

COAST ARTILLERY JOURNAL



GENERAL NOLAN INSPECTING THE 62ND CA (AA).

JULY-AUGUST, 1935

Gunners' Instruction



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The United States Coast Artillery Association



"The purpose of the Association shall be to promote the efficiency of the Coast Artillery Corps by maintaining its standards and traditions, by disseminating professional knowledge, by inspiring greater effort towards the improvement of material 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 Reserve and Reserve Officers' Training Corps."

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Presentation of the National Guard Trophy

By Major H. W. Stark, C.A.C.

THE formal presentation of the United States Coast Artillery Association trophy for the training year 1934 to the 198th Coast Artillery, Delaware National Guard, was made by Brigadier General W. E. Cole, Commanding the Second Coast Artillery District, at Wilmington, Delaware, on Saturday, June 8, 1935. For this occasion, the entire regiment was assembled in the State Armory at Wilmington under the command of Colonel G. J. Schulz. Following the presentation the command passed in review before Governor Buck of Delaware and General Cole, both of whom were accompanied by their respective staffs. Plans had been carefully made by Lieutenant Colonel S. B. I. Duncan, Executive Officer, to have the presentation ceremony and a review in Brandywine Park but the arrangements had to be altered at the last minute due to a torrential downpour, and the ceremony was held in the restricted space of the Armory drill floor.

During the evening, Governor Buck was dinner host at the Hotel DuPont to the visiting officers and the commissioned personnel of the Delaware National Guard, a total of 80 guests being present. Following the dinner, Governor Buck delivered a short address voicing the pride

of the citizens of the state in the award of the trophy to the regiment and congratulating the officers for the outstanding performance of the regiment. Governor Buck stated that the regiment had set a high standard for itself, and that he expected that it would more than live up to this standard in the future. Brigadier General W. E. Stover, The Adjutant General, State of Delaware, acted as toastmaster and called on the following officers, all of whom responded by appropriate remarks:

Brigadier General W. E. Cole, Commanding Second Coast Artillery District;

Colonel G. J. Schulz, Commanding 198th C.A., Delaware National Guard;

Colonel J. R. Kelly, Officer in Charge National Guard Affairs, Second Corps Area;

Lieutenant Colonel E. E. Bennett, Secretary-Treasurer, U. S. Coast Artillery Association;

Major L. B. Weeks, representing Chief National Guard Bureau;

Colonel J. P. LeFevre, former Commanding Officer 198th C.A.;

Lieutenant Colonel S. B. I. Duncan, 198th C.A.;

Major H. W. Stark, Senior Instructor;

Major W. M. Cravens, Officer in Charge Reserve Affairs, Wilmington, Delaware;

Major T. D. Simkins, Fort DuPont, Delaware;



General Cole presenting trophy to Colonel Schultz, commanding 168th C.A.

Captain L. A. Hudgins, Instructor.

While the dinner to the officers was in progress, the enlisted personnel of the regiment were entertained at supper in the Armory, followed by a floor show and dance under the direction of the regimental chaplain, the Rev. Park W. Huntington, who is also the National Chaplain of the American Legion.

Under the guidance of Colonel Schulz, the 198th C.A. has attained the objective which he set forth for it upon assuming the command of the regiment several years ago, and the officers and enlisted personnel have every reason to take pride in their achievement in that the regiment was designated by the U. S. Coast Artillery Association as the outstanding National Guard Coast Artillery organization in the United States. The 198th made the remarkable score of 98.2% for the training year. It has made commendable progress in the past few years, a fact which is evidenced by reports covering armory and field inspections, target practice, drill attendance, and care of Federal property. While all connected with the regiment realize that it will be difficult to secure a repetition of this award, nevertheless they have set this as their new objective, and will make every effort to again be designated for this signal honor. The obsolete 1918 equipment has recently been replaced by the latest M3 AA Guns on the M2A1 mount and the T8E3 Director, and the regiment is anticipating a successful training period at Bethany Beach, Delaware, during August of this year.

Major H. W. Stark and Captain L. A. Hudgins are the Regular Army Instructors on duty with the Delaware National Guard.

Trophy Presented to the 507th

THE Coast Artillery Association Trophy for 1934, awarded to the outstanding Reserve regiment, was presented to the 507th C.A. (AA), Iowa's only Coast Artil-

lery unit, in connection with Governor Clyde E. Herring's review of the R.O.T.C. unit at Iowa State College, on May 18, 1935.

Seventeen of the 25 officers who last year hung up the record of 135.96 credit hours per officer for completed extension school sub-courses were present to take part in the ceremonies in which over a thousand potential reserve officers took part as cadets, while 150 reserve, national guard, and regular army officers were members of the Governor's reviewing party.

Major General Stuart Heinzelman, commanding officer of the VII Corps Area, had expected to represent the President of the U. S. Coast Artillery Association in making the presentation, but was prevented by illness. He sent his Chief of Staff, Colonel Walter K. Wilson, a Coast Artilleryman, who carried out his assignment in a most excellent manner. Lieutenant Colonel Harold E. Pride, with appropriate remarks, received the trophy on behalf of the regiment.

Major B. L. "Pat" Flanigen, C.A.C., read the letter from the then Association president, General William F. Hase, announcing the award to the 507th.

Major Thomas R. Phillips, C.A.C., now a student at the C. & G. S. School at Fort Leavenworth, Kansas, former instructor of the 507th under whose inspiring leadership the regiment made an average of over 100 hours per year for two years; and Major B. L. Flanigen, C.A.C., present unit instructor, were not the least interested of the spectators at the presentation ceremonies.

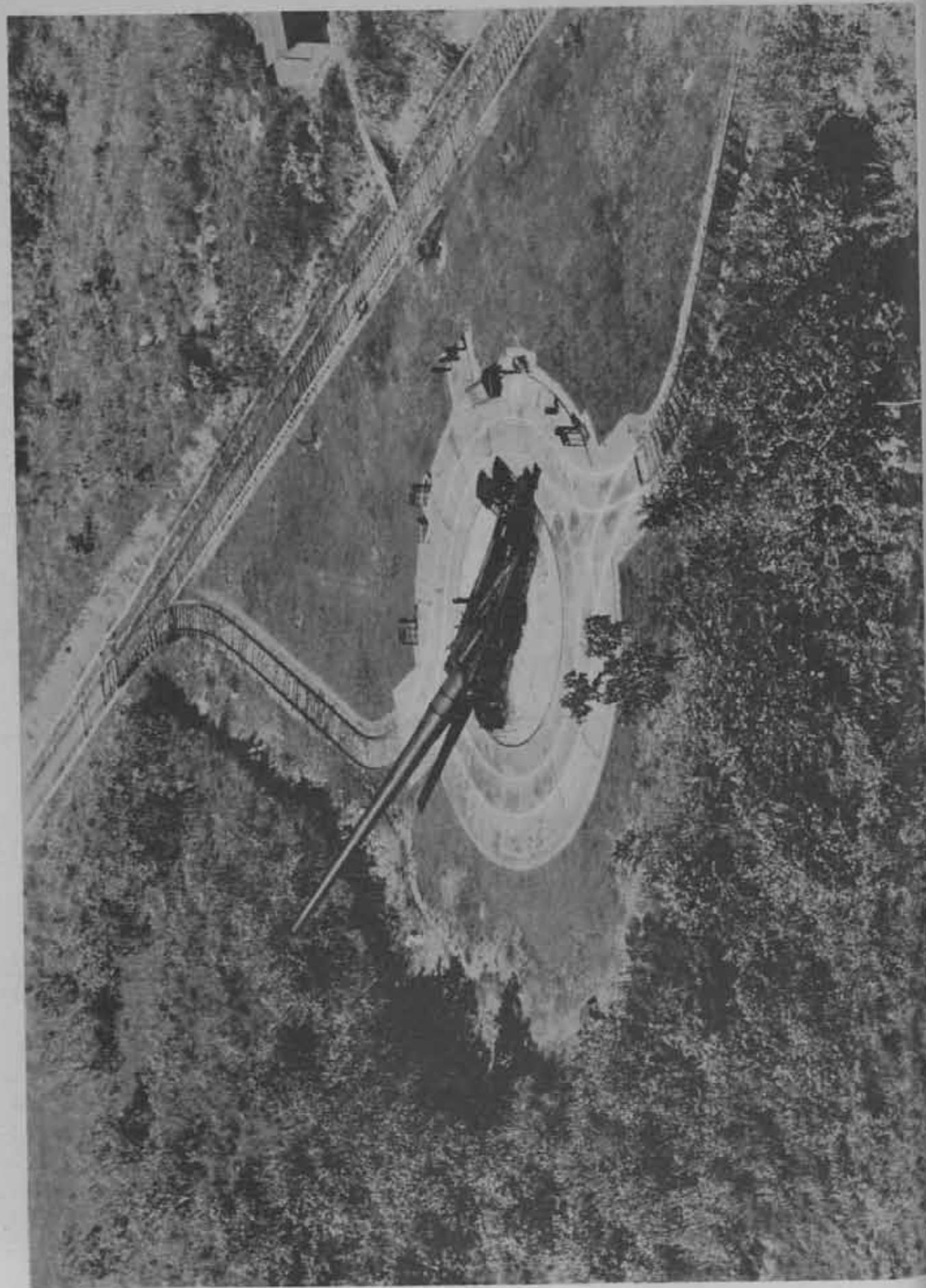
After the R.O.T.C. units had passed in review before the Governor and his party, 150 officers and guests sat down to luncheon before proceeding to Fort Des Moines for the two-day annual Contact Camp. In his remarks following the luncheon, Governor Herring pointed out what a satisfaction it is to any state or national executive to know that there is a large body of patriotic citizens who as Reserve or National Guard officers are always ready to maintain and defend the peace, no matter what the party affiliation of the administration then in power may be.

In his brief but stirring talk Colonel Wilson pointed out that the job of the soldier is always to restore peace to the people after the diplomats have lost it.

* * *

General Steele Elected President of Association

AT a meeting of the Executive Council of the U. S. Coast Artillery Association, held in Washington, D. C., on June 5, 1935, Major General Harry L. Steele, Chief of Coast Artillery, was unanimously elected President of the Coast Artillery Association. Under the provisions of Section 6, Article VI of the constitution and by-laws of the Association the Executive Council is authorized to elect members of the Council to fill vacancies occurring during an unexpired portion of a term of office. General Steele succeeds Major General William F. Hase, deceased.



Command of Land and Air Forces In Coast Artillery

By LIEUTENANT COLONEL RODNEY H. SMITH, C.A.C.

EDITOR'S NOTE: The following article was presented as a lecture by the Chief of the North American Military Mission to Brazil at the Army General Staff College in Rio de Janeiro before the Minister of War, the Chief of Staff, other high officials and the student officers.

The lecture deals with the debated question of whether the Army or the Navy should command the land forces, in particular the Coast Artillery and the air forces, employed in coast defense.

I. DEFENSE OF THE COAST BY LAND FORCES

REGARDLESS of who commands or should command land forces or sea forces, the coast line or shore is the natural and logical line of demarkation between the activities of these two forces. To simplify the study we will not consider air forces at this time; this will be discussed in the second part of this paper.

No one will dispute that the Army should control military operations in the interior of a country away from the coast. Nor will anyone not agree that the Navy should control operations on the high seas. This is simple and obvious, but when we approach the coast coming either from land or sea the subject becomes complicated and authorities in different countries differ profoundly as to the question of command, especially of the Coast Artillery.

Fleets cannot remain indefinitely at sea; they must have bases on the coast where they can refit, refuel, and be furnished with fresh supplies, and where they can take refuge from hostile fleets in case of defeat. These bases consist of good harbors, provided with the indispensable dry docks, repair shops, fuel storage, munitions, and other supplies.

Some naval authorities claim that since these bases are admittedly so vital to the Navy, the Navy should command the land forces defending them. At first glance this seems logical and perhaps might be, if the land forces consisted solely of coast artillery and it had no other mission than defense against attack made exclusively by vessels of war. But therein lies the error—the defense of naval bases and harbors on a coast line by land forces is not made solely by the coast artillery nor are these points subject only to purely naval attack. There are other attacks more dangerous, since it is to be expected that once an enemy has gained control of the sea, he will endeavor to land large forces of all arms, in general beyond range of the fixed cannon of the base and attack it from the flank and rear. To resist successfully such an attack, the defense will require troops of all arms including mobile coast artillery, which latter must support the infantry. Machine guns and light artillery will be used to defend the exposed beaches against hostile landing efforts.

Moreover landing attacks will not be limited to the beaches on the flanks but may be made on the beaches or landing areas *in front of and within* the harbor during periods of fog or other low visibility, or when the enemy considers that he has such superiority of naval fire or air attack that he can expect to neutralize our coast artillery during the operation of disembarking.

From this analysis, it is believed to be clear that the effective defense of a coast line and the naval bases on it by land forces does not consist merely of a duel between coast and naval artillery. It is much more complex and requires the combined action of all arms of the army, including coast artillery, against a hostile operation involving all arms supported by naval artillery.

It is well known that field artillery alone cannot successfully defend a river line. It now should be equally evident that coast artillery by itself cannot assure the defense of a coast line and its naval bases. To withstand the attack of a great overseas expedition may require divisions and even armies. It is obvious that no Navy has, nor should have, such large bodies of troops at its disposal, nor should it have control of them; this is not a naval function. Such large forces of all arms should be furnished by the Army and commanded by the Army.

For the effective defense of a base, troops of all arms will be disposed on the front and interior of the harbor so as to cover properly the points feasible for landing attack; they will also be located on the flanks covering the practicable landing areas within the vulnerable zone of the base. This vulnerable zone is considered to be that zone within which the enemy, if permitted to land unopposed, would have the possibility of subsequently conquering the base before we could concentrate sufficient troops to contain and defeat him. The following landing areas, for instance, would not be considered as coming within the vulnerable zone of a base, in other words within striking distance, and hence would not require an initial beach defense:

- a. A beach at a great distance from the base;
- b. A beach not at a very great distance but without roads connecting it with the base;
- c. A beach near the base, but barred therefrom by an impassable mountain range.

On the flanks of the base the troops of the various arms (infantry, machine guns, light artillery, etc.), defending the beaches would be supported by mobile coast artillery in the following manner: The heavy, long-range railway guns would counter-battery and hold at a distance the naval artillery supporting the landing attacks, and interdict the close approach of troop transports. This

interdiction would compel the hostile troops to travel a long distance to shore in small boats, during which time they would be at a maximum disadvantage, unable to fight or even to defend themselves effectively. The cannon of lesser caliber, such as mobile 155-mm. guns, would attack the destroyer laying smoke screens to protect the landing operations. This mobile coast artillery would also attack the small boats carrying hostile troops ashore, particularly while these boats are beyond range of light artillery and machine guns.

Within the area of the port proper, fixed coast artillery, reinforced by mobile coast artillery when necessary, would have the mission of supporting the infantry, machine guns and light artillery against landing operations. Of course within this same area all coast artillery would have the usual missions in defense of the port against purely naval attacks.

On the other hand our coast artillery, particularly the fixed batteries, will need the protection of infantry, machine guns and light artillery against hostile troops which may effect landings, as the result, for instance, of surprise raids made in periods of low visibility for the purpose of destroying the batteries.

Recapitulating, we may say that for the effective defense of a base or port and its vulnerable zone on the flanks, the coast artillery and other arms must be employed as a combined tactical team and this team must be under single command, that is, controlled by the Army. We must not disrupt this tactical team by placing the coast artillery under the Navy and the other land forces under the Army. Cooperation and mutual support can only be obtained by unity of command. To divide command is to violate a basic principle of war. Nor can we give the Navy command of this combined tactical team, because the handling of large bodies of troops in land operations is not a naval function.

To those who maintain that the Navy should have control of the land defense of the area of the port proper, using marines for defense against landing attacks within that area, while the Army is given control of the forces defending the flanks within the vulnerable zone of the port, the answer is that this is in effect to create a kingdom within a kingdom and to fall anew into the error of divided command and responsibility with all the evils flowing therefrom. We cannot correctly consider the defense of the port proper as separate and distinct from the defense of the landing areas within the vulnerable zone of the port or base. Let us see exactly why not.

Suppose that such a division has been made and that the tactical situation is such that the naval commander of the base estimates that some of the mobile coast artillery, infantry, and machine guns defending the flanks under Army command should be withdrawn therefrom to reinforce the base proper and that in accordance with his estimate of the situation he calls on the Army commander to furnish these reinforcements. Suppose further that the naval commander's estimate is correct and that he should be given the forces requested to prevent prob-

able defeat. Is the Army going to furnish them? It is highly problematical, as the Army commander, under the assumed hypothesis, has the sole responsibility for defending the flanks. He must consider that if he weakens his forces to accede to the naval commander's request, the principal attack may possibly fall on the weakened flanks and his would be the sole blame for any resulting disaster. On the other hand, if the Army commander does not send the reinforcements requested, the port may be captured. This would be a lamentable situation, but under the assumed conditions, the responsibility would be solely the naval commander's and not his. Thus we arrive at an absolute frustration of the defense.

In another tactical situation, the Army commander may correctly estimate that one or both of his flanks should be reinforced by some of the mobile coast artillery and marines, under naval command, defending the port proper. The naval commander may however refuse to furnish them for fear of endangering his own mission. Result: the enemy landing on the flanks would probably be successful, and the port would eventually be captured from the flanks and rear—another complete frustration of the defense.

To those who might claim that we could have unity of command and homogeneity of forces by using, under naval control, marines and coast and light artillery manned by marines, not only to defend the base proper, but also the landing areas within the vulnerable zone on the flanks, the answer is as follows: First, there would never be enough marines ordinarily available to furnish the large bodies of troops of all arms necessary for the efficient defense of the landing areas within the vulnerable zones of the various bases; second, if such large forces of marines were organized, trained, and equipped, we would have created a naval army which would be an insensate duplication of the Army of the nation. Furthermore this naval army would be tied to the coast line when the strategic situation might urgently require its use elsewhere, as for instance on a land frontier threatened by invasion.

There are other important reasons why all coast artillery, both fixed and mobile, should be under command of the Army. Let us suppose that there existed no menace of attack on the coast line, but that there was an imminent threat of invasion on a land frontier and that all the available heavy artillery was needed to meet that threat. Without doubt under the circumstances the mobile coast artillery should be withdrawn from the coast line to reinforce the heavy artillery which is so essential in land operations. If the mobile coast artillery were under naval control, the Navy authorities probably would refuse to furnish it on the grounds that they might need it themselves for an unforeseen emergency, or if they did furnish it, they might refuse to give up control of it and again we would have divided command. Experience in France during the War with railway units under naval command does not seem to have been too felicitous.

Now let us make another hypothesis. Suppose that

there is a threat of invasion of the coast line and no threat of invasion of a land frontier. Suppose further that the mobile coast artillery is under Army control and the fixed coast artillery under naval control. Without doubt all available mobile coast artillery should be concentrated to reinforce the threatened area. Logically, nothing should prevent the tactical grouping of a mobile battery with a fixed battery of the same or similar caliber and fire power, in the defense of a base, if the situation required it, but it would be an obvious absurdity to have the mobile battery under Army command and the fixed battery under Navy command. However the Army might refuse to surrender control of the mobile battery for fear they might later have need of it elsewhere.

Mobile coast artillery should be under Army command so that it may be used at will according to the strategic situation either on the coast line or in the interior. And in order to obtain unity of command, uniform training and a common doctrine of employment in coast defense, fixed coast artillery should also be under Army command.

In reinforcement of what has already been said, attention is called to the very significant fact that the nations with the three largest and most powerful navies, i.e., Great Britain, the United States, and Japan, have placed the defense of the coast and its naval bases by land forces in charge of the Army.

These nations find that the objective of a properly organized Navy is the creation, maintenance, and training of a high-seas fleet capable of offensive action, which will boldly seek out the hostile fleet.

These three nations moreover believe that to make local coast defense a primary naval function would require such a dispersion of force on the part of the Navy that it would be incapable of maintaining, training, and operating an efficient high-seas fleet.

II. DEFENSE OF THE COAST BY AIR FORCES

From the standpoint of strategical and tactical employment there are only two different categories of air forces, namely, land-based and ship-based. We do have flying boats, hydroplanes and so-called seaplanes, but in a military sense they are not sea-based planes since they cannot take off from the open sea except under very favorable conditions. Being thus incapable of basing on the sea and also unable to use the decks of carriers they must base on land-locked waters or be catapulted from ships and later be more or less precariously picked up from the surface of the sea. There are also the amphibian planes which may be based on land or on sheltered waters. They might be based on carriers, but probably would not be, as other types have a higher fighting value.

The coastal area is the broad general line of demarcation between the activities of these two air forces for even with the greatly increased radius of action of modern aviation it is still impracticable for land-based planes to fly out to sea and operate with a fleet crossing the ocean in search of the enemy fleet.

Nor is it practicable to use carriers lying or maneuvering off shore as bases for extended air operations deep into hostile territory. Carriers are too vulnerable and uncertain a quantity. As bases they are relatively small and not too easy to locate. They may be driven out to sea by sudden storms under such conditions that even if found, planes returning from long distance operations could not land on them. Hostile naval vessels or planes may sink or drive them out to sea. Consequently one of the first steps of an invading enemy after gaining a foothold on the coast would be to establish land bases for air operations inland.

It is clear that the carrier-based air force which accompanies the fleet should be controlled by the fleet, for it is a vital part of the fleet tactical team. It is equally clear that the air force operating with the Army in the interior should be controlled by the Army. Here we have again as in the case of land forces, the moot question of command in coast defense.

So long as our fleet is contesting with the hostile fleet for control of the sea we need fear no major naval or air attack against one of our fortified coast cities or naval bases. The enemy will not at that time risk his first-line ships or his plane carriers in a heavy engagement with our coast artillery and land-based planes. Were he foolish enough to do so we might inflict such damage that his fleet would later fall an easy prey to our own fleet.

It is only when our fleet has been beaten or has become dispersed, thus giving the enemy control of the sea, that our ports and bases will be in real danger, and, as stated before, the major peril then will be the threat of an invasion of a vulnerable coastal area by a major overseas expedition of all arms supported by the hostile fleet and a powerful air force.

With our fleet decisively beaten and scattered, it is obvious that any remaining vessels of our Navy can play only a minor and subordinate part in defending the coast, since they will be unable to offer effective resistance to the advance of the hostile fleet. Our Army will then have the primary responsibility and burden of defending the coast against attack and invasion.

We will now endeavor to show why the land-based air force defending a base and its vulnerable area must also be under Army command, that is, that this air force should be considered only as another member of the combined tactical team.

Let us assume the situation that the Army has control of the land forces defending a base and its vulnerable zone, but that the defense by air force is under the Navy. Assume further that the enemy has gained an air superiority which will justify an attempted landing and is in the act of landing. In spite of this, our air force will still be able to operate to a certain extent, for control of the air is never absolute. What should be the objectives of our weaker air force under the circumstances? Obviously the hostile troop transports, and troops in small boats, should be the primary objectives, because they are the most vulnerable and constitute the most dangerous threat to

the defense. Will the Navy commander order our air force to attack the transports and small boats? There is no certainty that he will. He may decide that the hostile plane carriers and war vessels should be attacked instead, with the result that the landings are successful and the base eventually is captured—another consequence of the pernicious division of command and responsibility.

The Army commander in the same situation may request air observation and adjustment of long-range coast artillery fire. Will the Navy commander furnish the urgently needed planes? He may or he may not as he sees fit. Obviously an absurd and impossible situation, yet history is full of such absurdities and failures caused by divided command.

Considering the intimate relation existing between the employment of air forces and antiaircraft artillery it is appropriate at this point to discuss the command of the latter. It should be noted that the expression "antiaircraft artillery" as here used includes also antiaircraft machine guns, searchlights, and sound locators. As in the case of Coast Artillery and other land forces, we cannot consider the defense of a base proper by antiaircraft artillery as separate and distinct from the defense by the same arm of the vulnerable zone on the flanks.

We have seen that if our fleet has been beaten decisively or otherwise eliminated and the enemy consequently has command of the sea, all forms of attack on an important base constitute a real menace, and that the major threat is attack by a large overseas expedition wherein landing operations are supported by naval and air forces. In accordance with war plans we will at this time, if not before, reinforce the base and its vulnerable zone with troops of all arms including mobile antiaircraft artillery. As in the case of Coast Artillery we may logically have occasion to group mobile and fixed antiaircraft batteries together. In this last situation, it would also be absurd to have the Navy commanding the fixed batteries and the Army the mobile batteries of the same tactical group.

All the antiaircraft batteries, fixed and mobile, should be under the same command for efficient defense. For the reasons already given in the case of Coast Artillery and other land forces, this command should belong to the Army. With the antiaircraft artillery under Army control and the land based air forces under Navy direction we would never get successful coordination between the two arms. This coordination must be very close since the mission of the antiaircraft artillery is to furnish the local defense of the base and its vulnerable zone against air attack, so that the principal air forces may be released for the tactical offensive. Moreover in the case of important areas such as New York City, it may be necessary to assign a certain number of pursuit planes to local defense. Even closer coordination between these planes and the antiaircraft artillery is required since they have the same mission. This team-work is particularly indispensable in the defense against night air attacks so that the searchlights and sound locators of the antiaircraft artillery may effectively aid our pursuit planes by locating, illuminat-

ing, and blinding the hostile planes. Such coordination can only be obtained by unity of command.

So much for objections of a tactical nature to the command by the Navy of the land-based air forces employed in coast defense. Let us now examine *naval* and strategic reasons why the Navy should not have such command.

We have already seen that the principal function of a Navy is the maintenance of a battle fleet that will actually seek out and defeat the enemy fleet on the high seas. This requires that the naval air force that accompanies our fleet on this offensive mission must be based on carriers and not on the coast. Should our naval air force consist solely of land-based planes, our fleet must remain within the radius of action of these planes, and hence cease to be an offensive weapon. It would be a high-seas fleet in name only and would surrender all initiative to a hostile fleet equipped with plane carriers or risk almost certain defeat by engaging the enemy beyond the radius of the land-based planes.

To attempt to provide the Navy with a combat air force, based partially on carriers and partially on the coast, would be a deplorable dispersion of force and would probably result in leaving our high-seas fleet without an adequate air force in a fleet engagement occurring beyond range of the land-based planes.

To be effective the Navy must keep its high-seas fleet concentrated; therefore it is axiomatic that the fleet must be trained as a unit and that when it takes the high sea in search of the enemy it must leave *no* vessel behind that can advantageously be retained with the fleet. This means that only obsolete, slow vessels, or vessels that are unable to endure the open sea, are left behind to assist the Army in local coast defense.

A perfect analogy applies to a naval air force. Every naval plane that can advantageously be taken with the fleet must be taken. Air power is essential to a modern fleet and must be concentrated with it, that is, based on vessels of the fleet. We cannot foolishly fritter away our naval air force by basing part of it on land at our widely scattered ports for local coast defense and at the same time have an effective air force to accompany the fleet. The only land-based planes that should normally be under the Navy in coast defense are the reconnaissance and patrol types which work in conjunction with the naval district vessels employed in local defense.

Summing up, if we attempt to give the Navy a carrier-based air force to accompany the fleet and another land-based force for coast defense and at the same time give the Army aviation units for operations in the interior we would violate a basic principle of war—economy of forces—and it would probably result in our having inadequate strength for all three purposes. We could be beaten by an intelligent enemy who with no more resources than ourselves to build or buy and maintain planes, yet so divides them that he gives his fleet a superior carrier-based air force and his Army a unified land-based force able either to operate in the interior or in coast defense as the strategical situation may require.

Minute Men of the Next War

By MAJOR GENERAL JOHNSON HAGOOD
Commanding Third Field Army

GEORGE WASHINGTON never said "I cannot tell a lie." Pershing never said "Lafayette, we are here." And the author of this article never said that he could train a soldier in ten days. But Forrest did say that victory comes to the one who gets there first with the most men. And it is upon this theory that officers here and there throughout the Army are interesting themselves in the development of rapid training methods by which, if the worst comes to the worst, soldiers can be put into the field in a time that is incredibly shorter than what most of us have heretofore been led to believe.

The training of a soldier may be broken down under three general heads: Technical Knowledge, Experience, Character.

Time is the all important consideration. So let us analyze the subject under each of these headings and see to what extent the Time Factor affects the results.

Technical Knowledge: The technique of the military profession as a whole has never been mastered by man. But so far as the individual soldier is concerned, a raw recruit may require no technical training at all. He may already have all the technical knowledge that is required of him to perform his job in the Army. For example, if a man be a truck driver in civil life, he can drive a truck in the Army. On the other hand, if a man be a bellhop, it may not be possible to make him into an aviator.

Under the old system of training it made no difference whether a man was a truck driver, a bellhop or a plumber; nor whether he was to be made into a rifleman, a cannoneer or a cook. The first thing to do was to make him into a soldier. And to do this it was the practice to

Six months in active campaign may give a man more experience than 20 years in the Regular Army.

fill him up with a lot of nonsense that was of no practical value to him as a soldier either in peace or war.

Under the new system we first determine what we propose to do with the man—what position he is to play on the team. We next determine to what extent he is already qualified to play that part. And finally we set ourselves to make up his deficiencies in the shortest possible time. For example, if a man is to be a baker, we do not start out by teaching him close order drill or the customs of the service. If he is to be a cannoneer, we teach him some particular duty at the gun. If he is to be an infantryman, we teach him to shoot his rifle and we do not for the moment concern ourselves with whether or not he can dismantle a machine gun blindfolded.

As a further illustration: If you were the captain of an old-fashioned light battery, you would find that it takes a long time to train a driver to put up a creditable show with the parade ground countermarches and wheels. But if you had a modern motorized battery, you would find no difficulty in picking up your motor mechanics and drivers already trained. This difference in the time factor is still further emphasized if the comparison be made between a newly-organized battery with all new men and horses, on the one hand, and on the other, and an old battery in which you are absorbing a single recruit. Thus we see that the time factor in giving a soldier technical knowledge is variable.

Experience: The two essential factors of experience are



23d Infantry on march in gas masks—13th day of training



23d Infantry recruits firing from four positions on seventh day of training

time and opportunity. Six months in active campaign may give a man more experience than twenty years in the Regular Army. The time factor in experience is something we cannot overlook and in many cases we cannot shorten.

Character: The development of military character is a question of time and association. The time factor is most essential and, generally speaking, military character cannot be developed in a hurry.

In General: From the above it is evident that there is no short cut in the process of making a thoroughly trained and experienced soldier. It is only on the field of battle that you can make a veteran of a recruit. But wars are fought with recruits and the least that we can do is to give our war-time recruits the maximum amount of technical training in the time at our disposal. We should not repeat the tragedy of the last war, when, after being in the war for over fifteen months, we sent 200,000 men to France who had never been taught to use their weapons.

THE TRAINING OF PEACE-TIME RECRUITS

The training of peace-time recruits in itself is not a matter of very great importance; certainly not a matter of concern to Division and Army commanders. But the development of methods by which recruits can be trained and rapidly absorbed at the outbreak of war is a matter of tremendous importance. And the development of a Can Do psychology among young officers and non-commissioned officers is vital to National Defense. One second lieutenant who believes that he can train a war-time battalion of raw men in less time than it has ever been done before is worth a dozen colonels who believe that their regiments will never be ready for action.

The essential functions of a soldier are to Shoot, to March, and to Obey.

The average young American soldier can be taught to

shoot in five hours—seven hours at most. But ordinarily he cannot be taught to make a full day's march with field equipment in less than ten days.

A day's march, therefore, is taken to be the neck of the bottle, and ten days is taken to be the time within which we try to reach our first great training objective.

We assume that the soldier can read. And for that reason we issue to each recruit a book of Instructions, wherein he will find simple explanations with diagrams to assist him in learning his duties. This is called the *Soldier's Handbook*. There is little in the handbook that a soldier cannot learn within the first ten days of his service. There is much in it that officers have failed to learn in forty years. It contains all those essentials of field service that should be required of young soldiers. It is free from all the fuss and feathers that delights the heart of the barrack-worn peace-time regular.

Printed below will be found a training order for war-time recruits. It is now in effect for training peace-time recruits in the 4th, 7th, and 8th Corps Areas. It will be noted that the High Command does not prescribe schedules. It lays out objectives and leaves to subordinates the means of accomplishing those objectives. Splendid results have been obtained in the Philippine Division (both with white and with native troops), in the 2d Division and in the 1st Cavalry Division; also at Fort Riley, Fort Sill, Fort Leavenworth, and other large commands.

So far we have only tried out the problem of absorbing recruits into existing active and inactive Regular Army units. We are reserving for a later day the more difficult problem of training new war-time organizations with all new officers and men.

The Revolutionary War, the Civil War, and even the World War saw examples of men who did things with raw troops that other people said were impossible. At Camp Funston, Kansas, the 10th Division, under com-

23d Infantry recruits in bayonet combat on seventh day of training



mand of General Leonard Wood, was accepted by the War Department as qualified for overseas service just one month after the day when first it was organized.

HEADQUARTERS FOURTH ARMY

OFFICE OF THE COMMANDING GENERAL

TRAINING BULLETIN }
No. 1 }

OMAHA, NEBRASKA,
March 1, 1933.

TRAINING WAR-TIME RECRUITS

1. **ASSIGNMENT.**—Every line soldier, upon arrival as a War Time Recruit, will be assigned to a combat unit and his instruction will begin at once in the particular duties to which he is assigned as a member of his organization. Normally he will be taught to use his weapon, to march with his command, to obey his officers, and to perform his simple duties as a private soldier in the field. With this as a foundation, his further instruction will be developed as time will permit.

2. **USE OF WEAPONS.**—This instruction will be started within twenty-four hours after the soldier joins. It will begin with his primary weapon. In the case of artillery, machine guns and the like, the soldier will be taught the particular duty to which he has been assigned in the gun crew. The instruction will include such general description and nomenclature as is essential for the intelligent use of the weapon—no more. It will include gallery practice, sub-caliber and such similar exercises as may be applicable, followed by firing in-service ammunition at the first opportunity. Having been instructed in his primary duties with his primary weapon, the soldier will, at a later date, be instructed in the secondary duties and in the use of his secondary weapons.

3. **MARCHING.**—*a.* Within forty-eight hours after arrival, the soldier's feet will be examined and his shoes properly fitted (if the shoes in which he reported are not suitable).

b. Dismounted Troops.—The soldier's equipment will then be adjusted and he will commence marching with equipment, beginning with short distances and pushing forward progressively to a march of eight miles with full pack.

Mounted Troops.—Within forty-eight hours after arrival, the soldier will be taught to saddle, harness, bridle, groom, and care for his horse. He will then be taught to make his roll, and to pack his saddle. This will be immediately followed by marching with equipment, beginning with short

distances and pushing forward progressively to a march of twenty miles with full pack.

4. **OBEEDIENCE TO ORDERS.**—Within forty-eight hours after arrival, the soldier will be instructed in the fundamental principles of obedience to orders and respect for authority. This will be done by explanations in simple language and without reading any particular articles of war or regulations. The soldier will be shown how to stand at attention and how to execute the hand and rifle salutes, but will not at this time be taught the other so-called Customs of the Service.

5. **FIELD DUTIES.**—*a.* As soon as practicable after the first forty-eight hours and within ten days after his arrival, the soldier will be taught such simple, fundamental field duties as may be applicable to his particular assignment.

b. This instruction will be concurrent with his training in the use of weapons, marching, and obedience (paragraphs 2, 3, and 4), will be conducted in the field, as far as practicable, and will include basic combat training, the essential details of musketry and field gunnery, defense against aircraft, use of gas mask, first aid, and personal hygiene.

6. **OTHER INSTRUCTION.**—*a.* After having been grounded thoroughly in the combat fundamentals, the soldier's instruction will be gradually extended by the introduction of close-order drills, ceremonies, and other exercises for the purpose of further improving and polishing him as a soldier.

b. The soldier will be made to feel from the beginning that he is an integral and essential component of his organization and that he must qualify himself to play an important part in case of emergency; that time will press and that, even though he may not be a perfect soldier, he must at least be a good soldier, the best that he can be made in the time available.

7. **SERVICES.**—The training of recruits in Service functions should be prompt and progressive, along lines similar to those for recruits of the Arms. They should regard their implements as their weapons and be taught the essential duties in the use of those implements before they are taught things of less immediate value.

BY COMMAND OF MAJOR GENERAL HAGOOD:

A. M. MILLER, JR.,
Colonel, G.S.C.,
Chief of Staff.

Power Speech Amplifier

BY FIRST SERGEANT JOHN M. MOSS, C.A. (AA), Ark. N.G.

With foreword by Captain H. A. McMorrow, C.A.C.

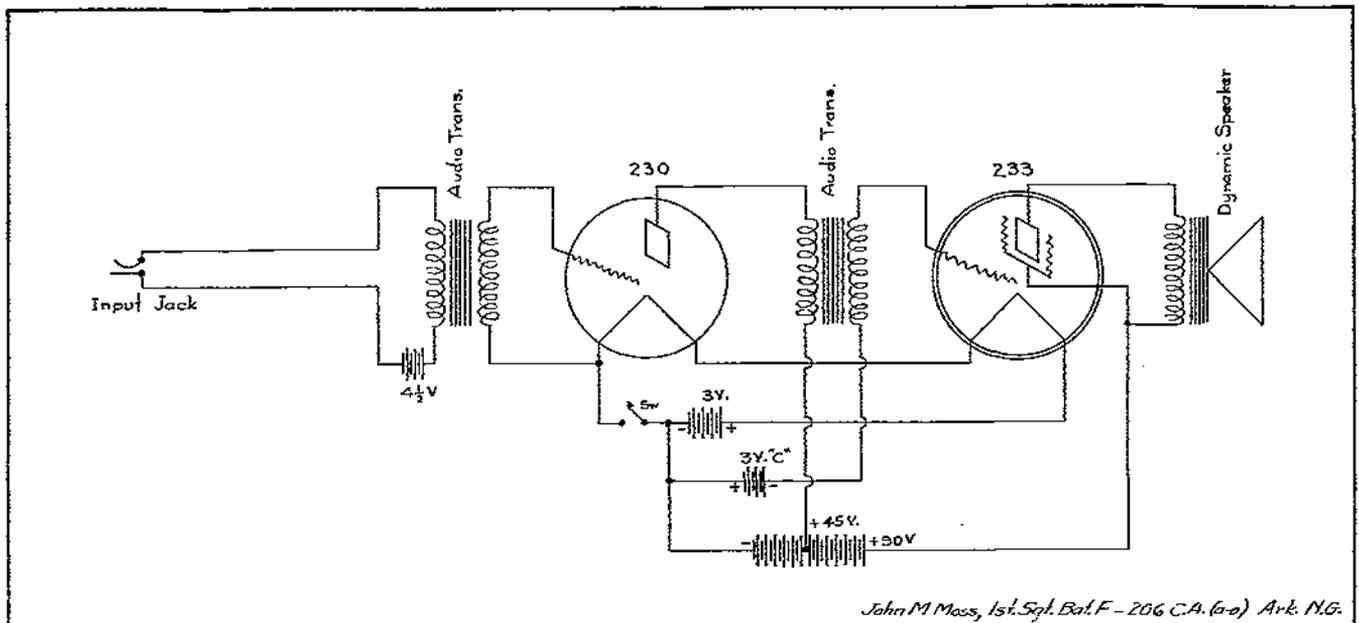
THE Moss Fire-Control Speech Amplifier is to be used in transmitting data from the flank to the gun position. Men who are unaccustomed to using the telephone under target-practice conditions find it practically impossible to receive during firing. Even trained telephone operators experience great difficulty. During the target practices of the 206th C.A. (AA), Ark. N.G., at Fort Barrancas, Florida, in 1934, the flank adjusters were not able to get corrections through to the director. It is believed that a voice amplifier will obviate this failure.

In designing this amplifier we used the new type two-volt tubes because of low filament voltage and low battery drain. The filaments can be lighted for months on two No. 6 dry cells, the two "B" batteries can be of the small portable type because the plate drain at normal load is 13 milliamperes. This type speech amplifier is no less rugged than the ordinary field type telephone, and very simple and economical to operate. The microphone-transmission line is only a few feet long and it is not necessary to use shielded leads. Instead of using a microphone lead of several miles length where shielding would be necessary, the microphone and amplifier are located at the same station. Shielding of the line from amplifier to speaker is not necessary, as RF noises will not be picked up.

An ordinary field, hand-set transmitter is used as a microphone. It is of the old carbon type and will not be

damaged by concussion resulting from firing. It is much less sensitive to sound waves and will not transmit unless sound waves hit the mouthpiece directly. The diaphragm is protected by a thick bakelite cover with a few holes, for these reasons it will not pick up much extraneous noise. The input system is a very simple arrangement composed of a high-grade microphone transformer coupled directly to the grid of a 230 tube. This tube is coupled to a low-resistance audio transformer. The ratio should be approximately 1—2½. The secondary rule is coupled to a 3-volt "C" battery and the grid of a 33 pentode power-tube is used as power output. Resistance coupling could be used but transformer power coupling is simpler and always dependable. The plate and screen of the power pentode is coupled directly to a 1200-ohm magnetic speaker capable of handling six to eight watts.

This speaker is of cone type covered with grill cloth on either side in order to give 360-degree sound radiation. The distance between the speaker and the amplifier is not critical, but for distances of three miles or more it might be necessary to add a little more voltage to the screen of the power-pentode tube depending upon the amount of resistance and the line losses between amplifier and speaker. If a good grade copper wire is used for this line instead of the ordinary telephone wire, there would be no distance within field use in which it would not work efficiently.



John M. Moss, 1st. Sgt. Bat. F - 206 C.A. (A-A) Ark. N.G.

Wiring Diagram of the Moss Fire-Control Speech Amplifier

Efficiency Reward in the Army

BY "REWARDED"

EFFICIENCY is defined as "power to produce the effect intended." I have noticed that books about it are in demand at post libraries and that the subject attracts our officers. Americans are a business people and it is good for the conduct of business that recognition be accorded when performance is efficient; consequently promotion on the basis of merit to a more responsible and lucrative position is expected to follow as a matter of course.

With the possible exception of some of the railroad companies that employ a highly organized personnel in their maintenance and operation departments, there are few large private corporations that award promotion on the grounds of seniority.

The Army is maintained as a bulwark of the established government and an instrument of final resort in the execution of its policies. It is also a vast business organization, but in this case promotion for commissioned officers up to and including the grade of colonel is based solely on seniority. A captain might possess the genius of Napoleon, the moral grandeur of Robert E. Lee, and the initiative and driving energy of Theodore Roosevelt, but not even the combination of all the qualities which made these men great would suffice to promote him over the head of the most mediocre major that ever passed the buck to a subordinate. Doubt is often expressed as to the possibility of obtaining the maximum good results under a system for promotion which holds superior and above average individuals down to the common level.

Several times, recently, I have heard it said that ordinarily there is no efficiency reward in the Army.

I love the military profession and its appurtenances including officers, soldiers, guns, horses, and the patient and faithful mule. I am trying to like tanks and other gasoline engine contrivances and not to dislike chemical warfare. The greater part of my life has been spent in the Army; it has given me the only home I ever had, and what the Army thinks, does and says interests me above all other matters.

In order to get an indication of the trend of opinion on these subjects I asked twenty-two officers, line and staff, two questions:

(a) Is the present system of promotion preferable to one which would permit promotion by selection to a limited extent?

(b) Is there as a rule in the Army a material reward for excellence in the performance of duty?

The replies are tabulated as follows:

| No. | Rank | (a) | | (b) | |
|-----|----------------|-------------|----------|-------------|----------|
| | | Affirmative | Negative | Affirmative | Negative |
| 5 | Field Officers | 4 | 1 | 0 | 5 |
| 7 | Captains | 6 | 1 | 2 | 5 |
| 10 | Lieutenants | 6 | 4 | 3 | 7 |
| 22 | TOTAL | 16 | 6 | 5 | 17 |

A captain might possess the genius of Napoleon, the moral grandeur of Lee, and the initiative and driving energy of Theodore Roosevelt, but not even the combination of all these qualities would suffice to promote him over the head of the most mediocre major that ever passed the buck.

The surprisingly large proportion of negative replies to (b) leads to the belief that something should be done about it. In an effort therefore to do my part I am giving a narrative of personal experience, the egoistic aspect of which I hope will be excused by the fact that it is presented under the cover of anonymity.

My chance of becoming a colonel before retirement for age is not very good, so it should not be thought that what I write is colored by good fortune. With respect to promotion my situation is like that of hundreds of other officers who are too old for their grade.

The first year or two of service as a second lieutenant is a most important period. It is the time when the officer, usually without his being aware of it, is under the critical observation of older officers who are then forming an estimate of his potentialities. It is also the time when the officer himself should decide upon the things he is to regard as important.

When I was about to become a second lieutenant a retired general officer whom I admired greatly advised me:

- Always to keep physically fit.
- Never to economize on wearing apparel and personal equipment and always to be well turned out.
- To take up some specialty of professional importance and become superlatively good at it.

In the light of past experience I add to these:

- Development of the ability to discern the decisive ingredients of any given problem or situation. (*De quoi s'agit-il?*—Foch) and
- The cultivation of one's sense of humor.

I have been able at the cost of much effort to accomplish (a) and (b). As for (c), I was unable to select any specialty that seemed to harmonize with what I took to be inherent qualifications so I decided to aim at a higher objective—nothing less than the performance in a superior manner of any task or mission, regardless of its nature, which might be assigned me.

In justice to myself I should say that I had no inordinate ambition and if there was any delusion of grandeur it extended only to a desire to make such small contributions as might lie within my powers to the honor and glory of the military profession and the United States Army.

At that time, however, circumstances were not favorable for the display of exceptional ability or initiative, deference towards seniors and a rigid compliance with orders and regulations being about all that was expected of a second lieutenant.

My company commander was like the Irish captain who said to his newly joined second lieutenant, "All I want from you, Sir, is silence, and damned little of that." The day I reported for duty the captain said that when he wished my opinion he would ask for it. Digressing for a moment, I may say here that more than two years passed before he did ask for it and then only after the company had been lost for several hours in a tropical jungle.

In the absence of any other opportunity for distinction I gave consideration to the matter of excelling in shooting. The instructor for the course in rifle marksmanship which we were taking in the garrison school was a distinguished rifle shot whose company, however, had to muddle along under a second lieutenant while he was away for months at a time taking part in competitions. I was indiscreet enough to ask in open class whether the advantage of obtaining individual excellence compensated for the great expenditure of time and energy involved. His reply, "Look at the mileage I get," was accepted as conclusive, but there did seem to be a certain lack of idealism in it. Anyway, I decided against trying to emulate him.

With the passage of time, knowledge about how to get along was acquired empirically. For instance, one soon learned that the Colonel and the Adjutant liked it when half a dozen companies were drilling on the parade ground in plain view through the windows of Headquarters building and became uneasy when the companies were taken out of sight for training in such subjects as minor tactics and scouting and patrolling. Also that it would not do when crossing the parade ground in front of Headquarters to saunter along leisurely; the best procedure was to walk briskly, carrying a bundle of maps.

I also quickly learned characteristics of my senior officers. First lieutenants, when you were alone with them, sometimes unbent and became quite affable. Even captains, in moments of relaxation, would sit by your fire, drink your whiskey, smoke your cigars and let you listen to them. The Colonel you seldom saw except when you were ordered to "report to the commanding officer" and that meant only one thing—trouble. The Adjutant made me think of the Archangel Gabriel. The field officers seemed to appreciate having someone to listen to them while they talked about themselves (more or less as I am doing now). Our battalion commander, who must have dated back nearly to the Civil War, took several hours one evening to tell of the fearful plight that he and others like him were in and concluded with this some-

what startling statement, "So you can see that with the officers, formerly junior to us, who have been made general officers over our heads bearing down on us from above, and the ambitious young Leavenworth graduates who wish to get rid of us pushing up from below, why, by Jove, sir, we are being ground between two millstones."

After more than a year of company duty I took stock of the situation. In spite of the fact that the routine duties of closing files at drill, checking clothing records, acting as counsel for the defense, and going on as officer of the guard every few days were being performed to the satisfaction of higher authority, I decided that things weren't going so well.

A detail in the Ordnance Department at that time meant temporary promotion to the next higher grade, and although my inclinations did not lead in that direction I investigated the matter. Apparently there were two essential requirements: friends at the War Department, proficiency in higher mathematics, mechanics, and other abstruse subjects that I knew very little about. I did not have the influential friends, and one glance at a book entitled *Ordnance and Gunnery* was enough to convince me that never would I display on my uniform the device which is supposed to represent a bomb with flames shooting from it.

As yet nothing in the nature of an efficiency reward had come my way, but I was not concerned about that. The question agitating my mind was, whether or not I was really efficient. Deciding that I was not and that actually my ignorance of the military profession was abysmal, I spent as much as the rather meagre pay of a second lieutenant would permit to purchase of professional books and tried to study them. The works of Clausewitz, Jomini, Verdy du Vernois, and various histories of wars and campaigns appeared on my shelves. I must say that, as a rule, they were as difficult of assimilation as was Kant's Critique of Pure Reason. Gripenkerl, however, had something definite to offer and I spent many an afternoon with him along the Moselle while my colleagues were shaking dice for drinks at the club.

At about that time I read somewhere that the young officer should "specialize in tact and tactics." Tact I thought I had already. A course in tactics was then being conducted in the garrison school. I decided to "max" it, and in order to do so went over every lesson assignment carefully five times, taking copious notes. The examination was purely a memory test and I led the class of fourteen second lieutenants making almost a perfect score. Even now I can close my eyes and call before me page after page of the text in *Security and Information*, or *Organization and Tactics*, both of which, in my opinion, were excellent publications.

By carrying out the same laborious procedure during succeeding courses in the garrison school, I found that I could always lead the class so long as the examination was merely a memory test. Social obligations suffered, naturally, and there was a bad case of eye strain brought on by "specking" Field Service Regulations without a good

reading lamp. It was not long, however, before the first efficiency reward came. This was the greatest guerdon, the highest mark of approval, that could be bestowed on a second lieutenant. I was appointed battalion quartermaster, which meant that I could ride a horse, wear gauntlets, and enjoy other privileges. There was also additional pay as a mounted officer.

Service as battalion quartermaster broadened the horizon. In addition to other duties there were the regimental mounted scouts to train and look after, which was indeed a joy. We became so good that, at the annual tactical inspection, the inspector general, a cavalryman, could find nothing to criticize and was rather annoyed thereat.

I had become an individual. Moreover, in training the scouts I soon acquired considerable knowledge of the surrounding country. This coupled with the ability to figure time and space problems, and a somewhat sketchy knowledge of the terminology of field orders gleaned from Leavenworth publications and Gripenkerl, gained me the privilege of attending the conferences when marches and maneuvers were being planned. Observing that some of the older officers were not thoroughly grounded in the technique of the five paragraph field order, then coming into vogue, I managed on several occasions tactfully to offer a draft of an order which I thought might be useful. These services made me *persona grata* at higher headquarters. The prestige acquired, small as it was, brought consideration on the part of senior officers which was made manifest in various ways. It also brought many additional tasks under the familiar Army rule of giving the extra jobs to the one who can do them.

At this time I began to keep a military scrapbook and have kept one going ever since. It has been of great value to me.

Omnivorous reading upon military subjects brought a great deal of information. Much of this was, without doubt, ill assorted, although I attempted, through the use of a memory system, to maintain a sort of "mind index" with the idea of being able to recall matters pertinent to any situation. In this I was influenced by having read a statement attributed to Napoleon, "In war the happiest inspiration is often but a recollection," or something to that effect.

Having read the views of Alexander Hamilton and John Paul Jones as to the qualifications which a military officer should possess, the importance of learning a foreign language, preferably French or Spanish, was brought to my attention. I decided to get at least a working knowledge of both tongues, and did so. This knowledge enabled me to make translations for what was then the War College Division of the General Staff. The reward for this effort was that my name was "placed on the list of officers who have made translations for the War College Division of the General Staff." There has always been a feeling of gratification that somewhere there is, or has been, such a list and that my name is on it. I should say here that the time and energy spent in studying these languages has been repaid a thousand fold.

My initial purchase of uniforms and equipment had put me heavily in debt. The list of articles bought is given because it may be of interest to compare what I had to get with present requirements. The items were: One full dress uniform, one dress uniform with extra trousers, one pair of epaulets, two olive drab uniforms, one social evening dress uniform, three khaki uniforms, three white uniforms, two pairs of boots, one pair of puttees, two pairs of russet shoes, one pair of white shoes, one pair of patent leather shoes, one overcoat, one cape, one raincoat and two O.D. shirts. For headgear I bought one full dress cap, one dress cap, one O.D. cap, one khaki cap, one white cap and a campaign hat with cord. I felt that I could not afford a mess jacket. Equipment purchased consisted of one revolver, holster, ammunition carrier and belt; a saber with full dress belt, sling and knot, a leather belt and knot; one officer's locker, one bedding roll and field mattress, two blankets, a rubber wash basin, canvas bucket, a folding lantern, a map case, an officer's clothing roll, a compass and various other odds and ends. The canteen, with cover, sling and cup could be drawn from the company.

Field glasses were an expensive item. Some lieutenants didn't possess them and tried to get by at inspection by borrowing. One impecunious shavetail had a pair of imitation ones used as an advertisement. When you looked through them you saw a brewery. It was "inspector's luck" that, at the annual inspection, the Inspector General a well known Army character, stopped before this officer and demanded his field glasses. The I.G. looked through the glasses and must have seen the brewery in full blast but he handed them back without a word. He was a good sport, and besides he knew the psychology of the second lieutenant. All those needing field glasses promptly got them.

The total cost of uniforms and equipment amounted to nearly a thousand dollars, for seven hundred of which I had to sign notes. The pay was about a hundred and sixteen dollars a month. How to get out of debt was a problem.

Upon the recommendation of someone at Regimental Headquarters I was offered a position as military instructor at a small boys' school recently started not far from the post. Of course I was glad of the opportunity to make extra money. The work being in addition to my regular duties, had to be done in my spare time. The pay was a dollar an hour. I was never able to make more than ten dollars a week at it.

My conscience bothered me some about that school. The prospectus carried my picture in full dress uniform over the statement "the only military school in — which has an officer of the Regular Army on the active list as military instructor." This was not so bad, but it seemed hardly proper to include also a picture of the city park in front of the school building with "campus" underneath, and a view of the Y.M.C.A. gym over the word "gymnasium." Nevertheless, the position was something out of the ordinary and the thirty or forty dollars extra each

month, which may be considered in the nature of an efficiency reward, helped a lot in meeting payments on the debt.

The incident I am now about to relate marked a turning point in my life in the Army.

The regiment was leaving the post to make a march of over a hundred miles and I was detailed as topographical officer to map the route. Never having done this before I sought advice from the other lieutenants. They suggested that I take notes during the march and upon my return to the post get some local maps and make my sketch from them. In other words they advised me to "fudge it," as seems to have been the custom.

Being unable to bring myself to fudging the map I worked at it conscientiously, each day completing it to date. The General joined us on the morning of the last day, marched with us to the post, reviewed the Regiment and had it formed in columns of companies for inspection. Then while the Regiment, eighteen hundred strong, stood waiting, the General called for the topographical officer. I learned later that his specialty was maps. I had never met him before. He was freckle-faced, sandy-haired and looked irascible. He said just four words, "Show me your sketches." As I spread them before him I was wondering what would have happened had I accepted the advice of the others and fudged it.

A few days later the General offered me a detail as his aide. We did not have the General Staff with Troops then and an A.D.C. was often, in effect, an Assistant Chief of Staff. I accepted the offer. This detail enlarged my experience and brought me into personal contact with a splendid officer of high professional ability and culture. In addition he possessed a kindly nature which made association with him a pleasure. There were also such material things as mounted pay, two good horses, and quarters in an attractive city. Here were some real efficiency rewards.

My first general had been a field artilleryman. Afterwards I was A.D.C. successively to two other generals of whom one had been in the Infantry and the other in the Coast Artillery. These details gave much practical experience in estimating situations from the viewpoint of the higher command and in the actual handling of questions relating to use of the combined arms. Continuation of the mounted status enabled me to keep two three-quarter thoroughbred hunters that added greatly to my enjoyment of life.

It may seem that I have placed detached service on a higher plane than duty with troops, but this is not so. Frequent periods of duty with troops are essential for a combatant officer. Troops are to him what Earth, the mother of Antaeus, was to that wrestler in Greek mythology, whom none could overcome because each time he was thrown to Earth, he received new strength. The officer who stays on detached service until he gets out of touch with soldiers individually as men and collectively as combat units is not fitted to command.

An officer may be the best engineer, scientist, lawyer,

or political economist in the Army, but these talents avail nothing if he cannot train his unit in peace and lead it in war.

On the other hand, a lifetime of garrison duty without revivifying touch with the outer world "has an inevitable tendency to cramp the mind with each succeeding year thus passed." Such service handicaps an officer for high command and other positions of importance, not connected with the Army, that he may be called upon to fill under our Government. My experience has been that after a period of detached service one thoroughly appreciates getting back to the Army.

Association with friends who speak the same language, handling men, the sight of soldiers in ranks, the retreat ceremony, horses and mules and the sound of bugles, all became sources of unalloyed enjoyment. It is these familiar things and the feeling of uncertainty as to what the future has in store that lend such a charm to Army life.

It was my good fortune to return to duty with troops just when the situation on the Southwestern frontier had become most acute.

Knowledge of Spanish brought the assignment as intelligence officer for a large district on the border, and this was great sport. Among other activities there were midnight rides through the chaparral along the Rio Grande and across the deserts, conferences with Texas Rangers, dealings with mysterious foreigners (both sexes) and—now it can be told—several expeditions across the river. To a man in perfect health, loving out-of-door life and in love with his profession nothing could have been more delightful.

One of the expeditions nearly cost the Army a "good, average officer" (efficiency report file). I was the officer. Having received information from reliable sources to the effect that a raid into Texas was to be made by members of the irregular cavalry troops garrisoning the towns nearby, I reported the matter to District Headquarters and received orders to try to stop it.

Taking this as an authorization to interview the commander of the irregulars, I decided to go, in uniform, without arms and alone. I had hardly got across the river before I was picked up by a mounted patrol led by a lieutenant who was a Japanese. He would not converse with me either in English or Spanish but conducted me to the nearest town. I behaved all the while as if I considered myself a guest instead of a prisoner. The plaza was filled with ragged, long-haired men wearing crossed bandoliers and carrying all sorts of weapons. I thought it best not to understand the unpleasant things that were said as we passed. We dismounted in front of an arched doorway, ascended a stairway, and entered a large room, bare except for a table and some chairs, and in which a general and about a dozen other officers were standing. The general had eyes of a peculiar greenish shade. He was the one of whom it was said that no one had the courage to meet his look eye to eye. My salute was not returned, and my outstretched hand and words of greeting was likewise

ignored. As no one moved or spoke, I walked over to the table, took a seat and invited them to sit down. They sat down, but the silence remained unbroken. The cigarettes I proffered were refused with the wave of the forefinger used throughout Latin America to indicate the negative. It was easy to see that they were in an ugly mood.

Lighting a cigarette I talked for at least fifteen minutes, pretending not to notice the fact that none of these officers had spoken a word. I never understood what their motive was in acting as they did. Probably the general wished to intimidate the "gringo" lieutenant and the others took their cue from him. Regard for the truth compels me to state that, if that were his purpose, he succeeded.

When the tension became so bad that something had to be done I decided to hide my uneasiness and bring matters to a point by getting angry, so I arose suddenly, slammed my hat down on the table and told the general I had come there to see him alone. He uttered the equivalent of "get out" in Spanish, and when the others left, we had a heart to heart talk. I told him flatly that his men were preparing to raid across the border mainly because they were hungry and had no food; that if they did so the Americans were going to drive them back and come over after them and that would mean war and he would be responsible for it. He was about three-fourths Indian and one-quarter Spanish, with possibly a dash of Italian. His countenance was absolutely inscrutable while I was talking. When I had finished he remained silent for several minutes. Then he looked up and said I was the first "gringo" that had ever spoken to him like a man and that there would be no raid. I remarked then that, speaking officially, it was gratifying to learn that there wasn't going to be a war but that, personally being a fighting man like himself, I couldn't help feeling a little disappointed. Then I suggested that, since he had gone so far, he might as well go the whole way and send back a drove of blooded cattle which recently had been run across the border and were at a certain ranch not very far away. He laughed and said, "Vamos a ver," which means "let us see about it." Afterwards we had a few drinks of cognac together and I left.

My escort to the river was commanded by another Japanese lieutenant who, like his compatriot, appeared not to understand either Spanish or English.

I heard later that some of the cattle were returned but could not believe the story as such a thing had never been known to occur before.

I ascertained later that my efficiency report rating for the period when I was intelligence officer was "superior."

This brings me to the matter of the efficiency report, that periodic write-up we all receive, and about which some officers think too much and others not enough. We are fortunate in being reported upon in this way because we are thus given the rare privilege of seeing ourselves as others see us. Every officer visiting Washington should ask for the file of his efficiency reports and study them carefully.

I believe that an averaging process applied to the reports covering many years of service gives a very good index as to the sort of officer and individual one really is. For example: I had always considered myself a tactful person until quite recently when upon checking up the reports I found that I have never received "above average" for tact. As more than 25 commanding officers have graded me as "average" under this heading, the conclusion is obvious that tact is not one of my outstanding traits.

The reports are a help in that they indicate defects which one may not have been aware of. The remark I appreciate the most is "a thoroughly dependable officer" and the one I resented the most when I read it was "conceited and egotistical." Probably those who read this article will conclude that the latter remark is justified. Singularly enough I have always regarded egotism and conceit as twin faults greatly to be abhorred in a military officer.

I am now going to mention a great efficiency reward received during another of the not infrequent periods when the situation along the Border was "tense." Presumably because of my knowledge of the country, the people and the language, higher authority, in planning for eventualities, ear-marked my company, reinforced by a machine-gun section, as the first element to cross the River. The mission assigned was to protect the crossing of the Battalion and then to act as advance guard for the march into the interior.

The company as a whole was well trained for the kind of service expected. The men were excellent at scouting and patrolling; every man was qualified with the rifle, and the majority were good game shots. Squad and section leaders knew their duties and the doctrine of supporting movement by fire had been ingrained through months of practical training on terrain similar to that over which we were to operate.

When at last the order, "cross at daybreak," came, it was with a light heart that I moved the company under cover of darkness to the bivouac on the river bank from which we were to start the crossing at four A.M. We were quite sure that we would encounter resistance from the force of several hundred cavalry and volunteer infantry that confronted us on the other side but we did not anticipate great difficulty in driving them back beyond the town and railroad which were our immediate objectives.

I should like to embellish this narrative by describing how we crossed and took our objective, but the truth must be told. Unfortunately, we were at the end of a telegraph line and the order having been sent back to headquarters for confirmation was altered to read "be prepared to cross at daybreak." This was an anticlimax. We had been prepared to cross for months. Of course the order "as you were" had to come before daybreak and this sent us back to the ordinary routine of watchful waiting. I should mention, however, that, while we were waiting, under orders to cross, there was a sort of intensification of life, and quickening of faculties that was most exhilarating. My experience has been that this peculiar exhilaration

comes to one only under circumstances like those just described.

Limitations of space prevent the mention of many other instances of reward received during the years preceding our entry in the World War.

I declined an appointment as regimental adjutant offered me during the winter of 1916-1917 because I preferred the out-of-door life and liberty of action I was enjoying as commander of an isolated station on the Border.

The spring of 1917 was a time of grave anxiety for the regular officers. Everyone was afraid of being left somewhere outside the swirl of events and assignments promising active service were eagerly sought.

A former battalion commander then stationed in Washington on the General Staff was responsible for the orders which came detailing me as instructor at the first officers' training camp at ———.

Appointment as major in the National Army came in August, 1917. I was among the first to be given the increased rank. A former company commander was responsible for my prompt advancement.

A month later I found myself Assistant Chief of Staff and acting as Chief of Staff at one of the huge cantonments thrown together at great cost to house the draft. The important staff appointment was made by a former regimental commander who, as major general in the National Army, was in command of the camp. Next I was with a combat division en route to France.

I do not wish to carry this narrative on throughout the period of the World War and the years which have followed, because to do so would be to prolong it unnecessarily.

I have never asked for anything, except duty with troops in time of war, but many varied assignments have come unsought.

Service as an Army officer has brought me in official and personal contact with people of all kinds, races and social degrees, including royalty, chiefs of states, premiers, dictators, oriental potentates, war lords, cabinet officials, high commissioners, diplomats, generals, and admirals in American and foreign services, politicians, captains of industry, labor leaders, ordinary people like myself, peons, semi-barbaric tribes and naked savages.

I have seen on their own soil troops of seventeen foreign armies, and at one time or another I have seen organizations of eleven foreign armies on active operations in the field.

Travel on official business has taken me through exactly 24 seas, exclusive of the Sargasso Sea, which is not really a sea. (If anyone thinks that doesn't mean seeing the world, let him take an atlas and check up on the seas.)

I have handled many thousands of men, have influenced them and have been influenced by them.

As a graduate of the A.E.F. General Staff College in France, the Chemical Warfare School, Command and General Staff School, the Infantry School (Refresher Course), and the War College, I am—or am supposed to be—an educated officer. But neither my experience nor my military education have changed my relative standing with respect to promotion. Rewards more desirable than promotion have come, however, the best of all being the intangible ones known to almost everyone who has grown old in the service.

Any officer who decides that he will not be satisfied with mediocrity and adheres to this decision in carrying out the tasks and missions assigned him, including those of minor importance that go to make up the daily routine, can be sure of getting his reward sooner or later.

He can also be certain that the reward will come in forms that I indicate as follows:

1. The innate satisfaction coming from a realization of duty well performed.
2. Knowledge of the world, of affairs, of the motivations of human conduct of the art of handling men. The ability to form logical conclusions and make important decisions without mental strain.
3. A high reputation in the service and the respect of all acquaintances among the officers and enlisted men.
4. Desirable details and assignments that come unsought.

It was our old acquaintance, Clausewitz, who wrote "there is on the whole nothing more important in life than to find out the right viewpoint from which things should be looked at and judged of—and then to keep to that viewpoint." The correct viewpoint from which the Army should be looked at is that *it gives back what one puts into it*, but with augmented effect. Expressed in another way there is here an exemplification of the Confucian rule of conduct "return good for good and for evil, justice." Nothing could be fairer.

Someone has written that happiness is to be found only in the pursuit of duty or an ideal. There are many in the Army who set up the thorough performance of duty as an ideal. The men who pursue such an ideal with patience, tenacity and an unconquerable spirit will receive their efficiency reward even in time of peace—and it is they who will be selected for the responsibilities of higher leadership if once again the day should come when the "charged thunder clouds of battle roll up and the brazen dice of war are thrown."



NEITHER HISTORY nor any other tangible evidence supports the claim that a world without armaments would be a world at peace.—W. ARMIN LINN.

Wrangell
Alaska



Defending Our Last Frontier

By ROBERT W. GORDON

IF a map of Alaska were superimposed over a similar scale chart of the United States, the southern tip of the Panhandle would correspond to Savannah, while Cape Wrangell on Attu Island would cover Fresno, California. Unimak Island would project down into Mexico near Columbus, N. M., and Point Barrow would be only a few miles from Winnipeg, Canada. This vast treasure house, sprawled across the North Pacific until it parallels nearly two-thirds of the great circle route between the United States and Asia, is almost totally undefended, about 70 infantrymen being stationed at Anchorage and 140 at Chilkoot Barracks near Skagway. The Army and Navy maintain a fairly extensive radio and telegraph net, but only a few operators and maintenance men are at each station.

That America is now looking at Alaska from a defense standpoint is shown by recent activities in Washington. Congressional committees have been addressed by experts, barrel rollers, and crackpots, the ideas of the former seldom being seen in print. There are those who would have us believe that Alaska is a bleak arctic wilderness not worth defending, and those who loudly declare that an enemy could seize a base on the Aleutian Islands, and from there bomb New York within 24 hours. There is a sound strategy between these two extremes, based on facts, that is really quite simple.

There are three possible uses an enemy might see in Alaska: capture for colonization and exploitation, capture for peace conference trading purposes, and occupation as a base for operations against the United States.

Rich in gold, silver, copper and other minerals, and in lumber, fish, seals and reindeer, with coal mines almost on the surface and undeveloped oil resources, Alaska would be an asset to any country, and well worth keeping by America. The advantage of holding this territory, however, is based on peace-time rather than war-time values.

It would be quite simple for an Asiatic power to land

troops in Alaska in a surprise attack, and overwhelm our insignificant garrison. There can be no defense against landing a hostile army in the Territory, for with thousands of miles of coast line to defend, and the enemy free to pick his point of attack, a passive defense would require millions of men, and the cost of their maintenance would make Alaska a liability rather than an asset. The hostile troops having landed, however, the burden of defense would be upon them. An enemy could no more make the country safe from counter attack than we could from the initial attack.

Since the presence of a hostile army in Alaska would in no way interfere with our war-making possibilities, it could be ignored until such time as we chose to strike. In the meantime its line of communications with the home country would have to be maintained over thousands of miles of open sea, requiring the continuous protection of a fleet large enough to defeat our own. Nothing could please our Navy better than to have a hostile fleet strung across the ocean or tied to a slow convoy. Caught thus, thousands of miles from its base, it would go down to certain defeat, leaving us free to attack the heart of the enemy's country at our leisure. The best defense of Alaska against occupation by a hostile army is the maintenance of a navy stronger than that of any Asiatic power.

The seizure of a naval or air base for use in operations against the United States is a much less remote possibility than an attempt to occupy Alaska for its own sake. The presence of a hostile naval base on the Aleutian Islands, where it would be comparatively safe against a land at-

There is a sound strategy, based on facts, that is really quite simple.



Map of Alaska superimposed upon that of the United States

tack by our own forces, would permit a hostile fleet to operate much closer to our shores than is now possible. A naval base is a protected harbor with facilities for refueling, repairing and supplying a naval force. Such a base cannot be put into operation in a day or a month. Harbor facilities and machine shops would have to be built and fuel, food and ammunition supplies would have to be transported there and stored. Defenses against attack must be constructed, for an undefended base would be a base for our own fleet as well as the enemy.

All of this construction work and transportation of supplies would have to be done after hostilities had commenced (their start in peace time would immediately bring on war), so as long as we possessed the stronger fleet we could prevent the establishment of such a base on our territory. The best defense against such a move would be the construction of a naval base of our own on the Aleutian Islands of the Alaska Peninsula in peace time, so that our fleet could operate to advantage in adjacent waters. Since this is American territory, we could construct such a base without hostile interruption in peace time, although the Washington Naval Disarmament Treaty, which Japan has terminated, prevents us from fortifying the Aleutians prior to December 31, 1936.

The seizure of an air base in Alaska, with the subsequent bombing of American cities, is a contingency now being impressed upon the American public. Now an air base is more than a landing field, just as a naval base is more than a harbor. An air base must have machine shops, mechanics, spare parts, and stores of fuel and ammunition. If near the sea it must be protected from bombardment by naval vessels and from capture by a landing party. If inland it must have enough ground troops to protect it from land attack. In either event it must be protected from aerial bombing. While a limited amount of supplies may be flown in, such a base must have land or sea communications for its construction and maintenance. No enemy, therefore, can establish a base and

begin operations from it "in 24 hours," as has been repeatedly asserted.

While the Pacific has been flown, no person acquainted with existing facts could honestly assert that bombing operations can be conducted across it in the present state of aviation development. To bomb anything, a plane must carry not only enough fuel for a one-way journey, but must carry a worthwhile load of bombs and enough gasoline for the return trip. It must also carry machine guns, gunners and ammunition. Every plane, no matter how large, has a distinct limit to the weight it can lift from the ground. At the present time no plane exists that can fly more

than 750 miles, drop a useful load of bombs, and return to its base and granting that advances in aviation continue at their present rate, it will be many years before Seattle will be bombed from the closest point, in Asia, 3,200 miles away.

It is quite true that every nation possesses men brave enough to conduct bombing operations at such a distance that they have no hope of return, but planes and men capable of flying oceans are too valuable to expend for the sake of killing or terrifying the civilian inhabitants of a city. Only the sinking or bottling up of the enemy's fleet, the complete destruction of a vital industry, or operations of like military importance, would justify the calculated loss of a great air armada. To guarantee return of the planes, a base within reasonable bombing range must therefore be established, and again the Navy appears as the principal defense against its establishment, with a sufficient air force of our own in Alaska to combat the establishment of a temporary enemy base which might suffice for immediate raiding purposes. For while no planes now exist that are able to bomb American cities from Alaska, the construction of such ships is not so remote a contingency that defense against it can be completely ignored.

Congress is now considering a bill for the establishment of an air base in Alaska, at a place to be decided upon by the General Staff. Such a base must be far enough inland to prevent its destruction by naval bombardment, a sudden aerial bombardment from carrier-based planes, or seizure by a landing party. It must be on established lines of communication so it can be supplied. Fairbanks meets all of these requirements and appears to be the logical site for such a base. It is situated where the head of the Alaskan Railroad from Seward and Anchorage, and the government road from Valdez, meet on the navigable Tenana River. Near-by Nenana is a possible alternative.

This Alaskan base should have a peace-time complete-

ment of 100 planes, and should be equipped to service the entire General Headquarters Air force if necessary. The personnel should be rotated so that as many pilots as possible would become acquainted with the country. Operating fields throughout Alaska, most of which are already in existence for commercial flying, should be equipped with storage facilities for an emergency fuel supply. An attendant on duty at these operating fields could easily dump this gasoline if enemy planes attempted to land and refuel from our emergency supplies.

In addition to the Air Corps ground force, about a thousand troops would be needed for ground protection and manning the necessary anti-aircraft defenses. It would also be desirable to fortify Cook Inlet, Seward and Valdez to protect communications, although there will probably be no appropriations for this in the near future.

Expert opinion places the cost for an adequate installation at \$23,000,000, with \$6,000,000 a year for maintenance, including the replacement of planes.

The Navy has three possible sites for naval bases: Kiska, Dutch Harbor, and Seward. Nothing can be done on the first two until the expiration of the present treaty. A base at Seward would protect the Alaska Railroad and the proposed air base, and would be close to a fuel supply from the oil fields at Controller Bay. Dutch Harbor is closer to both the United States and Asia than is Pearl Harbor in Hawaii. Its possession as a fortified base would insure

control of the short North Pacific trade routes. With Kiska as a base it would be possible to raid commerce in Asiatic waters with submarines and light cruisers. If the Navy had to choose one of the three, it would doubtless pick Dutch Harbor as being easier to defend than Kiska, while far enough out to serve as an advanced base.

It is not probable that more than a secondary naval base will be established in the Aleutians at any time in the near future. A major base must be made impregnable to assault, must have a harbor capable of sheltering the entire fleet, and must have a civil population to furnish labor for the repair yards. Such labor would have to be imported and maintained, as it does not exist in this almost deserted country. There is no harbor in the Aleutians that offers a safe anchorage for a fleet. These islands being mostly the jutting tops of a great undersea mountain range, the harbor bottoms are deep and rocky. Constructing wharfrage for a large fleet would be almost out of the question. No country would care to risk its main fleet in this area, which is fog bound and ice bound much of the year.

Sound strategy dictates that we should consider our last frontier as still an outpost—that we should maintain bases there from which we can operate without committing our main forces to their defense. We should fight for Alaska if necessary, but we can do this much better by not attempting to fight on it.



Chilkoat Barracks, the only garrisoned post in Alaska

Press Censorship in War Time

BY CAPTAIN H. W. CAYGILL
Infantry

Part I

WRITING in *American Mercury*, June, 1928, Raymond S. Tompkins, war-time correspondent of the *Baltimore Sun*, states that the first censorship code of the American Expeditionary Forces "started out with an expression of almost pathetic trust and confidence in the patriotism and military discretion of the press of the United States and its representatives in France."

As received by the correspondents from Major Frederick Palmer, the first press officer of the overseas forces, these instructions read:

The American Expeditionary Force depends more on the correspondents' patriotism and discretion than upon censorship in the safeguarding of military secrets. Information given confidentially to their friends by persons, official or civilian, as first-hand observation, is one of the most dependable sources of the enemy spy system. Therefore correspondents are asked to make it a rule never to relate to any person, however intimate, any fact or impression which is not conveyed in their copy as censored.

Correspondents will not be permitted to mention:

1. Name of any port of disembarkation, nor any description of it.
2. Names of any officers except the Commander-in-Chief, or the commanders of divisions, nor the names of any units.
3. Anything that will indicate to the enemy the routes of our transports or the methods used by the Navy to protect these routes.

These three rules, issued on June 25, 1917, comprised in toto the first censorship regulations imposed in France.

Twenty-four hours later dispatches reached the United States relating the landing of the first contingent of American soldiers on French soil and bearing the date line: "*St. Nazaire, France, June 26!*" French and British newspapers carried in their stories of the debarkation not only the name of the port, but the numerical designation and strength of the units involved. Thus was "broadcast to the world, enemy, neutral, and friendly" the fact that St. Nazaire was the port of debarkation for the United States troops.

Tompkins, in his article in *American Mercury*, implies that the blame for this leakage of information of unquestioned value to the enemy and of grave danger to those elements of the First Division which were still on the high (and submarine infested) seas, lay, at least partially, with the correspondents who cabled the story.

Major General Harbord, in his *Leaves from a War Diary*, states that "the scoop by the *London Times* which embarrassed us at the time of the first arrival of our troops was due to the crookedness of the French censor or a

'It will be difficult to keep up the morale back home if every man who comes across the sea enters a great silence which is broken only when his name appears on a casualty list.'

—Heywood Brown

corrupt telegraph officer, we have never known which."

Others have held that the French censor merely neglected the matter of date lines or failed to caution the telegraph operators.

No matter upon whose shoulders the blame rightfully should lie, the St. Nazaire date line incident brought to an abrupt end the short régime of a censorship based primarily on "pathetic trust and confidence."

There followed a continuous stream of censorship restrictions. "Verboten" was the use of names of any members of the overseas forces other than those of Generals Pershing and Sibert. No mention could be made of the name, number, strength, or location of any unit, nor of the location of any permanent base or headquarters outside of Paris. Taboo were detailed descriptions of systems of defense or of new types of guns, shells, and armament.

Forbidden was mention of future military plans, prognostication on eventual positions of the American combat forces at the front, and prediction as to the future arrival of troops from the United States.

On April 2, 1918, the censorship regulations, which had been promulgated helter-skelter as the occasion demanded, were codified by Lieutenant Colonel Walter C. Sweeney who, upon the organization of the General Staff of the American Expeditionary Forces, had become chief of that section of the Military Intelligence Division which supervised press censorship.

These codified rules stated that the principle of censorship was that all information might be given to the public provided that all articles were accurate in statement and implication, supplied no information of military value to the enemy, did not "injure morale in our forces here, or at home, or among our allies," and did not embarrass the United States or her allies in neutral countries.

There then followed specific rules which were intended to explain the above mentioned conditions "but never to be considered as permitting the publication of anything that conflicts with those four conditions."

American correspondents did not wait until November 11, 1918, to write their first "Now It Should Be Told" or "The Public Must Know" stories. In fact, the barrage of criticism began falling on the overseas censorship in the

winter of 1917-1918 before the American Expeditionary Forces had more than a corporal's guard at the front.

Space does not permit elaboration of all the points of criticism raised by correspondents, writers, literary sight-seers, and publicists against the censorship system and censorship personnel of General Pershing's forces. However, those phases of the censorship which caused the greatest complaint and dismay in the ranks of the writers will be discussed in some detail.

The correspondents, writes Raymond Tompkins in *American Mercury*, had gone to France "prepared to write the story of the A.E.F. for the folks back home, as they would write the story of a court battle to save a fair slayer from the noose. They had never covered a war, and the big thing was to get details."

Manifestly the edicts against identification of units and the use of names served to "plague and confound" the zealous writers. Theirs was the unenviable task of striving to write details without using the all-essential journalistic "what" and "who."

"THE GALLANT —TH REGIMENT"

Censorship rules, embodied in the instructions issued in the summer of 1917, prohibited the use of "the name, number, or location of any units of the forces." The regulations, as revised on April 2, 1918, forbade identification of any unit in the lines except when announced in the official communique. Troops in training areas could not be identified in cable dispatches as being from New York or New England. Greater latitude was permitted, however, when articles were to be sent to the United States by mail.

As American troops were thrown into the lines in ever-increasing numbers, the rules governing identification of units gradually were relaxed. Designation of organizations by name was permitted in press dispatches when it was definitely known that the enemy had taken prisoners from such units.

A later ruling made it permissible to mention "divisions and component parts upon withdrawal from a major engagement." Then, the official communique of September 26, 1918, covering the beginning of the great Meuse-Argonne attack stated:

This morning, northwest of Verdun, the First Army attacked the enemy on a front of twenty miles and penetrated his line to an average depth of seven miles. Pennsylvania, Kansas and Missouri troops, serving in Major General Liggett's corps, stormed Varennes. . . .

Thereafter the official communique was more profuse in the identification of the sectional origin of participating combat units. These relaxations, writes Thomas M. Johnson, a wartime correspondent for the *New York Sun*, in his *Without Censor*, "let us put more personality into dispatches, and paint for those at home a picture more interesting and full of meaning."

On this phase of censorship comparative peace eventually reigned on the censor-correspondent front.

Certain it is, however, that, in the earlier days, the pro-

hibition on unit identification worked in mysterious ways its wonders to perform.

Howard Broun, in a dispatch to the *New York Tribune*, dated December 23, 1917, protested that the censor had let through a story to the effect that "certain units of the Guard of almost all the States are now in France." Broun's contention was that the dispatch could refer only to the Forty-second (Rainbow) Division, which fact the German intelligence was bound to know, but that the veiled secrecy of the story only served to confuse the American public.

The *Nation*, on May 18, 1918, told of a dispatch printed in the United States which contained the line: "The gallant —th Regiment, bearing United States and Irish flags, went over the top." To every New Yorker who read and gloated over this item it was then definitely known that the "Fighting Sixty-ninth" was at the front and in action. Why not say so?

Added the *Nation*:

Now, moreover, we are beginning to be told little items which, if anonymity is to be preserved, ought not to appear at all. Thus we heard last week that two companies of the Ninth United States Infantry were honored as companies by the French Government; but we have never been told which regiment it was which marched in Paris last July and aroused such enthusiasm in the French public. Lately we were able to identify a New England regiment, which recently received more than 100 *croix de guerre*, from the news of a press dispatch, but no official announcement was made. France may honor our gallant ones, but not we ourselves nor our Government!

No discussion of the question of unit identification would be complete without brief review of the famous "Marine" incident.

Raymond Tompkins graphically tells the story in *American Mercury*, June, 1928.

The last great German thrust had halted barely forty-five miles from Paris. American troops took up the counter attack and were hacking away at Belleau Woods. It was a great story, just what the folks back home needed. But the censorship regulations read: "Units will not be mentioned by name." The correspondents implored the censor to let them use *some* designation. At the incessant exhortations of the writers, the harrassed censor finally permitted the use of the word "Marines" on the ground that the Marine units in France were not a unit as such but another service of the nation's military establishment.

Tompkins continues:

Next morning people 3,000 miles away read all about them over their wheat cakes and whooped to learn that Americans were the best fighters in the world—especially Marines. But they never read a word about the Ninth and the Twenty-third Infantry—never dreamed that there was any such infantry, never knew until long afterward that they had fought just as hard, bled just as fast, and died just as thoroughly as the Marines, and in exactly the same division in precisely the same operation!

So the Marines went on to an eternity of glory and

publicity, and the Ninth and Twenty-third went down, temporarily and perhaps permanently, to oblivion. That was one of the mistakes in the censorship of war news long since admitted by the censors themselves. But never, so far as the record shows, has any share of the guilt been admitted by the newspapers whose men hounded the censors into making it.

In his article, "The Censor's Side of It," printed in *Saturday Evening Post*, July 19, 1919, Gerald Morgan, chief field censor at the time, shoulders the blame for the "Marine" episode. He states:

The other mistake was overplaying publicity for the Marines. This really was a serious mistake. This is how it happened: When the Second Division came to Gisors, I asked by letter whether the expression "Marines" could be employed after the Marines had been identified by the enemy. When we reached Paris from Montreuil aux Lions I found the answer from General Headquarters lying on my desk, giving me such permission.

MAJOR BLANK GOES TO WAR

There must also be considered that twin plague of the prohibition on unit identification—the military taboo on the mention of individual names.

It will be recalled that the first censorship rules prohibited the use of the names of any officers or men other than those of the Commander-in-chief and the commanders of tactical divisions; that this rule, shortly thereafter, was revised so as to permit mention in dispatches by name of only Generals Pershing and Sibert and Admiral Gleaves.

As was the case with the regulations governing the identification of units, there was gradual relaxation of the edict against the use of names. The original rules were soon amended to permit the naming of staff officers when their names "naturally and properly" occurred in dispatches. In the spring of 1918 permission was granted to use the names of men and officers up to the grade of captain inclusive "if the name adds materially to the interest of the story, if the context does not make the use of the name indiscreet, and if other qualifying conditions are fulfilled."

Later revisions permitted the use of names under the following circumstances:

When mention of divisions or component parts thereof is authorized, names of individuals, of whatever grade, serving with such units, may be mentioned without restrictions, other than those imposed in individual cases by judgment of the censoring officers. The object of this restriction is to prevent unjustified repetition of the names of individuals.

Names of individuals below the rank of brigadier general may be mentioned at any time, provided there is nothing in the dispatch which indicates the unit with which the individual is serving.

The bar was on a low rung by the late summer of 1918. But the height at which it had rested in earlier months had caused not a few verbal and printed explosions.

Wythe Williams, in *Collier's*, January, 1918, stated he

could not see "what use to the Germans would be stories of dozens of officers in our army who were well known at home in civil life. What they are doing would thrill America. But all names are barred below the rank of brigadier general (sic). In this matter we imitate the English, who in turn imitate the French."

The French, declared Williams, would not emphasize the names of generals for fear of "the man on horseback." That had nothing to do with the American army. If the military authorities feared that self-advertising would be sought by individuals were the use of their names permitted, Williams was confident that the press would be perfectly competent to control that phase of self-glorification.

Discussing the same subject, James Melvin Lee wrote in the *Bellman*, September 21, 1918:

The use of censorship to suppress accounts of personal bravery and brilliant work in active service is said to be justified on grounds that publication of such items could make petty officers publicity seekers and would interfere with the *esprit de corps* of the army.

Granting the possibility that censorship of this sort might serve to keep the military forces free from "newspaper" commanders, Lee debated as to whether good service at the front was not entitled to a public "well done." It was his opinion that space limitations were such that only extraordinary battle feats of individuals would receive press notice.

The *Nation*, on May 18, 1918, made editorial complaint that the people knew only General Pershing's name; that correspondents could name no other officers except those receiving decorations from foreign nations. The result was that "we know the name of an aviator getting the Croix de Guerre, but not the second or third in command of the American Expeditionary Forces." The rules were being relaxed, however, even as the *Nation* was speaking its editorial mind.

"AN ANONYMOUS WAR?"

The earlier and stringent prohibition of the use of names has been justified by some on the ground that, when the combat divisions of the overseas forces were few in number, it would have been possible for the enemy intelligence to determine the identification; and through identification of the units which had arrived in France. The procedure, so it is claimed, would have been somewhat as follows: a correspondent would have cabled to the United States the statement that Captain John Doe had led the first raiding party sent into the German trenches by the —th Division. Wily German agents in this country would then ascertain by devious means the combat division of which Captain Doe was a member. By some circuitous route (there was cable, radio, and telegraph censorship on all communications leaving the United States) the enemy would be apprised of the fact that the —th Division was in France.

Collier's unconvinced editor exclaimed, on January 12, 1918:

The correspondents . . . cannot believe that the German General Staff is sitting up nights to read month-old New York or Chicago newspapers which a spy in this country has given to the Swedish sailor with orders to deliver in person to the Kaiser. . . . The effect of the news famine is beginning to tell on the nerves of the public.

Gerald Morgan, former chief field censor, held the same viewpoint. In *Saturday Evening Post*, July 19, 1919, he wrote:

As regards censorship during this period our principle restrictions were against the use of all names of officers and men and against unit identification. I doubt if the German High Command was chiefly interested in the A. E. F. at this time. . . . They probably knew in January that the A. E. F. could not be a factor of any importance as early as March or April. . . . I think the decision made later might as well have been made in January, 1918—to pass names of individuals and units as soon as any division had been identified by the enemy.

On this subject of anonymity, Norman Draper, during the World War an Associated Press correspondent with the American and British forces on the Western front writes:

I incline to the idea that some of the restrictions against the use of individual names and identification of units during the earlier days of the A. E. F. participation probably were unnecessary—at least to the extent which was effective then. There was absolutely no necessity for banning the use of names of individuals and units after the enemy had actually identified, by means of prisoners or otherwise, the units opposing them at various places in the line. However, I felt then and feel now that there was excellent reason for prohibiting the use of individual names and the identification of units in any way that would serve to permit the enemy to identify troops or units at any particular part of the line. Such information, if it should have been cabled to the United States, eventually would have found its way back to Germany. . . . I heartily agree that there would have been great publicity value in the use of names of persons and units—after it was positive that the information could be of no value to any enemy, and the only way this could be positive was to know that the enemy already had the information.

Many have been the contentions that the publicity value of the use of names of persons and organizations would have been so immeasurably great in the United States, especially during the earlier months of our war preparation, as to completely offset their purported military value to the enemy.

In its article headed "An Anonymous War?" the *Nation*, on May 18, 1918, had this to say:

To fight this war behind a complete screen of mystery as to individuals and organizations taking part in the gigantic struggle means inevitably a lack of that enthusiasm and interest among the home public which would inevitably follow upon the narrative of the achievements of units from this or that State or territorial division.

Heywood Broun, in his dispatch to the *New York Tribune*, dated December 23, 1917, stated:

It will be difficult to keep up the morale back home if every man who comes across the sea enters a great silence which is broken only when his name appears on a casualty list. No news is good news, has been the policy of the American censorship.

Wythe Williams was of the same school of thought, contending that one result of the censor's many sins was "a stagnation or at least a slowing up of interest in America because the present censorship is a non-conductor and there is lack of news concerning our activities."

Nodding in rather vigorous agreement with the correspondent of the *New York Times*, is to be found Major General Johnson Hagood who, in his *The Services of Supply*, writes:

Sir Ian Hamilton complained bitterly at Gallipoli of this stupid censorship, though the British were more liberal than the Americans. He said it made no difference to the Germans whether the attack was led by Smith or Jones, or whether they had been thrown back by the Southampton Blues or the Northampton Greys, but it made all the difference in the world to the morale of the people back in England. We ourselves killed all interest in particular units during the war, and then, when the war was over, we tried to bring it back to life by plastering the uniform with brass marks of mimic heraldry.

On this phase of World War censorship not a few of the military were enrolled under the banner of liberalism.

"LET'S GO AND WALK AROUND AMONG THE DEAD"

Restraints on the naming of casualties likewise was a source of no little friction between the press and the censorship. Here was news, albeit dismal news. Yet the yarn is told of an elated correspondent, freshly arrived at the front, impatiently demanding of the conducting officer: "Well, let's go and walk around among the dead. I need background for my story."

Prior to the entry of American troops into the lines, the censorship regulations prohibited the use of the names of casualties until publication of the official casualty lists by General Headquarters. Subsequent revisions provided that casualties might be mentioned by name, but "only when it is reasonably manifest to the censor that the facts are correct and that some definite good end, such as offering examples of heroism, etc., will be served by printing them." However, under no circumstances could individual casualties be mentioned until twenty-four hours after the dispatch from France of the official casualty cable to Washington.

Collier's, on January 19, 1918, stated that the censorship restriction on the naming of casualties in dispatches made for "a refinement of torture." Some time previous to the publication of the official list of casualties, stated the editor, "we are permitted to see a dispatch stating that two corporals and a private of the —th Regiment have died of pneumonia, and one lieutenant of the —th Regiment was killed by the premature explosion of a grenade."

It was *Collier's* contention that the effect of this form of censorship was as if the dispatch read:

Four of your number have lost your boys. Think that over for a few days, and then, as soon as we have decided whether or not their names are of military importance to the enemy, we will let you know which four are the unfortunate ones.

The codified rules of April 2, 1918, eliminated "refinement of torture" dispatches by prohibiting the mention of events related to casualties when the censor saw fit to eliminate names.

On this subject of censorship on casualties, Norman Draper expresses the following opinion:

I do think that once or twice the censorship or somebody who gave orders to the censorship took a little too much upon themselves and suppressed, for some purposes of their own, news that might as well have been put on the cables. For example, all seven or eight of the correspondents in that neighborhood knew, within a half hour after young Roosevelt had been killed, that he was missing, and they knew soon after that he was down, although they did not know whether he had been killed or made prisoner. The correspondents were not permitted to mention Roosevelt's name on a cable until after an announcement regarding his being missing had been made in the United States. It has always seemed to me that there was absolutely no reason for the suppression of news of that kind, but maybe somebody had a good reason not apparent to me.

Thousands of casualties—some of them known to writers who were accompanying the advancing troops—were not reported officially to General Headquarters for days, weeks, even months after occurrence, if ever reported for that matter. It does not follow therefore that the official cable from France to the War Department contained names which might have served as material for news items only 24 hours old.

On the other hand, in the maelstrom that was war, thousands of casualties were rumored and surmised—some of them officially reported—which had never occurred. Of these purported casualties correspondents were also aware.

The ban on the naming of casualties prior to the dispatch of the official cable was never lifted. The primary purpose for this restriction was to insure that the family of the individual was first notified by official sources, and then only after as careful verification of fact as was permitted under the existing conditions.

TROOPS TO THE NUMBER OF — ARRIVE AT — TODAY

A censorship restriction to which frequent objection was raised during the first months of American participation in the world conflict was that prohibiting statement of fact or surmise upon the number of troops in France.

Said the *Review of Reviews* in February, 1918:

Americans in general do not know how many men we have sent to France. . . . We venture to assert that it is accurately known in Germany. . . . The facts are also known in England and France. American citizens have not sought to pry into necessary military secrets.

Perhaps, however, it would be best to state frankly what we are doing, and adopt an open policy with full courage.

The *Nation*, in May, 1918, suggested publication of figures on the number of troops arriving each month in France "if only to counteract Germany's lying propaganda to the effect that few were getting over."

Early in the spring of 1918, when the propaganda value of publicity on the amazing rapidity of arrivals was found to outweigh that of information of value to the enemy, the ban was lifted. Thereafter, end-of-the-month dispatches were permitted stating the total number of United States troops in France and the number arriving during the month.

Limitations on the naming of training areas, base ports, and other locations also caused intense suffering in the ranks of the correspondents.

Expostulated Heywood Brown in the *New York Tribune* on January 6, 1918:

The German papers get news of the American army long before it is freed for publication back home. . . . For instance, German newspapers printed again and again the fact that American troops were training in the Vosges, and French papers carried the names of some of the towns, but nothing was said to America and nothing can be said yet (sic).

Wythe Williams had his little piece to speak on this subject. In his *The Sins of the Censor* he contended that geographic designation of certain important bases, such as ports of debarkation, should be kept secret as long as possible, but never after known to the enemy. "The same holds for training areas where troops have been stationed for a long while. The Germans have flown over our camps. Yet their location is a great secret in the United States."

The censorship regulation governing cross references was greeted with scorn by some newsmen. It read:

Cross References: If cable X says a headquarters is on a lake, cable Y near a large forest, and cable Z near a large city, the three cables in combination will reveal the location.

On its face, this statement might appear far-fetched—humorously so. Yet, Norman Draper, who for many months represented the Associated Press with the British forces, writes:

Had some of the correspondents spent any time with the British army they would have found out very quickly how two and two and two from different dispatches published in entirely different parts of the world could be added together to make a perfect six. And when the "perfect six" came up in the result, you may depend upon it that the enemy suffered accordingly.

The classic example of the workings of the censorship against the use of geographical names was that of the removal by an extremely conscientious censor of the word "Sedan" from a purely retrospective story about the Franco-Prussian War. On this occasion, the chief censor, not so conscientious, overruled his subordinate.

"WHEN FICTION RISES PLEASING TO THE EYE"

The censor's demands that dispatches be truthful, accurate, and without exaggeration fretted some writers to the extent that such restrictions cramped their normal peace-time style.

Instructions to the censoring officers, issued on August 14, 1917, read in part:

We do not censor for truth. Inaccuracies and inventions by correspondents are judged by their effect on morale and the military purpose. Conflicting statements from different correspondents when obviously floric and exaggerative may only serve to confuse the enemy. With our public they are their own answer.

In his dispatch to the *New York Tribune* of January 6, 1918, Heywood Brown censured the censorship not only for what it prevented the correspondents from writing but for what it permitted them to write. By rather occult reasoning he found the censorship in France exercising at least partial influence upon even the headline writers of the *New York* dailies. Wrote Brown:

It is also responsible in an indirect way for the singular style of war reporting which has surrounded the progress of the American army. We newspaper men have overplayed every slight piece of news to such an extent that the French and English laugh at us. The story of a patrol by American and French soldiers, a routine patrol such as takes place at a hundred points along the line every night, was printed in one *New York* newspaper under a two-column headline "American Troops Go Over the Top."

On the subject of accuracy and exaggeration, however, the censor was singing a different tune by April 2, 1918. The rules issued that date stated:

Exaggeration of our activities, accomplished or contemplated, will be studiously avoided, because of the bad effect this will have on the respect which our Allies have for our promises.

In one form or another, however, exaggeration and inaccuracy did creep through. In his glowing account of what he termed the great American victory at Seicheprey early in 1918 (General Bullard, in his *Personalities and Reminiscences of the War*, terms the "victory" a "serious mishap") a correspondent cabled that the attacking Germans "were dope crazed and acted like wild men, singing and yelling as they advanced."

The *New York Herald*, in an editorial discussion of this same victory, stated that from dispatches two things stood out:

One is that after the Germans had sent their infantry forward they dropped an artillery barrage behind them to make retreat impossible. Can there be any other reason for that than doubt in the minds of the Kaiser and his war lords of the German morale? The other is reference to the shock troops as "dope crazed" . . . Has the Kaiser found it necessary to call in German science to artificially bestialize his soldiers?

One wonders what might have been the reaction of the Kaiser and his war lords had they witnessed a subsequent

assault by United States troops, who (if we are to believe a correspondent's dispatch, passed by the censor) charged fiercely forward, shouting at the top of their lungs: "Remember the *Lusitania*!"

Then there was the "gallant —th Regiment" which swept over the top bearing flags—United States and Irish flags! And the press tale of the dead German found chained to his machine gun—the many press tales of many dead Germans found chained to many machine guns!

Here, however, it may be that we have wandered from the path of truth and accuracy in censorship into the swamp of war-time propaganda. General Harbord would have us believe that propaganda is one of those "great, indefinite, easily stretched, hazy, ill-defined terms which like sweet charity can be made to cover a multitude of sinners if not of sins." Apparently censor and correspondent were sinners alike when dabbling with one phase of World War truthfulness, accuracy, and exaggeration.

THE WAR GOD SLAYS THE MAIDEN TRUTH

Accuracy and truthfulness in criticism of military defects (and alleged defects!) found correspondent and censor at their normal stations, as far apart as the poles, eyeing one another suspiciously, disdainfully.

"Controversial matters, criticism of the Army and army policy, will not be passed except on approval of General Headquarters." So read the regulation, and, as well may be imagined, General Headquarters was not exactly liberal in the granting of approvals.

Let Thomas Johnson tell his side of the story. In *Without Censor* he writes:

The war-time version of the war was so often not the true version. The war god slew the maiden truth to make way for the twin Furies, Censorship, and Propaganda. The first lowered before exact and often ugly reality a screen upon which the second threw attractive figures. . . . The screen is now lifted, and those who gazed at it anxiously, hopefully, always proudly and bravely, can know how distorted were some of the things they saw. . . . It could not be written then, for those who told the battle's progress from day to day were under orders, controlled by Censorship and Propaganda, part of the war machine. They must weigh every word, thinking of the army that fought and the world that read and the people back home, and always of the men in gray behind the machine guns whom no tell-tale word must reach. The best "story" in the world was not worth a single doughboy's life. No wonder all the news did not get by the correspondent's conscience or the censor's blue pencil.

Johnson continues:

Perhaps that censorship, some of which was so necessary then, helped cause the reaction of criticism after the war. By what they said and would not permit to be said, Censorship and Propaganda pictured the A. E. F. always perfectly equipped and supplied, advancing gloriously, even blandly, from victory unto victory—a picture as unfair to the doughboys and their leaders as it was untrue. . . . Writing without censor, it seems, too, that patriotism and the thrill and lust for

victory that are part of war, led us (the correspondents) in the same direction—although we strove against it. The A. E. F. was itself to blame for no little of the exaggerated praise that newspapers printed. From general to doughboy, every one of its two million believed his outfit, be it combat division or grave digging unit, the most wonderful agglomeration in France, incapable of mistake or shortcoming, achieving only victory. The setbacks he carefully forgot when he saw anyone with the correspondent's green and red brassard.

The American Expeditionary Forces were not always perfectly equipped and supplied; nor did they always advance from victory unto victory gloriously, even blandly.

Raymond Tompkins tells of a correspondent who had discovered one unit, the soldiers of which had no serviceable shoes and the animals no oats and hay. He demanded of the field censor that his story be passed as one of those "Must This Be?" articles—a story that would rock Washington and topple the bureaucrats out of the capital city. When the blue pencil was run through his copy at the field press headquarters, he appealed in person to the chief censor at General Headquarters, contending: "The people of America want the whole truth. This, sir, is the truth!" The dispatch did not go over the cables.

Somewhat similar is Tompkin's story of the writer who literally exploded with excitement when he discovered that thirteen soldiers (out of half a million!) were in the hospital as the result of canned beef poisoning. The Spanish-American War in mind, the correspondent rattled off his story. It was not passed by the censor.

In *Without Censor*, Thomas M. Johnson writes:

As to aviation, the censors often asked us: "For God's sake, lay off it." It was a sore point. Everyone knew about the "sky filled with airplanes" publicity at home, that had helped in speeding up German airplane production. Everyone knew that our own production had failed sickeningly.

Norman Draper also discusses the "sky filled with airplanes." He writes:

In many instances officers of the line relied upon correspondents to correct conditions which they thought were wrong. For instance, one day when General Bullard was in command of the First Division he stormed out of his headquarters in the mud waving a copy of a New York newspaper which had on its back page a "patriotic cartoon" which pictured the skies filled with airplanes (presumably with Liberty motors) all the way from New York to the front in France. Bullard waved the paper in one hand and the fist of the other he waved around at three German planes soaring overhead. He commented that here was the kind

of stuff that was being fed to the people of the United States on the one hand, and here were the facts on the other. He then let off a blast about how his men of the First Division were being machine-gunned in trenches by German planes and that there wasn't a single American plane to chase them away. He asked that I do something about that. I sat myself down and wrote a hot piece, took it to the censor, General Morgan, who commented that he knew the condition complained of was true but that he thought that he and half a dozen other people would be court-martialed if he passed the dispatch. I argued with him a bit and he finally came to the conclusion that a court-martial for him was less important than a lot of soldiers being shot. So he put his stamp on the dispatch and I carried it to the cable office and watched until the last word disappeared.

Draper's letter continues:

When that dispatch hit Washington all sorts of things happened quickly, including the threats of court-martial for everyone concerned—except, of course, General Bullard, whose name was not mentioned in the dispatch. Of course, nothing came of it except that within the next three or four days the First Division had some planes to protect them—even if they were second-hand French planes.

There were errors of commission and omission in the supplying and equipping of the American Expeditionary Forces—innumerable errors, some of little consequence others of great importance. These have been brought to light in the many volumes on our World War effort written in recent years by military commanders, governmental officials, press correspondents, and civilians of the war era.

The harrassed Government in Washington—striving to erect a mighty military structure of four million men on the slender foundation of a standing army which, upon our entrance into the war, numbered barely one hundred thousand—heard frequently and fervently from the American Expeditionary Forces on the subject of supply deficiencies.

To the reader is left determination of the intrinsic value to the American public—and to the enemy—of dispatches harping on the fact that Private John Jones had no serviceable shoes and Private John Jones' mule no oats and hay. Or of cables to the effect that thirteen soldiers out of 500,000 had been hospitalized as the result of canned beef poisoning. Raymond Tompkins states that some of the correspondents "were neither lilies in the purity of their motives, nor stars in the quality of their journalism."

(To be continued.)

WHENEVER A SUFFICIENTLY STRONG GROUP is sufficiently dissatisfied it will use force in an attempt to obtain its end. Other groups will resist. That is more than the cause of war. It is war.—STOCKTON.

Chemical Security: Part I

BY CAPTAIN ALDEN H. WAITT,
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THE subjects dealing with the art of war which receive the most attention are those pertaining to the offense. We are taught that victory can be obtained only by fighting. Consequently, there is a tendency to overlook or take too lightly the problems that have to do with defense, and especially those that have to do with protection.

It is obvious, in this day of highly developed weapons, that in order to fight a soldier must be protected. This was brought out most forcefully in the long period of stalemate during the World War when it seemed that attack had failed. At that time the introduction of chemical warfare emphasized the necessity for a special type of protection that never before had been considered; protection of the lungs, eyes, and skin of the soldier against the direct action of chemical agents.

It is fundamental that the soldier of today must have adequate protection equipment to withstand a gas attack. This, however, is not enough. The problem of protection against chemical agents goes beyond the mere matter of equipment and the training in its use; it involves tactical considerations which require much thought, careful organization, and intelligent training.

For some years after the World War, protection against gas was covered in all armies by a study of the technical means of keeping gas away from the soldiers' lungs, eyes, and skin, and certain routine measures to be taken before, during and after a gas attack. These means were divided into two classes, called individual and collective protection. This classification is still used.

Both individual and collective protection are concerned with technique, equipment, and material factors, and so technical protection essentially is of a passive nature.

In recent years a new conception of the problem has been evolved, increasing attention being given to what is called tactical protection against gas. Tactical protection may be defined as the active measures of security which assist troops in carrying out their missions without excessive losses in gas casualties. It may be summed up in the two words—chemical security. It really amounts to the application of the principles of combat security to strictly chemical situations.

General Maurice, in his "Study of the Application of the Principles of War to British Strategy," says, "One of Napoleon's dicta is that every plan of campaign must be based on a sound and well considered security. He (Napoleon) describes his attitude of mind in preparing a campaign as that of the veriest coward. 'I endeavor to conjure up all possible dangers, to foresee all difficulties. Military service,' he said, 'consists in weighing carefully all possible eventualities and then eliminating, almost mathematically, chance.'"

Methods of Chemical Attack and Chemical Intelligence.

It is of course impossible to eliminate chance entirely in plans of protection against enemy gas, but it is possible to "foresee the difficulties," and make all possible provision for them. Unless commanders do foresee the difficulties that gas, especially persistent gas, may create, and take steps to counteract or circumvent these dangers, armies will be delayed in their movement, excessive casualties will be caused, and attacks will bog from confusion and disorganization. From what we know of developments in chemical warfare, this is not far fetched speculation. It is a fair estimate of what probably will happen to the command unprepared to meet enemy gas.

With every important military power studying chemical warfare, it is fair to assume that if gas is used at all it will be used on a far greater scale than was possible during the World War. Knowing the effectiveness of gas in the past war, the possibilities for the future are not difficult to imagine.

Suppose a corps or an army is preparing for an offensive. Large bodies of men are being brought up to assembly areas. Consider the effect of covering large portions of these areas and the roads leading to and from them with mustard gas or lewisite disseminated by bombs and spray from airplanes and by artillery shell. Unless careful plans are made, anticipating the action to be taken in such a case (even though the protective equipment is complete and the best possible), the freedom of action of the corps may be lost and the enemy will have accomplished what he set out to do. Although most of us give thought to security in our plans, maneuvers, and problems, there has been a tendency to ignore chemical security. It is too vital a subject to be omitted. If gas is used in the future, and few doubt that it will be, it will affect every individual and all military action.

The infantry commander planning his approach march must allow for delays that may be encountered by the presence of areas of persistent gas along his route. The supply officer will have to count on difficulties in getting his ration carts safely through zones contaminated with mustard gas and lewisite. The engineer charged with repairing bridges and roads will find it necessary to count on the combined effect of mustard gas and high explosive. The signal officer, planning his communications net, must take into consideration the possible effect of mustardized areas in the ravines and valleys where he plans to lay his wire.

These are a few of the problems that must be solved in a war involving the use of chemicals. They must be solved in the field by every arm and service. Chemical security is vital to all. A knowledge of tactical protection against gas is just as important as a knowledge of the



Mechanized chemical mortar ready to fire

C. W. B. PHOENIX

use of the gas mask. To the commander charged with the great responsibility of conserving his forces and bringing his command to battle intact and able to fight, it is more important; yet the general idea of anti-gas training is a few hours' drill with the gas mask each year, a sniff or two of tear gas, and possibly an exercise in which smoke candles are expended.

Any discussion of protective measures should be predicated on what an enemy desires to accomplish by his use of chemicals. According to the British teachings recently published¹ there are three main objectives for chemical attack—to inflict casualties, to harass and thus lower morale, and as a means of delay, either alone or in combination with demolition.

The Russians have a similar, but somewhat broader conception. Y. M. Fishman, Red Army Chief of the Military Chemical Administration, lists the following objectives:² to inflict mass losses on the enemy; to hamper the fire and maneuver of the enemy; to break up the normal work of the rear; and to destroy morale.

The French, in their Gas Defense Regulations, recognize the same objectives, but emphasize the use of chemical agents to prevent the enemy from entering certain parts of the terrain, as important roads, woods, and villages.

Thus, it appears that three great military powers have similar ideas as to the objectives of chemical attack. All

three agree also on the means of reaching these objectives.

The principal gas weapons that were used during the world War—the cylinder, projector, mortar and military shell—must be counted on in the future. Captain George J. B. Fisher, C.W.S., has described their uses in the January issue of the JOURNAL in "Chemicals—How, When, and Where?" We can take these weapons for granted, making due allowance for probable improvements in technique.

It is the new methods to which we must now give the most thought in a study of protection, for tremendous progress has been made in the dissemination of chemicals. Gas projection is not where we left it in 1918. During the World War the airplane was never used for projecting chemicals. Today the military world recognizes the potentiality of air chemical attack and is making preparations to use it offensively and meet it defensively. A description of the various methods of air chemical attack is contained in the manuals for gas defense of the European nations. Great Britain, France, Russia, Italy and Germany all lay emphasis on this form of attack. Remembering that the best defense is an active offense, there is only one conclusion to draw from this.

Two methods are described for air chemical attack—the dropping of chemically-filled bombs and the release of chemicals as a spray from tanks. Air bombardment with gas bombs may be carried out the same as with explosive bombs. The lightness of construction of the bomb makes it a more efficient weapon so far as filling is concerned than the artillery or mortar gas shell. As far

¹Tactical Notes on Defense Against Gas, The War Office, August, 1934.

²Military Chemistry, A Guide to Commanding Personnel of the Red Army, Moscow, 1930.

back as 1926, however, Rudolph Hanslian, the leading German writer on chemical warfare, suggested using containers of thin metal or glass to contain the chemical.³ All that is necessary is to toss these out of a plane. No bursting charge is required. The thin container striking the ground flies to pieces, and the chemical, probably mustard gas, is splashed in all directions. This would seem to be almost too simple and effective to be good. Certainly it would warm the heart of the procurement staff, who could place their orders with a commercial can company to supply unlimited quantities of containers, nothing remaining but to fill, seal, and drop them out of airplanes. No special equipment is needed, nor is special training required, since the chemical need not hit a point target.

The air spray method is accomplished by releasing mustard type agents from tanks carried by low flying planes. It would be combined with low-flying machine gun or fragmentation bomb attacks. The British, however, recently have suggested that "air spray attacks from a height may be delivered by the enemy at such a distance from the target that the aircraft concerned can neither be seen nor heard."⁴ The tremendous significance of this method, if it proves practicable, is apparent. The only protection against it would be a protective suit continuously worn enclosing a man from head to toe. Perhaps we will return to full armor; not that of the knight armed cap-a-pied, but with an armor that will resist molecules rather than lances.

There is another method of employing chemicals which is not entirely new but which is receiving increasing attention by many foreign armies. This is soil contamination with persistent vesicant chemicals, such as mustard gas or lewisite. The British call this the direct application method. It may be accomplished by hand grenades, by special vehicles fitted with sprayers, by large containers fired by time fuzes, or by contact or delay action land mines. The Russians describe sprayers carried by hand, mounted on two-wheeled vehicles, or on trucks, which are to be used for contaminating the ground and creating what they call gas obstacles.

Admitting the probability of gas from aircraft, chemical attack may be expected anywhere in a theatre of operations. It should prove of special value in the early stages of a conflict. There is a strong belief today, especially in Europe, that much will be gained by concentrating on delay action in rear areas before armies actually come in contact. Chemicals are an ideal weapon for such delay actions.

At the beginning of a war the main objectives of air attacks will be the enemy air forces, airdromes, arsenals, supply installations, and industrial centers. Chemicals of the mustard gas type doubtless will be used in conjunction with high explosives in attacking such objectives to cause confusion, delay repair, and to destroy morale.

Troop concentrations, especially during the early stages, will offer excellent targets for chemical bombing by aircraft. As troops move into concentration areas, they may be attacked by bombs and possibly by chemical spray. Regardless of the actual number of casualties, the use of persistent gases which attack the entire body will cause delay and disorganization unless complete provision is made to anticipate this form of attack.

Fishman states in his text on chemical warfare for the Red Army that air-chemical attack to cause casualties must be made against concentrations of troops in bivouac areas, in reserve, or when entraining or detraining at railroad stations. For such targets he recommends the use of chemical bombs combined with H.E. and incendiary bombs. For striking columns, he favors the chemical spray over attack with bombs. Under conditions of modern gas discipline he believes losses from the latter will be chance losses and the return to the march may be quickly effected. In the case of spraying, however, the losses may be large, especially if the attack can be made in a narrow place where the column cannot spread out, and atmospheric conditions are such that the mustard gas or lewisite spray itself can settle on the forces attacked. "Striking the reserves located in forests is especially advantageous." Here the persistent gas bomb is much more effective than the high explosive fragmentation bomb.

Main bodies in the rear, bivouac areas, large troop columns, and important headquarters are better targets for air attack with chemicals than are forward troops and who are in much smaller groups.

Mobile troops, operating in front, advance guards, and patrols, are likely to encounter bands of mustard gas whose actual location is of course less easily ascertained which have been placed on the ground to delay their advance. This will be true especially in defiles, along main routes, at river crossings, or where there are natural obstacles which must be passed.

In the meeting engagement the possibility of chemical attack by artillery and mechanized chemical mortars is increased. As deployment takes place, it is the British view that heavy gas concentrations will be met with but rarely, and that the enemy is more likely to use small harassing attacks to lower morale. Projector attacks on limited areas may be expected.

In an organized attack, the use of gas will be confined in general to the preparation fire and opening phases of the action.

Phosgene type agents may be used against troop concentrations to cause casualties if surprise can be gained. Irritant gases will be employed to force masking, to reduce the enemy's effectiveness, for counterbattery and harassing. Mustard type agents may be used to neutralize strong points on a flank, to contaminate areas vital to the enemy but over which our attack need not pass, and for counterbattery and harassing. The longer opposing forces are stabilized while in contact the more likely gas will be used.

³*La France Militaire*, October 31, 1926.

⁴*Tactical Notes on Defense Against Gas*, War Office. August, 1934.



LEFT—Smoke used to demonstrate gas cloud technique

C. W. K. Photos

In an attack on a defensive position which the enemy has had ample time to organize, all types of gas may be met. The enemy may employ chemical agents for harassing, counterbattery fire, and for counter-preparation. Since he is not expecting to attack, he will use persistent agents of the mustard type in the counter-preparation to contaminate roads, forming-up places, and observation posts.

During the pursuit the most likely form of gas attack is the airplane spray. Defiles may be bombed with H.E. and persistent gas, and bands of persistent gas placed ahead of the enemy column at key points. This may be done by mechanized vehicles working from a flank, or by air bombing.

In a withdrawal persistent agents fired by mortars and artillery on roads, defiles, at river crossings, or other key places may be used to delay pursuit. Contamination of the ground behind may be resorted to by direct application of mustard gas. It is probable that in the case of a deliberate withdrawal much use will be made of the direct application of persistent agents to contaminate ground, billets, and in connection with demolition work. Concerning the latter, an abstract "The Maneuver of Demolitions" by Major P. C. Bullard, C.E., in the December, 1934, issue of the *Review of Military Literature*,³ has this to say, "The tactical value of the demolitions will be greatly increased if the demolished zone is gassed with vesicant gas and defended by long-range artillery and bombardment aviation."

The art of using chemicals correctly in tactical situations is far from being crystallized, especially in a war of movement. We have much to learn about gas tactics, and only experience in war will prove or disprove our beliefs and speculations. The foregoing summary is concerned especially with current principles and teachings of foreign armies. It is given as a preliminary to a dis-

³Abstracted from *Revue Militaire Française*, September, 1927, "La Manœuvre des destructions," by Lieut. Colonel Bailla.



BELOW—Chemical mortar

cussion of the tactics of protection against gas. If we know how others plan to use a weapon, we are better able to devise counter measures. It is what an opponent may do with chemicals that interests the man planning protection. If you are going to hit with your right fist, the guarding left must assure security. Security is made up of many elements—chemical security is an important one.

In introducing chemical defense the text of the Red Army lays out six tasks to be attained, of which four are concerned with tactical protection. These are to discover the enemy's intention; the proper selection of positions with reference to chemical defense; to prevent enemy chemical attack by an active defense employing artillery fire; to notify troops of chemical danger; the use of protective equipment; and degassing.

The Russians state that these tasks demand the most careful training, and a high degree of "physical fortitude." They comment particularly on the effect of gas on morale—a feature strangely neglected by most texts.

In our own teachings, tactical protection against gas includes chemical warfare intelligence; chemical warfare reconnaissance; selection of routes of march, camp sites, and battle positions; the protective disposition of troops to avoid enemy gas; and offensive action to forestall or disrupt enemy chemical operations.

It goes without saying that security depends to a large extent on information. A careful intelligence scheme is demanded in order that the information may be timely,

complete, and accurate. So far as chemical warfare is concerned, it is of such a technical nature that special knowledge and training are required in the interpretation of chemical intelligence data.

An example of chemical warfare intelligence is cited from the writer's own experience.

As the gas officer of a division occupying a trench sector in the Haute Alsace, I received a report from a regimental gas officer that noises in the German lines indicated that trenches were being dug and metal drums or tanks installed. This suggested to the regimental officer that the Germans might be emplacing gas projectors. The position from where the noise came, however, was over two kilometers from the nearest probable projector target in our lines; up to that time it was believed that the maximum range of projectors was only about 1600 meters. Just prior to this, I had received word from the gas officer of the French Corps with which our troops were operating, that the Germans had developed a rifled gas projector of longer range—about 2800 meters, which recently had been fired against French troops on our extreme right. In view of this report the noise of the digging came from a position that would permit firing into a logical target in our lines if the new weapon were to be used. Upon request to G-2, an airplane photograph was obtained of the place indicated, which showed a new working that looked like a projector emplacement. The regiment was warned and shortly thereafter the projector attack from that emplacement was made. Protective preparations reduced casualties to less than 20, although a tremendous concentration of gas fell in a small area in which some 300 troops were located.

The fact that our artillery did not blow up the enemy's installation before it could be fired will be remarked, but there were reasons which prevented this in spite of recommendations that it should be done. The point is that chemical warfare intelligence data had been secured and that it resulted in preventing a large number of losses.

In addition to combat intelligence, there is of course command or War Department intelligence for which also a technical knowledge of chemical warfare is required. An outstanding example of chemical warfare intelligence, as it applies to this form, is the reported accomplishment of the British Intelligence Service in learning in advance of the contemplated use by the Germans of phosgene gas. British agents learned in the summer of 1915 that a new gas—phosgene—was being made by the Germans. The formula was obtained, as was the time and place it would be used. The British and their Allies were thus able to devise a gas mask that gave protection against the new agent, and were prepared for the attack when it came.

Such an achievement is, of course, rare, and it is rather with the every day factors in chemical combat intelli-

gence that the average officer is concerned in his effort to assure chemical security.

Such factors are the weather, terrain, activities, and armament of the enemy, state of enemy gas discipline, training and protective equipment, location and extent of contaminated areas and the interpretation of enemy chemical tactics. As an example of the last factor, an estimate may be made of the enemy's intention from his use of persistent gas. He is not likely to place it where he intends to attack. General Foulkes makes this very clear in his recent book "Gas!"⁶ in discussing the use of mustard gas by the Germans in the spring offensive of 1918. He says of the attack on the 21st of March, "that the exact front of the German assault was known accurately, as it was actually marked out for us by the enemy on the map by the preliminary use of mustard gas."

There is much information to be obtained from every gas attack and an accurate report is required of the gas officer. This officer should keep a gas situation map on which are plotted all gas attacks within his area. This is necessary especially where persistent gas has been fired.

A chemical laboratory company is now provided for each of our field armies which will be an important link in our chemical intelligence system. One of its principal functions will be the analysis of enemy chemical matériel.

The gathering of chemical combat intelligence will be a function of the same agencies that gather combat intelligence in general, but it will be found that the chemical officers and unit gas officers and noncommissioned officers are the principal means of obtaining this special information.

Speed of transmission is of great importance, especially in the case of new gases and new weapons. Doubtless any new gas discovered will be withheld until it can be used on a tremendous scale and with complete surprise. Our intelligence system will attempt to prevent this surprise, and at any rate get information back as speedily as possible to assure adequate protection against the impending attack. During the World War direct communication between chemical warfare agencies was authorized for all technical information and this should always be the case. At the same time the information must be passed on through the regular intelligence agencies and handled in the normal channels. There is need for a very close link between G-2 and the chemical staff section.

In every tactical action, surprise is an ever present danger. Adequate combat intelligence is the best guarantee of security and the chemical features must not be neglected.

⁶"Gas!," The Story of the Special Brigade, Foulkes. Blackwood & Co., London, Pages 267-268.

(To be Continued)

March of the Sixty-Ninth

By MAJOR KENNETH McCATTY, C.A.C.

LOOKING at it casually, we might be prone to brag a little about the speed and smoothness with which the 69th C.A. (AA) made its march from Fort McClellan, Alabama, to Fort Crockett, Texas, but when it comes to a plain statement of fact, this was one of the slowest marches in history. It started at Aberdeen, Maryland, on November 13, 1930, and ended at Fort Crockett March 23, 1935. We will admit that the outfit has visited practically every point of interest in the southeast during the intervening four years—that is why they call the 69th the Gypsy Regiment. Perhaps the experience we gathered wandering about to air races, state fairs, and target practices is what made it so easy for us to hightail it across Alabama, Mississippi, Louisiana, and Texas like a transcontinental on-schedule when we finally received our marching orders.

During the time we were (on paper at least) stationed at Fort McClellan, hardly a month went by that we did not receive more or less authentic information as to the date of our departure for Texas. We came to accept these rumors with considerable skepticism, so for the two years prior to the final dash our studies of the movement were desultory and casual. An occasional check-up on the progress of road construction and the compilation of reports on road conditions, accumulated in connection with CCC activities, was about all the thought we gave it. As the date of the movement could not be forecast, a detailed study based on the matériel to be moved was out of the question.

The first definite directive for an estimate on the cost of the movement came in a letter from Corps Area Headquarters, September 29, 1934. We made the report called for, making our estimates on the basis of using the old war-time transportation then on hand. Anxious as we were to get under way, we breathed a sigh of relief when the date was again deferred, and the last march of the old Class B's was to the graveyard. Our march would have been a different story if that equipment had set the pace. As soon as we had definite indication that the new motor transportation was about to arrive, a new estimate was prepared. This report controlled the allotment of funds for the movement.

Form letters were sent out to mayors, chambers of com-

merce and casual military personnel in all the towns on all the routes between Anniston and Galveston, asking for information on shelter facilities, bivouac areas, and the condition of roads and bridges. The response to these was enthusiastic, and a deluge of letters and telegrams arrived, requesting the regiment to make extended stops at practically every town on the route of march. When the actual reconnaissance was made, fairly complete information was on hand as to the facilities available at each town; this made it necessary to visit and examine into conditions only at those towns which were spaced at proper distances. Decision to use the southern route through Mobile and New Orleans was made primarily because of climatic conditions prevailing at the time the march was made. Aside from the comfort of the men, the possibility of spring floods interdicting the roads in the Mississippi valley could not be disregarded. As a matter of fact, for some time prior to the march, the direct route through Vicksburg, Mississippi, was under water. Of course, full use was made of correspondence with state highway departments and after all information was accumulated it was checked by an actual road reconnaissance over the entire route. As might have been expected, every fairly decent road in Alabama was blocked by road construction or bridge repairs at the time of the march.

The motor transport of the regiment consisted of the following:

- 2 5-passenger cars, 1 Plymouth, 1 Oakland.
- 1 Ambulance, GMC (old type).
- 2 8-passenger reconnaissance cars, Chevrolet.
- 12 Trucks, 1½ ton, Dodge.
- 18 Trucks, 2½ ton, Federal, 4-wheel drive.
- 24 Trucks, 2½ ton, Dodge.
- 7 Motorcycles, with sidecar, Indian.
- 5 Trucks, 10 ton, GMC (Prime Movers), with guns and instrument trailers.
- 4 Searchlights, Duplex.

About twenty private cars accompanied the convoy.

With the exception of the gun trucks, searchlights, ambulance, Oakland passenger car and one motorcycle, all vehicles were of 1934 manufacture. All except the



Texas roads are so straight they have to be corrected for latitude deviation

searchlights were capable of sustained speed of 30 miles an hour, the governors of the new trucks operating beyond this speed. The searchlights could not be driven faster than 25 miles an hour, notwithstanding that the sound locators were towed by Federal trucks, assigned to the searchlight battery for this purpose. Twenty-four Dodge 2½-ton trucks were received March 11th, and completed their 500 mile break-in run during the first day's march.

Motorcycles are of splendid assistance in convoy control under good road and weather conditions, but under adverse conditions are helpless and worthless. Over rough and dusty roads a motorcycle cannot operate at truck speed, and cannot pass a column in movement. A heavy rain makes motorcycle operation dangerous and very uncomfortable. With these factors in mind, we reduced the use of motorcycles to a minimum; four of the seven being carried in trucks. The motorcycles which we kept in operation performed yeoman service as guides at road junctions and guards at railroad crossings, returning to the head of the column as soon as this duty was accomplished. Their value in this work and their helplessness on other convoys where conditions were not so favorable leads to the conclusion that the proper use of these vehicles is to employ them to the maximum when roads and weather permit and to place them in trucks at all other times.

The assignment of motor transportation to batteries divided the vehicles into three classes—tactical, combat train and service train—but this classification did not control the loading. All trucks were loaded to full capacity with tentage and field equipment required on the march, battery property, organization equipment and impedimenta. Household goods of officers and noncommissioned officers were transported by commercial van, and four carloads of bulky battery property and equipment sent by freight, all other cargo being transported by the convoy. Approximately one hundred tons of freight were transported.

The convoy was organized into divisions, each division comprising the vehicles assigned to a battery. The divisions were further divided into sections of from five to seven vehicles. A distance of one hundred yards was prescribed between divisions and sections, and the distance between vehicles in a section was prescribed as the minimum consistent with safe driving, depending upon the conditions of road, traffic, and weather. At the speed we intended to operate we knew that uniform formation was not practicable, as each driver would naturally take the distance dictated by his own personal driving equation, the mechanical features of his truck, and the traffic conditions on the road. The comparatively great distance between divisions and sections permitted civilian traffic to dodge in and out of the column in passing. This was essential, as the column normally was more than three miles long. In passing through large cities the intervals were closed up and the speed reduced.

The fundamental idea behind the organization of the

convoy and the general instructions for convoy operation was to increase the speed of the convoy beyond what had been customary under conditions imposed by the former equipment. The two factors influencing convoy speed are the sustained vehicle speed, and the number and duration of stops. By maintaining a constant speed, the maximum that could safely be maintained by all vehicles in the column, and by eliminating needless delays of the column, either to aid crippled trucks or because of faulty prior reconnaissance, it was felt that distances in excess of two hundred miles could be made daily without undue fatigue or long hours. That this principle was sound was indicated by the fact that the longest day's march, 220 miles, was made over bad road conditions, and during the entire march of almost 1,000 miles only two unscheduled stops were made. The schedule was never deviated from by more than 30 minutes at any time.

The daily orders for the march directed the time of departure, the destination, the route, special instructions, the stops for rest, lunch, gasoline service and other purposes, and the guard at the destination. A typical order was as follows:

"HEADQUARTERS 69TH COAST ARTILLERY (AA)

Office of the Regimental Commander
Fair Grounds,
Mobile, Alabama,
March 19, 1935.

Daily Orders

No. 3

1. Time of departure: 8:30 A.M., March 20.
2. Destination: The Fair Grounds, Gulfport, Mississippi.
3. Route: U.S. 90.
4. Stops: One—east of Pascagoula, 15 minutes.
5. The Advance Party will clear the camp at 8:00 A.M.
6. The Guard: Gulfport.

Officer of the Day: Lieutenant Young.

Guard: Battery E—

1 Sergeant.
3 Corporals.
7 Privates (1 orderly).
1 Bugler.

By order of Lieutenant Colonel DONOVAN:

J. D. MITCHELL,
1st Lt., 69th C.A.,
Adjutant."

The advance party cleared camp each day in time to arrive at the destination and arrange the allocation of building or bivouac areas, and to secure fuel and water facilities. The advance party consisted of the billeting officer (adjutant), the supply officer's agent and the battery agents. An 8-passenger reconnaissance car was assigned to this detail. On one march the mess trucks accompanied the advance party.

The supply officer was also the agent finance officer and handled all matters of procurement of gasoline, fuel motor transport repair supplies, bridge and ferry tolls. At the first gasoline stop, the convoy was gassed up from the one gasoline truck accompanying the convoy. This was found to be unduly slow and, thereafter, the supply officer arranged in advance for several service trucks of the company securing the contract for gasoline on that particular day to meet the convoy and assist in the gasoline service. This reduced the time for gasoline service on a long march to about forty minutes. All companies hav-

ing bulk plants in the vicinity of the gasoline stop or the overnight stop were invited to bid on the service and the low bid accepted for the entire service, usually for about 2,000 gallons. The supply officer's agent was furnished a list of supplies required by the two operating messes, and it was his duty to see that supplies were delivered.

THE MARCH

1st Day (March 18). The regiment left Fort McClellan at 9:00 A.M., and, after suitable farewells, proceeded at slow speed through Anniston where practically the entire population turned out to bid good-bye. The Band played the regiment through the city. Road construction interdicted the direct route to Montgomery, the first destination. The road followed was poor, tortuous gravelly, and extremely hilly. Due to several weak bridges the gun section was sent by a road considerably longer, via Birmingham. As the Dodge trucks were in their "break-in" stage, the column speed was held to 25 miles an hour, and the searchlight section remained with the column. The route of the main column was through Talladega, Sylacauga, Wetumpka, Prattville, to Maxwell Field. With the exception of about ten miles of concrete and about twenty miles of black top, all of this section had a gravel surface. Despite these adverse conditions, and the fact that almost no time had been available for convoy training with the new vehicles, the convoy came through with no mishaps except an upset motorcycle. One of the Dodge trucks accompanying the gun section burnt out the engine after about 350 miles of operation. The Dodge agent, after inspecting this engine, accepted responsibility for the damage as due to faulty materials or assembly, and arrange for replacement of the engine without cost. The column arrived at Maxwell Field at about four o'clock in the afternoon, and bivouacked for the night in a hangar. Gasoline service was completed the same afternoon. Distance, 130 miles.

2nd Day (March 19). The advance party accompanied by the mess sections cleared Maxwell Field at 6:00 A.M., the main column at 7:00 A.M. Due to construction on the main road to Mobile, the route for this march was through Selma, Safford, Thomasville, and Jackson to Mobile. The first part of this march, to Selma, was over excellent concrete road, and a steady speed of 35 miles an hour was maintained. The searchlight section followed at reduced speed. It was found that at 35 miles an hour some governors operated and the column opened up excessively. Thereafter a speed of 30 miles an hour was maintained satisfactorily. The first stop was made southwest of Selma, approximately 60 miles from point of departure. The second stop was a scheduled 50 minute stop for gasoline and lunch, 60 miles further, south of Thomasville. A delay at this stop of about 20 minutes occurred, due to the slow service of gasoline from one truck. The final leg of this march, 104 miles, was broken by one scheduled stop of fifteen minutes, and one unscheduled stop after finally leaving the dust of Alabama roads and getting on the concrete which was to be practically unbroken to Galveston. The column arrived at Mobile, and

by 5:00 P.M. was busy establishing a camp at the fair grounds. Arrangements had been made to use the buildings but these had not been cleaned out, so a tent camp was established. As the next day's march was a "rest march," gasoline service was left to the following morning. All vehicles made this day's march on their own power except the one Dodge truck which was ruined the first day, and which finished the march at the end of a tow chain. Distance—220 miles; elapsed time—ten hours; running time—eight hours, five minutes; average running speed—27.2 miles an hour.

3rd Day (March 20). This was to be an easy march, 77 miles, to be a relief after the hard and dusty drive through Alabama. One stop of fifteen minutes was scheduled. The column departed at 8:30, arrived at Gulfport and billeted in the splendid fair ground buildings. A large part of the road was directly on the Gulf shore, an excellent road through beautiful residential development. The men had their first opportunity to bathe and relax, and police up the equipment.

4th Day (March 21). This march included crossing the Mississippi via the Canal Street Ferry, New Orleans to Algiers, Louisiana, and required a rearrangement of the column. Due to the deck plan of the ferry, only one gun truck and trailer, with about fifteen other vehicles, could be taken at one crossing. The gun truck was carried transverse of the deck, and was the last on and the first off. The column was therefore redivided, and proceeded from the bivouac at Gulfport at 7:00 A.M., in the order they would be carried across the ferry. It was approximately 90 miles from Gulfport to the outskirts of New Orleans. A steady thirty miles per hour speed was maintained to Alton, a distance of approximately 50 miles, where a fifteen-minute rest halt was made. The column proceeded at the same speed through Pearl River, Slidell, and the Chef Menteur Bridge, to the end of the broad boulevard, Gentilly Road, at which point the divisions were serviced and picked up by the police escorts. Each division was taken through the city at an average of about 25 minute intervals. The crossing was made without confusion and the last units were across at 1:30. After crossing the ferry, each division proceeded to Houma, Louisiana, independently. All units were in bivouac by 4:00 P.M., including the slow searchlights. The map distance of the day's run was 155 miles, and approximately two hours were consumed in crossing the river. Commercial traffic on the ferries was not interrupted on this crossing, and no accidents or delays occurred.

5th Day (March 22). The regiment cleared the bivouac at Houma at 8:00 A.M. and at a steady thirty-mile speed proceeded to Lake Charles, Louisiana. First stop at Franklin (63 miles) for fifteen minutes; second stop at LaFayette for lunch and gasoline service (43 miles). After lunch the column proceeded at the same speed to Lake Charles without further halt, a distance of 75 miles. An orderly tent camp was established on the outskirts of the city. The distance traveled on this march was 181 miles. roads perfect, no accidents or delays.

6th Day (March 23). The regiment cleared the camp site at 7:00 A.M. on the final day's march and over perfect roads proceeded through Houston to Galveston, Texas. The column was closed up on this march in order to try movement in close formation and at the steady speed maintained, complicated by civilian traffic on the roads, the closed formation resulted in several minor tail-end collisions. One unscheduled stop was made just outside of Galveston to close up the column, this being the second unscheduled stop of the entire march. The column entered Fort Crockett at 4:15 P.M., the day's march being 201 miles.

The fullest and most enthusiastic cooperation was accorded by all public officials and civic organizations, particularly west of New Orleans. The hospitality and interest of the population was almost an embarrassment, as repeated requests for delays and stop overs had to be refused. At Houma and Lake Charles the officers were entertained at dinner by local officials. At Gulfport, Houma, and Lake Charles a searchlight display was made, and the public admitted to the camp to examine the matériel. A very active and universal interest was displayed in National Defense throughout this march. No untoward incidents occurred, no breach of discipline on the part of the men, and no absences without leave were recorded.

Aside from the premature failure of one Dodge engine, noted above, the only mechanical failure of note was in the old GMC ambulance, which finally gave up the ghost on the last day's run. Some difficulties occurred in

the hydraulic brakes of the Dodge trucks, but this was due almost entirely to the lack of familiarity with the adjustments and the fact that no time had been available to iron out the kinks before the march started. No sympathy was wasted on a stalled truck; it simply pulled out of the column and waited till the clean-up squad (maintenance section) at the rear came up and made the necessary repairs or adjustments. No serious accidents occurred on the whole trip, which indicated that the organization and operation of the convoy was on a correct basis.

It is believed that the speed of thirty miles an hour is about the top at which this convoy could have been operated, but this is by no means the maximum at which large troop movements can be made. We could have made this march in four days at the same rate of speed. There is no reason why modern truck and bus transport cannot, on the perfect roads which are universally to be found, approach the usual cruising speed of commercial transportation, or about 50 miles per hour. At these speeds the difference between the maximum speed and the average speed will be greater than in this convoy, because the speed at which towns can be traversed will never exceed about 20 miles an hour. Of course, if it is desired to move a convoy in close formation, with equal distances between trucks, the speed must be limited to that imposed by safe driving. Increase in speed is gained by decentralizing control, to the point where each driver goes from hither to yon on his own. This convoy operated on a compromise between the two extremes, and we all feel that it was a very successful operation.

The Chemical Warfare School

BY CAPTAIN GEORGE J. B. FISHER, C.W.S.

WHEN Plato sought a quiet retreat where he and his pupils might foregather, he turned to the pleasant olive grove on the outskirts of Athens where once had lived the Attic soldier Academus. Here there evolved, out of the happy combination of suburban environment, congenial companionship, and the study of useful science, the spirit of the classic academy.

When The Chemical Warfare School was organized in 1921, very practical reasons led to its location at the chemical research and production center already established at Edgewood Arsenal, Maryland. Yet the natural beauty of the Gunpowder peninsula as it fingers into the Chesapeake is sufficiently akin to that of Plato's retreat on the river Cephissus to meet the ideal of a classical academic background.

The geographical situation of the school is likewise fortunate. About twenty miles northeast of Baltimore on the Pennsylvania Railroad and just east of the New York-Washington (U. S. 40) highway, it is readily accessible from the principal centers of the East.

Here during the past fifteen years have journeyed sev-

eral hundred officers to study (for periods ranging from four to twelve weeks), the application of chemicals in modern warfare. During these years the grounds, roads, school structures, even the school courses, have been continually improved and modernized until today the graduate of a decade ago would scarcely recognize The Chemical Warfare School he once attended.

Yet the objectives of the school have not been altered, even though with the passing years the means of attaining those objectives may have improved. The present school, which inherited the missions of the first chemical warfare schools organized during the World War at Camp Humphreys and Lakehurst, continues as a monument to the determination of Congress that our armed forces shall be kept well abreast of current developments in the military utilization of chemical agents.

While technically a "special service school," The Chemical Warfare School has always been devoted to the general instruction of officers of all arms—the number of Chemical Warfare Service students seldom representing more than a minor proportion of any class.

Commencing in the late fall, the first regularly scheduled army class is the Unit Gas Officers' course. This is followed in the spring by the longer Line and Staff course, which usually terminates early in May. The school year is later rounded out with the Field Officers' course, which extends through the month of July.

Each of these courses represents a distinct step in the professional education of the officer who would attain a thorough knowledge of the application of chemicals to modern warfare, both as applied to his own arm and in their broader relation to military effort generally.

The Unit Gas Officers' course, extending over six weeks, is designed to provide junior line officers who may be designated as battalion and regimental gas officers, with a thorough background of instruction for the performance of these duties. The unit gas officer representing a most important element in military organization for defense against chemical warfare, this course emphasizes the defensive aspects of chemical combat. It includes the characteristics of the important chemical agents, training in their identification, and particularly the various standard devices and procedures by which modern armies undertake to minimize the effectiveness of chemical warfare. Graduates of the Unit Gas Officers' course are therefore expected to competently assist unit commanders in establishing high standards of gas discipline within their respective organizations.

The Line and Staff course is the most comprehensive of the several courses conducted each year at The Chemical Warfare School. It is attended by both company and field officers and covers a period of twelve weeks, usually including the months of February, March, and April. Here chemical combat is examined in considerable detail. Tactics of the using arms are reviewed by means of map problems and maneuvers; followed later in the spring by terrain exercises, demonstrations and other out-of-door operations staged on the Edgewood reservation or against the rolling hills of the surrounding Maryland countryside. The research and production activities at Edgewood Arsenal are also studied at close range, so that graduates of the Line and Staff course acquire a broad scientific understanding of the problems of chemical warfare as well as considerable technical and tactical grounding in defense against chemical agents.

The Field Officers' course, of four weeks duration, commences the first Monday following July 4th of each year. It is frequently attended by officers just graduated from other service schools who have not yet joined their new commands, or by those whose duties in midsummer are such as to permit a brief interim of schooling.

This course is in the nature of a "refresher," although the instruction is designed to accommodate nongraduates as well as officers who have attended previous courses at The Chemical Warfare School. It is concerned more with strategic than with technical and tactical concepts of chemical warfare. Chemical decisions appropriate to di-

vision and higher commands are studied—demonstrations are witnessed—and the principles of chemical warfare are reviewed in sufficient detail to insure understanding of the coördinate use of chemical and explosive munitions.

These three courses constitute a key feature of the program of defensive training of the Army in chemical warfare, the general responsibility for which, by the National Defense Act, devolves upon the Chief of Chemical Warfare Service. Much of this training within companies and battalions throughout the service must inevitably be conducted by younger officers who have had the opportunity of studying at Edgewood. These officers have not only become specialists in one of the most modern developments of the military art; they have at the same time acquired considerable insight into the adaptation of scientific progress to the problems of war.

The question is frequently asked whether special technical training is necessary in order to successfully pursue any of the courses at The Chemical Warfare School. The answer is, No. Each of these courses is graduated according to the normal *professional* development of the class of officers which it accommodates, and includes such instruction in general science as may be necessary to provide a clear understanding of those subjects which may be somewhat foreign to the ordinary military experience of the student. If the officer has a thorough knowledge of the tactics and technique of his own arm and is well up to the standard of professional attainment appropriate to his grade, he need have no concern about his forgotten chemistry, because it is the problem of the instructors at Edgewood to impart the limited knowledge of chemical science needed for a working acquaintance with chemical matériel. The Chemical Warfare School has never expected of its students more than average scholastic experience coupled with a desire to learn the principles of a new branch of military art; given these, the school undertakes to direct profitably each officer's studies in such a manner that his weeks at Edgewood may constitute a pleasantly unique episode in his military education.

The shortness of the several school courses at Edgewood Arsenal requires that students at The Chemical Warfare School be carried on temporary duty status. Accommodations for families are therefore not ordinarily available on the reservation, although those may be obtained at reasonable rates at the not distant towns of Aberdeen and Bel Air. The latter particularly is a charming Maryland village where the families of student officers frequently spend pleasant and inexpensive summer weeks.

Edgewood Arsenal itself has much to offer in the way of diversion and recreation. The Officers' Club maintains a golf course, tennis courts, and a swimming pool. Swimming, boating, and fishing are all enjoyed in season on both the Bush and Gunpowder rivers, either of which is within a few minutes drive from the student officers' quarters.

Data Transmission and Remote-Control Sight System for Antiaircraft Machine Guns

BY LIEUTENANT LEE A. DENSON, C.A.C.

INDIVIDUAL tracer control has been used almost exclusively for the past few years in all antiaircraft machine-gun firings. Its possibilities have been exhaustively tested. Within 700 yards slant range it is effective; beyond that range its effectiveness rapidly decreases. Something better is needed. We in the field should not wait for that "something" to come full-fledged from the arsenal. We must pioneer improvements in matériel—break ground for the finished models to follow.

The data transmission and remote control sight system, designed, developed, and built at Fort MacArthur, Calif., is an example of what can be done in the field. It was used for all service firings by Battery "E," 63rd Coast Artillery, subsequent to March 12, 1935. Results were of a consistently high order and showed a very marked improvement in the fire efficiency of the battery.

DATA DETERMINATION

As a preliminary to a description of the sight and control system, it may be well to describe briefly the data determination. The tables of lead and instruments employed by the range section were similar to those used in the Schmidt Sight System (described by Captain William H. Sweet, C.A.C., in an article in the *COAST ARTILLERY JOURNAL*, April, 1930). Accuracy and ease of operation are facilitated by recent mechanical improvements on the instruments described. With the determined arguments of speed, angular height and slant range to

normal of target's course, tables of lead in mils are entered for lateral and vertical deflections. The tables yield leads through a sixty degree sector of the target's course. In general initial leads only are used and fire improved through observation of the platoon cone of fire.



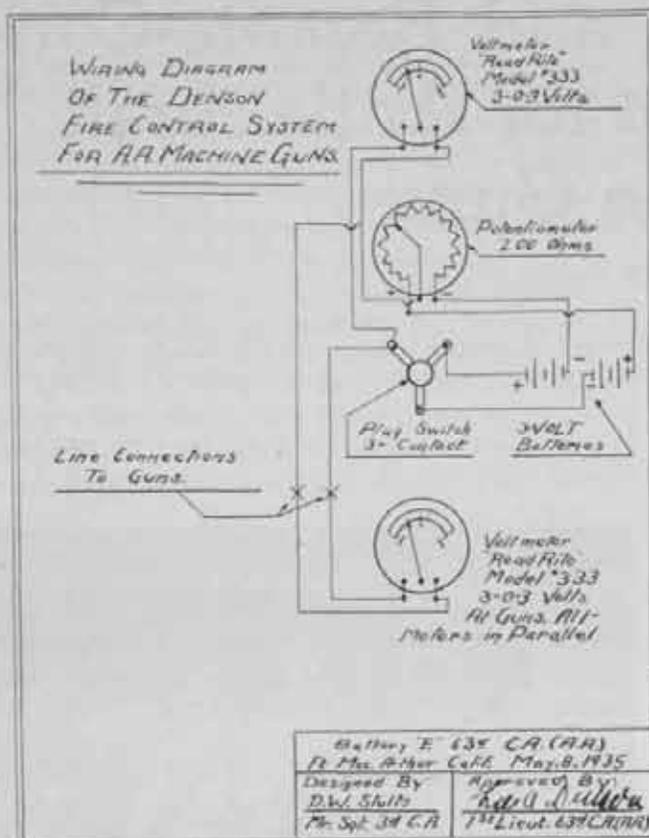
First Sergeant William B. Pearce and Sergeant Patrick Fitzgerald, master coaches at the platoon central control board.

Refer to accompanying photographs. At the platoon directing point sit two master coaches—one lateral, one vertical—lead tables in front of them, right hands on the control dials of the master transmitters. They dial the initial leads which are transmitted electrically to the receivers at each gun control board. Here mechanical pointers are matched to the voltmeter (receiver) pointers. Motion of each mechanical pointer is transmitted to and moves the rear sight to the proper deflection. Commercial type armored control cables accomplish this. Each gunner calls his sight setting for check and aligns his sight on the target. Fire is opened. The master coaches observe the platoon cone of fire and, by means of control dials, move the tracer cone instantly and at will to obtain and maintain adjustment. Normally, in adjusting, coaches never remove their eyes from the target. Deflection corrections are "felt" in. Corrections move the sight and become effective when pointers are matched and gunners have realigned their sights on the target. The rear sight is in constant, but slow, motion throughout a course and gunners hold on target without difficulty.

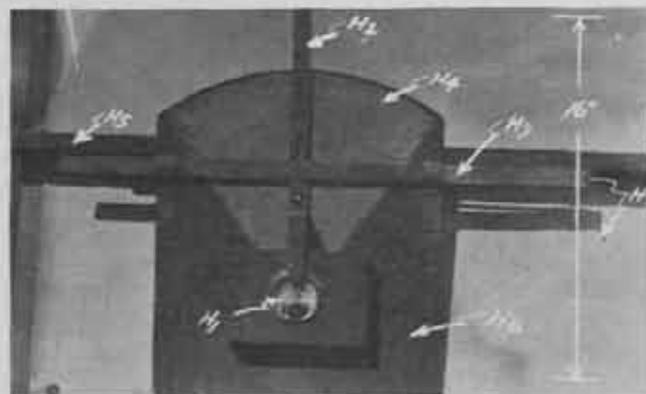
There you have the finished product in action. It was constructed under my direction by Master Sergeant Dean W. Stults, 3rd Coast Artillery, Corporal Oscar J. Schroe-



The Sight and Gun-Matching Boards in Use



der, Battery "E," 63rd Coast Artillery, and Private 1st Class Elmer G. Decker, Headquarters Battery 3rd Coast Artillery (now Staff Sergeant Electrical). Funds were practically non-existent (my pocketbook!); even the ordnance machine shop was not available, the ordnance machinist being on detached duty at the time. These were but two of the obstacles, too numerous to mention, which confronted these men. Their ingenuity, resourcefulness, and persistence met and overcame every difficulty and cannot but command the highest praise.



GUN CONTROL BOARD

(Vertical and lateral at each gun are identical)

- H₁—Voltmeter 3-0-3 Volts Readrite Model No. 333.
H₂—Control lever and matching pointer.
H₃—Cross slide.
H₄—Check scale.
H₅—Control cable (fixed to board).
H₆—Matching board proper (½" ply board).
H₇—Control cable piston.

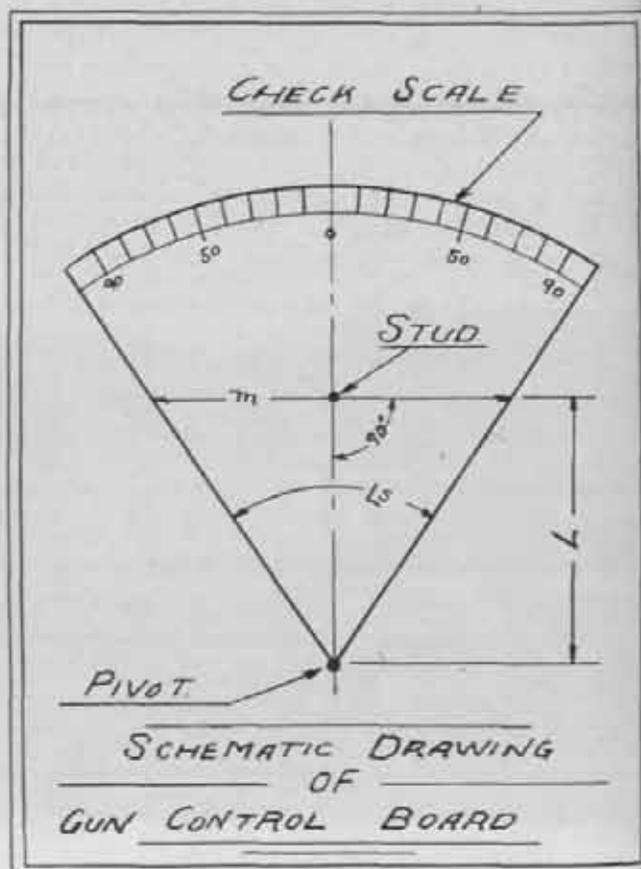
A description of the construction and functioning of the several units of the system will be of interest.

DATA TRANSMISSION

The electrical transmission system is simplicity itself. Ten volt-meters are employed to transmit deflection—one master and four gun meters for lateral and the same number for vertical. Readrite 3-0-3 volt meters, No. 333 were used. Their low cost (\$1.00 each) recommends them. On the face of each voltmeter is superimposed a scale of reading right-left or plus-minus 100 mils. Two 3-volt dry batteries at the master meters furnish the necessary EMF for each circuit. Controls are simply contact dials moving over a potentiometer. As controls are moved, current (i.e., deflection) is varied at will. Corresponding deflections are registered on all voltmeters.

REMOTE CONTROL

Movement of the rear sight is secured through the gun control boards. Twelve-foot lengths of commercial type motorcycle control cable are used. The wires are cut about 8" (amount of movement) longer than the armor. The armor is adjustably clamped to the rear sight through brass holding blocks and screws. At the control board the armor is stapled to the back of the board. The wire is secured to a piston of ⅛" round steel. The end of the piston is bent at right angles and pivots in the cross slide. The cross slide moves on the chord of a circle whose center is at the pivot of the receiving voltmeter's needle. The control lever is likewise pivoted here. The rotary





THE SIGHT PROPER—MOUNTED ON 0.50 CALIBER GUN, MAJOR ASSEMBLIES AS FOLLOWS:

- A—Front sight.
 B—Front offset bar and bracket.
 C—Main spacer bar.
 D—Receiver for 0.30 caliber front offset bar.
 E—Rear offset bar and bracket.
 F—Offset trigger assembly (0.50 caliber only).

movement of the control lever is translated to linear movement of the cross slide through a stud on the cross slide working in a slot in the control lever.

It was desired to take advantage of the full swing of the voltmeter needle and, at the same time, secure set-

tings by "match the pointer" system. The location of the stud at center of movement is obtained from the equation:

$$L = \frac{\frac{1}{2} m}{\tan \frac{1}{2} s}, \text{ in which,}$$

L = distance in inches from pivot along bisector of Ls ;
 Ls = total swing of voltmeter in degrees.

m = total linear movement of cross slide, i.e., total desired movement in inches of rear sight.

The brackets for the cross slide were fixed accordingly. A check scale was then constructed graphically by drawing radii through successive 0.4" (10 mil) points on the chord cross slide. It will be seen that successive 10 mil points on the check circle get closer together as the limit of swing is approached. Finally an adjustable pointer is mounted on the control lever, point to point with the receiver voltmeter needle.

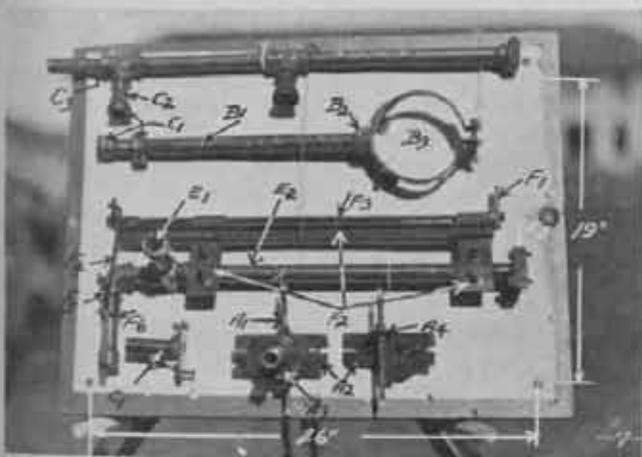
THE SIGHT AND MOUNT PROPER

The line of sight is offset 24" from the axis of the bore. This gives the gunner a clear unobstructed view of his target at all times. Distance from front to rear sight is 40". The rear sight moves right-left 100 mils, up 100 mils and down 50 mils (these limits can easily be increased). The front sight is fixed but adjustable in all directions to permit boresighting or application of arbitrary corrections. The sight frame as a whole is made of $\frac{3}{4}$ " black iron pipe—combining lightness with strength. Unions are inserted to facilitate breaking down the sight into easily packed and transportable units. The sight is used with both the 0.50 and 0.30 caliber gun. It is adapted for 0.30 caliber use by simply removing the 0.50 caliber front offset bar and offset trigger, attaching the 0.30 caliber front offset bar, reversing the front sight and rebore-sighting.

The front sight is threaded its full length and secured to the fore and aft bracket (of $\frac{1}{8}$ " strap iron) by lock nuts. Movement of the front sight in the "U" slot of the fore and aft bracket is approximately $1\frac{1}{2}$ ", while a side-wise movement of 2" is permitted by the mounting of the fore and aft bracket, through a "U" slot in the side-wise bracket. This in turn is bolted to a $\frac{3}{4}$ " floor plate (commercial type) and the whole assembly attached by screws to the main spacer bar.

The front offset bracket clamps the sight assembly to the water jacket at the forward end. A one-inch hexagonal nut was tapped and threaded to receive the $\frac{3}{4}$ " offset bar. The bracket of $\frac{1}{8}$ " strap iron is curved to fit the water jacket, and cut out to fit around the gun front sight stud, thus preventing rotary movement. Finger straps fit over the forward end of the jacket to prevent fore and aft movement. The entire bracket is riveted to the nut by six $1/16$ " rivets running through the nut. The bracket is hinged and clamped in place.

The rear offset bar is secured to the trunnion of the gun through a block of $\frac{1}{2}$ " armor plate. This was tapped and threaded to receive the offset bar, then tapped and threaded to conform with three holes already tapped in



DETAIL TO SCALE—SIGHT PROPER

- A—Front sight.
 A_r—Adjustment bracket (right or left).
 A_s— $\frac{1}{2}$ " floor plate—assembles front sight to main spacer bar.
 A_r—Adjustment bracket (front to rear).
 B—Front offset bar ($\frac{1}{4}$ " pipe).
 B_n—1" standard nut bored and tapped for $\frac{3}{4}$ " pipe-thread.
 B_b—0.50 caliber bracket— $\frac{1}{8}$ " strap iron—cut to grip front sight stud. Bolt clamp to hold in place.
 C₁— $\frac{1}{4}$ " union, nipple and tee—for attachment 0.50 caliber front offset bar.
 C₂—Same for 0.30 caliber offset bar.
 C₃—Rear assembly union ($\frac{1}{4}$ ").
 E₁— $\frac{1}{4}$ " spacer bar assembly union.
 E₂—Rear offset bar.
 E₃—Rear (gun) attachment block ($\frac{1}{2}$ " armor plate). Secures sight to trunnion block (0.50 caliber tripod 1925 M-1).
 F₁—Lever. F₂—Trigger mount. F₃—Trigger side bar.
 F₄—Lever. F₅—Auxiliary trigger. F₆—Grip.
 G—Nipple and floor plate mount for rear sight.

the trunnion as issued. Three machine bolts secure the block, and with it the sight assembly, firmly to the gun.

The offset (0.50 caliber only) trigger is a simple lever and pivot arrangement to enable the gunner to fire his gun from the side while retaining perfect control over it. Details are as shown above.

The rear sight slides as a unit right-left through 8" (200 mils). The carriage, built up of $\frac{1}{8}$ " brass strips, slides on a machined iron carrier plate (strap iron $\frac{1}{8}$ " x 4" x 16 $\frac{3}{4}$ "). The rear sight slide of $\frac{1}{8}$ " brass, slides up and down in the cross carriage. The ring is a section of 2 $\frac{1}{2}$ " brass pipe riveted to the slide. Rear sight wires and front sight tip are painted white. A flashlight thrown on them from behind gives good illumination for night use.

Offset back rests of pipe and $\frac{1}{4}$ " iron plate are substituted for the issue shoulder rest enabling the gunner to get squarely back of his sights and control his gun effectively.

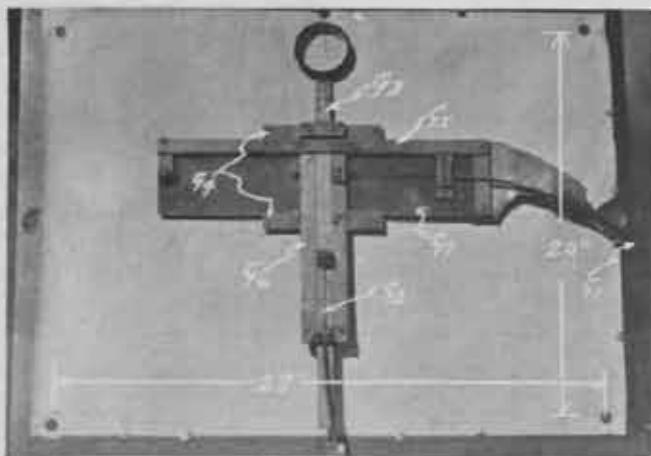
SUMMARY

The system may be summed up as follows:

Disadvantages and improvements needed:

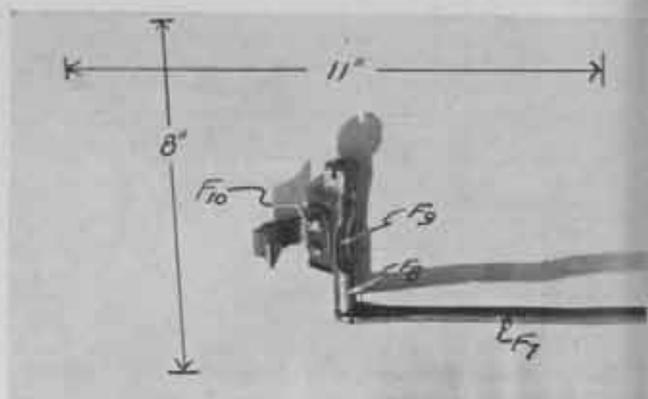
(1) Play was encountered in the lateral mechanical remote controls (little was encountered in the vertical). This was due to: (1) Spring in the bared portion of control wires at the rear sight, and (2) Spring in the control board pistons caused by excessive friction in the cross slide and piston mounting. Play due to the former cause may become excessive when sight limits are increased to 400 mils (16 inches). Redesign of this unit employing hydraulic means has been undertaken.

(2) Voltmeters with much larger face and swing of needle should be employed in order to permit needed increase in deflection limits and more appreciable mil scale



DETAIL OF REAR SIGHT

- G₁—Lateral control cable.
- G₂—Vertical control cable.
- G₃—Vertical slide.
- G₄—Lateral slide.
- G₅—Lateral scale (mils).
- G₆—Vertical scale (mils).
- G₇—Mount— $\frac{1}{2}$ " iron plate.



DETAIL OF TRIGGER ATTACHMENT

$\frac{1}{16}$ " bolt split to grip trigger

markings. A scale of 1/10 inch = 5 mils should be the minimum. Issue of suitable voltmeters by the Signal Corps has been requested.

Advantages:

- (1) Offset sights, keeping the gunner definitely clear of all muzzle flash and smoke.
- (2) Low cost, \$8.00 per sight.
- (3) Simplicity, needed repairs can be and were made by enlisted personnel in the field.
- (4) All advantages inherent in any system of central control notably:
 - (a) Adjustment of a cone of fire rather than the deceptive curving trace of a single gun.
 - (b) Adjustment goes on regardless of stoppages. When a gunner resumes fire following a stoppage, he is already adjusted.
 - (5) Flexibility, individual coach control is feasible due to broken control at the gun matching boards, the matchers then becoming individual gun coaches. It is employed on targets approaching the platoon directly. Individual tracer control may always be resorted to instantly, and is on targets within 500 yards where individual control is effective and gun differences are material.
 - (6) By extending wiring short distances in the cardinal directions master coaches may be placed in more favorable positions for observation and adjustment of fire.

I offer the following suggestions as to our future course in the development of really effective antiaircraft machine gun fire:

- (1) Scientifically determine the limit of tracer visibility under average light conditions. Is this equal to present tracer burnout ranges?
- (2) Strive to develop a 0.50 caliber tracer that will have a visible tracer range of 3,000 yards.
- (3) Continue development, within reasonable limits, of individual tracer control. Effective individual tracer control is most essential—in its proper sphere.
- (4) By all means, and most important, develop a simplified director capable of computing leads on targets from 500 to 3,000 yards.

An Improved System for A.A. Records Sections

BY LIEUTENANTS ROBERT W. BERRY AND JOHN A. SAWYER

THE officer in charge of records for antiaircraft target practices has an exceedingly difficult and important task. He is responsible that all necessary records are kept during firing and later for the partial analysis of these records. He must so train his section that it will not interfere with the battery firing, remembering always that his mission is to relieve the battery commander of all worry as to record keeping while obtaining accurate and complete records of every shot. In addition he must supervise the developing and projecting of film, the preparation of form AA 18, the plotting of the course and the completion of form AA 4. It is with a hope of aiding those officers who are given such an assignment that this article is written.

The officer in charge of records should realize that he is confronted with a task of major proportions. He must therefore have sufficient officers and men to assist him. One officer as assistant and 34 enlisted men, with a large proportion of non-commissioned officers, is the minimum number that can properly keep and prepare the records of an antiaircraft gun target practice. These men should be divided into the following sections:

| | | |
|---------------------------|-------|----------|
| 1. Visual section | 2 NCO | 20 Pvts. |
| 2. Camera section | 2 NCO | 2 Pvts. |
| 3. Meteorological section | 1 NCO | 1 Pvt. |
| 4. Developing section | 1 NCO | 1 Pvt. |
| 5. Projecting section | 1 NCO | 1 Pvt. |
| 6. Plotting section | 2 NCO | |
| Total | 9 NCO | 25 Pvts. |

An organization of the visual section which complies with the provisions of TR 435-55 is as follows:

| O ₁ GROUP | O ₂ GROUP |
|--------------------------------------------|------------------------------------------------------------|
| 1 NCO in charge | 1 NCO in charge |
| 2 Trackers | 1 Tracker |
| 1 Caller for lateral deviations | 1 Caller for range deviations |
| 1 Caller for vertical deviations | 1 Recorder (for caller) |
| 2 Recorders (for callers) | 1 Azimuth reader |
| 1 Azimuth reader | 1 Angular height reader |
| 1 Angular height reader | 1 Recorder for range deviations observed by battery firing |
| 1 Recorder for altitude from height finder | 1 Telephone operator |
| 1 Recorder for altitude set on director | — |
| 1 Recorder for stereoscopic sensings | 8 Total |
| 1 Telephone operator | |
| 1 Operator for time-interval system | |
| 14 Total. | |

The organization of the remaining sections is obvious.

Having secured the necessary personnel they must be trained in the duties they are to perform. Let us consider first the visual and camera sections. Their training requires practice in tracking actual aerial targets. If no tracking missions can be obtained resort must be had to some home-made device to simulate a target in flight. One or the other is essential. Even with planes available an additional device must be prepared to provide training for the callers of deviations and their recorders.

One such device consists of a chart on which appears, greatly enlarged, the same mil scales which the callers will see when looking through the instrument they are to use in spotting. A tuft of cotton on the end of a wire is used to represent the burst of a shot and is placed rapidly on various parts of the chart. The callers can thus be taught to call the deviations and the recorders to record them. While this device may not be the best, it is recommended because of its simplicity and because it will teach men to put rapidly into words the observed deviations.

Before considering the other sections it is desired to stress the fact that the training of the visual and camera sections should be first individual and then group work. The group work should follow as closely as possible the procedure adopted for obtaining records of an actual course. The time-interval system to be described later should be used during this training and much attention given to the starting and stopping of the recording.

The remaining sections will not, as a rule, require so much training. The meteorological section may come from Signal Corps or Coast Artillery personnel already trained in that work. Normally the officer in charge of records will not have to train this section.

The developing section will usually have a master gunner in charge who is a competent photographer. If he is provided with the proper equipment all that is necessary to obtain good results is to see that he follows closely the instructions given in the Coast Artillery School publication covering the operation of the cameras. The reading of deviations from the camera films must be done by an officer; and as the projecting of film is a simple matter, comparatively little training is required for the projecting section. Old film from previous years is an excellent medium for training the operators to project and read the film and fill out Form AA-18.

The personnel of the plotting section must be picked with great care for their ability and accuracy. As it is much easier to train men to use a plotting board than the Lewis charts we strongly recommend the use of an improvised board to plot the courses and to compare the



Figure 1

horizontal ranges. An auxiliary board can then be used to compute the slant ranges and altitudes. The ground speed computations should be made with a slide rule following the method laid down in training regulations. This work requires some mathematical ability and may have to be done by the officer in charge of records or his assistant. Actual plotting of records of previous firings is the best possible training for this section.

Having our data section organized and a method of training in mind, let us consider some mechanical devices that may be used to simplify our work and to increase the accuracy of our records. From our experience in over 100 target practices the most important of these was found to be a time-interval system.

The system we used was an adaptation of the telegraph. Essentially it consisted of a battery in series with a switch and two telegraph relays. The current set up by closing the switch actuated the two relays simultaneously and closed their respective contacts. These in turn closed local bell circuits at O_1 and O_2 , thus sounding the time interval signal at the same time to all personnel at both stations.

The details of the system are illustrated on the accompanying diagrams and photographs. Figure 1 shows from left to right the switch box, the O_1 time interval box and the O_2 time interval box. These were constructed of relatively rough lumber. A panel of ply wood was fitted in the top of each and a cover provided for protection of the electrical parts.



Figure 3

On the panel of the O_1 time interval box were mounted the only parts required by personnel of the records section under operating conditions, a switch to close the local bell circuit, the bell itself, and two pairs of binding posts (see Figure 2). The switch shown is a double pole, single throw, but only one side of it was connected in the circuit, no single pole, single throw, switch being available at the time. In the diagrams it appears as a single pole, single throw, switch. Under the panel were fastened three dry cells (type BA-17) furnishing four volts, one type BA-8 battery furnishing 22 volts and a 250 ohm telegraph relay. The batteries were fastened into the box with leather straps, the relay screwed to the floor. Wiring within the box was kept below the panel, as were the relay and batteries, to prevent tampering with the system by those who did not understand it. Reference to the blocked out portion of Figure 5 marked " O_1 time interval box" will explain the internal wiring while the external connections are shown in Figure 4.

The box on the right in Figure 1 is the O_2 time interval box. Its construction is similar to that of the O_1 box already described. It lacks only the 22 volt battery and the binding posts for the height finder and director bells.



Figure 2

Due to the similarity of detail in the O_1 and O_2 time interval boxes no pictures of the O_2 time interval box corresponding to Figures 2 and 3 are presented. Its wiring is shown in Figure 5 in the " O_2 time interval box" block.

The switch box, mentioned above and shown in Figure 6, might have been simplified to a mere push button, located on the O_1 time interval box, with appropriate changes in the wiring of the relay circuit (see Figure 5). For two reasons it was considered better to have a separate box for the switch that operates the system. First, it was thought desirable to separate the operator of the system from the confusion of firing and calling of shots around the guns and instruments, thus enabling him, under manual operation, to concentrate on ringing the bells at exact intervals of five seconds. This is an important point since much of the accuracy of the data taken by the record section depends on the exactness of the time intervals. It also overcomes the strong natural

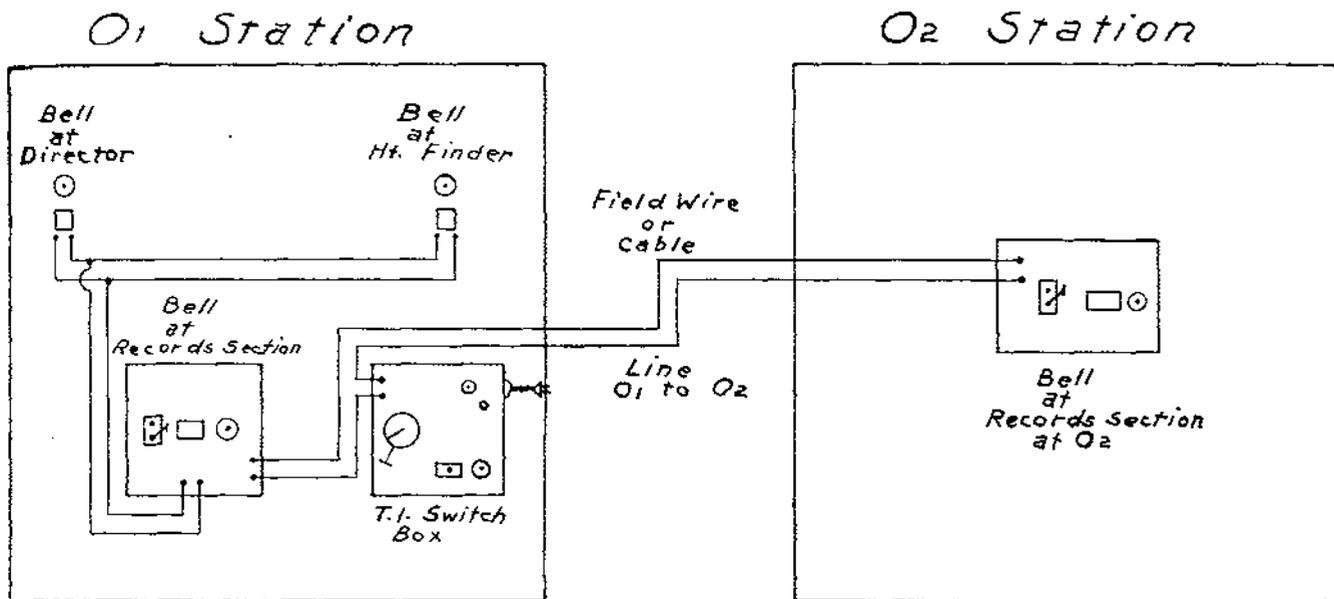


Figure 4

tendency to listen to the firing and deviations of the shots. Second, a separate switch box was preferable due to the space required for the parts of the automatic switch.

The construction of the apparatus was governed by the available materials. A 110-volt phonograph motor, having a governor and speed regulator, was found. To its vertical shaft was fastened the smaller of the two brass gears taken from a EE 4 telephone magneto. A bearing was made to take the shaft of the larger gear and placed so that the two gears meshed. Then the motor, with its gears, was mounted in the box so the shaft of the larger gear protruded vertically above the edges of the box about one inch. The panel, drilled to allow the shaft to pass through it, was fitted with the other parts (see Figure 6). On its under side were placed the fuses in the 110-volt line and all the necessary wiring. On its upper side were fastened the motor switch (identified by a white base), the manual switch (a push button), the change-over toggle switch, the stationary contact for the automatic switch and binding posts to connect the line to the switch box. After putting the panel in place on the box a circular plate of bakelite was fastened to the shaft protruding through the panel. On the perimeter of this plate was fastened a contact which was wired to the shaft electrically. A small hole (Figure 6) in the panel near the motor switch allows insertion of a screwdriver to adjust the motor speed. A cord and plug coming from the box on the far side is used to connect with any 110-volt AC socket for power to operate the motor. One source of such power is the light socket on the panel of the instrument trailer.

For automatic operation of the system the motor switch is turned on, and the change-over switch thrown to the left (see Figure 5). The motor speed is regulated so that the plate revolves once in five seconds. As the contact on the edge of the plate revolves it strikes the stationary contact fastened to the panel thus closing the relay cir-

cuit. The relay in turn closes the local circuits and rings the bells at both O_1 and O_2 . The contacts on the plate and panel of the switch box are so constructed that the bells ring for two-fifths of a second for each closing of the circuit.

To operate the system manually the change-over switch is thrown to the right (Figure 5). Then, by pressing the manual switch, the relay circuit will be closed as explained for automatic operation. By operating the system manually, with the aid of a stop watch, the bells can be rung on any desired time interval.

As shown in Figure 4 the three boxes described were connected in series using W-40 field wire. The O_1 and O_2 time-interval boxes were located near the instruments of the records section at O_1 and O_2 respectively. The switch box was placed in a tent well back of the firing line but within calling distance of the O_1 station.

In concluding this description a few miscellaneous notes may be of interest. About seven miles of field wire and underground cable were used between O_1 and O_2 in the setup of the system for the 64th Coast Artillery (AA) target practices of March-April, 1935. However, previous to installation of the system for target practice, a test was made over thirteen miles of W-40 field wire with excellent results. Also, on the target-practice setup, a successful test was conducted using grounds at O_1 and O_2 in place of the unbroken side of the line (see Figure 4). Another point noted was that the system, operating intermittently, drew very little current from any of the batteries, except possibly the three cells in the local circuit at O_1 which supplied current for three bells in parallel. These were the only cells renewed during six weeks of almost daily use. Their replacement was a matter of precaution only, since they were not worn out at the time and no failure of the system had occurred. Eighteen record gun practices, together with all the preliminary firings preceding them, were fired using this

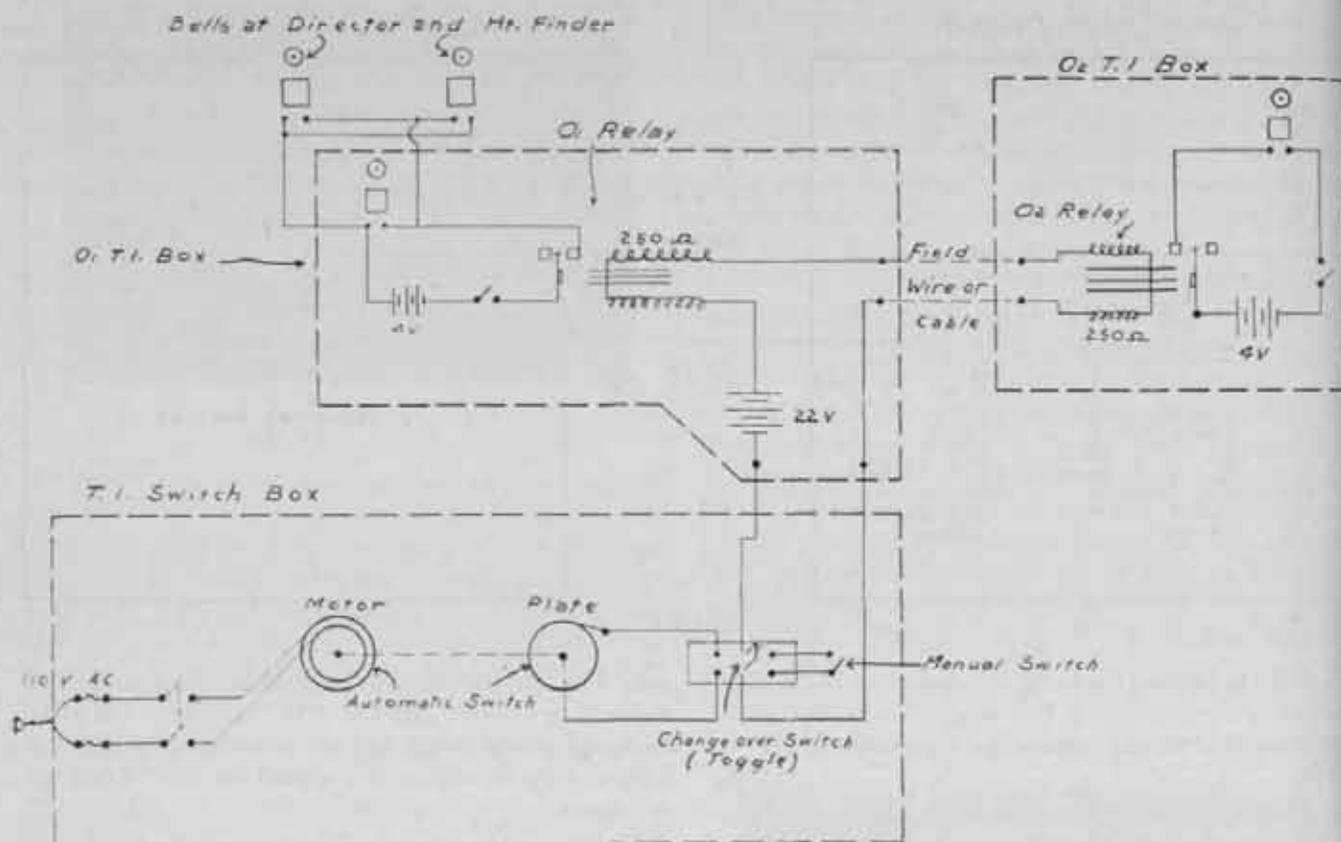


Figure 5

system. During the period no failures of any kind occurred. An item of importance is the necessity for a well-spliced field wire line throughout the relay circuit. Careless splices or bad connections will certainly cause trouble since the current in the relay circuit is only a few milliamperes over long lines. On short-base lines the battery voltage in the relay circuit should be reduced so the current flowing in less than 40 milliamperes which is the maximum current allowable through 250 ohm relays.

For those interested in constructing a similar system it is suggested that in place of the 110-volt motor in the switchbox a similar six-volt motor run from a storage battery might be an improvement, or the elimination of the switch box could be arranged by placing the manual switch on the O₂ time-interval box as previously men-

tioned. A further possibility is the use of a spring operated motor from a phonograph. A telegraph key might also be used in place of the push button used here as a manual switch. Should telegraph relays not be available it is often possible to locate unused telephone relays which are sensitive enough to operate on the few milliamperes of current flowing in the relay circuit.

An hour or two studying the fundamentals of photography will be well repaid by obtaining films of uniform density and clarity. During extended target-practice periods many hours of labor and eye strain in the projection room may be eliminated by very little study at the beginning of the training period. For day firings the sunlight reflected from the target, bursts and sky must be kept in mind. It may be estimated by eye but, better still, may be accurately measured using the Weston photonic exposure meter now issued by the Signal Corps.

Many photographers use the intensity of sunlight shining on themselves as the criterion for setting their camera apertures. This is wrong particularly under the exacting light conditions encountered in anti-aircraft photography. The light which produces pictures of our bursts and the target comes as sunlight reflected from those objects and not from the sun direct. There are times and conditions in the late afternoon or early morning when the light in the vicinity of the target is very much stronger than it is on the ground. The ground light may be sifting through heavy banks of clouds while the target and bursts, in a clear sky, are reflecting unfiltered sunlight. Especially in



Figure 6

the early morning hours or late afternoon or when firing nearly into the sun the light conditions are difficult to judge correctly. Clouds, because they reflect more light than the blue sky, must be given due weight.

Due to the difficulty of judging these conditions accurately it is strongly recommended that an exposure meter be used to determine the camera apertures. With this device, and a small amount of good judgment as to the part of the sky in which to measure light values, films may be obtained which will eliminate many headaches in the projection room. It is far easier to locate a well-defined burst on a light density film than to search a dark negative for a darker burst.

In using the Weston exposure meter consideration must be given the shutter speed of the camera and the number of stops to open for the filter used. This data for the spotting cameras is not known but several trials and an assumption of one-twentieth of a second for the shutter speed at ten frames per second gave us a point on the top dial of the meter which allowed us to disregard the filter and still obtain clear film of uniform light density. The point used was drawn in pencil midway between the arrows marked "Dark strong contrast" and "Brighter objects overexposed." Light values set opposite this point gave correct aperture settings opposite the fraction one-twentieth on the white dial. The only judgment required was in selecting the proper part of the sky in which to measure light values. However, knowledge of the approximate azimuth and angular height of the O₂ camera when turned toward the center of the field of fire enabled the man using the light meter at O₁ to measure values correctly for the O₂ camera. Many times these values were considerably different from those for the O₃ camera, demonstrating that the old system of using the same aperture setting for both cameras was the reason for a difference in film density on the O₁ and O₂ films for any given course. In measuring light values of the sky consideration should be given the direction of the course of a target. Values for crossing courses are not always correct for zero courses.

There are conditions in the sky at times which make clear films difficult to obtain. When, as sometimes happens, it becomes necessary to fire on a high-altitude target moving against a white, cloudy background, contrast between bursts and the clouds is so weak that the resulting films show only the flash of each burst. The closest approach to a solution for this problem seems to be to increase the number of frames per second exposed and open the aperture of the camera the amount required by the increase in shutter speed as determined from the dials of the exposure meter. The result should be to catch the flash on more frames of the film making it easier to identify. However, since the flashes on day film are small compared to those on night film due to the wider aperture used at night, extreme care must be exercised in developing a film to keep it clean and free from dirt spots which might be confused with the flashes.

For night photography, of course, the light which

records the burst on the film is more or less constant in value, since it originates in the flash of the burst. The small amount of light from the searchlight reflected by the target is insufficient to affect the film perceptibly so the target at high altitudes does not appear on the film.

The solution at night, then, is to open the aperture as far as possible, turn on the night light to darken the film so the guide lines show and speed up the motor to catch the flash on as many frames as possible. The exposure meter does not enter into the problem of night photography.

Having trained our section and built our time-interval device let us assume that we are in position, a gun battery is ready to fire and a target is in the air. As soon as the target is on the course the officer in charge of records assigns it to the data section. When all instruments and cameras report that they are "On Target" he commands "Track." As the target approaches the area in which firing is to take place the officer in charge of records commands "Stand by for time zero." At this command the operator of the time-interval system gives a long ring of the bells, a pause, and then starts ringing the bells on five-second intervals. The first normal ring after the long warning ring is time zero. On time zero and each bell thereafter the readers of angular height and azimuth record the data for the position of the plane at that instant. The recorders of, "altitude from height finder" and, "altitude set on the director," record the appropriate altitude on

ELEVATION OF SPOT LIGHTS RECORD Form AA-9

VISUAL, IN FILM

COURSE #3
P to L

a. (1) UNAPPAL (2) VERTICAL (3) FLANK DEVIATIONS RECORD

b. PLATE SPOT LIGHTS RECORD (1) FLANK (2) STEREOSCOPIC

Battery K 64th CA(AA) Place Laredo Date 3/29/35 Time 4:30 P.M.

| Time | Burst No. | Course 1 | | Course 2 | | Course 3 | | Course 4 | | Course 5 | |
|------|-----------|----------|---|----------|---|----------|---|----------|---|----------|---|
| | | L | R | L | R | L | R | L | R | L | R |
| 1 | | | | | | | | | | | |
| 2 | 7 | | | | | | | | | | |
| 3 | 0 | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | 2 | | | | | | | | | | |
| 6 | 20 | | | | | | | | | | |
| 7 | 15 | | | | | | | | | | |
| 8 | 30 | | | | | | | | | | |
| 9 | 15 | | | | | | | | | | |
| 10 | 7 | | | | | | | | | | |
| 11 | 2 | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | 0 | | | | | | | | | | |
| 16 | 0 | | | | | | | | | | |
| 17 | 7 | | | | | | | | | | |
| 18 | 12 | | | | | | | | | | |
| 19 | 15 | | | | | | | | | | |
| 20 | 25 | | | | | | | | | | |
| 21 | 25 | | | | | | | | | | |
| 22 | 15 | | | | | | | | | | |
| 23 | 0 | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | time 55 | | | | | | | | | | |
| 26 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | | | | | | | |
| 29 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |

NOTE: In grouping these shots lost shots should be considered. In this case twenty six were fired of which the visual section lost three. With normal rate of fire it can be seen that two and possibly three of these shots were lost in the "time 55" group.

Signed J. W. DOE

Figure 7

each bell. The recorders for lateral, vertical, and range deviations record the ringing of the bells by placing a check mark on the left edge of their record sheets each time the bell rings.

When the "time zero" bell rings the operator of the time-interval system, the officer in charge of records and the N.C.O. in charge of the visual section start their stop watches. When the officer in charge of records is sure that the data section is functioning smoothly he should report to the officer conducting the firing, "Data section in order." The above routine of recording continues until the first gun is fired. At this time the motors of the cameras at O_1 and O_2 are started. On the first bell after the first shot the O_1 camera operator turns on the veeder counters and the light which causes them to photograph. The O_2 camera operator simply turns on the light switch. This method insures that the cameras will be in step and has the added advantage of registering automatically a means of synchronizing the camera and visual records. This "means" is the fact that the first frame on which the veeder counters register was taken on the first time-interval bell after the first shot was fired. The next event to be noted is the occurrence of the first burst. When this occurs the callers give its deviations to the recorders. It must be remembered that these recorders have been checking off the time-interval bells by check marks on the left edge of their record sheets. The deviations are now recorded in a column and each time the time-interval bell rings a line is drawn under the last recorded deviation. (See Figure 7.) This places each burst in the five-second interval during which it occurred. The advantages of this system are obvious: It is simple, it provides a means of matching deviations, it shows plainly which shots were lost by one observer and not by the others and it provides a way of grouping shots and assigning them a "Records Time."

The method for stopping the data keeping is much the same as that used in starting. When the last burst has occurred the officer in charge of records commands "Stand by to cease Recording." At this command the operator of the time-interval system sounds a three-second warning bell between two five-second bells. The five-second bell which comes immediately after the warning is the final one of the course. On this bell the O_1 camera operator turns off the veeder counter switch and his light switch and the O_2 camera operator turns off his light switch. The visual section record their final data and the records for the course are complete. The camera motors are stopped immediately after this bell.

As we mentioned before, stop watches were started on "time zero." They are stopped on the final bell. During the course the stop watches are used as follows: The time-interval operator uses his as a safety measure in case he has to switch to manual operation, the officer in charge of records uses his to record the time of the first and last burst and the N.C.O. in charge of the O_1 visual section uses his to record the time of "Commence Firing" and "Cease Firing." This and other pertinent data on the

course should be recorded immediately after recording has ceased. A notebook should be used for this purpose as these notes are invaluable when projecting the film. A form for recording this data appears below:

Battery K, 64th C.A. (AA) Record Date: Mar. 28, 1935

| Time: 4:30 P.M. | | | |
|-----------------|-------------|-------------|-------------|
| Course 1 | Course 2 | Course 3 | Course 4 |
| R - L | L - R | R - L | L - R |
| 75.8 CF | 38.0 CF | 39.0 CF | 15.8 CF |
| 90.0 FB | 53.8 FB | 58.6 FB | 32.0 FB |
| 87.6 CF | 45.4 CF | 67.8 CF | 27.8 CF |
| 103.6 LB | 58.0 LB | 86.4 LB | 41.6 LB |
| 110.0 CR | 65.0 CR | 95.0 CR | 50.0 CR |
| 12 rounds | | | |
| None wild | | | |
| Camera O.K. | 4 rounds | 26 rounds | 10 rounds |
| | None wild | 1 wild | None wild |
| Target behind | Camera O.K. | Camera O.K. | Camera O.K. |
| light clouds | | | |
| after fourth | | | |
| shot | | | |
| Developed 3/28 | (Same) | (Same) | (Same) |
| Projected 3/29 | | | |
| Plotted 3/30 | | | |
| Checked and | | | |
| delivered | | | |
| to B.C. 3/30 | | | |

It should be noted that in Course 3 "Commence Firing" was given at Records time (39.0). As the first gun is usually fired immediately after this command it may be assumed that the cameras were started on time 45.0. They could not have started on time 40 as this bell rang at the same time as the firing of the first shot. This may be checked by subtracting the veeder counter reading at the start from that at the end of the course. This subtraction will give the number of seconds that the camera ran while the lights were on and, by comparison with the records time of "Cease Recording," will show the bell on which the veeder counters were illuminated. Another point to be noted is that the officer in charge of records is responsible for recording the time of the last burst. In order to do this he should know the number of rounds to be fired and should count the bursts. Thus he will know when the last burst occurs, and will be able to give the command to "Cease Recording" immediately thereafter. This is essential in order to conserve film.

Another point to be noted is that the entire operation of the section is based on the time-interval system which eliminates the chronograph and its communication and synchronization difficulties. The only telephone line required is used to transmit commands and information from O_1 to O_2 . The use of this system also affords a tie between the visual and camera sections which was previously lacking; it has other advantages of increased accuracy and simplicity which in our opinion would justify its adoption as a standard method of antiaircraft record keeping.

It should be noted that the latest TR 435-55 gives permission for the use of cameras for machine-gun record keeping. This method was used for the first time by the 64th C.A. in our 1935 target practices. The results were so far superior to any previously obtained using a visual section that no comparison is possible. Our method was as follows: Both cameras tracked the target as it ap-

proached. A warning command "Stand by for time zero" was given. Immediately after the command "Load" was given to the machine gunners the officer in charge of records gave "Ready," "Take" to the camera section. At the command "Ready," both operators started their motors. At the command "Take" the O₁ operator started the veeder counters and turned on the light illuminating them. The O₂ operator turned on his light. At the same time the officer in charge of records started two stop watches. When "Commence Firing" was given the auxiliary hand of one watch was stopped and when "Cease Firing" was given the auxiliary hand of the second watch was stopped.

Immediately after "Cease Firing" the officer in charge of records gave "Stand by to cease tracking, Ready, Stop." The command "Stop" was given on an even five seconds and both watches were stopped at this time. At this command the camera operators shut off the lights and stopped the counters. The motors were stopped immediately thereafter. The best results were obtained by having the officer giving the commands and the O₂ camera operator wear headsets so that commands reached both camera operators simultaneously. In projecting the film corrections equal to the deviation of the target from the center of the film were applied to the azimuths and angular heights recorded by the camera in order to obtain the exact position data of the target. When the courses were plotted the accuracy of the work was at once apparent, both from the appearance of the course itself and from comparisons of the altitudes figured from O₁ and O₂ data. The fact that at times the target had an angular travel of 110 mils per second made no difference to the camera, while it would have ruined any hope of obtaining accurate data from a visual section.

The following suggestions are made to assist the officer in charge of records:

Well defined datum points with correct orientation data should be provided for both O₁ and O₂ details.

Arrangements for the illumination of datum points at night by searchlights should be made with the Plans and Training Officer. (When stations are intervisible, lanterns set over the instruments permit an orientation check using the azimuth and back-azimuth of the baseline.)

Check the orientation of the M-1 spotting telescopes by using both telescopes on each instrument to disclose errors in adjustment.

A responsible noncommissioned officer at each station, detailed to collect and check records after each course, should see that the records turned in are completely filled out and should place them in large envelopes correctly labeled with the date, battery, time and course number.

Before each course the designation of the battery firing, the course number and the hour should be furnished all personnel.

Between the courses the callers should relieve the trackers on the telescopes to permit them to rest their eyes in preparation for the next course.

If clouds are in the sky near the field of fire a check should be made before each course with the noncommissioned officer at O₂ to determine whether or not the entire course can be tracked by the flank station.

An examination of instrument lights and a test of their batteries should be made prior to each night practice.

Between courses the camera operators should check their veeder counter readings and adjust any difference discovered.

Frequently throughout the preliminary firing the visual and camera records should be compared to determine personnel errors, slow or careless recording, unsteady tracking, or inaccuracy in spotting.

Some of the troubles which we encountered during the last target practice season will indicate where breakdowns may be expected.

Due to a loose binding post the motor of one camera failed to operate and the camera deviations from one station were lost.

Too much mercury in the contact cups of the camera-time-interval device caused the dragging of the spark when electrical contact was broken by the swinging of the metronome arm, resulting in erratic operation of the solenoids.

Camera records of one course were lost due to improper loading of the film in a magazine. (In loading the magazine, the film must be started accurately on the take-up bobbin, otherwise it winds up unevenly, gradually moving over the bobbin laterally until the edges of the film bind against the sides of the magazine. The result is a piling up of the film in the camera.)

After extended use the camera motors may fail to start when switched on. The cause of this failure may be a dirty or burned commutator. Should such trouble be encountered during target practice the motor may be started by giving the motor pulley a spin with the hand immediately after switching on the current.

An unusual fault which developed in one of our firings was the breaking of an electrical connection behind the camera-control panel. Solder on the lug of the signal switch had corroded, opening the signal circuit. The difficulties mentioned above indicate some of the things which may occur and the detailed care necessary to insure the proper functioning of the data section.

In closing we desire to emphasize that the mission of the data section is to cooperate with the firing batteries as well as to obtain accurate data of their practices. Due consideration must be given to the difficulties a battery commander must face in firing. With that in mind the officer in charge of records should arrange the functioning of his section so as to interfere as little as possible with the battery commander and still obtain the data required. Many times battery commanders will request the re-projection of film or the replotting of courses. The trouble involved is an integral part of the work and mission of the data section. It will be found that such cooperation is invariably appreciated and, in the long run, eases a difficult assignment.

Let's Have Better Reserve Officers

BY LIEUTENANT L. P. D. WARREN
22d Infantry

FOR eighteen months the Officers' Reserve Corps of the Army has been undergoing its first real test since the World War in connection with the Civilian Conservation Corps. Assuming that the 10,000 Reserve officers of company grades who have been on active duty in connection with the CCC represent a fair cross section of the Reserve Corps, it appears that a fair evaluation of the selection, training and promotion which applies in this important component of the military establishment may now be arrived at.

As a Reserve officer who has been on active duty for something over a year, most of that time as adjutant of a CCC district comprising 27 companies, scattered over a territory of some 30,000 square miles, I have watched about 200 Reserve officers function as company commanders, company officers, and junior staff officers for periods ranging from two months to a year or more. Sitting in my little office, watching them come and go, writing them letters, indorsements, meeting out praise and admonition, I have felt at times somewhat like a laboratory technician watching a parade of bugs pass under the glass of his microscope. And I have acquired some pretty definite ideas as to their present and potential value to the Army. My district is not, I think, unique; the officers who have served under my observation are neither better nor worse than the officers who have been on active duty in other districts, in other corps areas.

On the whole, these officers of the Reserve have done a difficult job well, with credit to themselves and the service. My district has developed a few outstandingly superior captains and lieutenants; men who, in a major war, would be excellent battalion commanders; others who would be company and platoon commanders of whom any colonel could be justly proud, others who in the zone of the interior, would no doubt render valuable service in training centers, in the various supply and overhead services, but who, I believe, would fail in the acid test of combat leadership. And of course, there are a few, a very few, downright rotters.

But, even as the CCC mobilization had brought out some outstandingly good officers, it has also brought out some things which, to my mind, are inherent faults in the Reserve system.

Our system of National Defense is predicated upon familiar and time-honored principle of march security; the point, a small force marching ahead to meet and take up the shock of the first contact with the enemy; the support, a somewhat larger body far enough behind the point to deploy and hold ground until the main body can come up and take over the burden of prolonged and decisive combat. In the analogy the Regular Army is the point, the National Guard the support, and the Organized Re-

"We can get along with mediocre colonels and brigadiers, and a few downright rotten majors, but God help the army that doesn't have good lieutenants and captains."

serves the main body. The first two elements are vitally important, of course, but for the long pull we must depend upon an army of citizen soldiers led by Reserve officers to fill the ranks of our paper organizations. Since the success of any army depends to a very large extent upon efficient and courageous leadership, it follows that the Officers' Reserve Corps is really the keystone in our arch of national defense.

The Officers' Reserve Corps started from "scratch" in 1920 when the National Defense Act was amended to set up our present defense system. Enough veteran officers of the World War were commissioned to provide a leaven of experienced and efficient men, and by 1924 the Reserve Officers' Training Corps had begun to provide an annual quota of several thousand young college graduates who were commissioned in the grade of second lieutenant. A lesser number were commissioned from the Citizens' Military Training Camps, until at the beginning of the fiscal year 1935 there were approximately 90,000 active officers of all grades, representing all of the arms and services, were holding commissions in the Officers' Reserve Corps.

Most reserve officers with World War commissioned experience are now in field grades; those few who are below the grade of major are mature men, and while as a rule they are excellent officers they are in such a small minority as to have little or no effect upon any evaluation of the corps as a whole. Under the present system of promotion and attrition, there will be no World War officers of company grades in another five years.

Practically all line officers who have been commissioned in the Reserve Corps during the last six or eight years have come from ROTC units of colleges and universities, and from CMTC camps, those coming from the latter representing probably not more than ten per cent of the total.

Entrance and graduation requirements of American universities and colleges are not standardized; and the university system is admittedly far from perfect. Student bodies are drawn from almost every strata of American life, with the vast majority representing the average middle class family. Military training has not generally been considered as an important part of a college curriculum by the faculty; rather it has been looked upon by many

faculties as a rather unnecessary evil, while to most of the students the ROTC course has simply been the means of securing a number of scholastic credits which otherwise would have had to be earned by more arduous academic pursuits. Then, too, the boys like to wear a uniform.

Most regular officers assigned to schools, colleges, and universities as Professors of Military Science and Tactics—PMS&T for short—have been impressed with the desirability of building the Reserve Corps up to its maximum authorized strength as quickly as possible, and as a consequence commissions have been ladled out to graduating classes in a wholesale manner. The students themselves "cram" their military subjects, just as they "cram" other subjects in their course, and once beyond the shades of the campus elms forget the one as quickly as they do the other. I am not familiar with the details of the military curricula in the ROTC universities, but from careful questioning of half a hundred recent graduate second lieutenants of one of the larger state universities of the south, I gather that they learned a smattering of the mechanics of close order drill—and practically nothing else, so far as their military course was concerned.

For example, this classic: I asked a young second lieutenant of cavalry if he knew how to keep a company morning report. "No, sir," he replied, "I don't know anything about a company. You see, I'm a cavalryman." As a matter of cold fact, few officers who come to my district from ROTC units have ever seen a company morning report, a company sick book, or any of the documents and records concerned with company administration.

Nobody, so far as I have been able to determine, has given these youngsters any instruction in the normal, routine administration and training duties of a company officer.

Following their graduation and commissioning in June, these officers, if they are lucky and funds are available, get two weeks of active duty training during the summer. This is the second phase of their military career. Due to the limited appropriation available, it is almost impossible for any officer to secure active duty training during two consecutive summers. Hence, during his required service in grade—three years for a second lieutenant—he can obtain not more than 28 days of active duty training.

From October to June of each year a reserve officer can, and is urged to, enroll in the Army Extension Courses; during this time, also, if the officer lives in or near a city of from 40,000 population upward, he comes under the wing of a regular officer detailed as unit instructor for whatever unit or units of the organized reserves may be assigned to that territory. The sub-course which is sent him is designed to require approximately 100 hours of work for completion of all subjects, or about twelve hours per month. A fairly bright young man who will concentrate can do the work in half that time. Upon completion of the sub-course, which covers a pretty wide range of subjects, the officer is given a certificate of capacity, which makes him eligible for promotion to the next higher grade

when he shall have completed the prescribed service in grade, and passed the physical examination.

It is almost absurdly easy to do the work required for promotion from second to first lieutenant. I know a reserve officer who completed the required sub-course, stood the examinations in each subject, including a practical test, in the elapsed time of nine days—and worked in an office from 8:00 A.M. to 4:00 P.M. each day, besides.

As a first lieutenant the officer may get a maximum, under present conditions, of 42 days active duty, but the average is not over 28 days. Four years service in grade, another sub-course in the Army Extension Course, and he becomes a captain.

The value of the group schools held by the various unit instructors varies as widely as the individuals assigned as instructors. There is apparently no standardized course of instruction. I recall one such group school which I attended two hours a month for nine months. The instructor, just graduated from one of the service schools, delivered nine very erudite and no doubt valuable lectures on the operations of a cavalry division as a part of an army corps, the setting for his continuing problem being the justly famous Gettysburg terrain. Unfortunately, the major tactics involved went completely over the heads of the group, which was composed of about a dozen second lieutenants of infantry, a few first lieutenants, infantry, cavalry, and field artillery, with a scattering of captains of all arms and services. There was, however, one lieutenant colonel of the J. A. G. Department who enjoyed the course immensely. The classes started with 92 officers in October, but only 27 stalwarts stuck it out until the final banquet in June.

During the fourteen-day summer training camp, the schedules are, as a rule, so full the officers are so talked to, talked at, lectured, drilled, marched, and thoroughly crammed with problems and technique that before the time is half gone their minds are in a whirl, and they either develop defense mechanism and determine to bluff it through, or else just give up in despair and close their minds altogether. The attempt is made to teach entirely too much in too little time, and they lack the fundamental training which would enable them to absorb the intensive instruction offered.

Even where the officers of one regiment or similar unit are given training together; where the regiment is organized on paper, field and staff and company officers all assigned to definite organizations or staff details, most training programs cover entirely too much ground—and high ground at that. All of the instruction seems to be based on the idea that when that mythical "M" day arrives, the officers will report for duty with a thoroughly organized unit, a regiment which is already a "going concern."

Apparently no one has ever stopped to realize that under the general mobilization plan, these third component regiments, brigades, and divisions, must be organized from scratch. During the past summer I was detailed, in addition to other duties of course, as coach-instructor in

administration during one of these fourteen-day training camps. I drew up an assumed situation somewhat as follows:

Each officer was told that today was "M" day; that he was designated as commanding officer of blank company, with lieutenants blank and blank as his company officers. He was told that tomorrow morning he would receive a draft of 193 men who would make up the personnel of his company; he was assigned an area which his company was to occupy, and was told to proceed with the organization, administration, and supply of his company, including the organization of his mess.

The whole idea was new and startling to them—and they didn't like it. They wanted to step in front of a company, fully organized and equipped, and give a snappy, "Squads Right," "March!" and go parading over the hill into the midst of an intricate tactical problem involving the placing of machine guns, the selection of a target, to be followed by a brisk fire fight, and the final rush to the objective and victory. But to bother with the details of service records, requisitions, organization, and individual equipment—not much. "Let the First Sergeant do it."

Like the "Six Honest Serving Men" Kipling considers essential for a writer, the military officers' six essentials are organization, administration, supply, training, tactics, and leadership.

An examination of the military knowledge qualifications required for promotion, as set forth in Army Regulations, would indicate that the course covers the essential subject adequately. But in practice it rarely works out that way. The student either copies his answer direct from the text, or he reads it over more or less casually, puts down an answer to the question, and the instructor who is grading his paper gives him a passing grade. Some instructors undoubtedly grade those papers very casually and loosely. In any case, I think that the individual officer learns very little, of the basic subjects of administration, supply and mess management, from the correspondence courses, and what tactics are learned are too advanced to be of practical value to him as a company officer.

When the CCC first started, the plan was to send out a Regular officer as company commander with two or more Reserve officers as assistants. One of the latter was to relieve the Regular officer as soon as he had demonstrated his ability to take over the command. It took but a short while to develop the fact that these Reserve officers—and in the beginning the Reserve officers ordered to CCC duty were carefully selected and represented the best officers in the corps in their grades—possessed little or no knowledge of routine administrative processes. The fact that they did possess other military knowledge qualifications in a very satisfactory degree helped them to acquire the necessary knowledge of administration, supply, and mess management, in a shorter time than these factors could have been learned had not they been of a very high type.

By the time the Regular officers had been relieved as

company commanders and the CCC was actually functioning with Reserve officers as commanders in the field, the second and third increment of Reserve officers had been called in and this second and third increment proved to be even more lacking in the required knowledge of administration, organization, supply, and mess management than had the first group. We found it necessary in this district to organize and conduct an administrative and supply school. The schedule and curriculum for this school provided for intensive instruction and we tried to cram into four or five days a course in administration which would enable the officers concerned to go out and take over the command of a CCC camp and really run it. A few months' experience with these officers in the field convinced us that we must have more time in which to train them, and we finally settled on a two weeks' course.

During the two weeks we were able to separate the sheep from the goats, and our experience has demonstrated that a fair cross section of the Reserve corps would normally fall into three general classifications: Class "A"—those officers who by temperament, education, training, and experience in civil life easily and quickly adapt themselves to a military career, who have the natural faculty for leadership, whose personality lends itself to command and to executive direction; officers whose efficiency reports are plentifully spattered with "excellents" and contain several ratings of "superior"; Class "B"—represents those who by their earnestness and determination to do the job accomplish acceptable results, but to whom military functions such as command, administration, the faculty of reaching a decision and carrying out that decision comes awkwardly and laboriously, officers whose efficiency reports would show a majority of "satisfactory" ratings with perhaps two or three "excellents" and no "superiors." Finally we have Class "C"—those who are obviously unfitted by temperament, training, and natural inclination for a military career; officers who know nothing of command and leadership, who perform the ordinary routine tasks by rote without ever grasping the principles involved or the reasons for which a given procedure is followed; officers who, faced with a necessity for any kind of a decision, are utterly baffled. For the most part they possess an inferiority complex which is painfully apparent. Their efficiency reports are "satisfactory" at the very highest. It is this last class which I think should never have been commissioned in any of the combat arms and probably not in any capacity. No doubt in a major military mobilization their services might be used to advantage in the interior in some minor clerical capacity, but they have no place as commissioned officers. This third class does not constitute a large percentage of the officers in the Reserve Corps but even a small percentage is too large.

Our school in this district was so successful that the Regimental Commander of the 22d Infantry decided to give similar instruction to Reserve officers ordered to active duty for fourteen-day training period during the fall winter and spring months. A schedule of instruction it

company administration was, therefore, worked out to take up the hours from 1:00 to 4:00 P.M. each afternoon for two weeks. This course has now been in operation in the 22d Infantry for several months and everyone concerned is highly pleased with the results obtained.

We have prepared two large boards on which are displayed all of the blank forms having to do with company administration, supply, and mess management. On one board are placed all of the papers such as service record, individual clothing and equipment record, soldiers deposit book, and other records pertaining to the individual soldier. The second board contains those forms having to do with unit administration such as the company morning report, the company sick book, and duty roster. We have a general situation which outlines a mobilization condition and in which each officer is assumed to be assigned as commanding officer of a given company in the regiment to be mobilized. We then have a special situation for each day in which we go through every step of the organization, supply, and administration, of an infantry rifle company. The first day's situation begins with the company commander being taken to a certain place and shown a stake in the ground which represents the head of his company street. He is told that tomorrow morning he will receive 193 recruits who are to make up his company. We have purposely avoided including a trained cadre in order that the company commander may himself go through every step in the process of organization of his company. The second day's situation begins with the receipt of the 193 men.

Each student is furnished with a kit which contains a company morning report, sick report, duty roster, and other forms he will need. He is required to keep his company morning report for a period of seven days. Our problems are so designed as to contain situations which will require the student to really keep a morning report. There are changes of various kinds such as transfers, discharges, deaths, arrests and confinements, furloughs—in fact all of the innumerable changes in the status of personnel which require entry in the company morning report and which affect the duty roster and the ration return. The student actually makes out menus for seven days, and based on these menus he makes out a subsistence requisition covering the same period for both non-perishable and perishable rations. He actually makes out a requisition for clothing in bulk and prepares individual clothing slips for a given number of men; he actually opens service records for a given number of men and the service record phases of the problem contains a biography of one soldier who goes through a rather checkered military career lasting several years and including, battles, skirmishes, wounds, decorations, trials by courts-martial, furloughs, transfers, and other changes which must be incorporated in the soldier's service record. During the two weeks of training these officers actually have 44 hours of classroom work in this course and they really learn something.

Our schools here have demonstrated both the need for

instruction in the subjects indicated and the fact that such instruction enhances the general ability and usefulness of the officer who takes the course. Our experience also indicates that these subjects have been sadly neglected at the ROTC units and in their active duty training.

Based on my experience with Reserve officers on CCC duty and with the fifty or more officers with whom I have had contact during their tour of two weeks' training with this regiment, I have reached some rather definite conclusions regarding the system of selection, training, and promotion now governing the officers' reserve corps.

I would recommend, first, a more careful selection, more rigid requirements for original commission. In this connection, I would have a board of not less than three officers, two of the Regular army and one Reserve officer, examine each candidate for commission. I would give the matter of personality, character, bearing, far more weight in the selection than is now given these factors. I would have the board examine into and give some weight to the background of the candidate, in determining his temperamental fitness.

I would amend the law so that the original commission in the Reserve corps be provisional for a period of at least two years, and at the end of the provisional period, I would require the officer to appear before another board to be examined as to his fitness to retain his commission, or for the commission to be made permanent.

The extension courses should be more thorough, much more detailed. At present one series of sub-courses, which requires about one hundred hours, plus one period of fourteen days' active duty training, is sufficient for promotion. A second lieutenant, during his first two years, should be thoroughly grounded in company organization, administration, supply and mess management. At least four months' instruction, requiring not less than fifteen hours per month, should be devoted to each of these subjects, with an examination in each subject which will accurately test the officer's knowledge. During the third year, give him scouting and patrolling, map reading, and organization of the ground. When he wants to be promoted to first lieutenant, have him go before a board of not less than five officers, at least three of whom should be Regular officers. Require the board to give him a real examination.

Successful completion of not less than 600 hours of correspondence school work, with not less than two active duty periods of fourteen days each, should be the basic requirement for promotion to the grade of captain. And of course the candidate should be examined by a board.

Put a premium on hard work. Provide that the required service in grade, now four years, may be cut down to three years, if the officer completes the required course with a grade of not less than 85 per cent, passes his board with not less than 80 per cent, and is willing to take at least fourteen days of active duty without pay, in addition to the two periods with pay he would normally get.

Again, divide the group schools held by unit instructors into classes for each grade. Actually have a school, and

make it intensely practical. For example, a course in basic weapons of each branch, with the rifle, machine gun, trench mortar, and so on actually on hand. Each officer should be required to handle, disassemble and assemble the weapon, and learn it thoroughly. This for second lieutenants.

So much for their first year. During the second year, actually organize and operate a mess—on paper of course. Give nine very definite problems in mess management, such as, preparation of ration return, requisition of non-perishable subsistence for one month; preparation of buying order for perishable supplies for a period of one month, menus for one month, cost keeping, preparation of food, serving, using leftovers—practical problems which will confront any company officer during his first few weeks of active service. For the third year, review and correlate all the study and the various problems of the first and second year, and of course, QMC Form 489.

Such a program could be made intensely interesting for young officers, I believe, and would add immensely to the value of their inactive duty training. Instead of trying to teach the second lieutenant what he should know as a captain, I would try to teach him thoroughly the things he must know to be a successful second lieutenant. So with each successive grade.

For first lieutenants I would outline a four-year course of instruction for group schools which would include one problem in scouting and patrolling lasting nine months; a problem in organization of the ground for nine months, map reading and map making for nine months, and at

least one course in military history which would take up one period of nine months.

To sum up I advocate (1) more careful selection for original commission, with provision for automatic elimination after a probationary period; (2) a more thorough and detailed system of military education by extension courses, with stricter examination for promotion, and provision for elimination for those who fail to pass promotion examination after two trials; (3) training designed to teach the officer the duties of his own grade thoroughly, rather than a study of the duties of the next higher grade, assuming always that he is competent in his present grade.

Perhaps such a system would result in reduction of the total number of officers for the first three or four years but one "excellent" officer is more to be desired than three "fair" ones.

I once heard a general officer say: "We can get along with mediocre colonels and brigadiers, and a few downright rotten majors, but God help the army that doesn't have good lieutenants and captains."

My experience with reserve officers of company grade during the last year and a half leads me to believe that the vast majority of reserve officers are earnest and patriotic men eager to reach the standards set and maintained by their brothers in arms of the regular establishment. They will work hard and well, and it is up to the Regular Army instructors who are charged with planning the course and instructing in them to see that the instruction is adapted to the actual needs of the Reserve officers.

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Tactical Employment of Searchlights

BY CAPTAIN WILLIAM F. MARQUAT, C.A.C.

HOW will searchlights be employed in future major military operations?"

This question presents a problem of many ramifications indeed. Of course there is prescribed a general plan of searchlight employment, but *will* such a plan be followed actually? Out of the maze of baffling possibilities associated with the problem there emerges the conviction that the solution may differ from the one we now accept. Let us analyze some of the situations that may arise during a future armed conflict between two modernly equipped fighting forces.

At the very outset we may conclude that night operations will be more extensive than ever in future warfare. Notwithstanding the actuality that the possibility of confusion due to darkness must be overcome, this assumption is based on the following facts:

1. Night action is economical since it requires a minimum force to accomplish a given result.
2. Tactical and strategical surprise are of paramount importance and are best obtained under cover of darkness.
3. With inferior forces, nocturnal activities promise the greatest possibilities of success. In the air they are practically the only operations possible without definite air superiority.
4. Although difficult to carry out, night operations are even more difficult to combat.

Hence we conclude that searchlights, or some other practical form of illumination, will assume a greater importance than ever in future warfare. With due respect to progress being made with the infra-red and other forms of target location and tracking, we cannot fire on a target without knowing whether it is friendly or hostile, and we cannot adjust artillery fire, under our present approved methods, without knowing definitely the position of the target with relation to the point of burst of the projectile. The presence of light best provides these requirements. A data-computing instrument is useful only to the materiel to which it is connected or to which the information may be transmitted. When an enemy element is illuminated it may be attacked by any of our own forces within range.

However, the presence of light also may prove a great disadvantage to the users unless judiciously employed. Already there is developing a tendency toward careful regulation of searchlight activities in forward areas and this in itself may cause a revision of our tactical employment plans.

Procurement is another problem that directly affects the future employment of searchlights. Under present tables of organization, providing a battery of searchlights per corps, three batteries per army and a fixed number in GHQ reserve, we find that we will require 42 batteries or 30 searchlight units for our field forces alone. This is

figured at 12 batteries for GHQ reserve, four armies and eighteen corps.

But the greatest need for searchlights probably will be for the protection of industrial, commercial or strategical centers, and the number of illuminating units required is almost inconceivable. An approved solution of the antiaircraft defense of Kansas City, Mo., calls for 41 batteries (615 searchlights). It will require only 15 less searchlights for the defense of this single area than for the entire field force of the army. Of course we realize that the approved solution is the ideal which will never be reached in actual service, yet if we consider the number of critical areas that will have to be protected, even if we reduce the above problem requirements by 60 per cent, we still are talking about a great number of searchlights.

Having made some general observations and having discussed the gigantic nature of the procurement problem, let us now consider specifically how searchlights will be employed. Let us begin by considering the employment of searchlights with a front line corps.

Although antiaircraft guns and machine guns are necessary to protect the corps activities from enemy aircraft, what about searchlights? Will the enemy undertake night bombardment of the thin lines of holding or covering forces? Will the enemy undertake extensive high-altitude night observation or night photography? Even with flares developed as highly as they are, just what type of night photograph would be taken from high altitudes against front line forces? Is the enemy going to undertake high altitude bombardment of every woods or village, using heavy bombs, in the possible expectation of striking assembled reserve forces when attack flights with fragmentation bombs are so much more effective?

Since searchlights are not effective against low flying aviation, due to the rapid traverse required, and since this type of aviation may be fired upon without illumination, just what targets are there going to be for searchlights in the forward elements of a corps?

If our forces use searchlights unrestrictedly, why is it not good tactics for an enemy to send up decoy planes so that his ground forces may see, by our illumination, on which flank we are massing troops for the daylight attack. If the corps is making secret night movements, why should not an alert enemy fly decoy planes along the "hard surfaced highway lanes" until our searchlights burst forth suddenly with the desired information. Is it better to permit the enemy to place intermittent attacks along roads he thinks we are using, or to turn on searchlights and remove all doubt?

Continuing in the interrogatory vein, just where, under the conditions pictured above, would we use searchlights intelligently? What would happen to the corps search-

light battery of fifteen units? Probably it would spend all of its time "in reserve."

Where searchlights probably would be used by an independent corps, would be in protecting its concentration area and perhaps at critical defiles along its line of communications. Since the concentration area must be, necessarily, at a rail transportation center, we can assume that such center would be one of the few available rail centers near the theater of probable combat. Hence the army would be most interested in retaining this center after the corps moved out and probably would furnish the initial searchlight protection.

Along the aforementioned lines of communication, each critical defile would present an independent problem of illumination. Bridge crossings of wide rivers would be excellent targets for enemy bombardment if not afforded night protection. They would stand out against the shimmering water as good targets for airmen, and additional light in the vicinity would not further jeopardize them. But here again they probably would be so important in the communications chain that the army or GHQ would furnish continuous protection for them.

In the case of a narrow mountain defile the problem might be different. Accurate bombing would block forward movement of our troops but this narrow slit would be hard to locate from high altitudes, especially if the road surface, if paved, be artificially blackened. Low flying, in mountainous country with heavily loaded bombers, is dangerous and light bombs hardly would make a first-class road impassible. So it might be an excellent idea *not* to illuminate such a pass. Or again, if the pass is so vital that it would be better judgment to let the enemy know its location but to place an impenetrable air and antiair defense around it, the army or GHQ again would take over the task.

The value of our searchlights to the enemy G-2 hardly can be overestimated. It would not take long to establish the fact that the sudden appearance in an area of fifteen searchlights, would indicate the presence there, of a unit of the size which normally contains a 15-piece searchlight organization. The sudden disappearance of 15 searchlights would mean the movement of this force and the reappearance of the piercing rays of light in another area would be as good as a message in indicating the actions and probable intentions of our forces.

The use of high powered searchlights in the front lines against ground troops or installations—the ease with which they may be destroyed by artillery fire; the fact that they cannot be defiladed and accomplish a ground mission; the danger of their disclosing the infantry movements and activities by means of the sidelight from their 800,000,000 candle-power beams—are too obvious for further discussion.

Now as to the problems of the Army with reference to illumination. Army antiaircraft, for example, will be charged with the protection of vital defiles, lines of communication, industrial and manufacturing centers, ports

of embarkation or debarkation, rail centers, financial and strategical centers and especially, important airports.

The question of secrecy as to the location of these establishments or areas is non-existent. The enemy knows just where they are and just which ones will be protected. The problem is to provide an adequate defense against the most formidable attack.

Enemy night bombardment, night observation, and even night photography not only are possible but almost a certainty. All aspects of this problem demand night illumination, just opposite to the situation in the corps where the use of searchlights is questionable.

With airplanes flying at greater speeds than ever (bombardment may be expected to fly at 250 miles an hour with reasonable future aeronautical development) antiaircraft defense must have greater depth than before. The old "ring defense" such as was used around Paris in the late war is out of the question. As the gun zone is pushed outward, the searchlight outer elements necessarily must be greatly increased in number. To provide the number of illuminating units required and to dispose them tactically is indeed a problem, and in each case it will require an individual solution and not a "type" answer.

We have discussed only the antiaircraft phase of the army's responsibilities. Suppose we look at special operations that will call for the use of searchlights, if they can be procured.

Defense against the landing of an overseas expedition presents one possibility. It is assumed that such a landing will be attempted at points some distance from an organized harbor defense. While starshells from artillery weapons in the defense will be the logical means of discovering a surprise landing, it can reasonably be assumed that railway or heavy mobile artillery may be used against transports and close-in covering forces of the Navy. For such a purpose searchlights will be valuable since they provide a continuous illumination that is subject to control. A vessel may pass out of the illumination of a starshell, thereby making artillery fire on it difficult. A search light will follow the vessel until it is brought under effective fire.

The neutralization of such searchlights will be difficult from the water, although possible. The amount of supporting artillery available to the landing forces will be limited, even though a beam of light may be seen easily. A 60-inch target is a very small area for land or naval gunnery. As for neutralizing a platoon of searchlights from the air, it is a tremendous task even with due consideration of the powers of attack aviation.

Harbor defense searchlights, perhaps, present a slightly individual problem, and due to their vulnerability may require auxiliary mobile lights. This sounds somewhat paradoxical in view of previous statements, but harbor defense searchlight matériel is vulnerable in the daytime where mobile lights are not. The illumination system of a harbor defense is permanently located either in vulnerable towers or in protected concrete emplacements, from the latter, the lights are run out on tracks for operation.

The destruction of these towers in the daytime by aviation, or of the track, in the case of the concrete casemated lights, would incapacitate the searchlight and the presence of mobile equipment for replacement would seem to be advisable.

Of course the army would not have control of furnishing the emergency searchlights for the harbor defense system, but since both types of operations just discussed deal with repelling the landing of a foreign force on our shores, it was considered that they should be examined together.

Harbor defense artillery is highly specialized and will be under separate command, hence the searchlights belong to the same command. Any auxiliary units or emergency system of illumination is a harbor defense problem separate from the mobile searchlight scheme. The answer here may lie in the establishment of a number of auxiliary baselines, using mobile searchlights for lighting units. Certainly some emergency system is necessary.

Other special operations, such as crossing a wide river after the initial crossing has been forced, rear area construction or maintenance enterprises, and other similar activities may or may not require searchlight illumination. This question will have to be determined "depending upon the situation" but each situation almost certainly will require searchlight illumination.

The protection of large cities, critical bridge centers, rail and water communication centers and airdromes, against attacking aircraft, has been mentioned. These may be under army control, under a group of armies or, with the rapid extension of the operating radius of aviation, may present separate problems under GHQ control. The possibility of air attack on centers of the Zone of the Interior may present GHQ with a tactical operation requirements. In addition to having antiaircraft artillery for allocation to armies or groups of armies for special missions, some such artillery may be necessary for the defense of establishments outside of the Theatre of Operations. It is here that perhaps the greatest need for searchlights will be felt.

The creation of the new GHQ Air Force, operating directly under GHQ, presents perhaps the greatest searchlight problem of all. Very few actual results have been obtained from much discussed air-antiaircraft joint operations. Of course the AAIS sends information to the air corps and certain problems have assigned "responsibility zones" to the air forces and the ground troops. However the practical details of actual cooperation certainly have not reached a satisfactory point. One of the most important phases of cooperation concerns the employment of ground searchlights in conjunction with night air activities.

No matter how capable an aviator may be, he cannot defeat an enemy plane in the air at night unless he can see his opponent. Friendly aircraft can neither locate nor combat enemy airplanes in the dark. If we assign certain defense areas to the aircraft alone and do nothing about coordinating air activities with some sort of illumination,

our planes either will be unable to offer a defense or will be fighting each other.

Likewise we cannot find the acceptable solution in a procedure of firing guns from the ground at illuminated enemy planes, and attacking with our own aviation through this gunfire. The situation is most bewildering. If we furnish no form of illumination, we guarantee an enemy the success of his mission if he can circumnavigate the antiaircraft defenses. The details of *how* to provide illumination of our enemy, using comparatively slow-moving mobile searchlights, when the planes of the combating air forces are traveling around 200 miles per hour, have yet to be worked out. Suffice it to say that there is a great need, totally ignored at present, of providing searchlight illumination for use of friendly aircraft alone.

Another great need of our air force, if we are not presuming to tread upon the sacred precepts of air development, is one for an individual and uninterrupted channel of air-ground communication. Increase in air speeds makes this need an important one. Orders must be transmitted to planes in the air—fast-moving situations will change after the takeoff of our formations—radio is *not* the perfect answer for the reason that it may be interrupted by the enemy; also it would be equivalent to sending the enemy a carbon copy of all orders issued.

The answer may lie in stationing signal searchlights at known points of "check-in" and transmitting two-way voice communication, using the light beams as the carrying medium. Technical laboratories already have perfected a method of accomplishing this—in fact it was demonstrated daily at the Chicago Century of Progress Exposition. Experiments have been made with conversation between the ground and a moving blimp. As yet no attempt has been made to obtain great range of transmission by using high-powered searchlights, and of course the difference between the air speed of planes and blimps will introduce further complications.

However the field offers more than a remote possibility of providing an individual channel of communication which cannot be interrupted unless the enemy can intercept the actual light ray. Future development may be expected to improve the present method of tracking airplanes with photoelectric apparatus, making possible the transmission of voice on invisible light (or heat) waves, thus approaching the ideal solution to this troublesome problem. If this is developed, a highly trained technical searchlight service will be required, and what would be more practical than combining defensive illumination with offensive communication as indicated above?

Necessarily our discussion of the various problems of illumination to be met in future warfare has been very brief, and doubtless there are other special uses for searchlights which have not been discussed. In the opinion of the author, we have gone far enough to substantiate the following specific conclusions:

First: In future conflict there will be a large demand for mobile searchlights other than with antiaircraft. If searchlights for this purpose are detached from antiaircraft

units we have automatically changed our basic tactical organization.

Second: The presence of organic searchlights with anti-aircraft units assigned to front line corps is undesirable in the vast majority of cases; hence we have regularly assigned searchlights at this point in excess of requirements.

Third: The need for searchlights in providing illumination "defense" for critical defiles, areas or establishments under protection of Army or GHQ will assume tremendous proportions.

Fourth: The problem of procurement of searchlights in the quantities required is a serious one.

Fifth: Considering assumptions presented in the second, third and fourth conclusions, it becomes apparent that the greatest economy possible in the assignment and employment of searchlights, is imperative.

Sixth: There is a serious need for training of searchlight units in coöperation with aircraft for night aerial combat as well as for the development of sound tactical doctrines along these lines.

Seventh: Searchlight employment for long-range, two-way individual channel communication between ground and air, offers a wide field for future development.

Eighth: It is apparent that, due to wide variations in governing conditions, each tactical problem of ground or air forces presents an individual and characteristic co-problem of illumination for night operations. This will require a separate "estimate of the illumination situation" and, based on such estimate, an individual solution. Such a condition calls for a staff officer trained especially in how and where to use searchlights and, perhaps more especially, when not to employ them.

Perhaps this article should end here to avoid controversy. Yielding, however, to that human frailty sometimes described by the clause, "fools rush in where angels fear to tread," we discuss a possible solution.

Coming directly to the point, the solution prescribes a separate searchlight battalion, organized for and trained in all-purpose illumination. The contemplated organization would be something like this:

Battalion headquarters and necessary staff.

Four batteries and a combat train to the battalion.

Four platoons, of five searchlights each, to each battery.

The combat train to consist of four operating sections and a communications section. The communications section to consist of four interior units, one for attachment to each platoon of searchlights, when they are operating separately.

In such a battalion certainly we have provided flexibility. The platoon, being the tactical unit and being organized for separate operation and maintenance, our battalion could furnish organized groups of searchlights of five, ten, fifteen or twenty in number, and even larger groups based on a battery with attached platoons. Using

this type of organization, very close to the required number of searchlights could be supplied for any given situation in accordance with the estimate for the illumination needs. Such a proposed searchlight battalion necessarily would be a GHQ unit.

Some of the disadvantages of this organization that are immediately apparent are:

1. The introduction of another "special organization" with all the accompanying disadvantages of a unit of this type.

2. Moving as a unit the battalion would require considerable road space.

3. In broadening the scope of action, the existent close coöperation between anti-aircraft gun and searchlight batteries would be more difficult to obtain. It is recognized that most of the work of a separate searchlight battalion would be in coöperation with anti-aircraft guns and airplanes to provide defense against hostile air activities.

4. An intricate problem of supply would be introduced.

None of these disadvantages appear to be prohibitive, however, and when weighed against the apparent advantages they seem minor. The organization of the separate searchlight battalion would permit the reorganization of the anti-aircraft gun battalion into a unit of four three-gun batteries which seems to be a future necessity with the increase in airplane flying speeds. One of the big objections to this plan formerly has been the increase in the size of the battalion. By divorcing the searchlights and making the battalion exclusively a gun unit, the battalion will be smaller than at present, since it requires less men to operate the additional three guns as a separate battery than to operate fifteen searchlight-sound locator units. This appears to be a serious consideration.

Finally, there appears an advantage that a separate searchlight organization will develop greater and more rapid improvement in both searchlight design and employment. While much effort and brainwork has been expended on searchlight development to date, it has been mostly to enhance the searchlight as a gun auxiliary for anti-aircraft. The broader picture, which includes employment in special operations and in conjunction with the Air Corps, seems to promise a correspondingly more general development.

Why not make a separate problem out of illumination? If we illuminate an enemy target at a critical time and in a critical area any source of destruction within which the target may be—whether it be anti-aircraft guns, land guns, airplanes or naval vessels—may operate against it.

And if we make a separate problem out of illumination, why not a separate organization to concentrate on and solve this particular problem?

EDITOR'S NOTE: It is not unlikely that many officers will disagree with the conclusions of the author and his proposed solution of the problem. We hope they do and that they will reduce their ideas to writing and send the manuscript to the JOURNAL.



Training Panel for Antiaircraft Spotting

BY LIEUTENANT A. L. RAMON, C.A.N.G.

DUE to the variables of ballistics and atmospheric conditions beyond the control of the best of us, effective artillery fire cannot be placed on a target without an efficient spotting system. If we do not have a spotting detail which can accurately and quickly spot the bursts relative to the target or any reference point used, we are wasting our time and ammunition. This is especially true of antiaircraft fire, where the size of an aerial target is so small and the speed so great that a spotting detail must be especially well trained. So far as known, no training device has been available that would enable us to check up the degree of accuracy of personnel assigned to do antiaircraft spotting.

The Ramon panel, designed to train spotters to read deviations, also permits the instructor to ascertain the accuracy and speed of performance. Its use last year greatly improved the work of the regimental spotting detail, accuracy being developed effectively throughout the year, both indoors and out, without actually firing at a target. The observers, trained to read accurately the mil value of a flash on the panel, were equally accurate in reading burst deviation during record practice.

The panel consists of a wooden frame (12' x 8') of light construction yet rigid enough to withstand the weight of materials used. Strips 1½" x 4" have been found satisfactory. One side of this frame is covered with three sections of composition board 4' x 8' and ⅜" thick, giving sufficient surface to plot coordinate lines spaced 8" apart.

The geometric center of this panel, the position of the target, is assumed to be zero. Deviations of five mils are plotted right, left, above and below.

Thirty-five to forty electric light sockets to fit a 2½ volt lamp are fastened securely on this panel to represent bursts. It is important to place these lights so as to give as much variation as possible in the resulting readings. They may be spaced at any desired intervals. Sockets and bulbs may be purchased from any radio supply shop for approximately six cents each, in lots of fifty. The sockets are wired to a common arc switch. A combination intermediate switch and telegraph key is placed between the arc switch and the dry cell batteries, making it possible to flash any desired burst for purpose of instruction.

Approximately 350 feet of 22 gauge copper wire is required to complete the wiring for a panel with 35 lights arranged according to the diagram. Two 1½-volt dry-cell batteries provide sufficient current. Considering the duration of a flash as representing a burst, the batteries should last about six months.

The arc switch is placed on the back of the panel and

near the center of the board to facilitate operation. The value of deviations may be indicated at the fixed terminal; this facilitates training but is not essential.

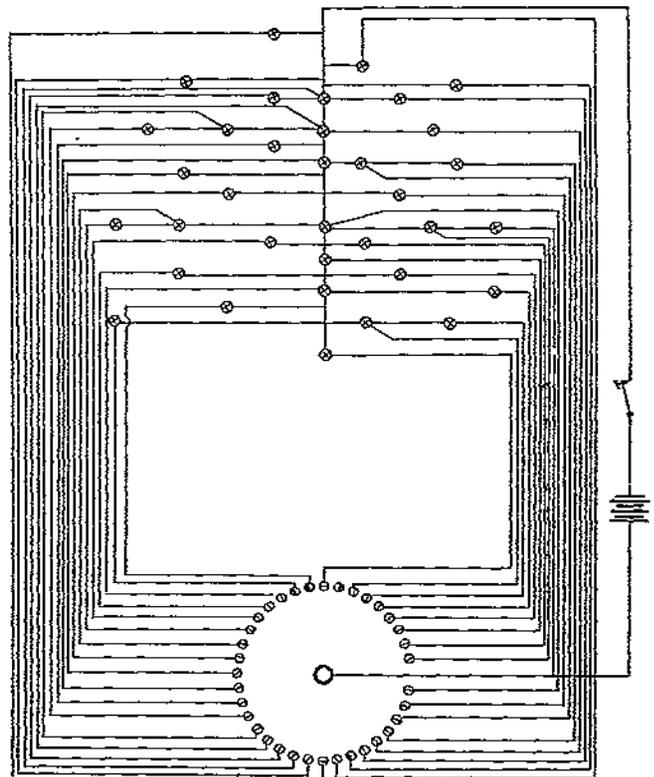
A silhouette of an aeroplane, representing the target, cut out of the same material as the board and placed in the center of the panel, will give added realism during training. This target is attached to the board by means of an adjustable projecting bolt, thus permitting a change in direction of flight whenever desired. Two observers read the deviations, one to spot rights and lefts from the battery station while the other spots overs and shorts from the flanks.

The location of the BC telescope will be the same in either case, whether spotting rights and lefts or overs and shorts.

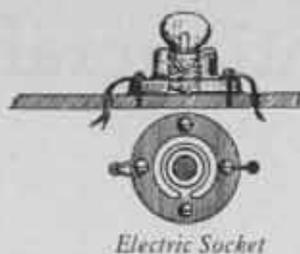
OPERATION AND TRAINING

The panel is placed in a convenient location 135 feet away from the BC telescope so that the line of sight will be perpendicular to the panel. At this distance the mil scale of the observing instrument M-1 will correspond with the lights on the board, giving a maximum reading of 50 mils right and left and 40 mils above and below.

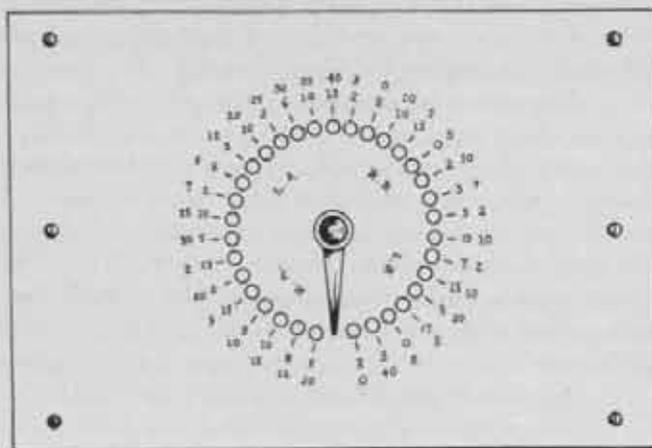
One man operates the arc switch. For preliminary



Wiring Diagram, Rear of Panel



Electric Socket

Switch Dial and Burst Indicator
(Front view)

training the telegraph key switch connected to the lights will be found very convenient. When the observer understands the readings on the panel by flashing one burst at a time, the arc switch may then be used, allowing four or five seconds for each flash and gradually decreasing the time between flashes as the reader becomes proficient. For proficiency 50 to 60 readings a minute will be required.

The instructor may check up the accuracy of the readings by comparing them with a chart where all the deviations on the panel are tabulated. The readings are tabulated as follows:

- In sequence right to left and left to right, as indicated on the arc switch dial.
- Divided in five groups of seven flashes, each group to correspond with the sequence on the dial on the switch. It will be noticed that the instructor may, in this way, obtain any particular group of bursts without following the sequence of the switch from 1 to 35. He will call or signal the operator for a definite group which may be designated by a letter such as A, B, C, or by a numeral. The use of a telephone is suggested for this purpose.
- Numerically from 1 to 35, using any one burst, regardless of location in relation to the target, as number one, and following with the others in any sequence desired. This will necessitate a secondary dial on the panel to

correspond with the tabulation selected. The instructor will call for individual shots or in sequence, such as numbers 12, 14, 2; or 10 to 20 or 7 to 14.

- If it is desired to flash more than one burst at a time, this may be done by placing a bridge on three or more contact points so that a group of shots may be observed and the center of impact read instead of individual bursts. This particular method of training will be found valuable to stimulate the firing of three or four guns.
- If a further variation is desired, the panel may be inverted, thus changing the location of bursts in relation to the target. Right bursts will become left; bursts previously recorded as above will be below. Other variations may be tabulated to meet any requirement by aiming the telescope at any point on the board, thus changing the deviations with reference to the target.

For practical purposes in training readers, the tabulations described in paragraphs a, b, c, and d will be found sufficiently satisfactory. It is possible that continuous flashing of the same sequence of bursts may become monotonous, especially after the reader has gained a certain degree of speed and accuracy. Also, he may memorize a certain sequence, in which case any tabulation obtained by changing the telescope two or three mils, either right or left or above and below, will result in a new set of deviations, thereby discouraging any tendency to memorize the readings as tabulated.

If the training is to be conducted indoors, it is advisable to have the panel painted either light blue to represent the sky, or white. For outdoor training, a dark shade of blue or buff will be found more satisfactory, depending on the light. Placing the board in the shade will improve the visibility.

As a further refinement in the training of a spotting detail, the panel may be suspended from a cable 150 feet in length and moved across a field, thus giving a simulated course of a target in flight, enabling the azimuth reader and angular height reader to receive further training. A more elaborate scheme will be obtained by the use of a frame supporting the panel and a system of pulleys and cables raising the panel in a vertical direction to simulate a target approaching the battery or proceeding away therefrom. A combination of the vertical and horizontal motions will simulate any maneuvers a target might make.

The cost of materials such as electric sockets, bulbs, and wire used in this panel, with the exception of lumber and composition board, is about \$7.45. It is believed that the benefits derived in developing competent personnel for the spotting details warrant the small expense and labor involved.



NATIONAL DEFENSE is one of the cardinal duties of a statesman. The delightful imaginations of perpetual peace have often amused, but have never been credited by me.—JOHN ADAMS.

COAST ARTILLERY ACTIVITIES

Office of Chief of Coast Artillery

Chief of Coast Artillery
MAJOR GENERAL HARRY L. STEELE

Executive
LIEUT. COL. HENRY T. BURGIN

Personnel Section
MAJOR R. T. PENDLETON

Matériel and Finance Section
LIEUT. COL. R. E. HAINES
MAJOR O. L. SPILLER
MAJOR C. W. BUNDY
CAPTAIN B. L. MILBURN

Organization and Training Section
LIEUT. COL. E. E. BENNETT
MAJOR ROBERT M. PERKINS

Plans and Projects Section
LIEUT. COL. G. A. WILDRICK
MAJOR C. M. S. SKENE

Corregidor News Letter

MAJOR GENERAL CHARLES E. KILBOURNE, *Commanding*,
COLONEL WILLIAM S. BOWEN, C.A.C., *Executive*

59th Coast Artillery
COLONEL PAUL D. BUNKER

60th Coast Artillery (AA)
LIEUTENANT COLONEL ALLEN KIMBERLY

91st Coast Artillery (PS)
LIEUTENANT COLONEL CLAIR W. BAIRD
92d Coast Artillery (PS)
MAJOR REINOLD MELBERG

Harbor Defenses of Manila and Subic Bays

AFTER seven months of hectic training, target practices, war-condition periods, and maneuvers, the garrison is taking a breathing spell. The hot season is on and gunners' instruction is the order of the day. Many officers and enlisted men have taken advantage of the opportunity and are away on detached service, leave, or furlough. The Post is undergoing a thorough policing with ditches, drains and culverts on the 23 miles of road being put into condition to carry off the deluges that are to come. Like the farmer, troops in the tropics have many of their activities determined by the seasons.

Much work is being done in the planting and care of natural camouflage. The work started last year is being continued in all regiments. It costs nothing and the troops are given valuable training in this important phase of military activities.

With all target-practice reports in the following tabulation of a few of the better scores in these defenses is given to aid the committee selecting the 1935 Knox Trophy winner:

| Org. | Type Guns | Battery Commander | Score |
|----------------------|-----------|-----------------------|-------|
| AT HIGH-SPEED TARGET | | | |
| A-92 | 3" R.F. | Lieut. G. F. Pierce | 305.6 |
| B-59 | 12" D.C. | Lieut. O. T. Forman | 217.5 |
| F-59 | 12" L.R. | Capt. V. Schmidt | 178.9 |
| B-92 | 155-mm. | Lieut. H. T. Turnbull | 169.5 |
| A-59 | 12" L.R. | Capt. C. O. Bell | 168.6 |
| G-91 | 6" D.C. | Lieut. H. H. Duval | 165.1 |
| B-91 | 6" D.C. | Capt. L. W. Goepfert | 102.1 |

AT NORMAL TARGET

| | | | |
|------|--------------------|-----------------------|-------|
| B-92 | 155-mm. | Lieut. H. T. Turnbull | 118.1 |
| B-91 | 3" R.F. | Capt. L. W. Goepfert | 115.1 |
| C-91 | 12" M. | Capt. W. R. Maris | 109.1 |
| G-59 | 12" M. | Lieut. R. Stone, Jr. | 108.7 |
| D-59 | 12" D.C. | Capt. C. M. Myers | 100.8 |
| C-92 | 155-mm. (night) | Capt. Wm. Hesketh | 96.5 |
| E-59 | 14" T.M. | Lieut. R. E. Bates | 90.1 |

Add to the above nine antiaircraft-gun practices with an average score of 92 and a low of 69—all camera observation—and the target-practice season of 1935 can be considered a successful one. Your correspondent is not quite as naïve as the scribe in Hawaii, so we will not report the poorer scores, but it can be said that there was not a single "dud."

On Memorial Day the post was entertained by a double-header track and field meet. Dual meets between the 59th and 60th and between the 91st and the 92d were conducted concurrently on the Topside parade ground. The 59th won the American meet, largely due to the personal prowess and coaching ability of Lieutenant D. S. Spengler. The 92d C.A. (PS) broke all precedents by winning from the 91st although the latter is much the larger regiment; most of the points of the winning team being garnered by Battery "C."

The officers and ladies of the 60th enjoyed an unusual outing to the island of Lubang, 40 miles to the southwest. The military purposes of this trip must remain locked in the secret archives but "a good time was had by all."

After debarking at the *barrio* (village to you) of Tilig the party travelled by *caratellas* across the island to the town of Lubang, where they were royally entertained by Mr. Pedro de Mesa, one of the leading conchologists of the world, whose fine collection of land and marine shells was greatly enjoyed.

Except when a transport departs, it is seldom that such an exodus takes place as when Colonel and Mrs. Loughry, Major and Mrs. Allen, Captain and Mrs. Warren, and Captain Parmalee left for China and Japan where they will visit until the arrival of the July transport. Colonel Loughry has been in command of the 60th, while Major Allen, as Harbor Defense Plans and Training Officer, has carried the burden of Atlas. Many were on the wharf to bid the party good-bye and "bon voyage."

In addition to the many visitors to China, Japan, and Baguio, some have made more unusual journeys. Captain and Mrs. W. R. Maris took a ten-day trip through Northern Luzon. After driving as far as the road would permit they went across country by pony-back through communities where a white woman is seldom seen. Captain C. A. Gillette and Lieutenant M. M. Bauer, C.E., have returned from a hunting trip on the island of Mindoro, one of the wildest and least inhabited in the archipelago. Their luck and marksmanship was excellent, for they killed three timarau, the fierce little wild buffalo found on that island and at no other place in the world.

* * *

EDITOR'S NOTE: The following account of our "Gibraltar in the East" was written by Major General Charles E. Kilbourne. It is a greeting to all former Corregidorites and a historical review of the many improvements initiated by General Kilbourne during this previous tour of duty in command of the largest Coast Artillery post. Largely due to his foresight, energy and careful planning Corregidor has been converted into a beautiful and comfortable post. The Coast Artillery personnel owe a debt of gratitude to General Kilbourne and his successor, General Embick, for the metamorphosis of this insular possession from a place where men *could* live into a place where living is a pleasure.

Dear Old-Timers:

You will have to pardon this method of passing the news; there are too many of you for me to reach all in personal letters, though I wish I could.

I have just come in from a walk along the Topside Line. All of you know what that means. Well—it is just as beautiful as ever and this is the second full moon we have had, since our arrival. When I decided to come back friends warned me that ("at your age") tropical service will "shorten your life." I told them I'd rather live one year on Corregidor than five in Washington and I find that I might have made it ten.

Excepting that my experience here may help the new garrison to avoid some troubles (we have had an 85% turnover this year), I find I could take it easy. The plans laid by those who were here from 1929 to 1932 have been accomplished, as well as many other positive benefits to the garrison.

Outstanding is the car line to Kindley Field via the tunnel through Malinta Hill. This access to the main post, combined with the proximity of the swimming

beach (and possibly the distance from the post headquarters) makes K.F. a popular location. There is also the landing field on the tail of the island. The work of transforming the "trails" into two-way roads has continued, and except for one bottleneck in the South Shore road in Ramsay Ravine, we have now three two-way routes from Topside to the Wharf Area.

Some of the big jobs you will remember are the following:

Middleside and Medical row drainage and parking—these have turned out successfully. The area is very pretty, and it is believed slides on that road back of Quarters 110-127 are no longer likely. The concrete road built by the 59th from 127 to the main road stands up well and is a fine solution of the traffic problem.

Steps and walks from C.O.'s quarters, Topside barracks, Commissary and Upper Middleside quarters to the Service Club are in constant use. The concrete walk has been extended through Stockade level and is about to go through to the *barrio*.

The Club is more popular than ever. The sod seems firmly established on the golf course and there are no bare spots, though we are 3½ months with less than ½-inch of rain and 8 weeks without a drop. Plants around the club have prospered. The swimming pool continues to average 10 kids to one adult but is well worth the year of dirt and confusion we went through to establish it.

The N.C.O. Club is a great success. It has settled down to sound administrative management.

The inconvenience our garrison endured in order to put concrete floors in Middleside quarters, concrete and asphalt roads in the areas most difficult to maintain, concrete walks in all occupied areas have been a Godsend to those who came after us. I'll never forget the awful job the troops had in digging out that two-feet of Macadam road back of Middleside barracks which caused the water to run into the kitchens. The asphalt road there, as well as around the hospital and back of Middleside quarters is nearly as good today as when laid.

Speaking of roads, the light asphalt back of QM and Commissary building has done well. There are two small improvement projects now under way and I have announced the policy that our road system is now basically satisfactory and complete and we shall start in on a policy of using a small but increasing percentage of road funds to give a light semi-permanent surfacing to existing roads. The present QM has a plan to enable this to be accomplished at about 12 cents a square yard for materials. We propose first to use this to abate dust nuisance in vicinity of barracks, quarters and clubs, and gradually extend to include the main road, the belt line, Way trail and North Shore to power plant. If I can see this done before retirement, I'll be willing to let the next C.O. fix the South Shore and Kindley Field systems.

The gradual thinning out of the original vegetation continues. Every improvement we make sends more rainfall into the sea instead of letting it soak into the

ground. Every new trail, mobile gun position, etc., established lets more hot, dry air into the jungle. Compensating for this, the palms, mango trees and other ornamental plants established are getting to be very beautiful.

Our hedges (now everybody laugh) are pretty ragged due to a fungus blight. A rather effective spray was found last year and I am not without hope of restoring them to their old beauty.

Middleside barracks present a remarkable appearance. Bougainvillea vines cover all pillars of the 60th line and are well upon the second story of the 91st. There are gardens along the front. Topside barracks have improved also, and there is a drive on now for the general beautification of that area. Incidentally the drainage system and asphalt roads constructed by troops back of Topside barracks is completely successful.

Ah Moon has passed on. But Woo Lee, Sang Lee, Gam Wah, the Persian Carpet House and other "Anchors of Comfort and Service" are with us. Mr. Cook is retired but is still on the Island. Mr. Martinez, Mr. Lutz, and Mr. Fernald are all carrying on.

The servant problem continues. How to carry out the Department mandate to reduce the civilian population, with a birth rate varying from 6 to 10 times the death rate, remains something of a puzzle. Many of the old servants greet me. For example those dear old Hase had when he told me, "I made an investigation and find I am supporting 37 people," remain on the island, but fortunately no longer center their efforts on one officer.

The Ciné now has a covered platform and driveway about one-third the size of the building—also a special car stop.

The S.C.F. Club died a natural death and I see no evidence of any desire to renew it as such. Many people

have spoken of trail walking and a note in the bulletin April 22d brought out 22.

Hughes is as slim and as high as ever. Drum is the same old place, with the same old problems—for example the cement we put in that under-wash has come out and must be replaced. Frank is O.K. The last rebuilding and ant-proofing of the houses really worked and the cement steps make access to the officers quarters easier though still hard enough to bring out the moisture—the gorge is the same old thing of beauty and grandeur.

In spite of changes in personnel and installations it is the same old island with the same beautiful views—south to Cavite, Lubang and Mindoro, east with the tail of the island curving into the bay, north to Mariveles and west into the Sunsets. I remember Pablo Leahy saying "It's as beautiful as a bum oil painting."

Chickens? Yes, they have increased enormously. As has the bird life. The sparrow crusade, combined with the drinking places established after I left have given the doves and orioles a great boost.

The artillery practice has been extended to include two batteries at Frank. Much of it is at high-speed (20 knots) targets. The whole schedule is more pressing due to the establishment of a real beach defense system.

The ghekos still wind-up and sound-off at night. There is one near the Ciné who selects the love scenes to make his side remarks. If Hollywood knew about him some of the stars would be over here with shotguns. Just think of a soul-stirring kiss being interrupted by:

"Duck eg-g-g-s! Duck eg-g-g-s"—about seven times winding up with two lugubrious grunts.

You'd better come back.

Panama Canal Department News Letter

Department Artillery Officer
COLONEL LEWIS TURTLE, C.A.C.

Fort Amador
COLONEL EARLE D'A. PEARCE
4th C.A. (AA).

Fort Sherman
COLONEL WILLIAM M. COLVIN
1st C.A.

Fort Randolph
LIEUTENANT COLONEL JAMES S. DUSENBURY
1st C.A.

THE rainy season in Panama officially starts on April 15th, any precipitation before that date is due to some slight miscalculation of the weather man and is not to be considered as rain. The performance this year indicates "a high state of training" on the part of the weather maker as the rains started almost exactly on schedule. We are thankful that rain was not added to our other discomforts while we were chasing the multi-colored enemy through the jungles.

Since April 15th the Coast Artillery troops in Panama have launched a comprehensive schedule of target practices, manning seacoast artillery, and all types and kinds of antiaircraft artillery matériel. To add variety, small-

arms target practices have been injected into the training schedule.

At Amador, Battery "C" 4th C.A. (AA) has completed its searchlight practices. The first practice held on the night of May 1st, score 110.7; the second took place on May 7th, score 97.8, the average being 104.

Batteries "A" and "F" have finished firing day practices with 3" AA guns. Battery "B" is standing by to fire whenever the clouds break long enough to permit firing and the field of fire can be cleared.

In the Second Battalion, Battery "D" fired two practices with 155-mm. guns, the first on April 26th and the second on April 30th. The battery required more than

six trial shots to secure a bracket on the target and the resulting loss of time ruined an otherwise satisfactory score. In the second practice the battery staged a comeback and secured a hit on the first trial shot. The score for this practice was 135.2. Battery "D" is now preparing for its mine practice. In this connection it should be noted particularly that the new mine dock is nearly finished and will be available for mine practice this year. This should be real news to those officers who despaired of ever seeing a mine dock at Amador. Battery "G" is preparing to fire 14" railway guns after which it will jump to antiaircraft training and firing.

Battery "I" is commuting to Fort Kobbe for drilling on the 16" guns in preparation for a long-range, airplane-controlled practice to be held late in June. It is expected that the battery will shortly move to Kobbe and remain until the practice is finished.

The batteries of the 1st Coast Artillery have firing schedules similar to those at Amador, but to date no reports have been received of the completion of any record practices.

On May 7, 1935, Fort Sherman won the Department Baseball championship by winning the deciding game from Fort Clayton by a score of 13 to 0. The final standing of the teams was:

| | Won | Lost | Percentage |
|--------------------|-----|------|------------|
| Fort Sherman | 3 | 1 | .750 |
| Fort Clayton | 1 | 3 | .250 |

The golf courses on the Isthmus have been the scene of a number of tournaments recently. One of these of particular interest to the Army is the Amador Club championship match in the President's Cup tournament. This was won on May 29th by Lieutenant R. P. "Red" Reeder when he defeated Dave G. Westman. The medal

scores for the first eighteen holes were even at 76. The final scores for thirty-six holes gave Lieutenant Reeder a total of 148 while Westman made a score of 153. The next tournament scheduled is the Amateur Championship of Panama and the Canal Zone. The entrants include a number of service personnel both commissioned and enlisted with a good representation from the Coast Artillery.

On May 20, 1935, the 1st Separate Chemical Company moved to Corozal for station. This makes additional space available for the expansion of Battery "C" 4th C.A. so that personnel may be assigned to that battery to care for the new fixed and mobile AA searchlights. It is expected that some of the 46,000 additional troops authorized by Congress will shortly find their way to the Coast Artillery in Panama and studies are being made of the housing problem at all posts. An increase will be heartily welcomed by the troops and it should lighten the fatigue burden.

A sector review of the Pacific Sector troops was held at Fort Clayton on May 10, for Governor Julian L. Schley. On April 13, a review of the troops at Amador took place, the occasion being in honor of Mrs. M. Amador, widow of Manuel Amador, first President of the Republic of Panama, for whom the post is named.

Troops of the 1st Coast Artillery participated in a Memorial Day parade in Colon. Besides the parade, an impressive memorial service was held at Fort Randolph under the direction of the Post Commander, Lieutenant Colonel James S. Dusenbury.

In closing we extend a cordial invitation to the officers who are ordered to Panama to join us as soon as possible. They will find plenty of opportunity for professional training during the summer and fall and the O.D. roster has room for a lot more names.

Fort Monroe News Letter

BRIGADIER GENERAL JOS. P. TRACY, U. S. ARMY,
Commanding.

COLONEL RUSSELL P. REBBER, 2d C.A.
Commanding Harbor Defenses of Chesapeake Bay

LIEUTENANT COLONEL JOS. F. COTTRELL,
Commanding 1st Bn., 2d C. A.

CAPTAIN RALPH E. HILL
Commanding 1st Bn., 51st C. A.

CAPTAIN PAUL B. KELLY,
Commanding 3d Bn., 52d C. A.

By Captain H. W. Cochran, C.A.C.

THE historical fortress on the shores of Chesapeake Bay was almost deserted during the month of June. The 51st and 52d C.A., the student officers of the Coast Artillery School and the Instructors, moved to Fort Story during the latter part of May for a month of field training. During this period the student officers participated in target practice culminating with battle practice. This is an annual event and is looked forward to by everyone except those remaining at Fort Monroe. The small garrison left behind had to carry a greatly in-

creased load during the absence of the 51st and 52d; literally it "more than doubled in brass." In addition to carrying on the usual post activities, Batteries "C" and "H" had to assume the additional burden of looking after 85 newly-commissioned second lieutenants, Coast Artillery Reserves, who have recently graduated from R.O.T.C. units in the III Corps Area. Several of these officers have been offered regular commissions in the Marine Corps. They are all especially selected men of demonstrated worth and excellent caliber and we are glad to welcome

them into the Coast Artillery Corps.

In addition to all this the 2d Coast Artillery had to prepare for the reception, processing and training of the R.O.T.C. students from the University of Pittsburgh, University of New Hampshire, M.I.T., and the Virginia Polytechnic Institute. Students from these institutions annually come to Monroe for a period of six-weeks' training. This year there were 225 in camp. Lieutenant Colonel Edward J. Cullen is camp commander, ably assisted by the officers from the several units.

Graduation exercises of the 1935 class of the Coast Artillery School was held on June 28. Major General Robert E. Callan, Commanding the 3rd Corps Area, delivered an inspiring address to the graduating class.

As notes for this news letter are being prepared the garrison is working overtime preparing for the reception, instruction, and training of the many organizations which will come to Monroe during this summer. These organizations are:

260th C.A. (AA) District of Columbia National Guard—22 officers, 300 enlisted men.

246th C.A. (HD) Virginia National Guard—40 officers, 540 enlisted men.

913th C.A. (AA) Res.—27 officers.

622d C.A. (HD) Res.—27 officers.

503rd C.A. (AA) Res.—62 officers.

523rd C.A. (AA) Res.—56 officers.

603rd C.A. (Ry.) Res.—44 officers.

In addition to the foregoing we will have the R.O.T.C. camp already mentioned, the C.M.T.C. Camp consisting of 225 red, white, and blue trainees and the first class from the U. S. Military Academy consisting of

about 22 officers and 284 cadets. With this very heavy training schedule it is evident that the permanent garrison at Fort Monroe will have a very busy summer. We are accustomed to this and look forward to greeting these friends and making their stay at Fort Monroe as pleasant and profitable as possible.

The rehabilitation of the Beach Club with its enlarged activities has turned Fort Monroe into a very popular summer resort. Present indications are that Randolph Hall will be filled throughout the summer with officers and their families from other stations.

The change in officer personnel is always heavy at this time of the year. This year the turn-over will be especially large and we will greatly miss many officers who have been with us for four or more years. Social activities on the post continue at a fast tempo. It seems that there is something doing all the time. An event of great interest was the marriage of Miss Frances Cramer, daughter of Major and Mrs. R. V. Cramer to Second Lieutenant J. D. Stevens, C.A.C., on July 31st.

Many activities for the entertainment of our friends and visitors are being planned for the summer season. One of these of an unusual nature was a water carnival held at the Beach Club on July 7. This consisted of a number of amusing aquatic events such as obstacle race, egg and spoon race, nightgown race, tug of war, hot-dog race, watermelon race, bag race, beer race, and penny scramble. The details of these several events will not be given but the title will easily suggest to others desiring to put on similar water carnivals the nature of the event, and it will only then be necessary to draw up rules and regulations. Prizes were provided for the winners of the several events.

Hawaiian Separate Coast Artillery Brigade News Letter

BRIGADE COMMANDER, BRIGADIER GENERAL ROBERT S. ABERNETHY

CHIEF OF STAFF, LIEUTENANT COLONEL BEN JAMIN H. L. WILLIAMS, C.A.C.

S-1, LIEUTENANT COLONEL E. C. DESOBRY, A.G.D.

S-2, MAJOR H. C. DAVIS, JR., C.A.C.

S-3, CAPTAIN W. F. LAFREZ, C.A.C.

S-4, MAJOR B. S. DUBOIS, C.A.C.

Harbor Defenses of Honolulu
16th C.A.

COLONEL G. L. WERTENBAKER, *Commanding*

Harbor Defenses of Pearl Harbor
15th C.A.

COLONEL A. J. COOPER, *Commanding*

Sixty-Fourth Coast Artillery

COLONEL WILLIS G. PEACE, *Commanding*

By Lieutenant John R. Lovell and Private Robert N. See

"THE WAR IS OVER!" With these words the Department Commander, Major General Hugh A. Drum, terminated what will probably be regarded as one of the most extensive field exercises ever attempted in the Hawaiian Department.

Since June 21 the Army and Navy forces in Hawaii have been "at war" with the "Reds." The troops moved into their initial positions and awaited the attack. Hostilities opened at 4:13 P.M., June 24, when the "Reds"

launched a combined naval and air attack against Oahu which succeeded in neutralizing our local "Blue" naval forces. During succeeding days the enemy landed in the Waianae Pocket, repeatedly attempted landings on the North Shore which were savagely repulsed, and made several feints toward the East Shore in the vicinity of Waimanalo.

During the period of the maneuvers until General Drum's historic words, "The exercise is terminated," at

8:57 A.M., June 28, the local Army forces in the Hawaiian Department battled with their backs to the wall for their very existence. With a reduced garrison, it was necessary to utilize to the greatest extent the principle of concentration of effort. Our new transportation made it possible for us to move large units quickly. It gave us tremendous hitting power and enabled us to surprise the enemy repeatedly. The Red G-2 section must have had a hectic time.

The Coast Artillery, under the command of Colonel A. J. Cooper at Fort Kamehameha, Colonel W. G. Peace of Fort Shafter, and Colonel George L. Wertenbaker at Fort Ruger, functioned extraordinarily well. To be a Coast Artilleryman, in the Hawaiian Department, one has to be a very versatile American soldier. Some of our batteries have as many as three assignments, i.e., fixed, mobile, and antiaircraft. First Lieutenant W. G. Holder's, Battery "A," 16th Coast Artillery, wins the leather medal for adaptability. The battery's primary assignment is fourteen-inch disappearing guns, its secondary assignment, six-inch disappearing guns, and its alternate assignment three-inch antiaircraft guns. During the period when the reserves of the Department were entirely exhausted, Battery "A," 16th Coast Artillery, was ordered to Fort DeRussy as infantry to form part of the Department's new reserve.

Captain Orley D. Bowman's Brigade communications gang functioned very well. Major Creighton Kerr at Fort Kamehameha, Lieutenant E. C. Wallace at Fort Ruger, and Lieutenant Robert W. Berry of the 64th Coast Artillery all came through with flying colors. "Bob" Berry and "Jack" Sawyer did an especially good job with the antiaircraft communications which included, during active periods, the use of radio station "KGU," in Honolulu. The writer has asked Berry for a special story which, we hope, will be included in the next Brigade News Letter.

At a conference immediately after the maneuvers, General Drum stated he was very well pleased with the results attained, especially with the enthusiasm manifested by all. He stated further he was proud to have such a fine body of officers and men under his command.

NAVY ARRIVES IN HAWAII

Not the proverbial robins but this time the Jack Tars from the United States Fleet ushered in spring in Hawaii and Honolulu. During the latter part of May and the first part of June the White Jackets from the entire fleet swarmed into Honolulu on such days as the ships were not out on maneuvers in the Pacific. Honolulu gave the keys of the city to the fleet personnel, and during the two-weeks stay officers and enlisted men alike succumbed to the charms of far-famed Waikiki Beach, hula girls, and grass shacks.

JOINT MANEUVERS

As a prelude to the Hawaiian Department Maneuvers, the Army took part in joint war games with the Navy

while the fleet conducted "certain" problems in adjacent waters. The Hawaiian Separate Coast Artillery Brigade and the 18th Composite Wing, in particular, conducted a defensive maneuver against a Black Force which was harassing our fleet while they were entering our harbors to replenish supplies.

HONOLULU SECTOR SPORTS

The first round of the Sector-Navy league came to a close June 15. Subron Four, winner of the 1934 title, is again the leading club. The 64th Coast Artillery, Fort Shafter, won the Honolulu Sector Army track title, and the Sector-University track league.

GENERAL DRUM FETED

Major General Hugh A. Drum, Commanding Officer of the Hawaiian Department, was the guest of honor at a dinner given by Brigadier General Robert S. Abernethy, Commanding General of the Hawaiian Separate Coast Artillery Brigade, at the Royal Hawaiian Hotel, June 19. The affair was one of the outstanding gala occasions of the summer season in military circles.

HIGH-SPEED DRILLS

The high command has let it be known that all batteries will be required to have at least one artillery drill per week on high-speed targets and at least one rehearsal per week on alternate antiair-assignments. This is in addition to regular dry runs on primary assignments.

Battery "D," 16th Coast Artillery, Fort DeRussy, commanded by Captain Clarence M. Mendenhall, Jr., conducted some very interesting high-speed drills this spring. Straight, sinuous, and ziz-zag hypothetical high-speed courses (speed 40 knots) with zero, 45 and 90 degree angles of approach were conducted. Because of inaccuracies in plotting the course and in determining the set forward point, it was necessary to reduce the time interval. After several drills the observing interval was reduced from twenty to ten seconds. All of the instruments in the range section were correctly and accurately operated while drilling at this speed. The equipment included a Whistler-Hearn plotting board, a Pratt Range Board, a home-made range percentage corrector, deflection board for guns, M1905, and a home-made spotting board M1. Case II with either a horizontal or verticle base was used at will. (It was impossible to drill at this speed using Case III methods because the old deflection board could not operate fast enough. However, by constructing an azimuth tape and using a second index to set off the deflection (like the range percentage corrector), Case III methods could be used as easily as Case II.

Battle tests were conducted by the Battery Commander and it was found possible in practice to fire on a target (6" DC Battery Dudley) in fifty seconds after the target was sighted.

Further information on these high-speed battle tests

(Please turn to page 320)

NEWS AND COMMENT

The Order of the Illustrious

IN this age of bustle, strife, and competition it is a common belief that individuals are so fully occupied with their own private affairs, including the necessity of earning a livelihood and providing a modicum of comfort for themselves and dependents, that there is little or no time left for a manifestation of the finer sensibilities, including the spirit of comradeship and a desire to cooperate in helping others out of the mud or over difficult places. It is, therefore, refreshing to find that there yet remains in human nature a latent willingness to shoulder the burdens of those who cannot carry their load and keep up in the race.

The real reason for this effusion is because a certain number (unfortunately a very limited number) of officers have unselfishly, generously and magnificently come to the assistance of the COAST ARTILLERY JOURNAL and have "put their shoulder to the wheel with a right good will." They have done yeoman service in a good cause, they have manifested a spirit of cooperation far in excess of that expected or demanded by custom, official courtesy or personal friendship. They have interested themselves in the welfare and success of the JOURNAL without hope of reward or expectation of favor. It is too bad that the War Department has not authorized the award of a special medal for exceptionally meritorious service in time of peace, in those cases where the service rendered was above and beyond the performance of official duty. In the absence of a citation of this nature we are compelled to substitute one of our own and for lack of a better name we will call it "The Order of the Illustrious." The first award, accompanied by appropriate citations, will be made to the following:

Major Albert D. Chipman, C.A.C.

Major Charles I. Clark, C.A.-Res.

Captain William F. Marquat, C.A.C.

Lieutenant Milton G. Mauer, 250th C.A., Calif., N.G.

Lieutenant. John Paulding, 212th C.A., N.Y.N.G.

The citation to accompany this mythical award will be as follows:

For having rendered conspicuous, outstanding and meritorious service in furthering the best interest of the Coast Artillery Association and the COAST ARTILLERY JOURNAL in that they have voluntarily procured a large number of members for the Association and subscribers to the COAST ARTILLERY JOURNAL.

What methods they employed we do not know, but we do know the results. No less than 50 new subscribers have been added to the rolls because of the efforts of these officers and what is more important they did this as a

labor of love. What they have done others can do equally as well.

It is not possible for the Editor to contact all officers, therefore, if some means could be devised to induce officers on duty with the Organized Reserves and the National Guard to become agents for the JOURNAL and its business activities we are certain that the list of subscribers would show a healthy and continuing increase. We would like to have one agent in each National Guard organization, either the instructor or a member of the regiment; also, we know that officers on duty with the Organized Reserve component can render valiant service to the JOURNAL. Particularly is this true during the summer training season.

We know of one instructor of a National Guard regiment with an officer strength of 38, whose regiment is now 100% subscribers, *all paid in advance*. Unfortunately for us he is an Infantry officer but we salute him with the profound respect and deference due one of high station, for certainly he is not made of common clay. Another Infantry officer has furnished 60 subscriptions from his area including the three components of the Army. Will some Coast Artilleryman show an equal amount of energy and initiative, thus again demonstrating the versatility of the Corps and proving that our sister arm has no monopoly on talent.

We want to make due acknowledgement and give credit to all those who have befriended the JOURNAL and assisted in increasing the list of subscribers. A roster of all these officers would be entirely too long to encompass in a limited space. We do not mean to slight or overlook anyone. The officers above mentioned are those who have rendered the most conspicuous and outstanding service. From time to time the JOURNAL will nominate other names to be added to the list of "The Illustrious." Who will be the next?

1 1 1

Changes in the Chief's Office

IN conformity with custom we again find it necessary to announce several changes that are about to be made in the official family. Lieutenant Colonel Francis P. Hardaway will become a member of the next class at the Army War College. For two and one-half years the organization and training section of the Chief's office has operated under the supervision of this capable officer. During this time many problems vitally affecting the training of the Coast Artillery Corps have passed through his hands. All of these bear the impress of his good judgment backed by a thorough understanding of the problem. He has rendered conspicuous service in fur-

thering the best interest of the Coast Artillery Corps and his separation from the office will be a distinct loss.

Our regret at Colonel Hardaway's departure is tempered by the knowledge that the mantle will descend upon the worthy shoulders of Major Robert Perkins, who comes to the Chief's office from the Army's highest institution of learning; after having completed all the courses at the Coast Artillery School and the Command and General Staff School. Prior to coming to Washington Major Perkins was on duty as plans and training officer of the Harbor Defenses of Manila and Subic Bays. He filled this position during a time when the entire defensive scheme of our far eastern insular possession was undergoing a thorough renovation. This work was excellent training for the duties which will devolve upon him in his new assignment.

The inexorable passage of time coupled with policy makes it mandatory to relieve Lieutenant Colonel R. E. Haines from his present duties. Colonel Haines will sail for Hawaii sometime during the month of September. He has been in charge of fiscal affairs in the material and finance section; this involves preparation of estimate of funds to be submitted to the budget committee and the necessary data to support the estimates. Hand in hand with this goes the sub-allotment of funds for the various Coast Artillery activities including ammunition allowances. The work performed by Colonel Haines was of a most exacting and painstaking nature. To say that he has done a good job in a difficult position would be putting it mildly. Figures involving millions, charts, diagrams, estimates, proposals, and what not have passed over his desk in an endless procession. Only by the exercise of the utmost caution and sound judgment is it possible to avoid the dangers of underestimating the needs of the Corps or the complementary dangers of overestimating, and therefore being unable to support the figures before the budget committee. Upon whom the toga of finance officer will fall has not as yet been decided. The most likely candidate for this assignment is Major Charles Bundy.

Orders have been issued for a return engagement of Captain B. L. Milburn, who has recently completed the course of instruction at the Command and General Staff School, Fort Leavenworth. Captain Milburn served a tour of duty in the Chief's office from 1923 to 1927. At that time he was assistant to the personnel officer, therefore, he is thoroughly familiar with the routine work and details of the office. Indications point to his assignment to the M. and F. section where his presence will be a welcome addition to the overworked personnel.

The Refresher Course at the Coast Artillery School

UNDER date of May 15, 1935, The Adjutant General issued a directive to each Chief of Arm quoted in part as follows:

"There may be held during the school year of 1935-

36, at the discretion of the Chief of Arm concerned, such refresher courses at the service school of the arm, of not to exceed five weeks duration, as may be deemed advisable. The students will be limited to field officers.

"Officers detailed to take the refresher course will be on temporary duty. No additional instructors will be detailed to the service schools concerned for the purpose of conducting these courses."

It will be recalled that refresher courses at the Coast Artillery School were discontinued about two years ago. The resumption of these courses will be welcome news to many Coast Artillery officers. Present plans contemplate conducting two courses during the next school year; tentative selections of periods are as follows:

a. November 18, 1935, to December 20, 1935.

b. April 27, 1936, to May 29, 1936.

In this connection there is another question upon which final decision has not been made. It very often happens that it is inconvenient, from both a personal and official point of view, for an officer of field grade to attend a short course of instruction at a definite period. The most convenient time for this is during a change of station or change of official duty. Officers can be made available during these periods with less interference with other duties than at any other time. The plan formerly followed was to order officers individually to take the refresher course. It is fully realized that this throws an additional burden upon the instructors of the Coast Artillery School in that one or more student officers may be present throughout the school year. Naturally from the standpoint of instructional value and the time of the instructors this plan is open to serious objection. Against this must be balanced the time and convenience of individuals. No information is now available as to how this question will be decided. Officers desiring to take the refresher course may submit their application through official channels.

"Action Speaks Louder Than Words"

WE are indeed thankful and appreciative of the many kind expressions of approval which reach the editorial office to the effect that the JOURNAL is interesting, instructive and fulfills its mission. While we occasionally reprint extracts from these letters, space does not permit mention of all of them; in fact it would be unwise to do so for fear of being accused of self aggrandizement. Complimentary remarks act as a lubricant, help reduce friction and make the machinery function more smoothly, but there is one other thing which we most earnestly recommend to those who are kindly disposed toward the JOURNAL.

In the first issue after assuming the editorial toga we made the request: "If you like the JOURNAL please tell others, if you don't like it please tell us." We are always glad to receive compliments, but (and it is a big "but") we are confident that the list of subscribers will show a marked increase if those of our readers who find the JOUR-

NAL of interest and value will tell this to their friends and acquaintances. This is not much to ask: oftentimes a word, like a seed, will fall on fertile ground and produce a plant whose fruitage will succor the needy. A sufficient number of these plants will produce an abundant harvest.

Elsewhere in this issue we have created a mythical "Order of the Illustrious." We are looking for more members and hope that with each issue we can add new stars to the constellation.

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Training Directive for Coast Artillery

AS a result of the recently authorized increase in enlisted personnel of the Army, of which the Coast Artillery will receive about 6,500, coupled with changed conditions, it has become advisable for the War Department to issue a new directive for the training of the Coast Artillery Corps to supersede the directive issued under date of January 6, 1930. The directive pertains solely to the training of regular army personnel.

1. Harbor defenses in the continental United States are classified for training as follows:

| CLASS I (Full training) | CLASS II (Limited training) | CLASS III (Maintenance) |
|----------------------------|--------------------------------|----------------------------|
| Long Island Sound | Portland | Portsmouth |
| Chesapeake Bay | Boston | New Bedford |
| Pensacola | Narragansett Bay | Southern New York |
| San Francisco | Sandy Hook | The Delaware |
| Puget Sound | San Diego | Charleston |
| | Los Angeles | Key West |
| | The Columbia | Galveston |

2. Harbor defense training will be:
 - a. Class I: In all phases of training.
 - b. Class II: In all phases of training as limited by maintenance duties. In harbor defenses having a submarine mine project, special emphasis will be placed on submarine mine training. During 1935, corps area commanders are authorized to prescribe submarine mine target practices in harbor defenses having a submarine mine project, and anti-aircraft artillery target practices in harbor defenses having no submarine mine project.
 - c. Class III: In these harbor defenses the primary duty is the maintenance of armament and accessories. Coast Artillery target practice will be conducted only upon special authority from the War Department.
3. All Coast Artillery will be trained to serve effectively anti-aircraft armament and accessories in addition to the seacoast artillery armament to which the organizations may be permanently assigned.

In order to carry out this training mission, all lettered batteries of harbor defense, tractor-drawn, and railway regiments (and headquarters batteries in Class II harbor defenses) will in addition to their assignment to seacoast artillery armament, have an additional assignment to anti-aircraft searchlights, guns or machine guns. Assignments should, as far as practicable, be divided equally in each Corps Area or Department and in each harbor defense between searchlights, guns, and machine guns.

Where searchlights are not available, assignment should be made to machine guns, pending the provision of searchlights.

4. Coast Artillery regiments (active or partly active) of the Regular Army are designated as follows:

ANTIAIRCRAFT ARTILLERY

| | |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1st Coast Artillery (AA) | The 1st Coast Artillery and 4th Coast Artillery are both designated anti-aircraft artillery regiments. However, the 2d Battalion in each regiment is designated as a seacoast artillery battalion. |
| 4th Coast Artillery (AA) | |
| 60th Coast Artillery (AA) | |
| 61st Coast Artillery (AA) | |
| 62nd Coast Artillery (AA) | |
| 63rd Coast Artillery (AA) | |
| 64th Coast Artillery (AA) | |
| 69th Coast Artillery (AA) | |

SEACOAST ARTILLERY

| | |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2nd Coast Artillery (HD) | The 2d Coast Artillery is designated a harbor defense regiment of the seacoast artillery but Battery C of this regiment is designated an anti-aircraft artillery battery. |
| 3rd Coast Artillery (HD) | |
| 5th Coast Artillery (HD) | |
| 6th Coast Artillery (HD) | |
| 7th Coast Artillery (HD) | |
| 8th Coast Artillery (HD) | |
| 9th Coast Artillery (HD) | |
| 10th Coast Artillery (HD) | |
| 11th Coast Artillery (HD) | |
| 13th Coast Artillery (HD) | |
| 14th Coast Artillery (HD) | |
| 15th Coast Artillery (HD) | |
| 16th Coast Artillery (HD) | |
| 41st Coast Artillery (Ry) | |
| 51st Coast Artillery (TD) | |
| 52nd Coast Artillery (Ry) | |
| 55th Coast Artillery (TD) | |

91st Coast Artillery (HD) (PS)
92nd Coast Artillery (TD) (PS)

The 59th Coast Artillery has heretofore been designated a tractor-drawn regiment though it has for some time manned harbor defense fixed armament. It is now designated a harbor defense regiment.

The 92d Coast Artillery has heretofore been designated a harbor defense regiment though it has for some time manned tractor-drawn artillery. It is now designated a tractor-drawn regiment.

/ / /

"Sweet Music"

THE EDITOR,
COAST ARTILLERY JOURNAL

Dear Sir:

"I have just received the May-June issue of the COAST ARTILLERY JOURNAL, and realizing that my present subscription has run out with this publication, I enclose a postal money order in the amount of \$3.00 for my subscription for another year.

"The JOURNAL is highly interesting and I certainly look forward with a great deal of anticipation to its arrival each month. I consider all of the subjects and articles invaluable to the complete training and reading of myself as a Reserve Officer."

Lieutenant, C.A.-Res.

COAST ARTILLERY BOARD NOTES

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

THE COAST ARTILLERY BOARD

COLONEL A. H. SUNDERLAND, C.A.C., *President*
MAJOR FRED M. GREEN, C.A.C.
MAJOR C. E. COTTER, C.A.C.
MAJOR G. B. WELCH, Ord. Dept.

MAJOR A. F. ENGLEHART, C.A.C.
CAPTAIN E. T. CONWAY, C.A.C.
CAPTAIN L. E. DAVIS, C.A.C.
1ST LIEUT. WALTER J. WOLFE, C.A.C.

SECTION I

Projects Completed Since Last Issue of the Journal

PROJECT NO. 1030—ELECTRICAL TEST SET, TYPE I-56, AND SUPREME SET ANALYZER, MODEL 333.—These sets were discussed in the last issue of the JOURNAL. As a result of comparative tests, the Board favored the Set, SC I-56, and recommended its issue to coast artillery troops. A basis of allowance was recommended so that one of these sets would be available in each harbor defense and one in each mobile regiment.

PROJECT NO. 1032—SIGNAL LAMP EQUIPMENT, TYPE EE-10-B.—This lamp looks like an automobile headlight with a handle; this may be extended to afford support for the lamp. The operating key, for code signaling purposes, is attached to the case containing the battery. It was recommended that this new lamp be adopted as standard to replace the Type EE-10-A, without changing the basis of issue, replacement to be gradually effected as the stock of the present Lamp, type LM-17, becomes exhausted.

PROJECT NO. 1035—OPTICAL BORESIGHT (Godwin).—Mr. Will H. Godwin, Resident Ordnance Machinist, Fort Crockett, Texas, developed a boresight that may be used on any cannon. The model submitted was for an anti-aircraft gun. The instrument consists essentially of a telescope mounted on a centering frame to be placed in the breech of the gun. It is a very fine instrument, with a few minor defects that might be remedied. The Board considers that it is unnecessarily elaborate. The standard boresights are very simple instruments, usable under practically all conditions; however the Board did recommend a slight modification of the standard boresight.

SECTION II

Projects Under Consideration

PROJECT NO. 953—RADIO-CONTROLLED HIGH-SPEED TARGET.—Some of the more obvious pros and cons concerning this target were mentioned in the last issue of the

JOURNAL. It can be stated at this time that work is progressing satisfactorily. It was found that with the limited personnel available to the Board it is very frequently necessary to take officers and men off of this project and put them on other work which has been given higher priority. It is expected that preliminary tests will be undertaken in the near future.

PROJECT NO. 964—RUBBER-JACKETED SUBMARINE MINE CABLE.—As stated before, this test was to extend over a considerable period of time. That period has expired, but the reports from all the harbor defense commanders involved have not been received. The reports received to date are most favorable for this cable. Someone reported that from the viewpoint of handling this cable on the deck of a mine planter, there was as much difference between the new and the old cable as there is between garden hose and barbed wire.

PROJECT NO. 990—TEST OF DULUX, NON-OXITE AND OTHER PAINTS.—As previously stated, none of the paints tested during the last year now present a particularly good appearance. The Board is undertaking a few tests that will be completed in the near future with a view to toning up some of these paints by the application of varnish. A suggestion has been made to the effect that the painting of cannon and their carriages might be solved by covering the well-cleaned steel surface with some non-corrosive metal sprayed on by the new metallic spraying processes. This same process might be applied to the present bright parts. The Board has had no opportunity to investigate these suggestions.

PROJECT NO. 1017—STEREOSCOPIC TRAINER T5; and PROJECT NO. 1018—OPHTHALMIC TELEBINOCULARS (Stereoscope).—These instruments have been given rather thorough indoor tests, and an outdoor practical test in connection with the recent firings of the Coast Artillery School personnel at Fort Story. The results have not yet been tabulated, hence no definite conclusions can be drawn.

PROJECT NO. 1023—PORTABLE KITCHEN, GASOLINE-BURNING.—Nothing pertaining to this project can be

added to the statements contained in the last issue of the JOURNAL except that a kitchen is promised at an early date.

PROJECT NO. 1025—SHIRTS, FLANNEL, OLIVE DRAB.—The one-year test of these garments is still in progress. There is little to report.

PROJECT NO. 1027—TABLES, MESS.—These tables are under a one-year test; they must be proving fairly satisfactory, for no mess sergeant has rebelled against the use of this equipment, and they are reputed to be notoriously conservative and hard to convince in matters of improved mess equipment.

PROJECT NO. 1031—DIAPHRAGM GAS MASK, E3R139.—Five of these masks have been received, and the directive instituting the test includes, among other things, a requirement that a man wear the mask in a gas chamber for at least an hour. With only five masks and one hundred men to run through, when they can be made available, a considerable amount of time will be expended in the physical features of the test, but the work is progressing.

PROJECT NO. 1033—FUSE SETTERS, M5 M2A1 AND T8.—Considerable work has been done by the Board in the comparative test of the M5 and M2A1 fuse setters. On several occasions parts of the M5 have broken while under test. Only preliminary tests have been made of the T8. It appears to be constructed on very good principles but its mechanical operation seems faulty. Considerable work has yet to be done before any conclusive report can be rendered.

PROJECT NO. 1034—COAST ARTILLERY SIGNAL LAMP EQUIPMENT.—A consistent reader of these notes will know that there has been considerable discussion on signal lamps. Some of the questions propounded are: What are signal lamps for? Will they be used in wartime? Can they be replaced by short-wave radio sets? A study is being undertaken by the Board to try to find an answer to these questions.

PROJECT NO. 1036—TRAINING MEMORANDUM, INSTRUCTIONS FOR COAST ARTILLERY TARGET PRACTICES, CALENDAR YEAR 1936.—The draft of this, for the action of the Chief of Coast Artillery, is practically completed. Report has not been furnished because it was held to be reviewed by the new members of the Board.

PROJECT NO. 1038—STORAGE OF RUBBER-JACKETED SUBMARINE MINE CABLE.—As stated under Project No. 964, the new rubber-jacketed cable is proving very satisfactory but it is necessary to institute comparative tests to learn the best method of preserving this cable in storage. Outlines for such tests have been submitted to the Chief of Coast Artillery for his action.

PROJECT NO. 1039—DATA TRANSMISSION SYSTEM T-11.—This is a new approach to the old problem of delivering the data from the plotting room to the guns in a fixed emplacement. The T-11 system includes the follow-the-pointer system of electrical transmission. The Chief of Ordnance has prepared two sets of this equipment, one of which is to be tested at Fort Hancock, N. J., and the other at Fort Monroe, Va. The Board has drawn up an outline for the test and submitted it to the Chief of Coast Artillery for action.

COAST ARTILLERY ORDERS

(Covering the period May 1 to June 30, 1935)

Colonel Earl Biscoe, from War Department General Staff to Hawaii, sailing San Francisco, October 1.

Lieutenant Colonel Robert Arthur from instructor, Massachusetts Institute of Technology, Cambridge, to 13th, Fort Barrancas, September 1.

Lieutenant Colonel P. D. Bunker promoted Colonel, May 1.

Lieutenant Colonel J. F. Cottrell, from 2d, Fort Monroe, to commanding officer Submarine mine depot, Fort Monroe, August 1.

Lieutenant Colonel E. J. Cullen, from instructor, University of Pittsburgh, to 11th, Fort H. G. Wright, August 1.

Lieutenant Colonel F. Q. C. Gardner promoted Colonel, June 1.

Lieutenant Colonel W. W. Hicks, from instructor, New York National Guard, New York, to historical section, Army War College.

Lieutenant Colonel J. L. Holcombe, from

Organized Reserve, 1st Corps Area, to instructor, University of Pittsburgh, August 15.

Lieutenant Colonel W. C. Koenig, from University of Kansas, Lawrence, to historical section, Army War College, August 20.

Lieutenant Colonel R. F. Maddux, from historical section, Army War College, to instructor, Massachusetts National Guard, Boston, June 30.

Lieutenant Colonel L. B. Magruder, from detail General Staff Corps, War Department, to 2d C.A. District, New York, June 30.

Lieutenant Colonel L. L. Pendleton, from 6th, Fort Winfield Scott, to instructor, New York National Guard, sailing San Francisco, July 2.

Major H. C. Allen, from the Philippines, to C.A. Board, Fort Monroe. Previous orders amended.

Major Franklin Babcock, from Hawaii, to University of Kansas, Lawrence.

Major A. C. Chesledon, from the Philippines, to Fort Winfield Scott.

Major E. B. Colladay promoted Lieutenant Colonel, May 1.

Major G. W. Easterday promoted Lieutenant Colonel, May 1.

Major G. H. Ericsson, from 6th, Fort Winfield Scott, to 3rd, Fort MacArthur, June 30.

Major C. G. Foltz, from student, C.&G.S. School, Fort Leavenworth, to the Philippines, sailing New York, September 18.

Major A. G. Frick, promoted Lieutenant Colonel, May 1.

Major F. F. Gallagher, from 1st C.A. District, Boston, to Organized Reserve, 1st Corps Area, Boston, August 1.

Major F. M. Green, from instructor, Massachusetts National Guard, Boston, to C.A. Board, Fort Monroe, June 30.

Major C. R. Jones, from Panama, to 13th, Fort Barrancas.

Major Kenneth McCarty, from 69th,

Fort Crockett, to student, Air Corps Tactical School, Maxwell Field, Montgomery.

Major C. F. Maguire, report to President Army retiring board, Washington, D. C.

Major J. B. Martin, from 13th, Fort Crockett, to recruiting, Peoria, Illinois, June 15.

Major M. J. O'Brien, from Hawaii, to instructor, University of California, Berkeley.

Major J. C. Ruddell, from Panama, to Massachusetts Institute of Technology, Cambridge.

Major F. L. Topping, from 14th, Fort Worden, to 1st C.A. District, Boston, sailing San Francisco, August 3.

Major S. S. Winslow, promoted Lieutenant Colonel, May 1.

Captain E. R. Barrows, from University of Alabama, to the Philippines, sailing New York, September 17.

Captain T. J. Betts, from 61st, Fort Sheridan, to G.S.C., 9th Corps Area, June 30.

Captain B. B. Blair, report to President Army retiring board, Presidio of San Francisco.

Captain H. B. Bliss, from 6th, Fort Winfield Scott, to Quartermaster Corps, Fort Sill, June 30.

Captain C. E. Brand, transferred to Judge Advocate General's Department, May 10.

Captain H. McC. Cochran, 3d, to student, C.A. School, Fort Monroe, August 30. Previous orders amended.

Captain J. M. Cole, from 7th, Fort Hancock, to Fort Slocum, June 30.

Captain E. R. Crowell, from University of Alabama, University, to Hawaii, sailing San Francisco, October 17.

Captain G. W. Dunn, Jr., from Mississippi State College, State College, to Panama, sailing New York, September 5.

Captain B. F. Fellers, from student, C. & G.S. School, Fort Leavenworth, to the Philippines, sailing New York, September 18.

Captain A. D. Fiskens, from Hawaii, to Massachusetts Institute of Technology, Cambridge.

Captain A. W. Gower, from Panama, to 11th, Fort H. G. Wright.

Captain D. B. Greenwood, from 63rd, Fort MacArthur, to Panama, sailing San Francisco, July 2.

Captain D. H. Hoge, from 52d, Fort Monroe, to 11th, Fort H. G. Wright, June 30.

Captain F. H. Koerbel, from Hawaii, to detail in Quartermaster Corps, Fort Mason.

Captain H. S. MacKirdy, from 62d, Fort Totten, to detail in Quartermaster Corps, Fort Slocum, September 1. Previous orders revoked.

Captain Samuel McCullough, from 61st, Fort Sheridan, to instructor, New Hampshire National Guard, Concord, June 1. Previous orders amended.

Captain A. L. Parmelee, from the Philippines, to instructor, New York National Guard, New York.

Captain J. F. Pichel, retired, physical disability, June 30.

Captain Frank Richards, from 13th, Fort Barrancas, to detail in Finance Department and Student's Finance School, Washington, D. C., for course in instruction, then to station at Atlanta.

Captain C. R. Roberts, from instructor, District of Columbia National Guard, to Hawaii, sailing New York, October 31.

Captain J. C. Stephens, from Washing-

ton University, St. Louis, to Panama, sailing New York, July 6.

Captain W. L. Weible, from student, C. & G.S. School, Fort Leavenworth, to instructor, C. & G.S. School. Previous orders revoked.

Captain W. W. Wertz, from 69th, Fort Crockett, to University of Alabama, University, June 30.

First Lieutenant J. G. Bain, from New York, to Panama, July 30. Previous orders amended.

First Lieutenant W. L. Barker, from Hawaii, to 14th, Fort Worden.

First Lieutenant T. G. Cranford, Jr., from 62d, Fort Totten, to Quartermaster Corps, June 3.

First Lieutenant C. E. Dunham, from C.A. School, Fort Monroe, to Panama, sailing New York, July 30. Previous orders amended.

First Lieutenant E. E. Elliott, from Hawaii, to 61st, Fort Sheridan.

First Lieutenant B. D. Gill, from student, C.A. School, Fort Monroe, to the Philippines, sailing New York, September 18.

First Lieutenant L. McI. Guyer, to student, C.A. School, Fort Monroe, August 20. Previous orders amended.

First Lieutenant P. A. Harris, from 8th, Fort Preble, to Hawaii, sailing New York, September 24.

First Lieutenant E. F. Heidland, to student, C.A. School, Fort Monroe, August 30. Previous orders amended.

First Lieutenant C. W. Holcomb, from student, C.A. School, Fort Monroe, to Hawaii, sailing New York, July 25.

First Lieutenant Dean Luce, from Hawaii, to 6th, Fort Winfield Scott.

First Lieutenant N. A. McLamb, from student, C.A. School, Fort Monroe, to Hawaii, sailing New York, July 30.

First Lieutenant W. L. McNamee, from student, C.A. School, Fort Monroe to student, University of Michigan, Ann Arbor, September 20.

First Lieutenant W. L. McPherson, to instructor, C.A. School, Fort Monroe, June 30. Previous orders amended.

First Lieutenant E. G. Martin, to student, C.A. School, Fort Monroe, August 30. Previous orders amended.

First Lieutenant H. H. Myrah, from Kansas State College, Manhattan, to 14th, Fort Worden, June 30.

First Lieutenant J. H. Pitzer, from Utah State Agricultural College, Logan to Hawaii, sailing San Francisco, October 17.

First Lieutenant J. G. Renno, from 51st, Fort Monroe, to Michigan State College, East Lansing, August 15.

First Lieutenant A. W. Schermacher, from student, C.A. School, Fort Monroe, to Hawaii, sailing New York, September 24.

First Lieutenant L. E. Shaw, to Hawaii, sailing New York, July 30. Previous orders amended.

First Lieutenant J. P. Shumate, from C.A. School, Fort Monroe, to Panama, sailing New York, September 5. Previous orders amended.

First Lieutenant J. C. Smith, from 6th, Fort Winfield Scott, to instructor, Washington University, St. Louis.

First Lieutenant A. C. Spalding, from Panama, to 62d, Fort Totten.

First Lieutenant P. W. Steinbeck, Jr., from C.A.C., Fort Slocum, transferred to Field Artillery, Madison Barracks.

First Lieutenant M. R. Thompson, from student, C.A. School, Fort Monroe, to Panama, sailing New York, August 27.

First Lieutenant M. L. Skinner, from 6th, Fort Winfield Scott, to student, C.A. School, Fort Monroe.

First Lieutenant F. B. Kane, from student, C.A. School, Fort Monroe, to student, Massachusetts Institute of Technology, Cambridge, June 1.

First Lieutenant W. S. Lawton, from 14th, Fort Worden, to 6th, Fort Winfield Scott. Previous orders amended.

First Lieutenant D. J. Bailey, from student, C.A. School, Fort Monroe, to the Philippines, sailing September 18.

First Lieutenant Sylvan Berliner, from 5th, Fort Hamilton, to instructor, Delaware National Guard, Wilmington, June 1.

First Lieutenant L. R. Bullene, from 52d, Fort Hancock, to 62d, Fort Totten, June 30.

First Lieutenant A. T. Bowers, from 62d, Fort Totten, to 52d, Fort Hancock, June 30.

First Lieutenant M. W. Tracy, from student, C.A. School, Fort Monroe, to the Philippines, sailing, September 18.

First Lieutenant A. R. Thomas, from student, C.A. School, Fort Monroe, to the Philippines, sailing, September 18.

First Lieutenant B. D. Gill, from student, C.A. School, Fort Monroe, to the Philippines, sailing, September 18.

First Lieutenant M. J. McKinney, from student, C.A. School, Fort Monroe, to the Philippines, sailing New York, September 18.

Second Lieutenant L. A. Bosworth, from 51st, Fort Monroe, to Ordnance Department, Watertown Arsenal, May 25.

Second Lieutenant C. F. Dreyer, transferred to Quartermaster Corps, May 31.

Second Lieutenant R. F. Moore, from 6th, Fort Winfield Scott, to 3d, Fort Rosecrans.

Second Lieutenant R. M. Nelson, from 62d, Fort Totten, to Hawaii, sailing New York, October 10.

Second Lieutenant A. J. Stuart, Jr., from 2d, Fort Monroe, to Panama, sailing New York, August 27.

Second Lieutenant R. J. Wood, to U. S. Military Academy, West Point, June 30. Previous orders amended.

Master Sergeant E. C. Athey, 62d, Fort Totten, retired, June 30.

Master Sergeant Richard Bettien, 13th, Fort Barrancas, retired, May 31.

Master Sergeant Blon Lovejoy, 69th, Fort Crockett, retired, June 30.

Master Sergeant J. A. Wilson, 7th, Fort DuPont, retired, June 30.

First Sergeant J. M. Banks, 59th, Fort Drum, retired, May 31.

First Sergeant Ernest Buchsenschutz, 62d, Fort Totten, retired, May 31.

First Sergeant R. L. Morris, 69th, Fort Crockett, retired, June 30.

First Sergeant C. H. Reynolds, 11th, Fort H. G. Wright, retired, June 30.

First Sergeant J. D. Taylor, 2d, Fort Story, retired, May 31.

Staff Sergeant L. J. Brit, 8th, Fort Preble, retired, June 30.

Sergeant George Amesch, 8th, Fort Preble, retired, June 30.

Sergeant Michael Crilly, 2d, Fort Monroe, retired, June 30.

Sergeant George Elwick, 60th, Fort Mills, retired, May 31.

Sergeant Emil Fagerlund, 15th, Fort Kamehameha, retired, June 30.

Sergeant James Groom, 6th, Fort Winfield Scott, retired, May 31.

Sergeant J. C. Vaughn, 11th, Fort H. G. Wright, retired, June 30.

THE FOREIGN MILITARY PRESS

Reviewed by Major Alexander L. P. Johnson, Infantry

SANTO DOMINGO — *Revista Militar* — January-February, 1935.

THE JAPANESE SOLDIER. By Commander Yaben.

The author quotes some interesting precepts of training of the Japanese infantryman:

"The Japanese foot soldier must be able to march, shoot and use his bayonet."

"The Japanese infantryman is taught from the very outset that the bayonet is the peculiar weapon of the doughboy, and that only by the use of this weapon will he be able to gain ground. He must remember, that the ultimate decision in battle must be sought in the attack, and that the bayonet is a decisive factor in each assault."

"The spirit of the Japanese Army is the spirit of the offensive. The enemy's abdomen should be the first objective of the bayonet. It is the most vulnerable spot, the one most easily penetrated by the bayonet. The soldier, therefore, does well to take his enemy on a run giving the war cry in order to unnerve his adversary, then drive home the bayonet with full force."

"Generally the first assault will prove successful. If not, attack again lunging against one side of the adversary or the other without wasting time on fencing. The man who assaults promptly, firmly and rapidly will be the victor in the bayonet combat."

"Since time immemorial the cold steel has been the weapon of the Japanese soldier. With it, and only with it has he preserved our country, and recorded his name as a glorious warrior."

"No human engine will ever be invented which will be able to resist the bayonet driven intelligently and valiantly by human mind and the human arm."

FRANCE—*Revue Militaire Francaise*—February, 1935.

A REAL SOLDIER: VON LETTOW VORBECK. By Colonel Charbonneau.

Discussing the Memoirs of Colonel von Lettow-Vorbeck, defender of German East Africa during the World War, the author pays homage to this distinguished soldier whose unique and resourceful conduct of the campaign in the heart of tropical Africa excited the admiration of friend and foe. With an army, whose strength never exceeded 3,000 Europeans and 11,300 natives, completely cut off from the homeland and all bases of supply, Colonel von Lettow-Vorbeck faced for four years 200,000 British, Belgians, and Portuguese troops in sub-equatorial Africa.

Living off the land, replenishing his supplies, arms and ammunitions by captures from the enemy, this brave commander refused to lay down his arms until ordered to

do so by the Berlin authorities after the signing of the armistice. At that moment Colonel von Lettow-Vorbeck's command consisted of 20 officers, 120 European troops and 1,200 natives. He had one cannon with forty rounds of ammunition, 37 machine guns, light and heavy, about 1,000 rifles and 200,000 rounds of rifle ammunition. Although the treaty of Berlin of 1878, the author notes, conferred upon Lettow-Vorbeck the right to adopt a course of strict neutrality for the duration of the war, he chose active belligerency in order to compel the enemy to maintain in Africa large contingents of troops which otherwise might have been diverted to the European theatre of war.

The author quotes numerous passages from Lettow-Vorbeck's Memoirs outlining the progress of the campaign, the problems and difficulties, the hardships and privations encountered and endured by this gallant band of defenders, to show the high state of morale, the fine sense of humor, and the unflagging optimism which endured to the end. The author refers with special emphasis to Colonel von Lettow-Vorbeck's tribute to the valor of native troops. A young English officer, Lieutenant Barrett, who fought with the British in that campaign and was captured by the Askaris, referred to them as "gentlemen." The author believes that this tribute to native troops is the finest vindication of the colonial troops of France.

The author states that, upon reading von Lettow-Vorbeck's Memoirs, he discovered not only a military leader of great merit, but a man of courage. Some years ago the British rendered public homage to this gallant foe when he appeared on the streets of London at the side of General Smuts, commander-in-chief of the Allied forces in East Africa, to whom von Lettow-Vorbeck surrendered in 1918; and he adds, the French Army will honor itself when it salutes this gallant soldier who in the most critical situation preserved his faith in the Fatherland.

GERMANY—*Deutsche Luftwacht*—March, 1935.

AIR ARMAMENTS AT THE CLOSE OF 1934

a. *Japan.* The Japanese Army Air force consists of eleven air regiments normally of six companies each, although several regiments do not have that number at this time. The Japanese naval air force comprises 21 squadrons. It is planned to increase their number to 29 by 1937, and to 39 by 1938. The combined air force has a total personnel of 22,000 with 2,050 airplanes of all types. The navy has four airplane carriers and two tenders. Two additional carriers are now under construction. All matériel is Japanese production including some foreign models built in Japan by special license. Airplane

plants located at Mitsubishi, Makajima, Kawasaki, Kawaniski, Wanatabe, and Ishikhamajima.

Japan has three schools for military and two for naval aviation. The combined budget for military-naval aviation for 1934-1935 amounted to approximately 78 million dollars.

The Japanese antiaircraft defense consists of one regiment of four battalions, and a large number of fixed AA defense guns.

b. Soviet Russia. Although the effective strength of personnel and available matériel is unknown, Soviet Russia's military aviation is reported to consist approximately of:

18 air brigades, with 48 groups and 58 independent squadrons;

4 naval air brigades, with 19 groups and 18 independent squadrons;

Non-brigaded units, 5 groups and 7 squadrons;

1 wing, 5 groups;

Total: 77 groups and 83 squadrons.

Approximately 35 per cent of the total (20 groups and 24 squadrons) is pursuit aviation; 34 per cent (31 groups and 2 squadrons) represents bombers; 27 per cent (22 groups and 56 squadrons) is made up of observation planes and 4 per cent (4 groups and 1 squadron) of attack aviation. It is estimated that Soviet Russia has a total of 4,325 airplanes, and of these about 3,250 planes are of the first line.

The smallest tactical unit is the flight (*svyeno*) consisting of three planes. Three flights constitute an independent or separate squadron. The organic squadron of the group (*eskadrilya*) consists of a variable number of planes: ten single-seater pursuit planes, or seven two-seater attack planes, six observation planes or 4 bombers. Three squadrons constitute a group which includes one additional command plane.

The Air Brigade consist of two or more groups. In case of war air brigades or groups are to be assembled in larger tactical units (*Aviatsionnye Gruppi—A.G.*). These may be placed under the direct control of army headquarters or they may be attached to divisions.

The Soviet air force is definitely organized as an offensive arm with special emphasis on bombers, pursuit, and attack planes. The ANI6 (TB3) is the standard type bomber. Its four motors generate approximately 3,000 h.p. Armament consists of four machine guns providing all around protection. One of these bombers recently covered the distance Vienna-Moscow (2,000 km.) in a non-stop flight at an average speed of 210 km.p.h. During the 1934 May-day parade 131 planes of this type flew over Red Square in Moscow. The bimotored bomber ANI4 (TB1) covered 3,400 km. in a non-stop flight. Some of these bombers were experimentally armed with the 2 cm. Oerlikon machine cannon. Equipped with pontoons, this type bomber is also used by the Soviet Navy.

Observation planes and light bombers are largely of the R5 and R5 bis model, a single motor plane somewhat resembling the British Gordon type. They have a speed

of 270 km.p.h. All planes of this type are equipped with radio, however, only two planes in each flight have sending apparatus. The armament consists of two rigid machine guns capable of a rate of fire of 960 rounds p.m. and a twin machine gun mounted in the observer's seat, the "Dyegtyarev" machine gun (250 rds.p.m.). The primary mission of the R5 type plane is the maintenance of liaison with moto-mechanized units.

The bi-motored bomber R6 has a speed of 260 km.p.h. at an altitude of 3,000 meters. It can carry 500 kg. of bombs a distance of 800 km.

Several squadrons are equipped with two-seater autogyro planes. Experiments are being now conducted with several types of attack planes.

The Air Academy includes a Tactical School and a School of Aviation Engineering. Soviet Russia, moreover, has a school for air navigation, a scientific research institute, and 33 schools for the practical and theoretical training of pilots, observers and other personnel. The Ossoaviachim operates 20 preparatory schools for pilots, and plans have already been approved for 60 additional schools.

Soviet Russia produces at present all of its aviation matériel. According to Pierre Coty, French Minister of Aviation, who visited Russia in 1933, within five years (that is by 1938) Russia will be able to produce more airplanes than the rest of Europe combined.

The antiaircraft defense consists of one AA battalion (189 AA guns) for each of the twenty corps. In addition, the artillery reserve includes three AA regiments (90 AA guns). There are a large number of fixed AA installations as well as AA artillery on railway mounts. The number of these and of searchlight batteries is unknown.

Soviet air tactics appear to concentrate on offensive operations, paying particular attention to the tactics of invasion of hostile territory, and the destruction of hostile industrial centers and transportation. The dropping of communist propagandists and agitators in hostile territory to undermine enemy morale is one of the projects. The strategic advantage of Soviet Russia is obvious, for as S. Amiragov pointed out in an article published in the October (1934) number of *Voyna y Revolutsiya*, "the industrial and political centers of Soviet Russia's potential enemies are much nearer to the Russian air bases than is the case the other way around."

—Militär Wochenblatt—March 18, 1935.

IMPORTANT LESSONS OF THE CHACO WAR. By Wim Brandt.

Hostilities on the Chaco front were suspended by an armistice on June 12. The deductions presented by the author are, therefore, particularly timely. Climatic conditions and the nature of terrain, he points out, which prevented the employment of large masses of artillery and cavalry, turned the war into an essentially infantry campaign. The density of vegetation in the tropical jungles

made it impossible to employ cavalry even for purposes of reconnaissance, it did not, however, interfere with the effectiveness of aerial reconnaissance which proved quite satisfactory in identifying troop concentrations and movements under cover of woods.

One of the most important lessons of the Chaco war, in the author's opinion, is the relative value of small elite armies and the levy en masse, with the decision in favor of the latter. At the outbreak of the war, the author states, Bolivia had one of the best armies in South America. During the early part of the war this small elite army fought against the rapidly assembled levies of Paraguay. Although successful initially, Bolivia's army soon spent itself, and inevitably suffered defeat. Only when Bolivia resorted to a general mobilization of her available manpower did she succeed in reestablishing something of an equilibrium.

The author finds that the training of troops in the use of modern weapons is comparatively simple. Generally three months sufficed to turn ignorant, illiterate individuals into fairly effective machine gunners or tank men. The overwhelming strength of modern defense, he states, presages prolonged warfare to the ultimate exhaustion, economic, military as well as technical, of the belligerents. Frontal attacks invariably failed even though defensive positions were thinly held, and reserves frequently absent altogether. Defensive fires of automatic weapons were very effective in breaking up attacks. The Vickers small tank proved unsatisfactory. The "Light Vickers 32," on the contrary, rendered effective service in the attack as well as in the defense. Chemical agents were not used.

The machine pistol, a new weapon used in large numbers, proved a very formidable weapon as did the 81 mm. Stokes-Brandt mortar. It has a range of 3,000 meters and can be carried by three men. The 47 mm. and 65 mm. mortars were unsatisfactory. Field artillery pieces of less than 105 mm. caliber were ineffective. This gun, the author observes, requires the same motive power as the smaller 75's or 65's, and that is, in his opinion, an added reason why there is no real need for a gun of intermediate caliber between the antitank gun and the 105 mm. gun. The Oerlikon automatic gun proved a failure. Two pieces exploded in action killing their crews. In point of actual effectiveness, the Oerlikon proved inferior to all other types of machine gun. It failed to bring down a single airplane.

GREAT BRITAIN—*Journal of the Royal United Service Institution*—February, 1935.

THE FUNCTIONS OF THE TANK. By Major J. K. Edwards, M.C., Scots Guards.

The modern tank developed since the World War in mobility, endurance and fire power. As to its tactical employment, the author states, two schools of thought have crystallized. The one favors independent tank action unrestricted by close coöperation with less mobile troops while the other adheres to the idea that the primary rôle of the tank still is the close support of infantry by

fire and shock action against hostile machine guns.

The dominating factor in the World War, the author writes, was the power of the defense and the impotence of the attack in the face of the devastating effect of the fire of concealed machine guns combined with the use of barbed wire. As a result, the infantryman was loaded down with every conceivable weapon and contrivance to assist him in his contest with the enemy machine gun. Prior to 1917 some success in the attack had been achieved by great barrages, but they eliminated possibility of surprise and cut up the ground to such an extent that the fruits of victory could not be gathered before the enemy could stabilize his front. The tank changed that situation.

The development of the tank since the war rendered timing of infantry and tank attacks increasingly difficult. Thus, the author points out, if the infantry line of departure is 3,000 yards from the objective and tanks are to cover the infantry during the last 2,000 yards, tanks travelling at 15 miles an hour must be on the objective 40 minutes before the infantry, moving at 1½ miles an hour, can arrive. During this time tanks would be exposed to antitank weapons while unable to exploit their own mobility. Again, a tank battalion supporting infantry advances over a front of 1,500 yards, thus barely covering the front of one infantry battalion. It will leave the enemy outside the zone of tank action free to concentrate on the attacking infantry. These considerations, the author states, cause officers of the Royal Tank Corps and others as well to look upon close coöperation with infantry attacks with increasing impatience, and they are turning to operations in which tank units maneuver like battle squadrons at sea. They argue that it is uneconomical to employ a costly weapon with a radius of action of a hundred miles and a speed of 15 miles an hour to support infantry within a restricted area, perhaps even over terrain unsuited to tanks. Such attacks, they hold, will frequently be made against the strongest portion of the hostile front, and that the preparations for the infantry attack will most likely prejudice the chances of surprise. They believe that tanks could give maximum assistance to infantry by breaking through the hostile front elsewhere, and operating against enemy gun lines and nerve centers. Such plan would exploit the special characteristics of the tank, and the moral effect it would produce would support the infantry at a minimum cost to tanks.

Those holding opposite views, the author states, do not minimize the potentialities of tanks employed with armored and mechanized forces, yet they are convinced that the infantry still is required to attack and capture defended positions, and to do so successfully the infantry requires an antidote to concealed machine guns, and the war proved that the tank is the most effective weapon to deal with that form of opposition. Hence, they argue, if close coöperation between tanks and infantry is to be exceptional, what is there to take the place of the tank?

The author believes that the effectiveness of the support given by tanks attacking independently should be

greatly discounted for the reason that tanks are no longer a novelty as they were in the World War when their moral effect frequently proved decisive. Counter attacks by the defender's tanks must be expected, and since these will have the advantage of familiarity with terrain, the prospects of success become doubtful. In the author's opinion, tanks will have many tasks to perform, hence the design of tanks and the organization of tank units must be suited to their probable employment. The infantry support tank should have cross-country mobility, a good machine-gun platform, and a small crew. It should be a low-cost weapon. Endurance is a secondary consideration. In the attack it must render maximum support; in the defense it should form a mobile reserve of fire power available for counterattacks. The author regards the incorporation of infantry tank battalions within the division a practical necessity of the day.

HUNGARY—*Magyar Katonai Szemle*—March, 1935.

THE REORGANIZATION OF THE ITALIAN ARMY. By Vitez Stephen Berko, Jr.

The recently effected reorganization of the Royal Italian Army provides four Army headquarters, 12 corps and a separate Sicilian command. These comprise 29 infantry divisions and three motorized divisions.

The infantry consists of one brigade of grenadiers of three regiments, 29 infantry brigades (88 regiments of the line and 12 regiments of bersaglieri), 4 brigades of Alpine Rifles (9 regiments) and one tank regiment. A total of 112 regiments. The officer complement of the infantry includes 273 colonels, 737 lieutenant colonels, 906 majors, 3,132 captains and 2,589 subalterns.

The three cavalry brigades comprise 12 regiments and one tank regiment. The officer personnel of the cavalry consists of 25 colonels, 76 lieutenant colonels, 100 majors, 263 captains and 230 subalterns.

The artillery is organized in twelve corps groups and a separate Sicilian artillery group with a total of 30 regiments of field artillery, 12 regiments medium artillery, 1 regiment horse artillery, 4 regiments mountain artillery, 10 regiments heavy artillery, 5 regiments AA artillery, and one regiment each of light and mixed artillery. There are 135 colonels, 363 lieutenant colonels, 460 majors, 1,547 captains and 1,378 subaltern officers in the artillery arm.

Technical troops, like the artillery, are organized in corps units, and include 12 corps engineer regiments, 2 sapper regiments, 2 regiments of pontoniers, 1 railway regiment, and one experimental detachment.

The Italian Army now has 13 tank groups and a Tank Headquarters consisting of 1 general officer (brigadier), 4 colonels and 36 other officers. The number of general officers is 234 including 28 lieutenants general, 62 majors general and the balance brigadiers.

ITALY—*Rivista di Fanteria*—March, 1934.

NEW EQUIPMENT FOR COMMUNICATIONS. By Lieut. Col. Carlo Micheletta and Giovanni Rossoni.

The authors discuss the modern means of signal com-

munications and some of the most recent types of instruments adopted for military use. Among these they describe a portable field telephone weighing approximately seven pounds. It is provided with a standard type mouth piece as well as with a laryngophone for use while wearing the gas mask. Lightweight portable wire-drums permit maintenance of telephonic communications on the march as well as in any other mobile situation.

The Italian Army also developed a portable dry-cell operated signal lantern weighing about 19 lbs. Its effective sending range is approximately 2 to 4 km. in daytime and a maximum of 10 km. at night.

A portable radiophone set is now being issued to Italian infantry regiments for service within the regimental sector. It is dry-cell operated, with batteries capable of seven days' service. The apparatus weighs more than the specified 32 lbs. It is carried strapped to the back of a soldier ready for constant use. It has a radius of action of 16 km. when used as a radiophone, and 12 km. as a wireless telegraph set. The authors note that the most serious problem presented by this most modern equipment of communication is the difficulty of procuring operating personnel possessing the necessary educational qualifications to secure efficient functioning.

U.S.S.R. — *Voyna y Revolutsiya* — January-February, 1935.

MILITARY DEVELOPMENTS OF 1934 IN JAPAN, GERMANY, AND POLAND. By A. Petrov.

The author states that Japan, Germany, and Poland have concluded an anti-Soviet alliance, and that they are now trying to secure the adherence of other states contiguous to Soviet Russia. According to available information, he states, the Japanese program of army reorganization and reëquipment is progressing more slowly than was expected. Nevertheless, it will be concluded by the end of 1935. He states that at the beginning of the current year the Japanese Air Force consisted of more than 1,600 first line airplanes divided about evenly between the Army and Navy. The effective strength of the Japanese Army is about 320,000 men. Army training emphasizes landing and night operations, and attacks against fortified positions. The Japanese Army modernized its tactics, and developed coöperation of the several arms, notably between tanks, aviation and chemical warfare.

Germany, the author states, organized 14 new divisions and one motorized division. He places the strength of the German Army at 300,000, and states that it is particularly well provided with heavy and AA artillery, tank battalions and antitank guns. Hitler's blackshirt storm detachments have been transformed into a militia. With universal compulsory service reintroduced, the German Army has become one of the most formidable war machines in Europe. The German air force has 700-1,000 planes. About 150 plants employing 120,000 workers are engaged in the production of war matériel.

BOOK REVIEWS

A HISTORY OF THE GREAT WAR, 1914-1918. By C. R. M. F. Cruttwell, Principal of Hertford College, Oxford, formerly fellow of All Souls College, Oxford. Clarendon Press, 1934. 630 pages. Price \$5.50.

By Major General H. D. Todd, Jr., Retired

Mr. Cruttwell has covered practically all the military and naval operations of the World War. While he did not attempt to consider the causes of the war or to discuss the settlement which followed, he aimed to present "the general reader with an accurate, intelligent, and interesting account of the greatest conflict between civilized states."

In a preliminary discussion he brings out the power that the people in each country exercised on the State. In their desire for both security and happiness they were willing to go to extreme lengths and the author states that "it is an amazing paradox that, in the very age when the working class were everywhere gaining power and increasing in comfort, when commercial competition was becoming keener and keener, they should have been ready, nay, often anxious, to impose upon themselves this tremendous servitude and potential risk."

Then follows a consideration of the plans of both the German and French leaders, and he refers to the "wild and premature offensive" resulting from the French Plan 17. The events leading up to and including the battle of the Marne are clearly described and then the author passes to the operations around Tannenburg and Lemburg, and to the 1914 campaign in Poland, before returning to the Western Front. By this method the reader is able to carry a continuous picture of the great conflict, particularly as the operations at sea are included in their chronological order. The reasoning and conclusions on the Dardanelles-Gallipoli campaign will be concurred in by most educated soldiers. The author's account of gas attacks and his views on the ethics of gas warfare are very interesting.

In reference to the battle of Loos, he is sharply critical of the British leader, Sir John French. In reference to this officer's successor, Marshal Haig, Mr. Cruttwell states: "The new Commander-in-Chief was also unfortunately a Cavalryman." "Religious to the depth of his Lowland soul, he gradually acquired an almost Cromwellian conviction that God had marked him out as an instrument for the triumph of the Allies. If adversity, as Bacon says, is the blessing of the New Testament, Haig grew with disappointment and disaster, until he stood out in the last four months of the war as a very great general."

With the assistance of clear maps, the account of the Russian retreat in 1915 is more easily followed than is the case with most other histories. "This great campaign

had been a triumph not of the big battalions—for the Central Powers were outnumbered by about 450,000 men, but of superior organization."

While a knowledge of history should convince every one that it would be most improbable if not impossible for the United States to remain absolutely neutral in case of war between nations possessing sea power, many apparently well-educated Americans are insisting that this country could and should maintain such neutrality.

These people should carefully read the chapter on the "British Blockade and the First German Submarine Campaign." To write a history of the military and naval operations throughout the four years of the World War is a stupendous task. Moreover the work grows greater as each year passes and more and more data becomes available. Mr. Cruttwell's investigations evidently covered an enormous field. His work shows great industry, a highly educated and logical mind and, in general, his statements are supported by excellent authorities—authorities referred to by footnotes. In one respect, however, he leaves the realm of facts for that of fancy or hearsay. This is when he refers to some of the operations of the American troops; a procedure, by the way, that is typical of many if not all Englishmen who write on incidents involving our troops. To begin with, our St. Mihiel offensive is referred to as the French-directed battle of St. Mihiel. Then as another example, Mr. Cruttwell in reference to our Meuse-Argonne offensive and the transfer of our troops from the St. Mihiel Sector writes: "The traffic congestion became fearful. It is said that 700 men were starved to death in the front-line trenches; many units after receiving no rations for four days, returned to the rear to fetch them. Up and down traffic had been unwisely allowed on the same roads, and on one occasion an absolute block occurred for twelve hours. British and French officers were hurriedly sent to reorganize the whole system."

General Hugh A. Drum, former Chief of Staff of the 1st American Army recently told the reviewer that General John DeWitt and his assistants under the general supervision of General Drum and his staff planned the entire movement from the St. Mihiel sector to the Meuse-Argonne area and that when the French officers above referred to appeared at First Army Headquarters they were politely told that their presence was neither required or desired; whereupon with equal politeness they departed.

The British brain trusters did not appear. Also, the reviewer having taken two brigades of field artillery from one sector to the other saw no Frenchmen and received no orders from Frenchmen until he left the American Sector and entered the area of the Second French Army just before the last night's march. The entire movement went

as per the march table worked out at the Headquarters of the 4th (American) Army Corps. There was no delay and no congestion seen at any of the crossroads. Again to those of us who were either in or near the front line trenches throughout the St. Mihiel and Meuse-Argonne offensives the report that 700 of our men starved to death is astonishing to say the least. General Drum never heard of it.

Road jams did occur, but it is generally understood they also occurred on both the British and French fronts. Throughout the movement of the large force that was transferred to the Meuse-Argonne front, French assistance was limited to lending trucks and drivers.

Why, what was published as propaganda to secure the distribution of our men among the British¹ and French units should appear in an otherwise accurate history is hard to comprehend.

The reason may be in the author's own statement: "I am writing for English readers." Or, it may be due to that insular prejudice often possessed by those who are born and brought up on a small and somewhat isolated island.

Through the text runs an interesting comparison of the ideas of politicians and those of soldiers and sailors. What the military men accomplished is history. What would have happened if they had been absolutely controlled by politicians is conjecture. The author served during the war in the British Army and consequently writes on this subject in a fairly judicial manner.

In every war the professional soldier is constantly besieged by civilians who either have plans guaranteed to immediately subdue the enemy or have inventions that will quickly destroy the hostile forces. With his knowledge of the art and science of war as developed through the centuries, the soldier knows he must become conservative and refuse to adopt new methods and new tools until they are thoroughly weighed against experience.

Being an amateur, this conservative attitude apparently does not appeal to Mr. Cruttwell. Another interesting phase of the book is contained in its statements in regard to the estimates of the various leaders by the officers and men of their command. The author is very keen in thus recording what may be termed the human side of history and the book in this respect furnishes ample evidence of what is believed to be a self-evident but seldom announced truth, viz.: the efficiency of a soldier or a sailor is better judged by his subordinates than by his superiors.

The epilogue contains another self-evident truth. "The events of 1914-1918 have proved to demonstration that war between great States, equipped with all the resources of science, cannot now be regarded as an 'instrument of policy.' It becomes inevitably a struggle for existence, in which no limit can be placed on the expenditure of men and money, no objectives can be clearly defined and no peace by an agreed compromise attained."

¹Imagine placing the men of the 7th (Irish) Illinois regiment or those of the 69th (Irish) New York regiment under monocol British officers!

In general the book presents a concise and clear picture of the operations on land and sea throughout the four years of the war and should prove of value to both the statesman and the soldier.

BAUTECHNISCHER LUFTSCHUTZ (Architectural Aspects of A.A. Defense). By Hans Schoszberger. 240 pages. Publishers: Bauwelt Verlag, Berlin. Price MK.7.50. Reviewed by Major Alexander L. P. Johnson, Infantry.

Architecture ever played an important rôle in the science of warfare, hence it is to be expected that the most recent developments in this field should seek to meet the situation created by the newest weapon of warfare, the airplane. In eight interesting, compact chapters the author presents an analytical study of the aerial arm, its various types of missiles of destruction, their accuracy, effect and effectiveness, and seeks to determine the appropriate methods and means of defense against each of them. The survey of the problem covers the minutest details, and is, therefore, a veritable storehouse of most valuable information.

The chapter dealing with the problem of large cities in the war of the future is particularly interesting. Quoting the Russian Koshevnikoff to the effect that "the degree of destruction of a city is proportionate to the density and the height of its structures," the author states,

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that the war of the future will unquestionably mean the end of large cities. New methods of construction and city planning must be devised to provide adequate protection against the menace from the air. The author discusses several types of city plans which will afford to the city of the future if not complete protection, the maximum that architecture can and must provide in this respect against hostile aviation.

A complete bibliography of the literature on war and architecture, aerial, chemical, and bacteriological warfare and kindred subjects concludes this valuable study. One hundred and fifty illustrations and six charts accompany the text.

FLAGS OF AMERICA. By Colonel William H. Waldron, U. S. Army. Standard Printing and Publishing Company, Huntington, W. Va. Illustrated. Fifty cents.

The 48 flags that have entered into the history and evolution of the American Flag are illustrated in color. These, together with a concise account of how each of them fits into the history of the United States, constitute the text of the interesting book, *Flags of America*.

The author introduces the Raven Flag of the Vikings as the first banner to float over the American continent. This he follows with the flags that entered into the discovery and colonization period. The series of colonial banners patterned after the flag of Great Britain and which show how very difficult it was for the American colonies to get entirely away from the flag of the mother country.

When Washington assumed command of the colonial army at Cambridge on January 2, 1776, he hoisted the Cambridge Flag and honored it with a salute of 13 guns. This was the first emblem in which the 13 alternate red and white stripes appeared. The union was the King's Colors of Great Britain.

On June 14, 1777, the continental Congress adopted the Stars and Stripes and from then on they have formed the basis of the American Flag. When Kentucky and Vermont were admitted to the Union a stripe and a star were added for each of the new states. It was the 15-stripe, 15-star flag which floated over Fort McHenry, Maryland, and inspired Francis Scott Key to write the immortal lines of our National Anthem, "The Star Spangled Banner."

Four of the State Flags are included in the series: Connecticut and Rhode Island, under which banners the troops from these colonies were sent to join the forces of General Washington around Boston. The other two are the Lone Star flag of Texas and the Bear Flag of California.

The flags of Mexico, under which the invasion of Texas was made by Santa Ana, and the Alamo Flag under which the heroes of Travis fought and died are also included in the book.

Finally the four flags of the Confederacy are illustrated. These are the Stars and Bars, adopted at Montgomery.

Alabama, March 4, 1861; the Battle Flag of the Confederacy which grew out of an incident at the First Battle of Bull Run; the second Confederate flag, which could be so readily mistaken for a flag of truce when the union was covered up; and the final Confederate flag on which a wide red stripe was placed on the fly end of the banner.

The concluding section of the book illustrates, in color, the method of displaying the Flag and the text gives the rules for rendering the proper respect and courtesies toward the National Emblem.

Coast Artillery Activities

(Continued from page 306)

and drills may be obtained by writing to Captain C. M. Mendenhall at Fort DeRussy.

OVERS AND SHORTS

A novel method of "spearing" swordfish was used recently by the personnel of Battery "C," 55th Coast Artillery, commanded by Lieutenant L. T. Vickers and Lieutenant E. T. Ashworth. We will have to admit it was a little rough on the fish.

When "C" Battery fired the 155-mm. G.P.F.'s this spring, so accurate was the aim of the battery that one shot leveled the superstructure of the target and a second knocked it clear of the water. The towing tug decided to come ashore for a new target when it was discovered that a giant swordfish had descended on the target in the splash of the second shot. The fish was brought to the Armstrong pier where the catch was verified. The lieutenants were deprived of their captive, however, and it is believed that members of the tug crew made away with the catch. How's that for a fish story?

Brigadier General Robert S. Abernethy presented 32 members of the Sector track and field team with medals as individual awards recently at a ceremony held at Brigade Headquarters at Fort DeRussy.

We regret to announce that Colonel Avery J. Cooper and his family have been ordered to return to the mainland on the August transport. The Colonel has been a very popular commander of the King's Post and we all hate to see him leave.

General Drum recently announced that the Secretary of War, the Honorable George H. Dern, will visit Hawaii late in September. This is certainly great news and we know that the Secretary will like our Hawaiian hospitality which is unexcelled by any other locality in the world. We will probably have a Department Review, and the rest of you readers can see it in the movies.

Colonel W. V. Carter, our Adjutant General, left in May for a new station on General Callan's staff. We have done our best to make a Coast Artilleryman of Colonel Carter and we believe we did a fairly good job. The Colonel learned to speak our language and make personnel assignments with a slide rule. Colonel E. C. Desobry has just joined and is trying to rectify the mistakes of the writer while he was "pinch hitting."

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