds himself. The weary monotony of isolation; the dreary routine of repetition day after day and month after month of the same chores; and the selfsame series of dawn and dusk alerts with only an occasional enemy to fire upon—these tried the patience, skill, and ingenuity of commanders of all ranks in exercising that degree of leadership necessary to sustain soldier interest under trying circumstances. These echelons needed all of the "lift" the Headquarters could muster.

Every effort was made to get into the hands of all units all available newspapers, magazines, movie projectors, films, libraries, etc. Often the total number of an item received by the Command for issue was insufficient to make the rounds, yet by horse trading, judicious requisitioning, and a sympathetic appeal to the proper source, it was usually possible to get enough of the items to satisfy all. In some matters such as in the publication and distribution of an illustrated booklet concerning the Tagalog dialect, the Command was "ahead of Washington." In others it undertook responsibilities foreign to the usual concept. I refer here to its purchasing activities in Australia on behalf of antiaircraft units.

Most units found themselves with funds on hand and a desire to purchase but no market. In particular they desired such items as radios, electric fans, large electric coffee urns, etc. These were as unobtainable on the open market in Australia as they were at home. The Headquarters took orders for all such requests and contrived to meet most of the demands.

In general, the procedure called for maintaining contacts with various agencies of the Australian government and with appropriate manufacturers. Government officials were first requested to release the necessary raw materials for manufacture of the desired items, and manufacturers were then induced to syphon off sufficient skilled labor to construct the desired items at previously determined prices. Upon completion, items were officer safe-handed by ship or air usually several thousand miles to a central point from which the purchasing unit took possession. Hundreds of items were procured until at last the long supply line to Australia and the wide dispersion of units made this service impractical. The total money value of items purchased ran into six figures.

In all operations, antiaircraft units were among the first to go ashore and among the last to leave. Initially they were charged with providing air cover for the beachhead and thereafter accompanied the task force in accomplishing its ground mission. Once the ground mission had been completed, however, the air threat still remained. At this time operational control of antiaircraft units was transferred from the ground force commander to the Far East Air Forces. Thus it happened that, although the war continued to advance, antiaircraft units were still required locally. After the air threat had subsided, antiaircraft units were detached from FEAF and returned to the jurisdiction of the 14th AA Command whereupon they received refresher training and were prepared for subsequent operations with the ground forces at which time the cycle of attachments began all over again.

From the earliest days it was very difficult to determine the availability within the Theater of technical items of equipment especially spare parts for such items as directors, cable systems, and radars. Reports from mainland supply agencies indicated that the equipment had been shipped, but confirmation of its receipt in the Theater was difficult to obtain. The reason for this state of affairs was not difficult to find: Base and depot personnel were largely unfamiliar with items of new equipment and had stored them with what were believed to be similar items.

As the war progressed and bases became more numerous, it became more and more important that the location of antiaircraft equipment be accurately known. The Theater was never overstocked with spare parts for directors and radars and thus the stocks at any one base were never more than sufficient to meet immediate needs.

The obvious solution to the problem of knowing what was stored at a base was to provide each base commander with an officer familiar with antiaircraft equipment. In many instances antiaircraft units were located in defensive positions about the base. Under such conditions an officer from one of the units was available. At other locations properly qualified officers were placed on DS with the base personnel. In either event, the officers selected were first brought into the Command headquarters for a short orientation and instruction period before assuming their new duties. In actual practice the officers were representatives of G-4 when they arrived at the Base. Normally their first duty was to make a complete and accurate search for existing antiaircraft supplies and equipment. These inspections

usually turned up equipment for which the Command had been searching without results. Thereafter each representative scanned the manifest of all incoming ships for anti-aircraft equipment. When he found such equipment aboard he reported the quantity and type to the Command and assisted the Base personnel in its proper storage. Periodically he made further inspections of the base for other "lost" items of anti-aircraft matériel. When an item was shipped out to a unit, he informed the Command of the shipment and also notified the representative at the receiving base who thereafter was on the lookout for its arrival and followed up on its delivery to the proper unit. This completely coordinated series of actions kept track of anti-aircraft equipment in the Theater and prevented it from going astray or being "lost."

Base commanders welcomed the assistance given them by the Command representatives, and supply agencies cooperated enthusiastically in providing the Headquarters with every assistance in fulfilling the requirements of its GHQ directive. Only through the loyal and sustained efforts of all concerned was it possible to supply and maintain the technical equipment in the hands of well over 100 battalions scattered over 5,000 miles of uncharted terrain.

In 1942 when retaliatory measures against the Japs at Rabaul were undertaken, severe losses were sustained due to enemy anti-aircraft fire. This consideration led to recommendations by anti-aircraft officers that a study of Jap anti-aircraft defenses might indicate the avenues of approach to the target wherein the least number of casualties might be incurred. This suggestion was the embryo from which the entire system known as Flakintel was developed. Flakintel was the name "given to the organization and procedure set up to advise Allied Air Forces concerning Japanese anti-aircraft fire which could be placed in the several likely avenues of approach." Its computations and weighted factors were considered in planning the directions from which air units were to approach and leave the target area. These data were used down to and including the mission planning level. Likely anti-aircraft artillery officers were brought from the field and instructed in the rapidly evolving system. Manuals on the subject were prepared, and a thorough all-out effort was made to assist the Air Forces in their planning. Qualified anti-aircraft officers were assigned to the G-2 section of the Headquarters and placed on detached service with the Far East Air Forces. Flakintel officers were included on the staffs of bombardment groups and all higher air force headquarters to assist in planning strikes. Others accompanied amphibious assault forces in order to report promptly the finding of any new or unusual enemy anti-aircraft equipment which might affect the considerations of Flakintel officers. The system and the officers and men who developed and applied it rendered an invaluable service to the general cause.

As the tempo of the Pacific war increased, various organizational changes were effected by General MacArthur among his major commands. In April, 1945, the USAFFE and Pacific Ocean area commands were merged to form AFPAAC, and in June, 1945, the AFWESPAC organization under Lieut. General Wilhelm D. Styer came into existence. The latter organization included all army commands

not strictly tactical. The 14th AA Command was assigned to AFWESPAC and remained under its jurisdiction until its inactivation the following year.

The change in assignment did not alter the basic missions of the Command. Until the sudden collapse of Japan seven weeks later it was busily engaged in equipping, supplying, and assisting in the training of units earmarked for the coming onslaught against the Japanese homeland. With the end of hostilities, however, other duties were assigned to the Command. It was realized before V-J Day that the necessity of "getting the boys home quickly" would some day be a pressing problem. And so, to accomplish this task in an orderly and efficient manner, plans and the necessary technique to implement them were worked out in anticipation of a sudden Japanese surrender. These plans were approved after V-J Day by AFWESPAC and ordered executed. Individually and by unit the anti-aircraft forces scheduled for return to the mainland were assembled, processed, and sent to embarkation points. Combat units other than anti-aircraft and assigned to AFWESPAC were assigned by that headquarters to the Command for processing. All in all more than 100,000 troops were returned to the United States by the 14th AA Command.

The end of the war found a large number of anti-aircraft units on Luzon. Some were engaged in mopping up the remnants of the Nip forces on the island; others were staging for coming operations. The deployment of this personnel either individually or by unit required disposing of organizational equipment to the appropriate supply agencies. Ordnance and Signal Corps facilities were inadequate for the purpose. The Command thereupon established the 14th AA Command Matériel Center about 25 miles southeast of Manila. This Center, directly under the supervision of the Headquarters, was charged with the receipt, inspection, processing, and temporary storage of major items of Ordnance and Signal Corps equipment being turned in by anti-aircraft units. It was operated by a composite battalion to which the interested technical services had attached an appropriate number of various types of specialists. Equipment thus turned in was, where necessary, reconditioned, and then prepared for indefinite storage.

On 19 December 1945, Major General Marquat was relieved from command and Brigadier General Morris C. Handwerk who had participated in the Okinawa campaign assumed leadership. Under his guidance the Command carried its duties to a successful conclusion. On 31 March 1946, the 14th AA Command was inactivated.

The foregoing account admittedly covers only the highlights of the general activities of the 14th AA Command. It does not include many other interesting phases of activities during the 2½ years which the Command was in existence. The full story of the battle accomplishments of its units fills a stirring volume in which every participant may justly take great pride. The full share of praise for a duty well performed rests with all of the individuals who comprised the Command. It is for this reason that no individual unit or person was mentioned during the narrative just completed. The credit for the fine success of the 14th AA Command belongs to every member of the team which proved itself in battle to be worthy of the trust and confidence placed in it by the country it served.

Radar Countermeasures

By Lieutenant Colonel Leonard M. Orman
Coast Artillery Corps

THE MOTHER OF INVENTION

Every new weapon in warfare of necessity soon produces a defensive measure. Just as the use of gas resulted in the gas mask, and the bomber fathered the need for radar so too did countermeasures result against radar itself. The first large-scale jamming of radar took place on 12 February 1942 when the *Scharnhorst* and *Gneisenau* passed through the English Channel under the very noses of the best Allied radar. The ships were not seriously damaged by shore batteries because the jamming created a small panic among the radar operators so that the vessels were not tracked by radar, and they were invisible under the cover of the weather.

In an effort to cut down the bomber losses from anti-aircraft fire over German-held territory the Allies, too, got into the radar countermeasures business.

VULNERABILITY OF RADAR

The new eyes which radar has supplied sometimes can be blinded by skillful countermeasures in much the same manner as ordinary vision can be blinded by the artificial use of a smoke screen. Let us examine some of the weak-

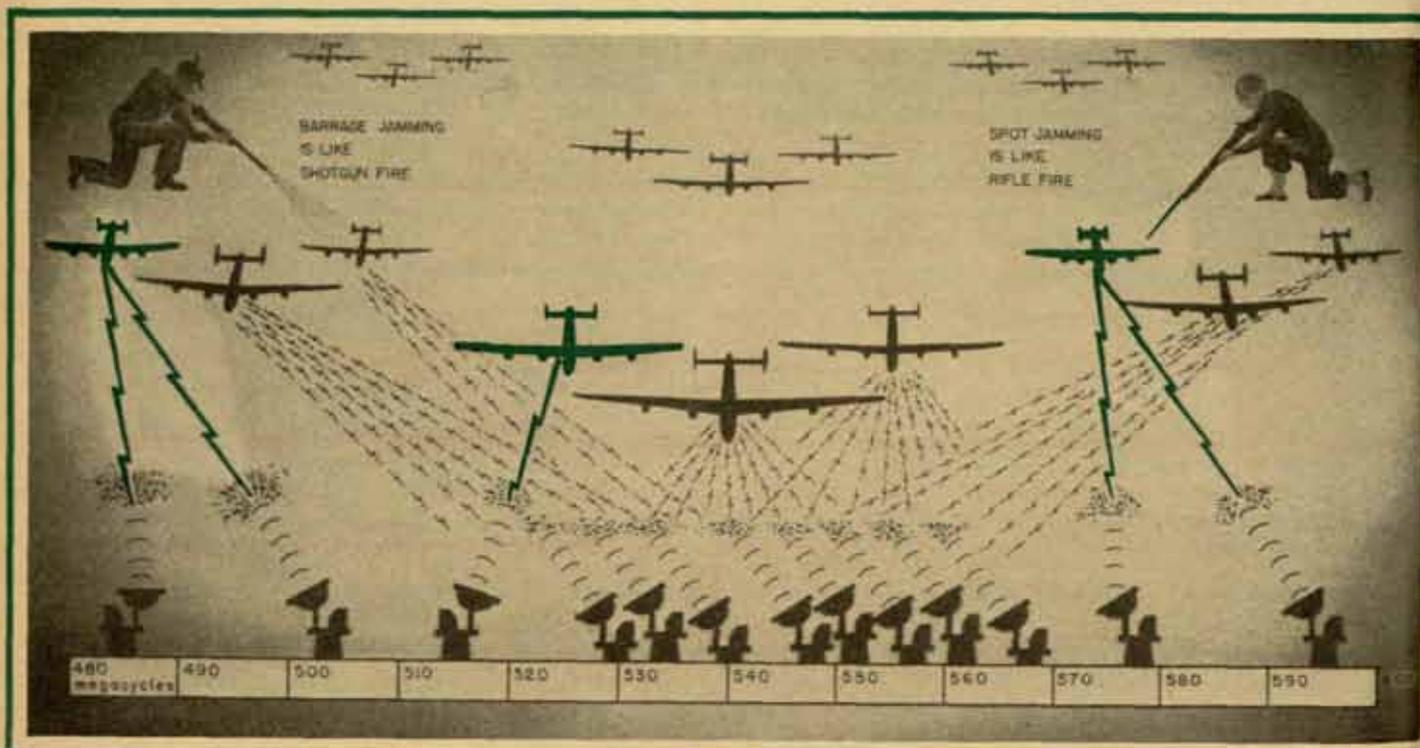
nesses of radar which lend themselves to this type of exploitation.

Radar stations send out radio impulses of tremendous strength; all that is needed to detect or hear these signals is a special radio receiver which will tune to the extremely short wave lengths used by the radar.

This represents the first Achilles' heel of radar: because it is constantly sending out strong radio signals, a radar set can be heard at a great distance—in fact, at a much greater distance than the longest range at which it can detect an object. Thus the radar itself can be easily detected. A radar with a maximum range of 70 miles could easily be "heard" well over 100 miles away. An operating radar, in effect, continuously advertises its presence. It is about as quiet, electrically speaking, as an artillery barrage is acoustically.

Secondly, a radar set betrays not only its existence, but also its exact location by the signal it sends out. It is always possible, by means of a radio direction finder, to determine the direction from which radio signals are coming, just as it is possible to tell the direction from which sound waves are coming by pointing an ear trumpet in different directions until the received sound is loudest. If the direction to a radio station is triangulated by base line methods the

*Commonly abbreviated RCM.



Electronic jamming by the Eighth Air Force. Two or three spot jamming planes (green) each with three transmitters, jam straggler frequencies while two "Carpet" in each of the other planes of the formation jam the crowded parts of the frequency spectrum.

position of the radio station may be determined. Once a radar signal has been tuned in on a radio receiver, it is possible by means of an attachment to the receiver to measure the azimuth of the radar and thus to determine its location. In addition to detecting and locating a radar, its frequency, coverage, pulse repetition rate, pulse duration, and whether or not lobe switching is used may be determined. For example, one of our radar reconnaissance planes which are called "Ferrets" charted the coverage of a top land-based radar completely by flying toward it at various elevations and on various azimuths. The Jap operator stopped his radar beam on the plane as soon as it was detected and followed its motion as long as it was in the field of view of the antenna. Thus the complete coverage of the radar was found by interpretation of the interrupted signals. Again at Kiska, this method was used to find the blind spot in the Japs' radar-eye and was fully exploited for bombing approach runs.

A third weakness of radar sets is the fact that the echo returned from most targets is so weak in strength. A fairly weak noise, therefore, would suffice to cover up the echo. It is only necessary to provide the target with a device which sends out a radio signal capable of covering up the signals reflected back to the radar by the target to blind the radar set.

A practical radar jammer consists of a tunable radio transmitter which sends out random "noise." Any home radio owner who uses an electric razor has a good idea of what such interference means. As seen on the indicators the "Noise" looks like many fine blades of grass moving about in a random fashion. Echoes from airplanes, which are usually displayed as vertical spikes on the radar scope, simply disappear and become lost in the "grass."

A further weakness of radar sets is that they cannot distinguish the nature of small targets. One small object, capable of returning an echo, looks to a radar just about the same as another. To a radar, an airplane or a ship is a small object. It has been found that a number of thin metallic strips, cut to a length proportional to the wave length used by a particular radar, can return a remarkably strong echo to that type of set. In fact, several thousands of these thin metallic strips, packaged in a small bundle weighing less than 2 ounces, will give a radar echo signal equivalent to several bombers when the strips are ejected from a plane and allowed to fall freely through the air. The metallic strips are designated by the code name "Window," from the fact that from the dispensing plane the sun's rays reflecting off the tinfoil seem like hundreds of windows flashing in the sun.

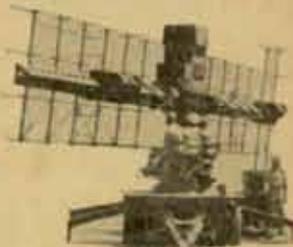
If a number of window packets are dropped out of a plane in succession, a trail is produced in which a radar can no longer distinguish a real target. The echo from an aircraft is simply lost among the echoes from the Window.

In brief review, the weaknesses of radar which can be exploited are these:

1. Radar can be heard at a considerable distance.
2. Its location and operating characteristics can be determined.
3. Since the echo it receives from most targets is very weak, that echo may be obscured by sending out a strong jamming signal.

**This is how
Anzio's fire control radars
compared at seeing through the window**

SCR-268



THIS LONG-WAVE SET COULDN'T SEE THROUGH THE WINDOW AT ALL

SCR-545



HALF MICRO, HALF LONG, 545'S VISION WAS HALF GOOD, HALF POOR

SCR-584



FULLY MICROWAVE, 584 COULD SEE UNDER ALMOST ALL CONDITIONS

Comparison of the various radar sets' ability to penetrate window.

4. Radar has difficulty in distinguishing between actual targets and false deceptive ones. Countermeasures exploit all four of these weaknesses.

DESCRIPTION

The enemy has two objectives in using radar countermeasures. First, he hopes to prevent us from obtaining any accurate or useful information about his forces by the use of our radars; second, he wishes to get information about our forces by listening to our radar. Since the second of these two objectives falls to the lot of the Signal Corps in our Army this paper will spend the major portion of its discussion in an analysis of the first objective. The radar countermeasures that may be used in accomplishing these purposes are of four types: jamming, deception, evasion,

JAMMING is the deliberate production by the enemy of strong signals for the purpose of hiding his movements or position from our radar by obliterating or confusing the echoes on our indicators.

DECEPTION is the deliberate production by the enemy of false or misleading echoes on our radar. Small targets may be made to appear like large ones or echoes may be made to appear where no genuine target exists.

EVASION consists of tactics that are designed to take advantage of the limitations of our radar to prevent or postpone radar detection, or to avoid revealing the true position of an attacking force. If attacking enemy planes take evasive action it may be impossible to determine the height at which they are flying or the planes may be detected too late for an adequate defense to be made ready.

INTERCEPTION is the detection of radar signals by the use of a special receiver. By this means, the enemy learns of our presence in his vicinity, and may determine our location and some of the characteristics of our radar. Since this form of countermeasure is passive, it will not be further discussed here.

JAMMING

The effect of radar jamming is to produce a confusing pattern on the screen of the radar indicator. The single trace that normally appears may become a network of interlaced lines, a solid pattern of light, very strong grass, or the trace may be wiped clean of all signals. Variations of these patterns may be produced by changing the amount of and

type of jamming, so that an almost infinite variety is possible.

In general, the enemy will derive greatest advantage from jamming fire control radar, **ESPECIALLY THAT USED FOR ANTI-AIRCRAFT FIRE CONTROL**, because this type of jamming will permit attacks by enemy aircraft to be carried out with less likelihood of accurate anti-aircraft fire. The ability of the operator to interpret the echoes as a means of establishing the size and composition of the targets is always impaired by jamming, and often interpretation will be impossible. The accuracy of the data obtained in the presence of jamming is less than that obtained in normal operation. Jamming usually can be detected on the radar at a greater range than is obtainable on the jamming vehicle as a target. Therefore, it is unlikely that the enemy will be so helpful as to begin jamming while he is beyond the detection range of an early warning radar.

In radars that use lobe switching or conical scan e.g. SCR-584, and AN/TPL-1, jamming can produce rather serious azimuth errors on the targets that can be seen through the jamming, and the pattern on the scope is often made more complicated by the switching that must be employed to display the echoes from the separate lobes. Although jamming may deny range information to the radar, it usually is possible to determine the approximate direction from which the jamming comes and by the use of triangulation the approximate position of the jammer may be determined.

There are two general types of jamming—electronic and



Jamming on D Day: How it upset Jerry's Radar Front. Radar countermeasures pattern for the Normandy Invasion is generalized in this diagram showing the extensive jamming of Jerry's radar defense. Mandrel is a type of Electronic Jamming designed for confusing German's long range sets. Air "Cigar" confuses fighter communication.

mechanical. Electronic jamming is accomplished by the transmission of modulated radio signals, while mechanical jamming is performed by dispersing Window or some similar substance.

The most effective type of "electronic raspberry" is produced by transmitting random noise on a frequency as nearly the same as the radar frequency as possible. Radar depends on two-way transmission. The power of a pulse sent out from the radar toward a plane falls off as the square of the distance. Since radar echoes must make a round trip, the strength of a radar echo varies as the fourth power of the distance. The signal from the jamming transmitter is therefore usually much stronger than the radar echo since the jamming travels directly, as opposed to the round trip taken by emission from the radar. A strong jamming signal may overload the radar receiver, which necessarily has been designed to be a very sensitive instrument, and therefore it may be rather susceptible to overloading.

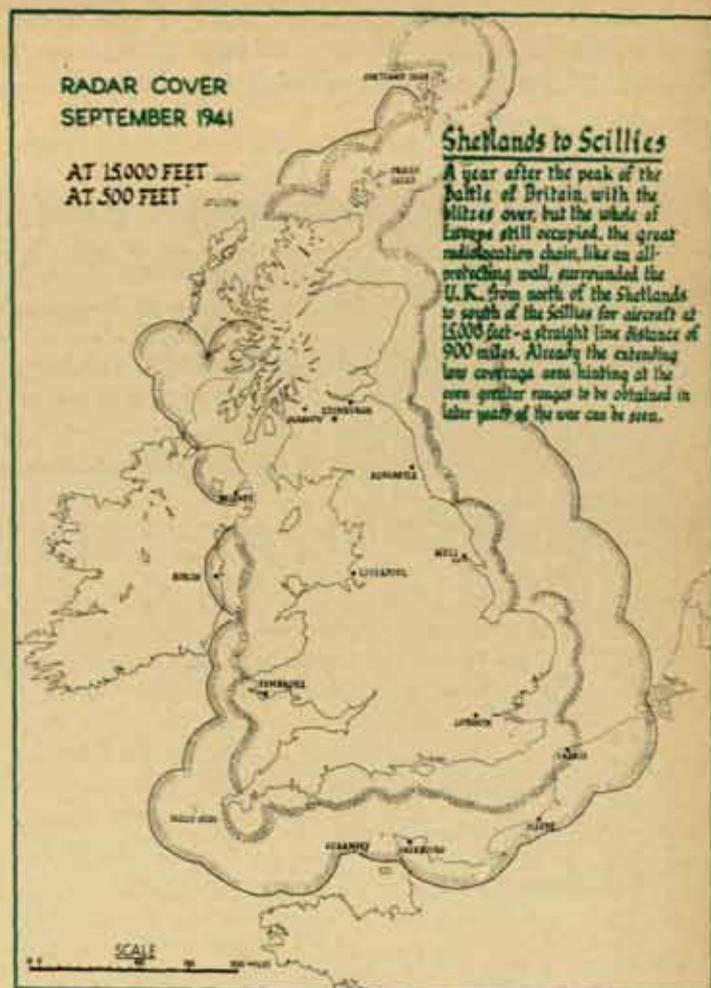
Very often a plane or ship may try to conceal itself from radar detection by carrying a jammer. This kind of jamming is called self-screening. If other planes or ships are in company with the jamming ship, the problem of detecting them may be complicated by the fact that the jamming and echo do not come from exactly the same place. How effective this jamming may be, can be seen from the fact that on the occasion of the first use of the U. S.'s electronic jammer, "Carpet" over Bremen the Carpet-equipped planes suffered losses less than one-half those of the non-equipped planes.

Electronic jamming may be further subdivided into two classes:

1. "Spot" Jamming.
2. "Barrage" Jamming.

Spot jammers are confined to a single frequency and are used with monitoring receivers so that the jammer can be placed exactly on the frequency to be jammed. They are generally carried aboard ship or plane or are land based, and their range is limited to the optical horizon or slightly beyond depending upon the power output of the equipment. Barrage jammers are generally airborne and are effective at distances up to 100 miles or more, depending on the altitude of the aircraft and the power output of the equipment. Barrage jammers cover a frequency band generally 10 megacycles in width and are sometimes equipped with automatic lock-on devices which detect the radar signal and automatically tune the jammer to the correct frequency.

Jamming can also be accomplished by the dispersal of many strips of reflecting material in the area covered by radar. Several different devices fall into this category. The most common of these objects is called "Window" or "Chaff." Other names for the same material are "Flak Paper" and "Maiden's Hair." These strips are of metallized paper cut to approximately $\frac{1}{2}$ wave length at the frequency to be jammed. "Rope" is the second of these objects and consists of pieces of tinfoil about 400 feet long suspended by a string from a small paper parachute. The third is known as "Angel" and consists of a very light corner reflector made of aluminum foil suspended from a parachute. Chaff and Rope are employed for confusion on any fre-



This map illustrates the radar coverage the British had in 1941. It is logical to assume that it was even better in February 1942. Yet the *Scharnhorst* and the *Gneisenau* sailed through under the cover of fog and jamming without any damage.

quency. Chaff is generally used where horizontally polarized radar is employed, while Rope is used against vertically polarized. Angel is used against radar sets operating at the higher frequencies.

All forms of Window may either be dropped from aircraft or dispensed by rockets fired from ships. Chaff and Rope are dropped or dispensed in bundles, each bundle representing the signal return from a heavy bomber or a large ship. The bundle may contain strips cut to cover several frequencies.

Since Window jamming consists of a cloud of particles that occupy a definite place in space, the vulnerability of radar to this type of jamming is different from the vulnerability to electronic jamming. Unlike cases in which electronic jamming is employed the location of Window relative to any targets which it is supposed to screen is continually changing. Window moves with the wind at a speed approximately two-thirds that of the wind, while the speed of the enemy ship or plane may be greater or less than the speed of the wind. If the Window area is not large the enemy will have difficulty in staying in the Window-infested area because the Window is hard to see in the air. Stragglers will appear outside the infected area.

Window produces pips that are quite similar to those from real targets whereas electronic emissions fill the scope

screen with patterns totally unlike those normally encountered. Also, the reflected signals from Window will occupy only a portion of the trace while electronic emissions cover the entire sweep.

The first indication of an impending raid may be "Window" pips on long-range search radars so that the jamming may work against the group responsible for it. With fire control radar, on the other hand, properly distributed Window can ruin the accurate determination of azimuth and height. For this reason the principal use of Window has been against this type of radar as a means of ESCAPING FROM ANTI-AIRCRAFT FIRE AFTER AN ATTACK. The extent of the success of the use of Window can be judged from these intercepts of conversation between German radar operators and their fighters on the first operational use of Radar—over Hamburg by the British on 24 July 1941.

"Search well in your area—there must be many hostiles near you."

"The planes are doubling themselves."

"Break off contact—hostiles are multiplying."

"Everything has gone wrong."

"It's a sorry mess—I'll explain everything when you come down." Losses during that raid dropped to 2.8% as compared with previous averages of 6.1%.

If the enemy intends to infect a large area with Window to prevent search or fire control by radar he will drop packages so that all the Window bundles will blend into one large cloud. The strips fall at about 300 feet per minute so that the signals returned from them persist on the jammed radar screen for perhaps 20 or 30 minutes, depending both on the height from which they are dropped and on the extent of the vertical coverage of the radar. The signals returned from the cloud of Window become so scattered after the first 10 minutes that the Window no longer provides strong enough signals for jamming, since echoes from targets can be seen through it. A tremendous amount of the material is required to jam a radar thoroughly. The jamming operation must be planned carefully with full knowledge of the characteristics of the radar to be attacked. In many instances where the Japs used Window, they apparently did so without sufficient knowledge of our radars and the jamming was ineffective.

Although the Allies used Window first it did not take the Germans long to realize that the strips of "tinsel" were not dropped to poison the cattle as was at first rumored and to use them quite successfully themselves. Anyone who operated a SCR-268 in Italy can tell that they did. However, on the Anzio beachhead the SCR-584 did an excellent job with our anti-aircraft credited with a total of 46 kills and many more probables since the "Window" dropped was cut for the frequency of the 268 and had little effect on the 584.

DECEPTION

From the standpoint of its use in the war, deception is one of least important of radar countermeasures. Although it is possible to deceive radars by the use of electronic

devices the necessary equipment is difficult to design and operate.

However, the use of mechanical devices for deception is entirely feasible and both the Germans and the Japs used deception techniques. For example, the Japs equipped sampans with reflectors so that they appeared to our radars like large craft. The sampans were sent out in advance of a convoy on courses calculated to lead our ships well out of the way by the time the real targets arrived. Other types of reflectors may be floated or suspended from balloons and designed to give false echoes like those from submarine periscopes, surface vessels or aircraft. Many of these devices produce echoes that seem very similar to genuine echoes in their behavior on the scope. Thus radars are very vulnerable to attack by deception for at least a short period of time. Often this short time is long enough to permit enemy planes to get out of gun range.

EVASION

Looking into the future, evasion is the least important of the radar countermeasures classes. During the past war low-frequency long-range radars could not detect low-flying targets at long range because the antenna pattern is such that the beam did not provide good low cover. Both the Allies and the Axis were fully aware of this limitation and frequently approached "on the deck," to use a Navy expression. Future radars may be logically expected to overcome this weakness.

IS RADAR HERE TO STAY?

The question might well now be posed, "Does RCM mean the end of Radar?" "Must we again revert to optical methods of search and fire control?" This does not seem to be the answer. Jamming must be expected in any future operations against an enemy. And that in itself eliminates its most potent factor—surprise. Proper training of radar operators will enable them to continue to operate in the face of countermeasures. This might best be illustrated by the fact that after the British operators, who were jammed when the *Seharnhorst* escaped, were given training in jamming they were able to track through the same type of jamming that had so completely baffled them on that February night in 1942. It is extremely difficult to make jamming 100% effective. The skilled operator can usually continue to obtain some information even though jammed. Future radar must incorporate in them the latest anti-jamming devices. A vigorous research program must be followed along these lines to not only give us the best radars in the world but also the ones least vulnerable to radar countermeasures. Anti-jamming must take its place along with other military characteristics as a definite requirement in all radar sets. For the pessimists who think that countermeasures will render radar obsolete it might be pointed out as a case in point that means have always existed and been used for jamming radio communications, but radio undaunted by that fact has continued to find universal military use each year. So, too, will radar.



Rocket Propulsion

By Dr. R. W. Porter

Although short-range powder rockets have had a place in military thinking for many centuries, developments of the last two decades in the field of rocketry are revolutionizing all previous conceptions of warfare. Along with the introduction of liquid rather than solid propellants has come the transition of rocket design from an "art" to a "science." As a result, self-propelled guided missile interceptors are now possible which will travel faster and farther than bullets, making both conventional anti-aircraft artillery and its conventional aircraft targets obsolete. And for the first time, engineers are seriously considering the possibility of using rocket-propelled vehicles to carry loads of hundreds of pounds halfway around the world. In the inevitable race of speed against more speed and high altitude against higher altitude the rocket is certain to win because it does not depend on air for reaction or combustion, but can travel as well in empty space as at sea level.

ECONOMIC CONSIDERATIONS

Considered as a matter of economics, the rocket-propelled missile shows a superiority over other types both at very short and very long ranges. In the case of a conventional aircraft, if the range must be increased more fuel is required, more wing area is needed to support the extra weight, more powerful engines are necessary to overcome the drag of the added wing, still more fuel is required for the larger engines, and so on until a limiting value is

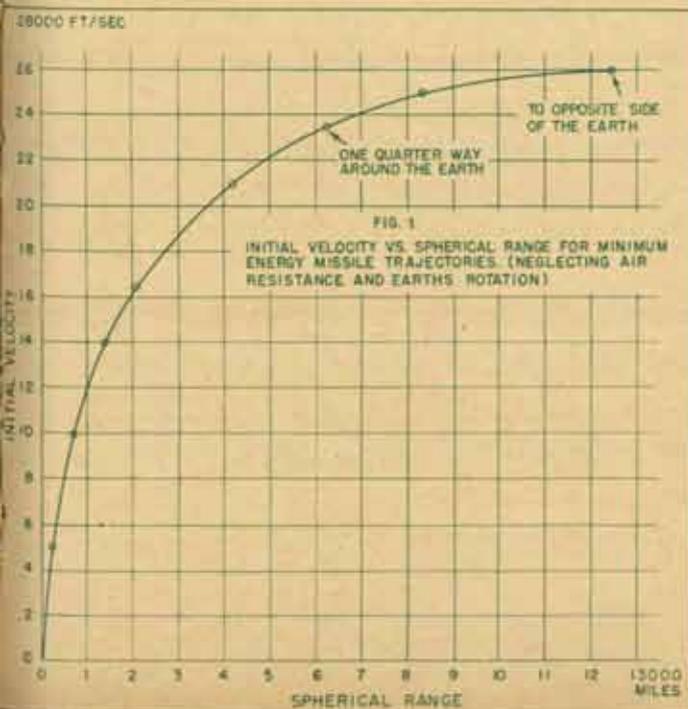
reached. As the range approaches a critical value, the weight goes up very sharply. For supersonic aircraft and ramjets the critical value of range is lower because of the poorer lift to drag ratio. A rocket, however, traveling outside the earth's atmosphere where air resistance is zero, can reach a speed at which centrifugal force balances the pull of gravity. In this case the range becomes infinite without any further expenditure of energy or mass by the rocket. Because of the simplicity of its propulsion system the rocket also has an area of superiority at very short ranges where the weight of propellant is small.

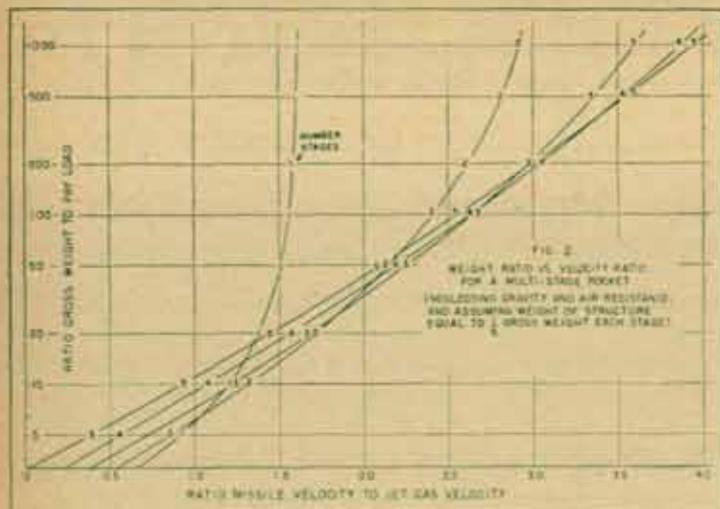
The above picture is profoundly affected by the possibility of propulsion of aircraft by atomic power, but there are certain drawbacks even in this case. In order to build an atomic power plant with sufficient power to fly, it seems certain that it would be necessary to provide enough active material to keep it flying around the world for hundreds, perhaps thousands of times. In the design of a one-trip missile this wasted energy might be inordinately expensive, even compared with the cost of a round-the-world rocket. Atomic energy can also be considered as a possibility in the case of rocket propulsion, but any advantages to be gained are limited by the fact that a rocket must carry along the mass needed for propulsion as well as the energy.

TRAJECTORY POSSIBILITIES

A detailed study of trajectories is beyond the scope of this article. Figs. 1 and 2, however, give a rough picture of the velocity and weight requirements for long-range missiles of the freely falling type. If one wishes to attack a target at a range of five thousand miles, for example, Fig. 1 shows that an initial velocity of the order of 22,200 feet per second would be required. Referring to Fig. 2 and assuming a jet gas velocity of 7,000 feet per second which is easily attainable, it is seen that this would require a four-stage rocket having a take-off to payload weight ratio of two hundred fifty to one, provided the designer can keep the structural weight of each stage down to one-fifth the gross weight of that stage. ($22,000 \div 7,000 = 3.1 =$ ratio missile velocity to jet gas velocity.)

It is interesting to note that with the exception of the almost negligible amount attributable to air resistance at the beginning, no energy is lost during the flight since the trajectory lies almost wholly outside the earth's atmosphere. The missile therefore will approach its target with kinetic energy and velocity equal to the maximum initial values. As the air density begins to increase during the last few seconds of flight, the skin temperature of the missile will rapidly rise to a value beyond the melting point of aluminum and steel, whereupon the missile will disintegrate and be consumed by oxidation.





Ratio Missile Velocity to Jet Gas Velocity

Recent studies have shown that this problem can be overcome in two different ways: First, by means of large braking surfaces which begin to slow the missile down at altitudes so high that dangerous temperatures are not reached; and second, by means of lifting surfaces which cause the missile to glide through the increasingly dense layers of atmosphere at high supersonic speeds, gradually slowing down as it releases its energy in the form of drag. The latter method is an efficient way to increase the range of a missile. In the above illustration an increase of several thousand miles might be obtained, or alternatively the gross weight at take-off for a range of five thousand miles might be reduced by a factor of about two to one and the number of stages reduced to three.

FUNDAMENTALS OF ROCKET PROPULSION

Staggering though its possibilities may seem to the imagination, the rocket principle is fundamentally the most simple of any known means of propulsion. A rocket motor consists of a chamber into which solid or liquid chemicals are introduced and burned, and a venturi or nozzle through which the resulting gases are expanded and accelerated. If it operates in a gravitationless vacuum, the behavior of a rocket can be expressed exactly by a simple statement of the conservation of momentum; namely, that during an infinite

period of time, the rocket is increased in speed by an amount equal to the fraction of its weight ejected as a gas in the jet multiplied by the average velocity of the jet with respect to the rocket.

Under these conditions a rocket starting from rest will acquire a velocity equal to its own jet velocity when it has burned roughly two-thirds of its original weight. By burning approximately six-sevenths of its own weight, a rocket could reach twice its jet velocity. If all of the weight of rocket could be consumed and ejected at the jet velocity which of course is impossible, the last particle would approach an infinite velocity.

A popular misconception, that a rocket cannot go faster than its own jet velocity, is shown to be false by the above reasoning.

MULTISTAGE ROCKETS

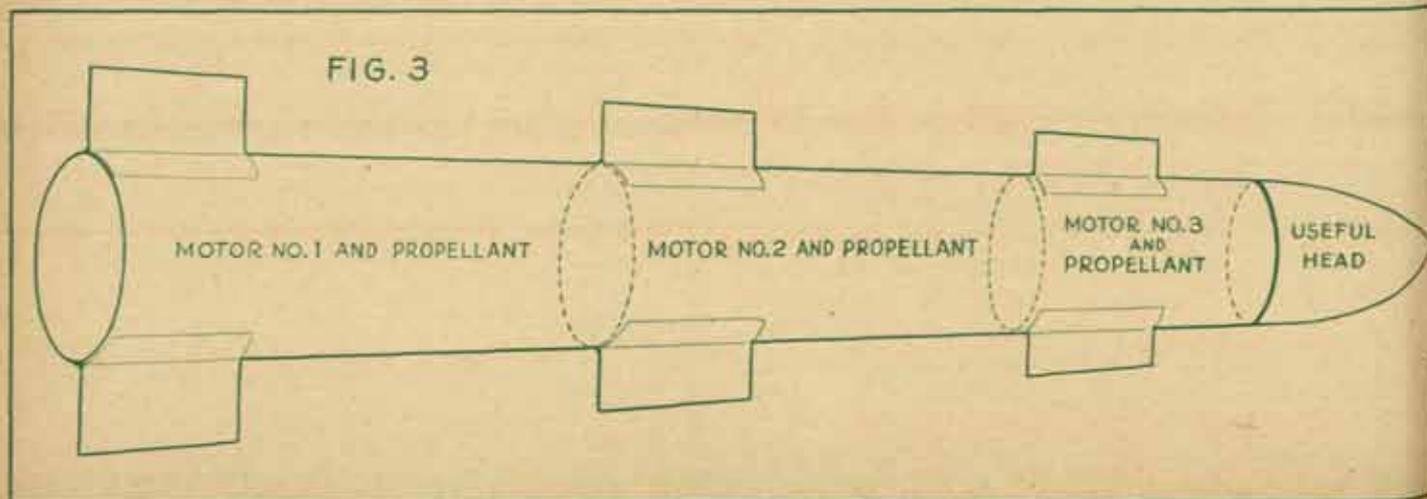
If a higher velocity is needed than can be obtained by means of a single rocket, the missile designer will turn to a multistage rocket. In such a scheme, several independent rocket motor (propulsion) units of decreasing size are arranged one ahead of the other. In this way, everything ahead of a motor unit may be considered as the payload for that unit, and so on. When any one unit has exhausted its propellant supply, it is jettisoned and the next unit takes over. The head of the final unit carries the useful load which may be explosives in wartime and scientific instruments in peacetime. (Fig. 3.)

POWER AND EFFICIENCY

Horsepower and efficiency are terms which, although dear to the heart of the conventional power plant designer, mean little to the rocketeer. In fact they can be rather misleading if improperly used. The power output and efficiency of a rocket motor depend, of course, on its speed. At zero speed although full thrust is produced, no useful work is done. The rate of doing work can be found by multiplying the thrust by the velocity of the rocket. On this basis, at its maximum speed of about 5,000 feet per second, the German V-2 developed about half a million horsepower for a little longer than one minute.

TWO MAIN FACTORS WHICH INFLUENCE DESIGN

The two most important factors which influence the de-



ener of a rocket propulsion system are jet velocity and weight. Let us consider for a moment the factors which influence the former.

Practical attainment of the theoretical jet velocity for a given propellant combination is a matter of allowing sufficient time for vaporizing, mixing, and burning to be completed, and of proper design of the nozzle or venturi to give efficient expansion of the gases from chamber pressure to exhaust pressure. Fortunately the design of such nozzles is relatively simple and straightforward. The problem of mixing and burning, however, is by no means a simple one, nor is it well understood at the present time. In the case of propellant systems, in which a fuel and an oxidizer are produced separately into the combustion chamber, the problem becomes one of providing as intimate a mixture as possible in the shortest possible time, or ultimately a problem in the design of spray nozzles. In the case of a monopropellant system, a homogeneous material capable of changing from one chemical form into another with an associated release of energy and a large volume of gas, is introduced into the combustion chamber. Reaction is caused by a flame front which exists in the chamber. Such material, unfortunately, is potentially an explosive and must be stabilized or slowed down in order to keep it from being too hazardous to handle. This stabilizing action generally defeats the requirement of fast burning, and brings about the necessity for a large combustion chamber.

In considering the factor of weight, a designer will certainly attempt to reduce the size of his combustion chamber as much as he can without causing an appreciable reduction in jet velocity. In addition he will select propellants having the highest possible density and will design for a low combustion-chamber pressure and spray-nozzle pressure drop in order to reduce the weight of the propellant tanks and feed system. Here as always however a compromise must be made, for if the chamber pressure is made too low the jet velocity may be reduced and if the pressure drop across the injector nozzles is too low flame oscillation or roughness may result.

THE COOLING PROBLEM

No discussion of rocket motors is complete without mentioning the cooling problem. Since combustion chamber

temperatures are beyond the melting temperature of the most refractory metals known, some means must be provided to cool all of the surfaces exposed to the hot gases. The simplest method, called regenerative cooling, consists of passing at least one of the propellants through a jacket over the back surface of the combustion chamber and venturi walls before it is injected into the motor. A second type of cooling, frequently used in addition to regenerative cooling, is film cooling. Introduction of a small quantity of one of the propellants at various points along the wall of the combustion chamber forms a cool sheath of vapor which helps to insulate the walls from the hot gases. Thus it is necessary that in addition to all the other requirements, at least one of the propellants, preferably the one used in largest quantity, have a high boiling point, high specific heat, and a relatively immobile vapor.

A great deal can be accomplished in reducing the cooling problem by proper flame geometry, that is by eliminating large-scale eddies and tending toward laminar flow, *i.e.*, in layers with a slowly moving layer of gas along the chamber wall.

CONCLUSION

Increasing military and commercial interest in missiles which will travel to very great distances at very high altitudes and speeds is bringing the best scientific talent in the country to bear on the development of rocket propulsion. At the same time the scientific progress during the recent war has provided new methods, new ideas, and most of all unlimited technical courage. Nothing is now too fantastic to be specified, promised, or in most cases even to be delivered. Under these circumstances, advances in the field of rocketry are certain to follow one another in rapid order. Better materials, new propellants, perhaps the use in some way of atomic power—all will have a part in the program. The greatest effort during the years immediately ahead, however, will almost certainly be along the lines of improved structural design, and of greatly increased sizes. Whether man will achieve his old ambition to be able to escape from the earth, or even to make new satellites, this year or this decade is still impossible to say. That these ambitions can be realized in our lifetime, however, now seems certain.



Cooperation in Weather

By Captain Robert A. Porter, Air Corps

The recent article by Captain Pechman (May-June issue) gave an excellent account of the use by the IX Air Defense Command of meteorological data obtained from the Air Weather Service, under arrangements made in the field by Antiaircraft and Air Weather Service personnel. War developed urgent need for the cooperative interchange of weather information, and the initiative and resourcefulness of field personnel created actual operational procedures which progressed far beyond the headquarters policies in the Zone of the Interior.

The fact that the field personnel of the Antiaircraft and the Air Weather Service did not wait for orders, or even permission, from higher echelons to set up a program for the interchange of useful meteorological data is a credit to them and to their organizations. Despite the heavy time demands of field operation, they considered this project sufficiently valuable to warrant the extra time and work which it required. This in itself is proof that the problem is one of practical importance and deserves serious consideration.

The development of a program of interchange of meteorological data was not confined to the IX Air Defense Command. As early as 1942, the necessity for such a program was recognized in the United States. The following reasons were considered most important:

(a) The newer guns and fire control equipment, with their increased ranges and accuracies, demanded the use of the most accurate meteorological corrections possible. In particular, the existing techniques (as given in TM 4-240) of estimating upper-air densities and temperatures from surface observations were completely inadequate, and prevented the realization of the potentialities of the new weapons. This problem was particularly prominent in the Antiaircraft, but was also a matter for concern in the SCA and FA.

(b) In 1942 the Air Weather Service, with a world-wide network of weather stations, was making hundreds of routine determinations of upper-air temperatures, pressures, humidities, and densities every day. These observations were necessary to the Weather Service for its general forecasting problems, but they were also suited to the need of the artillery arms for more accurate upper-air data. The equipment used by the Weather Service was the radiosonde, a small, compact box containing meteorological instruments and a very small radio transmitter. It is carried aloft by a balloon similar to the one used by the Antiaircraft for radar targets, and measurements of pressure, temperature, and humidity are automatically transmitted to the ground receiving station.

(c) The Weather Service was receiving rapidly multiplying demands for forecasts for air operations and other purposes. Newer and better forecasting techniques were being developed which required accurate knowledge of the conditions in the high levels of the atmosphere. Radio-

elements but the techniques for the determination of upper winds were not yet satisfactory. Visual theodolites, the only instruments available, left a great deal to be desired in the way of precision. In addition, their use was limited or prohibited by poor visibility or low-level cloud cover, weather conditions under which upper-air information is most vital.

(d) The gun-laying radars developed for the Antiaircraft were excellent for taking wind observations under all conditions of visibility and cloud cover. The later models, such as the SCR-545 and SCR-584, were—and still are—capable of determining winds with an accuracy well within the limits required for forecasting. However, the high cost of this equipment made it inexpedient for the Weather Service to procure them in the quantity needed for a complete wind reporting network.

The advantages of an interchange of information were clear and an extensive joint project to investigate artillery meteorological problems was established by the artillery arms, the Ordnance Department, the Signal Corps and the Air Corps. This project progressed to the formulation of technical procedures and administrative policies early in 1944. However, by the latter part of 1943, interchange programs had developed spontaneously in almost all of the active war areas.

There was little standardization from area to area in techniques and organization of the exchange of meteorological data between the Antiaircraft and the Weather Service, since the development of the process was influenced greatly by local considerations. The amount of attention and care given to the problem was a function of the personal interest and initiative of the officers and local personnel involved and the supply and communication status of the area. Delay in the preparation and distribution of Army-wide policies and information naturally contributed to the diversity of methods. However, certain unanimity of direction and purpose was achieved through the common sense and technical ability of the personnel on the spot, aided by distribution of informal information and the transfer to the theaters of a few officers familiar with the development of the project in the United States. The initial handicaps of lack of experience and ignorance of the other fellow's problems were overcome by energy, enthusiasm and the need for results.

The most comprehensive program of interchange was found in the European Theater of Operations, possibly because of the availability of personnel and equipment. In that theater AAF weather detachments were attached directly to Ground Forces units, insuring the preparation of ballistic data as a primary function. The antiaircraft battalions in rear areas, such as in the IX Air Defense Command, were assured of service from the numerous weather installations at tactical airstrips. Great interest in the program was shown by antiaircraft gun battalions and the



A mobile weather station on the move. This van is equipped to take both surface and air observations. In the field it is accompanied by a communications truck.

tensive use by the Weather Service in forecasting for both air and ground operations. The benefits of the interchange also extended to the FA, particularly for the larger caliber and longer range guns and howitzers. The focal points of the interchange were the Ground Forces weather detachments, which were equipped with *integrated communications sections*.

The Mediterranean Theater of Operations made one of the earliest attempts to develop and utilize the more accurate meteorological data obtained by radar and radiosonde. However, for most of the campaign in the MTO, the Weather Service was unable to furnish the personnel and equipment for a completely adequate program. Although the plan was well conceived, the interchange suffered because the ballistic program was an additional burden on a staff already busy with forecasts for air operations. It was not until the close of the campaign that a detachment was made available for specific Ground Force use. Even then, this detachment was designed only for general forecasts, so that ballistic meteorological data did not receive the necessary specialized attention. In the MTO, the FA entered actively into the program. A major part of the responsibility for handling the interchange fell to the 15th Field Observation Battalion which processed the Weather Service temperature and density data, determined winds, and disseminated the information to interested units. Antiaircraft personnel and radar equipment were attached to this Battalion.

In spite of stable tropical weather conditions which were little incentive for the accurate determination of ballistic data, units in the Southwest Pacific Area displayed ingenuity in developing techniques suitable for the climate. Unfortunately, these techniques were only partially applicable to the temperate conditions into which the cam-

paigned moved in its final stage. Lack of communications, equipment and supplies also limited the exchange of data. The flow of data from the Weather Service to the artillery was largely confined to forward areas and to a few localized rear areas. The impetus for development came chiefly from the 14th Antiaircraft Command, with the Weather Service cooperating by furnishing all the data possible with its limited equipment.

The use of meteorological services by Ground Forces in the Pacific Oceanic Area was very limited because of the nature of the operation and relative stability of tropical weather from a ballistic standpoint. Facilities arranged for use in the Okinawa campaign were not completely successful because of inadequate communications. In the militarily stable situation on Oahu, a system was developed for providing radiosonde data to the antiaircraft. The basic radiosonde information came from Navy radiosonde ascents and the data were processed by the Air Weather Service.

The usual arguments for standardization of techniques and procedures certainly apply here. The heterogeneity of methods developed in the various theaters did not allow efficiency in training and inspection, and there was no inter-theater fluidity of individuals or units. However, the fact that almost every conceivable technique received a wartime trial somewhere in the world is a great advantage in the formulation of a sound policy now.

Present Army policy in AR 95-150 established the Air Weather Service and outlined its duties, responsibilities and privileges. In the most recent revision of the regulation, the Air Weather Service is charged with furnishing weather service to all components of the Army. The only exception is the making of upper air observations for the specific purpose of determining ballistic quantities for artillery fire,



An Air Weather Service observer operates a radiosonde ground receiver during an observation of upper air pressures, temperatures and humidities from a mobile station. Signals giving meteorological data sent out by a balloon-borne transmitter are received and recorded by this radio set.

which is ruled to be an integral function of the artillery units. If weather observations are being taken by any Army unit, the Weather Service is empowered to obtain such observations as may be required for the fulfillment of its responsibilities. Further, the Weather Service may prescribe the form in which the observations are presented.

These provisions, of course, were designed to give effect to the agreed delineation of responsibility between the Weather Service and the FA. Late in the war, authorization was obtained to augment the T/O & E of the Field Observation Battalion by radiosonde and newly developed associated radio-direction-finding wind equipment, one officer trained in meteorology, and sufficient enlisted personnel to operate the equipment. This necessarily involved a considerable training program, and, even with the transfer of many AAF weather officers to the FA, none of these meteorological sections arrived in the theaters in time to see active combat. These sections have proved their usefulness, however, in valuable research on the influence of weather on the FA's ballistic problem. It is likely that their inclusion in Field Observation Battalions will prove to be a worth-while source of FA ballistic meteorological data.

Even with the present tendency toward a closer relationship between the artillery arms, this source of data does not offer a complete solution to the antiaircraft problems. Field Observation Battalions are ordinarily deployed in a Corps area. If we are to judge from the experience of the past war, a small percentage of antiaircraft gun battalions will be so deployed. The majority of the guns will be located in the Army area and in the Communications Zone, guarding the likely targets of the enemy's strategic bombing.

These units must also be assured of access to the best possible upper-air temperature and density data.

Before the various possibilities for the formulation of such a policy are discussed, it will be well to digress a little and consider the possibilities and nature of variations in the atmosphere. Meteorological elements vary with both time and distance. Since the measurements on which meteorological messages are based are always taken at a time in advance of firing, and at a distance from the actual trajectory of the shell, some error is involved. It is part of the artilleryman's job to consider all the errors to which his firing is liable, and then to estimate how much error he can tolerate from this source. Most current opinion seems to be that it is worth while to make a real effort to keep the errors of meteorological messages beneath the upper limits of 5 m.p.h. for ballistic wind, one per cent for ballistic density, and 5 degrees for ballistic temperature.

With these quantities as an indication of the required accuracy, some remarks about the density, frequency, and techniques of observation are possible from a meteorological point of view. Naturally, the variability of the atmosphere differs for the different regions of the world, and for the various types of weather situations which occur in the same region. For temperate climates, however, we have some idea how great an area and time, one observation can serve. For densities and temperatures, a radiosonde observation not more than 6 hours old, taken at less than 100 miles away, is likely to meet the accuracy required, except under unusual circumstances. For winds the requirements are more stringent. Wind observations over 4 hours old, or taken at a distance of over 30 miles, will probably be unsatisfactory.

These requirements for the density and frequency of observations are based only on the variability of the atmosphere. An additional source of error in meteorological messages arises from possible inaccuracies in the observing equipment.

From these facts, it may seem that there is little chance of obtaining the accuracies desired for meteorological messages for the widely scattered antiaircraft units without a large investment in meteorological equipment. The wind requirements are no cause for concern, since the radar with which each gun battery is already equipped is a completely satisfactory wind measuring instrument. Augmentation of the battalion meteorological sections and training of radar operators in the special procedures used in wind determination are all that is needed.

Unfortunately, the problem of providing ballistic temperatures and densities requires a great deal more thought. The tactical deployment of antiaircraft battalions is so varied that an arrangement which is suitable one week may be wholly inadequate the next. Possible situations range from a concentration of many battalions around one important potential target to spreading a single battalion over such a large area that meteorologically each battery constitutes a separate problem. If the Antiaircraft were to adopt a policy of providing organic radiosonde equipment, the unit which would have to be so equipped would be a battalion. Aside from considerations of economy of personnel and equipment, there are technical difficulties in the way of such a plan. The present type of radiosonde equipment

is not very flexible. In order to attain low weight and low cost, the transmitters are naturally very simple and can be tuned only to a very narrow band of frequencies. Consequently, simultaneous ascents sometimes interfere with each other at ranges of over 100 miles. *Only strong centralized control over radiosonde observations in a geographical area can make a very dense network practicable.*

Actually, such a dense network is not really necessary. In recent years meteorology has made rapid strides in understanding the high levels of the atmosphere and is still making progress. The standard weather reporting network of upper-air stations allows us to draw weather maps of the distribution of the weather elements. These maps permit not only an estimation of what the densities and temperatures are at some place where there is no observation but also, by the use of upper-air forecasting, to predict with some precision what they will be several hours in advance. There are errors, naturally, both in the space forecasting and in the time forecasting, just as there are in the method which uses the direct observation as valid for slightly different times and places. Experiments have been conducted which will permit a quantitative estimate of how great these forecasting errors may be, on the same basis for which the requirements of density and frequency of direct observations were estimated. For a location three or four hundred miles from the nearest upper-air reporting station, forecasts up to eighteen hours in advance met the accuracy requirements for ballistic temperatures and densities.

It is now possible to see how these technical considerations affect the formulation of administrative policy for the provision of Antiaircraft units with ballistic temperatures and densities.

The Air Weather Service, in order to fulfill its general forecasting responsibilities, will have forecasting and observing stations not only on airstrips, but also with Ground Force units. All stations will be served by an integrated communications net.

The weather problems peculiar to ground operations are manifold, and some of them are of especial interest to the Antiaircraft. Because of the increasing size of antiaircraft guns, the question of cross-country mobility is very important. This problem can be solved by detailed soil maps, interpreted by aid of past and forecast rainfall and temperature data. Barrage balloon operations require accurate short-range wind forecasts. Searchlight operations are dependent upon the prediction of visibility and cloud cover. Also as was demonstrated in ETO, weather forecasts correlated with studies of enemy deployment tactics and estimates of enemy target priorities can be used to anticipate enemy action, both defensive and offensive. In these and many other ways effective Antiaircraft operations require knowledge of the weather. The requirements of the Antiaircraft represent only a small portion of the many specialized weather requirements of various arms and services of the Army. It is therefore apparent that weather installations in the Army and Corps areas must be fairly extensive.

The plan of the Air Weather Service, based on wartime experience, provides for the assignment of liaison officers throughout the chain of command from the War Department down to antiaircraft brigade level. It will be the duty of these officers to advise antiaircraft commanders



A mobile weather detachment on Iwo Jima, April 1945. Surface and upper air observations were taken from the van; the tent was used for forecasting.

concerning the effects of weather on antiaircraft operations and the needs for weather information within the command.

Under this system each theater will maintain a pool from which can be drawn mobile weather units to be assigned where and when needed, and to which can be returned surplus weather units. Such a pool will meet the operational needs for flexibility. The degree of flexibility required may be illustrated by contrasting the situation near Kassel, Germany, in April 1945, with that at Antwerp in the winter of 1944-45. At Kassel, one antiaircraft battalion was spread so thinly along the front that several mobile weather units were necessary to provide required weather observations, whereas at Antwerp, approximately twenty battalions were so closely bunched that one mobile unit could provide all of them with the required observations.

In actual operations, the procedure will be followed of initially assigning mobile weather units on an area density basis, providing within the Communications Zone, Army Area, or Corps Area the number of units needed to give adequate meteorological coverage within the area, making allowances for terrain and other local conditions. The pool will be the reservoir that will provide flexibility over and above basic assignment quotas. The mobile weather units involved in this scheme are of the type capable of providing weather forecasts, upper air observations including rawin and rawinsonde (combination of rawin and radiosonde using one balloon), and comprehensive surface observations. Such units are truck-mounted and can be rapidly assembled. They require two officers and 17 EM for their operation. They will be attached to the Antiaircraft for operational control, quarters and rations.

Mobile weather units of the Air Weather Service will be part of the general weather network within the area to which they are assigned. These units will be provided with two-way radio. There will be a flow of weather information between the mobile units and weather stations and the central weather station in the area, whether the unit is assigned to the Corps Area, the Army Area, or the Communications Zone. Wire and radio facilities for

connecting weather units with antiaircraft units and to provide a drop on the master weather teletype circuit will be provided by the antiaircraft commands.

The forecasting services offered by the mobile weather units and by fixed weather stations will constitute an important part of the total program. Weather forecasts for ballistic corrections will be issued whenever the weather situation is changing so rapidly that three-hour corrections are called for. To provide such forecasts at more frequent intervals would not be practicable in terms of the antiaircraft operations; to offer them at regular intervals would be unnecessary and confusing, since observational reports would normally be forthcoming every six hours. General weather forecasts will be issued periodically and in the form of warnings as the situation demands to provide the weather information essential for trafficability forecasts, searchlight operations, barrage balloon operations and in anticipating enemy action as previously discussed.

Under the proposed system mobile weather units will constitute the chief source of data in the Corps Area, supplemented by FA observations obtained by FA teams. In the Army Area, mobile units will be supplemented to a large extent by fixed weather stations of the Air Weather Service. In the Communications Zone, the mobile weather units will become supplementary, being used to fill in

where needed between the more dense, fixed weather stations that are maintained well to the rear of the Corps Area. Thus the mobile weather units will constitute the adjustable element in the over-all system of supplying the observations needed by Antiaircraft. The theater pool will provide the flexibility and demands will constantly be met through the coordination provided by the weather liaison officers.

The concept of the weather station network and of the mobile unit as a part of that network is an important one. For general forecasting purposes, the individual observation is useful chiefly because it is part of a great network of such observations. That is, weather is a global phenomenon, all the aspects of which must be considered at once. One network of observations is adequate to serve all meteorological needs. Paralleling part of the network adds very little to the sum of weather knowledge. National and organizational boundaries already complicate the problem of the integration of weather information, and it is the fear of the Weather Service that further subdivision of responsibility will only result in needless duplication of effort. We have already outlined the reason why we think that all artillery will, upon further investigation of the problem, find that the network approach is both efficient and capable of the flexibility required.

Ordnance Guided Missile Program*

By Dr. Ancel St. John

The Ordnance Rocket Development Division of Research and Development Service is responsible for the development of all Army rockets and guided missiles of the rocket type. These missiles are jet-propelled, are guided by controlling the direction of the jet, carry their own oxygen for combustion and consequently operate most efficiently beyond the earth's atmosphere.

In line with Army Ordnance policy of cooperation with interested agencies, other groups in the armed forces and several educational institutions were invited to participate in the scientific phase of the V-2 program. The Navy, Signal Corps, Army Air Forces, Harvard, Johns Hopkins, Princeton, and the University of Michigan were among those who took advantage of the opportunity and formed a special panel to coordinate this phase of the investigation.

The V-2 program has thus become a joint venture. The General Electric Company, one of the Ordnance Department contractors, is charged with the job of fabricating the missing parts, overhauling the various components, assembling the missiles, and providing the fuels. General Electric scientists are collaborating with service experts in making research studies of the missile itself. The Signal Corps is cooperating with the Ordnance ballistics experts and has developed various pieces of electronic equipment essential to the study of flight characteristics. They are also coordinating the work of the services interested in detecting and tracking supersonic missiles.

The Army Ground Forces has stationed the First Guided Missile Battalion at White Sands Proving Ground to assist in handling the missiles and manning the various ground

stations. In addition, the Army Ground Force Board No. 4 and Antiaircraft School are furnishing personnel and equipment for the detection and tracking phase.

Army Ground Forces, Army Air Forces, and the Signal Corps are undertaking long-range detection and radar tracking experiments during the program. The Air Force is rendering valuable assistance in supplying planes and other equipment, as well as collaborating in the scientific research on the physics of the upper atmosphere.

The Navy Department, in addition to providing certain essential equipment, has assumed the responsibility for coordinating the program covering research of the upper atmosphere. The Naval Research Laboratory designed and provided the telemetering equipment which transmits to ground receivers a continuous flow of various data during the flight of the rocket.

Other elements of the Ordnance guided-missiles program which cannot be discussed in detail here include very long range ground-to-ground missiles, high-altitude antiaircraft missiles, and the necessary basic research on propellants, high-power jet-propulsion systems, guidance equipment, and countermeasures against enemy-controlled missiles.

The policy of the Ordnance Department in these developments is to place contracts with highly qualified technical institutions and commercial firms rather than build and staff new laboratories of its own. The White Sands Proving Ground is a firing-test range for medium and short-range missiles; not a research center. Test areas for long-range missiles are now being considered. Facilities are, of course, provided for the necessary assembly, testing, repair, and modification of missiles, and the study of their flight characteristics.

THE RED ARMY

By Lieutenant Colonel Wm. R. Kintner, GSC

"The best guarantee, the best security for freedom, . . . is a bayonet in the hands of the worker" . . . Frederick Engels, co-founder with Karl Marx of modern communism laid down this dictate a hundred years ago. Soviet Russia, the communist state, has taken these words seriously. As the Western Allies complete the rapid demobilization of their Armed Forces, the Soviet Red Army becomes more and more the most potent ground force in the world. The Red Army has won for itself the reputation of a first-class fighting machine. How did it get that way?

On 23 February 1918, the Workers' and Peasants' Red Army was born in battle against the Germans in the field of Pskov. Although this date has been chosen as its official birthday, its units had been forming from the nondescript rubble of the old Russian Imperial Army for some months past. It should be recalled that the Army of the Czars had been wrecked by defeatist propaganda, which continued to exploit the weakness of the Provisional Government. Persistent agitation undermined the confidence of army men in their officers and led to the dissipation of all military authority. When this occurred, the Bolsheviks disclosed their own concealed military cadres around which they built, from the remnants of the old, the new and revolutionary Red Army. The Red Army's fledgling steps were taken in civil strife. By 1921, over 5,000,000 men had passed through its changing ranks. But in spite of spotty leadership, poor discipline and interference from political commissars this gangling army finally won a bitter civil war.

During the period of chaotic domestic conditions which immediately followed this victory, the Red Army was reduced to a formless mass of half a million men. Confusion, indirection reigned. Starved for supplies and men, lacking in form or character, it finally came under the restorative hands of Comrade M. V. Frunze. Frunze was an intellectual revolutionary whose sole military experience had been gained in the civil war.

Frunze inherited the Red Army in the early nineteen twenties when it was still permeated with the revolutionary fervor of its birth. It was very much a comrade's army which attempted to operate on the discipline of revolution and not on systematic authority. Because most soldiers understand comradely equality better than the reasons for obedience to a single will, necessity forced the introduction of stricter military discipline. Frunze himself attempted to put more backbone into the Red Army by advocating tighter discipline which would still be consistent with communist theory. Naturally, such efforts met considerable opposition from less practical Bolsheviks who maintained that personal authority, based on persuasion not discipline, would be sufficient for military purposes.

In addition to improving its soldierly qualities, Frunze also put the Red Army through a reorganizational wringer. He set up a territorial-militia system similar to our own Na-

tional Guard and provided a new system of general military service. Frunze was likewise determined to adjust necessary military procedures to conform with basic communist beliefs. He emphasized the military education of politically sound Red officers whom he found lacking in the proper training for positions of high command. It must be recalled that at that time the Red Army was still dependent for leadership on the officers and noncoms it had inherited from the old Imperial Army. Prior to Frunze's regime a disastrous attempt had been made to train candidates for command in Marxian dialectics rather than along conventional military lines. Such politically trained commanders appeared on the several civil war fronts in 1920. The revolutionary zeal of such men had been greatly admired, but their combat value scorned. . . . "They do not know how to give an order. They do not have the necessary will power to command." In spite of this early failure Frunze wrestled with the problem of creating a proletarian officers' corps.

Before he was able to accomplish his many well chosen objectives Frunze died in 1925.

Voroshilov took over the helm and began an extensive effort to mechanize and modernize the Red Army. Technical improvements in military equipment were intimately bound up in the successive five-year plans. For almost a decade there were considerable advances made along these lines. However, progress was temporarily halted, and in certain fields retrogression set in, because of the damage done by the famous treason trials of 1937. Marshal Tukhachevsky, one of the key founders of Marxian military doctrine, many other generals, and thousands of field officers were given one of history's weirdest trials and shot for alleged treason. This purge eliminated from top command a large number of officers whose position had been won through revolutionary activity.

One indirect benefit came from the fact that rapid promotion was thus opened to younger men trained in the formal Soviet academies. On the other hand the fear, suspicion, and chauvinism which followed in the wake of these trials had a depressing effect on Red Army morale and discipline.

Yet in spite of this setback, the Red Army grew and grew. It tripled in size from 1934 to 1939. By the latter date 3,000,000 men turned out each day for the Russian reveille. This new force had a chance to flex its growing muscles in the mysterious border war against the Japs in Manchuria in 1938. The next year it finally took off the wraps in a full-scale move, unlike that public dress rehearsal, by attacking Finland.

History records few tales equal to the David vs. Goliath match between the valiant, but outnumbered Finns, and the Russian masses, fought in a bitter arctic winter before the eyes of an unbelieving world. Finnish valor pointed

out the fact that something was lacking in the amorphous mass of the Red Army. This something was adequate discipline. Consequently, the Red Army was initially no match for the tightly controlled and cohesive little army of Finland. Nevertheless, ruthless battlefield improvisation and immense superiority of numbers finally won a costly Soviet victory.

Marshal Timoshenko emerged from this debacle as the rising star of the Red Forces. He was able, in August 1940, to abolish the militarily disastrous system of political commissars. Timoshenko also capitalized on the dearly bought Finnish experience to organize large-scale, realistic war games which played an important part in preparing the Red Army for the approaching onslaught of Hitler's Legions.

In spite of twenty-three years of intensive preparation for war, the Soviets were not quite ready for the German attack when it came. They were not able initially to convert their decisive superiority in men and resources into superiority along the battle line. Realizing their weaknesses, the Red Army leaders astutely planned a resilient struggle. They knew that the vast Russian spaces and the Russian climate fought on their side. Their immediate goal was to escape encirclement, believing that time would tip the balance in their favor. Thus they accepted astronomical casualties, planned a drastic scorched earth policy, and, assisted by Generals Mud and Winter, managed to bleed the Wehrmacht into a state of impotence.

This adoption of the strategic defensive was a gamble, but the Russians had no other choice. It was touch and go whether it would succeed all through 1941. The next year brought about the progressive exhaustion of the Nazis, culminating in Stalingrad and vindication. Then began the strategic counteroffensive, which eventually, merging with the Allied attack in the West, brought about the complete defeat of the Third Reich.

Such a brief outline of the tremendous battle for Russia leaves no space to discuss the astounding evolution of the Red Army under the impact of total war. The gods of battle demanded stricter discipline than ever before. To understand the evolution of discipline we must retrace our story back to the military sickness injected into the Red Army by the famous General Order No. 1 issued by the Soviet of Petrograd. This order established a system of military committees to govern the Army and forbade soldiers saluting or standing at attention for their officers. Characteristically, these early Bolsheviks maintained that the interests of the revolution could not be sacrificed to the army's need of efficiency.

It is not surprising that the revolution abolished all grades and rank. Leaders were known simply as commanders whether they led a squad or commanded an army. Differences in dress, pay and privilege between elements of the Red Army were no greater than the small mark on the sleeves of commanders which distinguished them from rank and file. The equalitarian spirit so prevalent during the revolutionary period continued to plague the Red Army well into the war with Nazi Germany. Eventually, however, the moderating influence of time and the necessity of war were to make the Red Army the most rank conscious military machine on earth. This is all the more remarkable

when we consider that the Red Army of 1918 outlawed the very term "officer." Then unit commanders shared with the men their clubs and mess halls, for social differences because of rank were unthinkable among good socialist comrades. With identical uniforms and almost identical pay the private and the commander were treated, for most purposes, as if they were at the same level. Commanders were even subject to arrest by soldier committees. Under such a system there was little or no incentive to become a make-believe officer. In the early twenties a Soviet investigator made this comment, "A Commander's life is penal servitude . . . to attract youths to study for a military career, to dispel their fear of becoming commanders it is necessary to improve the conditions of Red Army commanders."

With the passage of time the greater influence of reason became apparent in all phases of Soviet life, including the Army. Thus as the disciplinary code was tightened, efforts were made to make army life attractive, both to the men and to their commanders. This tendency led to the decree of September 1935 which finally re-established individual ranks for commanders, gave titles to lower ranks, and brought the term Marshal out of mothballs as the designation of top Soviet commanders. This decree was motivated by a desire to re-enforce the power of authority and to provide incentive for greater effort on the part of outstanding individuals. Substantial pay differentiation was also established.

Along with other regulation changes, this action did strengthen the prestige and authority of commanders, and make responsible army service into a profession. Yet the military benefits of these reforms were somewhat mitigated by the revival of the political commissar system due to the 1937 purge. As a result the Red Army still had a long way to go when it met the Finns in 1939. The Finnish fiasco and the catastrophes that befell the Russians in the first year of the German war clearly called for stricter discipline as the essential ingredient of victory. To achieve better discipline, differences in rank grew progressively. At the same time more pronounced distinctions among command personnel were established and greater respect and privileges were accorded the Army as a whole. The pay-off came in a decree announced in 1943. A distinct "officers' corps" was re-established, and the term "officer," despised during the revolution, again became a title of honor and distinction. The traditional pogony shoulder board of the Czarist Army reappeared on the resplendently distinctive uniforms of the Red officers. Further differentiation between officers and men was announced along with the promulgation of the most severe disciplinary code to be found in any army of the world.

The Red Army manual states that "Soviet discipline must be characterized by stricter and more rigorous requirements than any army." A far cry from the revolutionary days of 1918 when the standards were so lax that Lenin, watching a review in Red Square, was moved to comment, "Look at them, how they march . . . like bags of sand." Even as late as 1929 the Red Army emphasized the class character of discipline. All of this former stress on conscious discipline on the part of the individual soldier is forgotten in the present disciplinary codes. Failure to obey

a superior's orders now became a criminal offense in the Red Army. Further, an officer no longer bears responsibility if he is forced to use arms to enforce obedience or to restore order. The commander's order has become the subordinate's law. The Code goes on, "The strictest discipline is proper to the Red Army by its very nature." In other words Soviet discipline must be more harsh than that found in the armies of capitalistic states which is based "solely on class subordination." The Peasants' and Workers' Red Army insists, "Every case of soft-heartedness and liberalism, even the smallest indulgence with respect to violation of discipline, results in great harm." Interestingly enough, measures were taken in June of this year to tighten these already stringent disciplinary regulations. This recent step, however, should be viewed as a reiteration of existing procedures rather than a radical change.

What is the Red Army's future? It can be safely predicted that the Red Army will remain the apple of Stalin's eye. The Soviet Press regularly hails the dignity and strength of its defenders. The Soviet officer, instead of being the object of scorn and ridicule, is glamorized and glorified in the controlled Russian press and screen.

The Red officer will continue to lead a conscripted army. The Soviet constitution specifies that military service in the Workers' and Peasants' Red Army is an honorable duty of the citizen. However, the present Soviet plans require the retention in the service of a large number of experienced regulars. Special inducements have been offered to encourage the re-enlistment of seasoned soldiers. Numerous schools open the possibility of advancement to ambitious men. Noncoms are selected after graduation from rigorous courses of instruction. Officers are chosen from the graduates of cadet schools, from the ranks, or from technically qualified civilians. As in our own army, genuine opportunity exists for enlisted personnel to advance to high rank. Mention should be made of Stalin's recent decree which established Suvorov Schools. These schools will train sons of dead Red Army vets. Six years of intensive study and military indoctrination will begin at the age of ten. Suvorov Schools are to be geared to produce 5,000 graduates a year. Promotion and advancement of officers is highly selective. Attendance at the leading service schools is on a competitive basis and is a prerequisite of high rank. The two most important service schools are the Frunze Academy, of similar stature to our Leavenworth, and the Voroshilov Academy which corresponds to our Army War College.

The leaders of the Red Army, having proven their ability and devotion by a monumental victory, enjoy a prestige and a position in Soviet society greater than that accorded military men in any country. The pay of the Red Army now compares favorably with highest Soviet levels. On the other hand, pay awarded the various ranks is remarkably out of line with theoretical communist tenets. The Russian

equivalent of our five-star generals is paid a hundred times as much as Private Tovarisch. Likewise, the Russian lieutenant is rewarded eleven times as much as the private for his contribution to the common Soviet defense. We must realize that the Soviet private, although poorly paid by our standards, is still pretty well off. His food and housing are provided by the state, and his few kopeks may rightly be considered pocket money. Too, he shares in the superior privileges accorded to all members of the army. Likewise, his war decorations bring him material advantages as well as honor.

Living in a completely rationed society, membership in the military profession is made desirable by opportunities to acquire extra food, better housing and the rare consumer goods now available in the USSR. The higher the rank, the greater the purchase rights in state stores to limited luxury articles unobtainable by the general communistic public.

Salutes are now required by all hands. The private salutes the corporal and so on up the line. The lower ranking soldier is expected to give up his bus or subway seat to any higher ranking man. Personal orderlies are now provided for all higher ranking officers, including retired personnel.

Plans are under way to construct special apartment houses for officers and their families. According to Soviet theory, off-duty relations between enlisted men and officers of the Red Army must not be conducted to the prejudice of either good discipline or the inherent dignity of communist citizens. Fancy and distinct officer clubs are now being provided in the Workers' and Peasants' Red Army because it "is necessary to have sharp differentiation between officers and enlisted men." All of these changes were made and are being continued because Soviet policy requires a strong army. A strong army is built around a powerful officers' corps. Red Army officers now comprise what amounts to a separate social class. This is not to imply that this condition has come about as the result of a deliberate effort to sabotage the revolution, but rather because officers, as members of the scarce intelligentsia, enjoy the generally favorable position of the Soviet educated class.

Militarily, the Red Army has come of age. In form and structure it has drawn away from the idealistic concepts of its founders, who believed that an effective army could be maintained by discipline derived from the comradely social instincts of individual soldiers. Soviet experience has reiterated the truth that a sound army must have its command personnel set apart from the mass of men they direct. Differences in national temperament will modify the proven military system in various countries. Notably, the Red Army exhibits the most formal structure, demands the most extreme symbols of outward respect for its officers and governs by the severest disciplinary code to be found in any Army in the world.



Rockets--They're Here to Stay*

By Colonel A. R. MacKechnie, Infantry

EDITOR'S NOTE: The author of this article has been a member of the Army Ground Forces Rocket Board since it was first organized at Fort Benning in March 1944. Prior to that, he commanded a regiment of the 41st Infantry Division in the New Guinea campaign.

The recent publicity given to rockets, together with the knowledge of the activation of several rocket battalions in the Army, has resulted in a kindling of interest in these new ground weapons throughout our service. An observer from the European Theater, where rockets were used to a limited extent by our forces in the closing phases of combat operations, reports widespread interest, with reactions varying from enthusiasm on the part of those who have fired, or witnessed the firing of the newer rockets, to apathy, or violent distrust on the part of those whose information is based on rumor, or who have observed the earlier models.

Although rockets are comparatively new in our service, actually they were used before the cannon. Their earliest history shows them being used by the Chinese in 1232. The British used them in the Napoleonic Wars, and at Bladensburg, during the War of 1812, they were so effective against our green troops that they fled the field and permitted the British to occupy and burn the city of Washington.

The development of artillery cannon with rifled barrels and greatly improved ballistic qualities, in the latter part of the nineteenth century, resulted in the complete abandonment of rockets as weapons of war, until World War II. Since 1940, the British, Russians, Germans, and our own Navy and Air Corps have developed and employed

many different types of rockets, and their success has led to their development, and finally their adoption, by our Army as a Ground Force weapon.

Rockets have always been inaccurate, as compared to a gun or howitzer, and their range considerably less than artillery shells of the same caliber. Development of weapons and projectiles in the past habitually has been with the view to increasing accuracy, range and effectiveness. The question naturally arises as to why we now reverse this policy in the case of rockets. A brief discussion of what a rocket is, and a comparison of the rocket with the howitzer may serve to answer the query.

A rocket is a self-propelled projectile. Essentially it consists of a "head" containing the explosive, or other filler, and the fuze; and a "motor," containing the propellant and some form of stabilizing device. Its chief distinction from an artillery round is that, whereas in the latter, only the shell leaves the bore when the piece is fired, in the rocket the entire round, head and motor, are projected. This means that extra, or dead, weight is added to the rocket, reducing its range and efficiency, since "motor" fragmentation is not effective as a rule. Roughly speaking, a rocket is only about one-half as efficient as an artillery shell.

We might say that the theory of rocket propulsion is the reverse of that for an artillery shell. When an artillery piece is fired, the intense gas pressure created by the burning powder forces the shell out the muzzle, and, being restricted by the breechblock, causes the piece to recoil. To withstand these forces, the tube and breechblock must be made of heavy steel and a recoil mechanism and recuperator must be provided, all finely machined. The shell is stabilized by rotation imparted by the rifled barrel and it leaves the muzzle at its maximum velocity.

In the rocket, the motor itself is built to withstand the gas pressure from the burning propellant. Gas escapes through one or more holes, or venturi, in the rear of the motor, forcing the rocket forward. Since its propulsion depends upon the unimpeded flow of gas to the rear, the rocket launcher tube is left open, eliminating the need for a breechblock. This also eliminates recoil, obviates the need for a recoil-mechanism, and permits the use of lightweight metals in the launcher tube and mount. Stabilization is provided either by fins attached to the tail, or by several gas-escape venturi, inclined at an angle to the long axis of the rocket, giving it a rotating motion.

Whereas, in the artillery round, all propellant powder is consumed within the bore, the propellant in the rocket motor burns for some distance after it leaves the launcher. Its initial velocity is low, and it continues to accelerate throughout the burning period. This is the chief reason for the greater dispersion of rockets over the shell, since it permits the introduction of many forces and variables which do not affect the shell. Theoretically, if all burning was completed within the launcher tube, the rocket would depart at its maximum velocity and rate of rotation and would be

*From the *Military Review*.



Marine Corps photo

From launching platforms mounted on trucks, Marine crews fire a hail of rockets at Japanese positions on a Saipan ridge.



Navy Photo

Navy Avenger takes off on Rocket attack. The installations for the rockets can be seen on the underside of the plane's wings.

as accurate as a howitzer shell. Practically, this is impossible since some propellants burn for several hundred feet, and a tube even fifty feet long would be impractical for field service.

The long burning time makes the rocket visible for a considerable distance and the gases escaping from the venturi at a high velocity stir up a cloud of dust and debris at the launcher position, making it difficult to conceal it from enemy observation. The hot gases are dangerous to personnel and matériel in its path, and occasionally small pellets of hot propellant fragments are ejected which may ignite dry grass or other inflammable materials. Operating crews and ammunition must be kept well to the flank of the launcher during firing, thereby slowing down reloading and the firing of successive volleys to some extent. Although rockets have *no recoil* they do have "back-blast," and, except for expendable type launchers, the heat and blast is so severe as to damage the launcher and its firing mechanism, imposing additional engineering problems in design and protection of those items.

Since the rocket is far less accurate and less efficient than the gun or howitzer and has the additional disadvantages of excessive blast and flash at the firing position, why, then, are rockets used and do they have any qualities which offset their disadvantages.

There have been two main reasons behind the development of the modern rocket. The first is economy, the second is tactical, and both are based on the absence of recoil in the rocket. The rocket is so constructed as to withstand the pressure of gases within its motor body, and its projection depends upon the free and unimpeded flow of these gases from its venturi. Therefore it is unnecessary and undesirable to launch it from a heavy steel tube or to provide a finely machined breechblock or recoil mechanism. For these reasons the rocket launcher may be made from light materials, cheaply, rapidly, and with an enormous saving in manpower and in strategic materials.

In 1940, following Dunkirk, the British were faced with the problem of re-equipping their army almost completely with rifles, cannon and other matériel, with limited resources, manufacturing facilities, and manpower. At the same time they were forced to defend themselves against

the aerial "blitz." The antiaircraft rocket was the ideal solution since it provided great masses of fire and could be made quickly, cheaply, and required a comparatively small amount of steel. In the same way, the Russians and Germans found that it was impossible to provide all the artillery required for a modern war. The Germans, particularly, found that the aerial "blitz" could not replace artillery in the support of ground troops and had badly underestimated their artillery requirements. The rocket was a partial solution to their problems.

The trend of air warfare has constantly been toward more and heavier armament. Due to the inability of airplanes to withstand the heavy recoil forces set up by larger cannon the Air Force was quick to seize upon the rocket as a solution to their problem and today we find both bombers and fighters equipped with this weapon.

One of the problems which faced our Navy in its many landing operations in the Pacific, was how to fill the gap in the supporting fires from the battle fleet when the landing craft approached within 1,000 yards of the beach. At that point the supporting fire had to be lifted to avoid danger to the small boats. This left the landing craft without supporting fire on the beach at the time it was most needed. These small boats were too light to withstand the recoil of cannons of the required caliber, and machine-gun fire alone was not sufficiently effective. Here again the rocket proved to be the answer since it could be fired from almost any type of landing craft, in intense volume, from multiple rail or automatic launchers. The effectiveness of these rockets, coordinated with naval gunfire and aerial attack, was evidenced in the slight opposition put up by the Japanese in the landings on Okinawa and in the Philippines.

It is possible to fire a number of rockets from the same mount, either by means of multiple rails or tubes, or by an automatic reloading device, without greatly increasing the total weight or decreasing the mobility of the launcher. This permits the delivery of a large volume of fire in a short period of time by a small number of men; a great saving in transportation, material, and manpower.

There are many types of rockets and launchers. The caliber, weight and type of filler, propellant, fuze, stabilizing device, range, and type of launcher and mount depend upon the purpose for which the rocket was designed. Rockets range in size from the 2.36-inch Bazooka, a shoulder weapon, to the V-Bomb used by the Germans. Some are



Army Air Forces Photo

The X-4 was one of several new weapons being developed by the Germans at the end of the war to attack our aircraft. The X-4 is a rocket-propelled missile to be launched from a parent plane.

fired from planes against ships and are designed to travel under water; some have shaped charges of TNT or C-2 composition for use against tanks or concrete walls and emplacements; some contain HE [High Explosives], some an incendiary mixture, some FS [Sulphur Trioxide Solution], WP [White Phosphorus], or other chemicals; some are designed to project cables, mine clearing devices, or anti-aircraft targets.

The construction of the launcher depends upon the type of rocket and its tactical use. The launcher is simply a device to hold the rocket and guide it in the proper direction and elevation in the initial stages of its flight. They may consist of a single tube like the Bazooka or the 4.5-inch expendable "Bunker Buster," M12; they may be made of a plastic composition, aluminum, or steel; they may be built to reload automatically, like the Navy Mk 7, or with multiple tubes like the Army T34 and T66; they may be fired from the shoulder, a tripod, a two-wheeled trailed mount, from a truck, a tank, a boat, an airplane, or the packing case may be used as a launching device.

Just as in the case of rockets, launchers are constantly being improved and modified. Neither are perfect, and those in use today may be as inferior to those of next year as they are superior to those of last year. The old M8, "fin-stabilized" rocket with a range of 4,100 yards has been displaced by the new M16, "spin-stabilized" rocket, with a range of 5,200 yards and approximately one-half the dispersion of the M8. In addition, short and erratic rounds have been completely eliminated. The old 8-tube, T27 Launcher with its flimsy and unreliable firing contacts and unwieldy mount has developed into the 24-tube, T66 Launcher, mounted on a two-wheeled carriage. The rockets and launchers of tomorrow may be changed just as radically.

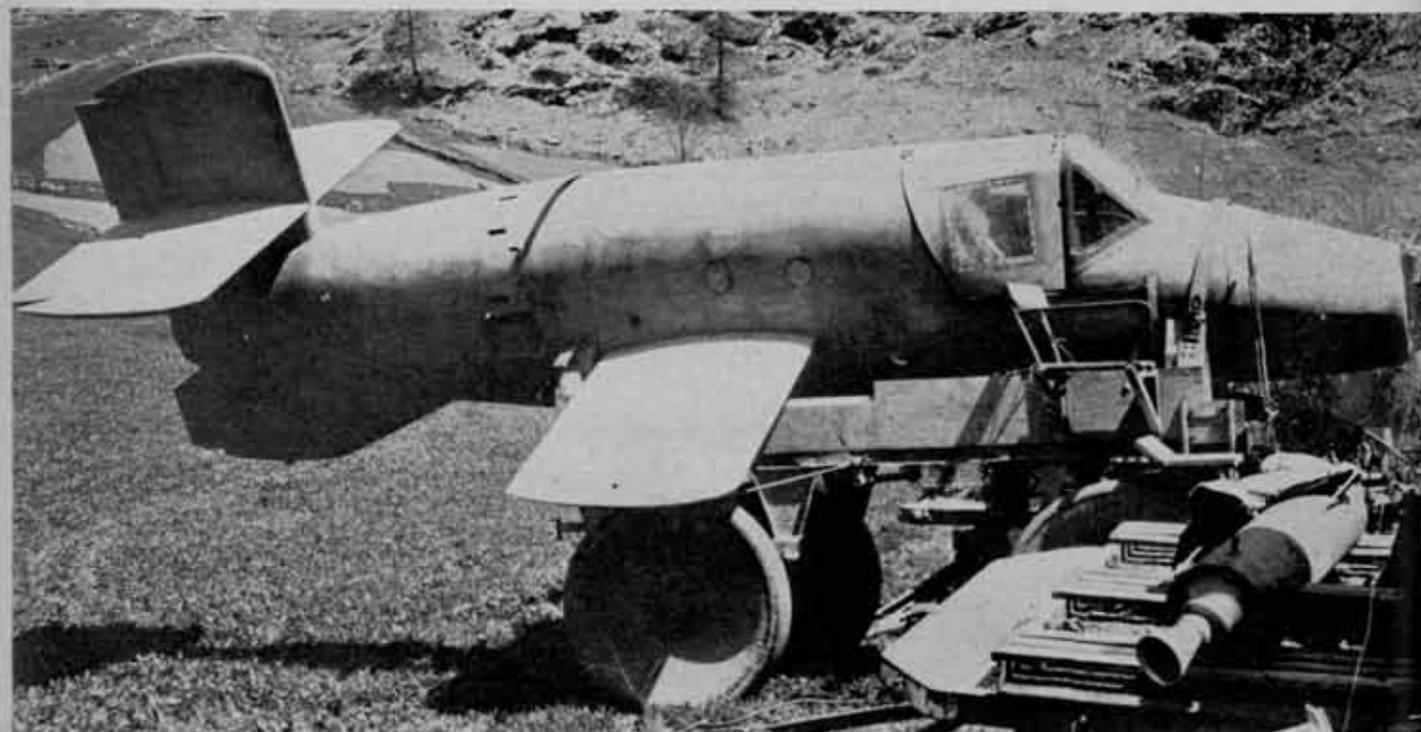
The M16 has recently been standardized. It is a spin-

stabilized rocket, thirty-one inches long and weighing 42.5 pounds. Its maximum velocity at a distance of seventy feet from the launcher is 830 feet per second. It has a bursting effect similar to that of the 105mm howitzer shell M1. The propellant power in the motor is ignited by an electrical squib to which current is applied through the launcher tube connections.

The T66 launcher has not been standardized and is still undergoing tests and modifications. It consists of a cluster of twenty-four aluminum tubes mounted on a two-wheeled, towed carriage, with split trails and a firing pedestal. It is designed for one-man control of sighting, elevating, and traversing. Ammunition is loaded into the muzzles of the tubes by hand. The electrical firing mechanism is carried in a metal box mounted on top of the cluster near the breech. The box also carries tools and the sight. The launcher weighs about 1,225 pounds and is capable of 800 mils elevation and a total traverse of about 360 mils. It is towed behind a 1½-ton (6x6) truck. The sight provided for the T66 launcher consists of the Quadrant, Elevation, T13; the Adapter, Telescope, M9; and the Telescope, Elbow, M62. Graduations are in mils and the Telescope, Elbow may be rotated through 6,400 mils, permitting the use of reciprocal laying. The power source provided consists of a hand operated ten-cap blasting machine attached to firing cable which leads to the firing box where the current is distributed to each launcher tube in turn. Any generator, battery, or batteries, capable of producing eighteen to twenty-four volts, may be substituted for the blasting machine as a field expedient.

THE FIELD ARTILLERY ROCKET BATTALION MOTORIZED, 4.5-INCH ROCKET, MOTORIZED

Tables of Organization for field artillery rocket battalions.



The Viper had a maximum speed of 620 miles per hour. It was a piloted rocket-propelled missile designed to attack Allied aircraft with cannon, rockets or by ramming. The pilot could eject himself mechanically prior to ramming attack. The war also ended this German development.

Army Air Forces Photo

motorized, 4.5-inch, truck-drawn, provide for a battalion headquarters, headquarters battery, service battery, three firing batteries, and a medical detachment, a total of thirty-four officers, two warrant officers, and 645 enlisted men. The headquarters battery includes a headquarters section, maintenance section, operations and communications platoon, and a pioneer platoon. The latter includes a pioneer squad and a dozer squad. The service battery includes a maintenance section, personnel section, service platoon, and ammunition train. The three firing batteries include a battery detail, maintenance section and two platoons. The battery detail includes reconnaissance, survey, fire direction, and communications personnel. Each platoon is composed of one ammunition squad and six launcher sections consisting of a chief of section, gunner, two rocketeers, and a driver.

The battalion is completely motorized and is equipped with thirty-six T66 launchers. The fire power available is really startling when it is seen that this *one battalion* can fire a 864-round volley of HE into an area in twelve seconds. This is the equivalent of seventy-two *battalions* of 105mm howitzers firing a one-round volley "Time on Target." In our battles in France and Germany there have been many instances when the fire of ten to fourteen battalions of howitzers has been massed upon a target 400 yards square, firing volleys of 120 to 168 rounds "Time on Target." Yet *one battery* of a rocket battalion can put down 288 rounds on the same area in twelve seconds—the equivalent of the fire of twenty-four battalions of howitzers. Think of the conservation of time, effort, manpower, and transportation, to mention a few items.

ROCKET EMPLOYMENT

Test firing and reports from combat areas indicate that the following *area* targets and missions are suitable for rockets:

- a. Troops in the open, in trenches, and in assembly areas.
- b. Enemy strongpoints, centers of resistance, and protected by *light* fortifications.
- c. Lightly armored vehicles, tank and vehicle assembly areas.
- d. Command posts, ammunition and supply installations.
- e. Reinforcing artillery preparation or counter-preparation fires.
- f. Harassing or interdiction fires on important areas such as defiles, bridges, and roads.
- g. Enemy landing craft and troops disembarking.
- h. Projection of smoke or other chemicals.

ATTACK OF TARGETS

Rockets have been termed "erratic" or "inaccurate." These terms are misleading, and are in themselves "inaccurate." It is true that the individual rocket is not as accurate

as an artillery shell, yet a number of rockets, fired under as nearly identical conditions as possible, will form a definite pattern on the ground, and the size and shape of this pattern can be predicted mathematically. This pattern is much larger than it would be for the same number of artillery shells, but this does not warrant the use of the term "inaccurate," otherwise the pattern and distribution of the shots within it could not be predicted.

In spite of the large dispersions, as compared to a howitzer or gun, the points of impact are dispersed regularly about the center of impact. Although this pattern is roughly elliptical in shape, for practical purposes it may be considered as a rectangle. The shape and dimensions of this dispersion rectangle change with the range at which the shots are fired. At short range it is long and narrow; at longer range it approaches a square; at extreme ranges it is wider than it is long. It is important that this peculiarity be kept in mind in selecting firing positions, targets, computing ammunition requirements, and distributing fire.

In attacking an area target the rocket unit commander is faced with the solution to the following problem:

- a. Selection of type of ammunition and fuze.
- b. Amount of ammunition required.
- c. Number of launchers or firing units required.
- d. Distribution of fire in width and depth.

Selection of the proper ammunition and fuze depends upon the nature of the target and the effect sought. Personnel in the open, in open trenches, or light brush, may be attacked with HE using superquick, or air-burst fuze. Personnel under heavy woods, in houses or in fortified areas require HE with delay fuze. Combinations of superquick, delay, air-burst, and of HE and WP will often be most effective. Experience and judgment are required to determine the best solution.

CONCLUSION

The rockets, launchers, the organization, and methods of employment described have yet to be tested in battle. Actual combat experience, together with improvements which are being made constantly, especially in range, accuracy, and in the reduction of propellant flash and blast, may radically change many of the ideas suggested herein. The tactics and mechanics of employment of a weapon must be altered as the characteristics of that weapon change.

Rockets are comparatively new and untried weapons in our army. They are being improved and other types are being developed all the time. New and improved rockets will mean new and different methods of employment. The rocket is not a cure-all, nor the "weapon to end all weapons." Don't expect it to perform miracles, because, like any other weapon, it has its powers and its limitations. But keep an eye on it—it's here to stay.



Effect of German Antiaircraft Artillery on IX Tactical Air Command Operations

By Major General Elwood R. Quesada

During the early days of the war, German armies crashed through the defenses of Europe accompanied by a Luftwaffe that roamed almost unopposed throughout the continent. The primary mission of an air force is to gain air superiority and Goering's Gruppen accomplished that with a vengeance. The Wehrmacht, in conjunction with the German Air Force, engaged in a campaign essentially between armies.

Air superiority permitted the Germans to devote little attention to flak, concentrating on the production of aircraft. To the Allied Air Forces fighting a grim defensive battle against extinction, flak was considered an annoying, but minor evil. Omnipresent enemy fighters constituted the greatest threat to Allied Aircraft and accounted for the lion's share of losses and damage. To minimize the destructive power of enemy planes we tinkered with aircraft designs, tactics and formation. Flak was hardly considered worthy of such special treatment.

But with the build-up of our air power the Hun began to lose control of the air. As the tide turned, it was *our* Fighters that did the hunting and it was *our* bombers that destroyed the strategic targets on the continent of Europe. As the German Air Force was gradually hounded from the air, flak became an increasingly important part of his defenses.

By the time the IX Tactical Air Command began operating on a large scale early in 1944, flak had replaced enemy aircraft as the principal cause of loss and damage to our air forces. Flak production, which had been given the same priority as the production of aircraft, increased in tempo and by the end of 1944 the already formidable defenses of Europe had increased to 50,000 light guns, 16,000 heavy guns, 7,500 searchlights, and 1,500 balloons. These defenses were manned by more than one million men and women. Flak guns of all calibers were encountered everywhere on everything—on the ground, buildings, towers, trucks, tanks, small boats, barges, railway cars, church steeples and even ambulances. Moreover, late in 1944 production of flak equipment was given a higher priority than all aircraft except those that were jet propelled.

As a result of this change in the over-all plans for the priority production of antiaircraft guns, there followed a gradual increase in the number of Fighter Bombers damaged and shot down. Fighter-Bomber pilots had respect for, but certainly never any fear of, the German Fighters. However, this new increase in the number of airplanes shot down by light flak came to be an increasing problem particularly as the first stages of combat fatigue became evident. In fact, Flight Surgeons frequently looked for emphasized anxiety concerning German antiaircraft fire as one of the first symptoms in diagnosing "combat fatigue." To the Fighter-Bomber pilots, light flak was cold, impersonal and mathematical, and as the missions built up it became increasingly difficult for the older pilots to close their eyes

and dive through the solid walls of light flak which seemed to appear with monotonous regularity on low-altitude missions.

The Germans massed their light flak equipment at every point of strategic importance along the front and in the rear areas. Any target considered worth an allied Fighter-Bomber attack was worth as much light flak as the Germans could spare for defense. Memorable scenes of extended battle such as Caen, St. Lô, Mortaine, Argentan, Aachen, Duren and others also stand out in Fighter-Bomber pilots' minds as "hot spots" never to be forgotten. The climax of the German "light flak" defenses was built up during the German break-through in December 1944 and January 1945. For this campaign, the Germans withdrew approximately 50% of their light flak defenses along the whole Western Front and concentrated them in the narrow "bulge area."

In addition to standard defenses, the Germans were busy devising new tricks. They delighted in setting flak traps for unwary Fighter-Bomber pilots. Among the various ruses employed were trucks which would shuttle back and forth along sections of highways which harbored large numbers of light flak guns. When the Fighter-Bombers dove for the attack, the truck drivers would jump into one of the many foxholes along the road and our attacking airplanes would receive concentrated fire from all directions.

Flying personnel made many observations that could only be classified as "phenomena." Some were undoubtedly German experiments, but it is believed that most were optical illusions on the part of the pilots. For instance, many reports were made of translucent balls variously described as appearing like silver balls, fish bowls, etc. It was generally believed such observations were actually balls of window that had failed to disperse. Cables suspended from parachutes and balloons were observed. Investigation revealed these to be meteorological devices. None of the many "phenomena" reported proved to be effective, although each and every report was carefully studied.

Early in 1944, flak intelligence sections were established throughout the Tactical Air Force in all echelons above group level. The mission of these sections was to study and analyze German flak defenses and to prescribe countermeasures that would be most effective. Flak intelligence sections saw to it that all the units were constantly informed of the latest information available on German defenses, capabilities and tactical employment as well as pin-point locations of all weapons.

Aerial photographs provided the most accurate information of the location and caliber of enemy flak. The entire front line was photographed daily, weather permitting, to a depth of approximately ten miles. Within a few hours after such missions were flown photo interpreters plotted the locations of all flak guns in six-figure map coordinates. In addition they could easily differentiate between occu-

pied, unoccupied and dummy positions. Moreover, they could usually identify the caliber of the guns observed. This information was telephoned to the headquarters of the Army and the Tactical Air Command for dissemination to groups, squadrons, and Artillery units. Most of the artillery targets fired on by night had been located on photographs taken that day.

The war waged against flak was another example of the close coordination, cooperation and joint effort on the part of the Ground Forces and Tactical Air Forces. A typical break-through of prepared defenses illustrates the point. On one operation against the Siegfried Line, aerial reconnaissance furnished the location of enemy flak. With liaison and reconnaissance aircraft adjusting their fire, our artillery, consisting of fifty-seven battalions, neutralized practically all of the flak within range. Fighter-Bombers attacked guns beyond artillery range, thereby permitting medium and heavy bombers to do an unmolested and consequently more accurate job of bombing in support of a major ground offensive. After this preparation, infantry and armor advanced against greatly weakened defenses.

It is interesting to note that invaluable assistance was rendered during this operation by friendly antiaircraft. During the attack of the Heavy Bombers on the break-through area, directly ahead of friendly ground forces and under most unfavorable weather conditions, it was of utmost importance that every precaution be taken to completely identify the exact front-line positions. To facilitate this, a line of colored antiaircraft bursts fired through the overcast, marked the earliest bomb release point of the heavies. This accomplished the exact purpose for which it was intended.

Artillery also frequently aided Fighter-Bombers in locating pin-point targets on close cooperation missions, when both weather conditions and terrain features made it almost impossible to locate small targets such as gun positions, dug-in tanks, camouflaged pillboxes, etc. Under these conditions, the immediate target area would be marked by smoke shells. After thus narrowing down the area of search, the Fighter-Bomber pilots were able to locate and destroy the pin-point targets. This method was also used to clean up encircled positions behind our own lines. This was a complicated type of mission and needless to say a maximum degree of coordination between artillery fire and Fighter-Bomber pilots was essential.

Artillery fire was also used consistently to neutralize known enemy flak positions. When a close cooperation strike was scheduled in the midst of a heavy concentration of antiaircraft installations, heavy artillery barrages were "laid-on" in coordination with the approach of the Fighter Bombers. In this way, the murderous enemy light flak positions were pinned down long enough to permit the Fighter-Bombers to launch their initial attack before the heavy concentrations could be brought to bear.

One of the most effective methods of actually destroying German gun positions was by adjusting the fire of 105mm and 240mm howitzer artillery from high performance reconnaissance aircraft. Pilots were usually briefed as to the location of enemy positions from photos and could frequently locate new positions visually. Aircraft took off in pairs with the leaders concentrating on observing targets and bursts and the wingmen flying protective cover. It was

considered a good mission when three or four gun positions were put out of action. Such accuracy was achieved that a German artillery officer taken prisoner in Normandy thought a new secret weapon had been perfected enabling the reconnaissance pilot and the fire direction center to drop shells on any spot desired. He was confident that the reconnaissance aircraft was employing some new form of radar. The L-5 Liaison type aircraft and their pilots contributed in no small way to this type of mission.

By analyzing flak positions the main concentrations of ground defenses were usually indicated. When our ground forces threatened to break through, the Hun would always divert most of his flak defenses to a ground role. At the Remagen bridgehead, the First Army requested a complete analysis of enemy flak capabilities which the enemy could employ in a ground role to contain our counterattack in the bridgehead. This was completed and forwarded in three hours and materially aided the Army G-2 in estimating enemy strength.

The Fighter-Bombers of the Tactical Air Forces developed extremely successful evasive tactics. It was axiomatic—never fly straight and level when within the range of flak. When attacking on a low-level strafing mission, the first principle was surprise. This was accomplished by staying low and making use of terrain features. Generally, on a low-level strafing attack on an airfield, part of the attacking force would neutralize the flak while the remainder of the force executed the attack. The entire force would remain low until the area had been cleared. It was found that the average flak gunner would take cover first and worry about his job later. Another bit of deception used was to send one flight into the target area just out of light flak range. This flight simulated a dive-bombing attack and drew fire. While the flak gunners were thus engaged the other flight sneaked in on the deck in a surprise sweep.

On armed reconnaissance missions, Fighter-Bomber pilots were briefed on the major flak zones in the area, but in general they depended on aircraft maneuverability to keep themselves out of trouble. Light flak in the tactical area was so numerous and so mobile that it was impossible to brief pilots with the same accuracy as was done for the bombers.

Our experienced Fighter pilots soon got to know where to expect flak and how to maneuver through it. The eventual low damage and loss figures proved they used this knowledge to good advantage. On specific, well defended targets, Fighter-Bombers took advantage of altitude and routing around flak zones in order to minimize the hazard. With the exception of airfields, it was rarely considered profitable by groups to attack flak positions as a means of defending themselves. It was like a man biting a dog.

In Fighter operations it was also found that the use of small numbers of aircraft worked out best. Except for an occasional low-angle engagement by heavy guns, Fighter aircraft were for the most part concerned with light flak weapons which, with their high rate of fire, could do serious damage to any large group of airplanes. Therefore, Fighter-Bombers frequently operated as Flights rarely larger than squadrons.

In studying the loss and damage figures of the IX Tactical Air Command it must be realized that the IX TAC

operated continuously over fluid battle areas of great flak densities. Moreover, the urgency of the missions frequently necessitated the operation of our aircraft in weather conditions which forced flying at altitudes very favorable to flak gunners. Despite the constant study of flak and aggressive countermeasures, both active and passive, flak was responsible for approximately half of all aircraft losses and almost all damage suffered.

The following table analyzes total losses and damage sustained by the IX TAC Fighter-Bombers:

	<i>Loss</i>	<i>Damage</i>
Flak	45.8%	88.5%
Enemy Aircraft	15.1%	3.4%
Other	39.1%	8.1%
Total	100.0%	100.0%

"Other" includes crash landing, accidents, loss or damage due to combination of flak and enemy aircraft and loss or damage with reasons unknown.

The battle of flak does not end with the cessation of hostilities. It must be remembered that the Germans did not employ proximity fuses which would have certainly increased their toll of our aircraft considerably. It is also known that many experiments were being conducted which did not materialize during the war. It is not just conceivable, but rather should be assumed, that further advancements and new developments in antiaircraft artillery are being made. In defenses against flak, emphasis must be placed upon the elements of speed and surprise. The development of jet and rocket propulsion and guided missiles is most important in the battles of air power versus antiaircraft artillery.



The resplendent beauty of snow-capped Italian mountains serves as a background for this M-51 crew manning their gun in the bitter cold.

FLYING ARMIES*

By Edwin E. Bomar

American doughboys in the first World War marched into battle on the European Continent at a speed of two-and-a-half miles an hour, and in the recent war they rode in trucks at twenty-five. In the next war for which our professional soldiers are obligated to prepare until everlasting peace shall envelop the earth, they probably will fly, not at supersonic speeds and in the stratosphere, but at around a hundred miles an hour and at treetop height. So will their tanks and trucks and guns.

Pinfeathers already are growing on every vehicle now in use by the Army Ground forces and they are being nurtured by war-experienced leaders from General Jacob L. Devers, AGF Commander, on down to pilots of the brilliantly successful Grasshopper planes of the Field Artillery Air Force, so that if there is another war, everything from a motorcycle to a 47-ton tank will have fully developed wings.

This is not wishful thinking; a lot is being done about it. The first and most important step was taken a short time ago when the Army Ground Forces projected plans for revolutionizing and streamlining its weapons as to size and weight to permit their swift transfer by air to fields of battle a few hundred miles up front. All its weapons, it was agreed, must be air-transportable, either by breakdown into air loads or preferably by larger aircraft yet to be developed.

One hundred miles an hour would be lightning speed for the ground army which all through military history has been subject to delays from mud, congested roads and blown-out bridges. Aircraft to by-pass these surface transport problems will run in size and capacity from a tiny single-seater courier, simple enough to be flown by enlisted men with but a few hours' training, through helicopters on up to gigantic craft to carry loads of fifty to a hundred thousand pounds.

We do not yet have a troop and cargo land plane that can carry a 100,000-pound load, though the Consolidated Vultee XC-99, under construction at San Diego, is estimated to be capable of flying that much with its six 3,000-horsepower engines for a distance of 1,500 miles.

In operation now are the Boeing C-97 four-engined cargo development of the B-29 Superfort and the Douglas C-74 four-engined Globemaster, both of which can haul around 40,000 pounds for that distance at speeds of over

300 miles an hour. But these are high- and fast-flying airplanes, designed to lift troops and cargo overnight from coast to coast and are not what the Army Ground Forces need for relatively short-range tactical operations. Their speed and weight rule out landing on small, improvised fields up front.

Having to think in terms of fighting on the earth, old style, until push-button atomic air warfare is completely developed, the Army Ground Forces wants aircraft for short distances and low altitude and capable of landing on the minimum of clear space. These, then, would require rockets to boost them into the air and rockets and reversible propellers to decelerate their landing speed, along with caterpillar-type landing gear to support their great weight on natural turf. They'll be anything but streamlined, sleek, shiny and pretty like the Boeing and Douglas troop and cargo carriers. They'll be expendable, too, and even at that, the transportation cost for such great numbers of men and tanks and heavy field pieces would be dirt cheap.

The Army Ground Forces already has proved sincerity of purpose by undertaking to limit the size, shape and weight of heavy ground equipment, so it now tosses the problem of providing the wings to the aircraft industry. Aeronautical engineers are now being asked to turn out designs that can fly low and slow and carry everything from a corporal (in the single-seater courier plane) to a 47-ton tank in the flying moving vans.

In this new field of Army Ground Forces aircraft is the C-82 Packet, dubbed the "Flying Boxcar." Built as an aerial truck for the Army near the war's end, the Packet, with its two 2,000-horsepower engines, hauls the Army's standard 2½-ton truck, a 155mm howitzer or 48 paratroopers or anything else up to 18,000 pounds. And it can do it at 200 miles an hour for 500 miles.

Its cargo compartment, eight feet high, eight feet wide and 38½ feet long, is like a boxcar with the sharp corners rounded off, and it hangs down from the wing and beneath two outriggers that support the tail. Two big doors at the back open at truck floor level for quick transfer of cargo from truck to plane, or a ramp is run up to it for loading jeeps, trucks or big guns.

But the Packet is only the beginning of what will be a large family of odd-shaped objects flying for the Army Ground Forces.

*Collier's.



The Decisive Battle of the Pacific War^{*}

By Walmer Elton Strobe

"The great end of a war fleet is to control the seas."

—MAHAN.

The Pacific phase of World War II was predominantly a naval war. In the air, on and under the sea, its engagements were many. Some of these were great battles, involving many ships and great numbers of combatants. Coral Sea, Midway, Leyte Gulf, and Okinawa—each of these was of great importance. Yet it is quite probable that historians of the future, observing the Pacific War with greater perspective and less bias than that of which we are capable, will consider none of these battles the *decisive* battle of the conflict. In fact, it is quite likely that history will record not one, but two engagements, as the decisive battle of the Pacific War. These two encounters, occurring some nineteen days apart, have been given the names: Battle of Santa Cruz and Battle of Guadalcanal.

In order properly to assess the decisiveness of Santa Cruz and Guadalcanal, one must survey them first in the panorama of the entire Pacific conflict. Pearl Harbor, the opening blow, caught the American nation by surprise. It stripped us at once of our strong right arm, sea power. There remained only the dancing, shadow-boxing left, air power, with which to defend ourselves. With this untried but highly effective weapon we held the Japanese at arms length for nearly a year. We held Pearl Harbor and protected our lines of communication to Australia but we could not prevent the rapid investing of the rich Far East. By the middle of April, 1942, the Japanese had completed their occupation of the central and south Pacific islands west of Midway and had established bases in the New Guinea-Solomon Islands area, threatening Australia with invasion. The Battle of the Coral Sea (May 7-8, 1942) checked the Japanese advance to the southward. Only a month later, the Battle of Midway stopped the second enemy attempt to neutralize and capture our Hawaiian outposts. These victories were great military feats but, nevertheless, our forces were rather in the position of the outmatched tennis player, desperately returning his opponent's well-placed shots while at the same time realizing that the next might very well be out of reach. During this period our offensive efforts were limited to a few isolated strikes against the enemy's more exposed outposts.

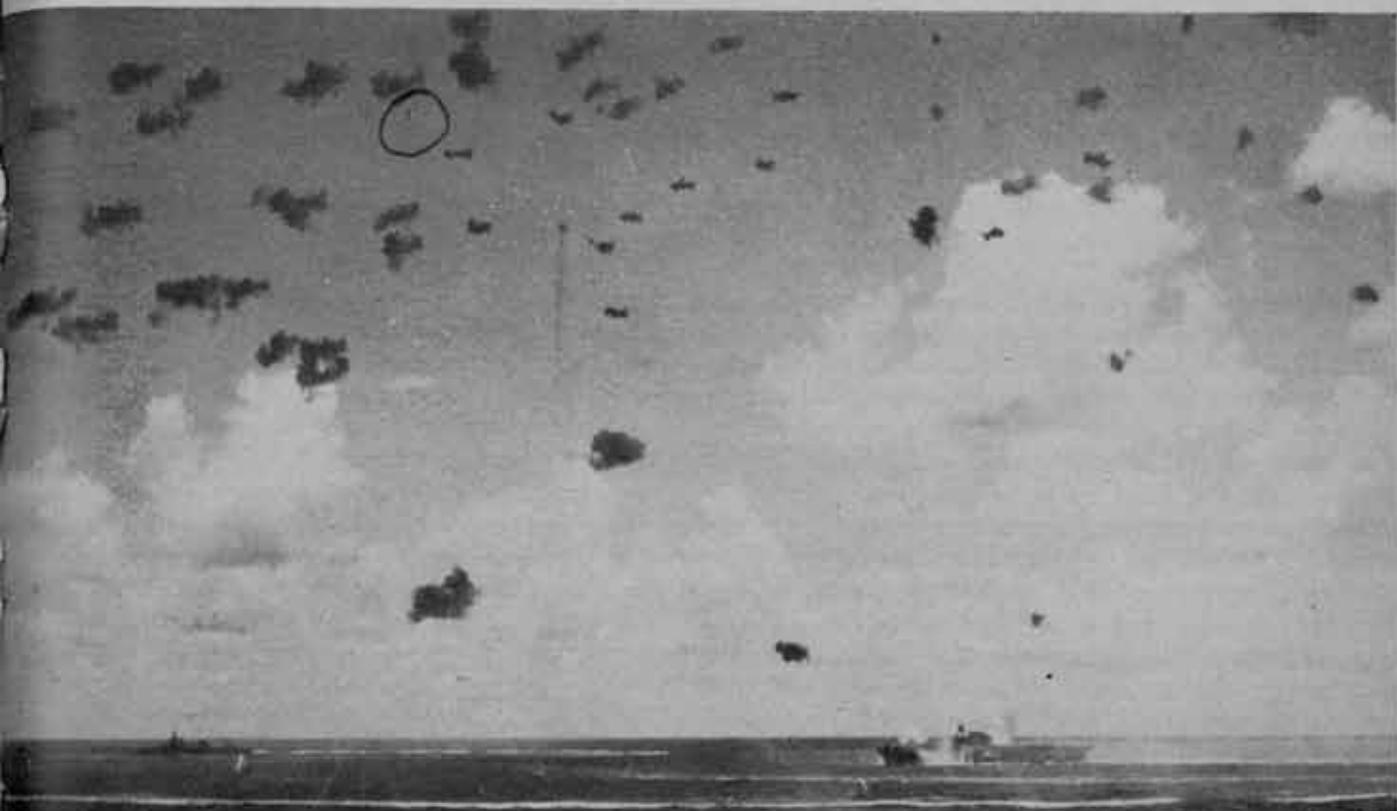
There may have been some of this desperate, "what have we got to lose" attitude involved in the decision to take the initiative and invade the lower Solomon Islands in August of 1942. But, fundamentally, the strategy was well-founded.

Santa Cruz and Guadalcanal clinched the American hold on the lower Solomon group. From that point on, ours was a steady and rapidly accelerating advance. One by one the chain of island strongpoints threatening Australia were captured or neutralized. The enemy's central outposts were hammered flat. In 1944 Saipan, Guam, and the Philippines were stormed and taken. The avalanche roared on with ever increasing tempo until the battered enemy capitulated in August of 1945. During this time of American advance and Japanese retreat, several heavy engagements were fought at sea. The Battle of the Eastern Philippines and the Battle for Leyte Gulf broke the back of Japanese naval power both on the sea and in the air. The actions off Okinawa were brilliant victories of naval power over the most fanatical of air attacks. But these victories were a result rather than a cause, a culmination of what had gone before. Santa Cruz and Guadalcanal lie at the turning point of the Pacific War. This was not a happenstance. There are vital reasons why the Japanese began to retreat after these battles rather than rebound as they did at Coral Sea and Midway. To find these reasons we must inspect the decisive actions in more detail.

THE BATTLE OF SANTA CRUZ

It was not until nearly two months after the initial landings on Tulagi and Guadalcanal that the Japanese realized that their forces on Guadalcanal would not be able to eject the American invaders without additional help. The Blue (American) landings had been successful, especially on Guadalcanal where Henderson Field fell quickly into our hands. Orange (Japanese) naval reaction was rapid, however, resulting in a crushing defeat of the Blue surface forces on the night of August 8-9, 1942. Four cruisers were lost in this action while damage to the Japanese was slight. The Japanese failed to follow up their advantage, being content with merely supplying and reinforcing their Guadalcanal garrison although controlling the waters around the embattled island completely. Any more ambitious plans they may have had were discouraged by con-

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Navy Photo

A Japanese dive bomber attack on the *Enterprise* during the Battle of Santa Cruz.

considerable damage inflicted on a transport force some 250 miles north of Guadalcanal on August 24-25 (the Battle of the Eastern Solomons).

About the first of October, however, the Japanese began a systematic attempt to build up their defending force on Guadalcanal. Fast supply echelons, soon named the "Tokyo Express," made nightly runs down to Guadalcanal from the Buin-Faisi area in the upper Solomons. One of these excursions was caught off Cape Esperance on the night of October 11-12 by a cruiser force under the command of Rear Admiral Norman Scott and was nearly annihilated. Even such a catastrophe failed to deter the Japanese, and the reinforcements continued. It has been estimated that during this period they were able to increase their strength on Guadalcanal by 7,000 to 10,000 men.

These developments convinced Vice Admiral (now Admiral) Halsey and his staff that a major attempt to regain the lower Solomons was imminent. We were ill-prepared to meet this threat. The attrition of the past few months had whittled the size of Blue naval forces to a dangerous low. Only one battleship, *Washington*, was operating in the South Pacific. Her sister ship, *North Carolina*, had been torpedoed by a submarine and forced to retire for repairs. Carrier forces were sadly depleted. Submarine operations had cost us the *Wasp* and had damaged the *Saratoga*. The *Enterprise* had been damaged in the Battle of the Eastern Solomons (August 24, 1942) and had retired to Pearl Harbor for repairs. This left but one carrier task group, formed around the *Hornet*, with which to carry on the air-sea war.

Air forces on Guadalcanal were reinforced and a squadron of PT boats moved into Tulagi. But surface forces were urgently needed, so the *Enterprise* at Pearl Harbor was repaired at top speed. On October 16 she left Hawaii in com-

pany with the *South Dakota*, a new battleship which had just arrived in the Pacific. Accompanied by several destroyers, the two vessels sailed for the South Pacific under forced draft.

The first act of the main Japanese attempt to regain Guadalcanal began on the night of October 23-24 with a land offensive calculated to recapture Henderson Field. Later information was to prove that Orange naval operations were closely geared to the progress of the fighting on Guadalcanal. The Japanese plans evidently called for the capture of Henderson Field before the arrival of the naval and transport forces. The heroic defense thrown up by the Guadalcanal Marines forced repeated delays in the timetable and the Japanese were incapable of altering their plans.

On October 24, the *Enterprise* and *South Dakota* joined the *Hornet* disposition. With their arrival the Blue forces were split into three task units. Two of these were built around the two aircraft carriers. The *Hornet* group included two heavy cruisers, two light antiaircraft cruisers, and six destroyers. The *South Dakota* remained with the *Enterprise*. In addition, the *Enterprise* group contained a heavy cruiser, an antiaircraft cruiser, and eight destroyers. The third task group was formed around the *Washington*, which was detailed to run to the southwest of Guadalcanal and then northward on the outside of Cape Esperance and Savo Island for the purpose of intercepting a possible Japanese thrust down the Slot.

During the early morning hours of October 25, the *Hornet* and *Enterprise* task groups moved northwest through the waters east of the Santa Cruz Islands. The morning search produced negative results. It was nearly noon before a contact report was made. A shore-based patrol

plane reported an enemy task group consisting of two battleships, four cruisers, and several destroyers. About an hour later another patrol plane reported a second Orange task group built around two aircraft carriers. They were apparently to the north of the battleships and were pursuing a collision course with the *Hornet-Enterprise* groups. About 300 miles separated the opposing forces. Because the reports were conflicting and meager, air strikes were withheld for some time. It was mid-afternoon before the take-off signal was given. The attack groups were hardly on their way when additional and disappointing news arrived. The enemy task groups, evidently again delayed by the magnificent stand of the Marines on Guadalcanal, had reversed their course and were retiring to the northward. It was impossible to inform the striking groups of this development without breaking radio silence. Consequently, the planes found no targets in their path.

During the night of the 25th, the Blue task groups maneuvered so as to be in a position to engage the enemy if he should cease his retirement and by dawn of the 26th were approximately 150 miles to the west of the position of the previous day. On this same night, the battle-weary Marines on Guadalcanal began to weaken and the Japanese were able to achieve a breakthrough along Lunga Ridge. Encouraged by this success, the Orange naval forces commenced a new approach to add their weight to the oft-deferred annihilation of the American forces in the lower Solomons. In the action which followed, only the enemy striking force was involved. The actual invasion armada with its covering force hovered to the northwest and later retired to the north when it became apparent that the Japanese plans had again gone awry.

Early on the morning of October 26 news came that the Marines had held. Almost simultaneously came contact re-

ports from patrol planes. It appeared that the enemy task force consisted of three groups a considerable distance apart. The three task groups were moving south in approximately line abreast. The nearest (most easterly) group, evidently the one reported first the previous day, contained two *Kongō* class battleships, a cruiser, and about seven destroyers. The center group contained two carriers (probably the *Shokaku* and *Zuikaku*) and several cruisers and destroyers. The group was later joined by a third carrier (probably the light carrier *Zuiho*). The most westerly group was built around two battleships but also contained an aircraft carrier (tentatively identified as the *Hayataka*, a converted merchant hull).

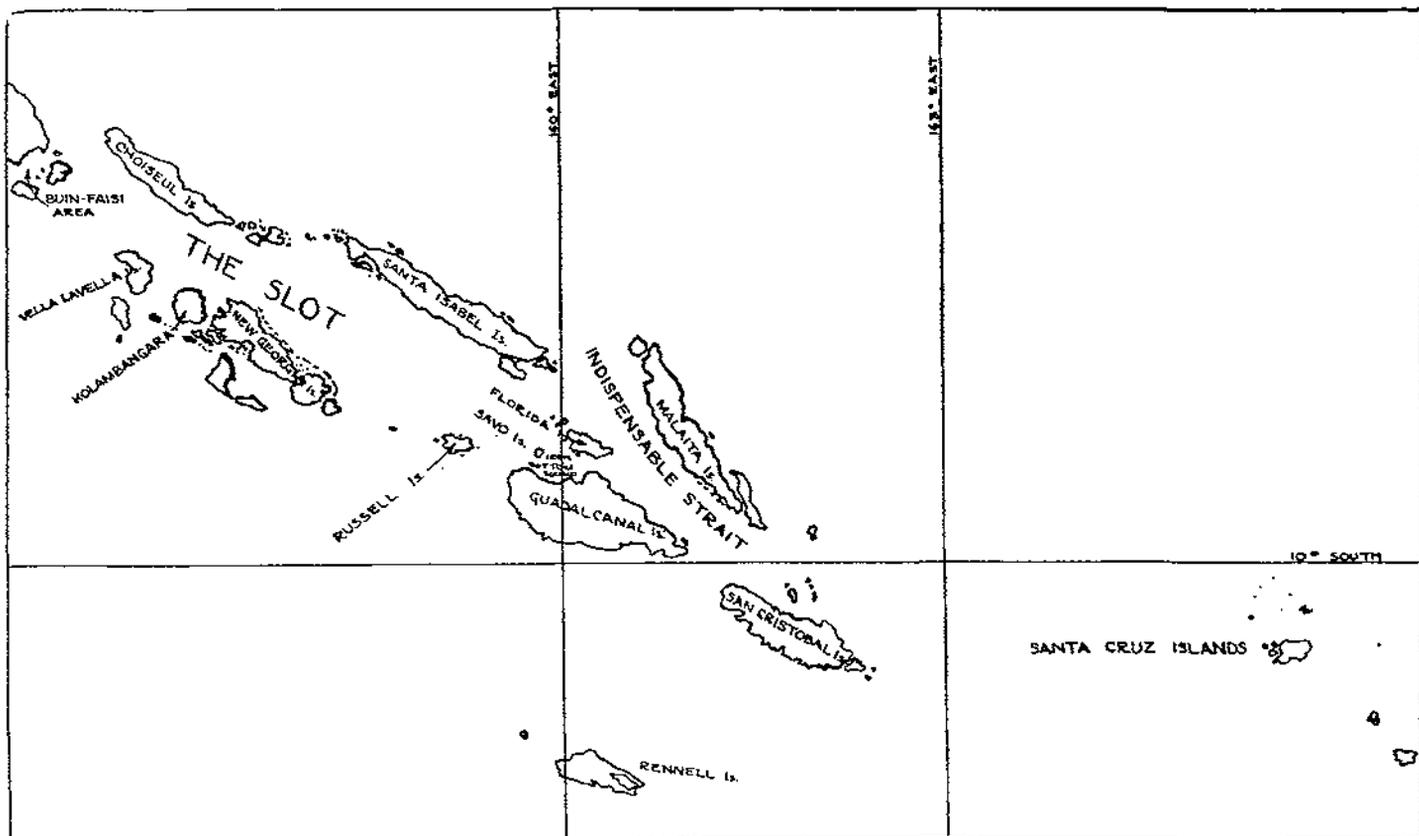
By eight o'clock in the morning, the enemy task group apparently having contacted their forces on Guadalcanal, countermarched and began to withdraw to the northward. The Blue forces had by this time, however, reached an attack position to the eastward and three attack waves were flown off, one from the *Enterprise* and two from the *Hornet*. The remaining *Enterprise* planes flew combat patrol over the two carriers, which were operating just over the surface horizon from each other.

The *Enterprise* attack group was surprised by a strong squadron of Zeros and lost some planes but managed to get through to the near battleship force. Several bomb hits were reported on one of the capital ships. One *Hornet* attack group found the central force without incident and reported at least four 1,000-pound bomb hits on one of the carriers. In addition, torpedo planes of this group claimed three torpedo hits on an accompanying heavy cruiser. The second *Hornet* group scored bomb hits on two heavy cruisers and a destroyer leader.

Coincident with these attacks, Blue task groups underwent a series of determined carrier aircraft attacks. In com-



Dense smoke marks the firing of a broadside at the enemy by this U. S. Navy battleship.



mon with numerous other air-sea engagements, the opposing aircraft had passed each other en route to the target. The *Hornet* bore the brunt of the Japanese air strikes, which lasted throughout the day. A bomb hit and a suicide plane crash into the island structure caused a serious gasoline fire. Shortly after, she suffered two torpedo hits which disrupted her power. These were followed by another suicide plane crash and three more bomb hits. The *Hornet* was left dead in the water with many fires and a considerable list. Despite this, the fires were extinguished, wounded were evacuated, and the *Hornet* was taken in tow by the *Northampton*.

Just over the horizon to the southward, the *Enterprise* was also being heavily attacked. A dive-bombing assault by 24 planes resulted in three bomb hits despite heavy enemy losses. Two attacks by torpedo planes and one additional dive-bombing attack failed to damage the "Big E" further, although the *South Dakota* received a bomb hit on Turret II and some damage was sustained by the anti-aircraft cruiser *San Juan* and the destroyer *Smith*.

Blue anti-aircraft fire was accurate and intense. Of 27 dive bombers attacking the *Hornet* during one attack, 20 were shot out of the sky. A total of 23 Japanese planes were shot down over the *Hornet* and 33 were splashed over the *Enterprise*. The new battleship *South Dakota* was a tower of strength in this respect, throwing up a tremendous sheet of "flak." Returning Yank pilots were cautioned about passing over this ship as "she was knocking down everything within range." Altogether, 56 enemy planes were shot down by anti-aircraft fire. The combat air patrol splashed about the same number. Thus, approximately 110 of the 180 attacking planes were downed in the vicinity of the target.

The final enemy air strike, late on the afternoon of the

26th, succeeded in scoring additional torpedo hits and bomb hits on the sorely beset *Hornet*. The carrier was abandoned.

In terms of surface vessels, American losses exceeded those of the Japanese. The *Hornet* and the destroyer *Porter* were lost and three other vessels were damaged. No Japanese sinkings were claimed, although the survival of the torpedoed cruiser was doubtful. Serious damage was done to a carrier and lesser damage done to a battleship and five lighter vessels. But the real body blow was dealt the Orange carrier aircraft. Four air groups were cut to pieces. Replacement aircraft in that part of the Pacific were difficult to obtain and a carrier without aircraft is like a battleship with its turrets removed—only more vulnerable.

THE BATTLE OF GUADALCANAL

The three weeks following the Battle of Santa Cruz were hectic ones. The American forces in the South Pacific were racing against time in an attempt to bolster the defenses of Guadalcanal. It was realized that the Japanese would continue their efforts to retake the strategic island group as soon as they could reorganize their forces. Our troops on Guadalcanal were reinforced on November 6, but further supplies and reinforcements were vitally needed. Intelligence reports informed Admiral Halsey that the Japanese were concentrating in the Buin-Faisi anchorage at the southeastern end of Bougainville Island. This was apparently their staging area for the second all-out attempt to retake the lower Solomons.

The route from Buin-Faisi (some 280 miles), however, promised the greatest success to a surface force. The islands between Guadalcanal and Bougainville formed a natural sound. This sound, originally called New Georgia Sound



Navy Photo

The 16" projectiles hurled by the Navy battleship at the right resemble a flight of planes.

was renamed "The Slot" soon after American forces invaded the island group. The Slot runs in a southeasterly direction, being bounded on the northeast by Choiseul and Santa Isabel islands while Vella Lavella, Kolombangara, New Georgia, and the Russell Islands lie to the southwest. At the bottom of the Slot lies Guadalcanal, which, with Florida Island, forms an inverted V. Tiny Savo Island lies squarely in the open V, forming two entrances by which those who traverse the Slot may enter Iron Bottom Sound, as the triangular expanse of water between Guadalcanal and Florida is called. It is aptly named, for more naval tonnage lies on its bottom now than was sunk in the Battle of Jutland.

The islands which line the Slot have many coves and harbors which afford ideal cover for surface vessels. Troops can be transported down the chain in short stages via landing craft if necessary. Reports of the Orange concentrations at the head of the Slot indicated that the further reinforcement of our forces would have to be pushed with all possible speed in order to land the much-needed supplies before the Japanese armada arrived. Accordingly, a supply group under Rear Admiral R. K. Turner was readied and departed from our bases to the south on November 8 and 9.

The supply vessels were hardly on their way when it became apparent that a vast Japanese amphibious movement was also getting under way. The American operations were only a day or two in advance of the enemy's as the two forces converged on Guadalcanal.

The first supply echelon arrived off Guadalcanal early on the morning of November 11. The cargo vessels, three in number, immediately began unloading off Lunga Point. Japanese reaction was almost immediate. Two morning air attacks resulted in damage to the transport *Zeilin* and some damage to shore installations. Unloading was continued during the afternoon and at nightfall the supply ships and their escorting cruisers retired into Indispensable Strait for the night. A search of Iron Bottom Sound by the cruiser force during the night revealed nothing.

On the morning of the 12th the second group of supply vessels arrived and began unloading at the Guadalcanal beach. The enemy again countered with a torpedo plane attack. This attack was repulsed with heavy losses which

were due to good shooting by the ships and by the combat air patrol from Henderson Field. No damage was suffered by the supply vessels but a flaming torpedo plane deliberately crashed the cruiser *San Francisco*, damaging the after fire control tower.

Contact reports of strong enemy movements were received from scouting planes all day. The strongest group was located about noon some 300 miles north of Guadalcanal.

In view of the strength of the approaching Orange battleship force, it was decided to send the supply ships back to Espiritu Santo even though several of the cargo ships were not fully unloaded. The escorting vessels were detached and formed into a striking force under Rear Admiral Callaghan. It was intended that this cruiser-destroyer force fight a delaying action until the carrier-battleship task force under Rear Admiral Kinkaid could intercept the advancing Japanese landing forces. The *Enterprise* task force at this time was some 600 miles due south of Guadalcanal—a full day's sail away.

After ushering the retiring cargo ships into Indispensable Strait, Admiral Callaghan's force re-entered Iron Bottom Sound at approximately midnight via Lengo Channel. The ships were in column as they cruised westward along the north shore of Guadalcanal. Four destroyers, the *Cushing*, *Laffey*, *Sterett*, and *O'Bannon*, were in the van. There followed five cruisers: *Atlanta* (Rear Admiral Scott), *San Francisco* (Rear Admiral Callaghan), *Portland*, *Helena* and *Juneau*, in that order. Another four destroyers, *Aaron Ward*, *Barton*, *Monssen*, and *Fletcher* brought up the rear. Near Lunga Point several groups of enemy vessels were picked up by radar inside Iron Bottom Sound to the northwest.

The Japanese fleet was in open formation. Subsequent events proved that contact with Blue forces in Iron Bottom Sound was unexpected. It is probable that the Japanese had accurate knowledge of the presence and strength of Callaghan's little squadron and had presumed that the outnumbered Americans would not chance an engagement. Consequently, the Japanese muzzles were loaded with bombardment ammunition for use on Henderson Field. This ammunition contained large bursting charges but was too light to penetrate the cruisers' armor. This fact had great influence on the engagement. The Orange forces approached Lunga Point and Henderson Field in three columns. The center group was the largest and contained a battleship, afterward identified as the *Hiyei*, a *Kongo* class battleship. The left and right groups contained four or five ships each, with two cruisers in each group. A fourth group, also containing a battleship, was far to the north, en route to bombard Tulagi. The presence of this force did not make itself known to the Blue force during the engagement.

The Blue column turned north and then northwest to close the Orange formation. The opposing formations approached each other rapidly. It was a dark night with no moon and contact was by radar. The first visual contact was made by the leading destroyer which sighted four ships crossing ahead. Permission to attack with torpedoes was requested and granted. The leading destroyers turned left to unmask the torpedo battery. At this point the targets were identified as destroyers on a retiring course. Evidently the

presence of the Blue vessels was at this time discovered by the light wing groups of the Orange force. These wing groups promptly countermarched.

Not being in an advantageous position for torpedo attack, the van destroyers swung back on the base course.

By this time the rapidly approaching forces were at point-blank range. The action began when Japanese light units on the flanks illuminated the Blue forces. Both sides opened fire. The American gunnery, aided by radar ranges, was more telling. A light cruiser in the right flank group blew up, shortly after being taken under fire by the *San Francisco*. In the left flank group two cruisers were soon on fire. One of these cruisers was seen to sink in a very few minutes under the punishing cannonade. A destroyer in the left group blew up shortly after and two others were seen to burst into flame. The left group was thus practically eliminated early in the engagement.

In the meantime, the *Atlanta*, which had just previously sunk an Orange destroyer, was torpedoed. With rudder jammed, she circled to the south. She was then taken under fire by a heavy cruiser with devastating results. Her batteries were silenced, all power was lost and many fires were started. Admiral Scott was among those killed. The *Atlanta*, helpless, began to drift toward the Japanese-occupied section of Guadalcanal.

In the Blue group moving northward, the *Portland* was torpedoed in the stern after wrecking a Japanese destroyer. Unable to steer, the *Portland* began to turn in tight circles. The *Juneau* was torpedoed and forced to retire to the eastward. The van destroyers, under heavy fire, closed the battleship in the center group. The *Laffey* took *Hiyei* under rapid fire and in return was knocked out with shellfire and torpedoed. The *Cushing* and *O'Bannon* pushed in close and scored torpedo hits on the enemy capital ship. The *Cushing* was put out of action with gunfire but the *O'Bannon* retired with minor damage. The *Barton* was also torpedoed and blew up immediately.

The *San Francisco*, still running to the west, engaged the *Hiyei* which she found on her starboard bow. A bitter gunnery duel followed which tore up the battleship's upper works and resulted in extensive damage to the *San Francisco*. At the conclusion of this gunfight, the badly battered Blue cruiser was left moving slowly to the southwest with the majority of her deck officers, including Rear Admiral Callaghan, as casualties.

The lighter vessels of the center force were badly mauled and under pressure from the *San Francisco* and the Blue vessels which were crossing the T, the *Hiyei* turned north and then to the west on a retiring course. During this interval she was subjected to heavy fire from the encircling *Portland* and the undamaged destroyers. The *Helena* concentrated her fire on a cruiser of the center force and *Aaron Ward*, *Monssen*, and *Fletcher* scored torpedo hits on cruisers and destroyers. In addition, the *Monssen* delivered a torpedo attack on the retiring enemy capital ship, scoring several hits before she was damaged so severely that she was abandoned. The *Sterett*, too, suffered damage from gunfire and was forced to retire.

When dawn broke over Iron Bottom Sound, it found eight vessels still on the scene of the night engagement. In the center of the sound, the *Portland* turned endlessly.

The *Atlanta* was lying dead in the water close to the Japanese-held beach but her fires had been extinguished. The *Cushing* and *Monssen* were on fire while *Aaron Ward* lay dead in the water. An enemy destroyer lay to the south of Savo Island, making slow progress toward the shelter the island offered. Still turning in circles, the *Portland* took this vessel under fire and sank it with several well-placed salvos. To the north of Savo lay *Hiyei*, with a cruiser standing by. Shortly after the *Portland* sank the enemy destroyer, the *Hiyei* began to fire slowly on the *Aaron Ward*.

During the night, the *Enterprise* task force had run northward at top speed and by morning it was within air range of Guadalcanal. The shelling of the *Aaron Ward* by *Hiyei* was interrupted by the arrival of a flight of torpedo planes from the *Enterprise*. The enemy cruiser retired precipitately to the northward. The planes pressed home an attack on the *Hiyei* and scored three torpedo hits. Continuous air attacks from Henderson Field were made against the battered capital ship throughout the day. Fires raged aboard the vessel which showed a surprising resistance to the remorseless attack. She sank sometime after nightfall on the 13th.

During the daylight hours on November 13, the *Portland* and *Aaron Ward* were towed to Tulagi on Florida Island. The plight of the *Atlanta* proved hopeless despite energetic efforts to save her and she was finally scuttled. Just before noon the Blue force retiring on Espiritu Santo was attacked by a submarine south of San Chistobal Island. The already damaged *Juneau* was struck by a torpedo and blew up. Thus, the inferior Blue forces lost two anti-aircraft cruisers (*Atlanta*, *Juneau*) and four destroyers (*Barton*, *Cushing*, *Laffey*, and *Monssen*) while the Orange forces lost one battleship, two cruisers, and four destroyers according to present information. Rear Admiral Callaghan's desperate stand had resulted in a brilliant victory although neither he nor Rear Admiral Scott survived.

The failure of the Japanese bombardment group to reach Henderson Field and destroy its facilities did not deter the advance of the major Japanese forces. The presence of several enemy forces in the Slot was reported. One of these was the large transport convoy which by the morning of November 14 had progressed well down the north coast of New Georgia Island. A fast cruiser-destroyer squadron was also in the lower reaches of the Slot and during the early morning hours of November 14 this force entered Iron Bottom Sound and bombarded Henderson Field. Some planes were destroyed but the field was not damaged seriously, the attack being broken off when Tulagi-based PT boats attacked the Orange bombardment force.

Upon daylight of the 14th, the retiring Japanese cruiser force was attacked by planes from Henderson Field and from the *Enterprise*. Bomb hits were scored on several cruisers. The approaching invasion convoy was subjected to several heavy air attacks by the *Enterprise*. Six cargo vessels were reported destroyed and six more were left burning. None of the enemy transports escaped damage.

About noon of the 14th, the *Washington* and *South Dakota*, with four destroyers, were detached from the *Enterprise* task force and ordered to search the Savo Island area after nightfall for an enemy bombardment force which had been reported and also for any remnants of the transport group which might have survived the day's air attacks.



Sunset over the convoy—all is well.

Navy Photo

The battleship task group approached from the south, running well out to the west of Cape Esperance, the northwest tip of Guadalcanal, in order to prevent being spotted by enemy coast watchers. The task group was in column with the four destroyers (*Walke*, *Benham*, *Preston*, and *Gwin*) in the van. After searching to the northwest of Savo Island, the Blue force turned to the east and ran down through the entrance to Iron Bottom Sound between Savo and Florida Islands. At about midnight, having approached the coast of Guadalcanal near Lunga Point, the task group turned west and searched west along the coast of Guadalcanal toward Savo Island.

Soon afterward, contact was made with enemy ships to the northwest in waters through which the Blue force had steamed on its eastward leg. The enemy was headed west inside Savo Island. There appeared to be six or seven ships, including several cruisers. The *Washington* selected the leading ship as its target, while the *South Dakota* took the third in line. The two heavy ships opened fire in full radar control and took the Orange column completely by surprise. Both targets disappeared after several accurate salvos of 16-inch projectiles were dropped upon them. Two of the smaller vessels detached themselves from the enemy column and retired rapidly to the north of Savo where, as later events proved, they notified a second Japanese task group of the presence of the battleships. Fire was shifted to the next largest targets after the first two were sunk. The Orange column was now completely disorganized, with several ships burning along the east shore of Savo Island.

While this action was in progress the van destroyers contacted eight to ten targets moving east around the south shore of Savo. These vessels proved to be destroyers detached from the main Japanese body which at the time was hidden to the northwest of Savo. The Blue destroyers pressed their attack against these vessels. The secondary batteries of the battleships also took these targets under fire. By moving to the attack, the Blue destroyers took the brunt of the torpedo attack meant for the heavy ships. The *Preston*

was sunk by gunfire, the *Benham* was torpedoed, and the *Walke* was both torpedoed and heavily damaged by gunfire. The *Gwin* suffered considerable gunfire damage and was forced to retire. The Orange destroyer attack, however, was repulsed with heavy losses.

At this stage all Blue destroyers had been put out of action, but because they had drawn the enemy attack toward themselves, the *Washington* and *South Dakota* were as yet undamaged. For a short interval, the two vessels found no targets as they passed to the west out through the strait between Guadalcanal and Savo Island. As they cleared Savo, a second task group was picked up. This group contained a battleship and several cruisers and was standing to the westward on a parallel course. Again operating in radar control, the *Washington* took the enemy heavy ship under fire. Many hits were obtained. Due to a temporary failure of her radar, the *South Dakota* inadvertently closed to within searchlight range of the enemy force. She was promptly illuminated and fired upon. In the exchange, the *South Dakota* sank one of the illuminating vessels but was herself considerably damaged in her upper works. She retired out of searchlight range.

The enemy battleship, identified later as the *Kirishima* a sister of *Hiyei*, soon was aflame from the effects of the *Washington's* pounding and swung away out of control. She sank several hours later. The two American battleships wreaked considerable havoc among the remaining vessels of the Japanese column before the latter withdrew in disorder to the northward.

Contact having disappeared, the damaged *South Dakota* and the untouched *Washington* retired to the south. They soon fell in with the crippled *Gwin*. As the Blue force moved southward, they picked up several indistinct contacts in the neighborhood of the Russell Islands. These contacts were evidently the remnants of the transport force, as four damaged Japanese cargo vessels beached themselves on Guadalcanal during the early morning of November 15. They were bombed by Henderson Field planes soon after

down and finished off by the destroyer *Meade* which "exercised complete control in the area." With this action the Battle of Guadalcanal ended.

THE DECISION

The Battle of Guadalcanal marked the last Japanese attempt to regain the lower Solomons. For the next few months they confined their activities to occasional "Tokyo Express" supply expeditions and soon they withdrew altogether. The Japanese withdrawal from the lower Solomons was overshadowed, however, by a fact of even greater importance. The Japanese appeared to have abandoned the offensive and to have assumed the defensive.

The change was marked. In the phase before Guadalcanal, the enemy had appeared eager to risk his heavy "non- expendable" units of naval power, his aircraft carriers and battleships, in every major engagement. This was true at Coral Sea, Midway, and in all the battles for control of the lower Solomons. After the Battle of Guadalcanal, however, Japanese heavy units disappeared from the seas. *A close study of communiques reveals that from November 15, 1942, until June 18, 1944, not a single Japanese capital ship was engaged by our forces.* During this time United States forces extended their control to the upper Solomons, New Guinea, and the Admiralty Islands; invaded the Gilbert and Marshall Islands; isolated and by-passed the naval base at Truk; and invaded Saipan. It was not until our movement into the Philippine Islands threatened the collapse of the entire Japanese Empire structure that Orange heavy units were forced out of hiding.

After the lessons of Santa Cruz and Guadalcanal, the Japanese did the logical thing. They withdrew their out-classed warships and went on the defensive. Their fleet went into hiding. Where? American naval men knew the answer. It lay in the navy yards and naval drydocks of the

Report on the Progress of the War, by Admiral E. J. King.

Empire, where workmen hurriedly installed more and newer automatic weapons, better fire-control systems and electronics devices. It was a vain attempt. The technological advancement of the Japanese surface fleet had been neglected too long. Japanese industry could not supply the know-how and Japanese scientists could not bridge the gap of years of disinterest in the problems of adequate air defense. What the United States Navy had developed through years of research and training could not be emulated in a matter of months, although considerable progress was made. Airmen returning from strikes during the Battle for Leyte Gulf remarked upon the improvement of Japanese antiaircraft defenses. But the American combination of fighters and ships' guns was immeasurably superior. It was so superior that a fleet "came to stay" off Okinawa despite the most fanatical air assaults even seen.

Thus, the ultimate destruction of the Imperial Japanese Fleet was foreshadowed at Santa Cruz and Guadalcanal. These twin engagements were the handwriting on the wall. When the victorious American fleet steamed into Tokyo Bay, it was met by a single Japanese destroyer—the only operable unit of the once mighty Nipponese fleet. It is well to remember, in this respect, that Japan surrendered before her home islands were invaded. Her conquests on the Asiatic mainland were still extensive and her huge, well-trained land forces there were largely intact. Her industries, despite heavy bombings, were still operable. Her naval power, however, had been destroyed. As a result of her loss of control of the sea, Japan was cut off from the sources of her most vital war materials. Her remaining air power did not have the fuel to launch itself on its desperate Kamikaze missions. Without gasoline, rubber, aluminum, and other equally important materials, Japan's war effort ground to a stop. Yes, truly, the Pacific phase of World War II was a naval war.



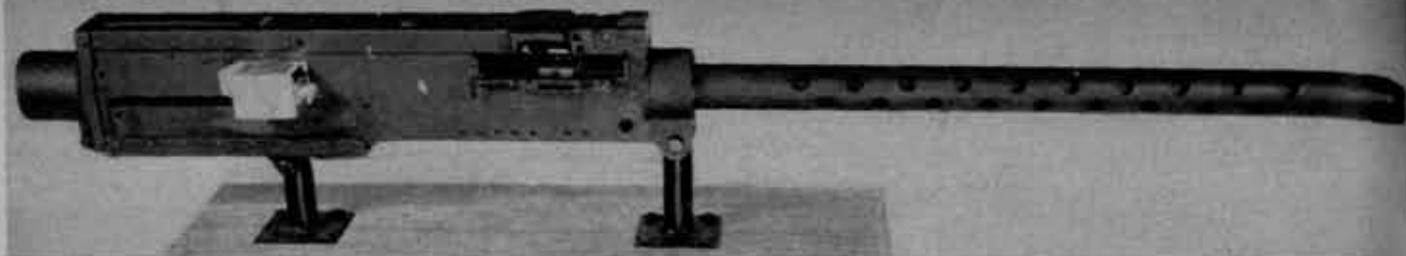
General Devers Lauds N.G.*

EDITOR'S NOTE: The following is quoted from an address of General Jacob L. Devers, Commanding General, Army Ground Forces, before the National Guard Association at Buffalo, New York, September 19.)

The Army and Navy Bulletin, which has no official connection with the services, recently stated the case for the postwar National Guard, and very ably, in an editorial from which I quote:

**Army and Navy Bulletin.*

"... the officers and men who have manned the Guard in the past and who will man it in the future are guided by a sincere and unselfish brand of patriotism. It could never be argued that the small monetary return they receive is adequate compensation for the hours Guardsmen spend at drills, in study and on maneuvers to better prepare themselves professionally for the defense of the United States. Nor can it be stated too often that participation in the activities of the National Guard has been undertaken by many officers and men at considerable personal inconvenience and even sacrifice in terms of time spent and money lost."



A New Aircraft Machine Gun

The M3 Weapon Increases Aërial Firepower Fifty Per Cent

By Colonel René R. Studler

An immediate increase of fifty per cent in the firepower of our combat aircraft is provided by the Army's new caliber .50 aircraft machine gun M3. While the new gun is of practically the same size and weight as the older M2, it fires 1,200 rounds a minute—half again as fast.

* * *

It became apparent early in 1937 that, as the speed of air combat increased, a corresponding increase in the rate of fire of aircraft weapons would be required. At that time the interest of the Army Air Forces in a higher rate of fire was expressed by General Arnold during a conference at Aberdeen Proving Ground, Maryland. As a result, in the early years of the war the rate of fire of the M2 gun was increased from 600 to 800 rounds a minute. This was a start in the right direction, but only the first step. The Ordnance Department continued with the development of what was to be a gun of "super" speed. The M3 is that gun. Its performance is far superior to that of any gun of comparable caliber or weight in existence. Its use will broaden still further the margin of superiority of our aircraft armament.

The new aircraft gun was developed by the combined efforts of the Ordnance Department and several commercial facilities operating as a team and is typical of the superior weapons which have resulted from such cooperative effort.

While the problem of increasing the cyclic rate of a machine gun may be easily overcome by the use of several well-known devices, it must be remembered that the impact stresses in a mechanism will increase as the square of the velocity of the moving parts. Thus, the problem in designing the M3 Gun, with its fifty per cent higher cyclic rate, was to design each part to take more than twice the stresses of the older gun without increasing the size or weight.

The outstanding special components of the new gun, as compared with the M2, are as follows:

1. Lightened bolt with improved metallurgy.
2. Extractor with reversible ejector which eliminates the necessity of forcing the ejector between the rounds of the ammunition belt.
3. Pneumatic barrel buffer which gives greater smooth-

Characteristic	M2	M3
Rate of Fire	750-850 r.p.m.	1,140-1,240 r.p.m.
Belt-lift capacity	17 lbs.	35 lbs.
Weight	62 lbs.	63½ lbs.
Length	56¼ in.	57¼ in.

Comparative data on M2 and M3 guns.

ness of operation and is not affected by temperature extremes. This buffer uses no oil and requires no special maintenance.

4. Redesigned accelerator which makes more effective use of the excess energy of the barrel and barrel extension to speed up the recoil of the bolt, thus increasing the rate of fire.

5. Belleville spring bolt buffer which utilizes cupped steel washers instead of the fiber disks of the M2 gun. This buffer returns more energy to the bolt and speeds its counterrecoil, thus increasing the rate of fire.

6. The breech lock depressors are rigidly mounted to the side plates of the gun. This prevents movement of the buffer body and greatly improves the stability of the gun components.

7. A special back plate which clamps around the receiver and prevents spreading of the side plates and consequent tearing out of the back plate.

8. Breech lock cam with a curved cam surface which gives smoother operation of the breech lock and reduces battering of the gun components.

9. Special top cover which incorporates a feed pawl shaped to fit the cartridge and link, and a strengthened belt-feed lever. This cover assembly gives increased belt lift capacity.

10. Split belt-holding pawl which has been incorporated into all caliber .50 aircraft machine guns. This assembly improves the feeding of ammunition to the gun in cramped installations.

EDITOR'S NOTE: Colonel Studler is chief, Small-Arms Development Division, Ordnance Research and Development Service.

According to the Book

By Lieutenant Lawrence Sanders

A runner stuck his head in my tent.

"The Gunny wants you," he says.

"Now what?" I says. I goes over to see the Gunny.

"How about taking a patrol out Saturday?" he says.

"Am I the only slob in this outfit who can take out a patrol?" I says. "That makes three this month."

"What's the matter?" the Gunny says. "Getting yellow?"

Nice guy, the Gunny.

"Yeah, I'm yellow," I says. "I'll yellow you in the face with a pick-mattock. Give me the damned patrol. I hope I fall asleep on the trail. I hope they shoot you for it."

"My heart bleeds for you," he says. "Go over and see the Captain."

"How about my taking your Thompson?" I says. The Gunny owns a Thompson. Don't ask me how he got it.

"Okay," he says. "Drop by and get it before you leave."

"Thanks," I says. "I'll remember you in my will." I goes over to the C.P.

"Look, Scargeant," the Captain says. "Will you do me a favor? Will you do me one lousy little favor?"

"Name it, Captain," I says.

"Will you do this one right? Will you do this one lousy little patrol according to the book?"

The last time I took out a patrol the Colonel caught us all swimming naked in a pond with no sentry posted. The time before that we got ambushed by some wild pigs and lost a lot of equipment.

"Please," the Captain says, "do this one right, will you?"

"Captain," I says, "this one will be according to the book, I promise you."

He looks at my stripes. "It better be," he says.

That third stripe I've got has been on and off so much I'm thinking of putting it on with a zipper.

I goes back to my squad.

"Guess what, kiddies," I says.

"Another patrol," Jensen says.

"Right," I says.

"Oh, goody," McGurk says. "Daddy, can I be point? I do so want to be point, and Daddy promised me I could be point next."

"Shut your flap," I says. "I only want six guys. I'll give you five minutes. If six guys haven't volunteered in five minutes, I'll pick them myself."

Five minutes later I picked Jensen, McGurk, the Hanell brothers, Torelli, and Bates.

"Now listen," I says. "The Skipper wants this one according to the book. This one will be just like the diagrams in the manual, with flank guards, point, rear guard, everything the way it says. If we run into a battalion of Nips, we'll flank 'em up a wooded draw. Is that clear?"

I guess it was clear. No one said a word.

We started out Saturday morning. McGurk was my point with a BAR. We followed down the trail, single file. I had the Thompson; the other lads carried carbines. We

had liverwurst sandwiches wrapped in waxed paper and some chocolate bars. We were due in at midnight. They didn't want much from us; they just wanted us to melt through the jungle and locate and destroy an artillery piece that fired three rounds onto the beach every afternoon at 1630. That's all they wanted.

You understand, the damn gun wasn't doing any harm. The shells always hit the same place, and we didn't have any supplies there, and everyone took cover just before they were due, but it was humiliating having that thing go off every afternoon at 1630, so the Colonel wanted it located. The planes couldn't spot it exactly. So they gave me six men to do it with. That was great. That was just swell.

We passed through our perimeter guard.

"So long, suckers," the sentry says.

"Listen, eight-ball," I says. "You tell that relief of yours that we're coming back through here at midnight, and if he opens up on us, I personally shall chastise him. After I get out of the hospital, that is."

We were five minutes out, and that awful silence just settled down on us. Creepy, know what I mean?

I was expecting the worst, and when McGurk held up his hand, we all flopped down quick, and I wiggled forward.

"What's wrong?" I hiss.

"Got something in my eye," he says.

"Got something in your eye? Oh, fine. Suppose we just set here the rest of the day while you dig it out. Will that be all right?"

"Sure," he says.

"Get up," I shout. "You no-good stoop. Give that BAR to Jensen and go to the rear. You've got something in your eye. That's the best I've heard yet. You want we should stop the war maybe?"

"Listen, Sarge," Jensen says, "I don't think I should take the BAR."

"I know how it is," I says. "It's just a little heavier than the carbine."

"It ain't that," Jensen says. "It's just—"

"Look," I says. "Do you see crosses on my collar? Don't tell me your troubles. Just carry the BAR."

We went in deeper and deeper. According to the map I got from Intelligence, we had to follow the trail until it cut inland; then we went straight away to some high ground near the north end of the island. They had put a little circle where they thought the gun might be. The Hanell boys were carrying the demolitions.

Here's how we were when it happened: we were going down the left side of a faint trail in single file. On our left was a strip of jungle, then the beach, and then the sea. On our right, across the trail, the jungle just went on and on.

Suddenly Jensen stepped off the trail into the bush. We all stepped into the jungle and squatted. The word came back: a Nip patrol, about 15, with a light machine gun.

They were coming down the trail toward us, 100 yards away.

"What does the book say to do now, Sarge?" Torelli says.

"Shut up," I hiss, thinking hard. "Jensen, go over to the left and set up the BAR so you're sweeping down the beach. Torelli, you, Bates, and McGurk go about 20 yards into the jungle on the right and sweep around till you figure you're on their flank. Come tearing out screaming and making like a regiment. We'll stampede them over to the beach, and Jensen will neatly roll them down with the BAR."

"What book is that from?" Bates says.

"Shut up and shove off," I says. They go off into the jungle on the right of the trail. We go over to the beach and get set up. The Hanell boys are from Oklahoma and are good shots.

"Listen, Sarge," Jensen says. "I told you I shouldn't have the BAR."

"Now what's wrong?" I says.

"I'm nearsighted," he says. "I can't see farther than that lone palm."

Somchow the book never mentions little things like that might come up.

"Thanks for telling me now," I says.

"I tried to tell you before," he says.

I gave the BAR to Jack Hanell. We set ourselves.

In two minutes we heard something that sounded like The Charge of the Light Brigade. I could heard Torelli shouting, "Dig me, daddy. Oh, dig me," and they were firing like crazy, tossing grenades, and screaming like banshees.

It worked out very nice. The Nips came streaming off the trail right out onto the beach, 14 of them with two officers tripping over their swords. We caught them right and had a field day. It was all over before Hanell had time to load another magazine.

"And that, lads," I says, "is called a Meeting Engagement and how to meet it. See further volumes of the Basic Field Manual for more exciting adventures of Little Rollo, and his Happy Warriors. Will the good guys win? Will the white girl be saved? See Chapter Ten of Daring Dangers playing at your local pool hall next week."

"Sarge," Torelli says, "you'll get the Bronze Star for this."

"That and a nickel will get me on the subway," I says. "Let's go."

"How are we going to carry all these souvenirs?" Bates says.

We buried the best of the stuff to dig up on our way back. We rolled the stiffs into the bush. I moved Bates up to point, and we started off again.

The trail curved away to the right, going inland. I stopped for a look at the map. There was supposed to be an old hut there where the trail turned, but there was nothing. Just jungle.

"Look, Sergeant," Jimmy Hanell says. "I have what I think is a brilliant suggestion."

He was the guy who suggested we go swimming the time the Colonel caught us.

"Now what?" I says.

"Instead of hacking our way through this stuff," he says,

"why don't we go down the beach? We can stay close to the bush, but we'll make better time. We can cut in when we get close to the gun position."

It didn't sound so crazy at that. "Okay," I says. "And for thinking it up, Jimmy, my boy, you can lead the way."

The sand was hot and hard on our feet but a lot easier than cutting our way through. We took a rest around noon and ate our chocolate and sandwiches.

"That ocean looks mighty good," Torelli says.

"Mighty cool," Jensen says.

"Mighty refreshing," Bates says.

"Mighty like a rose," I says. "Okay. Jim, you and McGurk stand the first guard. Fifteen minutes for a swim, no longer. Last one in is a rotten egg."

Man, that water was fine. I put my sweat-soaked dungarees in the sun to dry, and I just floated on my back, did surface dives, splashed around and had a high old time.

"Okay, Jensen and Bates, relieve the watch," I says. I goes up the beach with them. Jim Hanell and McGurk are going through the pockets of two dead Nips. They'd stabbed them from behind.

"When did all this happen?" I says.

"Few minutes ago," McGurk says. "They were watching you guys. We were watching them."

"Don't call me," I says. "Don't warn us or shout or anything foolish like that."

"But, Sarge, why should we interrupt your swim?" Jim Hanell says.

"Oh, shut up and take your dip," I says. That place was too busy to suit me. A hot-dog stand would have made out all right in that jungle.

I got the guys moving down the beach again.

We plodded down the beach for almost an hour. I was pooped. We took "ten" and flopped under the palms.

"Sarge," Jack Hanell says.

"Yeah."

"Sarge, I don't feel so good."

"I know what you mean," I says. "I don't feel so good either."

"It ain't that," Hanell says.

"Well, what is it then?"

"It's my back," he says. "I got blood poisoning."

"You've got what?" I says. He took off his shirt, and his white back was covered with water blisters. Where the straps of the demolition pack had been rubbing, the blisters were split, and the flesh was raw.

"I'm allergic to the sun," he says.

"Why did you go for a swim then?" I says.

"It looked so good," he says, "I forgot my skin was so tender."

"Your head too," I says. "Give me that damn pack." We plastered his back with cool mud we dug up. He said it felt good. I forgot what the book says about treating a guy who gets sunburned on a combat patrol. So we just plastered his back with mud, and it dried on there, and he put his shirt over it and said it felt good.

Honest, what a Sergeant has to put up with. There's a lot of things the book never gets around to. So there I was, carrying the Thompson and a demolition pack, as well as a map case, field glasses, compass, extra magazines

anything but shoe laces, chewing gum, cough drops, and peppermints.

When I figured it was about time to get off the beach and cut into the jungle, I called a halt and got out my compass. The needle was stuck. It kept pointing to S, and wouldn't float right. I hit it a couple of times on the butt of Thompson. There was a "Twang!" the crystal popped and the needle sprang two feet up into the air.

"Say, that's pretty good," Torelli says. "How long did you have to practice to do that?"

"Now let's see," I says. "Is it on the north or the south side of trees that moss grows?"

"You can tell by your watch, Sarge," Bates says. "You point the hour hand at the sun, and then somehow divide by two or split the angle somehow, if you're in the Western Hemisphere that is. I forget exactly."

"Thank you," I says. "It's perfectly clear."

"North is over there, Sarge," Jensen says. "I can tell by the sun."

"You're crazy," McGurk says. "It's over there."

"Knock it off," I yells. "I know which way North is, but I tell you guys, you'll know as much as me, and I'm boss of this outfit. Come on."

We cut into the jungle. At 1625 we boosted Jack Hanell into a tree, and he shinnied to the top. Right on the nose at 1630 came the reports of the gun, three rounds very near us. Hanell came sliding down.

"A cinch," he says. "Dead ahead. I saw the flash. We can't miss it. Should take us about four minutes."

Three hours later, the sun was sinking, and we stopped to have another conference.

"I tell you it was dead ahead," Hanell says. "I don't see how we missed it."

"Nice going, Private," I says.

"But, Sarge," he says, "I'm a Corporal."

"Ha ha," I says. "Those were the good old days. Come on." It took us another half hour to come to some rising ground. It was a nice grassy hill, smack in the middle of the bush.

Bates was point then. He stopped us and crawled away. We heard a couple of thuds and went on. He had caught the sentry in the back of the neck with the little hand ax he always carried.

We stopped at the foot of the hill.

"I don't like it," I says. "Too quiet."

"I could sing," Torelli says.

"Okay, wise guy," I says. "Let's you and me see who can creep and crawl to the top of that hill the fastest."

But of course we took it easy, and when we poked our noses over the crest of that hill, I almost fainted. We were looking right down into the gun emplacement, right down into the barrel of that damn artillery piece. Right smack into the muzzle of it. Brother!

"So long, Sarge," Torelli says.

"You stay here," I says. "I've got to figure this out."

There was a shack about 50 yards back of the gun with a bench out in front of it. Three Nips were sitting on the bench shooting the breeze. No one was near the gun except an old, flea-bitten hound chewing his tail.

"What does the book say, Sarge?" Torelli says.

Damned if I knew what the book would say. Anyway, I

sent Torelli down for the demo kit. When he crawled back with it, I had things pretty well planned. Maybe it was kind of crazy, but it worked.

"Fix me six blocks with a minute fuse," I says to Torelli. "When I get near the gun, roll it down to me."

It was getting dark fast then, and I was counting on the dusk. I stuffed my cap in my pocket, and taking little, mincing steps and hunching over, I walked around the side of the hill, then strolled up to the gun in full view of the Nips sitting by the shack. I heard Torelli whisper a string of Italian prayers, and I was with him all the way.

I got out my handkerchief and started polishing the barrel of the gun. One of the Nips yelled at me, a long hash of stuff. Without turning, I waved at them. Out of the corner of my eye, I saw one of them give me a wave back. They just went on smoking and watching me.

I opened the breech and began taking things out. The gun wasn't familiar to me, so I just took everything I could unscrew, unbolt, or twist off. I took the stuff with one hand and slipped it into my pocket. I kept wiping off the gun with my other hand. Torelli shoved the charge over the crest, and it slid down almost to my feet.

I prayed for darkness. And then that damn hound came sniffing around my feet. Beat it, I hissed; scam, get out of here. He sniffed me and began to growl. I stuffed the charge into the breech, pulled the lighter, and walked slowly over the crest just as the dog started barking. They'll shoot me now, I thought. They'll get me as I go over the crest, and they have me silhouetted.

But they didn't shoot. The dog's barking got them though, and they stood up and started toward the gun. Torelli and I raced to the bottom and burrowed into the bush. Just as the three Nips reached the gun, the charge went off. Very satisfying.

"Our hero," Torelli says.

"It was nothing, men," I says. "Or at least not very much. Any rifle company supported by a mortar platoon could have done the same thing. Let's get out of here."

We walked our feet off down to the knees.

We went back the way we came and picked up all the stuff from the Nips we had clipped: papers, identification, maps, swords, pistols, rifles. We looked like a caravan by the time we hit the home trail.

Torelli was out in front, feeling his way through the black.

He stopped us with a low whistle, and I went forward.

"Take a look at that, Sarge," he says.

There's a lone Nip squatting right in the middle of the trail cooking slum over a fire. I know it doesn't sound right. I never read in any book what you did when you met the enemy squatting in the middle of the trail cooking his supper, but there he was. I flicked off my safety and walked up to him.

"Hands up," sounded kind of dramatic, and "Put 'em up" was just as bad, so I just shoved the muzzle in his face and said, "Okay, Joe."

He jumped up, a short, little runt, and grinned at me.

"The book says to question all prisoners," Bates says.

"I know what the book says. Where you from, Joe?"

"Laguna Beach," the Nip says. "It's south of Los Angeles

about halfway to San Diego. I was houseboy there for five years."

"I've been there on liberty," I says. "Nice place."

"It sure is," he says. "Boy, am I glad you guys came along. I didn't know how I was going to get into your place. I'm fed up with this war."

"You and me both," I says. "Well, come along. Any more of you guys around here?"

"I don't believe so," he says. "I believe I'm the only one."

That sounded fishy to me, and I was as careful as the book says to be. But he was telling the truth, and we made our own lines without any more trouble. We hid our prisoner while Jensen went ahead to trade witticisms with the sentry. I wasn't taking any chances of getting blasted when those trigger-happy outguards caught sight of our lip.

I went over to the C.P. carrying a lot of junk. The Captain was playing cribbage with the Gunny. He looked when I came in. He groaned.

"All right," he says. "Tell me the worst at once. How many of them did you get killed?"

"Why, whatever can the Captain mean by that?" I says. "It was a perfect patrol, all according to the book. No casualties. We knocked off 20 and brought in one split-toe Joe who's weary of it all. Mission accomplished; gun located and destroyed."

The Gunny and the Captain sat there and looked at me awhile.

"I thought the Captain might like this nice sword," says. "Notice the precious stones set in the hilt." It's good thing he didn't see the one I kept for myself.

"Why, thank you, Sergeant," the C.O. says. "This is fine sword all right. What else did you get?"

I showed him all the stuff, the maps and papers and fat diary we took off one of the officers.

"Well, well," he says. "The Major will be pleased. The Colonel will be pleased. In fact, I'm damned pleased myself. Gunny, I think we've been underestimating this man."

"Captain, sir," I says, "that's just what I figured all along."

"You say you destroyed the gun?" the Gunny says.

"Yep," I says. "We blew it and the crew to kingdom come."

"Well, I can hardly believe it," the Captain says. "That's fine work, Sergeant. And don't worry; I'll see you get suitably rewarded for this."

"Yes, sir, thank you, sir," I says. "I did it all according to the book just like the Captain said. Any little reward the Captain can give me such as another stripe or perhaps transfer to the States will be gratefully appreciated, sir."

I got suitably rewarded all right. I had to take another patrol out the next week, walked into the neatest trap ambush you've ever seen, and caught a slug through my shoulder.



Changes of Address

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Return of the National Pistol and Small-Bore Matches*

By Leonard J. Grassman

Back on the sports stage after a wartime of more businesslike shooting, the nation's marksmen finished their first postwar National Pistol and Small-Bore Matches at Camp Perry, Ohio, early in September. About 1,000 keen-eyed contestants lined up along the two-mile Perry firing line and burned up over a million rounds of small-caliber ammunition and perforated target bull's-eyes all the day long from August 31, through September 8, firing the multiple shot which heralded the return of a greatly expanded and invigorated American sport.

Purpose of these matches is not to dispose of surplus ammunition but to provide a national benefit in addition to supporting a great sport and a nerve straining test of individual skill. The benefit, rarely apparent in peacetime, is obviously present when our nation is threatened by war. Our national marksmen became the teachers of our adaptable but rusty citizenry at the outset of the emergency which preceded the late war, and the National Rifle Association provided training films and expert gunnery instructors who taught the expert use of small arms to the officers and men who later became the small-arms instructors for our armed forces.

Early in the century, when the rifle and pistol ceased to be essential tools of daily life and their possession became a matter of law, the marksmanship of Americans had declined greatly from the standards of the famed frontier shooting. The War Department, always aware of any threat to National Security, decided some precaution should be taken to preserve at least a nucleus group of skilled marksmen to train our fighting forces in the event of future emergencies. To accomplish this, the National Board for the Promotion of Rifle Practice was formed. The Board, composed of twenty-one members appointed by the Secretary of War from representatives of the War and Navy Departments, the Army, Navy, Marine Corps, National Guard, Organized Reserves, National Rifle Association, and the country at large, has for its president the Under Secretary of War. The present board, in addition to its president, the Honorable Kenneth C. Royall, is composed of General Courtney H. Hodges, Commanding General of the First Army, War Department representative; Captain Clifford H. Duerfeldt, Navy Department representa-

tive; Major General B. B. Miltonberger, Chief of the National Guard Bureau; Major General E. S. Bres, Executive for Reserve and ROTC; Major General Milton A. Reckord, Adjutant General of the State of Maryland and Executive Vice President of the National Rifle Association; Colonel Emerald F. Sloan, USA (Ret), Director of Civilian Marksmanship, Executive Officer of the National Board; Colonel Christian H. Clarke, Jr., representing the Director of Organization and Training, War Department General Staff, and Colonel Joseph K. Bush, Army Ground Forces.

Interest in such skill had originated in Europe but as an organized sport it is primarily American. In 1871, the National Rifle Association of America was chartered in New York. A great part of its membership was composed of members of the civilian National Guard Units of a number of States. In 1903, the Office of the Director of Civilian Marksmanship was set up in the War Department with appropriations and authorization to provide certain War Department equipment to civilian rifle clubs which had been organized in accordance with regulations approved by the National Board for the Promotion of Rifle Practice. The Director issues Army Qualifications Badges to civilians, also. Because of his close association with the activities of the National Board, the Director of Civilian Marksmanship is normally appointed as Executive Officer of the National Board. Present Director is Colonel Emerald F. Sloan, USA. He and the Assistant Director, Lieutenant Colonel Paul F. Roberts, Inf., have had a great deal of experience in working with the National Guard, Reserves, and civilian riflemen, and are always available for information on organization of rifle clubs and procurement of government materials for such organizations. Three classes of applicants which may receive such assistance are schools and junior and senior rifle clubs organized for target practice.

Schools, in order to receive the benefits, must maintain during the entire school year a uniformed corps of cadets, at least 40 in number, above the age of 14 years. They must have an adequate course in military training and must conduct target practice in accordance with the regulations prescribed by the Board. Targets, rifles and ammunition in certain specified amounts are authorized for issuance. Senior rifle clubs may receive similar benefits by enrolling with the Office of the Director with a

*The Armored Cavalry Journal.

membership of at least 10 physically fit male citizens above the age of 18. They must not be eligible to receive federal aid for such activity from any other source and must maintain affiliation with the National Rifle Association and must carry out target practice as prescribed.

Junior rifle clubs have pretty much the same stipulations but must be under the sponsorship of an adult, responsible, male citizen, and have proportionate marksmanship qualifications and courses. In order to receive the issue of nonexpendable equipment all such organizations must furnish a surety bond, provide for secure storage of equipment, pay all transportation charges and have suitable range facilities. They must also submit at the close of each calendar year an annual inventory of U. S. property and an annual report of firing.

Contemporary interest in the use of small arms has been stimulated by personal experiences in the armed forces during the war, by enlarged gunnery and sporting clubs, by preparedness-minded organizations, schools and other such units. It is anticipated by the small-arms enthusiasts that the sport will be greatly enlarged and more popularly received in the future.

The first of the National Matches was held at Sea Girt, New Jersey, in 1903. The Matches of 1905 and 1906 at the same location. The 1904 Matches were held at Fort Riley, Kansas, and in 1915 and 1916, they were conducted at Jacksonville, Florida; in 1919, again in New Jersey, at Caldwell. All other matches have been held at Camp Perry, Ohio; the first in 1907 and the last in 1941.

In the first matches, participation was limited to teams from the regular services and the State National Guard organizations. The National Individual Rifle and Pistol Matches were inaugurated in 1904 with 187 entries in the rifle and 38 in the pistol. With the passage of the National Defense Act in 1916, participation of civilian teams from each state was authorized and a Small-Arms Firing School became an important part of the National Match Program. The National Pistol Team Match was inaugurated in 1920 with 36 teams firing. In 1939, there were 128 entries in the rifle team match, 33 in the pistol team competition and 2,037 in the National Individual Rifle Match and 622 in the National Individual Pistol Match.

The National Championships of the National Rifle Association have been an important part of the National Match program from the beginning. In 1940, there were 91 NRA matches.

The National Matches sponsored by the War Department consist of the National Trophy Rifle Team, the National Trophy Individual Rifle, the National Trophy Infantry Team, the National Trophy Pistol Team, and the National Trophy Individual Pistol Match. Many new matches have been created for this year's and subsequent matches. During the 42 years since the adoption of the National Matches, numerous Trophies have been accumulated and these trophies are

presented to the winning teams or individuals who usually retain possession of the original trophy for one year and are given a miniature replica thereof for their permanent possession. The contestants also fire for small money prizes.

Marksmanship as a sport is comparatively low cost after the initial outlay for equipment, which, in itself, isn't great. It is a family sport in which all members of the family regardless of sex may indulge. It is an ideal week-end sport, and bows neither to weather conditions nor season since there are ample facilities practically everywhere in the nation for indoor and outdoor shooting. It is a sport of skill and a test of temperament, granting great satisfaction.

Through the years it has swept a long way from the career soldier's bivouac but still remains the most engaging sport for regular and reserve officers who maintain a man isn't a soldier unless he can shoot, and military men have long and successfully competed on the range, individually and in civilian or military teams.

Now, as the interim Army is more settled and officers are becoming accustomed to their newest assignments, military teams are springing up on a large number of camps and posts, and military activity in the field of marksmanship contests promises to be greater than ever.

The same picture is true for the civilian side of the picture. Veterans, loath to set aside the skill in shooting attained in service, are either joining or forming marksmanship organizations. Although this year's match was the greatest in the history of the National Matches, shortage of housing facilities and difficulties in transportation, and costs have prevented it from being as great as it might have been. In the next few years, when such limitations are removed, the National Matches are expected to claim numbers as great as other national sports.

This year's match produced some remarkable scores despite the rust collected through lack of target practice during the busy war years. Arthur Cook, 18-year-old youth from the District of Columbia, won the junior small-bore rifle championship at Camp Perry with a 1,582 score. One of two 18-year-olds to make the Dewar international team (teams competing from the English speaking countries) this year, Cook beat out John Kelley of Fort Worth, Texas, who had a score of 1,580. The national small-bore title went to G. Wayne Moore of Washington, Pa., who used a borrowed rifle to post 3,184. The pistol championship title went to Harry Reeves, a Detroit policeman who attained the highest score ever posted at Camp Perry. He scored 2,588.

Such shooting as this places the famed marksmanship of our Daniel Boones and Dead-eye Dicks of our more romantic pioneer days in a rather amateurish light by contrast, and as the fever for the small arm spreads from our present 500,000 marksmen into the millions, our nation will have no fear about a shortage of teachers in expert marksmanship in the event of a future emergency.



The Current Military Situation



By Colonel Conrad H. Lanza, (Retired)

Introduction. The subjects discussed below are short military studies of areas in which the United States hold interest. The studies are intended to be factual as to what has occurred and impartial as to current conditions, and are based on information available to the author. They do not necessarily imply War Department indorsement of factual accuracy or opinion.

THE GENERAL SITUATION

As these lines are written a Conference of twenty-one Nations has been under way at Paris for nearly five weeks. The mission has been to investigate, report upon and submit recommendations regarding the drafts of five peace treaties presented by the Big Five Powers, covering the states of Hungary, Rumania, Bulgaria, Finland and Italy.

Labeled a Peace Conference, the major result to date has been not to make peace, but to accentuate the differences between Russia and the Western Powers consisting of the United States and the British Empire. These three Powers are the nucleus of the current strategical situation. The remaining two large Powers are France and China.

France would like to be a first-class Power, but has neither the military forces nor the industrial ability to become one for a long time. It has sought to act as a mediator between Russia and the Western Powers. One reason for this is that France strongly desires peace, for should war come between Russia and the Western Powers, France sees that it will become the main theater of operations, and will be crushed, and possibly destroyed in the huge conflict.

Russia would liked to have had France as an ally. Through its Fifth Column in France, composed of the strong and well disciplined Communist Party, there had been hopes that France would become Communist controlled. Had that happened, it would have been very difficult to avoid all of continental Europe being included in the Russian sphere of activities.

This danger has been averted. At the latest elections, the Communist Party in France was defeated and now seems to have passed its peak of maximum strength. By granting a large loan to France, the United States has established a strong economic bond with that country. In the same way Great Britain has been bound by a still larger loan. With this help, both the British and French will be able to strengthen their military power in cooperation with the

China is a Power by courtesy only. It is a helpless colossus, unable to maintain order in its own country and absolutely incapable of furnishing anything constructive to alleviate international complications.

The differences between the Western Powers and Russia are increasing. No single difference seems worth while having a war about, but together they constitute a serious danger. They form a basis for propaganda, much of which is exaggerated. For example, the Russian press and radio represent that it is wrong to state that disagreement exists between West and East. The real disagreement is alleged to be between democracy and reactionism. Russia, of course, is represented as the only free democracy devoted to the well-being of all peoples. The Western Powers are claimed to be controlled by forces of reaction devoted not to freedom but to preserving monopolistic capitalism.

From a military point of view the proposed peace treaties under discussion at Paris, have one important point. The military forces permitted to Italy now consist of 250,000 men and 350 planes. On the other hand, the other four small states, which are within the scope of Russian influence have together, authority to maintain armies of 281,000 men and 390 planes. The experiences of World War II indicated that the fighting quality of the troops from the four small states was considerably better than those from Italy. These figures do not include Yugoslavia, Albania, nor Poland which are considered as Allies. These three latter states are scheduled eventually to furnish Russia with about 50 divisions.

If all five treaties are approved in their present drafts, Russia will be the main beneficiary by virtue of accessions to its military forces.

RUSSIA

Interior Conditions. Advices from behind the Iron Curtain of secrecy are coming through. What is going on is not so secret as it used to be. The main reason is that in the occupied countries the strong Underground Parties are still hostile to Russia. They are in a good position to observe, note what is happening, and to pass along refugees from the vast interior of Russia.

From this source it has been ascertained that poverty and lack of supplies is increasing. With these disagreeable conditions dissatisfaction is growing. The same is the case in the Ukraine.

are reported as below average this year, while those in the Volga areas are just average. The Ukraine is in general a country of dry farming with normally deficient crops two years out of five. If a reserve is kept over from the good years, enough food may be available. However the war prevented any reserve from being accumulated, and the food situation is now acute.

It is not therefore surprising that, approximately 1,750,000 Russian troops are billeted in the countries of occupied Europe who are charged with feeding this large number of men. These figures do not include Russians belonging to the civil administration on which no reliable information is available.

The Russian food situation has been helped materially by the UNRRA, which has delivered great quantities of commissary supplies to White Russia, the Ukraine and Poland. For Russia to break with the United States which is furnishing such great assistance seems unreasonable. In fact, Russia has retreated from positions taken, every time the United States has been firm. However if the UNRRA ceases providing supplies after the current year, as has been recommended, that link with the United States will disappear.

Russian troops in occupied Europe are reported as being well equipped and trained. There is doubt as to the state of their morale as numerous desertions have occurred. In most cases the deserters alleged that their reason for wishing to leave Russia was the intolerable conditions at home. Refugees from the former Baltic states state that the troops now in that area are looking forward to war, and are hoping that it will come quickly, in order to afford them a chance to desert.

Numerous reports indicate that the current 5-Year Plan is not working according to schedule. There are serious deficiencies, some due to sabotage, and others to incompetence. Consequently the Russians are developing industries in occupied areas, particularly in Germany. In the latter country important military matériel is being manufactured. This has led to charges of violations of the Potsdam Agreement which provided for the prohibition of military industries within Germany. Russia claims that the prohibition was meant to apply only to matériel intended for Germany, and had nothing to do with matériel intended for the Allies.

Railroad transportation is deficient, and improving only slowly. In case of war, the few lines open would be exposed to attacks by the Underground Partisans. This is a serious factor should war come, and is another prime reason why war at this time is not desirable. To remedy that condition, special units have been organized, charged with consolidating Russian dominance within occupied states by liquidation of opponents. Methods used vary with locations, and it is expected to require at least several years.

RUSSIAN POLICY

The indications are that the Polit Bureau is split. A majority, recognizing the very unsatisfactory home conditions, believe that a war with the Western Powers should be avoided at this time at any cost. They have so far carried that idea into practice as witnessed by the Russian withdrawal from Manchuria, and from Iran under pressure.

Other members of the Polit Bureau believe that although

a major war is not desirable at this time many Russian objectives might be gained by proper activity. This element feels that never again would the United States send large armies to Europe. They are of the opinion that if enough "incidents" can be brought about, the United States may become disgusted with Europe and pull out. In that case, the Iron Curtain could be pushed westward to include all continental Europe with little or no active war. This appears to be the explanation to the constant stream of Russian objections to American and British measures. Not one has so far been pushed to a point of danger. Examples—the effort to overthrow the existing Spanish Government; the cession of Trieste to Yugoslavia; the contention over Russian bases within the Mediterranean.

It is impossible to foresee what the policy of Russia may be in the future. Either faction may at any time secure control—one seeking to avoid war (in control at present) and the other willing to take chances in order to increase Russian prestige and power throughout the world. Marshal Stalin is believed to be strongly in favor of avoiding a war. However, he is aging and is not in good health so his hand may not remain much longer at the helm of Russian leadership. The situation is certainly fraught with danger.

MILITARY CHANGES

On 18 July, Moscow announced that Marshal Georgi Zhukov had been relieved from duty in that city, and assigned as Commanding General at Odessa. The press has generally commented on this change as indicating that Marshal Zhukov has fallen into disfavor for some unknown reason and was transferred to an unimportant assignment.

This is by no means certain, and should not be presumed. Supreme Russian Headquarters for the entire Western Front has been reported as having recently opened in Odessa. This has not been confirmed, but there are no reports indicating another location. Marshal Zhukov's rank and former excellent war service is such that he might well be the next Russian C-in-C. In this case the change of station is important.

Marshal Zhukov has the reputation of being a thorough planner and a ruthless executive. This would be just the kind of general desired to prepare for new campaigns. Whether Supreme General Headquarters includes the Caucasian Theater of Operations is uncertain. In view of Russia's demands on Turkey (see action following under that heading) strategically the Caucasian and Istanbul Theater of Operations should be under one commander. It is best to assume that they are.

Latest information indicates that Russia has facing Istanbul, six divisions in Bulgaria, plus about twelve Bulgar divisions, which are partly facing Greece. In Rumania are some twenty Russian divisions, plus considerable corps and army troops. In Caucasia, facing Turkey and Iran are twelve to fourteen Russian divisions, excluding two Azerbaijan divisions, which counterbalance an equal number of Iranian divisions. Iran and Turkey are allied and bound to help one another in case of war. The troops in Rumania appear to be the SHQ Reserve, for use anywhere on the Western Front.

YUGOSLAVIA

Yugoslavia is attracting considerable attention. It has made a claim to Trieste, which it desires be acquired in the proposed peace treaty with Italy. Until World War I Trieste had not belonged either to Italy or Yugoslavia. It was part of the Austrian-Hungarian Empire and its principal commercial port. The naval port was to the south at Pola. Both these places are inhabited by Italians as the entire territory was given to Italy at the conclusion of World War I.

Thereafter Trieste was a useful port to the separated states of Austria and Hungary, and to South Germany. It was not particularly useful to either Italy or Yugoslavia, as each of those countries have other ports closer to the heart of their industries and resources. The mountainous interior of the Trieste peninsula is Slav occupied, and Yugoslavia demands the area on the basis that it is impracticable to divide it. Exactly the same argument would apply to Italy. Possession of the disputed territory would give to Yugoslavia a port which would be most useful to the Russian controlled state of Hungary. It might well become a Russian base. Holding the mountains back of Trieste would make it difficult in another war, for Italy to invade Yugoslavia but easy for the latter, or for Russia, to advance into Italy.

The north part of Italy contains nearly all of the Italian Communist Party who can be expected to act as a Russian Fifth Column. The Western Powers are not anxious to give Russia the advantage by furnishing a convenient frontier which may facilitate an invasion of Italy.

The Trieste frontier is guarded against Yugoslavia by a British Corps, which includes the U. S. 88th Infantry Division. On the opposite side of the frontier is the Yugoslav Fourth Army estimated as about six small divisions, Russian equipped and with Russian instructors. Patrol clashes occurred in July with minor casualties. In August, two American transport planes which had strayed slightly over the border line were downed by Yugoslav planes with resulting casualties.

Whether this outrage was Russian directed is unknown. It may not have been. Under energetic protests from our State Department, Yugoslavia has apologized and promised not to do it again.

Yugoslavia is ruled by Marshal Tito as dictator. His record resembles somewhat that of Mussolini. Like the latter he was born in humble surroundings, and became a blacksmith named Josep Broz (a very common name in Yugoslavia). His education was meager, but in later years like Mussolini he educated himself. During World War I, Broz served as an enlisted man in the Austrian-Hungarian armies and was captured by the enemy. This led to a three-year tour in Russia as a POW. Broz took a course of instruction in Communism, and acquired a Russian wife. He was returned to Yugoslavia as a Russian agent, and organized the Soviet International Terrorist Organization. Its designation correctly indicates the nature of this body. In Yugoslav language, the name is *Trajna Internationalna Teroristika Organizacija*, the initials of which spell TITO, whence the present title of the Yugoslav dictator came. He has always remained a Russian agent and regularly goes to Moscow for orders.

There is considerable opposition to Tito in his own country. The north part, which is predominantly Catholic, strongly resents the present government, which is mostly Serb and nominally belongs to the Orthodox faith. There is an active Underground movement. In case of war Tito could not count on undivided support of his people.

Besides the troops opposite Trieste, an additional six divisions are reported as opposite the Greek border. The former weapons and ammunition of these troops which are German and Italian have been sent in part into Greece, surreptitiously, with instructors, to arm illegal Communist bands. The Yugoslav army is being reequipped throughout with Russian matériel, and has Russian instructors.

TURKEY

THE ISTANBUL STRAITS

On 7 August, Russia delivered an official note to Turkey expressing dissatisfaction with the present status of the Istanbul Straits. Among other things it demanded that the garrisons be hereafter mixed Russian and Turk to assure that the Straits in the future should never be used by a Power hostile to Russia.

Turkey immediately consulted the Western Powers. She reported that she had only token quantities of war planes, armored forces and heavy artillery. Her lines of communication between the east and west frontiers were inferior, making it difficult to transfer troops from one frontier to another. Her northern border fronted along the Black Sea and was open to attack by amphibious expeditions. She felt that she could not singly refuse the demands from Moscow and thereby risk war.

Possession of the Istanbul Straits would admit Russia to enter the Mediterranean as a new naval Power. It might well lead to ultimate absorption of Turkey within the Soviet Union, which appears would be the end most desired by Russia, but which Turkey has refused to consider.

On 19 August the United States advised Russia by letter that she did not approve of the garrisons of the Istanbul Straits being changed from the Turk garrison now there. No danger to Russia was visible, and if there were, the proper procedure would be to report that situation to the United Nations Security Council. Great Britain sent a similar note. There the matter for the present rests. Turkey, of course, thus assured of support refused the Russian demands.

THE ARMENIAN FRONTIER

The Turk-Russian frontier facing the Caucasus extends through Armenia. There is an Armenian Soviet on the Russian side. A detached force of Armenians has for centuries been living in Lebanon to whom Russia has distributed able propaganda by press and radio inviting them to leave Lebanon, which is a mixed Christian and Moslem state, and return to Armenia as the home of their fathers and a glorious place to live in. This propaganda has stressed the probability of that part of Armenia now in Turkey being transferred to the Soviet Armenia. One of the citizens of the latter state is General Bagramian, who formerly commanded the Russian Army which captured Berlin, and who may now be the commander on the Armenian front.

as his name appears in the propaganda. Up to August, over 10,000 Lebanon Armenians had accepted the Russian invitation, and had departed on Russian ships for relocation and resettlement. The movement is scheduled to continue at the rate of 5,000 per month.

The mission of this movement seems to be to strengthen Russian manpower with a fairly desirable lot of immigrants, who are good workers.

THE NEAR EAST

The main center of trouble is Palestine. A serious dispute has arisen between the Jews and the British authorities. On 7 July, the Jewish radio appealed to all nations for volunteers, arms, munitions and ships to fight the British. This has been widely answered.

Through local organizations, detachments of Jews recruited in Europe from displaced persons, are being outfitted and are being provided transportation to Palestine by water. Funds for these purposes originate largely within the United States through appeals to sympathizers to contribute money for restoration of Palestine to the Jews.

Within Palestine, opposition to the British is shown by serious sabotage. It has involved demolition of railroads and bridges, attacks on isolated individuals or detachments, bombing of buildings, including a hotel in which there was an important British headquarters. To repress these acts of violence the British have three divisions (not ten as erroneously stated in the preceding number of this JOURNAL). There is no danger of the British hold being overthrown. The sabotage alone will not do it.

The Jews have an Underground Army plentifully supplied with infantry and automatic weapons. The total estimated strength is 62,000 but only a small number can be mobilized at any one time and place.

The Jewish opposition to the British is based on refusal to admit 100,000 Jews to Palestine as recommended by an Anglo-American Commission on 20 April last. Such admission would be in violation of the local immigration laws and is stoutly opposed by the Arabs who form a majority of the population of Palestine. Were it not for the British troops, the Arabs could wipe out the Jews. Consequently the action of the Jews in calling for war against Britain is not consistent.

The Arabs are organizing three divisions (called armies by them) having a strength of 13,000 men each. A part of one division had been equipped at the end of August. It is outfitted in American uniforms¹ and is under training. Palestine has adopted the Grand Mufti as its chief. That individual, Haj Amin el Husseini, escaped from France in May where he had been a special POW, and is now in Egypt where he has organized a CP which has already strong influence in the Arab World.

Commencing 13 August, the British transferred to Cyprus, all Jews illegally arriving off the Palestine coast. This movement is designated as Operation IGLOO.

The United States has on several occasions expressed its approval of Jewish immigration into Palestine. This has resulted in a growing evidence of Arab antagonism to America. For example, Syria has declined to allow Ameri-

can air lines airfields to be established within its territory.

Russian influence in the Near East is increasing. Current activities appear to be limited to the organization of 5th Columns. Headquarters are at Beyrouth, Lebanon. It publishes a daily paper devoted to Communism, and maintains agents throughout the area from Iraq to Egypt inclusive. Some of these agents are intelligence men who report on the facts, while others are administrators charged with directing and increasing Communist activities. However the British have a good counterintelligence service operating.

The American Legation in Beyrouth was bombed on 5 August. It was not ascertained whether this was caused by Arabs or Communists. The last French troops were withdrawn from Syria and Lebanon on 31 August, and the last of French administrative personnel, now closing their former extensive activities, are to be withdrawn by the end of the year. Both of these states are now independent Arab states.

THE FAR EAST CHINA

Russian Influence. Russia is not directly interfering in affairs of China. How much liaison there is between Chinese and Russian Communists is uncertain. The Russian position is temporarily that of holding a position of readiness.

On the east side of Manchuria, in north Korea, the Russian forces are estimated at 175,000 men. There are good lines of communication from this area westward into Manchuria. On the north and west sides of Manchuria, the Russian forces are estimated as exceeding 400,000 men. The two forces together surround Manchuria on three sides. It would be difficult to hold that area against a concentric Russian attack. A detached force, estimated as a corps of two divisions, holds Port Arthur and Dairen, which are supplied by water from north Korea and Vladivostok.

The Communist Position. The Communist controlled area includes Manchuria, less the railroad from Mukden to Harbin; Jehol, less the south section; Chahar and generally the area north of the Yellow River, less certain sections including Peiping and Tientsin. Between the Yellow and Yangtze Rivers are some Communist forces. South of the Yangtze only weak Communist forces exist.

The strength of the Communist forces is far inferior to that of the opposing Kuomintang Party. The strength of the Communists lies in the vast extent of the country, and local popular support. The country is so vast, that retreat can be maintained indefinitely. The Communists do not fight unless the advantage is distinctly on their side. Before a superior force they withdraw, and proceed to a new theater of operations.

The Communists have received either from Russia, or by Russian connivance, a large amount of Japanese weapons and ammunition. They now have some artillery, and some armor. The great weakness is the air service, which until recently was limited to but a few planes used for communication purposes. They now have some combat planes, but do not have trained pilots. This defect is

¹Obtained from surplus stocks disposed of in Egypt.

ed as in process of being remedied through suitable training schools.

The usual Russian propaganda as to the advantages of Communism, based upon alleged evils of capitalism, and opium as the opium of the people, does not work in China. There are no capitalists in Communist China, and the people have no religion. Consequently it makes no sense to a Chinese to declaim against these subjects. They just don't care. In their place a social program of improved education, sanitation, and similar projects have been instituted with some success. It is now necessary to adjust views of Russian and Chinese Communism before complete and satisfactory liaison is likely.

The Kuomintang Position. The Kuomintang is in control of that part of China proper outside the Communist area. It has only a tenuous hold on Tibet and Sinkiang. Its leadership is in the hands of Generalissimo Chiang Kai-shek and a small number of immediate supporters. They claim to represent democracy, but in 20 years there has never been an election. The members of the Kuomintang Party are estimated to be about 1/2 of 1% of the population.

The strength of the Kuomintang lies in American support. The United States has financed it, has equipped and trained its armies. It has recently turned over a number of small war vessels and undertaken to help establish a navy. An air force has been supplied with combat and transport planes, and as far as possible trained. A vast quantity of stores has been turned over to the Kuomintang on a credit basis. United States Marines guard the lines of communication from Peiping through Tientsin to Mukden in hostile territory.

With all these advantages the Kuomintang just exists in the face of Communist attacks. Its superiority over Communist armies is believed to be about 6 to 1, with the much better equipment. Its great advantage lies in its air force which goes where it pleases, and bombs at will, as the Communists have neither aircraft artillery nor combat planes. Kuomintang air bases are never attacked.

The weakness of the Kuomintang lies in its general inefficiency and corruption. To maintain itself it severely controls public speech, the press and the radio.

On 19 July, a new American Ambassador reported for duty to aid General George C. Marshall who remains as special ambassador. This is the missionary Dr. John L. Hart, long a resident and former president of a Chinese university in Peiping. He is well acquainted with China and its troubles. After surveying the situation the two

American ambassadors issued a joint communiqué on 10 August. This stated:

1. the Chinese people are practically unanimous in desiring a cessation of the civil war.
2. the economic situation demands peace if a disastrous collapse is to be avoided.
3. fighting is daily becoming more widespread, threatens to engulf the country, and to pass beyond the control of those responsible.

In conclusion, the communiqué stated that it appeared impossible to reach a settlement of the issues which would permit a complete cessation of hostilities in China.

The situation as of 1 September. The war is continuing. No decisive battles are being fought. Contending armies advance and retire without material change in the military situation. As the troops move back and forth, they raid the country, kill people and cause more or less destruction. No conclusion is in sight.

THE PHILIPPINES

On 4 July, the American flag was hauled down at Manila, and the Philippines were declared independent under native rule.

The greatest problem is the Hukbalahap insurrection. The Hukbalahap main strength is reported to be about 10,000 men armed with infantry and automatic weapons, and located in central Luzon. They are divided into companies of some fifty men who conduct guerrilla warfare. They live off the country, collect taxes, enforce their judgments in spite of local laws, and conscript recruits. They have the country so far terrorized that there has been a marked decline in the rice crop, which even in normal times is never sufficient for the country's needs. Minor insurrectionary forces have been identified in South Luzon and in Mindanao.

A Filipino Division, officered partly by Americans is being formed, with a view to being sent to Japan for garrison duty.

The former Japanese puppet President of the Philippines has been returned to Manila for trial as a war criminal. His defense is that he didn't like the United States, but that he was justified in aiding the Japanese cause regardless of that admission, as the best policy for the country as a whole. He has an important following and his trial may lead to complications.



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The JOURNAL prints articles on subjects of professional and general interest to personnel 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.

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

News and Comment

About the Cover

The cover for this issue shows the shoulder patch posed for the 14th AA Command.

Unfortunately the war ended before approval could be obtained from the proper War Department Agency to make this patch official.

It is carried on the cover since the history of the 14th AA Command appears in this issue of the JOURNAL.

Too Much Imagination

The following letter was received by the JOURNAL from a foremost authority in the field of guided missiles in response to a request to review an article which we were contemplating publishing.

We are reproducing it here because it reflects the opinion of technical experts regarding the variety of proposed articles on guided missiles which are now being written by enthusiastic laymen.

* * *

To The Editor:

I have read the article which you asked me to read and offer suggestions for toning down some of the extreme statements. This type of article is particularly offensive to technical groups working on guided missiles because it does not distinguish between actual accomplishments and mere casts of future accomplishments; it promises much more than the technical man sees any reasonable possibility of accomplishing in the near future, and it gives an entirely erroneous picture of the present state of guided missile development to our military leaders and to the public. Fortunately it is not possible to give a detailed and specific evaluation within the framework of the security regulations.

I am afraid I cannot be of much specific help. My statements are carefully worded but give wrong impressions. For example, the heading at the top of page 1 reads "A barrage of huge missiles, sensitive to heat, light, and magnetism could be fired from across the ocean and wipe out our cities, factories and big ships." Note that the verb is *could* be fired. Technical men who are familiar with the guidance problem are not certain that this performance will ever be attained; it is certainly a long way into the future. The development of missiles which can be fired across the ocean is much nearer; in fact we have them in the form of ordinary aircraft propelled by conventional power plants. To hit targets accurately is another matter. In this question we are still in the early stages of research to determine what performance is possible.

I am sorry that I cannot be of more specific assistance to you.

Sincerely yours,

HUGH L. DRYDEN,
Associate Director,
National Bureau of Standards,
U. S. Department of Commerce

About Our Authors

Colonel Carl T. Tischbein who is now assigned to the Supply Control Branch of the Services of Supply and Procurement, War Department General Staff was Chief of the 14th AA Command during the war. (Page 2.)

Lieutenant Colonel Leonard M. Orman needs no introduction as this is the fifth consecutive radar article he has written for the JOURNAL. As previously stated Lieutenant Colonel Orman is now an instructor in the Department of Electronics and Electricity at the United States Military Academy. (Page 8.)

Dr. R. W. Porter is one of the foremost authorities on aeronautical engineering. At present he is affiliated with the General Electric Company in the Aeronautical and Marine Engineering Division where he is working on "Project Hermes." (Page 13.)

Captain Robert A. Porter has been associated with the Research and Development Division of the Air Weather Service since early in 1943. In 1945 he took a six months' trip to Europe, Italy, India, China, the Philippines, New Guinea, Guam and Hawaii to survey the uses of meteorological equipment and data as well as to offer any assistance in the development and adoption of new War Department procedures. (Page 16.)

Dr. Ancel St. John is an engineer in the Rocket Development Division, Research and Development Service, Office Chief of Ordnance. (Page 20.)

Lieutenant Colonel William R. Kintner is assigned to the 22nd Section, War Department. He is now attending a two years' course in Political Science and International Relations at Georgetown University. (Page 21.)

Major General Elwood R. Quesada was Commanding General of IX TAC during the entire European Campaign. He now commands the Tactical Air Command at Langley Field, Virginia. (Page 28.)

Mr. Edwin E. Bomar was a Lieutenant Colonel in the War Department Public Relations Branch. He is now the Associated Press Representative assigned to the War Department. (Page 31.)

Lieutenant Lawrence Sanders is making his first original contribution to the JOURNAL. However in the July-August issue, the JOURNAL reprinted his story "Man for Man" from the *Leatherneck*. (Page 41.)

Leonard J. Grassman is an Informational Specialist in the Press Section War Department Public Relations Branch. (Page 45.)

Colonel Conrad H. Lanza is another one of our regular contributors. For four years he was head of the G-2 Section at Leavenworth. He has also been decorated by the French Government for his work in the field of history. (Page 47.)

* * *

this teamwork between the various branches of the Army Ground Forces in our postwar organization.

One solution advanced that has received much favorable comment is the one whereby all officers would be commissioned in the Army rather than in any one branch of the service.

It is hoped that under this system several highly desirable objectives, such as the following, would be achieved:

a. A better general understanding of tactical and technical problems of the related arms would ensue.

b. The contingencies of duplication of effort would diminish.

c. More universal standardization of matériel and methods would result.

d. Greater economy and efficiency in the utilization of officer personnel would be possible.

e. Latent capabilities of officer personnel would be discovered and developed.

f. All officers would have equal opportunities to become qualified for the command of an infantry or armored division since there would be no discrimination against officers whose initial assignment happened to have been a more specialized activity.

There are many ramifications of this solution, however, which must be given careful consideration. Particularly important is the effect on the members of the National Guard, Officers' Reserve Corps and Reserve Officers' Training Corps.

Many reserve officers feel that their training prior to the war in the ROTC and the ORC was not sufficiently specialized to enable them to effectively assist in any one particular phase of the training of inductees. This brings up the question as to whether officers of the civilian components should retain their present integrity under this proposal.

Vitally affected also in the proposal are the various service journals and associations.

Under consideration is the establishment of one Army Ground Forces weekly magazine to replace all the present monthly and bi-monthly service journals. One difficulty involved editorially speaking in accomplishing this consolidation pertains to an editorial policy. It is comparatively easy to outline and adhere to a policy where only one branch is concerned but when all arms are involved, bias and prejudice must be reduced to an irreducible minimum.

Other problems pertaining to finances and subscribers must also be solved to the mutual satisfaction of all concerned and to the best interests of the military service.

The future of the branch associations presents a little more difficult problem possessed of many contingencies.

It is believed that any proposal seriously affecting the organization of the associations and the disposition of their resources will be referred to the members of the associations concerned for consideration.

All the problems discussed here are capable of solution and present no real obstacle to the attainment of the desired goal of unification and economy providing the welfare of the members of the associations remains of paramount importance in all planning and future operations.

Proposed Changes Affecting the Journal

The importance and necessity for well knit coordination between the ground arms was so very effectively emphasized during the war that serious consideration is now being given as to the best methods for retaining and improving

Press Misquotes General Larkin

To The Editor:

When one is misquoted in the press, there is usually little to be gained by writing letters of denial or correction.

However, when a misquotation offends a large and patriotic group which served this country and the Army well during trying times, I feel it a duty to set the matter straight.

Recently, a reporter for the NEA Service, Ind., represented me as deprecating the abilities of Reserve Officers who are charged with Army mess management during the war.

This is a downright misquotation and absolutely contrary to everything I have ever said or felt in regard to Reserve Officers. I have always had the highest regard and respect for Reserve Officers who served their country in war and peace. Permit me to offer one concrete example:

Following the invasion of Southern France in 1944 I was placed in command of the Southern Line of Communications in support of the Sixth Group of Armies, consisting of the Seventh United States Army and the First French Army. This represented a large and very important mission. From my deputy chief of staff on down through every member of my general staff there was only one officer of the Regular Army. In fact, when my chief of staff was called away prior to consolidation of the Southern Line of Communications with the main European Communications Zone, I replaced him with a Reserve Officer. I considered my SOLOC staff the finest that I had from the invasion of North Africa in 1942 through the Tunisian, Sicilian and Italian campaigns, the liberation of France and the collapse of Germany. At no time was I more effectively assisted in accomplishing my mission.

I am deeply disturbed over the vicious and unwarranted attempt by an irresponsible writer blindly to alienate through misquotation inseparable elements of the Service.

Sincerely,

T. B. LARKIN,
Major General,

The Quartermaster General.

AAA School Troops Redesignated

Redesignation of the units of the Antiaircraft Artillery School at Fort Bliss formerly known as "School Troops" was announced recently upon direction from the Commanding General of the Replacement and School Command at Fort Bragg, N. C. The authority assigns the units to the Replacement and School Command and attaches them to the Antiaircraft Artillery School.

Under the new organization, the units will be headed by the 5th Antiaircraft Artillery Group. Attached to the Group will be the 60th AAA Automatic Weapons Battalion, the 68th AAA Gun Battalion, 443d AAA Automatic Weapons Battery, 231st Searchlight Battery, 34th AAA Operations Detachment, 281st Ordnance Ballistic and Technical Service Team and 3639th Quartermaster Truck Company.

Other units attached to the 5th Antiaircraft Artillery Group are: 241st, 335th and 336th Signal Radar Maintenance Units and the 62d Army Ground Force Band.

Organized Reserve Corps

Authorization for the activation of the following ORC units has been issued and activation is already under way:

San Francisco, California—

331st CA Battery, Gun HD.

Billings, Montana—

Hq & Hq Battery, 323d AA AW Bn (Mobile)

Portland, Oregon—

332d CA Battery, Gun HD.

Jacksonville, Florida—

651st Airborne AA AW Battalion (Mobile) as part of the 108th Airborne Division.

The following list shows the War Department assignment of senior state instructors to the Organized Reserve Corps according to Armies:

FIRST ARMY

Colonel Preston Steele, CAC, Wilmington, Del.
Colonel John R. Culleton, FA, Montpelier, Vt.
Colonel Willis Mc. Chapin, CAC, Ft. Preble, Me.
Colonel Arthur L. Lavery, CAC, Manchester, N. H.
Colonel Paul N. Starlings, Inf., Providence, R. I.
Colonel James T. Loomer, FA, Boston, Mass.
Colonel Ira W. Black, Inf., Hartford, Conn.
Colonel Pleas B. Rogers, Inf., New York, N. Y.

SECOND ARMY

Colonel Alfred S. Knight, Inf., Richmond, Va.
Colonel Beverly A. Shipp, Inf., Charleston, W. Va.
Colonel J. D. Cunningham, Washington, D. C.
Colonel John H. Rodman, Inf., Louisville, Ky.

SEVENTH ARMY (THIRD ARMY AREA)

Colonel James C. Welch, Inf., Columbia, S. C.
Colonel Hiram W. Parkington, FA, Jacksonville, Fla.
Colonel Oscar S. Smith, Inf., Birmingham, Ala.
Colonel Kenneth S. Whitemore, Inf., Jackson, Miss.
Colonel Jay T. Wream, CAC, Nashville, Tenn.
Colonel Norman McNeil, Inf., Raleigh, N. C.

FOURTH ARMY

Colonel William P. Hayes, Inf., Austin, Texas.
Colonel Hurly Fuller, Inf., Denver, Colo.

FIFTH ARMY

Colonel Alexander H. Cummings, Inf., Detroit, Mich.
Colonel Wilson T. Bals, Cav., Milwaukee, Wis.
Colonel Paul J. Mitchell, Inf., Denver, Colo.
Colonel Irwin L. Lummis, Inf., Springfield, Mo.
Colonel Edwin A. Smith, Inf., Chicago, Ill.

SIXTH ARMY

Colonel Wade D. Killen, Inf., Salt Lake City, Utah.
Colonel John W. Thompson, Inf., Boise, Idaho.
Colonel William H. Sweet, CAC, Portland, Oregon.
Colonel Wendell Blanchard, Cav., Phoenix, Ariz.
Colonel Robert C. Yates, FA, Reno, Nevada.
Colonel Robert R. Hilsman, Inf., San Francisco, Calif.
Colonel George B. McReynolds, FA, Helena, Mont.

National Guard

Since publication of the National Guard program in the issue of the JOURNAL, all states with the exception of New York have now made acceptance of the formal allotments of units offered them.

This brings the National Guard troop basis up to 4,768 officers, 274 warrant officers and 70,341 enlisted men in aircraft units and 646 officers, 74 warrant officers and 83 enlisted men in seacoast units.

Under present allotments, the total authorized National Guard troop strength will reach 676,674.

In addition to the list of senior instructors previously published in the JOURNAL, the following appointments have been made:

THIRD ARMY

Colonel Rufus S. Ramey, Cavalry, Tennessee;
Colonel Thomas G. Oliphant, Field Artillery,
Mississippi, and
Colonel Clifford J. Mathews, Infantry, Georgia.

FOURTH ARMY

Colonel Claude M. Thiele, Coast Artillery Corps,
New Mexico;
Colonel David W. Craig, Field Artillery, Oklahoma, and
Colonel D. M. Scott, Infantry, Arkansas.

FIFTH ARMY

Colonel C. I. McClure, Field Artillery, Illinois;
Colonel Dennis E. McCuniff, Infantry, Colorado;
Colonel Robert L. Taylor, Field Artillery, Iowa, and
Colonel Edwin A. Smith, Infantry, Wyoming.

SIXTH ARMY

Colonel James W. Barnett, Cavalry, Idaho;
Colonel Christiancy Pickett, Field Artillery, Utah, and
Colonel John T. Zellars, Infantry, Arizona.

HONOLULU, T. H.

Colonel Cicel D. Porter, Infantry.

PUERTO RICO

Colonel Edward L. Strohbahn, Field Artillery.

The following officers have tentatively been assigned as aircraft instructors:

Lieutenant Colonel Pennock H. Wollaston, AA Bn,
California;
Major James E. McElroy, AA Bn, Connecticut;
Colonel Arthur Wilson, AA Brig, Connecticut;
Major Joseph E. Treadway, AA Bn, Massachusetts;
Lieutenant Colonel J. Urban, AA Bn, New Hampshire,
and
Colonel Dean Luce, AA Brig, Washington.

Duty Time Sports Program

Taking a cue from the growing national interest in competitive athletics, currently emphasized in new baseball attendance records and the frequent appearance of SRO crowds for the coming football season, equally in evidence in

Army camps throughout the United States, the Army Ground Forces were today planning an "on duty" sports program heretofore unparalleled in military training.

Aware that four out of every ten men called by selective service during World War II were rejected as physically unfit, the Ground Forces, in its new plan, will provide opportunity for every GI in the nation to participate in a variety of sports, at the level of individual ability, under trained, capable leaders during regular drill hours.

Present training directives call for six hours of each training week to be spent in organized competitive athletics, in contrast to the 1-3 hour periods permitted in leading universities and colleges, thus giving the Ground Force soldier the best intramural sports activity in the country.

To develop the athletic directors and instructors needed to carry out the coaching and organization phase of the program, the Army Ground Forces has taken over the Quartermaster Physical Training and Athletic Directors' School at Camp Lee, Virginia.

Headed by Lieutenant Colonel H. S. "Sam" Francis, former all-American fullback and track star at the University of Nebraska, 1936 Olympic Track Standout, and a veteran of four years with the Chicago Bears and Brooklyn Dodgers pro grid teams, the school will handle a class of 60 officers and 120 enlisted men at each course.

With no rank discrimination recognized, all students will be thoroughly drilled in the coaching of over twenty popular sports ranging from archery to wrestling, during the eight weeks' course.

Students will also receive an effective background in the organization of athletic tournaments and officiating.

Classroom work will consist of instruction in fundamentals and techniques of various sports highlighted by active student participation with emphasis on organization and team play.

The majority of the instruction time will be utilized to teach basketball, touch football, swimming, boxing, baseball and softball, and track but adequate attention will be paid to archery, badminton, bag punching, cross country, golf, horseshoes, soccer, speedball, table tennis, tumbling, volleyball and weight lifting.

Upon graduation, students will be qualified as athletic directors in their respective units, to administer the Ground Forces program.

Alaska Detachment Activated*

An Alaskan Detachment has been activated at Fort Bliss and has begun training for its mission of manning a permanent garrison in Alaska. Training is under the command of Lieutenant Colonel C. O. Mannes, Jr. The Detachment is composed of the 529th and the 639th AAA AW Battalions and will function as part of the 267th AAA Group commanded by Colonel Hubert McMorrow.

Major F. L. Wellenreiter is Commanding Officer of the 639th and Major Donald K. Stevens of the 529th.

Cadre personnel consisting of 151 men for each battalion arrived at Bliss 3 September and training started very shortly thereafter.

*The Fort Bliss News.

New Atomic Research Center

Major General L. R. Groves, Commanding General of the Manhattan Project, today announced the selection of Camp Upton, New York, as the site of the proposed new northeast National Laboratory, one of three research centers for work in nuclear physics.

The Long Island camp site had been declared surplus by the War Department but was withdrawn from surplus lists and transferred to the Manhattan Project to be the permanent site of an atomic research center.

Nine of the major educational institutions of the northeastern part of the United States have formed Associated Universities, Inc., incorporated under the laws of New York, to operate the laboratory under contract with the government.

Members of Associated Universities, Inc., are:

- Columbia University
- Cornell University
- Harvard University
- Johns Hopkins University
- Massachusetts Institute of Technology
- University of Pennsylvania
- Princeton University
- University of Rochester
- Yale University

Policies under which the research center will be operated will allow selected scientists and graduate students from any school to make use of the facilities of the laboratory for approved research projects.

Purpose of the laboratory is to study fundamental problems of nuclear science and to carry out investigations on the applications of atomic energy.

Facilities to cost more than \$5,000,000 initially will be available for both fundamental and applied science as well as studies of the application of nuclear knowledge to science and engineering.

Financial support will come from the Government through reimbursement of the contract-operator, Associated Universities, Inc., for all costs. The Manhattan Project, the War Department agency which produced the bomb and which has been responsible for the nation's atomic energy facilities, has allotted funds for this work.

General Groves said the entire program as an organic part of the Manhattan Project would be transferred to the new atomic energy authority whenever the new authority is established.

The new national laboratory is one of several contemplated laboratories throughout the United States. The Argonne National Laboratory at Chicago is already in operation under a similar management contract. A third is planned for the far west. Also part of the facilities of the Clinton Engineer Laboratory at Oak Ridge, Tennessee, will be available for research projects in connection with the coordinated national program.

* * *

The Army Air Forces is monitoring a cooperative effort with the Manhattan Engineering District and the U. S. aircraft engine industry to solve the problem of using atomic energy for the propulsion of aircraft.

First "GAPA" Defense Projectile Fired

A heretofore secret guided missile, designed as a potential defense against possible attack by high-speed, high altitude enemy aircraft, has been fired for the first time. It was disclosed today by the Army Air Forces.

Known as "GAPA" (Ground-to-air Pilotless Aircraft), these prototype projectiles are pencil-slim, 10-foot-long guided missiles which, when perfected, are expected to be capable of seeking out and destroying possible enemy weapons before they can reach their targets. They are manufactured by the Boeing Aircraft Company, which has conducted intensive research into the problems of supersonic flight for the last 15 months.

Sixty "GAPA" projectiles are to be fired in Utah this year in the first phase of an extended program scheduled to last several years. First test models of the new missiles are propelled by standard Aerojet rocket units. A booster power unit is attached to the tail of the projectile, accelerating the missile to very high speed within a few seconds.

To carry out the test program, the Boeing Aircraft Company has a 30-man staff operating out of Wendover Field, Utah. Head of the Boeing "GAPA" unit is Richard H. Nelson, who served as project coordinator on Boeing's B-29 Flying Fortress construction during the war. Engineering staffs in the Boeing plant at Seattle are working on further details of the "GAPA" program.

"Once problems of control and stability are solved," was pointed out by W. E. Beall, Boeing engineering and sales vice-president, "the principles involved in this new weapon may have far-reaching effects on the design of future passenger or cargo-carrying aircraft."

* * *

New Blue Uniforms

Restoration of peacetime authorization of blue uniforms for winter, off-post wear for personnel of the United States Army is planned for the future. Authorization for the blue uniform, hitherto for officer personnel only, is to be extended through the ranks of the Army from private to general. This project is planned to provide the United States Army with an army uniformly attired—one to be proud of in parade and to insure individual soldiers a smart appearance during off-duty periods.

However, this plan will not be executed until sometime as the present shortages are erased from the market and when Army procurement of the necessary materials will not come into conflict with civilian needs nor in competition with civilian purchasing. After decision has been reached as to shades of blue and such details as piping and trim, it is planned at some future date the new blues will be authorized for wear by all male military personnel.

The new uniforms will be issued to enlisted men. Officers will be required to purchase their uniforms.

The Quartermaster Corps said the present OD Shade uniform will be retained for garrison wear at camps, posts and stations. However, this uniform is being improved in appearance and tailoring. The jacket, field, wool, has been given a smarter appearance by shortening to correspond with higher-waisted trousers. The new wool shirt will have shoulder straps for enlisted men as well as officers.

Belgium Fourragere 1940 for Antwerp X

Belgium Government has awarded the "Fourragere" to units of the Antwerp X Antiaircraft Artillery and for the extraordinary defense established by these against V-1 bomb attacks during the critical periods October 1944-15 December 1944 and 16 December-30 March 1945.

Personnel who served with any of the units listed in the for a major part of either of the two periods may for authorization to wear the Fourragere by submitting a letter through channels setting forth the facts and stating that the appropriate entry be authorized in record of the individual concerned. Letters should be addressed Awards and Decorations Branch, Adjutant General, Department, Washington 25, D. C.

Translation of the original citation follows:

Journal of the National Defense.

of the 17th of June 1946.

LES, Prince of Belgium, Regent of the Kingdom.

proposition of the Minister of the National Defense.

decided and decide:

Article 1.—"The Antwerp X Antiaircraft Artillery Command of the U. S. Army and attached units including:

Headquarters Battery, 50th AAA Brigade

Headquarters Battery, 56th AAA Brigade

Headquarters Battery, 17th AAA Group

Headquarters Battery, 30th AAA Group

Headquarters Battery, 45th AAA Group

25th AAA Gun Battalion (Mobile)

26th AAA Gun Battalion (Mobile)

36th AAA Gun Battalion (Mobile)

41st AAA Gun Battalion (Semimobile)

44th AAA Gun Battalion (Mobile)

45th AAA Gun Battalion (Semimobile)

46th AAA Gun Battalion (Semimobile)

47th AAA Gun Battalion (Semimobile)

48th AAA Gun Battalion (Semimobile)

49th AAA Automatic Weapons Battalion

49th AAA Gun Battalion (Semimobile)

50th AAA Automatic Weapons Battalion

55th AAA Gun Battalion (Semimobile)

50th AAA Operations Detachment

51st AAA Gun Battalion (Semimobile)

awarded twice to the Order of the Day of the Belgian Army

in contribution of the "Fourragere 1940" for:

Citation: "The Units of the Antwerp X Command" played a heroic part in the organization and maintenance of the antiaircraft defense, with a view of opening this port on 28 Nov 1944 by making fail the supreme attack of the bombs thrown by the Germans located in the Trier area as well as of the area situated at the northeast of the Trier. The material destruction and the loss in lives, as well as the Belgium Civilians as for the Allied troops were at the minimum, owing to the unceasing efforts of the personnel belonging to these units.

Working day and night, this military personnel performed their duty in a remarkable way. It had for result the liberation of the harbor of Antwerp and the forwarding of ammunitions to 5 Allied Armies. The heroic

behavior of these units honors very much the "Antwerp X Command and the Allied Forces."

2d Citation:—"The Units of the Antwerp X Command" at the moment of the supreme offensive thrown by the Wehrmacht on the 16th of Dec 1944, established an anti-aircraft defense system, without precedent, against the attempts of destruction of the harbor of Antwerp.

The results of this heroic action, the success of which was of vital importance to the allied cause in general, and for the maintenance of the liberation of Belgium in particular proved so fortunate that the utilization of the harbor was never interrupted. The action of the officers and the men joined to their unceasing efforts and their technical ability closed the campaign with a result of fire without precedent, of 97 per cent.

* * *

Article 5: The Minister of the National Defense is in charge of the execution of the present decree.

Given at Bruxelles,

on the 17th of June 1946.

s/CHARLES

s/De FRAITEUR

* * *

Unit Citation to 166th

The 166th AAA Gun Battalion recently was awarded the Presidential unit citation by Lt. Gen. Robert L. Eichelberger, commander of the Eighth Army. The unit, from 15 Dec. 1944 to 6 Jan. 1945, provided the defense of the airfields and beachhead installations on Mindoro, and according to the citation, "on no occasion was a hostile aircraft able to penetrate the defended area to cause any serious damage."

* * *

Additional German and Austrian Scientists

Continuation of the joint State-War-Navy program for utilizing the scientific knowledge and skills of selected German and Austrian specialists in science and technology to further American military research and development has been announced by the State, War and Navy Departments.

It is planned within the next several months to bring to the United States additional volunteer Austro-German specialists to join the more than 200 brought over since the end of the war in Europe.

These men, who will be thoroughly screened on the basis of ability and potential contribution to furthering America's military and industrial development necessary to the defense and prosperity of the nation will at first concentrate their efforts exclusively on Army-Navy projects.

It is emphasized that those found to be active Nazis, war criminals or suspected war criminals are arbitrarily eliminated from the entire program of utilizing Austro-German scientific knowledge and skill through a thorough screening first in Europe and again in the United States, and that all specialists brought to the United States are volunteers.

Upon completion of their work for the Army and the Navy they will be made available to American industry through auspices of the Department of Commerce after a further thorough screening and investigation to determine their eligibility for status under immigration laws.

CAC ROTC Units and Instructors

University of Alabama, University, Alabama—Colonel S. B. Mason, Infantry, P.M.S. & T.; Major Zebulon L. Strickland, Instr., CAC; Capt. James B. King, Instr., CAC.

University of California, Berkeley, California—Colonel William L. Ritter, Inf., P.M.S. & T.; Major Albert O. Chittenden, CAC, Instr.; Capt. Ferdinand H. Flick, CAC, Instr.; Capt. Charles A. Buck, CAC, Instr.

University of California, Los Angeles, California—Colonel John L. Kee, Infantry, P.M.S. & T.

University of Cincinnati, Cincinnati, Ohio—Colonel Edward Barber, CAC, P.M.S. & T.; Lt. Col. Lee J. Davis, CAC, Instr.; 1st Lt. Emil M. Ulanowicz, CAC, Instr.

The Citadel, Charleston, South Carolina—Col. Charles H. Barnwell, Jr., Inf., P.M.S. & T.; Major Alexander H. Lucas, CAC, Instr.; Capt. William S. Wall, CAC, Instr.

University of Delaware, Newark, Delaware—Colonel R. T. Pendleton, CAC, P.M.S. & T.; Colonel Layton A. Zimmer, CAC, Instr.; Capt. Eldee R. Stark, CAC, Instr.

Fordham University, Fordham, New York—Colonel Norman E. Hartman, Inf., P.M.S. & T.; Major Edward D. Rice, CAC, Instr.; Major William D. Ward, CAC, Instr.

Georgia School of Technology, Atlanta, Georgia—Colonel William Q. Jeffords, CAC, P.M.S. & T.; Major Edward S. Mathes, CAC, Instr.

Hampton Institute, Hampton, Virginia—Colonel R. H. Grinder, CAC, P.M.S. & T.; Lt. Col. Harry B. Ruebel, CAC, Instr.; Major Clarence M. Davenport, CAC, Instr.

University of Kansas, Lawrence, Kansas—Colonel John Alfrey, CAC, P.M.S. & T.

Kansas State University, Manhattan, Kansas—Colonel A. E. Hutchinson, Infantry, P.M.S. & T.; Major Delos C. Taylor, CAC, Instr.; Capt. Sidney L. Cone, CAC, Instr.

University of Maine, Orono, Maine—Colonel F. R. Fuller, Infantry, P.M.S. & T.; Lt. Col. Chester E. Glassen, CAC, Instr.

Massachusetts Institute of Technology, Cambridge, Massachusetts—Colonel Harold R. Jackson, CAC, P.M.S. & T.; Lt. Col. Thomas M. Lerner, CAC, Instr.; Major John C. Bolton, CAC, Instr.

University of Minnesota, Minneapolis, Minnesota—Colonel R. A. Ericson, CAC, P.M.S. & T.; Major Lemuel B. Redd, CAC, Instr.

Mississippi State College, State College, Mississippi—Colonel George N. Randolph, Infantry, P.M.S. & T.; Colonel Ralph W. Russell, CAC, Instr.; Capt. Richard F. Cox, CAC, Instr.

University of New Hampshire, Durham, New Hampshire—Colonel James C. Bates, CAC, P.M.S. & T.; Major James A. Sullivan, CAC, Instr.

University of Pittsburgh, Pittsburgh, Pennsylvania—Colonel John I. Hincke, CAC, P.M.S. & T.; Lt. Col. Eugene Smith, CAC, Instr.; Capt. Cary G. Dunn, CAC, Instr.

University of San Francisco, San Francisco, California—Colonel LaRhett L. Stuart, CAC, P.M.S. & T.; Major Veto Blekaitis, CAC, Instr.

Texas A and M College, College Station, Texas—Colonel Guy S. Meloy, Jr., Infantry, P.M.S. & T.; Major Clarence J. Hutson, CAC, Instr.

Utah State Agricultural College, Logan, Utah—Colonel

E. W. Timberlake, CAC, P.M.S. & T.; Capt. Ha Higgins, CAC, Instr.

Virginia Polytechnic Institute, Blacksburg, Va.—Colonel Thomas W. Munford, CAC, P.M.S. & T.; James H. McCann, Jr., CAC, Instr.

Washington University, St. Louis, Missouri—Colonel Paul Cole, CAC, P.M.S. & T.; Major James N. O'Connell, CAC, Instr.; Capt. Edwin Kalbfleish, Jr., CAC, Instr.

University of Washington, Seattle, Washington—Colonel William H. Jones, Jr., Inf., P.M.S. & T.; Lt. Col. B. Joseph, CAC, Instr.

The University of Illinois and Michigan State will not reactivate CAC units until the fall of 1947.

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AAF "Drones" to be Used in Antiaircraft Tests

A section of Texas sky will be darkened by flak batteries in a formation of Boeing B-17 Flying Fortresses through the barrage in an attempt to escape the anti-aircraft fire and arrive over its "target" in joint Army Air and Army Ground Forces tests to be held shortly.

The AAF B-17s will be pilotless "drones," and they will be fired by troops of the Coast Artillery Corps. The tests will be held at Fort Bliss, Texas, under the guidance of the Antiaircraft Artillery School. The tests will be beginning the first week of December. Personnel of the AAF Experimental Guided Missile Group, at Eglin Field, Florida has begun flight training with the "drones" at Fort Bliss, experimenting with new guiding equipment to be used in the tests.

Members of this newly formed AAF group had considerable experience in flying crewless aircraft during the tests and later in the long-distance, remote-control flight of two B-17 "drones" from Hawaii to California.

The forthcoming flights will be the first flight of a large number of crewless bombers in simulated combat conditions. At least 10 "drones" will be used.

The obsolete B-17s will not be used as mere targets but will offer gunners practice in firing on actual aircraft. The tests will afford both antiaircraft technicians and AAF personnel an opportunity to determine the effect of newest type flak on large bomber formations and to increase the efficiency of antiaircraft fire control and direction equipment.

Newer bombers are capable of drastic evasive maneuvers (weaving from one side to another and rapidly changing altitude) and require only a short bomb run. Coast Artillery fire control equipment has been designed to compensate for sharp turns by aircraft, but no conclusive tests were possible during hostilities.

Antiaircraft Artillery technicians will be enabled to analyze what happens in actual firing conditions against a large formation of attacking aircraft, using radar to pick up barrage bursts against flights staggered at different altitudes and coming into the target area from several directions.

Each burst of flak will be permanently recorded by a battery of cameras photographing the tests from various angles, highlighting a prolonged flak analysis program on the part of the Ground Forces. These films will be studied by antiaircraft technicians to determine the types of shells and fuses most effective against armored aircraft.

Division Associations

More than forty Army divisions of World War II now have active division associations and societies, according to Jacob L. Devers, Commanding General of Army Ground Forces. A few of these, such as the 1st, 2d and 3d Army Division societies, date back to World War I, but many have been organized within the past year, General Devers stated.

A section of Army Ground Forces headquarters has been organized to assist former members of the eighty-nine Infantry, Armored, Airborne and Cavalry divisions which served during World War II in getting together to form such associations and an Army Ground Forces radio program, "Division Diary," heard on the Mutual Broadcasting System, is broadcast to a different division each week.

"We heartily welcome additions to this list of division associations," General Devers stated. "Many divisions, inactivated at the close of the war, will be reconstituted as National Guard and Organized Reserve units. Their division associations, functioning as 'alumni' bodies, perform a patriotic role in keeping alive their proud traditions. The division societies of Regular Army and other divisions still active in occupation duties have taken the lead in sponsoring morale-building liaison with their former comrades."

Courses at Civilian Schools

More than three hundred highly qualified Army officers will pursue postgraduate work in specialized fields at civilian educational institutions throughout the nation this year, the War Department announced today.

Arrangements have been made with the schools to accept Army specialists as a part of a far-reaching Army educational program. Because virtually all the study to be undertaken by Army personnel will be on a postgraduate level, it is expected that the program will affect veterans seeking recognition under the GI Bill of Rights, since the majority of them will be enrolled in undergraduate schools.

In addition to 134 officers pursuing postgraduate studies, 150 military personnel will attend three- to four-week short courses in Safety Administration at New York University and 90 will study Motor Vehicle Safety at Northwestern University, also a three-week course.

Forty-nine of the 135 long-term students will be drawn from the Army Ground Forces and the remainder will come from the Administrative and Technical Services of the Army. They will be selected on the basis of professional and personal qualifications, previous scholastic record and specialty.

New Sleeping Bag and Squad Tent

A new lightweight sleeping bag for use in cold, wet climates and a new squad shelter tent housing 12 men are the latest subjects of experiments by the Army Quartermaster Corps.

The sleeping bag weighs 7½ pounds and consists of a resin-coated nylon separated by fiber-glass insula-

tion. Sleeping bags issued during the war were not found suitable in wet climates. The outer layer of the newly developed bag prevents moisture from entering, while the inner layer, next to the occupant, overcomes the chilling effects of body vapor.

The new shelter tent is revolutionary in design, employing no center poles, ropes or stakes. It is 16 feet wide, 32 feet in length, 8 feet high at the ridge and 6 feet high at the eaves. The frame is made of steel sections.

Weather Station On Wheels Gives Faster Weather Data*

A complete "weather-station-on-wheels," mounted on a truck which can be quickly driven to any location accessible to powerful six-wheel drive Army vehicles and then be set in operation in an hour, is the Signal Corps' answer to the Army's ever mounting demand for more and faster weather data.

Housed in a van mounted on a standard 2½-ton Army truck, the compact, all-purpose station was widely used in forward areas, it was disclosed by the Office of the Chief Signal Officer, in releasing information about the equipment, a development of the Signal Corps Engineering Laboratories, Bradley Beach, New Jersey.

Where the mobile station could not operate, as in small Pacific islands, "packaged" meteorological sets contained in easily handled boxes were flown in by plane or sent by ship.

Mobile Meteorological Station SCM-1, the Army nomenclature for the mobile weather station, contains all the equipment necessary for making essential meteorological observations, and when supplied with data from other stations, can be used to prepare weather forecasts. Its varied instruments provide data on temperature, humidity, air pressure, amount of precipitation, ceiling height, and the speed and direction of surface winds and winds aloft. The station also may be equipped for radiosonde for recording the pressure, humidity, and temperature of the upper atmosphere, and can be supplemented by radio direction finding and radar equipment for obtaining winds-aloft data.

When the station functions as a forecasting unit in a network of weather stations it is connected with outside units by telephone, teletypewriter or radio. By the use of teletype the station can be connected on a long-line circuit with several other stations, and through relay centers to other circuits forming a communications network. Weather messages can thus be exchanged with every other weather station in the network in minimum time.

The complete equipment, from folding chairs to pencil sharpener, is housed in the specially designed van of a 2½-ton truck. Packed into as small a space as possible, the equipment is securely fastened to avoid damage in rough travel. Delicate instruments are mounted to protect them from shock and vibration. A gasoline power unit, set up outside the van, supplies current for lights, fans, teletype equipment, radiosonde receptor, and ceiling light projector.

Four men can unpack and assemble this weather station in about an hour. It can be packed in the same space of time.

*See article "Cooperation in Weather" this issue.

Coast Artillery Newsletters



Antiaircraft Office, GHQ, AFPAC, Tokyo, Japan,
APO 500

BRIGADIER GENERAL WILLIAM F. MARQUAT,
Antiaircraft Officer

Shortly after the move of General Headquarters, United States Army Forces, Pacific, from the Philippines to Japan, in August and September, 1945, the Antiaircraft Office was reorganized in its present form. Current authorization includes three officers, one chief warrant officer, three enlisted men and one civilian. Duties are assigned as follows:

Antiaircraft Officer	(Gen)
Executive Officer	(Lt Col)
Administrative and Personnel Officer	(CWO)
Equipment and Training Officer	(Lt Col)

Through utilization of Machine Records Unit reports, the Personnel Officer keeps five complete sets of cards on Coast Artillery Corps officers in the Pacific Theater. The cards are arranged alphabetically, by organization, by component, by MOS, and by category. These records are a ready source of available information that enables this office to make judicious recommendations on allocations, assignments, and reassignments. At present, efforts are confined to obtaining AAA officers, now performing some other duty to replace officers from other branches presently assigned to AAA units. Strange as it may seem this is no small task.

The Equipment and Training Officer keeps all records pertaining to the combat efficiency of the various AAA units in the theater. A proposal to integrate AAA Technical Instruction Teams into the training program of AAA units in the Pacific is his present primary concern. Such

teams were employed extensively in the theater during war and their use during the occupation and in peacetime is considered equally valuable. Under the contemplated plan, the teams would be organized and trained in the theater and sent to the theater to spend approximately six months each giving individual units training in the latest technical changes and trends pertaining to antiaircraft artillery.

Review and revisions of recommended T/O & changes for all AAA units were forwarded to the War Department a short time ago. Though the possibilities of rocket development, guided missiles, and future reorganization are cause for much speculation, efforts are continuing being made to perfect our present organization and equipment.

Under the supervision of this office, the Japanese Aircraft and Seacoast Artillery Research Board has prepared excellent reports on weapons and equipment found in Japan. These reports are in three volumes, one pertaining to Seacoast Artillery, one dealing with Antiaircraft Artillery, and one a short summary including data covering both phases. Complete distribution of these reports was made in April 1946.

The report of Antiaircraft Artillery Activities in the Pacific War, a fine document which ties in the antiaircraft activities with combat action in such a way that it practically comprises a brief review of the war in the Pacific area, should be approved for distribution shortly.

At present the literary activities of the office are confined to the preparation of the history of the 14th AA Command which was inactivated on 31 March of this year, following accomplishment of its war mission. CAC officers and men here in the Pacific all have fond memories of the Command and are eagerly awaiting the publication of its history.





138th AAA Group, Yokohama, Japan, APO 503

COLONEL CHARLES A. FRENCH, *Commanding*

At the present time all antiaircraft units in Japan are attached to the 138th AAA Group, which is assigned to the Eighth Army. They comprise approximately 3,100 officers and enlisted men, and include the 753d AAA Gun Bn, 933d AAA AW (SP) Bn, 933d AAA AW (SM) Bn, 82d AAA Mort Bn, Btry C of the 325th Slt Bn, 162d AAA Opns Bn, and the 277th SRMU.

The primary mission of the Group is to furnish security guards for important installations of the Eighth Army in the South Tokyo and Yokohama areas. Other occupational duties include the training of key personnel, technical training, information and education, special service duties, and recruitment for the regular army. These responsibilities were assumed in May 1946 when the Commanding Officer of the 40th AAA Brigade, which was transferred, less personnel and equipment, to AFMIDPAC.

The Commanding Officer of the Group is Colonel Charles A. French, who was commissioned in the CAC at Oregon State College in 1912 and who saw active service in World War I. Upon inactivation of the 68th AAA Brigade on 15 March 1946 he was given command of the 40th AAA Brigade, from which he was transferred, with other personnel, to the 138th AAA Group.

Units attached to the Group are scattered throughout the Yokohama-Tokyo area. They are composed largely of personnel, both officers and enlisted men, formerly assigned to units of other arms and services, a situation resulting in a lack in the theater of antiaircraft replacements in sufficient numbers to meet occupation demands. Despite this fact, however, the Command has been able, in the case of each unit, to construct a foundation upon which an antiaircraft organization can be built. Occupation duties leave little time for antiaircraft training, but effective training is being made of such time as is available. Response is being made to the units to basic training programs and special training in antiaircraft tactics, and the maintenance and repair of antiaircraft equipment and weapons has been splendid.

Throughout the various stages of its career, the Group has established an enviable war and occupation record. The 68th AAA Brigade, activated at Noumea, New

Caledonia, it included among its assigned battalions some which had participated in the Guadalcanal Campaign. Through a series of battles, it saw action on New Georgia, Vella Lavella, Treasure Island, Bougainville, Green Island, Emirau, and Luzon.

The Brigade arrived in Yokohama in September 1945, some elements going ashore with the original occupation forces.

A series of administrative and organizational changes produced the 138th AAA Group. The last cease fire order had been given months earlier in the Philippines, but in tackling its occupation mission, the Group lost none of the vigor and foresight that had won the Brigade favorable recognition during fighting days of the war. Attesting to the high degree of vigilance and efficiency of its units is the record of arrests made by security guards. Since start of the occupation approximately 5,100 Japanese have been apprehended for pilfering or attempting to pilfer food and equipment. Of the total, approximately 900 were arrested during the period, 25 May through 5 July 1946.

Inspection of records of the attached AAA battalions reveals that they established enviable combat records. The 753d AAA Gun Bn, formerly the 161st AAA Gun Bn, fought in the thick jungles of New Guinea and across the ranges of Luzon in ground support of infantry units. The 90mm artillery pieces it formerly fired have been replaced with 120mm guns. Paralleling this record is that of the 209th AAA AW Bn, which also saw action in New Guinea and on Luzon, and which wound up its campaign during the closing days of the war in the Cagayan Valley. The 933d AAA AW Bn, formerly 2d Bn of the 76th Coast Artillery, saw action in New Hebrides, Solomon, and Manus Island campaigns.

* * *

*452d AAA AW Bn (SP), Korea, APO 712

MAJOR RALPH N. ROSS, *Commanding*

The *452d AAA AW Bn (SP), was activated 17 June to take over the occupation mission of the 834th AAA AW Bn. The latter unit was inactivated on 30 June and its personnel transferred to units of the various branches of service stationed in Korea. All matériel was transferred to the new AAA Bn.

At present the 452d AAA AW Bn (SP) has only about thirty per cent full strength but is drawing personnel from troops newly arrived in the theater. The current pressing need is for training but no comprehensive program can be undertaken under present personnel conditions. It is planned to initiate such a program after the battalion has attained seventy-five per cent of authorized strength. The men then will be given ten weeks of intensive training, followed by firing practice. Meanwhile, three hours a day are being devoted to basic training and the remainder of the time is spent in construction of quarters and battery areas.





32d AAA Brigade, Luzon, P.I., APO 707

BRIGADIER GENERAL FRANK C. McCONNELL, *Commanding*

A rear detail of five officers and sixty enlisted men remained behind on Leyte to complete the evacuation of the old area, reclaiming such additional critical items as plumbing fixtures, pipe, screen, lumber and corrugated tin through salvage operations, which they would bring with them to Manila. Just how well they accomplished their mission is evident in the cargo that they did bring with them, and in the radio received from the Commanding Officer of the detachment in which he said: "When we leave the area the only things that will be left will be coconut trees and concrete floors, all other materials are coming with us."

By the time that the rear detachment was ready to move, shipping in the Southern Islands had become critical and it was necessary to move it in two units. The first, consisting of four officers and fifty-two enlisted men, departed from Leyte on 13 July aboard LCI 725. FS boat 171, assigned to lift the balance of the personnel, and all of the cargo, departed on 16 July and arrived in Manila on 19 July after a particularly rough voyage caused by typhoon "Ingrid" (code name) which lashed Luzon. The roughness of the trip can be illustrated by the fact that on more than one occasion the ship's bridge was awash.

At this writing the evacuation of personnel and equipment of the Brigade from Leyte to Luzon has been completed. Hq & Hq Btry, 32d AAA Brigade are now located at Camp Camarilla, Manila, Luzon, home of the Philippine Ground Force Command.

The Brigade's only mission at the present time is the construction and improvement of its camp site, and the support of Hq Co., Philippine Ground Force Command, in its "housekeeping" activities.

On 1 June 1946, the date of discontinuance of the 32d AAA Brigade Area Command, twenty-nine officers and two warrant officers were assigned to the headquarters; one officer was attached unassigned. Hq Btry had five officers and 251 enlisted men assigned, and two enlisted men attached unassigned. On 24 July 1946, seven officers were assigned to the headquarters. On the same date Hq Btry was at T/O strength with two officers and sixty-four enlisted men assigned; two enlisted men were attached unassigned. This marked decrease in personnel is attributable to the redeployment program, and to the transfer of both officers and enlisted men to the Philippine Ground Force Command. The transfer of this personnel to PGFC has proved advantageous to that headquarters since all transferees were trained in General or Special Staff Section work

during the era of the Area Command. All have been assigned duties similar to those formerly held in the Area Command.

General McConnell continues to command the Brigade and perform additional duty as Deputy Commander and Chief of Staff of the Philippine Ground Force Command.

70th AAA Group, San Marcelino, Luzon, APO 704

LIEUTENANT COLONEL R. L. LEIDY, *Commanding*

Only anti-aircraft unit now in the Philippine Islands actually performing branch duty, the 70th AAA Group is charged with operation of the AAA Training Center, San Marcelino. The assignment on 13 June of the Philippine Scouts to the Group (GO 3, PGFC) provided the Center its first training mission since the termination of hostilities.

A total of 1,590 men were screened for assignment, special attention being given to their own preferences, confidence in ability to perform certain duties, and the following AAA units were activated for training:

- 1st AAA Group (PS) (Prov)
- 2d AAA AW Bn (SP) (PS) (Prov)
- 3d AAA Gun Bn (Type A) (PS) (Prov)
- 4th AAA S/L Bn (Type C) (PS) (Prov) (Btry C)
- 5th AAA Opns Det (PS) (Prov)

The task of drawing the initial issue of T/O & E equipment for the provisional units was assumed by the Group and all available transportation was utilized to haul it to the depot in Manila.

The Motor School graduated its fifth class on 22 July and began plans to set up a nine-week course for Philippine Scouts.

The Radar School enrolled seven men from the Okinawa Base Command for the SCR 584 Maintenance Course. No Philippine Scouts have qualified for this course to attend class sessions as spectators.

The AW School began classes during July covering drill and employment of 40mm guns and the M1 quadruple mounts.

Captain John W. Gaffney, O26823, stricken by pneumonia was rushed to the Naval Hospital at Olongapo and later flown to Fort McKinley, Manila, where he died on 1 July. He was a resident of Waterbury, Conn., and a graduate of the United States Military Academy, Class of 1944.

136th AAA Group, Okinawa, APO 331

LIEUTENANT COLONEL F. T. BERG, *Commanding*

The 136th AAA Group now occupies the old headquarters area of the Tenth Army on Okinawa and has constructed its own housing, power and water installation and recreational facilities. Group Headquarters is located in the building formerly occupied by the Commanding General. Japanese cannons, emplaced for surrender ceremonies, are still in position, pointing toward Tokyo.

Commanding Officer of the Group is Lieutenant Colonel F. T. Berg who succeeded Colonel L. W. Bartlett upon the latter's departure for the United States in June to attend the National War College as a student.

The Group comprises three units: the 63d AAA G

commanded by Lieutenant Colonel I. A. Peterson, the 586th AAA Slt Bn, commanded by Major W. H. Barnett, and the 586th AAA AW Bn commanded by Major J. G. [unclear]. Due to the current shortage of both officer and enlisted personnel, Group is performing all tasks normally accomplished by headquarters of the three battalions in addition to its own headquarters duties.

Some relief from the personnel situation has been effected by employment of native Okinawans throughout the group as barbers, kitchen and mess hall help, civilian labor, and for other housekeeping jobs such as construction, maintenance of buildings and grounds, and operation of utilities. With this help, antiaircraft troops have been able to contribute much to various operations and the general development of Okinawa. They have constructed housing for female civilian workers, operated Okinawa

University and the Awase Dependent Housing Area, and provided security guards for Sobe, Naha, and Machinato Services of Supply installations. In fact, AAA has come to mean "Always Available for Anything" on Okinawa.

A "County Fair" demonstration was held on 23-24 May to familiarize all personnel with the various types of equipment employed by the three battalions. It attracted several distinguished guests, including: Lieutenant General Styer, Commanding General, AFWESPAC; Brigadier General Bowman, Commanding General, Okinawa Base Command; Brigadier General Timberlake, Commanding General, 1st Air Division; and Brigadier General Hayden, Okinawa Base Command.

During the Ryukyus Roundup, 4 to 6 July, the 325th AAA Slt Bn emplaced ten searchlights for demonstration purposes.



Hawaiian Artillery Command

MAJOR GENERAL GEORGE F. MOORE, *Commanding*

During the latter part of the war, the antiaircraft, sea-coast, and nondivisional field artillery units on the island of Oahu were organized as separate commands under Headquarters Central Pacific Base Command which was a major echelon of United States Army Forces, Middle Pacific. On 1 November 1945, the Central Pacific Base Command was inactivated. On the same date the Hawaiian Artillery Command was formed as a major echelon of Headquarters United States Army Forces, Middle Pacific.

The Commanding General, Hawaiian Artillery Command (short title ComGenHawArtyCom) was given command of all nondivisional field artillery on the Hawaiian Islands, the 2273d Antiaircraft Artillery Command (Hawaiian), and the 2274th Hawaiian Seacoast Artillery Command. The mission of this command is similar to that of a typical large artillery command located in an island area.

At its inception, the Hawaiian Artillery Command was commanded by Major General Henry T. Burgin. One group of nondivisional field artillery, consisting of two medium battalions, one eight-inch howitzer battalion, one observation battalion, and a group headquarters and headquarters battery was assigned to the Hawaiian Artillery Command, in addition to the antiaircraft and seacoast artillery commands. All units of this group were inactivated by the end of April. The surplus field artillery officers and personnel therefrom were assigned to antiaircraft and seacoast artillery units and are being trained in the tactics and techniques of those branches.

The headquarters of the Hawaiian Artillery Command at Fort Ruger, which long has been the home of artillery units. On 4 February 1946, Major General George F. Moore relieved Major General Burgin as Commanding General, Hawaiian Artillery Command. On 17 March 1946, Major General Moore assumed temporary command of the United States Army Forces, Middle Pacific, and

Colonel Henry B. Holmes, Jr., assumed command. On 10 July 1946, Major General Moore resumed command of the Hawaiian Artillery Command.

Because of the shortage of personnel brought about by demobilization, there have been no firing exercises since the beginning of the year. To compensate for the loss of experienced personnel, emphasis has been placed on "on the job" training of personnel to fill key positions.

A Hawaiian Artillery Command Officer Candidate School Examining Board was formed on 9 April 1946. Since that time four applications have been recommended for approval by the board and approved by the Commanding General.

Effort is being made to impress all personnel with the importance of the War Department conservation policy. A series of posters has been prepared in this headquarters and published to the command. They are in color, about two by three feet in size, and each depicts rotund, conservative Private TIP admonishing soldiers to conserve food, electricity, equipment, and cleaning and preserving materials. Private TIP's name is an abbreviation of "Tomorrow's Income-tax Payer."

All officers who have been stationed on Oahu will be disappointed to hear that the Fort DeRussy Officers' Club, situated on the Beach of Waikiki, was burned completely on 7 August 1946. The cause of the fire has not been determined.

2273D AAA COMMAND (HAW)

COLONEL LEONARD L. DAVIS, *Commanding*

During the period covered by this Newsletter, the 2273d AAAC (HAW) has been required to re-train almost every man in the Command due to losses incidental to the readjustment program. This problem has been further complicated

by the loss of many officers and key noncommissioned officers, and the lack of school trained replacements. By consolidating personnel of batteries, battalions and sometimes of groups into special classes, everything from gunnery to meat cutting has been taught. Another major factor is the fact that 52% of the present enlisted personnel in this command are Class IV or V men. Training these men to operate the highly technical antiaircraft artillery equipment is a problem which is facing all commanders.

A Searchlight Battalion, commanded by Lt. Colonel Raymond C. Cheal, cooperated with the Air Forces by moving searchlights to the perimeter of the City of Honolulu and putting on a searchlight display over the city the night of 1 August to commemorate Air Force Day.

In anticipation of a large Joint Army-Navy Exercise (JANX) to be held later, the 7th Air Force and the 2273d AAAC (HAW) conducted a joint exercise on 8 August in which an Intelligence Battery manned several observation posts and operated the filter room. A SCR 584 from one of the gun battalions and an AN/TPL-1 from a searchlight battalion were also used to track incoming flights and aid in training men on the battalion plotting boards. The high- and low-level sweeps by planes from the 7th Air Force made the problem realistic.

With the discussion of statehood for the Territory of Hawaii appearing in almost every edition of the local papers, the War Department's TIP program on the American Political System has created a wide interest among the men in the command, especially among those who are island residents. Twenty-eight men were sent to the TIP Instructor's School conducted by AFMIDPAC, and it is expected that these new instructors will be able to add still more interest to the program.

Swimming, baseball and tennis have been in the sports spotlight during this period. To facilitate scheduling the various events, the Command has been divided into the North and South Leagues. The North League is composed of an antiaircraft artillery group, commanded by Colonel W. L. McPherson and stationed at Schofield Barracks. The South League comprises Headquarters, 2273d AAAC (HAW) and its Intelligence Battery, both at Fort Shafter, and an antiaircraft artillery group, commanded by Colonel D. C. Tredennick, with units located at Fort Ruger, Fort DeRussy and Fort Kamehameha.

Out of a total of 20 men selected to represent the Hawaiian Islands in the AFPAC track meet that was held in Meiji Stadium, Tokyo, Japan, 25-27 July, the 2273d AAAC (HAW) was represented by four men. The Army team from Japan won, Hawaii was second, and the Philippines third; Korea and the Marianas were also represented.

Hq, 2274TH HSAC

COLONEL JOHN T. DE CAMP, *Commanding*

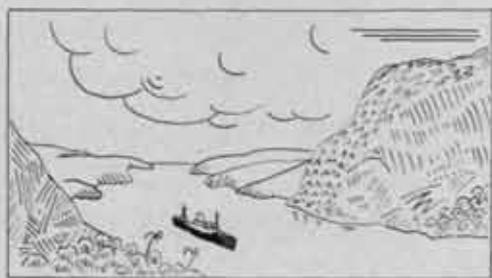
The 2274th Hawaiian Seacoast Artillery Command recently undergone a complete reorganization. On July the Harbor Defenses of Pearl Harbor and Honolulu and Harbor Defenses of Kaneohe Bay achieved their reorganization. Several of the units which were active on VJ Day have been inactivated and others are in the process of inactivation. The constant reduction in strength, together with the steady loss of trained personnel due to eligibility for separation, has resulted in practically a 100% turnover in personnel in HSAC in the past twelve months. The July 1st reorganization resulted in HSAC assuming the functions of the harbor defense headquarters with the batteries reporting directly. Batteries "A" and "B" are located at Fort Kamehameha, and Battery "C" is at Fort Hase, with the remaining units at Fort Ruger. These line batteries each support numerous small maintenance detachments and outposts which are located at the various seacoast installations on Oahu.

The mission of the Hawaiian Seacoast Artillery Command continues to be the maintenance of the numerous seacoast artillery installations on Oahu. The rapid mobilization has brought about many serious problems. With the small but steady influx of regular army enlisted men, many who have had previous overseas tours with seacoast artillery on Oahu, and with the induction of a large number of Hawaiian-born enlisted men, many of whom have been assigned to HSAC, the maintenance problem is being solved. Several schools have been conducted in proper maintenance procedures.

Three officers of the command were among the 9,000 who were offered Regular Army commissions on 28 July. They are Major Maurice J. Palizza, S-3 HSAC; Captain Francis J. O'Connell of an AAA AW Battalion, both of whom accepted; and Captain Willis H. Tassie, S-1 HSAC.



PANAMA COAST ARTILLERY COMMAND



BRIGADIER GENERAL F. P. HARDAWAY, *Commanding*

Fort Amador had its biggest day since announcement of man's surrender when Chief of Staff, General Dwight D. Eisenhower, visited the post on Tuesday, 13 August, during his tour of Pacific side Panama installations.

The General was greeted at Amador by Brigadier General F. P. Hardaway, Commanding General of the Panama Coast Artillery Command, and Colonel E. M. Benitez, Commanding Officer of the post.

He was conducted on an informal inspection of Fort Amador troops, in mass formation on the Amador parade ground where he interviewed many of the men.

General Eisenhower was accompanied on his tour by his staff and other high-ranking army officers, including Lieutenant General W. D. Crittenger, Commanding General of the Caribbean Defense Command and Panama Canal Department, and Major General J. L. Homer, then Deputy Commander of the Panama Canal Department.

The Coast Artillery Training Center, situated at Fort Amador, recently moved its headquarters and classrooms to a new location, which affords more space and improved facilities for carrying out the training program now in effect. A class consisting of ten enlisted men from various elements of the Republic of Honduras Army, completed a ten weeks' Basic Electricity course, as student guests of the U. S. Government on 24 August.

Upon completion of the Electricity course, the ten students returned to their organizations in the Honduras Army. Eleven other Honduras students, who also completed the Basic Electricity course, were retained at the Training Center for further instruction in the fields of Radio Maintenance and Wire Communications. They are expected to graduate during November.

On Thursday, 27 June, an orientation tour was held at the Training Center gun park, for visiting staff officers from the Panama Canal Department and the Caribbean Defense Command. The tour was in the form of a "Coast Artillery County Fair," with exhibitions and demonstrations which served to acquaint the visiting officers with the weapons and equipment used by Panama Coast Artillery forces.

Personnel of the 903d AAA (AW) Battalion got a taste of living and training together as a unit as well as a relief from their usual tactical requirements when off-site training was conducted at Camp Chorrera during the month of August.

During the month at Chorrera, training was conducted under the supervision of Brigadier General R. W. Berry, Commanding General of Antiaircraft Defenses, Pacific Side; with Lt. Col. John R. Schrader, Commanding Officer of the 903d as camp commander.

The 764th AAA Gun Battalion, with Batteries "A" and "B" of the 766th AAA Gun Battalion are scheduled to conduct off-site training at Camp Chorrera during September.

Coast Artillery facilities, including Coast Artillery Mine Planters from each side of the Isthmus and Radar and Communications equipment, were used in air-sea-ground rescue missions during July and August. The Mine Planter *Ringuold*, from Harbor Defenses of Balboa, Fort Amador, was utilized as a searching vessel to assist in the recovery of crash victims, when two army bombers collided over the ocean in the vicinity of Cieba Island in July.

Later in that month the Mine Planter *Weaver* was sent from its base at Harbor Defenses of Cristobal, Fort Sherman, to serve as a base for Infantry Searching parties and as a radio relay station, in the search for two P-47 pilots who parachuted into the jungle after their planes collided in the air over the Maria Chiquita vicinity, on the Atlantic side of the Isthmus. A radar station using the AN/TPL-1 set from the Training Center at Fort Amador, was set up in a jungle position, maintaining air-ground radio contact with rescue planes in order to plot the ground location of any evidence of the lost flyers, observed from the air. Both Radar and Radio equipment were manned by Coast Artillery personnel.

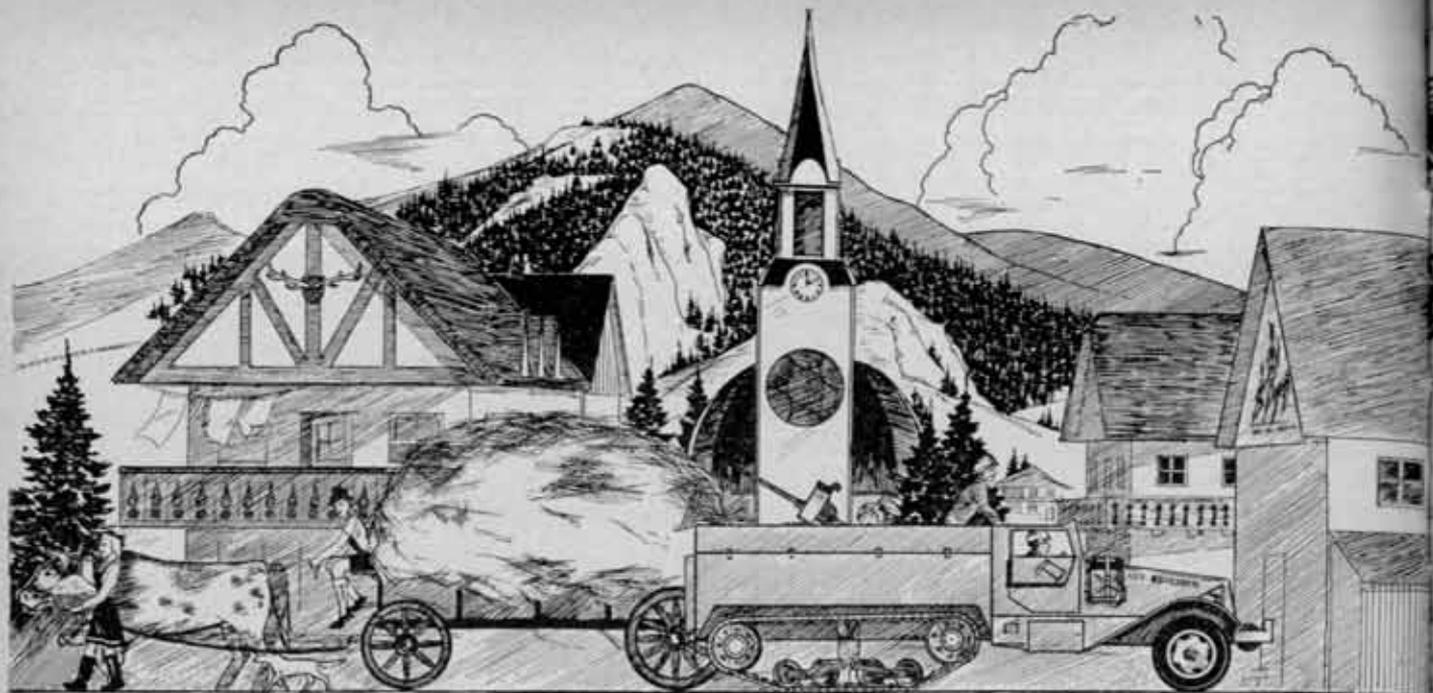
One of the lost pilots was rescued from the jungle early in August and at this dispatch, search for the second is being continued.

The salute battery of French 75s at Fort Amador has thundered nine times since that post was designated as saluting station on 5 February of this year. Most recent were the 17-gun salutes tendered General Eisenhower on his arrival in Panama on 12 August and his departure on 15 August; and to Admiral Halsey upon his arrival and departure on 17 and 21 August.

Major General J. L. Homer, who served as Deputy Commander of the Panama Canal Department from February 1945 to August 1946, left Panama by air on Saturday, 17 August, to return to the United States. General Homer has since assumed command of the Antiaircraft Artillery activities and the Guided Missile Center at Fort Bliss, Texas.

Replacing General Homer as Deputy Commander is Major General Ray E. Porter, who comes to this department from the office of the Chief of Staff in Washington, D. C.; where he was Director, Special Planning Division. During 1945, General Porter commanded the 75th Infantry Division in the ETO.





Third United States Army Aircraft Section, Germany

Colonel Frederick R. Chamberlain, AAA Officer, Third Army

Antiaircraft units of the Third United States Army have entered a strenuous training program, having been relieved of occupational duties by the Constabulary. Both officers and men welcomed the opportunity to restore their units to the splendid fighting condition attained during World War II. The first thirty days were allotted principally to basic subjects, due to the fact that redeployment and rotation had drained the battalions of almost all combat men and experienced technicians. Replacements received from the Zone of Interior knew nothing about the basic weapons of the battalions. The second phase started on 3 August 1946 and included advanced subjects. Tactical field exercises in local areas are to include antiaircraft artillery with an infantry division, armored division, and defense of airfields.

A high priority on ordnance, automotive, and gun parts enabled units to make much needed repairs to the tracks and turrets in spite of a lack of experienced fire control electricians and artillery mechanics. Firing points have been established and battalions are now in the process of test firing the half-tracks. Small-arms ranges have been set up in battalion areas and men will fire small-arms qualification course "C."

Two OQ2A detachments, attached to the 390th AAA AW Bn (SP), have completed training and began to fly tracking missions 15 August 1946. The Air Corps has also provided tracking missions, the 366th Fighter Group flying for the 644th AAA AW Bn (SP) and the 390th AAA AW Bn (SP), and the 70th Fighter Wing flying for the 203d AAA AW Bn (SP). Tentative plans have been made with the 29th Tow-Target Squadron to fly tow-target missions for firing during the month of September at the Widflecken Range. OQ2A planes will also be used during this firing practice.

The 390th AAA AW Bn (SP), which had an enviable combat record with the 26th Infantry Division finished a

year of occupational duty in the Bavarian capital city of Munich, Germany, prior to its release for training. Its occupational missions included foot and motor patrols, road blocks, static guard posts, and "Swoop" operations to discover stores of contraband articles in the hands of German civilians and to detect underground movements. Road blocks were set up to control the movement of civilian and displaced persons, to pick up stolen property, to apprehend wanted persons such as war criminals, and to assist the military police in apprehending AWOLs, deserters, and black market operators. Patrols were organized to maintain order and assist the reconstituted German Civil Police. Static guard posts were concerned with guarding objects of international interest such as the art collecting center where looted art collections of Europe were assembled prior to being returned to the countries from which they were stolen; wind tunnels which the Germans had developed and which were to be dismantled and sent to the U. S. for study by American engineers; extensive records of the Nazi Party, and a film colony with much valuable equipment and many captured enemy propaganda films. Other missions included such widely varied tasks as operating laundries, hotels, transient billets and messes, displaced persons camps, and repatriation trains for displaced persons. On 5 August 1946, the 390th AAA AW Bn (SP) was notified that it had been cited in an Order of the Day of the Belgian Army and awarded the Belgian Fourragere (1940).

The 571st AAA AW Bn (SP) has contributed considerable time to the re-education of the German Youth during the past two months. All excess athletic equipment was donated to authorized German Youth clubs. Small groups of German boys from each club have been instructed in the use of American equipment, and these groups will in time become instructors for their respective clubs. Approximately five thousand children in the vicinity of Karlsruhe have benefited from the battalion's efforts.



FORT BLISS, TEXAS

MAJOR GENERAL JOHN L. HOMER, *Commandant*

The following changes during the month of July 1946 occurred at the Antiaircraft Artillery School:

ARRIVALS

Name	Duty
John H. Madison	Not yet joined
Col. Henry K. Roseco, Jr.	SD w/267th Group
Edmond H. Carpenter	Not yet joined
Edward M. Hudak	Radar Department
Bernard C. Luebkert	SW w/529th AAA AW Bn
Harold O. McCallum	Communication Department
Chester K. Britt	SD w/384th AAA Gun Bn
Clyde B. Carroll	SD w/267th Group
Geo. A. DeMarcay, Jr.	DS AGF "Frigid"
John J. DeRosa, Jr.	Radar Department
Wilbur L. East, Jr.	Radar Department
Jack B. Kennaman	Not yet joined
Robert C. Mitchell	Secretary
Merrill P. Montgomery	SD w/529th AAA AW Bn
Gerald E. Benegar	DS AGF "Frigid"
Meville L. Trimble	SD w/284th AAA AW Bn
Lt. Paul Beckage	Not yet joined
Lt. John W. Bryan	Radar Department
Lt. Frank C. Burriss	Not yet joined
Lt. Ray H. Hatlestad	Radar Department
Lt. Daniel O. King	SD w/450th AAA AW Bn
Lt. Eugene E. Lendvay	Not yet joined
Lt. Glen A. McFeters	Secretary
Lt. Cread E. Miller	SD w/267th Group
Lt. Allen B. Moran	Secretary
Lt. Steve M. Natal	Enlisted Detachment
Lt. Roy F. Paeker	Not yet joined
Lt. Erwin N. Schwab	Flak
WO William W. Osteyee	Radar Department

DEPARTURES

Name	Duty
Col. Earl M. Corothers	450th AAA AW Bn
Col. Ramon C. Dougan	Camp Stoneman, California
Col. William J. Wuest	Camp Kilmer, New Jersey
Benjamin T. Baird, Jr.	Camp Stoneman, California
Willard J. Hodges, Jr.	Camp Stoneman, California
George B. Mitchell, Jr.	450th AAA AW Bn
James N. Olhausen	Washington Univ., St. Louis, Mo.
Ralph F. Pearson	R&SC Fort Bragg, N. C.
James L. Regan, Jr.	Fort Sam Houston, Texas
Woodrow Steichen	Camp Stoneman, California
John H. Walters	Hq, Fourth Army, Ft. Sam Houston, Texas
Chester K. Britt	384th AAA Gun Bn

Capt. Roy R. Carpenter
 Capt. Clair LeJeune Hall
 Capt. Palmer L. LaPlant
 Capt. Paul Loeser, Jr.
 Capt. James McKeen
 1st Lt. Bedford P. Cain
 1st Lt. Elmer J. Coffey
 1st Lt. Clarence F. Crawl
 1st Lt. Garold W. Curo
 1st Lt. Charles L. Fulton
 1st Lt. William P. Guild
 1st Lt. Cletus L. Luebbe
 1st Lt. Walter D. Savage
 1st Lt. Willard J. Whicker
 2d Lt. Henry F. Dombroski
 WOJG Francis A. Klaiber

Fort Lawton, Washington
 Camp Stoneman, California
 Hq, AGF, Washington, D. C.
 Carlisle Barracks, Pa.
 Fort Sam Houston, Texas
 Fort Sam Houston, Texas
 Camp Stoneman, California
 AAA & GM Center, Fort Bliss
 WBGH, El Paso, Texas
 Fort Sheridan, Ill.
 Fort Lawton, Washington
 Fort Lawton, Washington
 Fort Lawton, Washington
 Camp Stoneman, California
 Camp Stoneman, California
 Fort Geo. Meade, Maryland

The following changes occurred during the month of August 1946:

ARRIVALS

Rank	Name	Dept.
Lt. Col.	John T. Herrod	Dept. of Instructional Methods
Lt. Col.	Perry B. Priest	SD w/AGF Board No. 4
Maj.	Franklin A. Ayer	Division of Instruction
Maj.	Ralph H. Courtney	Division of Instruction
Maj.	Fred W. Jacks, Jr.	Dept. of Extension Courses
Capt.	William C. Barlow	Dept. of Miscellaneous Subjects
Capt.	Daniel L. Blue	Dept. of Flak Analysis
Capt.	Albert V. Cito	Dept. of Material and Technique
Capt.	James B. Clark	Division of Instruction
Capt.	Dennis J. Clifford	S-1, AAAS
Capt.	Ray E. Ecker	Secretary
Capt.	Thomas A. Ecker	Division of Instruction
Capt.	Lester P. Lanelli	SD w/322d AAA AW Bn, Ft. Bliss, Texas
Capt.	Henry A. Lowe	Dept. of Fire Control
Capt.	Robert G. Lavell	Dept. of Flak Analysis
Capt.	Max R. McCarthy	Dept. of Extension Courses
Capt.	William P. McKinney	S-1, AAAS
Capt.	Donald A. Munroe	S-4, AAAS
Capt.	Albert Pajunas	Enl Det, AAAS
Capt.	Kenneth W. Ramsey	Secretary
Capt.	Councill P. Rountree	Dept. of Research and Analysis
Capt.	Fred M. Ruck	Dept. of Tactics
Capt.	Clifton P. Semmens	Dept. of Miscellaneous Subjects
Capt.	William E. Smith	Enl Det, AAAS
Capt.	Stephen M. Snopkowski	SD w/384th AAA GM Bn, Ft. Bliss, Texas
Capt.	Edward F. Tindall	SD w/284th AAA GM Bn, Ft. Bliss, Texas
Capt.	Norman M. Walker	Dept. of Instructional Methods
1st Lt.	William J. Berger	Dept. of Material and Technique
1st Lt.	Eugene C. Cox	Dept. of Fire Control
1st Lt.	Byron P. Darling	Dept. of Material and Technique
1st Lt.	Paul C. Dunn	Enl Det, AAAS
1st Lt.	Ernest L. Hanson	Enl Det, AAAS
1st Lt.	Richard L. Kunde	Dept. of Flak Analysis
1st Lt.	Joseph J. Macko	Dept. of Flak Analysis
1st Lt.	John P. McDermott	SD w/322d AAA AW Bn, Ft. Bliss, Texas
1st Lt.	John A. McGrane	Division of Instruction

1st Lt. Edward R. Reum
1st Lt. Edward J. Skaggs

1st Lt. Gene D. Velkers
1st Lt. John L. West

Dept. of Research and Analysis
Dept. of Miscellaneous Subjects
Dept. of Radar
Dept. of Flak Analysis

Capt. Merrill P. Montgomery

Capt. Edward T. Tait
Capt. Edward F. Tindall

322d AAA AW Bn, Ft. Bliss, Texas
Sep C, Ft. George Meade, Md.
284th AAA GM Bn, Ft. Bliss, Texas
O/S Repl Depot, Camp Stoneman, Calif.
1st AAA GM Bn, Ft. Bliss, Texas
Ft. Lawton O/S Repl Depot, Seattle, Wash.
Frankfort Arsenal, Bridesburg Sta., Philadelphia, Pa.
1st AAA GM Bn, Ft. Bliss, Texas
5th AAA Gp, Ft. Bliss, Texas
O/S Repl Depot, Camp Kemer, N. J.
639th AAA AW Bn, Ft. Bliss, Texas
Ft. Lawson O/S Repl Depot, Seattle, Wash.
O/S Repl Depot, Camp Stoneman, Calif.
Sep C, Camp Beale, Calif.
Ft. Lawson O/S Repl Depot, Seattle, Wash.
O/S Repl Depot, Camp Kemer, N. J.
Del. N. G., Dover, Delaware
Sep C, Ft. Sam Houston, Texas
450th AAA AW Bn, Ft. Bliss, Texas

DEPARTURES

<i>Rank Name</i>	<i>Destination</i>
Col. William L. McNamee	Hq. AGF, Washington, D. C.
Lt. Col. John B. F. Dice	Hq. 4th Army, Ft. Sam Houston, Texas
Lt. Col. Philip V. Doyle	Comd & Staff College, Ft. Leavenworth, Kansas
Lt. Col. Chesley F. Durgin	OC of S, Washington, D. C.
Lt. Col. Harry J. Harding	5th AAA Gp, Ft. Bliss, Texas
Lt. Col. Harry D. Nichols	FAS, Ft. Sill, Okla.
Lt. Col. Henry K. Rosco, Jr.	O/S Repl Depot, Camp Kemer, N. J.
Maj. Franklin A. Ayer	FAS, Ft. Sill, Okla.
Maj. Veto Blekaitis	University of San Francisco, Calif.
Maj. Charles B. Boyles	Sep C, Ft. Sheridan, Ill.
Maj. Bernard C. Luebker	5th AAA Gp, Ft. Bliss, Texas
Capt. Merrill L. Lemilie	284th AAA AW Bn, Ft. Bliss, Texas
Capt. Charles W. Matthews	Panama Canal Dept, Quarry Heights, Canal Zone, 1103 D AAFBU Hq, Caribbean Wing Air Transport Command, West Palm Beach, Fla.
Capt. Robert C. Mitchell	O/S Repl Depot, Camp Stoneman, Calif.

1st Lt. William A. Brant

1st Lt. John W. Bryan

1st Lt. John Flanagan

1st Lt. Thomas E. Gray

1st Lt. Ray H. Hatlestad

1st Lt. Jack R. Kennaman

1st Lt. Ralph L. Klenik

1st Lt. Stanley S. Marcus

1st Lt. Davis W. Marr

1st Lt. Glen A. McFeters

1st Lt. Sterling K. Peterson

1st Lt. Alvin D. White

CWO Richard C. Colburn

CWO Harry Engle

WOJG Willis A. Harris, Jr.

WOJG Andrew N. Hayden



112th AAA Brigade

San Francisco, Calif.

BRIGADIER GENERAL DAVID P. HARDY, *Commanding*

Authority to start selection of officers and enlisted men for the San Francisco-Oakland bay area's 112th Antiaircraft Artillery Brigade of the California National Guard has been received by Brigadier General David P. Hardy of San Francisco, Commanding General of the Brigade.

General Hardy's new command when completely recruited to strength authorized by the War Department will total some 3,100 officers and men, California National Guard headquarters at Sacramento announced.

General Hardy, assistant superintendent of San Francisco schools, commanded San Francisco's 250th Coast

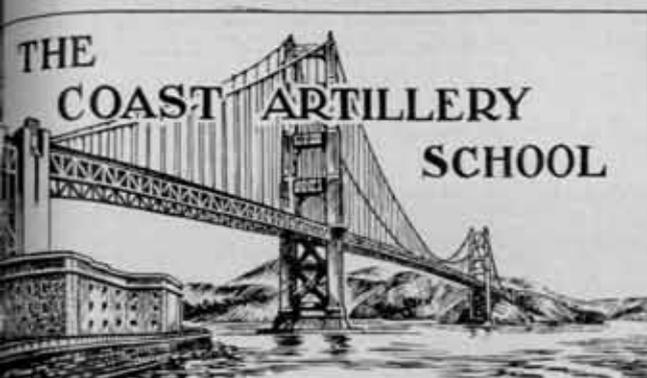
Artillery Regiment of prewar days, and served during World War II in Alaska and at Fort Ord, California.

The new 112th AAA brigade will consist of the 233d and 250th AAA groups embracing two semimobile gun battalions, a semimobile automatic weapons battalion, a self-propelled automatic weapons battalion, a searchlight battalion, and an operations detachment. Colonel Walter Schoaff will command the 233d Group and Colonel James W. Cook, the 250th.

Headquarters of the 112th was activated by War Department authority on 15 August, according to General Hardy. Captain Walter A. Anderson will command the Brigade Headquarters Battery. Also assigned to the Brigade Staff is 1st Lieutenant Gerald E. Robinson.

General Hardy emphasized that enlisted priority will be given to graduates of Officer Candidate Schools and men with overseas service.





MAJOR GENERAL ROBERT T. FREDERICK, *Commanding*

On 1 June 1946, the Coast Artillery School officially went into operation at Fort Winfield Scott, California. The "mecca" of the CAC is located on a hill overlooking the city of San Francisco. The post itself consists mainly of permanent barracks of fine old Spanish design, laid out in a horseshoe pattern around a spacious well-kept parade ground. Although each building was originally constructed as living quarters, some of them have been remodeled to provide classroom facilities for the school.

On 5 September, scholastic activities resumed when the Officers' Electronic Course and Submarine Mines Course commenced. Other courses, which include instruction by the departments are: The Officers Advanced Branch Course and the Officers Associate Basic Course. Selected officers attending the Advanced Course will undergo a period of instruction at the three artillery schools: Field Artillery, at Fort Sill, Oklahoma; Antiaircraft Artillery at Fort Bliss, Texas, and Coast Artillery at Fort Scott, California. It is intended that a graduate of the Advanced Course be versed in the duties of Battalion, Group, and Harbor Defense Commander; be familiar with Staff and Command duties in Division Artillery, Antiaircraft Artillery Brigade and Harbor Defense Level. Officers attending the Associate Basic Course will be recent graduates of Officers' Candidate Schools, officers of the Associate Arms, and regular officers from other branches who desire to attend. Enlisted specialists, to start in February, include: The Master Gunners' Course, Electrical Course, Diesel Course, Radar Operators Course, M8 Gun Data Computer Course and Submarine Mine Course.

With the new location of the School, many changes have taken place within the command. The Departments of Artillery and Tactics have been incorporated into the Department of Gunnery and Tactics with Colonel Carl W. Holcomb as Director. It consists of three sections; Artillery, Tactics, and Review. Other departments of the school are: Training Publications, Colonel Herbert H. Maxwell, Director; Engineering, Colonel William A. Hampton, Director and Submarine Mining, Lt. Colonel George F. Pierce, Director.

The Department of Gunnery and Tactics is preparing a program of instruction for the first year Advanced Course ROTC, covering the subject of Seacoast Artillery and Technique. Colonel Holcomb and Commander Stencil, Navy Liaison Officer with the Coast Artillery School, recently visited the United States Navy Amphibious

tative schedule for two weeks' amphibious instruction to be given by the Department of Gunnery and Tactics for students of the Advanced Course.

The Department of Training Publication is now working on the outlines for all Extension Courses. Enrollment for these courses has not as yet been initiated by the War Department. Film Strips AN/MPG-1, Parts No. 1 and No. 2, have been completed and forwarded to Army Ground Forces Headquarters for review. Changes to FM 4-10 and 4-15 and TM 4-235 have been completed and are now in the process of illustration by the Visual Aids Section.

On 1 July, Headquarters Detachment, Harbor Defenses of San Francisco was activated. This organization will operate solely as a caretaking detachment for the Harbor Defense, maintaining the armament and equipment out of service and guarding the outlying stations. New units activated 1 August as training reserve units are: The 13th CA Bn, 2d CA Bn, 55th CA Bn, 515th CA Btry, 2d CA Btry and the 77th FA Btry (155mm Gun SP).

Personnel changes for the Coast Artillery School as of 1 September are as follows:

ARRIVALS

Rank Name	Duty
Lt. Col. John J. Guy	Personnel Staff Officer, Hq & Hq Btry, CAS
Lt. Col. Nyles W. Baltzer	Assistant Artillery Engineer, Hq & Hq Det, Harbor Defenses of San Francisco
Maj. Thomas D. Caulfield	Radar Instructor, Dept of Eng, CAS
Maj. William H. Nicolson	Tactics Instructor, Dept of Gunnery & Tactics, CAS
Capt. Worth C. Conner	Det Commander, Hq & Hq Det, 2d CA Bn
Capt. William A. Youngberg	Seacoast Gun Data Computer Instr, Dept of Eng, CAS
Capt. Edward K. Herrman, Jr.	Training Publication Officer, Dept of Tng, CAS
Capt. Henry Surum	CA Unit Commander, 55th CA Btry
Capt. Harry L. Darden	Recruiting Officer, Hq & Hq Btry, CAS
Capt. Vincent L. Burke	Chaplain, Hq & Hq Btry, CAS
Capt. Elmer E. Twining	Asst S-3, Hq & Hq Btry, CAS
Capt. Lawrence W. Stephens	Unit Commander, CAS Det
Capt. James F. Seals	Seacoast Gun Data Computer Instr, Dept of Eng, CAS
Capt. William G. Mathews	Electrical Eng Instr, Dept of Eng, CAS
Capt. Paul Rutkovsky	Intelligence Officer, Hq, 61st Coast Artillery Battalion
Capt. Gerald A. Reynolds	Btry Commander, 515th CA Btry
1st Lt. John M. Periale	Executive Officer, 55th CA Btry
1st Lt. Dallas L. Nash	Bn Executive Officer, Hq & Hq Det, 2d CA Bn
1st Lt. Earl L. Sexton	Property Officer, Submarine Mine, 2d CA Btry
1st Lt. Henry F. Hamberger	Btry Executive Officer, Hq & Hq Btry, CAS
1st Lt. Willis E. Powell	Instr, Dept of Sub-Mines, CAS
1st Lt. Sherman J. Smith, Jr.	Detachment Officer, Mine Training Detachment

DEPARTURES

Rank Name	Duty		
Lt. Col. Nyles W. Baltzer	Trfd to O/S Repl Depot	1st Lt. John J. Bean	Trfd to Overseas Repl Depot
Lt. Col. George F. Main	Trfd to Overseas Repl Depot	1st Lt. L. T. Gray, Jr.	Trfd to Overseas Repl Depot
Lt. Col. Sheldon H. Smith	Retired	1st Lt. Joseph Polancic	Trfd to Overseas Repl Depot
Lt. Col. Walter E. Christie	Separated from Service	CWO Richard T. Carlsen	Retired
Maj. George H. Best	Trfd to Overseas Repl Depot	CWO Carl J. Keller	Trfd to Overseas Repl Depot
Maj. John Christenson	Trfd to Overseas Repl Depot	CWO Louis Epstein	Trfd to Overseas Repl Depot
Capt. Baron A. Edwards	Trfd to Overseas Repl Depot	CWO Louis H. Gardapee	Trfd to Overseas Repl Depot
Capt. Thomas E. Leachman	Trfd to Overseas Repl Depot	CWO Fay G. Lewis	Trfd to Overseas Repl Depot
		CWO Virgil L. Kuykendall	Trfd to Overseas Repl Depot
		WOJG George A. Marsh	Trfd to Overseas Repl Depot



260th AAA Group, Washington, D.C.

COLONEL LEROY S. MANN, *Commanding*

Maj. Gen. Butler B. Miltonberger, Chief of the National Guard Bureau, opened the postwar recruiting drive of the 260th AAA Group and other District of Columbia National Guard Ground Force units with a radio interview Wednesday, 21 August. Speaking over Station WWDC at Washington, General Miltonberger cited advantages to World War II veterans in Guard membership and indicated that Guard organizations would be kept abreast of developments in weapons, equipment and training.

Possession of its modern armory, expected 1 September, having been further delayed, the 260th now looks forward to occupying the building about 1 October. Receipt of equipment for its battalions and Federal recognition de-

pend to a large extent upon occupation of the armory.

Two recruits, the first to join in the postwar reorganization of the District of Columbia National Guard Ground Force units, were received by the 260th the night of August. They were M/Sgt. Edgar Reed, who was inducted into Federal service in 1941 as a member of the Ground Force predecessor, the 260th Coast Artillery Regiment (AAA), and Sgt. Walter Uhorchak. Both Washington men, they were sworn in by Brigadier General Albert L. Cox, Commanding General, District of Columbia National Guard.

Since its activities were last reported, Colonel LeRoy S. Mann, commanding Officer, 260th AAA Group, has announced changes in battalion commanders. These were made necessary by the decision of Lieutenant Colonel Walter L. Kemper to remain on active duty. As presently organized, battalion commanders are: 340th Searchlight Battalion, Lieutenant Colonel George V. Selwyn; 260th Gun Battalion, Lieutenant Colonel Given W. Cleverly; 380th Automatic Weapons Battalion, Lieutenant Colonel Charles Yech, Jr.



Army Ground Forces Board

No. 4 Notes

Major General John L. Homer, President

On 6 July 1946 the Antiaircraft Service Test Section relieved from Army Ground Forces Board No. 1 and became Army Ground Forces Board No. 4. The latter was thus activated and was directed to form an Antiaircraft Service Test Section and a Guided Missile Service Section. Colonel Robert H. Van Volkenburgh, Commandant, Antiaircraft Artillery School, was directed to assume command as Acting President pending arrival of Major General John L. Homer who is now President of Army Ground Forces Board No. 4 as well as Commander Antiaircraft Artillery and Guided Missile Center at Fort Bliss. Colonel Van Volkenburgh selected Colonel G. Cary, former Director of the Antiaircraft Service Test Section to be the Executive Officer of the Army Ground Forces Board No. 4, Colonel James E. McGraw, former Director of the Antiaircraft Service Test Section, and Colonel Peter S. Peca to be Director of Guided Missile Service Test Section. Colonel Peca came to the Guided Missile Service Test Section from Army Ground Forces Board No. 1 where he had been the Guided Missile Section Officer. The above reorganization was accomplished using the same officers and personnel as originally constituted the Antiaircraft Service Test Section of Army Ground Forces Board No. 1, and no change in the location or mission of this group is contemplated.

Most of the work performed by Army Ground Forces Board No. 4 may not be published due to security regulations. However, a number of items of interest are noted below:

Winter Tests. The Antiaircraft Service Test Section is actively engaged in preparing plans and training personnel for participation in cold weather tests of antiaircraft equipment. Tests will be conducted in the extreme conditions existing at Fairbanks, Alaska, during the coming winter. Standard and experimental equipment will be used. These are in logical continuation of previous winter tests including those conducted by the Ordnance Department at Camp Shilo (1942-43) and Fort Churchill (1943-44) in Canada. The new tests will be more comprehensive than those performed previously and will involve use of equipment as far as possible by table of organization units of the Army. The Antiaircraft Artillery School is organizing and training the tactical antiaircraft units which will take part in the tests. The Antiaircraft Service Test Section is preparing detailed plans and is training officers and other specialists who will supervise special tests.

New Matériel. A continuing function of the Antiaircraft Service Test Section, particularly since the latter part of the recent war, has been the preparation of military characteristic requirements for proposed improved types of matériel. These are currently being revised to meet new types of missiles and higher expected airplane

speeds. In guns, increased velocity, increased flexibility and decreased weight are desired. In directors, increased computational ranges, increased velocity capacity, improved tactical control and less dependence upon visual contact are expected. Improved radar performance is specified including positive identification methods.

Precision Theodolites. There has recently been installed near Fort Bliss an aerial survey system involving theodolites of very high precision in order to record accurately the paths of aerial targets during radar and director tests. The requirement for these instruments was discovered early in the last war and the military characteristics were evolved by the Antiaircraft Service Test Section (then the Antiaircraft Artillery Board) and the National Defense Research Committee. The latter organization began their construction and after the war the theodolites were completed under Ordnance contracts.

The new instruments are permanently installed on heavy foundations and, with their individual rotatable shelters, resemble miniature astronomical observatories. They are capable of measuring angles, as read from photographs, to an accuracy of approximately one-tenth of a mil. Timing apparatus of high accuracy is included and can be used to coordinate associated test equipment.

Testing Device for Automatic Weapons Computing Sights. The Antiaircraft Service Test Section has received a mount for comparing the performance of various computing sights. It consists essentially of the familiar Maxson machine-gun mount (M45) and a compact range-only radar. The entire assembly is mounted on the Generator Trailer M7 and resembles the Multiple Machine-Gun Mount M51, less guns. Various computing sights may be installed in lieu of the machine guns. Accurate ranges are supplied by the radar. In the testing of computing sights, it is not contemplated that this mount represents the ultimate mount of the future. It is expected that variables due to mounting on various types of guns and ranging by individual processes will be eliminated and essential differences between computing sights will be more easily analyzed.

Guided Missile Service Test Section. This section has just been organized to cover the field of Guided Missiles. It will work in proximity to and in close coordination with the Antiaircraft Service Test Section. The present principal activity of this section is to devise means of locating and tracking super-velocity missiles. It took over the personnel and activities of the Guided Missile Sub-section of the Antiaircraft Service Test Section which had been working at White Sands Proving Grounds during the firings of the German V-2 Rockets.

Suggestions Concerning Antiaircraft Equipment should be forwarded to Headquarters, Army Ground Forces, Washington, D. C., attention Development Section.

Since our readers have not displayed any particular interest in this section of the Journal we plan to dispense with it in future issues.

BEST

General

THE EGG AND I. By Betty MacDonald. In 1927 the author married a man who was fired with the idea of opening a chicken ranch in the Northwest. They moved to a ranch on the Olympic Peninsula, and with a great deal of humor she chronicles her complete disenchantment with chickens and farm life. There is much, too, in her story about her neighbors, the thrifty and critical Hickses and the carefree and borrowing Kettles. Lippincott \$2.75.

PEACE OF MIND. By Joshua Loth Liebman. Rabbi Liebman correlates the findings of psychoanalysis with the basic religious teachings in order to give man a clear understanding of himself and through that understanding, wisdom and peace. Simon and Schuster \$2.50.

I CHOSE FREEDOM. By Victor Kravchenko. Kravchenko was born and grew up in the Russian revolutionary faith. He became a famous engineer and a trusted member of the Communist party. Then he suddenly quit his job and the party when he was part of a Soviet Purchasing Commission in the U.S.A. He relates the gradual disillusionment that led him to break with his whole previous life. Scribner \$3.50.

THE GREAT GLOBE ITSELF. By William C. Bullitt. In a book that hits hard at a subject treated gingerly by most authors, Mr. Bullitt, American Ambassador to Russia from 1933 to 1936, brands the Soviet Union as the menace to peace. That nation's creed, calling as it does for a political conquest of the world, embodies in itself the ever-present threat of war, he believes. He links present day Russian policy with its Czarist origins and with the totalitarianism of Germany and Italy. Scribner \$2.75.

TOP SECRET. By Ralph Ingersoll. A frank history of the invasion of the Continent, with no mercy for mistakes or obstructions. His reports on the campaigns on the blunder that lengthened war by weary months, on the mishaps and muddling is incisive. Harcourt Brace \$3.00.

LAST CHAPTER. By Ernie Pyle. A short account of Pyle's march to the Pacific front and the invasion of Okinawa, written with the homely detail and warm interest that made big best sellers. *Here Is Your War* and *Brave Men*. Like the previous books, it contains an index of the names mentioned in the text, also a brief postscript section. Holt \$2.50.

OSCAR WILDE. By Hesketh Pearson. The author of *G. K. Gilbert and Sullivan*, and other books has written an enthusiastic biography of Oscar Wilde. He reports the stories of Wilde's femininity but caps them with accounts of his physical prowess and courage. All in all, however, the book is a chronicle of the man who wrote some of the most amusing comedies in English. Harcourt \$3.75.

FANFARE FOR ELIZABETH. By Edith Sitwell. The author of *Victoria of England* brings to life the terrible yet romantic childhood and girlhood of the future Queen Elizabeth in the household of Henry VIII. Macmillan \$2.50.

YANKEE STOREKEEPER. By R. E. Gould. The autobiography of a Somerset County, Maine storekeeper, written with sly New England humor. It deals rather with Yankee "horse-trading" than with personalities. Gould tells of business coups, of apparent mistakes which he manages to turn to profit, now and then of picturesque customs of his store. Although he was an old-fashioned storekeeper, he was a smart businessman who licked the chain stores at their own game. Eight full-page drawings by Stephen Vothies. Originally announced by Stephen Daye under the title *Country Storekeeper*. Condensation in one issue of *Saturday Evening Post*. Looks like a possible best seller. Whittlesey \$2.50.

EARTH COULD BE FAIR. By Pierre Van Paassen. An intimate account of a Netherlands town and its people—Gorcum, the city of Van Paassen's birth, from his boyhood to World War. Here is an excellent view of a way of life that is totally unfamiliar to many of us; a portrait of people with all their motives, fears, hopes; a story of the rebellion of man against the forces of oppression. Dial \$3.50.

DETROIT IS MY OWN HOME TOWN. By Malcolm Binns. A racy informal picture of Detroit through sketches of its great figures, inside stories about titanic feuds, yarns about baseball players, and other interesting people and places. The author is known Detroit for many years as only a newspaper man could. Bobbs-Merrill \$3.75.

THE AUTOBIOGRAPHY OF WILLIAM ALLEN WHITE. Biography of a great American liberal editor and proprietor of the *Emporia Gazette*, which he developed into one of the most notable small newspapers of the United States; friend of presidents, statesmen and common Americans. His own story is also that of his land and people. Macmillan \$3.75.

A SOLO IN TOM-TOMS. By Gene Fowler. A humorous and intimate biography in which other people are given chief attention: I. Baldwin, the high-wire walker; Jack Dempsey; the Barrymore prostitutes and gamblers and celebrities. A picture of America from 1890 to 1938 and a personal narrative. Viking \$3.00.

MY THREE YEARS WITH EISENHOWER. By Captain Harold C. Butcher. The personal diary of General Eisenhower's Navy Aide, old and close friend, who shared the General's quarters from the invasion of North Africa to the final surrender of Germany. Besides being an inside view of three years of war, it is also an excellent portrait of Eisenhower. Simon and Schuster \$5.00.

THE SCARLET TREE. By Sir Osbert Sitwell. Second volume of Sir Osbert Sitwell's autobiographical writings, the first of which was *Left Hand, Right Hand*. In this narrative of his boyhood (1899-1909) we learn more about his distinguished family, who are now forced by financial difficulties to leave their ancestral home in Derbyshire and move to London. A portion was serialized

BOOK CLUB SELECTIONS

SEPTEMBER

Book Find Club

A WORLD TO WIN \$3.00
By Upton Sinclair. Viking

Book-of-the-Month Club

THE SUDDEN GUEST \$2.50
By Christopher LaFarge. Coward-McCann

People's Book Club

HEARTWOOD \$2.50
By Anne Miller Downes. Lippincott

Literary Guild

THE DARK WOOD \$2.75
By Christine Weston. Scribner

Junior Literary Guild

6, 7, 8 Year Olds
GREYLOCK AND THE ROBINS ... \$2.00
By Tom Robinson. Viking

9, 10, 11 Year Olds
THE WONDERFUL YEAR \$2.50
By Nancy Barnes. Messner

Girls 12-16

TOPFLIGHT: FAMOUS AMERICAN WOMEN \$2.50
Edited by Anne Stoddard. Nelson

Boys 12-16

THE WILD DOG OF EDMONTON .. \$2.00
By David Grew. Reynal & Hitchcock

Religious Book Club

THE STORY OF THE FAITH \$5.00
By William Alva Gifford. Macmillan

ELLERS

Expedient service to all and 15% discount to members of the Coast Artillery Association on orders of \$2.00 or more — cash or charge.

Fiction

HUCKSTERS. By *Frederick Wakeman*. A rip-roaring satire on the advertising agency business, including some marvelous conceits in New York and glimpses of radio work in Hollywood. The thread of the story is woven around Vic Nordman, in charge of the Beutee Soap account of the Kimberly & Maag agency. All well until Vic falls in love with Kay Dorrance, wife of a man, and has a torrid affair with her. He thinks of marriage for the first time, but abandons the idea out of deference to Kay's big husband. *Rinehart* \$2.50.

THIS SIDE OF INNOCENCE. By *Taylor Caldwell*. A novel of American life in one of the most absorbing periods of our national history—the decades immediately following the Civil War. The story concerns two rebels against the conventions of their times . . . one who was as clever and resourceful as she was beautiful and a man who would stop at nothing to attain his desires. *Scribner's* \$2.00.

TANNIA NEWS. By *Margery Sharp*. The story of Adelaide from 1875 to 1944, a Victorian virgin who married a ne'er-do-well and went to live in his slum house, only to discover, in middle age, that she had become a celebrity in London's smartest apartment house. A long, ironic comedy, rich in detail and subtly humorous. *Brown* \$2.75.

RHUBARB. By *H. Allen Smith*. When old Thad Banner left his business and his ball team to Rhubarb, his misanthropic yellow dog Eric Yaeger had his hands full. He was not only guardian and coach to Rhubarb; he had to pacify an insulted ball team, defeat the machinations of a disappointed heiress, and suffer the amorous advances of Polly, the weight lifter. *Doubleday* \$2.00.

HAPPY FEW. By *Helen Howe*. A very sophisticated, satirical novel set chiefly in Cambridge and holding up to ridicule the Harvard faculty members and their wives who call themselves "the Group." Dorothea is the leader—poised, beautiful, dignified. In the war, however, Dorothea's complacency is rudely shattered when her husband is killed, her lover jilts her, an old flame refuses her advances. Dorothea suddenly sees herself not as a cultured aristocrat but as an egotistic prig. *Simon & Schuster* \$2.75.

THE SALEM FRIGATE. By *John Jennings*. The 32-gun frigate *Essex* and its thunderous career is the background for the long story of Tom Tisdall and Ben Price. Ben has stolen Patience from Tom's nose, and Tom has married Selina (whom Ben has loved). On land and sea, as captives of the Barbary pirates, during the War of 1812, the two battle the enemy, the desert, stormy seas, and each other. *Doubleday* \$3.00.

THE SNAKE PIT. By *Mary Jane Ward*. An autobiographical account of life in an asylum. She tells of wet packs, the tubs, of the boredom and despair of institutional existence, of the gradual growth of hope. It takes place entirely in the asylum. *Random House* \$2.50.

THE AMERICAN. By *Howard Fast*. John Peter Altgeld, beaten child and overworked as a boy, set out to become a rich man and died. Then as Governor of Illinois and a not-too-scrupulous use of power, he suddenly championed the cause of the Chicago anarchists. For a time he triumphed as spokesman of the worker, but a western orator named Bryan upset his plans. *Duell, Sloan & Pearce* \$3.00.

L. TIMSON. By *Marguerite Steen*. The most important thing about this novel is that it is by the author of *The Sun Is My Mother*. More or less contemporary London is the setting. Coarse and ambitious Bell divorces her no-good husband and sets out to make money for her children's upbringing. However, her husband clouds her understanding: Kay grows up frustrated and bitter. Jo becomes pregnant by a war-shocked soldier. Bell, though she revealed she has become wealthy as an abortionist, gives the child her blessing. *Doubleday* \$2.75.

THEN AND NOW. By *Somerset Maugham*. In 1502 the city of Florence sent Machiavelli to treat with the Duke of Valentino, who was pressing Florence for an alliance or else—. Maugham draws a plausible picture of the times, of the wily Machiavelli, of the shrewd and treacherous Duke. There is a scene of Machiavelli's attempted seduction of a pretty wife only to

find his eighteen-year-old nephew has succeeded where he has failed. *Doubleday* \$2.50.

SPOONHANDLE. By *Ruth Moore*. Aggie, who would share in the proceeds if brother Willie sold Little Spoon Island to the rich summer people, called Willie and Hod shiftless; whereas they simply preferred their island to the prejudiced and gossipy Maine village. Then Ann Freeman, author-rebel, and Joe Sangor, the "Portygee," brought Hod out of seclusion, while Willie took over the upbringing of a half-wild orphan boy. *Morris* \$2.75.

THE FOXES OF HARROW. By *Frank Yerby*. Stephen Fox, gentleman gambler, arrived in New Orleans penniless. By his Irish charm and his gambler's skill he ran up a fortune. Then he built the magnificent Harrow and married the belle of New Orleans. Duels, a quadroon mistress, a riverboat race and other spectacular details give color to this long chronicle running from 1825 to the end of the Civil War and the ruin of Harrow. *Dial* \$3.00.

SINGING WATERS. By *Aun Bridge*. The remaking of bored Gloire Thurston when exposed to the earthy simplicity of the Albanians. Nils Larsen persuades her to stop off at Zagreb; Gloire, a widow, had hated the world but in Albania she recaptures a joy in life and at the end gives up Nils, the man she loves, to act as assistant to Dr. Emmeline Crowninshield. *Macmillan* \$2.50.

MR. ROBERTS. By *Thomas Hegglin*. Naval war as it was fought on a cargo ship, with a hated Skipper; a motley, bored crew; and one respected officer, young Lieut. Roberts. *Houghton, Mifflin* \$2.50.

BOOK CLUB SELECTIONS

OCTOBER

Book-of-the-Month Club

MISTRESS MASHAM'S REPOSE . . . \$2.75
By T. H. White. *Putnam*

Literary Guild

LORD HORNBLOWER . . . \$2.50
By C. S. Forester. *Little, Brown*

Junior Literary Guild

6, 7, 8 Year Olds
THE MONKEY WITH A NOTION . . \$2.00
By Glenn O. Blough. *Holt*

9, 10, 11 Year Olds
COWBOY BOOTS . . . \$2.00
By Shannon Garst. *Abingdon-Cokesbury*

Girls 12-16

THE TANGLED SKEIN . . . \$2.00
By Alta Halverson Seymour. *Westminster*

Boys 12-16

CAPTAIN JOHN SMITH: THE LAD FROM LINCOLNSHIRE . . . \$2.00
By Ruth Langland Holberg. *Crowell*

Order from

The Coast Artillery Journal

631 Pennsylvania Ave., N.W. Washington 4, D. C.

SEACOAST SERVICE



TEST SECTION

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 Seacoast Service Test Section, Army Ground Forces Board No. 1, or to present any problem that may properly be considered by the Section. Communications should be addressed to the President, Seacoast Service Test Section, Army Ground Forces Board No. 1, Fort Baker, California.

Items pertaining to Antiaircraft Artillery should be sent to the Antiaircraft Test Section, Army Ground Forces Board No. 4, Fort Bliss, Texas.

Any recommendations made or views expressed herein are those of Army Ground Forces Board No. 1 and are not to be construed as representing the opinion of all War Department or Army Ground Forces Agencies.

COLONEL R. E. DINGEMAN, Director

LT. COL. JAMES T. BARBER

LT. COL. WILLIAM R. MURRIN

LT. COL. GEORGE B. WEBSTER, JR.

LT. COL. FREDERICK N. WALKER, JR.

MAJOR FRANCIS J. PALLISTER

MAJOR JOHN C. LINDERMAN

CAPTAIN RICHARD T. PULLEN, JR.

Six-inch gun T2 (M1). The service tests of the 6-inch Gun T2(M1) and Barbette Carriages M3 and M4 have been completed recently. This gun is of a design similar to that of the 6-inch Guns M1903A2 and M1905A2 with the exception of a few external dimensions and the breech mechanism. The new breech mechanism is similar to that of the 155mm Gun M2. The Barbette Carriages M3 and M4 are similar in design to the Barbette Carriages M1 and M2, except that the cradle dimensions have been changed to accommodate the T2(M1) gun. In addition, the M4 carriage, which is equipped with the Remote Control System M14 (as is the M2 carriage), is equipped with a redesigned electronic controller to give it more uniform and accurate tracking.

The firings conducted indicate that the T2(M1) gun does not meet the military characteristics set up for this gun. Minor modifications were recommended on the Barbette Carriages M3 and M4. As modified, these carriages will be operationally satisfactory. The Barbette Carriage M4 is markedly superior to the Barbette Carriage M3.

The Seacoast Service Test Section recommended that no additional 6-inch T2(M1) guns be manufactured, and that no action be taken to classify as to standardization the Barbette Carriages M3 and M4 until the ballistic characteristics of the T2(M1) gun are completely corrected.

Electric elevating and traversing drives, 16-inch gun. Tests of the Westinghouse Variable Voltage and General Electric Amplidyne Drives were completed in May 1946. The tests produced conclusive evidence that both drives are superior to the present Waterbury speed gear drives. The variable voltage drives provide all-electric power operation and control of the gun and carriage in elevation and traverse by a "matched pointer" system. The amplidyne drives provide all-electric power operation and control of the gun and carriage in elevation and traverse by a remote control system the data for which are transmitted from the M1 computer located in the plotting room. An alternate means of

operation of the latter system is handwheel operation at the gun, affecting a "matched pointer" system.

The General Electric Amplidyne Drive is the more satisfactory of the drives and has capabilities which exceed those of any power drive with which seacoast artillery armaments is now equipped. Action has been taken to bring about standardization of the General Electric Drive.

Loading platform, 12-inch barbette carriage. The tests of the loading platform for the 12-inch Barbette Carriage Model 1917 have been completed recently. The purpose of the platform is to provide footing just to the rear of the breech of the gun. In addition to increasing the efficiency of operating personnel, the platform decreases the likelihood of personnel, projectiles, or powder bags falling into the gun pit. This Section recommended that the standard loading platform be installed on all active 12-inch Barbette Carriages, Model 1917.

155mm drill gun, T5. A new drill gun equipped with the breech of a 155mm Gun M1A1 has been received for test by this Section. This drill gun differs from earlier models in that it may be elevated up to thirty degrees. The lower half of the tube is a tray hinged just forward of the breech. When the breech is closed the weight of the projectile and powder causes the tray to swing downward and the projectile and powder slide off the tray, and the tray swings back to its original position. This eliminates the need for an extractor thus speeding up the drill. The drill gun is also equipped with casters so it may be used in an armory or similar structure. The equipment is currently under test at Fort Winfield Scott.

Change in azimuth origin from south to north. As is well known, for many years all fixed seacoast guns at seacoast defense installations have used South as the origin of azimuths. Since coast artillery units frequently are called upon to operate with antiaircraft, field artillery, and ground units, and naval units, all of which use North as the origin of azimuth, the coast artillery procedure has

understanding and confusion. The past war brought numerous instances of such confusion and resulting

as early as 1923 the Coast Artillery Board recommended adoption of North as an azimuth origin for all seacoast artillery. On recommendation of the Chief of Ordnance, other proposal which had been under consideration by Seacoast Service Test Section, that of changing angular measurement from degrees to mils, was studied in connection with the proposed change of azimuth origin. As much as the change of azimuth origin and the conversion of angular measurement each would entail changes to some parts of guns and fire control equipment, it would be of course, more efficient to make the changes concurrently. In view of this, the Seacoast Service Test Section has recommended that immediate action be taken to institute a conversion policy to provide for orientation from azimuth and azimuth measurement in mils for Coast Artillery armament and associated fire control equipment.

O. R. C. Training Program

With activation of Organized Reserve Corps units well under way, two-year training programs for the ORC have been issued by Army Ground Forces. In addition to Infantry, Armored Cavalry and Artillery training, Army Ground Forces is responsible for the training of units of technical services which would normally be attached to the Army.

The programs provide for the training of Signal, Infantry, Airborne Infantry, Armored Infantry, Field Artillery, Tank Destroyer, Armored, Antiaircraft Artillery, Seacoast Artillery, Military Police, Engineer, Chemical, Medical, Ordnance and Quartermaster units, for ORC bands and Order of Battle and Photo Interpreter teams.

They are based on a minimum of fifty home or "armory" training periods annually, of two hours each. Field training consists of a fifteen-day period annually, but since such training is not planned until 1948, a field training program will be issued at a later date.

The programs are outlined to provide refresher training, initially, in basic subjects, followed by progressive training in technical and technical subjects. All units will receive instruction in such basic subjects as administration and mess management, first aid, chemical warfare, customs of the service, dismounted drill and ceremonies, domestic discipline, dismounted drill and ceremonies, domestic discipline and martial law, intelligence, signal communication, map and aerial photograph reading, methods of instruction, military law, organization of the Regular Army and Organized Reserve Corps, protection of military information, censorship, psychology of leadership and utilization of training aids.

This training will be followed by technical and tactical subjects of the particular arm or branch, including logistics, vehicle operation and maintenance, air-ground liaison, the artillery-infantry-tank-engineer team, military history, map exercises and maneuvers, staff procedure, supply, appreciation, weapons, tactics, amphibious operations and specialist training. Advanced training for a limited number of specialists will be conducted by means of

Sandblasting equipment. Action has been initiated to amend Table of Allowances 4/4, 30 October 1944, to include sandblasting equipment for cleaning submarine mine cases. The proposed basis of issue is to be one set per thirty groups, with a maximum issue of two sets per harbor defense.

Offset method firing. A means of offset firing using the AN/MPG-1 has been devised by this Section. The tracking scope of the radar is modified so that an offset marker appears three degrees to each side of the center vertical marker. When using offset firing the target is tracked by means of one of the offset markers depending upon the direction of travel of the target. As a result the center vertical tracking marker tracks a point which is offset laterally by three degrees from the target. This method eliminates the need for a towed target and consequently permits more maneuverability and speed of the vessel. Records of actual deviations may be taken by photographing the tracking or "B" scope at the instant of splash.

special courses to be held at the various service schools.

Tables of allowances of equipment for home training of the Organized Reserve Corps have been approved by the War Department, and units will be able to begin drawing their equipment as soon as adequate facilities for its maintenance and storage are procured, General Devers stated.

The tables of allowances published thus far cover equipment for home training of ORC Chemical, Antiaircraft, Engineer, Field Artillery, Infantry, Medical, Ordnance, Quartermaster, Signal, Finance, Special Services, Counter Intelligence, Order of Battle, Photo Interpreter, Transportation Corps and Airborne Infantry units. Virtually all organic equipment of each arm, branch and specialty is made available, plus necessary Air Forces, Chemical, Engineer, Medical, Ordnance, Quartermaster, Signal and Transportation equipment.

The amounts of equipment authorized vary with the class of unit, whether A, B or C. Class A units are organized at full strength of officers and enlisted men, and will be as fully equipped as possible. Only essential individual and training equipment will be furnished Class B units, organized with full officer strength and enlisted cadres, and Class C units will be organized, with full officer strength only.

To alleviate problems of maintenance and storage, only 25% of authorized vehicles will be issued, and 25% of specialized equipment such as artillery pieces, heavy engineer equipment and tanks. Such heavy equipment will be issued to Class A units only, except in the case of Class B Field Artillery battalions, which will be issued one appropriate artillery piece. Normal engineer, ordnance, chemical and quartermaster equipment which accompanies vehicles will be issued on a one-per-vehicle basis.

In addition to individual arms and equipment, which will be issued to all members of Class A and B units, and uniforms, which will be issued to all enlisted members of the ORC, many specialized items of equipment from World War II stocks will be furnished for use in home training.

COAST ARTILLERY ORDERS

WD and AGF Special Orders covering the period 26 June through 30 August 1946. Promotions and demotions are not included.

MAJOR GENERALS

Meyer, George R., to retire.

BRIGADIER GENERALS

Babeock, Franklin, to retire.
Colladay, Edgar B., to retire.
Gage, Philip S., to retire.
Oldfield, Homer R., to retire.

COLONELS

Alfrey, John, University of Kansas, Lawrence, Kans.
Anderson, George B., relieved from detail in QMC.
Atwood, Roy S., to retire.
Barrett, Archibald B., to Hq Seventh Army, Atlanta, Ga.
Brady, William I., relieved from asgmt to Gnd SIS Sec and asgd to Gnd Sv Journal Sec AGF.
Burnell, Nathaniel A., Hq Second Army, Baltimore, Md.
Campbell, Alexander H., to Office US Joint Chiefs of Staff, Washington, D. C.
Carroll, James A., to detail in TC.
Chapin, Willis Med., to Hq First Army, Governors Island, N.Y. w/sta at Portland, Me. Detail as Senior Instr Organized Reserves State of Maine.
Chaplin, Robert T., to OSW, Washington, D. C.
Cochran, John H., to retire.
Cole, Paul W., to Washington University, St. Louis, Mo.
Cooper, Avery J., Detailed as member GSC asgd to duty w/the WDGS.
Craig, James L., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
Crews, Leonard R., Sixth Army Hq and Hq Det HD of Puget Sound, Fort Worden, Wash.
Davis, John W., to Hq AGF, Fort Monroe, Va.
Detwiler, Harold P., to Hq First Army, Governors Island, N. Y. w/sta at New York City for duty as Instructor New York NG.
Dice, John B., Hq Fourth Army, Fort Sam Houston, Texas.
Diestel, Chester J., to detail in GSC to duty w/the WDGS.
Drake, Frank, to retire.
Dunn, Walter K., to HD of Long Island Sound, Fort H.G. Wright, N. Y.
Foster, Valentine P., to First Army, Fort Dix, N. J.
Freeland, Ellicott H., to retire.
Gallant, Edward B., to OC of S, Washington, D. C. for duty w/Budget Div.
Gough, A. Deane, to detail member GSC asgd to duty w/the WDGS.
Grimm, Henry F., to AAA Repl Pool AARTC, Fort Bliss, Tex.
Gunn, Clem O., to CA Repl Pool, Fort Winfield Scott, Calif.
Harvey, Thomas H., to USMA, West Point, N. Y.
Hendon, Robert R., to War Assets Adm, Washington, D. C.
Hendrix, Raleigh R., to Hq and Repl Sch Comd, Fort Bragg, N. C.
Hincke, John I., to Univ. of Pittsburgh, Pittsburgh, Pa.
Irvine, Michael M., to relieved from active duty.
Jackson, Albert M., to retire.
Jeffords, William Q., to Georgia School of Technology, Atlanta, Ga.
Johnson, William L., to retire.
Jones, Allison W., to AGO Casuals, Washington, D. C. atchd to MDW for duty w/ARB.
Kemble, Franklin, to retire.
Kendall, William H., Special Services Div., Washington, D. C.
Kreuter, Robert H., to detail member of GSC and asgd to GSC w/troops.
Lee, Robert V., to detail as member GSC and

Lewis, Parry W., to retire.
Luce, Dean, to AAA Repl Pool AARTC, Fort Bliss, Texas.
McCarthy, Edward B., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
McCormick, Thomas C., to Fourth Army Texas Mil Dist, Fort Worth, Texas.
McGeehan, Charles W., to retire.
McLean, Donald, to Second Army, Baltimore, Md. w/sta at Allentown, Pa.
McNamee, William L., Hq AGF, Washington, D. C.
Mansfield, Herbert W., to detail GSC w/ the WDGS.
Martin, Emmor G., to Hq AGF, Fort Monroe, Va.
Mellnik, Stephen M., to detail as member GSC asgd to WDGS.
Merkle, Ernest A., AGF Bd No. 4, Fort Bliss, Texas.
Metz, Thomas McG., to Comd and Staff College, Fort Leavenworth, Kans.
Meyers, Harry F., to Hq Second Army, Baltimore Md. w/sta at Richmond, Va.
Mitchell, John D., to First Army HD of Delaware, Fort Miles, Del.
Myrah, Halver H., to AGF Board No. 1, Fort Bragg, N. C.
Nelson, Paul B., to detail as member GSC asgd to WDGS.
O'Connell, Geoffrey M., to AAA Sch, Fort Bliss, Texas.
Ostenberg, Frank T., to detail as member GSC asgd to WDGS.
Papenfoth, William H., to detail as member GSC to duty w/the WDGS.
Peddicord, Everett D., to Hq AGF, Fort Monroe, Va.
Pitzer, John H., to detail in CMP.
Rothgeb, Clarence E., to Hq Sixth Army w/sta at Santa Fe, N. Mex. for duty as Instructor New Mexico NG.
Roy, Paul A., Hq AGF, Fort Monroe, Va.
Russell, Ralph W., Mississippi State College, State College, Miss.
Russell, Sam C., to relieved from active duty.
Schabacker, Clarence H., Hq AGF, Fort Monroe, Va.
Schmidt, Victor G., to retire.
Seward, John H., to Hq Fourth Army, Fort Sam Houston, Texas, w/sta at Santa Fe, N. Mex. for duty as Instructor New Mexico NG.
Shepardson, Frank H., to Comd and Staff College, Fort Leavenworth, Kans.
Shumate, Joseph P., Fifth Army, Camp Crowder, Mo.
Sinclair, Jesse L., to retire.
Smigelow, Howard G., Hq Sixth Army, Presidio of San Francisco, Calif.
Steele, Preston, Hq First Army, Governors Island, N. Y. w/sta at Third Mil Area, Wilmington, Del.
Sturman, J. Foxhall, Jr., to detail member GSC asgd to GSC w/troops.
Sweet, William H., to Hq Sixth Army, Presidio of San Francisco, Calif. w/sta at Portland Ore. detail as Senior Instructor Organized Reserves State of Oregon.
Sullivan, Andrew P., to detail member GSC to duty w/ the WDGS.
Taylor, Wentworth H., to detail in TC.
Thiele, Claude M., to Hq Fourth Army, Fort Sam Houston, Texas w/sta at Santa Fe, N. Mex. for duty as acting Senior Instr N. Mex NG.
Thomas, Benjamin A., Fid Agencies San Antonio Sec WD Manpower Board, San Antonio, Tex.
Tischbein, Karl F., to detail member GSC asgd to WDGS.
Tredennick, Donald C., to AAA Repl Pool AARTC, Fort Bliss, Texas.
Turner, Robert A., to detail member GSC and

Vandersluis, Howard J., to detail GSC to w/the WDGS.
Van Volkenburgh, Robert H., to Asst C AAA Sch, Fort Bliss, Texas.
Walker, Eugene B., to retire.
Waterman, Bernard S., to detail GSC to w/the WDGS.
Weddell, William A., to Seventh Army, Jackson, S. C.
White, Thomas B., to the Industrial College of the Armed Forces, Washington, D. C.
Winton, Arthur V., to detail in GSC to w/the WDGS.
Wolfe, Walter J., to detail member GSC asgd to WDGS.
Wrean, Joy T., Hq Seventh Army, Atlanta, w/sta at Nashville, Tenn. as Senior Instr Organized Reserves State of Tenn.
Young, George E., to AAA Repl Pool, Fort Bliss, Texas.

LIEUTENANT COLONELS

Adams, Gilbert N., Hq AGF, Fort Monroe, Va.
Alley, Stuart M., Fourth Army, Fort Bliss, Texas.
Amorosa, Arnold D., AAA Sch, Fort Bliss, Texas.
Armstrong, Chalmers H., Hq Sixth Army, Presidio of San Francisco, Calif.
Bates, Raymond H., Hq AGF, Washington, D. C.
Belardi, Raymond J., to detail GSC to duty w/the WDGS.
Bellonby, Emory E., to detail member GSC to WDGS.
Brown, William H., to detailed in TC.
Broyles, Harmon E., to Hq AGF, Fort Monroe, Va.
Bush, Ernest L., to OC of S, Washington, D. C.
Claflee, Robert A., to Hq First Army, Governors Island, N. Y.
Columbia, Hervey D., to Fifth Army, Camp Crowder, Mo.
Comstock, Richard H., to Hq First Army, Governors Island, N. Y.
Conway, Bernard E., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
Cormier, Everett L., to Hq Fifth Army, Chidlow, Ill.
Corothers, Earl M., to 450th AAA (AW) Battalion, Fort Bliss, Texas.
Dalrymple, Isaac J., to AGF Board No. 4, Fort Bliss, Texas.
Darling, Francis W., to detail member GSC to WDGS.
Davis, Edward G., to detail member GSC to WDGS.
De Rita, Joseph, to CA (SC) ORP, Fort Winfield Scott, Calif.
Disalvo, Anthony, to Comd and Staff College, Fort Leavenworth, Kans.
Dixon, Fred, to AAA Repl Pool RTC, Fort Bliss, Texas.
Donohue, James M., to USMA, West Point, N. Y.
Dougan, Murray D., to AAA Repl Pool AARTC, Fort Bliss, Texas.
Durgin, Chesley E., to OC of S, Washington, D. C.
Fisk, Samuel W., to Hq Sixth Army, Presidio of San Francisco, Calif.
Foote, Seneca W., to Hq Fourth Army, Fort Sam Houston, Texas, w/sta at Santa Fe, N. Mex. for duty as Instructor New Mexico NG.
Gallagher, Robert E., to detail GSC to w/the WDGS.
Goff, John L., to AAA Repl Pool AARTC, Fort Bliss, Texas.
Hackett, Charles J., to relieved from detail in AGD.
Hanson, Charles C., to Fourth Army Oklahoma Mil Dist, Oklahoma City, Okla.
Harriman, Joseph E., to detail in GSC w/troops.

- Harold G., to Second Army, Fort Hayes, Ky.
- John L., to Seventh Army, Fort Benning, Ga.
- Gordon H., to USMA, West Point, N. Y.
- Paul C., to retire.
- Joseph R., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Raymond A., to USMA, West Point, N. Y.
- Bruce H., to Hq First Army Governors Island, N. Y.
- Walter E., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
- David S., to Comd and Staff College, Leavenworth, Kans.
- Edward A., to Sixth Army Mil Dist Fourth Area, Helena, Montana.
- Jack V., to detail member GSC asgd WDGs.
- Werner L., to AGF Board No. 4, Fort Bliss, Texas.
- Royal L., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Postford A., Hq Seventh Army, Atlanta, Ga.
- Donald, to reld from asgnt to Gnd Sec and asgd to Gnd Sv Journal Sec AGF.
- Charles T., to QM Tng Center, Camp Va.
- Oliver K., to Comd and Staff College, Leavenworth, Kans.
- Murray J., to Hq AGF, Fort Monroe, Va.
- John M., to retire.
- John B., to detail in Ord Dept.
- Shelley P., to Seventh Army North Carolina Mil Dist, Raleigh, N. C.
- Francis K., to detail as member GSC to WDGs.
- David B., to asgd to Gnd Sp Info Sec AGF.
- George E., to Second Army, Fort George Meade, Md.
- James C., to Fifth Army Percy Jones Center, Fort Custer, Mich.
- Calvin L., to Hq AGF, Fort Monroe, Va.
- Arthur C., to reld from detail as mem-GSC and from asgnt to WDGs.
- Ferry B., to AGF Board No. 4, Fort Bliss, Texas.
- Lamar C., to AAA Repl Pool, Fort Bliss, Texas.
- Ralph H., to relieved from active duty.
- Walter H., to relieved from active duty.
- Willard G., to Comd and Staff College, Leavenworth, Kans.
- Harry B., to detail Hampton Institute, Hampton, Va.
- Eric A., to Fifth Army, Fort Sheridan, Ill.
- Donald V., to AGF Board No. 4, Fort Bliss, Texas.
- Ernest H. T., to Hq Fourth Army, Fort Sam Houston, Texas.
- Walter A., to USMA, West Point, N. Y.
- Walter A., to OC of S, Washington, D. C.
- Elliott W., to Fourth Army Texas Mil Dist, Austin, Texas.
- Albert A., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Selby M., to relieved from active duty.
- Eugene, to University of Pittsburgh, Pittsburgh, Pa.
- Richard S., to OC of S, Washington, D. C.
- John F., to CA Repl Pool, Fort Winfield Scott, Calif.
- Charles W., to Second Army, Camp Meade, Ky.
- Edgar H., to Central Intelligence Agency, Washington, D. C.
- Robert M., to relieved from active duty.
- Harrison F., to retire.
- Benjamin N., to detail in JAGD.
- Donald B., to detail as member GSC to WDGs.
- L., Jr., to reld from detail in GSC and asgd to GSC w/ troops.
- Williams, Albert C., to Second Army, Fort Knox, Ky.
- Williams, James M., to detail as member GSC asgd to WDGs.
- Wollaston, Pennock H., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
- Wright, Willard L., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Zeller, Frank J., to The Industrial College of the Armed Forces, Washington, D. C.

MAJORS

- Ayer, Franklin A., to FA School, Fort Sill, Okla.
- Baker, Phillip H., to detail in TC.
- Bearse, David Gurney, to 165th AAA Oper Det, Fort Bliss, Texas.
- Black, William J., to detail in TC.
- Blekaitis, Veto, to University of San Francisco, San Francisco, Calif.
- Boggs, Kenneth L., to First Army Second Mil Area Hartford Mil Dist, 115 Broad St, Hartford, Conn.
- Bogue, William B., to FA School, Fort Sill, Okla.
- Bolton, John C., to Massachusetts Institute of Technology, Cambridge, Mass.
- Brown, George B., to relieved from active duty.
- Brooks, Robert L., to relieved from active duty.
- Bruns, Stockton D., to FA School, Fort Sill, Okla.
- Bull, Harcourt G., to Special Service Repl Pool, Camp Lee, Va.
- Burrell, Walter E., to FA School, Fort Sill, Okla.
- Butts, Robert E., to FA School, Fort Sill, Okla.
- Cahill, Phillip J., to relieved from active duty.
- Campbell, Guy L., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Cannady, Preston B., to First Army Hq 1st Sv Comd, Boston, Mass.
- Carpenter, Edmond H., to AAA School, Fort Bliss, Texas.
- Casey, Jack M., to 322nd AAA (AW) Bn, Fort Bliss, Texas.
- Casey, Charles W., to 384th AAA (GN) Bn, Fort Bliss, Texas.
- Caulfield, Thomas D., to CA School, Fort Winfield Scott, Calif.
- Chavis, Thomas N., to Hq Sixth Army, Presidio of San Francisco, Calif.
- Chittendon, Albert O., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Cochran, James M., to detail in GSC to duty w/the WDGs.
- Cole, Norman E., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Colquitt, Rawlins M., to detail as member GSC to duty w/the WDGs.
- Cornwall, Paul R., to OC of S, Washington, D. C.
- Cox, Joseph C., to Second Army Virginia Mil Dist, Blacksburg, Va.
- Crane, Richard J., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Curran, Harlow T., to detail in TC.
- Cushing, Christopher B., to Hq Fourth Army, Fort Sam Houston, Texas.
- Davis, Gerald W., to Office US Joint Chiefs of Staff, Washington, D. C.
- Davis, Thomas W., to detail as member GSC asgd to WDGs.
- Denby, Roland E., to FA School, Fort Sill, Okla.
- Doane, Leslie O., to HD of Los Angeles, Fort MacArthur, Calif.
- Edmunds, James M., to First Army US Army Rctg Sv Det No. 2, 39 Whitehall St., New York, N. Y.
- Elder, Archibald R., to 267th AAA Gp, Fort Bliss, Texas.
- Evans, Belmont S., to USMA, West Point, N. Y.
- Fisher, Sydney G., to Hq AAP, Washington, D. C.
- Flint, Britsford P., to OSW, Washington, D. C.
- Goldart, William J., to detail as member GSC to duty w/the WDGs.
- Gillmore, William K., to Hq Fifth Army, Chicago, Ill, w/sta at Illinois Institute of Technology, Chicago, Ill.
- Glore, William R., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Goettl, John P., to FA School, Fort Sill, Okla.
- Grotte-Helmer M., to FA School, Fort Sill, Okla.
- Guth, Henry T., to FA School, Fort Sill, Okla.
- Hall, Robert E., to 233rd AAA (Slt) Bn, Fort Bliss, Texas.
- Hall, Samuel B., to FA School, Fort Sill, Okla.
- Hamilton, William P., to relieved from active duty.
- Hanson, Arthur F., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Hatton, John Herschel, to relieved from active duty.
- Hiller, Elon L., to Fifth Army, Fort Riley, Kans.
- Holman, Albert G., to Sixth Army Post Operating Co, Fort Ord, Calif.
- Holt, Arthur E., to FA School, Fort Sill, Okla.
- Howze, Frank B., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Hucks, Herbert M., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Hunegs, Harry, to Hq Second Army, Baltimore, Md. w/TDY at Wilberforce University, Wilberforce, Ohio.
- Hutton, Phillip M., to Hq Fifth Army, Chicago, Ill.
- Hutson, William M., to detail Ord Dept, Washington, D. C.
- Jennings, Cleveland H., to Comd and Staff College, Fort Leavenworth, Kans.
- Lambert, William H., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Lea, Thomas R., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Lossen, Herbert L., to Fifth Army Northern Br US Disciplinary Bks, Milwaukee, Wis.
- Lucas, Marvin H., to detail in TC, TC Tag Center, Fort Eustis, Va.
- Lucas, Peyton R., to FA School, Fort Sill, Okla.
- Ludden, Clemens P., to detail as member GSC to duty w/the WDGs.
- McAllister, James L., to Hq First Army, Governors Island, N. Y.
- McCafferey, Benjamin, to AAA Repl Pool AARTC, Fort Bliss, Texas.
- McCann, Donn M., to The Intelligence School, Fort Riley, Kansas.
- McInnis, William L., to relieved from active duty.
- Macaulay, George B., to Washington, D. C. for duty in AC/AS-3 Office of Sp Asst for AA.
- Malone, Duane W., to Sixth Army Hq and Hq Det. HD of San Diego, Fort Rosecrans, Calif.
- Marshall, John E., to Fifth Army, Fort Sheridan, Ill.
- Masterson, William F., to Seventh Army Alabama Mil Dist, Birmingham, Ala.
- May, Charles R., to AAAORP AARTC, Fort Bliss, Texas.
- Messner, Arthur E., to FA School, Fort Sill, Okla.
- Mitchell, George R., to 450th AAA (AW) Bn, Fort Bliss, Texas.
- Mulder, John H., to 68th AAA Gun Bn, Fort Bliss, Texas.
- Mundbenke, Wilson E., to relieved from active duty.
- Nagel, James R., to Hq Fourth Army, Fort Sam Houston, Texas.
- Olhausen, James N., to detail at Washington University, St. Louis, Mo.
- Paciorek, Stanley J., to FA School, Fort Sill, Okla.
- Padilla, Lewis R., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Pallister, Francis J., to AGF Board No. 1, Fort Winfield Scott, Calif.
- Patton, Thomas J., to Army Security Agency, Washington, D. C.
- Pearson, Ralph E., to Hq Repl and Sch Comd, Fort Bragg, N. C.
- Pell, Kenneth E., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Peters, Walter C., to relieved from active duty.
- Peterson, William H., to Hq Seventh Army, Atlanta, Ga.
- Pryor, Frank D., to FA School, Fort Sill, Okla.
- Raffaelli, Raymond J., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Regan, James L., to FA School, Fort Sill, Okla.
- Reitz, James T., to detail as member GSC asgd to WDGs.
- Rideall, Joel McE., to FA School, Fort Sill, Okla.

Ritchey, Andrew W., to FA School, Fort Sill, Okla.
 Roberts, Charles C., to Hq First Army, Governors Island, N. Y.
 Roberts, Sam A., to Hq Seventh Army Atlanta, Ga.
 Robinson, Edward H., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
 Roddy, Francis Joseph, to AAAORP AARTC, Fort Bliss, Texas.
 Rohan, Thomas C., to First Army Hq 1st Sv Command, Boston Army Air Base, Boston, Mass.
 Sandalls, Williams T., to detail as member GSC asgd to WDGS.
 Schneider, Leonard G., to relieved from active duty.
 Smith, Calvin O., to detail as member GSC asgd to WDGS.
 Speltz, Reinhard L., to Fourth Army WDPC, Fort Sam Houston, Texas.
 Spiller, Benjamin A., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Steiger, George E., to FA School, Fort Sill, Okla.
 Stevens, Donald K., to 529th AAA (AW) Bn, Fort Bliss, Texas.
 Strickland, Zebulon L., Jr., to University of Alabama, University, Ala.
 Strongin, Edward, to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Thomas, Arnold R., to School of Mil Govt, Carlisle Barracks, Pa.
 Treadway, Joseph E., to AAA Repl Pool, Fort Bliss, Texas.
 Tuft, Theodore B., to detail in TC.
 Vardas, Constantine, to FA School, Fort Sill, Okla.
 Walker, John K., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Wardrop, M. S., to detail in TC.
 Wellenreiter, Francis L., to 639th AAA (AW) Bn, Fort Bliss, Texas.
 Willis, Harold P., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Wipf, William W., to detail in JAGD.
 Winslett, Edmund J., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Woodes, Raymond C., to 267th AAA Group, Fort Bliss, Texas.
 Wright, John M., Jr., to OC of S, Washington, D. C.

CAPTAINS

Aman, Paul W., to Fifth Army, Fort Sheridan, Ill.
 Anderson, George K., to Seventh Army Hq and Hq Det HD of Charleston, Fort Moultrie, S. C.
 Anderson, Gilbert Kohrt, to 384th Gun Bn, Fort Bliss, Texas.
 Armour, Bernard Murray, to 224th AAA Slt Bn, Orlando, Fla.
 Arvin, Charles R., to FA School, Fort Sill, Okla.
 Aurand, Paul Burket, to CAC, Fort George G Meade, Md. TDPFO.
 Barkey, Howard E., to relieved from active duty.
 Barlow, William Charles, to AAA School, Fort Bliss, Texas.
 Barr, James G., to AGF Board No. 4, Fort Bliss, Texas.
 Barrett, Robert F., Jr., to AARTC, Fort Bliss, Texas.
 Bianchi, Joseph J., to 450th AAA (AW) Bn, Fort Bliss, Texas.
 Blue, Daniel L., to AAA School, Fort Bliss, Texas.
 Boaz, Ralph A., to 267th AAA Group, Fort Bliss, Texas.
 Braniner, Harold R., to SCSTS, AGF Board No. 1, Fort Bragg, N. C. w/sta at Ft Winfield Scott, Calif.
 Britt, Chester K., to 384th AAA Gun Bn, Fort Bliss, Texas.
 Brown, Ernest A., to Sixth Army Nevada Mil Dist Fourth Mil Area, Reno, Nevada.
 Burch, Lewis R., to 384th AAA Gun Bn, Fort Bliss, Texas.
 Burton, Lewis R., to 384th AAA Gun Bn, Fort Bliss, Texas.
 Calkins, James E., to 529th AAA (AW) Bn, Fort Bliss, Texas.

Carey, James Patrick, Jr., to AAAORP AAARTC, Fort Bliss, Texas.
 Carpenter, Delbert O., to 639th AAA (AW) Bn, Fort Bliss, Texas.
 Cassell, Robert S., to First Army Hd of Boston, Fort Banks, Mass.
 Chambers, Troy J., to 1st Experimental Guided Missile Group, Elgin Field, Fla.
 Chavet, Walter A., to (SC) Repl Pool, Fort Winfield Scott, Calif.
 Chilton, Paul Gordon, to AAAORP AARTC, Fort Bliss, Texas.
 Colo, Francis W., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Cone, Sidney L., to Kansas State College of Agriculture and Applied Science, Manhattan, Kansas.
 Conner, Worth Clements, to Harbor Defenses of Los Angeles, Fort Winfield Scott, Calif.
 Connor, Thomas R., to detail in TC.
 Cook, James M., to Engr School, Fort Belvoir, Va.
 Corby, Ralph Fisher, to HD of Chesapeake Bay, Fort Story, Va.
 Cross, William Seth, Jr., to AAAORP AARTC, Fort Bliss, Texas.
 Cudney, Russell H., to detail in Ord Dept.
 Cummings, Hubert Gordon, to AAAORP AAARTC, Fort Bliss, Texas.
 Curcru, Edmond H., to retire.
 Darden, Harry Lee, to CAC (SC) ORP, Fort Winfield Scott, Calif.
 Davidson, Sol C., to 233rd AAA (Slt) Bn, Fort Bliss, Texas.
 Davis, Leonard Waldron, to (SC) ORP, Fort Winfield Scott, Calif.
 DeCristoforo, Wilfred H., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Derricksion, William B., Jr., to detail in TC.
 Dickinson, George B., to AAA Repl Pool, Fort Bliss, Texas.
 Dobbie, John J., to AMC, Washington, D. C.
 Donahue, Patrick H., to First Army US Army Rctg Sv Det No. 10, Worcester, Mass.
 Dong, Charles, to 529th AAA (AW) Bn, Fort Bliss, Texas.
 Dunn, Cary Gossard, to Attech unsgd to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Ecker, Ray Elmer, to AAAORP AARTC, Fort Bliss, Texas.
 Elliot, Sidney B., to relieved from active duty.
 Elliott, Sherman L., Jr., to reld from detail in IGD.
 Ely, Gerald Franklin, to AAAORP AARTC, Fort Bliss, Texas.
 Evans, Graham R., to Hq AGF, Washington, D. C.
 Falconer, Donald P., to relieved from active duty.
 Farley, Edward W., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
 Fiske, Robert Walter, to AAAORP AARTC, Fort Bliss, Texas.
 Fletcher, John W., to Second Army New Cumberland General Depot, New Cumberland, Pa.
 Fling, William J., to FA School, Fort Sill, Okla.
 Galligan, Edward P., to Seventh Army WDPC, Fort Bragg, N. C.
 Garcia, Obaldo, to AAAORP AARTC, Fort Bliss, Texas.
 Gates, Joseph, to 450th AAA (AW) Bn, Fort Bliss, Texas.
 Gause, Freeman Marion, to 450th AAA (AW) Bn, Fort Bliss, Texas.
 Gentle, James E., to Hq Second Army, Baltimore, Md.
 Gilbert, Raymond C., to Fifth Army Percy Jones Hosp Center, Fort Custer, Mich.
 Gottlund, Platon, to relieved from active duty.
 Gurney, Frank W., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Gwinner, Harold Henry, to (SC) ORP, Fort Winfield Scott, Calif.
 Hall, James Melvin, to (SC) ORP, Fort Winfield Scott, Calif.
 Hansen, Leonard T., to 450th AAA (AW) Bn, Fort Bliss, Texas.
 Hanvey, Samuel Elvis, to relieved from active duty.
 Hatt, Leslie F., to detail in TC.
 Hartley, Harold Johannes, to 213th AAA AW

Hayward, George E., to relieved from detail, Inf.
 Hecht, Arthur Lee, to 267th AAA GP, Fort Bliss, Texas.
 Herberston, George Wright, to AAAORP AARTC, Fort Bliss, Texas.
 Herrmann, Edward Karl, to (SC) ORP, Fort Winfield Scott, Calif.
 Hicks, Kenneth C., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Higgins, Edward F., to AGF Board No. 4, Fort Bliss, Texas.
 Hoffman, Sidney, to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
 Horneij, Edwin Henry, to AAAORP AARTC, Fort Bliss, Texas.
 Hutchinson, Minning E., to 529th AAA (AW) Bn, Fort Bliss, Texas.
 Hutton, Henry James, to (AA) AAAORP AARTC, Fort Bliss, Texas.
 Jackson, Charles Franklin, to 526th AAA (AW) Bn, Orlando, Fla.
 Jesurun, Gladstone M., to Command and Control College, Fort Leavenworth, Kans.
 Johnson, Henry T., 639th AAA (AW) Bn, Fort Bliss, Texas.
 Johnson, James E., to Sixth Army, Camp Sherman, Calif. TDPFO.
 Kalbfleisch, Edwin, Jr., to detail at Washington University, St. Louis, Mo.
 Kasler, Charles L., to 284th AAA (AW) Bn, Fort Bliss, Texas.
 Kevan, Edward F., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Kelly, Charles W., to AGF Board No. 4, Fort Bliss, Texas.
 Kelly, Noel L., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 King, James B., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 Kuch, Charles F., to detail in TC.
 Kurz, Edward P., to relieved from active duty.
 Laing, James A., to detail in Inf.
 Lanelli, Lester Peter, to AAAORP AARTC, Fort Bliss, Texas.
 LaPlant, Palmer L., to Hq AGF, Washington, D. C.
 Larson, Durfee, to Engr Repl Pool Engr Ft Belvoir, Va.
 Lawrence, Charles Henry, to relieved from active duty.
 Lazzarini, Alfred A., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 LeMere, Francis Peter, to 68th AAA (Gun) Bn, Fort Bliss, Texas.
 Le Monier, Donald Joseph, to AAAORP AARTC, Fort Bliss, Texas.
 Lesneski, Stanly V., to Sixth Army Hq and Det HD of San Diego, Fort Rosecrans, Calif.
 Lewin, Charles Young, to relieved from active duty.
 Levendusky, Harry G., to 450th AAA (AW) Bn, Fort Bliss, Texas.
 Liles, William R., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
 Line, Austin C., to HD of Columbia, Stevens, Oregon.
 Lister, Joseph Raymond, to relieved from active duty.
 Logan, William T., to detail in JAGD JAG Pool Hq Fifth Army, Chicago, Ill.
 Lohmer, Leo J., to detail in TC.
 Lohn, James Mendel, to AAAORP AARTC, Fort Bliss, Texas.
 Lundgren, Roy Helenas, to 529th AAA (AW) Bn, Fort Bliss, Texas.
 Lynch, Thomas F., to Second Army West Pennsylvania Mil Dist, Pittsburgh, Pa.
 Lytle, Theodore J., to detail in AGD.
 McCahon, James H., to Cav School, Fort Bliss, Kans.
 McDaniel, Cecil A., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 McElligott, Joseph P., to AAA Repl Pool AARTC, Fort Bliss, Texas.
 McEwan, Richard G., to University of California, Los Angeles, Calif.
 McGovern, James P., to detail in TC.
 McKell, William McArn, to relieved from active duty.

- Atlie Harold, to 526 AAA Gun Bn, Orlando, Fla.
- Donald C., to 253rd AAA (Slt) Bn, Hood, Texas.
- Thomas Loren, to 2845th AAA AW Fort Bliss, Texas.
- Robert H., to The Abn School, Fort Benning, Ga.
- John H., to AARTC, Fort Bliss, Texas.
- Alexander R., to 450th AAA AW Fort Bliss, Texas.
- El Roy P., to OASW WD Strategic Serv Unit, Washington, D. C.
- William G., to CA Repl Pool, Fort Winfield Scott, Calif.
- Reno A., to CA School, Fort Winfield Scott, Calif.
- George C., to Repl Pool AARTC, Fort Texas.
- Hugo J., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
- Howard G., to AARTC, Fort Bliss, Tex. Winborn, to detail in TC.
- Merrill P., to 322nd AAA (AW) Fort Bliss, Texas.
- Richard J., to 108th Counter Intelligence Center Det First Army, 90 Church St., New York, N. Y.
- Thomas E., to Hq Sixth Army, Presidio San Francisco, Calif.
- Harry E., to relieved from active duty.
- Thomas Howard, to Atchd Unasgd CA (SC) ORP, Fort Winfield Scott, Calif.
- Henry H., to FA School, Fort Sill, Okla.
- Donald Lloyd, to AAAORP AARTC, Fort Bliss, Texas.
- Alexander, to relieved from active duty.
- John E., to detail in QMC QM Tng Center, Camp Lee, Va.
- Robert George, to Int School, Fort Benning, Kans.
- John F., to relieved from active duty.
- James D., to Seventh Army US Disarmory Bks, Camp Gordon, Ga.
- Benjamin N., to FA School, Fort Sill, Okla.
- Albert, to 639th AAA (AW) Bn, Fort Bliss, Texas.
- Theodore William, to 213th AAA AW Bn, Orlando, Fla.
- Frank J., to FA School, Fort Sill, Okla.
- Gustave A., to First Army US Army Sv Det No. 2, Westchester Square, Bronx, N. Y.
- Paul D., to detail in TC NYPE, Brookline, N. Y.
- Edgar N., to detail as member GSC asgd to WDGs.
- Peter F., to Fifth Army, Fort Sheridan, Ill.
- Manning S., to 450th AAA AW Bn, Fort Bliss, Texas.
- Robert Decker, to Atchd Unasgd AAA ORP AARTC, Fort Bliss, Texas.
- John C., to First Army Hq and Hq Det HD of Boston, Fort Banks, Mass.
- James H., to relieved from active duty.
- Joseph A., to 108th Counter Intelligence Center Det First Army, New York, N. Y.
- Hal H., to 639th AAA (AW) Bn, Fort Bliss, Texas.
- Robert J., to 529th AAA (AW) Bn, Fort Bliss, Texas.
- Walter L., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- David C., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Cummings A., to 450th AAA (AW) Bn, Fort Bliss, Texas.
- Byron C., to relieved from active duty.
- Gervies L., to 450th AAA (AW) Bn, Fort Bliss, Texas.
- Julius E., to 614th TD Bn, Camp Hood, Texas.
- Richard H., to FA School, Fort Sill, Okla.
- Frederick L., to FA School, Fort Sill, Okla.
- Homer W., to relieved from active duty.
- Shananowitz, Harry, to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Sharpe, John Henry, to atchd unasgd to AAAORP AARTC, Fort Bliss, Texas.
- Shea, Charles J., to Fifth Army RC, Fort Riley, Kans.
- Skipper, John D., to Second Army Hq and Hq Det HD of Chesapeake Bay, Fort Story, Va.
- Smith, William Edward, to atchd unasgd AAA ORP AARTC, Fort Bliss, Texas.
- Snorpskowski, Stephen M., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Speshock, Edward John, to 213th AAA AW Bn, Orlando, Fla.
- Stabler, Joseph P., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Stacy, Robert S., to OC of S, Washington, D. C.
- Standal, Hjalmer Leonard, to CA (SC) ORP, Fort Winfield Scott, Calif.
- Stauffer, Charles J., to FA School, Fort Sill, Okla.
- Swick, Loyal Benson, to CAC WDPC, Fort Dix, N. J.
- Taber, William A., Jr., to detail in TC.
- Tannenbaum, Kenneth M., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Tarver, Thomas H., to OC of S, Washington, D. C.
- Tawes, John P., to FA School, Fort Sill, Okla.
- Taylor, William Ehlers, to 253rd AAA (Slt) Bn, Camp Hood, Texas.
- Tindall, Edward F., to 284th AAA (AW) Bn, Fort Bliss, Texas.
- Trimble, Melville L., to 284th AAA AW Bn, Fort Bliss, Texas.
- Tuliszewski, Victor Joseph, to CA (SC) RP, Fort Winfield Scott, Calif.
- Twining, Elmer Ellsworth, to CA School, Fort Winfield Scott, Calif.
- Verga, Salvatore J., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
- Ward, John J., to CA (SC) ORP, Fort Winfield Scott, Calif.
- Waugh, Edgar S., to Seventh Army Hq and Hq Det HD of Pensacola, Fort Barrancas, Fla.
- Werner, Franklin A., to FA School, Fort Sill, Okla.
- Wilcox, Albert Monroe, to Hq and Hq Det HD of Portsmouth, Camp Landon, N. H.
- Williams, Horace Greely, to HD of San Francisco, Fort Winfield Scott, Calif.
- Wilpers, John J., to Counter Intelligence Corps Center, Holabird Sig Depot, Baltimore, Md.
- Wilson, Louis A., to 529th AAA (AW) Bn, Fort Bliss, Texas.
- Worrell, Thomas A., to Fifth Army, Fort Riley, Kans.
- Wreidt, Neil M., to FA School, Fort Sill, Okla.
- Wyatt, William L., to Hq Seventh Army, Atlanta.
- Youngberg, William Axel, to Atchd unasgd to CA (SC) ORP, Fort Winfield Scott, Calif.

FIRST LIEUTENANTS

- Acker, Kenneth Gene, to AAAORP AARTC, Fort Bliss, Texas.
- Anderson, William B., to reld from detail in Inf and detailed to QMC.
- Artley, George A., to detail in QMC QM Tng Center, Camp Lee, Va.
- Baldwin, Ten Broeck Watkins, to AAAORP AARTC, Fort Bliss, Texas.
- Balsley, Kenneth Ray, to 213th AAA AW Bn, Orlando, Fla.
- Bartholomew, Howard Warren, to AAAORP AARTC, Fort Bliss, Texas.
- Beall, Roy A., to Fifth Army, Fort Riley, Kans.
- Bellamy, Athelston Alhama to 450th AAA (AW) Bn, Fort Bliss, Texas.
- Bennett, Richard S., to 450th AAA (AW) Bn, Fort Bliss, Texas.
- Blake, John F., to relieved from active duty.
- Boughner, Duncan S., to AAA Rep Pool AARTC, Fort Bliss, Texas.
- Brown, Archie Dewey, to 244th AAA Slt Bn, Orlando, Fla.
- Buffalano, Frank A., to AGF Board No. 4, Fort Bliss, Texas.
- Burckhardt, William H., to detail in TC.
- Burriss, Frank C., to AAA School, Fort Bliss, Texas.
- Cain, Clements Marion, to CA (SC) ORP, Fort Winfield Scott, Calif.
- Cain, Lee R., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Cannelos, Peter John, to AAAORP AARTC, Fort Bliss, Texas.
- Carey, James Orvis, to AAAORP AARTC, Fort Bliss, Texas.
- Carroll, Ernest Albert, to 213th AAA AW Bn, Orlando, Fla.
- Carskadon, Ihling L., to detail in TC.
- Casaus, Carlos M., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Chandler, John A., to relieved from detail in Inf.
- Chitwood, Albert Earl, to 60th AAA (AW) Bn, Fort Bliss, Texas.
- Clements, James R., to Fourth Army, Camp Hood, Texas.
- Cline, Herbert Newton, to 526th AAA GUN Bn, Orlando, Fla.
- Coker, Thomas L., to 1st Experimental Guided Missile Group, Elgin Field, Fla.
- Connolly, Charles B., to 3104th Sig Serv Bn, Eastern Sig C Tng Center, Fort Monmouth, N. J.
- Coulson, Robert Edward, to AAAORP AARTC, Fort Bliss, Texas.
- Cox, Eugene Caldwell, to AAA School, Fort Bliss, Texas.
- Craw, Clarence F., to Fourth Army, Fort Bliss, Texas.
- Crawford, Alfred John, to AAAORP, Fort Bliss, Texas.
- Creel, Norvel Eugene, to AAAORP AARTC, Fort Bliss, Texas.
- Curo, Gerald W., to AAA Repl Pool, Fort Bliss, Texas.
- Daley, Edward J., to 384th AAA (GN) Bn, Fort Bliss, Texas.
- Darling, Byron Paul, to AAA School, Fort Bliss, Texas.
- Davis, Glen, to 450th AAA AW Bn, Fort Bliss, Texas.
- Denniston, Edgar Leroy, to Atchd unasgd to AAAORP AARTC, Fort Bliss, Texas.
- Derrick, Charles Daniel, to 213th AAA AW Bn, Orlando, Fla.
- Dove, Frederick Henry Marion, to AAAORP AARTC, Fort Bliss, Texas.
- Duffey, Harold E., to 450th AAA (AW) Bn, Fort Bliss, Texas.
- Eidy, Adam, to AAAORP AARTC, Fort Bliss, Texas.
- Errigo, Joseph Anthony, to AAAORP AARTC, Fort Bliss, Texas.
- Field, Willard E., to detail in TC.
- Fikentscher, Arthur, to AAAORP AARTC, Fort Bliss, Texas.
- Flanagan, John, to Fort Lawton Overseas Repl Depot, Seattle, Wash.
- Fortune, Marvin B., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Fox, Gabriel, to Camp Hood, Texas.
- Fox, Maphis Cary, to AAAORP AARTC, Fort Bliss, Texas.
- Francis, Russell, to detail in Inf.
- Francisco, Louis S., to AAA School, Fort Bliss, Texas.
- Franz, William Francis, to Atchd unasgd to AAA Repl Pool, Fort Bliss, Texas.
- Gillespie, Bryce, to 284th Slt Bn, Orlando, Fla.
- Greenhalgh, Earl Clark, to CA (SC) ORP, Fort Winfield Scott, Calif.
- Grubb, James Ferris, to 233rd AAA Sl. Bn, Camp Hood, Texas.
- Hadden, Eddie, to 25th Regt Combat Team, Fort Benning, Ga.
- Halisky, John Robert, to Ord CA School, Fort Winfield Scott, Calif.
- Halliwell, Warren Le Moyne, to AAA School, Fort Bliss, Texas.
- Hanson, Ernest Leroy, to AAAORP AARTC, Fort Bliss, Texas.
- Hastings, Jerrold L., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Hayes, John Butler, to 384th AAA (Gun) Bn, Fort Bliss, Texas.
- Heimer, Gerard, to FA School, Fort Sill, Okla.
- Heisler, William F., to 1st Experimental Guided Missile Group, Elgin Field, Fla.
- Hicks, Earl Alfred, Jr., to CA (SC) ORP, Fort Winfield Scott, Calif.

- Hickey, Edward J., to AAA Repl Pool, Fort Bliss, Texas.
- Hill, Harold Ralph, to CA (SC) ORP, Fort Winfield Scott, Calif.
- Jackson, Leonard M., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Janousek, Neal F., to AARTC, Fort Bliss, Texas.
- Jenisch, Fred F., to 716th MP Bn, Fort Dix, N. J.
- Johnson, Carl W., to detail in TC.
- Katz, Albert, to AAAORP AARTC, Fort Bliss, Texas.
- King, Daniel O., to AAA School, Fort Bliss, Texas.
- Kizenkovich, Zigmond Paul, to AAAORP AARTC, Fort Bliss, Texas.
- Kunde, Richard Leroy, to AAAORP AARTC, Fort Bliss, Texas.
- Ladner, Gerard J., to 322nd AAA (AW) Bn, Fort Bliss, Texas.
- Lassiter, George Linville, to atchd unasgd to AAAORP AARTC, Fort Bliss, Texas.
- LaVerd, Santo, to detail in TC.
- Lea, Alphonso, to 233rd AAA (SL) Bn, Camp Hood, Texas.
- Levy, Robert S., to Letterman GH, Presidio of San Francisco, Calif.
- Livingston, Gus, to Fifth Army, Fort Sheridan, Ill.
- McAnulty, Wallace McKey, to 253rd AAA (Sl) Bn, Camp Hood, Texas.
- McDermott, John Patrick, to AAAORP AARTC, Fort Bliss, Texas.
- McDonald, John P., to Fifth Army RC, Fort Riley, Kans.
- McGree, Nicholas Collins, to AAAORP AARTC, Fort Bliss, Texas.
- Macko, Joseph John, to AAA School, Fort Bliss, Texas.
- Makepeace, Ralph C., to relieved from detail in QMC and detailed in TC.
- Malone, Michael Joseph, to AAAORP AARTC, Fort Bliss, Texas.
- Marr, Davis W., to Fort Lawton Overseas Repl Depot, Seattle, Wash.
- Martell, William Charles, to 526th AAA Gun Bn, Orlando, Fla.
- Martin, Robert William, to AAORP AARTC, Fort Bliss, Tex.
- Meisenheimer, David B. to relieved from active duty.
- Meyer, Harlan Max, to AAAORP AARTC, Fort Bliss, Texas.
- Morris, Eugene Francis, to AAAORP AARTC, Fort Bliss, Texas.
- Muhl, James P., to AAA Repl Pool AA Repl Tng Center, Fort Bliss, Texas.
- Murray, Charles William, to AAAORP AARTC, Fort Bliss, Texas.
- Nash, Dallas L., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
- Norman, Jourdon E., to First Army WDPC, Fort Dix, N. J.
- Oakley, Ward S., to 450th AAA Auto Wpns Bn, Fort Bliss, Texas.
- O'Brien, Clarence Leonard, to Atchd unasgd to CA (SC) ORP, Fort Winfield Scott, Calif.
- O'Brien, John Frederick, to 322nd AAA (AW) Bn, Fort Bliss, Texas.
- O'Connor, James Whitney, to AAA School, Fort Bliss, Texas.
- Ore, Edwin F., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Osgood, Basil Rice, to atchd unasgd AAAORP, Fort Bliss, Texas.
- Otterbourg, Charles Raymond, to Atchd unasgd AAAORP AARTC, Fort Bliss, Texas.
- Packer, Roy F., to AAA School, Fort Bliss, Texas.
- Peavey, Harry C., to detail in TC.
- Petris, Nicholas C., to relieved from active duty.
- Powell, Owen Ivor, to AAAORP AARTC, Fort Bliss, Texas.
- Ramsey, Robert A., to detail in TC.
- Randazzo, Joseph Samuel, to CA (SC) RP, Fort Winfield Scott, Calif.
- Reid, Raymond T., to Second Army Hq and Hq Det of Chesapeake Bay, Fort Story, Va.
- Reidy, Joseph A., to Seventh Army Moore Gen Hosp, Swannanoa, N. C.
- Remie, John A., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
- Reum, Edward R., to AAA Repl Pool, Fort Bliss, Texas.
- Richards, Burke E., to detail in TC.
- Rogers, William Conrad, to AAAORP AARTC, Fort Bliss, Texas.
- Roskopf, John Kenneth, to 322nd AW Bn, Fort Bliss, Texas.
- Rybkowsky, Joseph Anthony, to CA (SC) ORP, Fort Winfield Scott, Calif.
- Sealander, Melvin William, to AAAORP AARTC, Fort Bliss, Texas.
- Smeding, Wilford John, to Camp Beale, Calif.
- Smith, Donald Bruce, to CA (HD) of Delaware, Fort Miles, Del.
- Smith, James W., to AARTC, Fort Bliss, Texas.
- Snow, James A., to 322nd AAA (AW) Bn, Fort Bliss, Texas.
- Sobke, Llewellyn, to AGF Board No. 4, Fort Bliss, Texas.
- Sonders, Leon Jay, to CA (SC) ORP, Fort Winfield Scott, Calif.
- Sprigg, William H., to CA School, Fort Winfield Scott, Calif.
- Stafford, Harry Arthur, to Atchd unasgd AAAORP AARTC, Fort Bliss, Texas.
- Steffan, Arnold Balthas, to (CA) HD of Galveston, Fort Crockett, Texas.
- Stringer, John L., to Seventh Army WDPC, Fort Bragg, N. C.
- Swigart, Roy M., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Syso, Michael Joseph, Jr., to AAA School, Fort Bliss, Texas.
- Terry, Milton O., to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Thedos, Jack Vernon, to Hq and Hq Det 12th Columbia, Fort Stevens, Oregon.
- Thomas, Grover E., to Fourth Army US Army Retg Dist, Fayetteville, N. C.
- Thomas, William John, to relieved from active duty.
- Thompson, Francis John, to relieved from active duty.
- Thornton, Paul E., to Sixth Army Post Operations Co., Fort Lewis, Wash.
- Thornton, Rozier L., to Second Army Hq Chesapeake Bay, Fort Story, Va.
- Throop, Vernon D., to Counter Intelligence Corps Center Holabird Sig Depot, Baltimore, Md.
- Thwaits, Prior, to AAA Repl Pool AARTC, Fort Bliss, Texas.
- Tozzo, Palmo A., to NYPE, Brooklyn, N. Y.
- Trombley, George L., to detail in TC.
- Ulanowicz, Emil M., to University of Cincinnati, Cincinnati, Ohio.
- Vredenburg, Fletcher R., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
- Wagner, Raymond Philip, to relieved from active duty.
- Waggoner, John P., to relieved from active duty.
- Walton, Robert W., to relieved from active duty.
- Waterman, Joe G., to 450th AAA (AW) Bn, Fort Bliss, Texas.
- West, John Leon, to AAA School, Fort Bliss, Texas.
- Whitcomb, Harry S., to relieved from detail in Inf.
- White, Alvin D., to Fort Lawton Overseas Repl Depot, Seattle, Wash.
- White, Robert Allen, to 60th AAA (AW) Bn, Fort Bliss, Texas.
- Willard, Robert S., to CA (SC) Repl Pool, Fort Winfield Scott, Calif.
- Williamson, Wayne L., to detail in TC.
- Wilson, Jack P., to Second Army HD of Chesapeake Bay, Fort Story, Va.
- Wood, Roy Lee, to atchd unasgd AAAORP AARTC, Fort Bliss, Texas.
- Youngs, Ronald Francis, CA (SC) ORP, Fort Winfield Scott, Calif.
- Ziemski, Frank Joseph, to CA AAAORP AARTC, Fort Bliss, Texas.

SECOND LIEUTENANTS

- Becks, Robert Roger, to 384th AAA (Gun) Bn, Fort Bliss, Texas.
- Coleman, Rennie C., to 450th AAA (AW) Bn, Fort Bliss, Texas.
- Elliott, Henry Wilford, to 450th AAA (AW) Bn, Fort Bliss, Texas.
- Hemenway, Robert Walter, to 233rd AAA (SL) Bn, Camp Hood, Texas.
- Johnson, Lee A., to 450th AAA AW Bn, Fort Bliss, Texas.
- Mitchell, Iverson O., to Second Army US Army Retg Dist, Washington, D. C.



Newly Appointed CAC Officers, Regular Army

(This Augments the List Published in the July-August Issue of the Journal)

Rank Indicated Is Permanent

Majors

Schultz, Marion H.

Adams, Lawrence W.

Todd, Harold E.

Connor, Robert T.

Captains

Cardwell, Eugene F.
Knapp, Ernest C.

Kallis, Stephen A.
Murray, Walter H.

Fieldler, Arthur A.
Dorman, James R., Jr.

Curren, William F., Jr.
DeVaney, Carl N.

Bowman, James W.

First Lieutenants

Cuffin, Ralph B.
Buckman, William E.
Szerdote, Sydney E.
McGrain, Donald
Halmberg, Donald W.
Huston, Robert M.
Richards, Harris T.
Robinson, John S.
Daniel, Roy E., Jr.
Van Court, Lloyd P.

Daugherty, Glen E.
Browne, Harvey S., 3rd.
Hughes, Eddings T.
Pratt, William W.
Ottinger, Charles F.
Heinrich, Charles T.
Schafer, Robert W.
Yates, Edison E.
Ellers, Conway L.
McCartney, Robert W.

Duckwall, Richard L.
Sharp, Felix C., Jr.
Landers, Herbert H., Jr.
Franson, Paul O., Jr.
Standish, Albert C.
Swatosh, Robert B.
Woodward, Joseph G.
Quirey, William O.
Muir, Robert P.
Chrietzberg, James, Jr.

Fulmer, Richard P.
Flynn, Ralph M.
Wild, Edward W.
Romans, Warren L.
Tringali, Joseph A.
Howard, Charles E.
Wilson, James A.
Buchanan, Stephen C.
Trussell, John B. B., Jr.
Chavis, Thomas N.

Buckwalter, John S.
Krueger, Herbert W.
Gordon, James L.
Gardner, Ralph V.
Pallo, John
Cunningham, John L., Jr.
Tillery, George G.
Cole, Charles B., Jr.
Pruett, Lloyd O.

Second Lieutenants

Stappard, Byron E.
Stephens, Joseph W., Jr.
Peters, Peter C., Jr.

Marr, John D., Jr.
Kipp, Eugene H., Jr.

Dix, Roy A.
Fleming, Dale R.

Weyant, Wallace W.
Furman, Hezekiah W. C.

Fischer, Kenneth P.
Partington, William H.

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