COAST ARTILLERY JOURNAL

GENERAL MALIN CRAIG

NOVEMBER-DECEMBER, 1935

Gunners' Instruction

No organization can afford to be without these pamphlets for the training and instruction of the enlisted personnel, they cover the requirements for qualification as set forth in Training Regulations 435-310 (Examination for Gunners).

NUMBER	GUNNERS' INSTRUCTION PAMPHLETS	PRICE
I.	2nd Class Gunner, Antiaircraft Artillery (Except Searchlight Btry.)	$0.75
II.	2nd Class Gunner, Antiaircraft Artillery (Searchlight Btry.)	0.50
III.	1st Class Gunner, Antiaircraft Artillery (Except Searchlight Btry.)	0.65
IV.	1st Class Gunner, Antiaircraft Artillery (Searchlight Btry.)	0.40
V.	2nd Class Gunner, Fixed Seacoast Artillery (All Units)	0.55
VI.	1st Class Gunner, Fixed Seacoast Artillery (All Units)	0.50
*VII.	2nd Class Gunner, Mobile Seacoast Artillery (All Tractor-Drawn and Railway Units)	0.75
*VIII.	1st Class Gunner, Mobile Seacoast Artillery (All Tractor-Drawn and Railway Units)	0.75
*IX.	Expert Gunner, Antiaircraft Artillery	1.25
*X.	Expert Gunner, Fixed Artillery	1.00
*XI.	Expert Gunner, Mobile Seacoast Artillery	1.25
XII.	Submarine Mining	1.50

*Indicates pamphlets that recently have been revised and brought up to date.

All Pamphlets are now available. They cover the instruction of all 2nd Class, 1st Class, and Expert Gunners of Antiaircraft, Fixed and Mobile Artillery.

These pamphlets are invaluable for the training and instruction of Coast Artillery personnel. Each enlisted man of a submarine mine detachment should have a copy of "Submarine Mining"

The above prices are retail (postpaid) for single copies. On orders for 10 or more copies to individuals we allow a discount of 10% (postpaid).

To ORGANIZATIONS of the military establishment a discount of 20% will be allowed on any order regardless of number. F.O.B. Washington, D. C.

The Coast Artillery Journal

1115 17th St., N. W. Washington, D. C.

THE COAST ARTILLERY JOURNAL

Member Affiliated Military Magazines

Published as the Journal of the U. S. Artillery from 1892 to 1922

LIEUT. COL. E. E. BENNETT, C.A.C., *Editor*

VOLUME LXXVIII NOVEMBER-DECEMBER, 1935 NUMBER VI

Publication Date: December 1, 1935

Contents

Greetings 418

Pursuit in Cooperation with Antiaircraft Artillery 419
By Major Claire L. Chennault.

Chemical Security — Part III 424
By Captain Alden H. Waitt.

Fifty Million Frenchmen Can Be Wrong 427
By Captain C. T. Lanham.

The Elements of Leadership 437
By Major General Charles E. Kilbourne.

Developments in Organization, Armaments and Equipment of the Coast Artillery Corps 439
By Colonel Henry T. Burgin.

Emergency Methods of Fire Control 443
By Captain James T. Campbell.

The British Capture of Manila—1762 446
By Major Earl Landreth.

The Department of Enlisted Specialists 451

March of the 145th Field Artillery 455
By Captain John H. Pitzer.

Seven Years A-Scoring 459
By Captain Homer Case.

Military English 463
By Captain Joseph I. Greene.

Coast Artillery Activities 467
Classification of Coast Artillery Officers — Hawaiian News Letter — Fort Monroe News Letter — Harbor Defenses of San Francisco — Corregidor News Letter.

News and Comment 474
Order of the Illustrious — Election of Officers — "The Artillery Acquitted Itself Magnificently" — San Francisco Chapter—Coast Artillery Officer Honored—Over the Top—245th Coast Artillery—What the Instructors Are Doing—Things the Army Does Besides Fight—Washington University Points the Way—Warrants for Cadet Non-Coms—Promotion in the National Guard.

Coast Artillery Board Notes 479

The Foreign Military Press 483
By Colonel A. L. P. Johnson.

Book Reviews 487

Coast Artillery Orders 393

Index, 1935, Volume LXXVIII 394

THE COAST ARTILLERY JOURNAL IS NOT RESPONSIBLE FOR OPINIONS EXPRESSED IN PUBLISHED CONTRIBUTIONS

THE COAST ARTILLERY JOURNAL pays for original articles upon publication.

Published bi-monthly under the supervision of the United States Coast Artillery Association for the information of the Coast Artillery personnel of the Regular Army, National Guard and Organized Reserve.

Publication Offices, 1406 East Franklin Street, Richmond, Virginia; Editorial Offices, 1115 17th Street, N.W., Washington, D. C.

Terms: $4.00 per year. (Coast Artillery Association members, $3.00 per year.) Single copies, 75 cents.

Entered as second class matter at Richmond, Virginia, under the Act of March 3, 1879, for mailing at special rate of postage provided for in Section 412, Act of October 3, 1917.

Copyright, 1935, by the United States Coast Artillery Association.

Greetings

From the Chief of Coast Artillery
To the Coast Artillery Personnel

AT THE APPROACH of the season of the year when the spirit of good will prevails, it is altogether fitting that I extend to the officers and enlisted men of the Coast Artillery Corps a few words of appreciation for the fine spirit of loyalty and devotion to duty they consistently manifest. I am fully conscious of the splendid morale and the high standards of training that exist in all components of the Corps. The whole-hearted manner in which officers and men have labored, often under trying difficulties, to carry out the policies of the War Department, encourages me to view the future with assurances that the Coast Artillery Corps will carry forward the high ideals and best traditions of the service.

I view with satisfaction the commendable progress that has been made in all lines of endeavor, especially the efficient manner in which unusually heavy training schedules have been handled, and great credit is due all connected with their conception and execution. The projected development of artillery material and equipment is most encouraging. Officers are devoting their time and talents to the solution of problems which have long perplexed the Corps; many of these problems are now nearing a satisfactory solution.

Never before have the civilian components of the Corps reached such a high state of training and efficiency. The work being done by the National Guard is most commendable. In the matter of supply of material there is much to be desired, but the training of the Guard has reached a point where it will be able to function efficiently immediately upon mobilization.

There is an ever-increasing amount of interest being manifested by members of the Reserve. Problems and training projects heretofore considered impossible are now a matter of routine. The work in the extension school courses, as reflected in the number of credit hours earned, has reached a level never before attained. The loyalty and devotion to a cause on the part of Reserve officers merits unstinted praise. I cannot too highly commend them for their zeal and interest to the end that they may be better prepared to carry out their duties and obligations as citizens and officers of the Army.

For these fine accomplishments I desire to extend to the entire Corps, both officers and enlisted men, my best wishes for a

Merry Christmas and a Happy New Year

HARRY LEE STEELE,
Major General,
Chief of Coast Artillery.

Pursuit in Cooperation with Antiaircraft Artillery

By Major Claire L. Chennault, A.C.

"Formation Flight," a Camera Study by Qm-Sgt. Alfred Hillier, USMC.

TECHNICAL development and the trend of military thought indicate that bombardment aviation may prove of decisive importance in the next war. Judging from the preparations that are being made in every country in the world, it is certain that the initial phase of the next great war will be characterized by bombardment operations.

Aerial bombardment constitutes a threat that cannot be disregarded. Avoiding conflict with armed surface forces, bombardment will endeavor to strike directly at the industrial, economic and social structures of the enemy nation. Every individual within range of hostile bombardment will be aware of the menace of the aerial weapon.

The danger is so real and of such magnitude that we might well afford to devote more thought and effort to making preparation for adequate defense. The purpose of this article is to relate briefly the measures that were adopted during the World War to secure coöperation between the two principal anti-bombardment weapons—pursuit aviation and the ground guns—and then to develop means and methods which could be employed in defense against aerial bombardment today.

General Ashmore, in "Air Defense," pages 100 to 105, describes the only organized effort made to deny hostile bombardment in an area in the vicinity of the front lines:

"After attacks on various places in our back areas, Calais, Audruicq, Arras, St. Omer, etc., in the first half of 1917, the German bombers turned their attention to the forward zone in the northern half of our line. Sixteen sections of searchlights were therefore concentrated between the coast behind Nieuport and neighbourhood of Ypres. A really efficient lighted area was thus established for the first time in the war. As the organization here got into working order, the enemy machines were driven up from 4,000 feet to more than twice that height, and our casualties on the ground were reduced to the small minimum to be expected from indiscriminate bombing over a large area.

"At the beginning of 1918, the center of gravity of bombing activity shifted southwards, and seventeen sections of searchlights were distributed to form a continuous belt close up to the front lines of the 3rd and 5th Armies. Bombing was checked in the lighted area, but it gradually came to be realized in France, as it had been in England, that to put a stop to bombing you must bring down enemy machines, and that to bring them down in sufficient numbers the coöperation of night-fighter machines is essential.

"Most of the searchlights were by this time equipped with lorries, but there were still some non-mobile sets. Fourteen of these latter were lost in the German breakthrough in the spring of 1918. The loss was a blessing in disguise; it hurried up the issue of improved equipment.

"After the German advance was brought to a standstill,

Amiens was severely bombed, 600-lb. bombs being used in large numbers. The guns and lights that had been collected after the retreat and were not installed here did good work, and most of the bombs fell outside the town.

"The success of our night-fighter pilots in England on 19th May finally convinced our G. H. Q. in France of the value of this form of defence.

"In June, No. 151 Squadron, made up of a flight from each of three fighter squadrons of the London Air Defence, together with some searchlights, also trained in London defence tactics, went over to France.

"The squadron was at first stationed near the Foret Crecy, not far from Abbeville. It was equipped with a continuous wave wireless set, by means of which it was kept in constant touch with the forward antiaircraft observation posts, regarding the movement of enemy bombers. The searchlights were disposed in a semicircle about eight miles east of Abbeville, and on receipt of alarm our machines patrolled over them.

"After the arrival of No. 151 Squadron, the enemy made no attempt to bomb Abbeville, but our machines operating over some of the other areas met with considerable success.

"On 10th August, Captain A. B. Yuill, who had already accounted for one of the five Gotha victims of that period, succeeded in bringing down a Giant. This was a machine with five 260 h.p. Maybach engines; it carried a crew of nine men. It proved an easy target for the searchlights, owing to the large amount of exhaust smoke, which showed up distinctly when illuminated by the beams. A very large concentration of searchlights attracted four pilots to the scene, Captain Yuill among them. The Giant was attacked from all sides, but Yuill got into close quarters, about twenty-five yards, and did not fire a shot until he had settled below and behind the Giant's tail. He then opened fire with three short bursts, and put one of the engines out of action. The next two bursts set the fuselage alight about the rear gunner's cockpit. The Giant started going, nose down, and turning on one side; it then dived still steeper, burst into flames, and one set of wings dropped off.

"The victory is typical of the correct tactics to employ for the attack on a bomber at night. As long as the scout pilot was collected and took his time to attain the proper position, the result of this fire was nearly always decisive. Over-eagerness or fire at long ranges seldom produced any result.

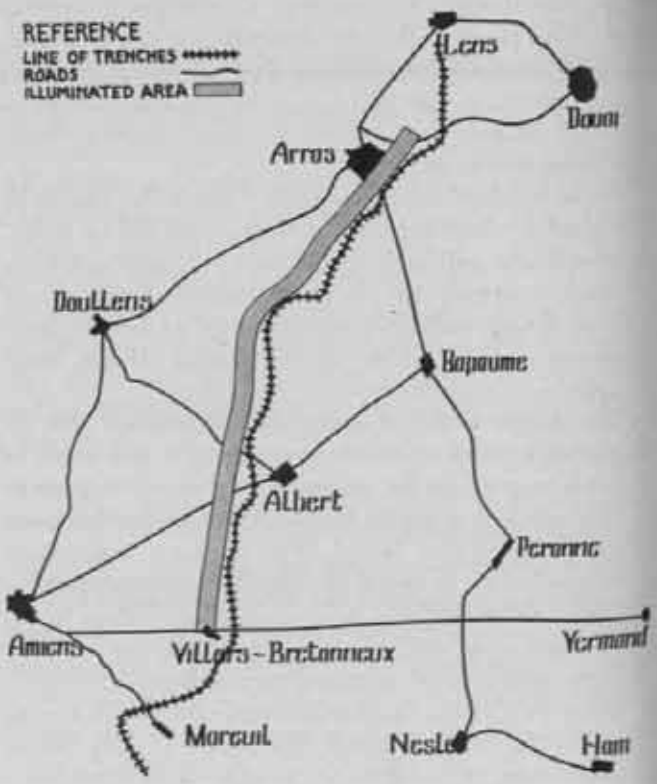
"Intimately connected with these tactics was the action of the searchlights. We have seen how searchlight beams, following a bomber closely, can help the scout pilot to get into touch even if the target is not actually illuminated. Indeed, many scout pilots at one time held that the searchlights should stop short at this, and that the attempt actually to illuminate the bomber would only end in the exposure of the fighter machine. As the searchlight work improved, it was found to be far better to hold the bomber in the beam, even after combat had been joined.

"The searchlight crews were quite capable of lighting the bomber without exposing the fighter. A bomber held in a strong concentration of beams is rendered very helpless. The crew can hear nothing but the sound of their own engines; the effect of the brilliant light reflected from every surface of the machine is so dazzling that it is practically impossible to see anything. The fighter can take up his attack position unseen and unheard; the first the bomber knows about it is the passage of the bullets through the fuselage.

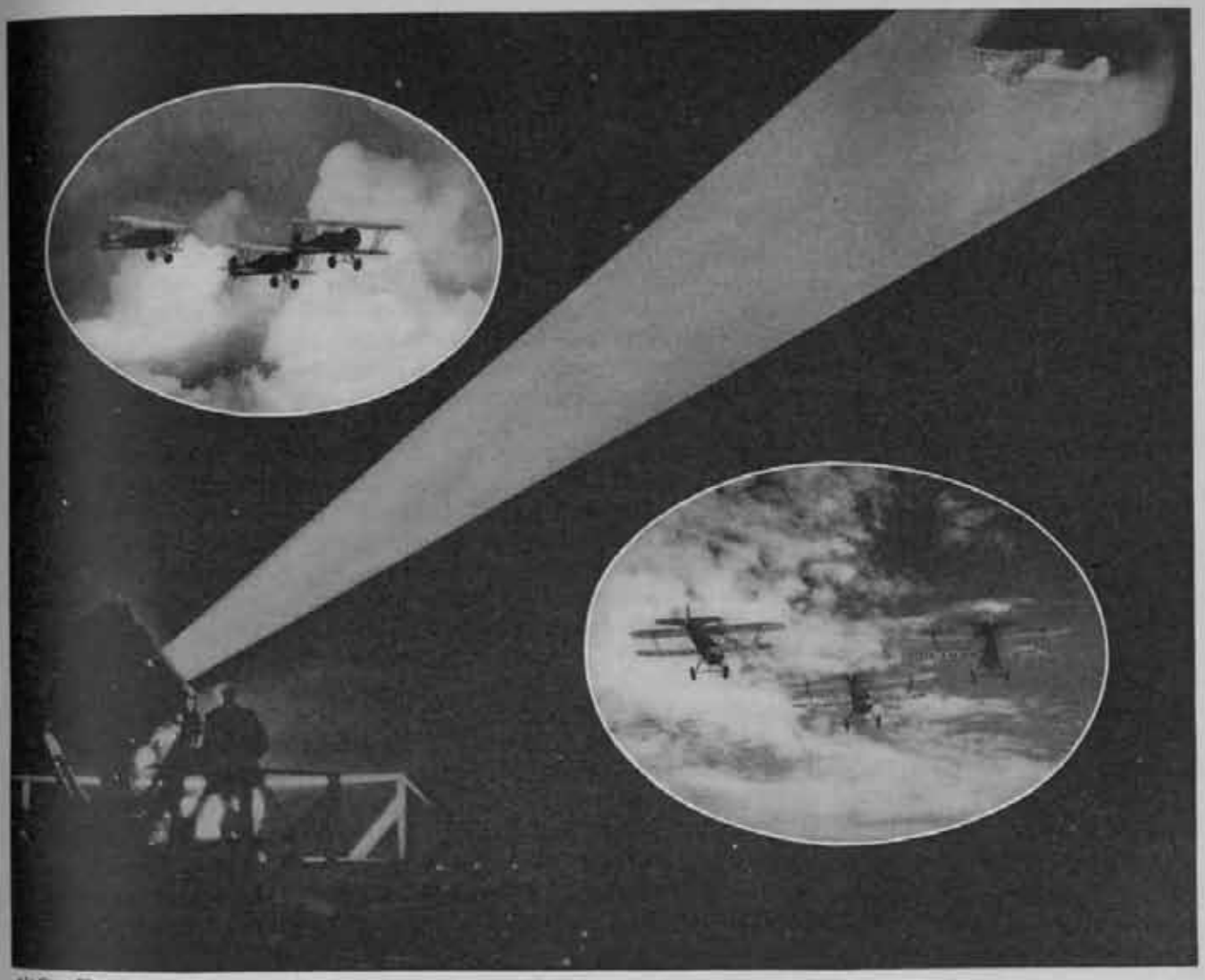
"Although during August, after Captain Yuill's success against the Giant, five more bombers were shot down, the results did not satisfy either the squadron commander or the antiaircraft people on the ground; enemy bombing in the front area, and particularly on the roads, was still heavy and effective. It was decided to patrol farther forward. A thick belt of searchlights was formed close up to the line from the north of Arras to the road running east from Amiens.

"Success was immediate and striking; between the 13th September and the end of the month the squadron working in excellent coöperation with the antiaircraft guns and searchlights, destroyed fourteen bombers and put an end to the enemy's activity in that part of the line.

"During the general advance of our armies, the searchlight belt was pushed up as close as possible to the front. This moving warfare entailed very heavy work, in which our detachments were effectively helped by over 1000 officers and men of the American Engineers, who had been attached to learn the work. Some of these Americans were employed towards the end to man captured German searchlights.



Map showing illuminated area and area of operations of Squadron No. 151, Night Pursuit.



Air Corps Photos

"Owing to the remarkable success of No. 151 Squadron, G.H.Q. in France asked in October for enough night-fighter squadrons to cover the whole of the British Front. The general condition of the war undoubtedly made raids in England less likely, for the time at any rate; and so long as the framework of the ground organization and control system were left intact, the strength of the London defences could always be restored at a day or two's notice.

"The War Cabinet, on 18th October, decided to raise the number of night-fighter squadrons in France to five. They were to be made up in the London defences, and were to go out accompanied by the searchlights that had been working with them."

Despite this experience of the Royal Air Force, there is a general impression that no attempt was made to deny hostile night bombardment, except in defense of a point such as London and Paris during the World War. Many authorities today maintain that only the defense of a point is practicable. Referring again to the mission of pursuit on the defensive "to deny freedom of action of hostile aerial forces," we are impressed by the fact that no exception to this general mission is made for night pursuit operations. The mission of night pursuit is, "to deny freedom of action to hostile aerial forces" and not "to defend a given point or area." In executing its mission, night pursuit may operate over areas where there are no profitable targets for hostile bombardment.

In order to perform its true mission of denial rather than of strict defense, night pursuit must be supported by adequate auxiliary services. These services consist of searchlights and the Aircraft Reporting Service.

The requirement for searchlights is that the lights be disposed so as to provide the required degree of illumination in the area where denial operations are to be conducted. The exact degree of illumination required will depend upon such factors as meteorological conditions, size of hostile aircraft or size of formations, and amount of reflection from surfaces of hostile craft. While the objective of the searchlights will be to illuminate and hold the bomber in a beam until a pursuit plane can make its attack, the pursuit pilot can locate and attack the hostile airplane without the aid of direct illumination.

The same requirements for the Aircraft Reporting Service exists for night pursuit, as for day pursuit. Briefly these requirements are:

To detect, locate, and report the approximate position of hostile aircraft at frequent intervals.

The record of these operations impresses one with the importance of the following requirements:

The necessity for having pursuit units properly trained and equipped for night operations.

The necessity for having an adequate number of searchlights for the illumination of the proposed area of operations.

The necessity for having an effective Aircraft Reporting Service, properly trained and equipped.

The necessity for close coöperation between all elements of the defense. These requirements could be satisfied in England only by establishing unified command.

We have had few opportunities for developing coöperation between our own antiaircraft and pursuit aviation for either day or night operations in this country. Both services have been so busily engaged in developing their equipment and individual efficiency that neither has given much thought to developing the coöperation necessary to effective team work. It is unfortunate that this condition exists, and steps to correct it should be taken immediately. Effectiveness in war depends upon peacetime training; and it is especially necessary that our aerial defense be effective from the first hour of hostilities.

During December, 1934, a joint operation involving the employment of one pursuit airplane against one bombardment airplane, with four searchlights and a hastily-organized Aircraft Reporting Service supporting the pursuit operation, was conducted at Maxwell Field.

Due to lack of equipment, particularly searchlights, the pursuit airplane was required to defend a designated point. The bombardment airplane was required to approach within the limits of a 90° angle at any altitude between six and twelve thousand feet.

The objective of the searchlights in this exercise was to illuminate and hold the bomber in the beam while the pursuit airplane made contact and delivered its attacks.

The listening posts established by the AA Battery were used as observation—listening posts for the Aircraft Reporting Service. These posts were connected by direct telephone to Defense Headquarters where the Battery Commander and the Air Officer were stationed. This headquarters was equipped with a radio (voice) transmitting station.

Detection of the bomber was accomplished by ear by personnel in the observation-listening posts who endeavored to locate the airplane within the limits of a square containing nine square miles of area. This information was telephoned to Headquarters where it served to alert both the searchlight crews and, being relayed by radio, the pursuit pilot who was equipped with two-way radio. As the bomber progressed toward its objective, it was picked up by the sound locators, its altitude and exact position estimated, and eventually illuminated by the searchlights.

Upon receiving the first information of the approach of the bomber, the pursuit pilot who was cruising in the rear of the sound locator, proceeded toward the estimated location of the bomber with the expectation of being in its vicinity when first illuminated. As he proceeded outward, he received subsequent and more accurate reports of the bomber's position and altitude, thus being enabled to regulate his flight so as to approach the interception from a lateral position slightly below the level of the bomber rather than from above and the rear.

The first method of approach, laterally and from below, has the advantages of making the interception more rapidly and of permitting the pursuit plane to attain position for effective fire with very little chance of being observed from the bomber. Personnel in the bomber looking down are blinded by the searchlight beams while the pursuit pilot looking up has good vision and can often see the bomber silhouetted against light beams or light areas even when no beam is directly upon it.

While this joint exercise was conducted with an inadequate amount of equipment, several valuable features which should receive further study, were developed. Among these are the following:

1. The zone of defensive operations beginning with the forward observation-listening posts and extending to the rear line of searchlights should be as deep as possible, certainly not less than forty miles.

2. The observation-listening posts should be equipped with small, portable sound locators and with instruments for determining the approximate position and altitude of the hostile aircraft.

3. Searchlights should be disposed in parallel lines of lights with the lights on successive lines arranged roughly in echelon.

NOTE: It is believed that if the present type of light is employed that these lines may be 12,000 yards apart with lights approximately 14,000 yards apart in the lines. While these distances may appear extreme, it must be borne in mind that, if at least three lines of lights are established, any invading aircraft will be compelled to fly well within the range of visibility from two or more lights. Also, that while visibility from the ground may be desirable for information purposes, it is not necessary to the pursuit pilot.

4. Lights should be employed at extreme ranges in order to provide illumination for the pursuit pilot, who will often be able to see the bomber when it is invisible from the ground. As the range decreases, every effort should be made to contact and hold the bomber with at least one beam, passing him on from one line to the next line to the rear.

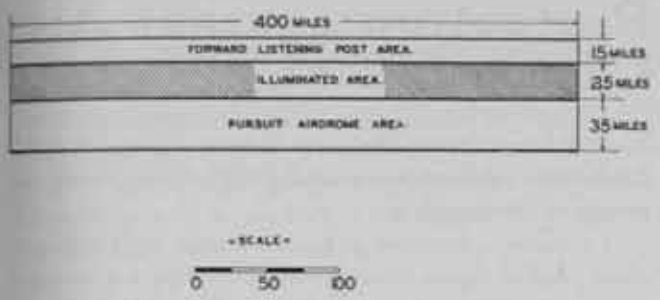
5. Unified command must be provided and the control system must reduce the time factors involved in each phase of operations to the minimum.

6. Observation-listening posts should be established throughout the zone of operations in order to provide frequent reports of the enemy's position. These reports will be used by both the searchlights and the pursuit pilots.

7. Defending pursuit airplanes should cruise at designated altitudes near the extreme limit of illumination of the forward line of searchlights. This will permit earlier contact with the enemy and longer combat time in the area of illumination.

8. Individual pursuit airplanes should be designated by the Defense Commander to deliver the attack upon indi-

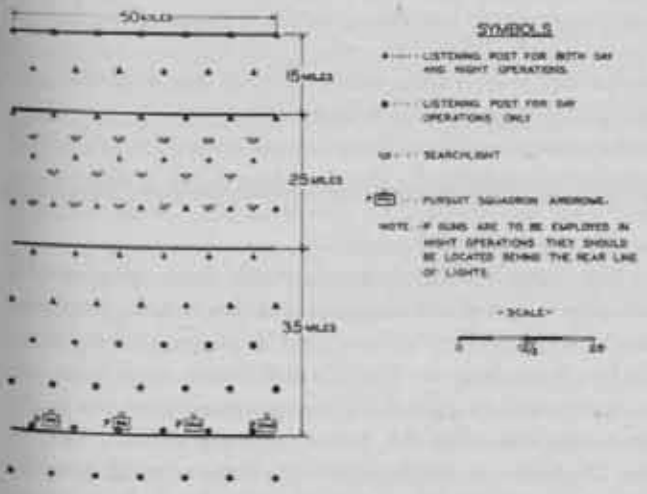
GENERAL OUTLINE OF AIR DEFENSE AREA



vidual bombers or small formations of bombers. This provision eliminates the danger of collision between friendly pursuit planes and provides a reserve of pursuit planes maintained in the best position for establishing contact with successive increments of hostile aircraft.

While this system of defense has been studied for employment particularly for the denial of freedom of action of hostile aerial forces, in accordance with pursuit's true mission, it could be employed with slight modifications for the defense of a small area or point of great value. The objections to the employment of pursuit in the defense of a point are: that there will always be numerous points requiring defense, the total amount of equipment required for all points will be greatly in excess of that available for use, and equipment located about a point far in the interior can be used only in operations conducted against that particular point. Thus, the defensive will be far more expensive than the offensive.

A SCHEMATIC REPRESENTATION OF THE ORGANIZATION OF A 50 MILE SECTION OF THE AIR DEFENSE AREA



It is believed that in most situations, it will be found that bombardment will endeavor to fly a fairly straight line between its bases and its proposed targets. This requirement may exist because of the international situation, meteorological conditions, geographical conditions or the principle of economy. Given infinite fuel range, there always remains the desire to conduct as many operations as possible with a given force within a given period of time. For this reason alone, every effort will be made to reduce "parasitic" flying time—the time required to fly from base to target and return to base. Other considerations tending to favor near-direct flying routes are:

1. The decrease of the personal efficiency of personnel with length of flight. Aerial operations are peculiarly dependent for effectiveness upon the personal efficiency of the operating personnel.
2. Increased losses of aircraft from mechanical failure on longer flights.

Considering all these factors, it is believed that in most situations an area for defensive pursuit operations can be selected in such position that the majority of hostile bombardment efforts will be required to enter it for consistent operations. The organization of this area for day and night pursuit operations is identical, except that night pursuit requires illumination.

While detailed estimates of the equipment required for night pursuit operations will depend entirely upon the size and shape of the area and the concentration of pursuit airplanes and searchlights required for a given situation, we can make a general estimate of the area that a given amount of equipment will serve. For instance, if it is found that three lines of lights six miles apart with lights located eight miles apart on each line provide sufficient illumination for normal operations, it is apparent that 150 lights in operation will establish an area of illumination approximately 400 miles long and 25 miles deep. An area of this size defended by effective numbers of pursuit planes or by both pursuit and guns, should constitute a barrier to the operations of hostile bombardment in the interior of any industrial region.

The amount of pursuit required will depend upon such factors as the strength and method of operation of the enemy's forces, the relative combat efficiency of the two opposing types of aircraft, and the degree of denial desired. It is not contemplated that the defense will deny the penetration of all hostile aircraft. There is no doubt, however, that an efficient defensive system will deny that freedom of action which will permit the unrestricted operation of individual airplanes and small formations and force the attacker to employ strong defensive formations—in other words, to adopt the principle of concentration instead of being able to utilize the advantages of dispersion.

★

IT IS THE LACK *of any good reason for fighting which is the only sure safeguard against aggression; while for a peace-loving nation—especially one with the responsibility of great possessions—security and the power to preserve peace call for weapons, not weakness.*—JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

Chemical Security—Part III

By Captain Alden H. Waitt
Chemical Warfare Service

Protection against Air-Chemical attack.

DURING the World War gas attacks were confined to the forward areas of the zone of combat. It was only within a so-called danger zone, ten or twelve miles behind the trenches, that the gas mask had to be carried, and within an alert zone two or three miles from the enemy that it had to be worn in a position from which it could be adjusted rapidly. The problem of protection, then, was confined to a relatively narrow zone where the opposing forces could reach each other with artillery or weapons of shorter range.

In the years since the war, the situation has changed as the result of the development of air-chemical attack. In any future war it will be necessary to provide for protection against enemy chemicals in every part of a theater of operations and probably in the zone of the interior.

This article is concerned with the problem of protection against chemical attack from the air. Since gas has not been used from aircraft in war, except in isolated cases against tribesmen, we have no past experience to guide us. We are dealing with probabilities and possibilities. The facts we have to work with are few, but they are significant.

It is a fact and not a theory, that chemicals can be used effectively from airplanes; we know that every important nation today in making its war plans, takes this fact into full account.

In a previous article of this series, the use of chemicals from aircraft was mentioned briefly. It is appropriate here to cover in more detail the possibilities of this form of attack. Since, from the point of view of protection, we are concerned with possible enemy use, it will be interesting to learn the views held in other armies. The Chief of the Military Chemical Administration of the Red Army says,* "In the next war, undoubtedly, a greater significance will be attached to aviation methods of chemical attack. . . . The use of the persistent poisons, by the air arm, will have a very wide application because of both the comparatively simple organization of flight, and the military results achieved."

The main tasks of the chemical attack by the air arm are: inflicting direct losses on enemy troops—chiefly where they are concentrated in columns, reserves, bivouac areas, or when detraining or entraining at railroad stations; embarrassing or handicapping the maneuver of troops; breaking up the organization of army supply by poisoning fords, defiles, or approaches to them; infecting definite boundaries, or some local object; by bombing or spraying supply and transport points, railroad junctions, and roads in rear areas; disorganizing the normal work of the rear in equipping the army and supplying the population with the necessities; and finally, undermining the morale of the population.

If a railroad junction is bombed with high explosive alone, skilled repair crews properly organized may make the repairs and open the road to traffic in a short time, probably in a few hours. If, however, the high explosive bombs are accompanied by a number of bombs filled with mustard type agents, the business of repair will be greatly complicated and delayed since the repair crew will have to wear the gas mask. It is true that small contaminated areas can be degassed but this takes time and can never be fully effective, so in any event masks and protective clothing must be worn. Let anyone who doubts the handicap caused by the gas mask try fifteen minutes of manual labor while wearing one.

Of all methods of chemical attack, the discharge of chemicals from airplanes raises the most serious problem in protection, and it is especially difficult to protect against the airplane spray. Attack by spraying is easily accomplished and combines surprise with the ability to lay down heavy concentrations over a wide area in a minimum of time. True, the necessity of flying at low altitudes presents a problem, but this difficulty may be solved by the use of smoke planes to cover ground forces before the actual attack with spray or bombs. Moreover, as stated in an earlier chapter, the British suggest air spray attacks from a height and at a distance from the target so that the aircraft can neither be seen nor heard. It is not known just how practicable such a method may prove, but it is within the bounds of possibility.

The range of air-chemical attack depends upon the cruising radius of the airplanes and this is being increased every year. When we see loaded planes making mass flights from Italy to the United States, and from our western coast to Hawaii, we may wonder just where the limit really is. On the basis of present military aircraft we can make an estimate of the zones in which possible enemy aircraft might operate in war today, but tomorrow we shall most certainly have to extend these zones.

A theater of operations may be considered as consisting of four fairly distinct zones of vulnerability:

A safety zone where attack is improbable;
A zone subject only to operations of bombing aircraft;
A zone of unlimited air attack by both bombing and attack aviation;
A zone of maximum vulnerability.

Today the cruising radius of long-distance bombers is about 400 miles; that is, 400 miles out from airdrome and 400 miles back, without a stop. Attack aviation, a type

**Military Chemistry*, by Y. M. Fishman, Moscow, 1930.

that might be equipped for chemical spray, has a cruising radius of about 170 miles. The fact that airdromes must be located a safe distance behind the lines held by the ground troops reduces the flight range considerably, but within 120 miles of our own lines we may look for unlimited air attack, and within 350 miles we may expect attack by bombers. Beyond the 350 miles rearward, we have a theoretical safety zone, but the safety depends not only upon our front-line troops holding, but also on the possibility that we have made too conservative an estimate of the enemy's cruising radius.

Consequently, protection against gas in the so-called safety zone should approximate that needed in the bombing aviation zone. It must include all means of technical or passive protection—gas masks, protective clothing, shelters, degassing equipment—and an efficient information and alarm system. Warning in these zones should be provided by telephone, telegraph, or radio, from outlying posts in ample time to take the necessary steps to put protective measures into effect.

The first line of defense against the bombers will be our own air forces. The next will be antiaircraft installations. The third will be the passive defense of the individuals who will proceed to their bomb-proof and gas-proof places of safety. We cannot disregard the fact, however, that, no matter how effective the defense, some of the attack is certain to get through. There is no such thing as an impregnable defense against air attack. Plans must be based on the breaches that are sure to occur.

It is quite likely that combined explosive, incendiary, and chemical attack will be customary. The explosive and incendiary will destroy, while the chemical will search out individuals behind barricades and cause delay in repairing damage. Spray from low-flying bombers is a possibility in the bombing zone, but practical difficulties make its use unlikely. An air burst bomb might be devised, however, that would give the effect of spray over a small area.

When we reach the zone of unlimited air attack we encounter our most difficult problem in our scheme of protection against gas. Here we must guard not only against gas attacks from bombing aviation, and artillery firing chemical shell, but also from chemical spray spread by fast, low-flying attack planes. The last is the danger we have most to fear. Every grove of trees or wooded hill mass presents a mask from behind which a plane flying at 200 miles an hour and at an altitude of 75 to 100 feet may come with assorted weapons directed against ground troops. When these planes approach, the man on the ground does not know whether attack will be by machine guns and fragmentation bombs, or machine guns and chemical spray, or all three. It will probably be made by a combination of all.

The ground arms have developed antiaircraft defense with the attack by explosive and machine-gun bullet in mind. Nearly all the thought that has been devoted to this subject has been given to attack with these weapons. Little consideration has been given to defense against chemical planes, or combined attack behind a smoke screen. Yet chemical spray attack is as great a menace to ground troops as is attack by bombs and bullets. Also it offers more chance to the attacker of a successful return.

The reply of ground troops to low-flying air attack is ground fire from rifles and machine guns. When attacking with fragmentation bombs or machine-gun fire, the plane must fly over the ground troops, but in the case of chemical spray, the aviator does not have to fly directly over the target. He can fly upwind of the target, sheltered perhaps by partly wooded areas, and by following a course at right angles to the wind, drift his spray over the ground troops without being seen. True, he must know the location of the ground troops, but he has a wide margin to work with; for he can cover a band a mile in length and two hundred yards wide.

It is apparent from British and Russian writings that the authorities in these countries do not consider the technique of chemical laying difficult even with the present material. Add a protecting screen of smoke that will precede the actual attack and it will be difficult to prevent an enemy from laying his chemical and getting away safely. Further, if the air attack is not willing to risk ground fire, chemical planes will certainly be able to place bands of persistent agents along the routes that ground troops must follow, a few minutes or a few hours before troops reach the areas. Defiles and valley roads will be excellent targets.

The mission of the air attack is to hinder, to delay, to impede. Casualties are secondary—the plane's mission is accomplished if it can cause a column to take a longer way or enforce delay by masking.

Against this attack we have *what?*

We have a gas mask that will protect the face and lungs; protective clothing that protects the body from vesicant vapor; we can devise protective capes to shed the liquid; we have movement and ground fire and normal security measures, which include information, protective formations, and air patrols in advance, to the rear, and on the flanks.

At the first warning, the man must adjust his protective equipment and then open fire on the plane if he can. The speed of the plane, which will not be less than 180 miles per hour, will give the soldier little time to adjust gas protection and deliver effective fire. It is estimated that an air attack can be launched and completed in 30 seconds and that troops will have approximately 15 seconds to fire at planes within effective range. This estimate, however, has not taken into account the adjustment of gas protection which will take six or eight seconds at the least. In the few seconds remaining, the soldier should counter the attack with every available weapon.

There has been some discussion as to whether a man should first open fire on the aircraft or put on his gas mask. I believe that, regardless of other considerations, the law of self-preservation will govern if gas danger exists. The soldier will adjust his gas mask and other protective equipment before he does anything else. Air-

chemical attack presents one good and sufficient reason for the development of speed and skill in putting on the gas mask.

Not enough consideration is given to the drive against the soldier's morale by this destructive machine from the air with its sudden dash at full throttle, dropping bombs and spraying machine-gun bullets and gas. True, it has been shown mathematically that three planes can fire only 5,400 bullets over an area of 2,200,000 square feet, and that this is only ineffective plunging fire, but is the soldier a mathematician? Moreover, chemical spray fills the air with innumerable minute gas bullets, and after one good gas attack it will not comfort the soldier to know that in the next one his share of the air will be affected by only a few thousand poisonous particles.

Where air attack is expected, detachments completely equipped for gas protection should be with the main body in constant readiness to open fire immediately on enemy planes. Half of the men in each detachment should have the mask adjusted and all should wear impervious clothes to shed mustard or lewisite spray. Since marching in impervious clothes is impossible except for short distances, the detachments should be carried on light, cross-country vehicles.

When large bodies are on the march, antiaircraft artillery should be provided to go well ahead of the troops to guard especially dangerous portions of the route, such as defiles or mountain passes. Not only should they be in place when the troops arrive to counter direct attack by enemy aviation, but if practicable they should be posted hours or even days ahead of time to prevent chemical planes from contaminating the narrow passes.

Our present theory of air defense on the march is that each element provides its own. Thus, in the infantry column there are properly mounted machine guns, spotted at intervals. Similarly, the artillery and the trains have antiaircraft machine-gun defense. If these measures are to be effective against air-chemical attack, all of these defensive squads or detachments should be motorized and furnished with impervious protective clothing.

Night operations offer the best protection against air attacks. It is quite possible that, in the future, practically all movements of larger units for any distance will be made under cover of darkness. Night operations, however, do not insure immunity from observation or attack, for troops can be picked up by moonlight on a roadway, or even on a clear night without a moon on a broad white road. Flares may be used also. It is possible that since it is more difficult in the dark to hit a target with bombs or bullets, the use of chemical spray may be favored for night attack.

In the selection of routes of march, winding roads and those giving concealment offer the best protection. It must be remembered, however, that wooded areas and trails bordered with overhanging undergrowth may be gas traps. Therefore, chemical reconnaissance will be necessary.

Complete use should be made of the road net and a command should march in several columns with the column divided into small groups, thus cutting down the size of individual targets. While this gives more protection relatively against bullet and fragmentation bomb than against chemical spray which covers a much greater area, it will also reduce gas casualties.

Deployment to the extent of dispersing on both sides of the road is a rule against air attack, but it is of little use against chemical spray. The first action should be to get on the protective equipment. Following a chemical air attack the command should move upwind as soon as possible to get out of the contaminated area. Then the normal procedures of first aid and degassing should be initiated.

The suggestion is made, in the British and Italian manuals, that in a chemical spray attack, a measure of protection may be obtained by seeking cover under trees when the foliage is heavy, with the idea that the leaves serve as an umbrella. The foliage, if thick enough, will keep out the droplets of chemical and provide some protection, but tests indicate that the mist filters rapidly through the leaves. The danger lies in placing too much dependence on the protection offered, which is for only a few minutes. There is also danger of serious contamination where the undergrowth is heavy. High grass or brush will catch the chemical which will brush off on the individual getting back to the road.

In any case, it will be necessary to move out of a wooded area as soon as possible since vapor concentrations in such a place will be very heavy for hours after the attack—much heavier than in the open where air currents have full play. It is an interesting and important fact that wooded areas, which offer excellent protection against explosives, not only afford no protection against gas, but are, in fact, danger spots. Heretofore the soldier has sought the woods for cover. He will, of course, continue to seek cover there from explosives, but he must remember that he is not safe there from gas.

Obviously the need for gas protection complicates matters greatly for the fighting man, and the sooner we recognize the fact the better, for we can do something about gas, and casualties from that source can be reduced. The perfect solution to the protection problem has not yet been found, but the chemical warfare service of our army has developed the finest equipment possessed by any army in the world today, and has laid out the training methods that should be followed. It rests with the combatant arms to develop the complete protective scheme, to use the technical means to best advantage and to work out in detail the specific methods of chemical security for protection in the field.

Fifty Million Frenchmen Can Be Wrong

By Captain C. T. Lanham
Infantry

"All formulæ for avoiding thought die hard . . . and as fast as one formula dies, another takes its place."
The Post Impressionist.

THIS historical vignette deals with the experiences of certain elements of the French 42d Division on August 21, 1914. In common with most honest narratives of battle it sets forth many errors. I say "errors" in the sense that they are so considered today, for in 1914 they were accepted as standard procedure. Whatever value this study may have lies in the profound implications of that single statement.

Will today's orthodoxy be tomorrow's tragic mistake? Are we sacrificing to the great god *Form* and neglecting the greater god *Substance?* These are questions that might well be pondered. Neither the answer of the majority nor the answer of authority is necessarily conclusive. For instance, on August 21, 1914, the world might have reasoned that "Fifty Million Frenchmen Can't be Wrong," but by nightfall of August 22 the world knew that Fifty Million Frenchmen Had Been Wrong.

André Maurois sums the matter up in this statement: "The truth is that *reality* is always different from what we expected. . . . The most precise analyst cannot even outline the infinite variety of the *Real.*" Although he made this observation with reference to the world of art its application is universal. In particular does it apply to the military. Today no man can accurately predict the ultimate rôles of aviation, mechanization, and motorization. We think this and we surmise that, but not until battle is joined shall we learn the final truth. In 1914 the French "75" had only been tested in the "polygon"; its possibilities were seen through a glass darkly. Then there

Our beautifully evolved theories of war are like our theories of the ladies, in that "you never can say 'til you've tried 'em, and then you're like to be wrong."

was an amusing but inconspicuous little weapon called the machine gun! Can you name the man who foretold its future? Indeed, I am inclined to think that our beautifully evolved theories of war are like our theories of the ladies, in that "you never can say 'til you've tried 'em, and then you're like to be wrong."

It is not likely that any nation shall be much better prepared, materially, to meet the terrible reality of war than was France in 1914. Material preparation was not lacking, but *mental preparation* was. Thought had atrophied and in war that is fatal. The not too blind and not too fickle goddess of Chance bestows her favors on that army whose leaders are blessed with a flexible mind. The standard procedure, the set form, the stereotyped solution can never meet the wildly improbable situations that characterize battle. Only those leaders who have the moral courage to jettison their mental cargo of military platitudes and attack their elusive target with the directness permitted by an unencumbered mind, will long endure in war.

This battle narrative is a case in point. Again and again it is marked by the sheer inability of leaders to cope with reality. But then the war was new and the copybook maxims had served them well in peace. Later most of them learned. Some never did.

* * *

On August 20 Joffre decided that von Moltke's great wheel to the west had progressed sufficiently to present a vulnerable flank. That night he uttered the word that unleashed his impatient armies. By dawn of the 21st a million eager Frenchmen were tramping to the north. On the right of the Third Army, with its flank exposed to the east, marched the VI Corps (Third Army) with its 12th, 42d, and 40th Divisions echeloned to the right rear. (See Map No. 1, from here on.)

Sometime during the night of August 20-21 the 42d Division received its directive for the march. The 12th Division would march via Ollieres—Hans-dev-Pierrepont—Pierrepont. Its leading elements would clear Spincourt at 6:00 A.M. The 42d Division would march on Mercy-le-Bas. The leading element of its advance guard would

---

Author's Note: With the exception of certain orders, dispositions, intelligence reports, etc., that are given in *Les Armées Françaises dans la Grande Guerre,* the author has been unable to locate any original sources in this country that deal with the specific incidents set forth in this battle study. The only detailed account available appears to be an article by Colonel Etienne which appeared in the May, 1925, issue of *La Revue d'Infanterie* as the third instalment of a series entitled "L'Infanterie dans la Prise de Contact!"

Colonel Etienne has drawn largely from four sources: The march journal of the 19th Battalion of Chasseurs, the accounts of a captain and a lieutenant who were members of this unit, and a lecture on the artillery phase of the 42d Division's operations on August 21, 1914, given by Colonel Verguin to the students of the "Cours d'Artillerie du Centre d'Etudes" at Versailles.

This problem is based almost entirely on the Etienne narrative. Several minor assumptions have been made for the purpose of the problem, such as the locations of various units at certain times.

The discussions of the several requirements do not purport to be *approved solutions* or to carry the stamp of authority. They merely represent the opinions of one Infantryman.

pass Gondrecourt at 6:00 A.M. The 40th Division, followed by the 54th Reserve Division, would march in the wake of the 42d. The 10th Light Cavalry (less one troop) and the 12th Light Cavalry would maintain contact between the 12th and 42d Divisions. The 7th Cavalry Division would cross the Spincourt-Conflans highroad at 5:30 A.M. and move into the Landres-Murville area. It would be supported by two infantry battalions from the 42d Division. Such, in effect, were the major provisions of the corps order.

One thing remained—information of the enemy. The 42d Division had been in this area for some time and plenty of information had been forthcoming. (This has been plotted on Map No. 1). French aviation had reported an enemy cavalry division located in the vicinity of Malavillers covered by a long line of outguards as indicated. Hostile cavalry supported by infantry had organized several localities for defense in the Hancourt-Spincourt area. To the east numerous field works had been noted and a number of towns had been prepared for defense. Troops of the German XVI Corps and landwehr formations had been reported in this same area. Four infantry regiments had been definitely identified. Farther to the north, beyond the frontier, heavy troop movements to the west had been continually reported.

General Verraux, commanding the 42d Division, had this information in his possession or available to him the night of August 20-21. He was now face to face with his first decision of any importance. He must plan the march of his division from its present location to the area about Mercy-le-Bas that is shown by the broken line on Map No. 1.

FIRST REQUIREMENT

General Verraux's march order to include

a. Plan of march;

b. Security measures for march.

(NOTE: The units available to the 42d Division on August 21 are shown in the Order of Battle on Map No. 1).

HISTORICAL SOLUTION AND DISCUSSION

The 42d Division marched in a single column via Gondrecourt — Affleville — Joudreville — Domprix — Xivry-Circourt. The advance guard marched in this order:[1]

1 troop, 10th Light Cavalry;
19th Battalion of Light Infantry;
2 battalions, 94th Infantry;
1 battalion of 75's;
1 company, 3d Engineers;
(C. O., 83d Brigade, Advance Guard Commander.)

The 19th Battalion of Light Infantry with one platoon of the 10th Light Cavalry attached, was designated as flank guard and directed to march on the Chanois Farm via Gondrecourt — Aix — Norroy-le-Sec — Landres — Murville — Higny.

One company of the 94th Infantry was ordered to move to the telegraph station located two kilometres east of Gondrecourt and remain there until the entire division had passed.

The main body followed the advance guard at 2½ kilometres. The trains, etc., under escort of one company of the 16th Battalion of Light infantry, followed the main body at one kilometre. They were ordered not to cross the Spincourt—Conflans highway without further orders.

These were the major provisions of Operations Order No. 33 issued by the 42d Division during the early morning hours of August 21.

It is difficult to follow the reasoning that prompted this order. From the information available to General Verraux three things literally leap to the eye:

1. A serious engagement may develop at any time during the march to Mercy-le-Bas.

2. At the very least, continual harassment may be expected from the large bodies of hostile cavalry that are operating in this general area.

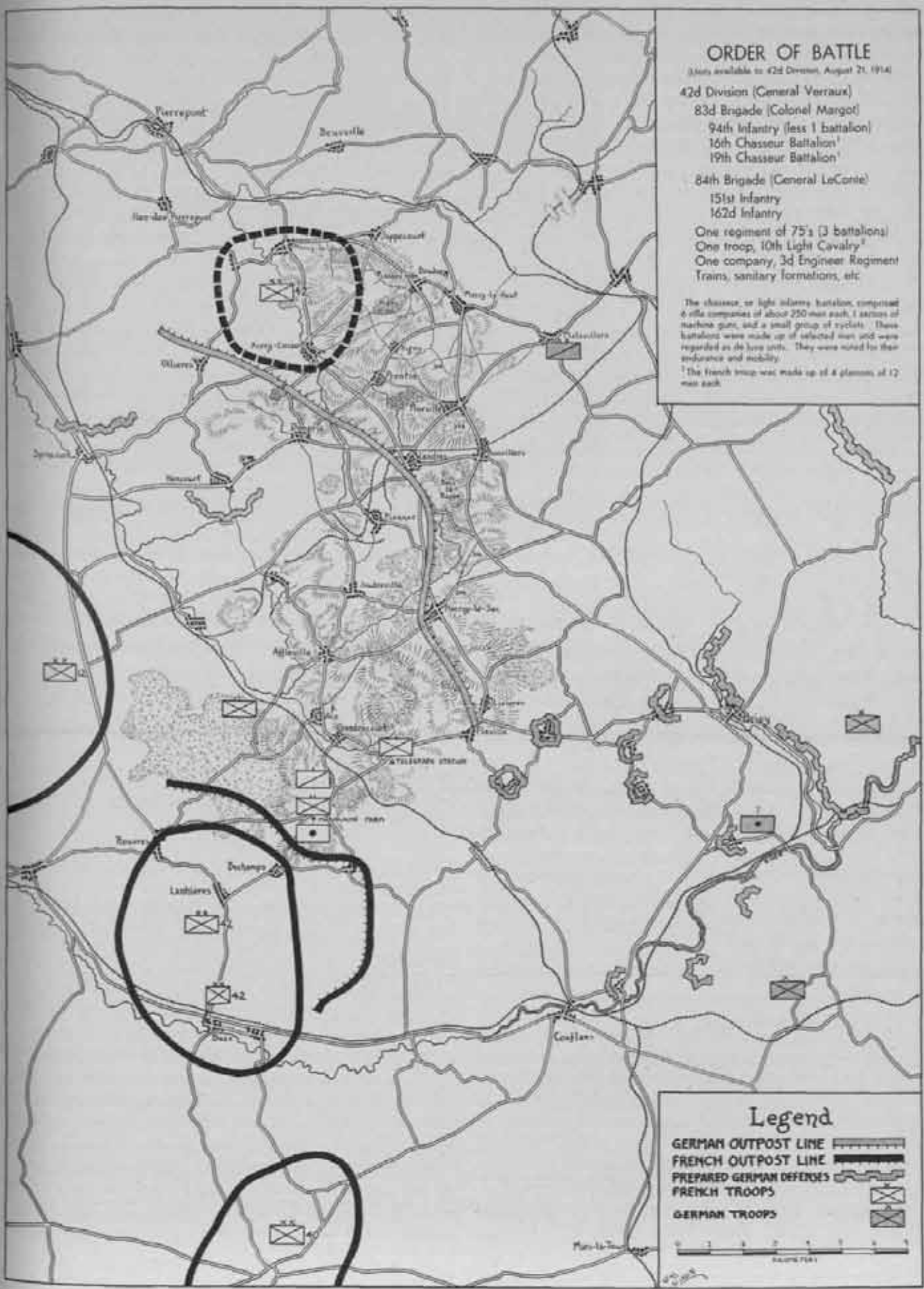
3. The enemy infantry reported a few kilometres to the east constitute a serious threat to the right flank of the 42d Division.

Under these conditions the decision to march in a single column cannot be understood. The possibility of battle renders the early development of the division a paramount consideration. The road net being ample, the march should certainly be conducted in at least two columns—and these should be echeloned to the threatened flank. Even if the possibility of a serious engagement be discounted, the inevitable harassing action of enemy cavalry would in itself condemn the long single column. Every delay, and the advance guard can expect many from the aggressive Uhlans, will be reflected all the way back to the trains. Furthermore, from the detailed information in his possession, General Verraux can certainly anticipate at least isolated instances of stubborn resistance. The double column by its continuing threat of envelopment will dislodge these small groups almost by a gesture; the single column will have to deploy its advance guard and bludgeon its way through.

Finally the ever-present flank threat should unquestionably have ended any hesitation to march in two columns. The possibility of a hurricane cavalry attack sweeping over the crest of the hill range to the east, brushing aside or containing the 19th Battalion of Light Infantry, and striking the long flank of that single column, should have made General Verraux shudder. The double column would do more than halve that very real risk for it would provide depth, space for maneuver, and a reserve.

The itinerary selected for the flank-guard battalion seems equally obscure. A glance at the map shows that

[1]Operations Order No. 33 of the 42d Division shows the 19th Battalion of Light Infantry as the last element of the advance guard. Apparently some other order intervened for this battalion marched immediately behind the cavalry until it reached Aix. At this point it turned off toward Norroy-le-Sec and assumed its flank guard mission.


ORDER OF BATTLE
(Units available to 42d Division, August 21, 1914)
42d Division (General Verraux)
83d Brigade (Colonel Margot)
94th Infantry (less 1 battalion)
16th Chasseur Battalion[1]
19th Chasseur Battalion[1]
84th Brigade (General LeConte)
151st Infantry
162d Infantry
One regiment of 75's (3 battalions)
One troop, 10th Light Cavalry[2]
One company, 3d Engineer Regiment
Trains, sanitary formations, etc.
The chasseur, or light infantry, battalion, comprised 6 rifle companies of about 250 men each, 1 section of machine guns, and a small group of cyclists. These battalions were made up of selected men and were regarded as de luxe units. They were noted for their endurance and mobility.
[1] The French troop was made up of 4 platoons of 12 men each.
Legend
GERMAN OUTPOST LINE
FRENCH OUTPOST LINE
PREPARED GERMAN DEFENSES
FRENCH TROOPS
GERMAN TROOPS
Pierrepont
Beuveille
Haudiomont
Oglevers
Ancerville
Lachaussée
Coulaines
Mars-la-Tour

Map No. 1

this route is almost constantly flanked at short range by hill after hill, most of which are heavily wooded. Colonel Etienne suggests this alternate route and his point seems to be extremely well taken: "The Fleville—Lixieres ridge line, Notroy-le-Sec, Hills 306 and 316, the Bois de Rappe, Hill 344, Hill 354, Chanois Farm."

It is regrettable, of course, that more cavalry was not available. This flank battalion and the main body, too, could well do with additional cavalry for reconnaissance purposes. The fact that so little cavalry was available to this division must be attributed to the corps commander, General Sarrail. He appropriated the 10th and 12th Chasseurs à Cheval for his own purposes. The 7th Cavalry Division scheduled to operate in the Landres—Murville area may have been a comfort to General Verraux but it was not under his command and the 42d Division was responsible for its own security. A single squadron at the disposal of this division might possibly have averted much that happened on this day.

Although General Verraux may have been blessed with but one troop of cavalry it was no excuse to let his reconnaissance go by the board. There is no evidence that he took any steps during the early morning hours of August 21 to supplement or even to verify the information already at hand. So far as we can tell today, and we may well be wrong, General Verraux moved blindly forward without sending out a single reconnaissance group. The enormity of such an error, particularly under the conditions here existing, cannot be overemphasized. Certainly requests should have been made to Corps for aerial reconnaissance at the crack of dawn. Patrols on foot, on horse, on the beloved French bicycle, should have started out fifteen minutes after the corps march order was received. Even if General Verraux's information was accurate and reliable up until dark of August 20, he had no assurance under the shining sun that the enemy would remain "put" during the long hours of the night. The fact that he had taken the precaution of establishing an outpost system about his division bivouac indicated that he was not oblivious to the possibilities open to the nearby enemy . . . *or was it merely a matter of form . . . an adherence to regulations?*

But let's get on with our story.

SITUATION CONTINUED

At about 4:30 A.M. the 19th Battalion swung out of the little town of Lanhères, where it had bivouacked, and headed for Gondrecourt where it would take its place at the head of the advance guard of the 42d Division. As early as they were, General Verraux was still earlier. The division commander stood by the road near the Marjolaine Farm and watched this proud chasseur unit swing by. He was particularly pleased with this battalion for it had already acquitted itself well under fire. Six days earlier it had had an affair of sorts with a German battalion (or what was reported as a battalion) and had put it to flight. To themselves and to the rest of the division they were now veterans . . . tried and true. Perhaps that was one reason why they were selected for the perilous flank mission.

South of Gondrecourt a halt was called and extra ammunition issued. While this was going on and while the remainder of the advance guard was moving into column, the battalion commander scoured his front, including Gondrecourt, with patrols. At 6:15 A.M. the long column moved forward.

Now during the first part of this march, as Colonel Etienne points out, the 19th Battalion had a double responsibility. He says, "on the one hand it must cover the march to the north and on the other cover its own flanks at a distance of 1500 to 2000 metres." At this stage of the march the battalion commander took no chances nor did he seek some conventionalized formula that would obviate the necessity for thought. He met the problem and solved it on its own merits by adopting a formation roughly resembling a triangle, "the left leading and the remainder widely echeloned to the right and to the rear." The cavalry platoon (less three troopers) marched a short distance in advance of the leading company. The battalion commander marched at the head of his command. The last company of the battalion was charged with the mission of protecting its right flank. To assist it in this task the major turned loose three of his cavalrymen.

We shall follow this battalion in considerable detail after it turns east at Aix and takes up its proper flank guard mission. Meanwhile we must ride back down the column past the two battalions of the 94th Infantry and take a look at the battalion of 75's.

It is just 6:30 A.M. The caissons are rumbling along the road toward Gondrecourt. The leading piece is about one kilometre north of the Marjolaine Farm. The artillery commander rides at the head of his battalion. Fog eddies and swirls about the countryside. Suddenly, far off to the front, somewhere north of Gondrecourt, comes the faint but unmistakable crack of rifle fire. The artilleryman cocks his ear to the north. He knows, or should know, that the leading element of the advance guard must be close to Aix.

SECOND REQUIREMENT

His actions and orders, if any, within the next three minutes.

HISTORICAL SOLUTION AND DISCUSSION

The artillery commander instantly deployed his battalion. By 7:00 o'clock his batteries were all nicely in position on the high ground about 1½ kilometres north of the Marjolaine Farm and their observers were watching the fog roll over the French countryside. Meanwhile, the little flurry of rifle fire had long since died out and the infantry column was plodding steadily down the road. The incident was the result of a Uhlan patrol working up an appetite for breakfast by taking a few pot shots at the leading element of the advance guard. The long French column lumbered to a halt while the point, possibly assisted by the advance party, routed out the German patrol.

Wide World Photo

A brief halt was called

Now, I may be seriously mistaken, but it seems to me that, in this entire action, I smell the unmistakable odor of a slightly decayed peace-time maneuver. Doesn't the set-up strike a familiar chord in our own memory? The column marching down the road with advance guard out; the point fired on by an outlined enemy; the inevitable deployment; the invariable pitched battle with blanks banging and breathless umpires racing back and forth waving flags; and finally sweet victory. Certainly the instant reaction of this artillery commander would lead one to believe that his thought process had become automatic, that his mind was schooled to accept a few scattered shots a mile to the front as the inevitable and invariable herald of immediate and general battle. He was not to be caught napping. Not even when the fire died out did he recall his batteries. Fire up front, no matter how much or how little, meant battle. He was in position. True, he couldn't see very much from that position because of the fog, but that was more or less beside the point. He had complied with the dictates of that omnipotent and ubiquitous god called *Form*. But the saddest commentary of the whole procedure is this: At 10:30, at noon, and at 2:30 . . . three times more . . . the major repeated the same process—and accomplished precisely nothing.

Now hindsight, particularly from the vantage point of twenty years, is no great virtue, and criticism *after the events* is always easy. Nevertheless, if we are to profit by the experiences of others we must examine their successes and failures with a critical eye.

What, then, can we find of interest in this artillery incident? Almost the first thing to strike the eye is the major's position at the head of his artillery battalion. If his reconnaissance officer had been forward with the advance party or at the head of the support this might not loom so large. However, it appears that no representative of the artillery marched in advance of the battalion commander. This is a grave error. The place of the artillery commander, or at least of his representative, is far forward where the situation can be nailed as it breaks, the infantry's needs determined, and the artillery disposed, if need be, to meet the circumstances at hand. From the major's actual location, a mile or more in rear of the leading infantry elements, he could do no more than act blindly.

The second error, and indeed one that largely grew out of the first, lay in the unnecessary deployment of his entire battalion. This occurred four times. In each instance it was occasioned by a few shots far to the front whose significance he had no way of determining. If the artillery commander had dropped off a battery we might possibly find some justification from the point of view of caution. But it is not seen how any extenuating circumstance can be offered for the repeated deployment of his entire battalion on the sole ground of a few scattered shots. Indeed on each occasion the incident was regulated and the fire had ceased before his rapidly tiring batteries had lumbered into their useless and too distant positions.

After each of these ill-advised deployments the battalion had to be reassembled, marched back to the road, double the infantry column, and, at an increased gait, regain its place with the advance guard. This procedure was exhausting to both men and animals, but of far greater importance was the fact that, during these considerable periods of time, the infantry battalions of the advance guard were completely out of touch with the artillery and therefore unable to call on it if the need arose.

Today, of course, this artillery battalion would be handled in a different manner. At least one battery would always be in or close to some *previously reconnoitered and predetermined position* from which it could cover the advance of the infantry. In other words, the artillery would divide and advance by the "leap-frog" process.

SITUATION CONTINUED

Following its inconsequential brush with the Uhlan patrol the 19th Battalion, still in its widely echeloned formation, continued on to Aix without further incident. Here it turned to the northeast and tramped on towards Norroy-le-Sec while the remainder of the division marched north through Affleville. At Norroy-le-Sec the 19th again

had a bit of a skirmish with a German cavalry patrol. This was swept aside without difficulty and the 19th plodded stolidly on to Landres which it reached at noon. Here a brief halt was called.

In the light of subsequent events, the disposition of the battalion at this time is particularly interesting. This disposition is shown schematically on Sketch No. 2. Each company was partially deployed. Section and platoon columns echeloned, in general, to the right flank were the popular formation. Several things stand out in this set-up. First it is definitely not a textbook picture. Companies are disposed to take advantage of the terrain. If the need arises the battalion can fight as a unit on the high ground just west of Murville, on the ridge line west of Landres, or in Landres itself. Second, the battalion cannot be gobbled up as a whole. The units are so disposed that they can put up a stout fight in any direction. Not even a single company can be knocked off before support arrives. The section of machine guns is located at Landres, a pivotal point; it can be rushed to the support of any one of the six companies. In short, here is a business-like layout that definitely precludes any possibility of surprise and at the same time affords the battalion every opportunity to make the most of the means at its disposal.

Look well at this disposition! We may have occasion to harken back to it.

The halt here was only momentary. Again the 19th moved on. The leading companies turned Prentin and its woods from the southeast. The last two companies swung east of Landres and moved on toward the high ground southwest of Murville. These two companies were echeloned to the right rear, and the same echelonment was adopted within the companies themselves. The three troopers assigned to the 6th Company (the last company) had galloped off to the right flank to reconnoiter. Throughout the entire march German cavalrymen had been seen in the distance, appearing and disappearing, but doggedly following the movement of the battalion.

The situation at this time is concisely expressed by a Lieutenant B, a participant, whom Colonel Etienne quotes as follows: "Major M and the battalion officers had no exact idea of the situation. At Landres we had met a cavalry captain and several troopers (cuirassiers of the 7th Cavalry Division, if my recollection is correct). We asked him for information: he knew nothing definite."

"The inhabitants of the villages through which we passed said that the Germans had left that morning but that they did not know in which direction they had moved.

"Just as we were about to cross the Murville-Landres road we were halted in order to let a cyclist group from the 7th Cavalry Division pass. These cyclists were moving toward Murville. Almost immediately thereafter we saw the commanding general of the 7th Cavalry Division and two of his staff officers trot by in the direction of Murville.

"We were all convinced that the enemy infantry was still far off."

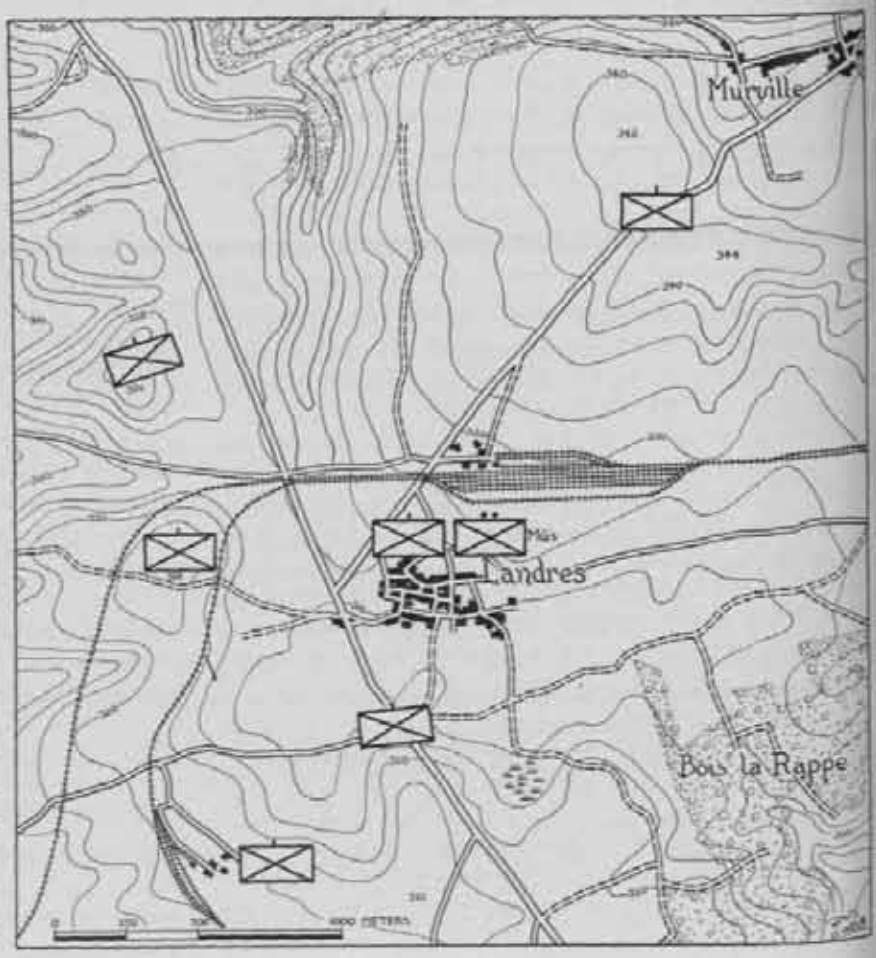
Now a startling thing occurred! Over the crest of hill 344[3] came the three mounted scouts of the 6th Company at a dead gallop. At undiminished gait they raced between the last two companies and throughout their passage they shouted the same message over and over again . . . "The German cavalry is charging! The German cavalry is charging!"

By this time these companies had crossed the Landres-Murville road and were heading slightly west of north. They still marched in their wide stair-step formation.

THIRD REQUIREMENT

Actions and orders of the two company commanders.

[3]This location may not be exact but the incident took place somewhere close by, and hill 344 fits the picture.



Sketch No. 2
Approximate disposition of 19th Bn., at noon, August 21, 1914

HISTORICAL SOLUTION

Both companies fixed bayonets and deployed at a dead run, wheeling into line facing hill 344. With muscles tensed for the whirlwind shock of cavalry they waited. Every finger curled about a trigger; every eye stared at the crest. Hours seemed to pass but actually the drumming hoofs of the three mounted scouts were still reverberating when over the hill thundered *one lone German lancer!* No man shall ever know the thought in that lone horseman's mind when he beheld the terrible spectacle of 500 French infantry . . . waiting . . . waiting. But this we do know . . . with lance lowered to the charge he hurtled forward and took the tremendous volley head on. On that 21st day of August one lancer of the German 13th Dragoons rode triumphantly into Valhalla.

SITUATION CONTINUED

The two companies now resumed their formation and moved on toward Higny. The August sun beat down mercilessly on the hard-marching chasseurs. They had been on the go since 4:00 A.M. Their last breathing spell of any consequence had been at Gondrecourt. All day they had climbed continually to the north. Now throughout the entire battalion fatigue became evident. Everyone hoped for a halt. Almost like an answer to their unspoken wish a mounted messenger rode from company to company with word from the major that the battalion would assemble north of Higny on the wheat-covered slopes of hill 348 facing in the direction of the Chanois Farm.

FOURTH REQUIREMENT

Security measures taken and dispositions prescribed by the battalion commander.

HISTORICAL SOLUTION AND DISCUSSION

The battalion commander designated the 2d Company as right-flank guard. It went into position facing northeast on a line generally southeast of the southeastern point of the Bois d'Higny. Its left flank rested about 400 metres from the edge of the woods. The remaining companies, the 1st, 3d, 4th, 5th, and 6th, closed up as shown on Sketch No. 3. The unimproved road running across hill 348 from the northern exit of Higny afforded a natural protection from the north owing to a long cut that ran almost all the way across the face of the hill. Here the 6th Company took up its position, fully deployed.

In view of the battalion commander's disposition at Landres his disposition here is altogether bewildering. If his closely grouped battalion had been thoroughly outposted a great many favorable points could undoubtedly be uncovered. But this battalion was not outposted. Not 500 metres away lay the Higny Wood *which had not been reconnoitered*. With the exception of one or two patrols sent out by one company (apparently the 6th) to keep an eye on Boudrezy, there is no indication that a single security detachment was posted. The 2d Company may have afforded some protection to the right flank of the battalion but it took no measures to protect its own flank so far as we can tell today.

In short, here was a battalion, numbering about 1500 men, grouped on a wheat-covered plateau, with an unreconnoitered wood at almost point-blank range, unprotected by patrols, and in a country known to have been occupied by the enemy only that morning. Suppose, for instance, that a German infantry battalion had hidden itself along the edge of that wood and in the high wheat that grew on that plateau. What then? What reason had this battalion commander to believe that German infantry, or dismounted cavalry, were not in these woods and in that wheat? Such terrain under such conditions should literally shout . . . "Beware of ambush!" But let's get on.

SITUATION CONTINUED

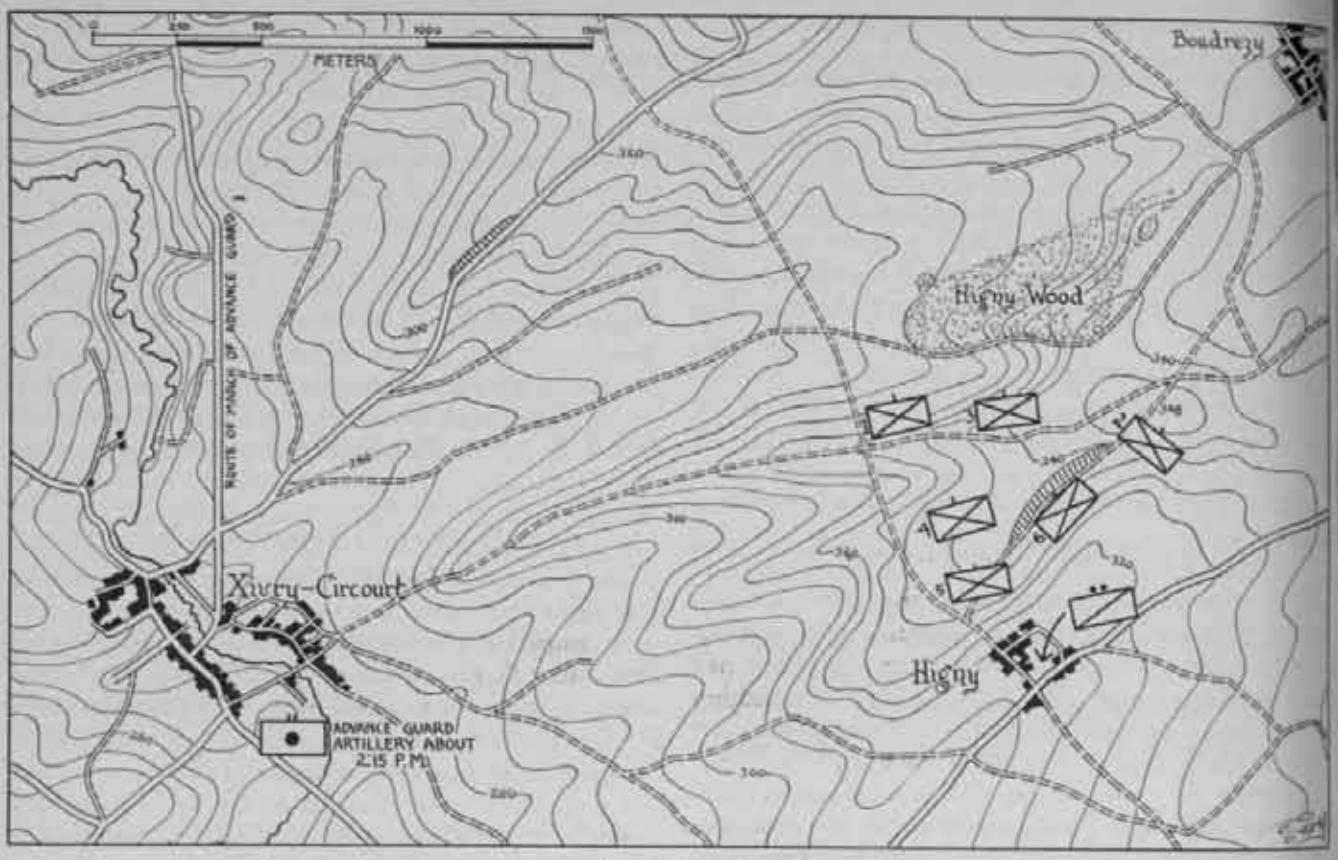
The companies close up. The men are blowing hard and glad to get a rest. In Higny the handful of cavalrymen assigned to the battalion are watering their horses. From the hill the chasseurs can see the main column marching steadily toward the north. The advance guard is moving through Xivry-Circourt. In the direction of Murville they see French cyclists pedaling along. Here and there peasants are working in the fields. It is hard to believe that a war is really on.

But the long rest the chasseurs had anticipated was not to be. Scarcely had the 6th Company moved into position along the road than the major gave the signal to sling equipment. Wearily the tired infantrymen clambered to their feet and slung their packs. A hell of a rest!

The forward movement started and at that instant the entire southeastern face of the Higny Wood and the wheat field to the right flank erupted in a blast of lead. Rifle and machine-gun fire knifed through the bewildered battalion. Under the stunning shock of such complete surprise few units would stand. The 19th Battalion stood!

This was to be no skirmish with a Uhlan patrol but a real fight. The 19th immediately sought to recover its equilibrium. The two right platoons of the 2d Company swung to the northeast and achieved their deployment by crawling through the high wheat while German bullets clipped the blades above them. The 1st and 3d Companies deployed facing to the north. The 4th and 5th deployed more or less in place, one behind the other. The 6th Company, protected from the north by the embankment, remained in this position in reserve. The machine-gun section moved along the road occupied by the 6th Company to a point abreast of the 2d Company.

The battalion, somewhat recovered from the initial shock of this surprise, now settled down in earnest to the business at hand. The crack of musketry gradually mounted to a deafening pitch. But now a shriller note rose over the field. Somewhere artillery was firing and the shells were falling squarely on the French position. The hard-pressed Frenchmen looked at one another in instant agreement . . . this could be none other than their own artillery firing short! But whatever their feeling on the



Sketch No. 3
Approximate disposition of 19th Battalion, at about 2:15 p.m., August 21, 1914

subject may have been they held their ground and continued the furious fire fight. At the same time the battalion commander dispatched several mounted messengers to the advance guard artillery with word to cease fire. He was to learn later that he had maligned the French artillery . . . the shell fire was coming from German batteries, probably horse batteries from the 8th Cavalry Division.

A few minutes later, in fact at about 2:30 P.M., a second message was sent to the advance guard, this time requesting the support of the artillery battalion.

Not more than fifteen minutes had elapsed since the first shock. The enemy was definitely known to occupy the Higny Wood and the northeastern slope of hill 348. The battalion commander had no idea of the location of the German artillery. As a matter of fact it had only dropped a few shells on the battalion and then ceased firing. The situation had not yet fully developed but the major was aware that an attempt was already being made to penetrate between the 2d and 3d Companies and believed that an attempted envelopment of his right flank was getting under way.

FOURTH REQUIREMENT

The message sent by the commanding officer of the 19th Battalion to the artillery with the advance guard.

HISTORICAL SOLUTION AND DISCUSSION

According to Colonel Etienne the message merely requested artillery fire on the Higny Wood. A bit later the statement appears that "the artillery battalion was requested to support the 19th Battalion which was stopped by violent rifle and machine-gun fire coming from the southern edge of the wood one kilometre north of Higny."

Is this message sufficient for the artillery to act on? The range from the high ground northeast of Xivry-Circourt is about 3,000 metres or roughly 3,600 yards. The artillery is provided with excellent maps. The day is now crystal clear. From Xivry-Circourt the Higny Wood must stand out like a sore thumb. These are some facts that must be considered in the artillery problem presented.

However, the message sent to the artillery left out several factors not only of vital interest to the artillery but perhaps of life and death interest to the infantry. It made no mention of the location of the French infantry units. It made no arrangement either as to time or signal for the artillery to lift its fire. And finally it failed to prescribe any definite line or terrain features, such as the southern edge of the Higny Wood, beyond which the battalion would not advance or at least would not advance until a certain fixed time. Now this message was obviously deficient on every one of these counts, and probably several more. But here the question arises . . . was it possible or practicable for this battalion commander to incorporate these items in his message to the artillery? I vote in the negative.

In the first place, this was a meeting engagement. The

situation was not fixed. As Colonel Etienne puts it, "here everything was moving, both the enemy and ourselves." By the time the battalion commander had formulated a nice precise message to his artillery friends the entire situation could do an about face. No one short of a soothsayer could foresee what would happen from one moment to the next.

So it reduces to this: Artillery fire is badly needed but with the artillery and its observers 3,600 yards away it is dangerous to ask for it in this moving situation. If fire support is requested the infantry must give the artillery some assurance that units will not advance beyond some unmistakable line until some set time or until some prearranged signal at which the artillery will lift its fire. But since the infantry cannot tell what will happen from moment to moment, the dangers of this procedure are evident.

What is the answer?

FIFTH REQUIREMENT

Action of the artillery commander upon receipt of the 19th Battalion's request for fire on Higny Wood.

HISTORICAL SOLUTION AND DISCUSSION

The actions of the artillery commander are not reported in detail. However, it appears that he did four things in the following sequence: (1) made a detailed reconnaissance for positions; (2) moved his entire battalion into positions on the high ground "a hundred metres northeast of Xivry-Circourt;" (3) "arrived at an understanding with the 19th Battalion;" and (4) at 5:00 P.M. *two hours and fifteen minutes after he received the infantry's request*, opened fire on the Higny Wood with one battery.

There are so many things wrong with this particular picture that it is difficult to know where to start. Suppose we begin with the 19th Battalion. The division commander had not allotted his flank guard any artillery. The flank guard itself came under the command of the advance guard commander. If it became involved in a serious fight it would have to call on the advance guard artillery for support. Therefore, common sense would seem to dictate that an artillery representative march with this battalion. This was not done.

Next, no matter what computation is employed and despite the most liberal allowances for unforeseen delay, the two hour and fifteen minute interval before fire was opened cannot be *satisfactorily* explained. It is inferred that the artillery commander *personally* performed every one of the four tasks itemized in the historical solution. When it was all over he had three batteries in position 3,600 yards away from the hard pressed infantry. From that position and that distance it was impossible to follow the fluctuations of the infantry struggle. He could and did fire on the Higny Wood but with only one battery and after an unconscionable period of time. Perhaps he had arrived at an "understanding" with the 19th Battalion that its troops would not advance beyond the southern edge of the wood. Of course, in view of the direct request for fire on a definite area he might have been justified in opening on the Higny Wood at once while a representative settled matters with the 19th Battalion. In that event he should have been able to smother the wood with his battalion in a matter of minutes. . . .

Another important consideration is the fact that the advance guard proper was again deprived of all of its artillery. While its infantry battalions marched on toward Mercy-le-Bas, its artillery battalions squatted down on the outskirts of Xivry-Circourt and flirted with the situation that had developed on the flank. It would certainly have been prudent for the division commander to have replaced this "lost battalion" with artillery from the main column. Which, of course, brings us to the point that we cannot hold the artillery commander responsible for everything. The final responsibility devolves on the advance guard commander although he probably accepted his artilleryman's recommendations.

Looking back it appears that a highly workable and practical solution to this affair could have been brought about by the immediate dispatch of one battery to the vicinity of Higny while the remaining two batteries continued with the advance guard. Thus the 19th Battalion would have had direct, active, and invaluable support in less than 30 minutes after its message reached the artillery. Had an artillery representative marched with the 19th Battalion this figure would probably have been cut still further. In all likelihood he would have recommended this same direct action. Furthermore, he would have had a suitable position and O. P. located to which the battery could have immediately moved without lost motion.

The heart and soul of the whole matter is not merely artillery in direct support . . . but artillery and observers so placed that no phase of the infantry struggle is overlooked and control so perfect that the great sledge hammer of the artillery can be instantly switched to accord with the swiftly moving infantry situation.

No matter how we regard this incident we are forced to the conclusion that the artillery commander was lost in that often bewildering forest of technique. It is not likely that he overlooked a single rule laid down in his artillery manual . . . *except perhaps the primary mission of artillery*. True, it took him two hours and fifteen minutes to complete his set-up; true, he eventually used only one-third of it; true, a battalion of infantry, less than two miles away, was being bled white during this process; but still one cannot afford to gloss over such an important thing as form.

Again it is high time we returned to our story.

SITUATION CONTINUED

The attempt to penetrate between the 2d and 3d Companies was frustrated by a headlong charge of the 6th Company for which it paid dearly. The fight then swung to the right flank which the enemy sought to envelop. The right platoon of the 2d Company was driven back

and then in a furious counter attack retook its lost ground. But pressure continued to build up on this flank.

On the north the fight went on with undiminished fury. The 4th and 5th Companies had long since been forced to move to the assistance of the 1st and 3d. Meanwhile, the 6th Company had been pulled back to its old position along the road where it was again held in reserve.

At 5:00 o'clock the first artillery fire fell on the Higny Wood. The immediate effect of this long-awaited fire was to enable the infantry on the north to push forward and seize the edge of the forest. And there, of course, it had to remain unless it wished to run the gamut of its own artillery.

The struggle on the right flank had turned the wheat field into a shambles. Around the machine-gun section the dead were literally heaped one on top of the other. No one remained to man one gun but the lieutenant in command of the section. In a matter of moments a German bullet had laid him out with his crew.

The envelopment progressed. The 2d Company began to give ground. At this juncture the battalion commander again called on his reserve. The 6th Company sprang from its sheltered position. The captain shouted a command and dropped dead. But the company carried on. The envelopment was again temporarily blocked. But still there was no decision. In every quarter of the field the dead piled up.

Then occurred one of those minute incidents that so often determine the outcome of battles. A wounded bugler stretched on the ground suddenly and without authority sounded the charge. Instantly another bugler leaped to his feat, repeated it, and dropped with a bullet through his head. It was enough. The 19th Battalion swept forward. A moment or two of furious hand-to-hand combat followed and then the Germans broke. A bloody pursuit dogged them as far as Boudrezy.

Quoting from the reports of the advance guard and flank guard commanders, Colonel Etienne states, "The 19th Battalion had had an affair with a battalion supported by machine-gun units. The Higny Wood was a veritable charnel house."

No accurate reports exist as to the casualties suffered by the 19th Battalion. The figures vary from 220 to 600. Considering the conditions under which they fought, the larger number does not appear excessive.

So ended this sanguinary encounter at Higny Wood. That night the valiant survivors trudged into their bivouac area at the Chanois Farm . . . their mission accomplished. The gallant behavior of the 19th Battalion on this day should assure it a permanent niche in the rich history of France.

The remainder of the 42d Division, more fortunate than its flank guard, continued placidly on to its march objective without encountering any serious resistance. It would have its turn the next day!

* * * * *

Looking back twenty years we can realize that this day's work was an infallible portent of the morrow. From almost every point of view the 42d Division failed to meet the *potentialities* of the situation. That it escaped unscathed (discounting the unnecessary slaughter in the 19th Battalion) is no more than a testimonial to its luck. On the next day it paid the penalty in full for warfare by rote: on that day division after division was overwhelmed by complete tactical surprise and by nightfall entire armies were streaming southward in confusion.

Today the French pendulum has reached the other extremity of its arc. The headlong offensive of 1914 has given way to extreme caution. Infantry moves at a snail's pace. Divisions crawl from crest to crest with sometimes as much as two-thirds of their strength in a practically fully deployed advance guard. It is no longer called an advance guard but that makes little difference since to all intents and purposes it has replaced the 1914 variety. We wonder how this rigid conception will fare against the swift-moving tank attack or against motorized infantry? We wonder about its flanks and its rear. The French say the day of surprise is over, and still we wonder. When this new doctrine or dogma or theory clashes with flesh and bone and iron and steel and lead we shall know. Until then we can only surmise.

That same thought was expressed in the beginning of this paper. In a sense it sounds "defeatist." It appears to advocate the abolition of theory, of training, of maneuvers, since the realities of war always differ from our peace-time conceptions. It does to this extent: if theory soars in the blue empyrean, if training becomes cut-and-dried, if maneuvers become stereotyped playlets of a mass exhibitionism, then we would do well to chuck the whole lot.

It is only too true that we can never reproduce situations as wildly improbable and illogical as those that flourish in battle. But we *can* turn our imaginations loose. We can concentrate on the unexpected. We can promote confusion in our maneuvers. We can blow hell out of the C.P.'s and tear up communications right and left. We can rule out key men and key leaders at the decisive point and at the worst times. We can jump a lieutenant into a battalion commander's job in the midst of an attack and push the battalion commander into his colonel's shoes. We can give false information of the enemy, or inaccurate information, or no information. We can work our chief umpires into brain fever by requiring them to invent the unexpected . . . the unexpected . . . the unexpected!

It will not take much of this to relieve us of our preconceived ideas and our mental catalog of approved solutions. Bit by bit we will come to the inevitable conclusion that there is no subsitute for thought and that to think, *and think in time,* the muscles of the intellect must be kept supple. And then when the lid does blow off we will not be stunned into immobility or waste decisive minutes wondering how or why it happened . . . *but act.*

The Elements of Leadership

By Major General Charles E. Kilbourne

Editor's Note: This article was extracted from an address delivered by General Kilbourne to the officers at Fort Mills, on the eve of his departure from the Philippine Islands in June, 1932. Since that time the manuscript has been in the possession of his son-in-law, Lieutenant Maxwell W. Tracy, who at the request of the Editor, very kindly forwarded it to the Journal, believing that General Kilbourne would have no objection to its publication.

I WISH to speak to you this morning on the rudiments of leadership. These are well worthy of your deepest consideration, for each of you, when he accepted his commission, condemned himself to be a leader. I say condemned, for very few have the aptitude or the desire to lead. We try to believe we want power and responsibility when most of us, in reality, desire only the prestige of position. Most men really want someone else to take the initiative and to direct. But an army officer cannot escape—he may be a good leader, or a poor leader, but a leader he must be.

There are some who have a natural gift for leadership; these start well ahead of those who lack it. We have all seen boys in school who naturally took the initiative and whom others instinctively followed. But this natural gift is only one point in the game. Some of these boys have continued successful throughout life, but we have all seen many of them passed in the race by those we scarcely noticed, except perhaps as duds.

Long consideration and observation have convinced me that (excepting the natural gift) the following are the important elements of successful leadership:

Physique——————Endurance
Knowledge——————Industry
Courage——————Physical and Moral
Decisiveness——————Confidence
Judgement——————Common Sense
Self-control——————Sympathy
Loyalty——————Unselfishness
Fortitude.

Everyone of these lies within your own power to develop, and if you earnestly apply yourself to their development, you need not fear the opposition of any man, however gifted, who neglects them.

Physique — Endurance

Few men can do justice to themselves or their responsibilities unless physically fit. Once in a century, perhaps, a Turenne is born who can rise above physical suffering long endured—these exceptions prove the almost universal rule. So keep yourselves fit, keep your bodies strong and your minds clear—exercise, sleep, seek amusements, be careful about drinking and other things, harmless and even beneficial in moderation, but hurtful if indulged in to excess. Remember your body and your mind are your own, they are the only things you really possess all to yourself; they cannot be taken from you, nor can you escape them.

Knowledge — Industry

These are almost synonymous, for knowledge comes only by industry and the possession of knowledge is an incentive to further industry. A leader must have a broad knowledge of his task. I once read an analysis of the characters of the two great leaders of the Franco-Prussian War — McMahon and Von Moltke. The former was an inspiring personality but he depended upon his natural gifts. Von Moltke was a deep student, an analyst, a plodder, thoughtful and thorough. None dreamed that McMahon would have anything to fear if opposed in war by Von Moltke. But Von Moltke crushed him with what appeared scarcely an effort. Learn your jobs; study, observe and reflect.

Courage — Physical and Moral

Very few men lack physical courage if physically fit. Most men fear being afraid far more than they do being injured or killed. I have seen some men funk it under fire, but for everyone of these I have seen a hundred inspired and enthusiastic, proud to find themselves unafraid. Courage in action is, I believe, one of the most common traits. Shrinking from unpleasant, violent physical contact with our fellows is only superficial veneer due to our social training. Savages do not have it and it disappears rapidly from civilized men thrown into the natural environment of warfare and contest. You need not doubt your physical courage.

Moral courage is far more rare; most men shrink from responsibility. But this shrinking can be overcome by knowing thoroughly your tasks; that is, by knowledge. Men like to do things they know they can handle perfectly. A regimental commander, terribly wounded in the Argonne, told me his first thought, when he found himself helpless, was, "Thank God someone else has to take the responsibility now." He had been promoted from a Captain (on staff duty) to the command of a war strength regiment, with its complicated equipment, in less than a year. He realized that he did not know his job; he felt that on his decisions depended, not only the lives of 3,000 men, but possibly the success or failure of the Army. And he knew that he was not thoroughly prepared.

General Nolan told me of an incident following his attack at Apremont by which he had driven a salient into the German line which must be recaptured or the whole line would have to retire. A battalion, commanded by a young Major of high reputation, was in a quarry about 150 yards in front of the main line. All knew a counterattack impended, all expected it at dawn. Three times General Nolan visited the advanced battalion. Each time he noted the nervous condition of the commander. He felt that he should replace the Major, but could think of

none as competent. The last visit was about midnight. He found the battalion quiet, most of the men asleep, but the Major more nervous than ever. He asked, "Major, is there anything you can think of that I can do to help you?" The Major then blurted out, "General, tell me how many of my men I am justified in losing before reaching a decision to retire."

General Nolan replied, "Major, you are not to retire under any conditions; you are to fight here to the last man."

"Thank God," said the Major, "now I can sleep."

Neither of these men feared injury or death; both were weighted down by a responsibility they felt unfit to meet. So I say again, be industrious and thorough, gain knowledge if you would avoid the horrors of moral cowardice.

Decisiveness — Confidence

A leader must decide, he must have confidence in himself and inspire confidence in his men. Better decide wrong than not render any decision at all. Remember, the other fellow may have decided wrong also and then your men may be so good that they put the thing over in spite of your mistakes. Do not be vacillating nor inadequate, if you would avoid certain failure. But remember, a leader cannot decide wrong too often. Again we are brought back to knowledge, gained by industry.

There is a phrase of two words I wish to impress upon you, and I hope you will never forget it. *Personal Reconnaissance.* The necessity for this in campaign is obvious. I wish you to think of it in a broader sense. I want you to apply it to all your work. Think ahead, try to visualize contingencies; plan, keep a few jumps in advance of your subordinates. In this way you will be able to make prompt and correct decisions, you will gain confidence in yourself; and your men, realizing that you know more than they do, will have confidence in you.

We are applying this principle to our war plans here. We have, to the limits of our capacity, visualized every situation that may confront the command, from the beginning of strained relations to the actual combat. We have studied the needs of the command in each situation and have listed the tasks necessary to enable the command to fight and to live, arranging them in order of importance. We know the tools and materials required, and where they can be obtained. We have divided the available labor. There remains to coördinate with our transportation.

Our object is to insure that each officer, enlisted man, foreman, gang boss, and laborer shall start at once, and with all tools and materials needed, on a constructive task which he himself can see is important. If the commanders and staff can insure this, they will be free to keep on planning ahead, and the men will know they are under a leadership that knows what to do. But if conflicting orders are issued, if men are put on useless tasks, if they are taken out for a job and the means to accomplish it are not provided, they will know their commanders are rattled and confidence will disappear.

This is what I mean by *Personal Reconnaissance.* Apply the principle and you will lack neither decisiveness nor confidence.

Judgement and Common Sense

These come by thinking over your own mistakes and successes and by observing the failures and successes of others. One must be especially careful in moments of enthusiasm; hold yourselves down at such times. The same course as that advised to attain decisiveness and confidence will aid greatly your reputation for judgement and common sense.

Self-Control and Sympathy

These are essential to leadership. A leader cannot fly off-the-handle and still retain the respect of his men. You must avoid personal anger. You may show official indignation at a subordinate's neglect of duty or misconduct, but it must be official and impersonal. There are men who are frightened into submission by a senior's anger, but such men are not worth anything, submissive or not. A real man's gore arises at once at a show of personal anger; he gets angry in return. And when a subordinate is personally angry at his commander, all hope of cordial coöperation is gone. So learn to keep your temper. Personal anger has no place in official relations, and it is cowardly to humiliate one powerless to resent it.

You must have sympathy for those in your command. Show an interest in their work. Make it a point to be with them from time to time, especially if the task is unpleasant. The sergeant may know perfectly how to do it and be able to make the men do it. But if you drop around, ask how things are going, offer assistance if needed, show that you consider it important, you will help the sergeant and make the men take interest. Visit your men when they are sick, show them you have them in mind, and you will have their support. They will work for you while you sleep. I know of nothing finer than the spirit of an outfit determined "to make good for the old man."

Loyalty — Unselfishness

Most people think of loyalty to an individual or to a commander, and that is the thought usually expressed. But I do not have that in mind. I speak of loyalty to the job. No man has the right to ask personal loyalty except for personal services or consideration, generously rendered. If a commander deserves it he will gain personal loyalty. But every commander has a right to demand loyalty to his policies and orders; he has the right to expect his subordinates well and faithfully to perform their duties as called for in the oath of office.

Loyalty means unselfishness, the sinking of yourself in your duty. Think over your reading of history and your observation of men and I believe you will agree that no selfish man ever has been served beyond the point that it was to the selfish interests of others to serve him. That thought is so important that I am going to repeat

t—*no selfish man has ever been served beyond the time when it was to the selfish interests of others to serve him.* Reflect on this and decide if you wish that kind of service.

Unselfishness really includes all the traits I have spoken of. For example, a man in action thinking only of how he can best perform his duty cannot know physical fear because physical fear comes from thought of himself. A man who is giving his whole thought to his job will not shrink from the responsibility. And there is no reason why he should. If his whole soul is in it, then his spirit is bound to inspire his men and they will work their utmost. Therefore, think more of the success of your work for the sake of your work, than you do for the effect of success or failure on your own record and reputation. Selfishness is natural; fight against it.

Fortitude

By this I mean sticking to it. Do not be a quitter. Do not be half-hearted. Remember that the mistakes, failures, the humiliations of yesterday are gone, they are water under the bridge. Get up each day remembering that it is a new day and with the determination that it shall be a day of accomplishment. Refuse to be discouraged. Sink your teeth in anything you have to do and hold on.

Now I wish to acknowledge to you that I have failed on occasions in every one of the things I have spoken about. Many of you here have seen me fail in one or more. And I have suffered in consequence, sometimes suffered acutely. One thing I can claim, I learned early in life to start again each morning. The other qualities I have earnestly striven to acquire and am still trying. I advise you to do the same. I urge you to strive earnestly to acquire these qualities for I am convinced that, in that course alone, can you hope for happiness in your professional life. I know there are men who seem to take pride in their ability to shirk and get by, but I think most of these have their moments of secret shame, when they acknowledge, in their own hearts, that they are inferior to those who do their duty conscientiously.

None of us bat 100%. If you have a 75% man and you want an 85% result, you must bat the extra 10% yourself. And if a 75% man is delivering 75%, he deserves encouragement and praise. He is doing his best, which is all you have the right to ask. Do not fancy yourself as a driver. There are times when to drive is necessary—a leader taking over a new command and not knowing his men may have to drive; but no continued success can come by driving men. Success comes by inspiring them to *drive themselves and take pride in it.*

Developments in Organization, Armaments and Equipment of the Coast Artillery Corps.

Extracts from a lecture delivered at the Army War College, September, 1934.

By Colonel Henry T. Burgin, C.A.C.

Mission

To the Coast Artillery Corps is assigned the mission of manning all artillery designated for seacoast defense against naval targets (this includes fixed, railway and tractor drawn artillery), all antiaircraft artillery and a part of G.H.Q. reserve artillery. Also the Coast Artillery is responsible for the submarine mine defense of the important harbors; this includes all controlled mines and such other barriers to navigation as may be deemed necessary and proper.

The mission of the Coast Artillery is stated in General Order 22, War Department, 1927, as follows:

> "The missions of the Coast Artillery are the attack of enemy naval vessels by means of artillery fire and submarine mines and the attack of enemy aircraft by means of fire from the ground."

Stating this in a different way we can properly say that the mission of the Coast Artillery is to bring effective fire to bear upon enemy targets beneath the surface of the water, in the air or on the water whenever they come within the range of our weapons. To carry out this mission effectively and efficiently requires a multiplicity and diversity of matériel, a high degree of training and specialized technical knowldge.

Organization

To perform its assigned functions, the Coast Artillery has been organized in two main divisions—seacoast artillery and the antiaircraft artillery. Seacoast artillery is organized in harbor defense regiments, tractor drawn 155-mm. gun regiments, and railway artillery regiments. Antiaircraft artillery in continental United States is organized in mobile regiments. These regiments do not include the antiaircraft weapons, accessories, and personnel in the harbor defenses, these being part of the harbor defense garrisons. In Panama, Hawaii, and the Philippines, Coast Artillery troops are used as required for seacoast and antiaircraft defense under the defense plan.

Type tables of organization for harbor defense regiments have recently been adopted. Before reaching a conclusion as to a suitable strength and composition for a regiment, the total required personnel strength for each harbor defense was worked out, based on carefully prepared manning tables. The manning requirements, based

generally on armament now emplaced, vary widely from small harbor defenses, such as those of Portsmouth or Key West, to harbor defenses of the magnitude of San Francisco, Puget Sound, and Chesapeake Bay.

The organization of the tractor drawn regiment of Coast Artillery is prescribed in Tables of Organization No. 333. The war regiment consists of a headquarters and headquarters battery, a service battery, and three battalions, each of two 155-mm. gun batteries. Each battalion has a combat train, as these guns would be employed normally in seacoast defense in battalion units. The fire control apparatus and gun sights are designed for normal use on moving naval targets and units are organized to include personnel specially trained for handling the problem of a moving naval target. The existing organization is satisfactory except for the lack of organizational searchlights to make possible tracking by night. In the next revision of Tables of Organization No. 333, we expect to incorporate in each 155-mm. gun battalion of seacoast artillery a searchlight platoon of 5 lights, thus setting forth the habitual need of such lights with artillery used in seacoast defense.

The organization of the railway artillery regiment is prescribed in Tables of Organization No. 323. This regiment also consists of a headquarters and headquarters battery, a service battery and three battalions each of two batteries. There is no battalion combat train, each battery carrying its own ammunition, as frequently a battery, particularly in the larger calibers, i.e., 12-inch and 14-inch, would be used alone, rather than in a battalion group. Armament for these regiments consists of 8-inch, 12-inch, and 14-inch raiway guns and 12-inch railway mortars. The 8-inch gun and 12-inch mortar batteries are four-gun units, the 12-inch gun and 14-inch gun batteries are two-gun units. The latter two (12-inch guns and 14-inch guns) require prepared emplacements for all-around fire; the others have all-round fire from the track. The railway regiments also have no organic searchlights. Since these regiments are specially trained and equipped for firing on moving naval targets and since they would function in general coast defense or in the reinforcement of harbor defenses, inclusion of organic searchlights is necessary and will be recommended.

The organization of the antiaircraft artillery regiment is prescribed in Tables of Organization No. 120. The regiment includes two main units, a gun battalion and a machine-gun battalion. The gun battalion includes three gun batteries, each of four 3-inch antiaircraft guns, and a searchlight battery of 15 searchlights to provide illumination for night firing. The machine-gun battalion includes four machine-gun batteries, each of twelve guns, caliber .50. Each battalion includes a combat train. Each gun-battery has four antiaircraft machine guns for its own defense. The searchlight battery has no machine guns under the present table.

The lack of machine guns with searchlights, which are often located in remote positions exposed to attack, is a major deficiency under the present organization and we expect to remedy it at the first opportunity. Also the consensus of opinion is that we have too few weapons in the antiaircraft machine-gun battery and that we should increase the number by at least a four gun platoon. Antiaircraft machine guns of this battery, often occupying positions just off the road close to their trucks and firing usually in short bursts, have a simpler problem of ammunition supply than infantry machine guns and more machine guns can readily be handled than the twelve in the present battery and in the infantry company.

The proper composition of the antiaircraft regiment is a matter of trial and it is possible that our organization in two battalions, a gun and a machine-gun battalion, is not the ideal arrangement. However, the present regiment serves the purpose of a sufficiently suitable reservoir of matériel which can be built up as needed when requirements are better established. With the great increase in speed attained by the modern bomber, satisfactory defense against attack from the air from any direction is not secured by the use of three-gun batteries, which would be too widely dispersed.

Defense by six-gun batteries appears to be the minimum, and such defense would require the use of the gun elements of two of the present regiments. One possibility in organizational development would be a regiment of two gun battalions, each of three-gun batteries and a searchlight battery, with a machine-gun battalion of enough machine guns to fulfill defensive needs against low flying airplanes over the area where the guns and searchlights are located. The present organization of the mobile regiment was adopted largely as a compromise of antiaircraft requirements in forward and rear areas. Another means which has been advanced to make possible a more extended but sufficiently strong gun defense is the equipping of each battery with six, instead of four guns, and supplying each battery two sets of fire control instruments, making possible three or possibly two-gun-platoon action against single targets.

With regard to fixed antiaircraft guns, they are emplaced in continental United States only in harbor defenses. Harbor defense equipment tables carry the necessary auxiliaries, such as searchlights, machine guns, and fire control instruments for these fixed guns, and the harbor defense manning tables include the personnel for the antiaircraft defense installations of the harbor defense.

Development

Coast Artillery cannon range in caliber from the 3-inch seacoast and the 3-inch antiaircraft guns to the 16-inch guns, throwing a projectile weighing more than a ton a distance of 48,000 yards—more than 27 miles.

A recent development in method of emplacing the primary caliber seacoast guns was the decision to mount such guns in the future in emplacements giving frontal and lateral protection with traverses between the guns. The earth and concrete parapets and traverses will also give protection to the plotting room and to at least part of the ammunition supply, thus permitting its storage at the

guns. In the period following the World War, we emplaced large seacoast guns on open concrete platforms and located plotting rooms, power plants, and comparatively unprotected ammunition storage installations some distance from the guns, the ammunition being distributed in several separated magazines. In other words we relied on dispersion of elements and on concealment rather than on protection through bombproof construction, largely because of the greater expense of the latter method. In the future we shall give the guns greater protection from ships' fire and the more important and more vulnerable accessories and the ammunition greater protection from both aerial bombing and naval gun fire. Our latest and our more important batteries are being equipped with means of collective protection against gas for vital inside chambers such as plotting rooms where activities must be unimpeded and where protection by the gas mask and special clothing would be insufficient to insure continuity of operation.

Fire control equipment for seacoast artillery has proved quite satisfactory except for needed simplification of apparatus for rapid fire guns, such as 6-inch and 155-mm. calibers, for firing on fast moving targets, and means of fire control for long range firing of our big guns, when terrestrial observation for tracking and for spotting is not practicable. Exercises have recently been carried out in long range firing which give promise of solving this problem by means of aerial observation of the ship's course, plotting based on this observation, and by spotting from the air. Progress has been such that this now constitutes an important emergency method of fire control. At places where there is sufficient height of site at observation stations to permit accurate waterlining of ships, reliable ranging is obtained by use of the depression position finder. Where the height of observation stations is low, reliance is placed on the horizontal base system of position finding. A good self-contained range finder giving reasonable accuracy up to ranges of 20,000 yards would be of great advantage and it is hoped that such an instrument can be developed.

The principal antiaircraft artillery weapon, the three-inch gun, is an excellent cannon, particularly now that very high muzzle velocities are used, resulting in short times of flight. This is brought about through the use of the removable liner. A new liner can be inserted in the field in about fifteen minutes, and the rate of fire need not be kept down in order to conserve accuracy life of the gun.

The 3-inch gun is mounted on a trailer which may be towed by a heavy truck at a speed on good roads of about 35 miles per hour. It may be emplaced in twenty to thirty minutes and returned to traveling position in a little less time. The muzzle velocity is 2600 foot seconds as compated to 1800 in the war matériel. The rate of fire is 25 to 30 shots per gun per minute. This rate is achieved through a full automatic breech block and a specially designed fuze setter. The effective vertical range is about 25,000 feet as compared to 16,000 in the war matériel. There are no sights on the gun. The firing data, elevation, azimuth and fuze setting are transmitted electrically from the fire control section to dials on the gun. These dials are kept continuously set by matching pointers on each dial. While this matériel is satisfactory, the mount is very heavy, requiring a large and expensive towing vehicle of limited cross-country ability.

The fire control equipment for the 3-inch gun consists essentially of a height finder and an automatic computing device, called a director. The director is manned by a crew of six men who follow the target with two sights (one in azimuth, one in elevation) and set in the altitude as it comes from the height finder. No other data are required. The director solves instantaneously the data to the future position of the target and automatically transmits it to the dials on the gun as above mentioned. The altitude is measured by a self-contained stereoscopic height finder or by a two-station system with a measured base line. The latter system is used only where the height finder is not available. Considering antiaircraft fire control apparatus, the existing director, that instrument which mechanically computes firing data for the antiaircraft guns, is remarkably efficient considering the many variables involved in establishing the course of a rapidly moving and maneuvering object, such as the modern bomber. Accuracy and rapid functioning have been secured but not the desired ruggedness, simplicity and cheapness. The cost of production is high. Simplification of the instrument and modifications which will cut down on adjustments and repairs are imperative. Work on the director has been carried on in the last few years by the Sperry Gyroscope Company, by Frankford Arsenal, and by the Coast Artillery Board. There have been produced concurrently an excellent continuous fuze setter and electrical transmission of data from the director to the guns, using a match-the-pointer system which makes all operations comparatively simple. With this system accurate fire can be delivered on airplanes at a rate of 25 shots per gun per minute. The self-contained stereoscopic height finders are excellent but have the disadvantage of high cost, difficulty in rapid procurement, and the requirement for highly trained operators. Two station altimeters are simple and accurate but have the disadvantage that with several targets in the air in close proximity, the two separated observers have difficulty in promptly getting on the same target. The best prospect is improvement of the present self-contained height finder and at the same time finding means of reducing its cost.

For the antiaircraft machine guns, current development is the improvement of the mount for the caliber .50 gun, which has had too much vibration, and improvement of means of fire control, including the tracer, which gives a visible trajectory up to ranges of about 2,000 yards.

Efforts have been made to develop a fast firing weapon projecting high explosive ammunition smaller than the 3-inch and more effective than the machine-gun bullet. These have been centered on a gun of about 37-mm. caliber, but to date have not been satisfactory in that a

mount sufficiently free of vibration to give needed range and accuracy has not been found, nor has a system of fire control of sufficient efficiency and simplicity been evolved. A weapon and ammunition of this type appear necessary for combating low flying armored airplanes.

Recently a metal mirror for the antiaircraft searchlight has been produced. This mirror is much more durable than the glass mirror and also less expensive, particularly under quantity production. Sound locators, used to enable the searchlights to pick up airplanes at night, have inherent weaknesses under certain conditions which have caused work to be initiated on other means of detection at night. This work has been remarkably successful and equipment is expected which will function satisfactorily in locations where the sound locator cannot be used advantageously—for example, where traffic is necessarily so close to sound locators as to interfere with their functioning. In the meantime, however, work is progressing on an improved type of sound locator.

Development of our fire control equipment and auxiliary apparatus to make seacoast and antiaircraft artillery firing more effective has been a major concern of the Coast Artillery, the Ordnance Department and the Corps of Engineers for many years.

Some four years ago the War Department created a Harbor Defense Board, consisting of the several Chiefs of Arms and Services concerned in the building, maintenance and operation of a harbor defense. This Board had for its mission the drawing up of projects for the modernization of all harbor defenses of continental United States. This work has been completed. Basic projects have been drawn up for each harbor defense and approved. Old and obsolete armament has been eliminated and new and modern equipment is being supplied in accordance with an established priority. The only fixed artillery to be mounted in future will be long range 8-inch rifles and the 16-inch guns.

The projects, as stated before, have been approved and work has progressed toward completion of detailed annexes covering:

(1) Guns and their installations,
(2) Fire control installations for the control of fire,
(3) Searchlights for the illumination of water targets,
(4) Under water defense such as submarine mines and submarine nets and listening posts,
(5) Antiaircraft artillery for defense of the harbor defenses,
(6) Protection against chemical agents.

Annexes for all but about three minor harbor defenses have been worked up.

Coast Artillery fortifications are combined into nineteen harbor defenses on the Atlantic, Gulf, and Pacific shores of continental U. S., two in Panama, one in the Philippines and two in Hawaii. Those in the foreign possessions are kept fairly well supplied with personnel and the personnel is always trained and ready for action. Owing to the decrease in strength after the World War, the harbor defenses in continental U. S. were seriously depleted of personnel. In order that some training might be had for the Regular Army units and training centers provided for the civilian components, a great number of the Coast Artillery stations in continental U. S. were placed on an inactive status with only sufficient personnel to maintain the armament. The remainder of the harbor defense personnel was concentrated in five harbor defenses: two on the Atlantic, one in the Gulf, and two on the Pacific Coast. These five active harbor defenses have carried the entire load of Regular Army and civilian component training. Time has demonstrated that the guns and equipment have been preserved so that in a short time they can be put into serviceable condition after the harbor defenses are actively manned by a full complement of personnel. In other words, the guns and equipment are there and can be used at any time personnel is provided for their operation.

Funds which have been appropriated during the past few years for development have been sufficient to enable the supply services to carry on experimental work with fairly satisfactory results. Such has not been the case with respect to procurement of matériel after the pilot models have been standardized for manufacture. The result is that the Regular Army and National Guard regiments in the continental U. S. have not enough equipment to carry on peace time training. In an emergency there would be a woeful lack of equipment in these regiments all of which are included in the first phase mobilization.

★

IT WOULD SEEM SELF-EVIDENT *that the League would be far better employed in investigating and endeavoring to remove the potential causes of war than prolonging what has proved to be futile efforts to evolve a scheme for limiting the means of waging it.*—JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

Emergency Methods of Fire Control

By Captain James T. Campbell, C.A.C.

A MOST important part of the prediction of firing data is the method used for recording the passage of time. The data must be computed for firing at a particular instant, and must be transmitted to the gun emplacements in such a way that the gunners are never in doubt as to the proper time to fire. In the standard system, repeated drills familiarize the personnel with a carefully prepared routine in which time seems to take care of itself; but when an emergency system is put into operation, the timing is likely to be the first thing to go wrong.

When the problem of drawing up an emergency system is laid before any representative group of officers, some of them are sure to propose a time-range board and a time-azimuth board. This suggestion has some merit, for these boards do show the range and azimuth as explicit functions of time, a very desirable feature. But they suffer under the severe disadvantage that they do not show how the range rate and the azimuth rate depend upon other things that may be known about the target's position and movement. Experience has fully demonstrated that personnel are not able to predict along curved lines. And if any officer doubts that the track of a time-range or a time-azimuth board is curved, let him plot a course of a fast moving target, being given infrequent and slightly inaccurate readings. The principal advantage to be gained by using the plotting board is that all maneuvers of the target will be faithfully represented. This simplifies prediction because a good part of the enemy's movement will be along straight line courses.

Since the plotting board is limited to the plotting of two variables, and the two chosen are range and azimuth, the remaining variable, time, must be taken care of in another way. In the normal system this is done by simply plotting the positions of the target at uniform time intervals. In emergency systems, especially those designed to meet situations in which no direct observation of the target's position is possible, the smooth and orderly sequence of events is broken, the line along which predictions are made may be manipulated in almost any way, and confusion results.

Two very important general principles should be followed in the design of an emergency system. First, the emergency system should differ as little as possible from the standard system. Second, no possible source of information should be overlooked, and no method or step that is valuable in the standard system should be eliminated unless that elimination results in a genuine net gain. The first of these principles seems obvious, but it is very easily forgotten when the time comes to apply it. Ask almost any officer what he would do if all observing stations were wiped out and he will answer, "Take the percentage corrector to the B.C. station and ——." Just why the B.C. station is an appropriate place for the percentage corrector is never fully explained, nor is it clear why valuable time should be lost in moving it and in training the personnel of the battery how to act in this unusual situation. Certainly, the best thing to do in an emergency is to keep every possible man in his usual place and doing as nearly as possible the usual things. A very serious objection to the use of special boards, instruments, or other gadgets is that they will not be on hand when they are needed.

The second of these general principles, the one that requires the use of all possible information and close adherence to standard method, demands ingenuity and painstaking study. It is not sufficient to find *a* way to meet any particular situation; the correct solution of the problem will not be reached until one has found *the best* way. This means that the battery is not fully prepared to meet an emergency until someone has done some careful planning, and the worth of the plans have been demonstrated by means of satisfactory drills.

Attention will now be turned to the plotting of different kinds of courses on the plotting board. The word *course* will be taken to mean a series of points on the board, each point of the series being defined by its *range* and *azimuth* as read on the scales of the board.

An *actual course* will be the series of points corresponding to the actual positions of the target as it moves across the field of fire. In plotting this course, the only method worth considering is to make the readings on the azimuth scale and gun arm (or relocating arm) equal to the azimuth and range of the target from the gun or directing point. With the instruments in use at present, the position of the target is found intermittently, so that this course is represented by a series of isolated points, but the course itself may be thought of as continuous.

A *corrected course* will be made up of points found by combining the position data of the actual course with the ballistic data given in firing tables. The range reading of any point is equal to the range reading of the corresponding point on the actual course plus the ballistic correction indicated by the firing tables for the conditions existing at the time of firing. The azimuth reading of a point on the corrected course will be equal to the azimuth reading of the corresponding point on the actual course plus the correction for drift, cross wind, and rotation of the earth.

An *adjusted course* will be the series of points found by applying to the points of the corrected course some correction not indicated by the firing tables but dictated by observation of fire.

A *ballistic course* is a series of points each of which corresponds to the firing data that would have caused the target to be hit. Unlike the courses previously mentioned, the ballistic course is not continuous but is made up of

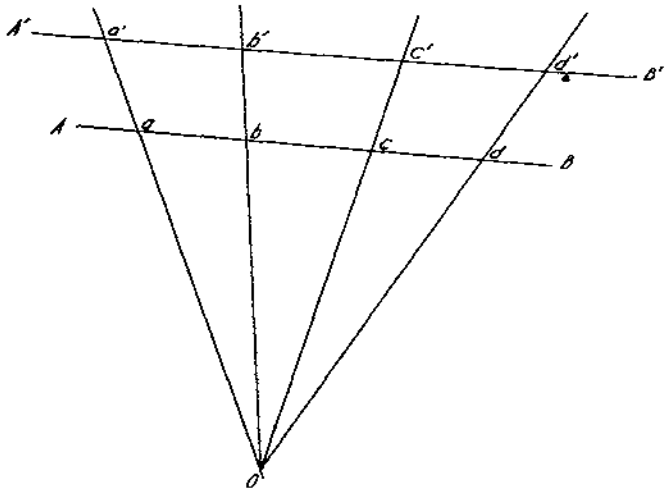


Figure 1

isolated points, each point determined after observation of the fall of a single shot.

The two propositions given below are useful when thinking of what changes take place in a course if it is operated upon in certain ways.

Proposition 1: When a straight line course on the plotting board is transformed into another course by giving to the range of each point on the original course an unchanging percentage increase or decrease without changing its azimuth, the resulting course is a straight line course parallel to the original.

In Figure 1, O represents the center of the board, AB represents the original straight line course, and $A'B'$ the course resulting from the proposed transformation. The point a' on the new course is determined by moving along the line Oa, starting at the point a on the original course, and moving through the distance aa' which is equal to the given percentage of the distance Oa. The points b', c', and d' are derived *from* b, c, and d in the same way so that $aa'/Oa = bb'/Ob = cc'/Oc = dd'/Od =$ the given percentage /100. It is a simple problem in plane geometry to show that a', b', c' and d' lie on a straight line parallel to AB.

Proposition 2: When a straight line course on the plotting board is transformed into another course by swinging each point of the original course through a fixed angle in azimuth without changing its range, the resulting course is a straight line making with the original course an angle equal to the fixed angle through which each point of the original course is moved. The distances between points on the course are not altered by this transformation.

In Figure 2, O represents the center of the board, AB represents the original course. and $A'B'$ the course resulting from the transformation. By hypothesis, $OA = OA'$, $OB = OB'$ *and angle* $AOA' =$ *angle* BOB'. It is obvious that $AB = A'B'$ and angle $ACA' =$ angle AOA'.

Figure 3 shows the relative positions of the actual, corrected, adjusted, and ballistic courses for a target moving along a straight line as follows:

Azimuth of course—325 degrees.

Speed of target on the course—450 yards per minute.

Length of normal to course—7,400 yards.

Distance from normal to initial point 7,100 yards.

The points numbered O, 1, 2, .. 12, represent the positions of the target at uniform time intervals of one minute each. The points O', 1', 2', .. 11' are removed from the points indicated by the unprimed numbers by distances corresponding to the travel of the target during the time of flight. If the target were at the position indicated by point 2, for example, when the shot is fired, it would, according to the firing tables, be at point 2' when the shot falls. The time of flight used in computing the positions of these setforward points is that corresponding to the uncorrected range to the points themselves. The corrected course is computed using Firing Tables 155-B-3 with the assumed conditions:

Normal Charge.

Azimuth of ballistic wind—6,100 mils.

Speed of ballistic wind—35 mph.

Ballistic density—97%.

Atmospheric temperature—90° F.

Target below gun—60 feet.

Projectile weight—normal.

Muzzle velocity—1,990 f/s.

The data used in plotting the corrected course are the corrected range and corrected azimuth of the setforward point. Then, according to the firing tables used, if the gun were fired when the target reaches point 2, the pointing data to be used would be that indicated by point 2'. It will be noted that the corrected course is not a straight line and is not parallel to the actual course. This is due to the combined effects of a range correction that is not a fixed percentage of the range and a lateral correction that is rather large but not constant.

The adjusted course of Figure 3 is found from the data

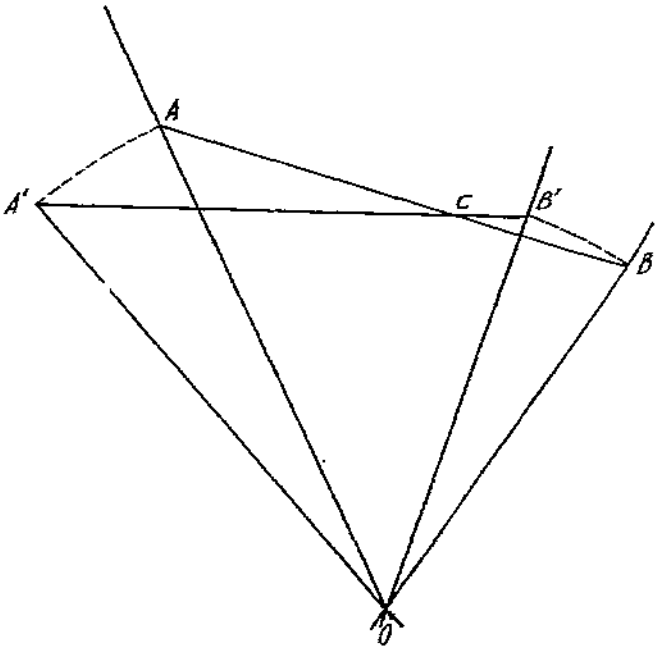


Figure 2

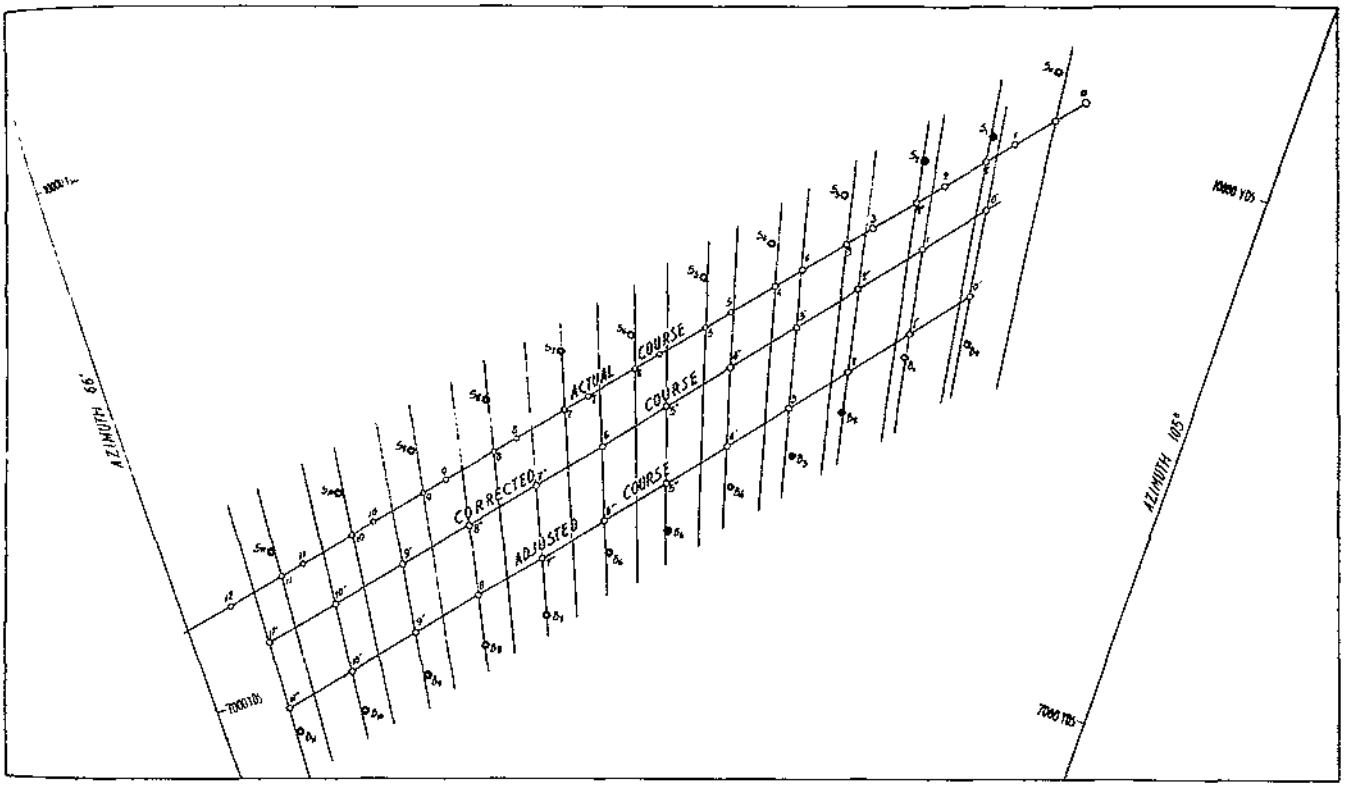


Figure 3

plotted on the corrected course by applying an adjustment correction of *down* 5%. Since this percentage is constant throughout the course and the azimuths of plotting have not been changed, any segment of the adjusted course short enough to be considered as a straight line will be parallel to the corresponding part of the corrected course. Points on the adjusted course are indicated by triple-primes. It is now assumed that the gun was fired with the data indicated by the adjusted course and that the shots fell as indicated by the points marked S_0, S_1, S_2, .. S_{11}. Then, according to the assumption that a change of a given number of yards on the range drum will cause a change of a like number of yards in the range to the point of impact, and a change of a given angle in the azimuth of pointing will cause the same angular change in the azimuth to the point of impact, the ballistic points for this shoot are as indicated by the points marked B_0, B_1, B_2, etc. The value of this assumption may be open to debate, but the examination of this question will be left for another time. Regardless of the merits of this assumption, in future work it will be assumed that the firing data that would have hit the target is that represented by these ballistic points. This assumption is perfectly legitimate even though it may not be consistent with the falling of the shots as indicated in the figure.

The data pictured in Figure 3 will be taken as basic and the shoot represented will be conducted by various methods of fire control. Several different emergency situations will be assumed and numerous methods will be examined. Having all of these situations and methods referred to the same problem will offer some advantages in comparison of results. Also, having a single set of data in mind will help materially in fixing clearly the relations between the various parts. Since there may be readers who wish to use these data for their own purposes, to check the solutions given or to work on schemes of their own, the tabulation is given:

Time	Actual Range Instant of Firing yds.	Actual Azimuth Instant of Firing mils.	Range to SFP yds.	Azimuth of SFP mils.	Corrected Range yds.	Corrected Azimuth mils.	Adjusted Range yds.	Range to Splash yds.	Azimuth of Splash mils.	Range to Ballistic Point yds.	Azimuth of Ballistic Point mils.
0	10255	1757	10120	1742	9560	1714	9082	10377	1738	8825	1718
1	9949	1723	9824	1709	9290	1681	8826	9956	1710	8694	1680
2	9654	1688	9538	1673	9029	1646	8578	9761	1674	8355	1645
3	9371	1651	9265	1636	8783	1610	8344	9524	1631	8085	1615
4	9102	1611	9006	1595	8543	1570	8116	9225	1591	7897	1574
5	8848	1569	8761	1553	8320	1529	7904	9022	1551	7643	1531
6	8609	1524	8531	1508	8108	1485	7703	8708	1506	7526	1487
7	8388	1477	8319	1461	7913	1438	7517	8635	1461	7201	1438
8	8186	1428	8126	1411	7740	1388	7353	8405	1410	7074	1389
9	8004	1376	7952	1359	7581	1336	7202	8190	1356	6964	1339
10	7843	1322	7799	1305	7446	1282	7074	8032	1302	6841	1285
11	7706	1266	7670	1249	7331	1227	6964	7809	1246	6825	1230
12	7593	1208									

The British Capture of Manila—1762

By Major Earl Landreth
Infantry

PERHAPS in all Manila there is nothing so fascinating as the old walled city. Surrounded by neatly trimmed lawns, sunken gardens and modern playgrounds, it is difficult to picture in this mellowing pile of stone the grim guardian that for centuries stood as a symbol to native and traveler alike of the might of Spain. On September 23, 1762, when the bearded sentry, scanning the entrance to Manila Bay, descried thirteen sail on the horizon, the close cropped lawns were rank growths of grass and the gardens and playgrounds a weed-filled moat of stagnant water.

At this time Spain controlled the Philippines through Mexico, and Manila was governed by Archbishop Rojo, one of a long succession of ecclesiastical governors, for Spain professed more interest in the spiritual welfare of the Filipino than in the galleon that yearly carried the Island's tribute to the Crown. From the plaint of the venerable governor that it was difficult to get the natives to work once the galleon was loaded and ready for dispatch, it might be assumed that at some time or another the importance of this ship had been duly impressed upon all. Nor perhaps was it an accident that the Archbishop was a good financier and business man, and while he failed to repair the walls of the city which had fallen into decay and the streets within the walls which had become almost impassible, the well-laden galleon sailed annually for Mexico.

As to spiritual matters, the attitude of the good Archbishop might easily be determined when on the one hand he required his officers to cease holding dances in the Palace and on the other hand scandalized his flock by encouraging this same wicked art of dancing at parties in his own establishment. It was even whispered behind fans that the Archbishop had been seen about the streets of nearby Cavite singing ribald songs in company with some of the less conventional ladies of his court.

Now, lest we seem too hard on the Archbishop, let us hasten to say that when he assumed control of his office conditions were indeed in a bad way. The Treasury was down to its last 10,000 pesos, and public buildings were in such a state of disrepair that it was feared they would tumble down upon their occupants. Well might a more energetic man than the Archbishop have thrown up his hands at the task before him. With commendable energy, however, he had the buildings repaired and at the same time brought the Treasury balance up to more than 130,000 pesos. In addition, he began the construction of three frigates at Cavite to operate against the Moros and protect the annual treasure ship.

As for the walls of Manila, the Governor deemed them adequate to repel native attacks, and placed his faith in the great distance of the Philippines from Europe, considering, as do many present-day American statesmen, the ocean his best defense. So the walls were left in their state of disrepair. But even while the Archbishop dreamed in fancied security, the English were considering ways and means of capturing the Island. A plan to seize the southern Islands and force a favorable treaty on Spain was considered, but when on January 2, 1762, England declared war against Spain, orders were issued directing the capture of Manila, and General Sir William Draper was ordered to India to set the expedition in motion from there.

"Had their skill and weapons been equal to their strength and ferocity, it might have cost us dear."

General Draper was a very active and energetic commander and by August 1st, three weeks after his arrival in India, had, despite an exceptionally heavy surf, completed loading his ships and sailed. The expeditionary force was a motley crew, consisting of a regular regiment, the 79th, with about 500 men, about 270 Marines, 600 Sepoys and a company of 250 French deserters. These two latter were East India Company troops. In addition there were two small artillery detachments and an indeterminate number of unarmed lascars for laborers. Besides there was a battalion of seamen, numbering about 550, giving an armed landing force of about 2,300.

If General Draper was active, no less so was Admiral Samuel Cornish who commanded the fleet. While the expedition was being prepared, he sent a frigate to cruise between Madras and the straits of Singapore to prevent any ship from carrying word of the expedition to Manila, and in order to hasten the preparation, sent part of his fleet ahead to water at Malacca. Calm weather, however, delayed them, and they did not arrive at Malacca until three days after the remainder of the fleet had assembled there. Watering took until August 27, but the time was not entirely lost for the energetic Draper bought large quantities of rattan so his troops could spend the tedium of the coming voyage in making gabions. After leaving Malacca, Draper must have spent much of his time in planning for the coming operations, for upon arriving at Timon, the naval rendezvous point, he issued his orders for landing even to details of his landing signals. As the fleet approached Luzon a heavy northeast gale drove the vessels off the coast and separated some of the squadron. Whether this wind separated the supply ship from the remainder of the squadron is not known, but when Admiral Cornish finally made land on September 23 and anchored his thirteen ships in line off Cavite, the two store ships were not with him.

To the Spaniards, while not knowing of the declaration of war, the unexpected appearance of the thirteen ships

in the harbor could mean but one thing. It is small wonder that the utmost confusion reigned in the city. Those living within the walls rushed outside to get away from the expected bombardment while those living outside the walls rushed inside to secure protection. The officials were hardly less excited than the people, although travelers from India had warned them that an expeditionary force was being prepared and three days earlier a strange ship had been reported in the harbor. Little attention was paid to these warnings and, as we have seen, Manila was wholly unprepared for the coming attack. The city was garrisoned by the Royal Regiment, an organization that, in spite of its European name, had been recruited in Mexico and, so far as any one knew, had never fired a shot. It was composed of twenty companies of 100 men each, but these companies had never been filled and death and desertion had taken their toll. Detachments for convoy duty with the galleon and for special assignments elsewhere in the Islands had further reduced the regiment until it is doubtful if it numbered 600 men. In addition to the Royal Regiment, there was an artillery detachment composed of 80 native Filipinos, who were, at best, but indifferent artillerists.

Upon the appearance of the British fleet Rojo immediately took steps to supplement the garrison by raising four companies of Spanish militia of 60 men each. He also caused the munitions, which were stored in the arsenal outside the walls, to be brought inside, and at the same time he gathered supplies from the surrounding country in anticipation of the coming siege.

The British had planned to attack at Cavite first, and then, using that as a base, operate against Manila. They found, however, the wind unfavorable for such an attack, so Admiral Cornish and General Draper, after sending an ineffectual summons to the Archbishop for surrender, put in with two frigates and reconnoitered Manila and the vicinity. At this time the fill upon which now stands the docks, the Manila Hotel and many other buildings, was part of the bay, and the ships could approach to within a very short distance of the walls. The consternation and confusion within the city was very evident to both Admiral Cornish and General Draper, and they decided to take advantage of this condition and land near Manila at once. This decision was strengthened by the fact that they had noted two churches standing near the wall which, if taken before they could be destroyed, would give the British command over the south wall of the city.

In selecting a landing place, they chose the beach near Malate, at which point American troops were to be landed more than one hundred years later. Although it was about six o'clock in the evening, steps were immediately taken to carry out the decision. In accordance with a prearranged plan, which as we have seen was worked out during the voyage, Admiral Cornish gave the signals to prepare to land. Accordingly, three frigates immediately moved close to the shore to cover the landing with their guns. The landing force was composed of the 79th Regiment, the marines, and a detachment of artillery with three field pieces and one howitzer which had been fixed in the longboats. This force represented the best troops available and numbered in all between seven and eight hundred men. It was divided into three groups and loaded into the longboats. One group was brought under the stern of each of the covering frigates which were separated by some distance, to confuse the Spaniards as to the exact point at which the landing was to be made.

As soon as all was in readiness, the two groups of longboats on the right closed in on the left frigate which rested opposite Malate, and before 7 P.M., in an even line, the three groups pushed to the shore. Each group of longboats was under the control of a naval captain. By this time large numbers of natives and a few Spaniards had assembled to oppose the landing. The frigates, however, opened fire to cover the flanks of the landing party, quickly dispersing the natives, and the landing was made without armed opposition. It was not attended without danger, however, for a violent surf arose which capsized the boat containing the howitzer and dashed some of the other boats to pieces. The occupants of the remaining boats leaped into water up to their waists and, carrying their muskets and ammunition on their heads, waded ashore. The first to get ashore immediately formed ranks to cover the remainder of the landing party.

No lives were lost in the landing but considerable damage was done to arms and ammunition. At this time, if the Spaniards had made a determined defense, considerable damage could have been inflicted on the British. As we have seen, however, the Archbishop was not a soldier and no orders directing dispositions for the defense were given. The Spaniards and natives who gathered near Malate apparently had neither plans nor leadership. That night the British posted an outpost and slept under arms.

Rojo had been busily engaged in removing powder from Polverista, a powder magazine near Malate, but late in the evening decided he would defend it since its capture would give the British an excellent covering position for the landing of further troops and supplies. He dispatched 100 men for its defense.

In the morning, in spite of heavy rains betalding the arrival of the dreaded typhoons, Draper pushed out towards Manila, capturing the Polverista, most of its defenders having fled upon his approach. Colonel Monson with about 200 men was then sent ahead to reconnoiter the roads and approaches to the city. He seized the Ermita Church about 900 yards from the walls. Not only was this large and commodious church strong defensively, but it furnished cover from the rains. The latter factor was important for the ground was so saturated with water that it was impossible to find a camping place. The 79th Regiment under Major Moore was immediately pushed forward to secure this position and General Draper occupied the priests' house as a headquarters.

Meanwhile, another small party advanced under cover of houses to Santiago Church near the bay and only 300

yards from the city. This church commanded the city, giving a good view of the Spanish defenses. Sensing its importance, the reconnoitering party notified General Draper who immediately dispatched troops for its occupation. The occupation of a post so near the enemy defenses at such an early stage of a siege was contrary to all military precepts of the time, but the weather made the British situation critical and normal siege operations were impracticable.

During the advance from Malate, Admiral Cornish had not been idle. The battalion of seamen was landed and posted between the marines who had been left at Malate and Polverista to cover the communications and the 79th Regiment in the advance posts. The rains had been increasing and the surf continued dangerous, but the remaining troops, including the Sepoys, were finally landed though not without loss. The utmost skill was required of the naval personnel who, in spite of the surf, landed supplies and artillery as well as troops.

Meanwhile, the defense continued its ineffective and spasmodic efforts. Seeing the British advance detachment at Santiago Church, they made weak and futile efforts to dislodge it by fire alone. The failure to gain results from this fire was probably due both to the inadequacy of the guns and the inability of the men serving them. Later, when the advance detachment at Santiago Church had been reinforced, the defenders made a sortie with two companies of Spanish and about 1,500 natives, occupying the Bagumbayan Church about 200 yards from and on the right of Santiago Church, from which position they were able to bring fire on the British right. A small detachment of Sepoys under naval command was first sent against the troops making the sortie. Later Colonel Monson with 100 seamen and three pickets from the 79th drove the party back into the city with such disorder that they left one of their artillery pieces on the glacis. The British then occupied the Bagumbayan Church which commanded both the city and the Santiago Church.

Having established themselves near the walls, the British, notwithstanding the rain, immediately began preparations for the siege. Batteries were started and one behind Santiago Church was finished by nightfall. A party was sent forward to reconnoiter the walls, and since Rojo had neglected to post sentries in the covered way near the Royal gate, one detachment was able to sound the depth of the moat which was found to be about five feet. This party was fired upon from the bastions and sustained three casualties, but from the information gathered, several weaknesses in the wall were uncovered. The glacis was found to be too low, the ravelin was not armed and the covered way was in disrepair. Moreover, the ditch did not include the capital of the bastion of the Fendicion on the southwest corner. This was the deciding factor in determining Draper to select this point for his assault.

The next nine days were devoted to preparations. Guns from the ships were brought ashore and emplaced, trenches were dug and a place at arms constructed. Work was retarded by the weather which continued bad and because the supply ships carrying the intrenching tools and gabions did not arrive until the 30th. All of the ships' carpenters and blacksmiths, however, were put to work making intrenching tools, and the work of establishing the batteries proceeded in spite of all obstacles.

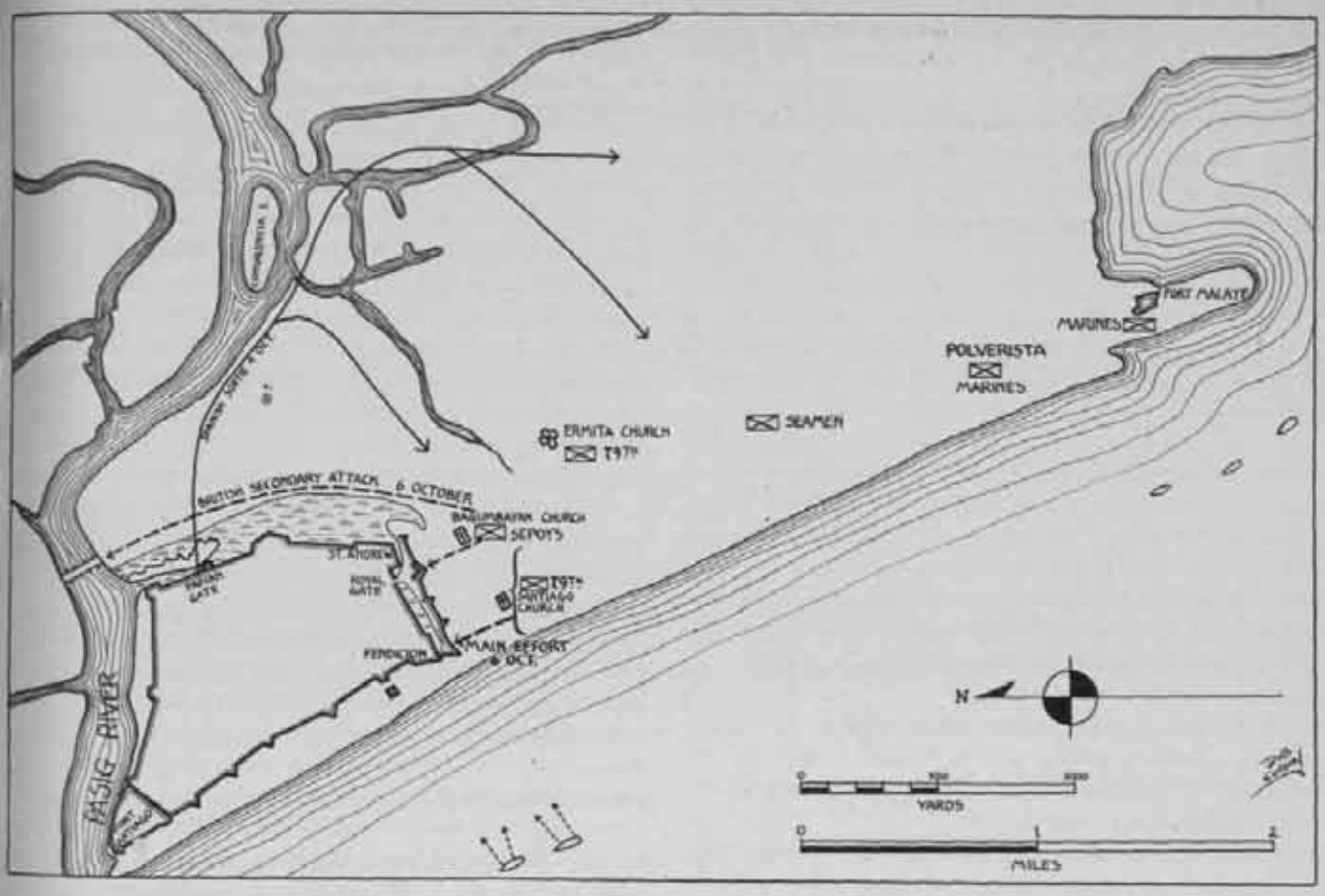
On the 28th two of the larger ships moved close inshore and began an enfilading fire along the front intended for the attack. This fire had little effect as the ships were unable to approach close enough to the target and the shells either buried themselves in the sand at the foot of the walls or passed harmlessly over the city. The moral effect was considerable, however, and so the bombardment was continued night and day. This fire was returned by Rojo but without effect.

A most regrettable incident occurred on the 28th. The nephew of the Archbishop, who was bringing news to Manila of the declaration of war, was captured by the British shortly after he entered the harbor. The Archbishop having requested his parole, he was being conducted to the city under a flag of truce when the natives, many of whom had but just joined the Spanish garrison, made a sortie. Unaccustomed to the courtesies of war, they fired on the flag of truce, killing the British officer in charge and mortally wounding Rojo's nephew who had attempted to shield him.

A fresh storm blew up on the 1st of October, endangering the ships engaged in the bombardment and in fact the entire squadron. One of the supply ships, the *South Sea Castle*, was blown ashore near Polverista. This proved of distinct advantage, however, as it permitted the unloading of the supplies which otherwise could not have been unloaded at all because of the surf. Moreover, the ship lay in such a position that its guns were able to cover the Polverista which at that time was menaced by a large body of natives.

While the good Archbishop contented himself with issuing a manifesto, stating that an "Angel from the Lord was gone forth to destroy the enemy like the host of Sennacherib," the British took advantage of the noise of the storm to complete work on the battery for the 24-pounders and to construct a battery for the ten- and thirteen-inch mortars and a communications trench between the battery and the church. The next day the seamen brought up and mounted the remaining guns. The weather moderated somewhat on the morning of October 3 and the bombardment of the city was begun. Most of the fire was directed at the Fendicion Bastion and within a few hours the twelve guns of the defense were silenced with a loss on the British side of but two men. Meanwhile the battery in the orillon of the bastion of St. Andrew, being on the flank, had been causing considerable annoyance, and a battery of three guns were emplaced so as to bring fire against it.

During the night a brisk fire of grape and musketry was maintained to prevent the Spanish from repairing their embrasures and remounting their guns in the Fendicion Bastion. This fire was effective, for on the morning



of October 4th the Spaniards were able to open fire with only three or four guns.

On this night, however, the Spaniards made their one good defensive move of the siege. The British force was too small to permit the detachment of troops north of the Pasig River to prevent the city from receiving supplies and reinforcements from the outlying country and, as a consequence, by the 4th of October, approximately 5,000 natives had reinforced the garrison. Only about half this number were considered capable of bearing arms, but Rojo, deeming this number sufficient, decided upon a sortie that would in one move regain all of his lost ground. The plans called for a division of the force into three columns; one of these was to move against the batteries near Santiago Church, one was to attack the troops at Ermita and Malate, while the remaining column was "to invest by the seaside." It is difficult to say just what this last mission was, but it probably called for a move against the position held by the marines at Polverista and Fort Malate.

This force, composed mostly of natives, moved out of the Parian gate at about midnight. No sooner had it passed the gate than the natives began to make a great racket. While this noise must have aroused the British, it apparently did not disclose the plan. The column that was to attack Ermita and Malate moved to a position probably opposite Convalencia Island, and from there, taking advantage of the cover of the trees along the streams, moved against the seamen's cantonments. Eluding the British patrols, it attacked the cantonments about three hours before daylight.

It is difficult to see how this move could have been made unobserved. Either the British patrols must have conducted themselves in a most perfunctory manner, or their attention must have been drawn by the noise in the direction of the Parian gate. At any rate, the assault came as a surprise. The natives, however, being armed only with bows and arrows, were no match for the seamen who stood their ground. Detachments of the 79th Regiment went to the assistance of the seamen and at daylight one of these counterattacked and dispersed the natives with a loss of about 300 men. In speaking of this native force Draper says, "Had their skill and weapons been equal to their strength and ferocity, it might have cost us dear."

During this engagement the detachment designated to move against Santiago Church apparently stood fast and did not attack until the first detachment had been repulsed. This group was composed of both Spanish and natives and when it finally moved against the Bagumbayan Church it drove out in disorder the Sepoys defending it.

The capture of this church gave the Spaniards command over the British positions and they were able to inflict several casualties on the British located in the place of arms. The latter, however, held their ground in the rear of the church and finally recaptured it with the assistance of some field pieces. The third column did nothing. Its commander deserted it and the natives fled.

This was the last effort of the natives, most of whom, discouraged by their lack of success, deserted and left for their homes.

The next day, October 5th, a breach was made in the walls, and the battery in St. Andrew, which had been enfilading the British, was silenced. Another ineffectual summons of surrender was sent to the Archbishop. That night Draper issued his orders to "principal officers of each department only" and the necessary preparations for the assault were made.

At 4:00 A.M. on the 6th, troops left their cantonments in small groups to avoid observation and by degrees assembled in the parallel near Santiago Church.

As day broke, however, a large body of Spaniards was discovered formed on the St. Andrew Bastion with two guns in such a position as to enfilade the attacking troops. Upon seeing these dispositions, General Draper feared that, in spite of all of his precautions for secrecy, his plans were known by the enemy, but the battery he had established to fire on the bastion dispersed the Spaniards with a few shells. Immediately thereafter the signal for the assault was given.

The British assaulted in three columns. The main effort was to be made against Fendicion Bastion, with a secondary attack at the Royal Gate. The third column was to move on the bridge over the Pasig. The assaulting troops were formed with 60 volunteers from the various corps leading the way, closely supported by grenadiers of the 79th Regiment. These were followed by engineers, pioneers and other workmen to clear and enlarge the breach and to throw up works in case the Spaniards proved too strongly entrenched in the bastion to be dislodged. The advance troops were followed by two grand divisions of the 79th which were in turn followed by the battalion of seamen and the remaining two divisions of the 79th. The Company's troops brought up the rear. A thick smoke caused by the general discharge of artillery, which was the signal for the attack, screened the assaulting waves.

The assault was conducted with "amazing spirit and rapidity." The Spaniards in the bastion did not wait to receive it but withdrew with such rapidity that the British feared that the bastion had been mined. Considerable resistance was encountered at the Royal Gate, which was battered down with axes. About 50 Spaniards and natives in the guard rooms over the gate fought to the last and were put to the sword. No further resistance was encountered until the great square near Fort Santiago was approached. Here the British were fired upon from the galleries around the square. No attempt was made to hold Fort Santiago, the defenders leaped into the Pasig River and attempted to escape to the opposite shore. The river was deep and rapid and according to estimates some three hundred were drowned in attempting to escape. The Archbishop and his chief officers surrendered to the British.

The British were unable to penetrate further than the territory immediately surrounding Manila. Spanish deserters from Rojo organized the natives in the outlying country and maintained guerrilla warfare until the British finally left the Islands early in 1764, pursuant to the treaty of peace which was signed in February, 1763.

This joint action by the British appears to have been conducted in such a business-like way that one gets the impression that both General Draper and Admiral Cornish were well schooled in such operations. Little can be found to criticize on the part of the attackers. If one would add tanks and aviation to the picture, the similarity to a modern joint action would be striking. We find the elements of surprise as to the point of landing and a prompt reconnaissance of the enemy position which permitted the selection of the weakest point for the assault. We find the seizure of the best observation and an artillery preparation in which the Navy assisted. Finally, we have a coördinated attack at the culmination of the preparatory fire, made at daybreak with due precautions to preserve secrecy. We even find the assault made under cover of a smoke screen and with great similarity to modern formations, as the assault was made in several lines, in depth, and was preceded by scouts.

Criticism has been leveled at the attackers for not first capturing Cavite before proceeding to Manila. Cavite was well stocked with supplies and would have furnished a base for operations and a safe anchorage for the fleet. Moreover, its capture would have been comparatively simple. It would, however, have permitted better organization for the defense of Manila and the Archbishop, not being required to act under pressure, might have formulated plans for the defense. It will be remembered that the early British plans contemplated such action, but these were changed to take advantage of the confusion caused by the appearance of the fleet. A more just criticism might be made of the failure of the British to place a detachment in observation of the Parian gate. It appears, that at the time of the initial investment, the terrain in the vicinity of this gate was inundated to such an extent that this could not be done. Subsequently, it dried sufficiently to permit a sortie, but apparently no measures were taken to keep the gate under observation. There appears to have been a lapse in security measures just before the British assault that might easily have resulted in the failure of the entire expedition if the Spanish sortie from the Parian Gate had been properly conducted and the troops properly armed and supported by artillery. Such a lapse is entirely inexcusable and once again emphasizes the need for constant alertness under all conditions of terrain and against any kind of enemy.

As for the defense, the less said the better. It appears to have been conducted mostly from the advice of the civil rather than the military officials.

The Archbishop mixed hope with indecision and practical measures with religious superstition. His sortie was half-hearted in that it contained insufficient trained troops to be effective. One gets the impression that it was sent out more as a forlorn hope than as a well-planned counter measure.

The Department of Enlisted Specialists

Prepared under the direction of the Commandant, Coast Artillery School.

DURING recent years it has become increasingly apparent that there is a certain lack of information, particularly among officers of battery grade, concerning the Department of Enlisted Specialists, Coast Artillery School. All officers know that there are, in the Coast Artillery, certain specialists of non-commissioned staff rank, known as Master Gunners, Electrician Sergeants and Radio Sergeants, who, in harbor defenses, work for the artillery engineer and who, in mobile regiments, function in headquarters, service and searchlight batteries. It is generally appreciated that these men are rather handy to have around when there is some orientating or drafting to be done or when there is complicated electrical or radio equipment to be maintained, operated and repaired. Further it is generally known that occasionally an ambitious man comes into the battery office and submits an application to take a course at Fort Monroe and along in April some luckless lieutenant gets detailed to supervise examinations of two or three days' duration. Finally, it is known that, toward the end of August, this same ambitious man leaves for The Coast Artillery School and that he may or may not be seen in the battery again. His career subsequent to leaving the battery seems to be more or less surrounded by a haze of mystery. The purpose of this article is to endeavor to penetrate this haze.

Before proceeding with this discussion it may not be amiss to briefly recount the history of the Coast Artillery School. Its inception dates back to November 5, 1823, when the Quartermaster General submitted a letter to the Secretary of War recommending the establishment of a "school of practice." This bore fruit and in General Orders No. 18, dated April 5, 1824, the Secretary of War directed that ten companies of artillery be stationed at Fortress Monroe as an "artillery corps for instruction." The school opened in December of that year and in August of 1825 courses corresponding to those given the commissioned students were started for noncommissioned officers and especially selected privates, therefore, the school has been in operation for more than 110 years except for short periods, notably during the War with Mexico, the Civil War and the Spanish American War, when it was closed because of the pressing need of both officers and enlisted men elsewhere. This procedure was not followed during the World War when there was a most insistent and persistent demand for enlisted specialists. In place of curtailing activities the facilities of the school were greatly expanded. Courses were shortened and intensified and a stagger system was adopted so that new classes entered each week. This made it possible to handle four or more complete courses simultaneously. In this way every text book and piece of equipment was used to capacity to provide a more continuous flow of graduates from the school. The accomplishments of this period are indicated by the following figures:

Course	Total Graduates of Regular Course to include Aug. 3, 1917	Total Graduates of Temporary Courses during World War
Electrical	431	490
Artillery	142	260
Radio	239	249
Clerical	56	439
Motor Transport	—	2658
TOTALS	868	4096

With the signing of the Armistice the school was again discontinued but was reorganized in April, 1919 with a class of about 50 students. The courses reëstablished included the electrical, artillery, radio and clerical. To these classes have been added others, notably a nautical course to provide warrant officers for mine planters and the electrical course has been divided into two sections. The "A" section comprises the old course for harbor defense electrician sergeants and the "B," or automotive, section specializes in the instruction of electricians for mobile artillery organizations. In this section instruction in the maintenance, repair and operation of motor transportation is especially emphasized.

So much for the school history. Now let us see how an enlisted man gets into one of the courses and what he does after he gets there. Under the provisions of Paragraph 4 *c*, Army Regulations 350-700, as amended by Changes No. 1 and as further amended by Circular No. 1, War Department, 1935, an applicant for one of the regular courses must, at date of application, have served one year in the Regular Army and must be a member of the Coast Artillery Corps at date of enrollment, unless otherwise authorized by the War Department. He must also be a reliable man of excellent character and habits. Right at this point is where the first check should be applied. The Government should not be put to the expense and the man should not waste the time incident to attendance at the school unless he is considered suitable material for the noncommissioned staff grades. The responsibility of selection rests primarily upon the battery commander for the reason that he has personally had full opportunity for observation in each case. Applications are submitted not later than March 15 in the United States and, when approved by the harbor defense or regimental commander, they are forwarded no further but are held to be made a part of the completed examination papers of the applicant. Each harbor defense or regimental commander, by March 25, advises the Commandant, The Coast Artillery School, whether there are any applicants in his command

and, if so, how many sets of examination papers are required.

The Commandant, by April 5, sends these papers to the organizations requesting them. In overseas departments applications should be limited to those men whose tours of foreign service will expire in time to permit them to report at Fort Monroe by August 29. Applications must be approved, not later than February 28, by the Department Commander, who should then inform the Commandant by radio as to how many sets of examination papers are desired and return the approved applications to harbor defense or regimental commanders to be made, at the proper time, a part of the completed papers.

The examination covers spelling, composition and penmanship, arithmetic and algebra to include linear equations involving two unknowns. A physical examination is also required. Completed papers should be promptly assembled and forwarded to the Commandant for grading. All marks are then sent to the Chief of Coast Artillery together with a recommended list of successful candidates. Selected candidates are ordered to report at Fort Monroe not later than August 29.

We will not examine the scope of the various regular courses. A glance at the accompanying schedule shows that the master gunners course covers mathematics to include spherical trigonometry and coördinate geometry, physics, drawing and descriptive geometry, photography, computations, plane and topographical surveying and orientation. The graduates are qualified to apply any of this knowledge to the various problems connected with orienting and firing heavy artillery. The other three regular courses, electrical (sections A and B) and radio, all require a basic knowledge of electricity. They therefore start with the same subjects. These include enough mathematics and drawing to enable the student to pursue the course in electricity intelligently. The electrical A section then branches out into internal combustion engines, advanced electricity, cables, wiring, searchlights, machine shop practice, fire control, and submarine mining. The B, or automotive section takes up all phases of motor transportation, rejoining the A section to study searchlights and antiaircraft fire control equipment. The radio class covers radio engineering and code practice. The section A electrical graduates are the men who, in the past have been known as electrician sergeants. They are competent to maintain and operate any piece of electrical apparatus or equipment used in a harbor defense. The section B graduates are automotive specialists. They also are qualified searchlight men and have a knowledge of electrical antiaircraft fire control equipment. The radio graduates are not only qualified as commercial operators but are also capable of installing and maintaining standard radio equipment.

For the past year or two it has been evident that the automotive section of the electrical course was not providing graduates in sufficient numbers to satisfy requirements. This deficiency became particularly apparent with the replacement of old motor transportation at the end of 1934. Therefore, on January 1, 1935, twelve graduates of the electrical A course were returned to the school for a post-graduate course of six months duration to qualify them for duty with mobile Coast Artillery units.

The special courses are conducted on a basis similar in most respects to the regular courses. Although the regular clerical course was discontinued some years ago, a special course for clerks has been authorized. This is

operated primarily for the training of local personnel, although, when vacancies are available, men from other posts are accepted upon their own application provided they are willing and able to defray transportation costs. At Fort Monroe candidates are selected by means of an examination covering elementary arithmetic, grammar, spelling and penmanship, and composition. Other candidates are admitted upon the recommendation of their organization commanders. The course lasts about 21 weeks and covers sufficient arithmetic for the preparation of rosters and morning reports, penmanship and spelling, grammar and composition, stenography and typewriting, and army paper-work; it is of insufficient duration to produce finished typists and stenographers. However, grounding in these subjects is sufficiently thorough to permit ambitious men to perfect themselves after completing the course. Otherwise, graduates are qualified to perform any assigned clerical task in a battery, regimental, or post headquarters. A radio operator's course is also conducted for the training of local personnel. Enough electricity and radio engineering is taught to enable the student to make minor adjustments and look after routine maintenance. The remainder of the time is devoted to code practice. Upon completing the course, graduates take the Federal examination as commercial operators.

Three special courses are authorized for enlisted personnel of the National Guard. These are of about three months duration and are miniature models of three of the regular courses, viz: master gunners, electrical A and radio. They are conducted only when funds for the purpose can be made available by the National Guard Bureau. Because such funds have not been available, these courses have been inactive for the past few years. During the current year (1935-1936) eleven selected enlisted men of the National Guard have been designated to pursue the radio course. The schedule shows the subject matter covered. Applicants to attend any of these courses should be forwarded through channels to the National Guard Bureau. A student taking any special course is assigned to the student detachment and is treated in all respects like those taking the regular courses.

Instruction is for the most part conducted by enlisted graduates of the School. The applicatory system is employed whenever practicable; that is, students are actually required to perform such work as splicing cables, hooking up motors and generators, or locating gun positions and orienting guns. They are also required to operate standard types of equipment pertaining to their specialty and to be able to diagnose and correct troubles of all kinds.

What becomes of the graduates of the various courses? Contrary to popular belief, the great majority are immediately returned to their original organizations. The exceptions are usually for the best interests of the Coast Artillery as a whole. For example, graduates of the electrical automotive course should obviously go to mobile units (antiaircraft, tractor-drawn, or railway). Two electrical A graduates usually go to the Submarine Mine Depot for further practical instruction. They, of course, eventually go to mine commands. Occasionally individuals are selected by the Chief of Coast Artillery for special assignment. Insofar as the School itself is concerned there is a strict policy against proselyting. At rare intervals transfer is requested of an especially qualified individual for duty as an assistant instructor. In such cases, it is because, after careful consideration, it is believed that he is the best man available for the duty and that the best

The Coast Artillery School
Department of Enlisted Specialists
1933-1934
Master Gunners Class - Drafting

interests of the service will be served by his transfer. This is done only with the concurrence of the regimental or harbor defense commander concerned. Applications for transfer originating with a student are invariably referred to his permanent organization commander.

Until recently all graduates of the four regular courses were placed on eligible lists for appointment as staff sergeant (artillery, master gunner, electrical, or radio) as vacancies might occur. About a year ago a survey of the situation revealed that, except in the electrical automotive section, the number of graduates far exceeded the normal attrition and that graduates of the 1934 class would be required to wait for appointment from three years in the case of electricians, to twelve years in the case of radio men. It further appeared that, unless some drastic action were taken, graduates in 1944 might retire before being appointed. Representations were made which resulted in the publication of Circular No. 7, War Department, March 5, 1934, prescribing a validating examination if appointment was delayed for more than five years after graduation and further providing that only selected graduates would be placed on the peace-time eligible lists. Graduates not so selected are considered available for emergency appointment under the provisions of paragraph 3-*b*, Army Regulations 615-5. This should in time serve, to a limited degree, to alleviate the present situation.

The special courses offer no automatic promotion to their graduates. Staff sergeants (Clerical) are appointed from eligibles determined by competitive examination under the provisions of paragraph 9-*d*, Army Regulations 615-5. Warrant officers for the Mine Planter Service are appointed under the provisions of Army Regulations 610-10, from men who have trained aboard mine planters. However, men who successfully complete a special course materially increase their value to the service and the reward should lie in specialist ratings or in promotion to the noncommissioned grades below the third.

Obviously the primary mission of the Department of Enlisted Specialists is to qualify high-type men for appointment to noncommissioned staff grades. Secondarily, the department utilizes its remaining capacity and facilities in furthering the education of selected men along those professional lines which are of greatest benefit to the Coast Artillery. That the standards of our enlisted specialists should be high is self-evident and to maintain those standards there are selective steps as follows:

1. Approval by local commanders of the original applications to take one of the regular courses.
2. The entrance examination.
3. Ability to meet the academic and military requirements as a student.
4. Selection upon graduation for a place on the eligible list for peace-time appointment.
5. When applicable, the validating examination when appointment is delayed for more than five years after graduation.
6. The promotion examination from staff to technical sergeant.
7. The promotion examination from technical to master sergeant.

Steps 2 to 7, inclusive, are the responsibility of the school under the direction of the Chief of Coast Artillery. Step 1, although entirely beyond the jurisdiction of the school, is highly important and for that reason it is here repeated and emphasized that the character and habits of each applicant should be carefully scrutinized before approval is given. The School is organized and equipped to do its part and it only asks that it be furnished with suitable material.

SCHEDULE
Coast Artillery School
Department of Enlisted Specialists
Regular Courses

Electrical "A"

Subject	*hours*
Mathematics	110
Physics	60
Drawing	33
D. C. Electricity	111
Engines	57
A. C. Electricity	105
Storage Batteries	36
Diesel Engines	54
Motor Transportation	19
Advanced Electricity	131
Cables and Wiring	72
Machine Shop	67
Searchlights	90
H. D. Fire Control	160
A. A. Fire Control	36
Submarine Mining	94

Electrical "B" (Automotive)

Subject	*hours*
Mathematics	110
Physics	60
Drawing	33
D. C. Electricity	111
Electroplating and Welding	58
A. C. Electricity	104
Storage Batteries	36
Upholstery and Painting	42
Radio Maintenance	19
Automobiles and Trucks	13
Machine Shop	84
Ignition	56
Searchlights	90
Shop Repair and Assembly	143
A. A. Fire Control	36
Maintenance and Convoys	123

Radio

Subject	*hours*
Mathematics	110
Physics	60
Drawing	33
D. C. Electricity	111
Engines	58
A. C. Electricity	104
Storage Batteries	36
Motor Transportation	19
Code Practice	324
Typewriting	66
Radio Communication and Procedure	258

Radio Operator

Subject	*hours*
Code Practice	177
D. C. and A. C. Electricity	124
Radio Communication	114
Radio Procedure	42

Master Gunner

Subject	*hours*
Geometry	95
Algebra	65
Physics	60
Mechanical Drawing and Descriptive Geometry	330
Trigonometry	72
Lettering	29
Photography	56
Computing	36
Drawing	54
Plane Surveying	158
Topographic Surveying	106
Orientation	93
Gunnery Computation	78

Clerical

Subject	*hours*
Stenography	228
Typewriting	178
Penmanship and Spelling	49
Grammar and Composition	73
Arithmetic	12
Records, Reports and Returns	24
Correspondence and Filing	16
Practical Office Operation	27

Master Gunner, N. G.

Subject	*hours*
Geometry	28
Algebra	23
Trigonometry	56
Mechanical Drawing	69
Surveying	37
Mapping	24
Topographical Surveying	31
Orientation	41
Gunnery Computation	44
Target Practice Analysis	35

Radio, N. G.

Subject	*hours*
Code Practice	160
D. C. and A. C. Electricity	124
Radio Communication	82
Radio Procedure	30

Electrical, N. G.

Subject	*hours*
D. C. Electricity and Lab.	107
Machine Shop	21
Diesel Engines	30
Gas Engines	30
A. C. Electricity and Lab.	68
Cables and Wiring	30
Searchlights	67
Fire Control and Maintenance	42

March of the 145th Field Artillery

By Captain John H. Pitzer, C.A.C.

When an invitation was extended by Captain George D. Preston to accompany, as an unofficial observer, the 145th F.A., Utah N. G., on their maneuvers with the 40th Division, the writer accepted with pleasure. Because of the remarkable efficiency of this regiment, in spite of the limited time allotted for training, and the whole-hearted spirit manifested, a brief account of the march should be of interest to all officers.

An essential part of any exercise is the preliminary organization (the execution probably is not more than 50% of the problem). The planning for this march extended over a period of two months and consisted of training drivers, classification and examination of matériel, uniform loading of trucks, march discipline, supply, and reconnaissance.

One of the most important items was our old friend logistics. A month in advance of the beginning of the march a reconnaissance party consisting of two officers and four enlisted men was sent to select the route and camp sites and to make arrangements for rations, gas, oil and water. This was especially important as one of the great problems was the procurement of supplies in the arid and sparsely populated section of Nevada and California. Trucks were put in the very best condition. Arrangements were made to have a motorcycle police escort accompany the column throughout the entire march, the paramount idea being to move without accident and with the minimum inconvenience to the traveling public. With a convoy of approximately 100 trucks this was quite a problem; it was successfully handled, due in a large measure to the excellent march orders issued by the Brigade Commander, Brig. Gen. W. G. Williams and the Regimental Commander, Colonel Carl A. Badger.

It will be appreciated that there is considerable difference between taking a Regular regiment on an extended march, all units of which have been working together for some time, and taking a National Guard regiment, which has not been brought together in over twelve months and had no training in convoy work on a grand scale.

Battery "C," 145th F.A., made the longest march of any unit of the regiment. This battery left Logan the afternoon of July 10th, joining 1st Battalion Headquarters, and the 143d Medical Company, in Salt Lake City, where these units bivouacked for the night. The following morning these three units joined Batteries "A" and "B," Regimental Headquarters, Service Battery and the Brigade Staff, and moving exactly on schedule, cleared Salt Lake City at 5:30 A.M. Two motorcycle police escorted the column. A detachment under a lieutenant did excellent work in directing traffic and enforcing safety measures. There was either a state motorcycle officer, city policeman, county police officer, or a soldier M.P. stationed at each railroad and interurban crossing; also at intersecting roads wherever there was to be a change in direction, a fine piece of preliminary planning that added much to the successful operation of the convoy.

Battery "E" joined the column at Nephi. Battery "F" and the Regimental Medical Detachment joined at Provo, Utah. This Detachment was "armed" with an anti-

The regiment immediately settled down to serious business

The column used several safety devices

quated G.M.C. ambulance. If you read Major McCatty's article on the "March of the Sixty-Ninth," (July-August issue of the JOURNAL) you will note that the 69th's old G.M.C. ambulance "finally gave up the ghost on the last day's run." The 145th's old hack traveled right along with the rest, all the way to San Diego and back, consuming about as much oil as gas, and snorting into its home station in as good health as it has experienced in the past ten years.

Headquarters 2nd Battalion joined at Cove Fort, Utah, completing the column. Stop for lunch for the first day was at Filmore and the troops were able to visit, during the noon rest period, the museum in the old stone building that had seen service as a state capitol.

The first night out for the entire command was spent in bivouac on the grounds of the Branch Agricultural College, Cedar City, Utah. The College opened the gymnasium with its showers and toilet facilities; the local band provided a concert, and a dance was given for the men. The march for this day was 267 miles.

The column cleared Cedar City at 6:00 A.M. on the morning of the 12th. The regiment never moved out until the camp site had been thoroughly policed and the grounds inspected by the regimental commander. Some idea of the heat may be realized when, at lunch time, it was found to be 114° in the shade in a place where the breeze(?) was blowing. The heat that day was brutal, even in the open station wagons and trucks with the tarpaulins rolled up, but in the closed cabs of the trucks it was torture.

The column reached Las Vegas that afternoon and camped at Lorenzi Park. Here the officers and men had free access to a fine swimming pool and availed themselves of the opportunity for relief from the sweltering heat. Boulder Dam is 28 miles from Las Vegas. The temperature at the top of the dam site was 130°. A march in such heat is no tea party for either vehicles or men; however the regiment covered 196 miles that day.

The next night's halt was at Lebec, Calif. Here we used the camp site of the 63d C.A. (AA) when on their two weeks' march earlier in the spring. This was the longest day's march on the outward trip—305 miles.

The next day, Sunday, July 14th, the roads of California were jammed with traffic. Right at the start El Tejon Pass slowed the column up, and with the additional Sunday traffic it took all day to cover 206 miles, even though the route was over the best of highways. Lunch this date was served on the Fair Grounds at Ventura, with a ringside seat for a close-up view of the Pacific Ocean, this for many of the Utah boys was their first glimpse of the sea.

Arriving at Guadalupe, Calif., the same evening, the regiment immediately settled down to serious business. An excellent problem had been drawn up; and if there ever was any exercise that approached war conditions, even down to "tin hats" and complete camouflage, it was at these maneuvers. Two regiments of Infantry, supported by the 143d F.A. (Calif. N.G.), were trying to force their way south; two other regiments of Infantry, supported by the 145th, had the mission of holding and eventually driving the enemy to the north. According to the umpires this mission was accomplished. The 145th, arriving on the scene after dark, after a 1,000-mile march across scorching deserts, went into bivouac in a woods. During a dark night the regiment moved forward 1,000 yards to an advanced position, the only illumination being from flares dropped by the "enemy" planes; at dawn it put down a barrage preparatory to an attack.

The enemy was driven to the north and the "war" was won by noon, Tuesday, July 16th. Units of the 143d F.A. immediately left for their home stations; the 145th moved into a prepared camp, including tents and mess halls and were very comfortable for the next five days. This was the only time either officers or men enjoyed the luxury of cots during the entire march.

Artillery firing and the Divisional review occupied the days while at San Luis Obispo. The Divisional Review was an impressive ceremony with about 6,000 troops participating. In addition to the Governors of California and Utah, Major General Paul B. Malone, Commanding the IX Corps Area, and Major General George E. Leach, Chief of the National Guard Bureau, were in the reviewing stand. It will be of interest to his friends and classmates in the Army to know that Captain Ralph Tudor, U.S.M.A., Class of 1923, is now aide de camp to Major General Barrows, Commanding the 40th Division.

The regiment started for the San Diego Fair on Wednesday, July 24. Camp was made that night in the park at Huntington Beach and San Diego was reached by noon the next day. All men in uniform were admitted free of charge to the Exposition. All who visited the city of San Diego received cordial treatment and were especially loud in their praise of the courtesy shown them by the Naval personnel. The *Ranger*, the latest American aircraft carrier, was in port. Men in uniform were ferried to the ship in Navy launches and permitted to inspect the ship.

The column left San Diego on the morning of July 27th. The halt for supper was at Barstow. All were so interested in getting home that Colonel Badger decided to make a night march and the regiment continued on to

Lorenzi Park, Las Vegas, the same camp ground that it had used previously.

This night march was of great value from a military point of view because of the training in night convoy work. Two truck convoys took all of those interested to see Boulder Dam on Sunday.

July 30th found all units back at their home stations. The regiment showed exceptional marching ability considering the fact that it had no training or experience as a unit. The men were not hardened to the long hours of driving, neither were they accustomed to sleeping on the ground, nor were they so fast in pitching and breaking camp. They became seasoned as the days went by and were getting into and out of camps ahead of schedule before the march was half over.

The march of 368 miles from San Diego, Calif., to Las Vegas, Nevada, should stand for some time as a peacetime record. To drive this distance in one day in a passenger car is not much of a feat, but to conduct, in good order and without mishap, a column stretching along some six miles of highway, is something else again!

The column consisted of the following vehicles:

10 Dodge 1½ Ton Trucks Model 1934.
24 Chevrolet 1½ Ton Trucks Model 1934.
34 Chevrolet 1½ Ton Trucks Model 1933.
15 Station Wagons Chevrolet Model 1934.
10 Station Wagons Chevrolet Model 1933.
1 G.M.C. Ambulance Model 1923.
1 General's Car (Private Vehicle).
2 Instructors' Cars (Private Vehicles).
1 Supply Officer's Car (Private Vehicle).
1 Sergeant Instructors' Car (Private Vehicle).
1 Command Post Trailer.

Only five private cars were permitted to accompany the column.

At the start the march was attempted as a regimental column. This soon proved to be impracticable. From then on, outside of cities, the march was made by battalions with a five hundred yard interval between units. Even columns of this size are sometimes unwieldy. Smaller sections, as used by the 69th C.A., appear to be much better in facilitating the movement of other traffic using the same road. On this march there was no division into fast and slow columns as all vehicles could maintain approximately the same speed. Other distances maintained were as follows:

Between vehicles in towns, 10 yards.
Between batteries in towns, 25 yards.
Between vehicles on the road, 100 yards.
Between batteries on the road, 100 yards.

Vehicles should be equipped with hydraulic or power brakes. With mechanical brakes, safety demands too much distance between trucks.

Trucks that broke down or overheated were left to be "mopped up" by a repair truck from the service battery. Not a single truck was towed into camp, this speaks very well for the repair section.

Some of the motor difficulties encountered were as follows: The cooling systems on the Chevrolet trucks are entirely inadequate, especially in high altitude such as was encountered on this march. The radiators boiled over in a comparatively short time when operating at an elevation of a mile or more. They were cooler in the heat of the desert at lower altitudes than they were in the rarefied but cooler atmosphere of the mountains. Except for this overheating, the trucks easily towed one and a half tons, while hauling an equal weight, at 35 miles per hour. Finally the hoods were removed and replaced only at night; this materially helped to cool the motors.

After climbing any long hill, such as some of those encountered on this march, a halt should be made as soon as possible and all radiators filled. One truck burned out all of its motor gaskets due to failure to attend to this detail.

There was considerable trouble with carburetion; needle valves stuck; some fuel pumps failed to work; one truck blew out a cylinder head and two generators were burned out.

A new difficulty was encountered due to the dual rear wheels of the trucks. On some curves undue stress is placed on the outer of the dual wheels, resulting in sheared bolts connecting the outer to the inner wheels. Obviously a more rugged construction is necessary to overcome this defect.

The arrangement at all points for gassing the trucks was entirely inadequate. Upon reaching Las Vegas, 1,400 gallons of gas were required to fill the tanks. The drivers of the trucks last in the line were prevented from going to sleep until around 11:00 o'clock, although the column had reached the camp site late in the afternoon. Gassing from several stations or from portable tanks would obviate this.

There were no uniform containers to carry a reserve supply of oil, water and gas, for each vehicle. There were no gas or water tank trucks and reserve supplies had to be carried by each individual truck. As a result the already overcrowded vehicles were still further cluttered up with two five-gallon cans per truck—one for gas, and one for water. The gasoline can in each truck was a fire hazard. Arrangement should be made to provide each vehicle with uniform cans for a reserve supply of gas and oil; these should be distinctly marked to avoid mixing.

The column used several new (as far as the writer is concerned) safety devices. A big sign over the bumper of the leading truck read "ONE HUNDRED MILITARY VEHICLES ABOUT TO PASS. PLEASE BE CAREFUL," and on the rear of the last vehicle in the column, a similar large sign read "ONE HUNDRED TRUCKS—PASS WITH CARE." Tail lights were put on the muzzle covers of the guns and hooked up with the lighting system of the towing vehicle. Some states require, in addition to tail lights, that a red reflector be attached at the rear of vehicles. These were also attached to the muzzle covers, the two undoubtedly saving a lot of radiators from damage on both military and civilian vehicles.

The mess trucks of each unit went ahead of the main

The 145th on the march

column after the breakfast and noon meals, hence the messes were set up and operating whenever the column reached its next mealtime halt.

In connection with the messes, the writer was impressed by the efficacy of "dry ice." A small amount, in any sort of an airtight can, would keep butter and ice cream frozen solid even when crossing several hundred miles of desert.

More equipment could be conveniently carried in the trucks if they were built with boxes along the sides under the folding seats. A novel method for saving floor space in the trucks was used by Battery "C." Two rows of angle irons were fastened to the floor of the trucks on the under side, and the tractor treads shoved in lengthwise and fastened in place.

The march table was prepared for an average running speed of 25 miles per hour. This, however, was not reached the first two days, but was exceeded later, so that the average for the entire trip was very close to the scheduled figure. It was found to be an excellent idea to set the starting speed at some fifteen miles per hour slower than the speed to be attained finally.

Some of the higher elevations crossed on this march were: Sardine Summit, 5,900 feet; Wildcat Canyon, 6,760 feet; Cajon Summit, 4,301 feet; Tejon Pass, 4,213 feet; and Pine Valley Summit, 4,100 feet, the last three are in California.

The maximum grades were as follows:

In Utah—Sardine Canyon from 5.8% to 6.4%.
In Nevada—6.18% and,
In California—7%.

There were very few minor, and no major, accidents on the trip. One man was run over by a gun but suffered no permanent injury, he went right on with the column. One truck turned over on its side in rounding a sharp curve but no one was hurt and it continued the march.

The discipline was excellent and the column received a warm welcome wherever it stopped. The citizens of the various communities passed through evinced much interest in the movement. All in all it was a fine exhibition and brought great credit to the 145th and the National Guard.

In closing, it is my opinion, after reading reports of the two Coast Artillery regimental motorized marches and after having accompanied this one, that the most efficient method for covering extensive distances would be to send the entire command by rail whenever possible. Organization transportation should be reserved for shorter hauls and not unnecessarily worn out on extended movements. In addition, personnel would arrive at their destination in much better condition.

★

BECAUSE OF THE SPECIAL CONDITIONS *that prevailed on the Western Front, possibilities for tank employment were limited to frontal assaults. Due also to the mechanical unreliability of the machines then in use, no more extended operations could probably have been successfully undertaken. The result was that tanks came to be generally regarded as weapons useful only for close support of heavy infantry attacks, with their required speed indicated by the rate of marching troops and with their capabilities limited to the disruption of organized small-arms fire along strongly fortified fronts.*

This function of combat vehicles is a most important one. But this constricted conception of mechanization fails utterly to conform to the principles which must guide the American Army in its further development.—MACARTHUR.

Seven Years A-Scoring

By Captain Homer Case, C.A.C.

In 1927, after a lapse of ten years, the Coast Artillery reinstituted a system of scoring target practices. The study of seacoast practices contained in the first part of this article indicated that for firing at water targets the score had so increased ranges and rates of fire that the hits per gun per minute, the real measure of effectiveness, were practically doubled in seven years. It also showed that for 1932 and 1933 a considerable decrease in rates of fire and an appreciable reduction in the percentage of hits had combined to make the hits per gun per minute materially lower than for the preceding few years. This condition probably resulted from inadequate ammunition allowances and a K factor in the score that encouraged slower firing.

In 1926 seacoast artillery matériel, methods of fire control, and training were fairly well standardized, and it is safe to say that most of the advances in target practice for the following years resulted from the adoption of a score.

Antiaircraft Artillery

For antiaircraft artillery the situation was quite different, and a consideration of the target practice results since 1926 gives more of an indication of the constant improvements in matériel and fire control than it does of the effect of the adoption of the score. While it was but yesterday it is hard to recall the situation of the Regular Army antiaircraft artillery in 1926:

All gun batteries were equipped with 3-inch M1918 guns on trailer mounts. Fire was controlled with the R. A. Corrector and altitudes were obtained with the two-station altimeter. All data was transmitted by telephone with a resultant large and varying dead time. The whole system was a heritage of the World War that had ended eight years before.

But cruder still was the system of determining the deviations of bursts for the purpose of computing hits. An observer at the battery with an instrument read lateral deviations, a reasonably satisfactory system; but the second observer was so situated that his data could not possibly be accurate. He was an aerial observer—usually a junior lieutenant—and, sitting backward he observed from the open rear cockpit of the towing plane. As his working tools he carried a wire grid, a pencil and a record pad on which was a diagram of the grid. Holding this grid at arms length with its center on the target he was expected to catch each burst and plot its position in its correct place on the diagram, giving it a serial number—all this in the icy gale of the propellor blast. With four guns in action there were some 45 bursts to be observed and plotted per minute. Plotting interfered with observing and observing interfered with plotting. If the observer did not lose his pencil, pad or grid he was certain to lose at least a third of the bursts. Some of the more successful observers relied on the system that so quickly identified Mr. Addison Sims of Seattle, and did their recording after the plane had landed. The battery commander was then turned loose with two uncoördinated sets of readings, and the number of hits he finally reported was more a measure of his ingenuity and conscience than of the excellence of his practice.

The antiaircraft machine gun situation was more like that of today—the number of hits was definitely determined by the holes in the material target, and everybody was trying to devise a satisfactory system of fire control.

The firings at Aberdeen Proving Grounds that began in 1926 and continued each fall until 1930 resulted in great advances in antiaircraft gun fire. Deviations of bursts were first taken from two ground stations by trained officer observers. The very precise Jackson spotting camera was developed and has since been issued to all regiments. Even greater advances in matériel were made. First the Vickers and then the Sperry directors were tested. After correction of defects disclosed by the tests these directors were adopted for issue to the service. Single station height finders more suited to service conditions than the two-station altimeter were tested and approved. The spider mount guns with their greater stability, increased rates of fire and removable liners were evolved from the firings. Electrical transmission of data reduced errors and dead time. The Coast Artillery is greatly indebted to the Ordnance Department for the ingenuity of its officers in devising this fine equipment and for their enthusiastic cooperation in the firings. The issue to the services of the modern matériel has had much more to do with increased efficiency than could possibly have come from the adoption of a score.

This period also saw great advances in antiaircraft gunnery, most of it coming from the Aberdeen firings. A satisfactory trial shot system was devised, and the mechanics of solving the problem were greatly simplified. In 1926 adjustment of fire was practically prohibited, but the tests soon showed that this method of improving the accuracy of fire was very desirable. Through the teachings of the Coast Artillery School and the issue of numerous publications on the subject the general standard of knowledge of antiaircraft gunnery was raised.

In spite of the hundreds of thousands of dollars and rounds of ammunition expended at Aberdeen, machine-gun firing advanced but little during that time. Except for negative results there was little improvement in matériel and gunnery. The caliber .50 machine gun was developed and adopted, and the rate of fire of the caliber .30 gun was increased by the use of a stronger driving spring. There was no real advance in the use of tracer fire and all directions for computing machine gun firing data were too

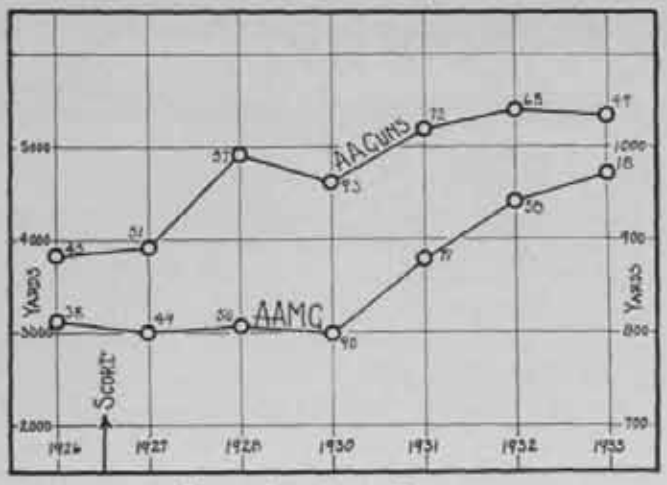


CHART 1 — SLANT RANGES

The scale for the guns is on the left and for machine guns on the right. On this and other charts the numbers at each plotted point indicates the number of practices considered.

slow to be satisfactory. In this service an era of target-practice-condition gadgets sprung up, but this passed with the requirement that part of all practices would be fired with tracer control. And today, as in 1926, the efficiency of a battery rests on the collective guessing of eight privates whose officers cannot tell them how to guess.

The charts with this article show graphically the results of antiaircraft target practices (except searchlights) from 1926 to 1933.* Data for earlier practices are not available at this station. All published results of 3-inch gun and caliber .30 machine gun practices fired as primary assignments by batteries in the Regular Army for these years are included. The data on results of caliber .50 machine gun firings are too meagre and are not used. The charts should answer the questions as to whether we are (1) shooting faster, (2) at longer ranges and (3) obtaining more hits per gun per minute than we did before the score was adopted in 1927. They speak for themselves, but outstanding points will be commented on:

Chart 1—Slant ranges.—With the increased speeds and ceilings of all airplanes, especially bombers, hits must be obtained at long ranges. For 1926 and 1927 the average slant ranges for gun practices were under 4000 yards. In 1928 this range jumped to nearly 5000 yards, with lesser increases for most of the following years. For 1932 and 1933 slant ranges had increased almost 40% over 1926 and 1927. For machine guns there was little change until 1931, but then the slant ranges became greater each year until in 1933 an increase of over 20% had been made. For the last two years the mean slant range was practically beyond the tracer burn-out point.

Chart 2.—Percentage of hits.—To enable the percentage of hits made from year to year to be directly compared, these values for the different years have been reduced to a common range.* For this and other reasons the scales for plotting the graphs in charts 2 and 4 have not been shown. For gun practices the results of visual and camera observation are shown separately; and it can be seen that when used the camera gives a percentage of hits approximately half as large as visual observation. This justifies the present practice of making the requirements for an "Excellent" with visual twice as high as for camera observation. The camera, unlike figures, does not lie; but because of an amiable desire to please or through some optical illusion the visual observers frequently read the deviations smaller than they really are. The high percentage of hits—from aerial observers—in 1926 fell off sharply for 1927, evidently because most regiments had adopted ground observation. From 1927 to 1932 there was a constant increase from year to year, with an advance of almost 100% for that period. (The 1933 plot must be disregarded since it represents a single practice.) The practices observed by camera show a similar increase from 1930, the first year this method was used in the service, until 1933, except for 1930 when but four practices are included. All this is very encouraging, but the machine-gun results are less heartening—and very peculiar. From 1926 to 1931 there was a general improvement, rising almost 50% in that time, but in 1932 this percentage of hits dropped sharply, without warning and almost without apparent reason. For 1932 the percentage of hits were but 47% and for 1933 but 39% of the high mark reached in 1931. The mean for these two years was over one third below the average for 1926 and 1927. This unusual happening will be discussed at length later.

*To include 1928 the calendar year was the target practice year, but during 1929 this was changed to the fiscal year. The practices fired from January 1, 1929, to June 30, 1930, were grouped together under the 1930 target practice year. For this reason the year 1929 does not appear on the charts.

*The mean percentage of hits obtained one year at an average slant range of 3800 yards cannot properly be compared with that for the next at 5400 yards. In the preparation of this chart it was assumed that for all years angular height, rate of fire, etc., were constant, and that slant range alone varied. The formulae for antiaircraft scores for 1935 were then used to measure the effect on the expected percentage of hits of varying slant ranges. Neglecting small and immaterial errors due to the assumptions made, this had the effect of bringing all practices to a common range.

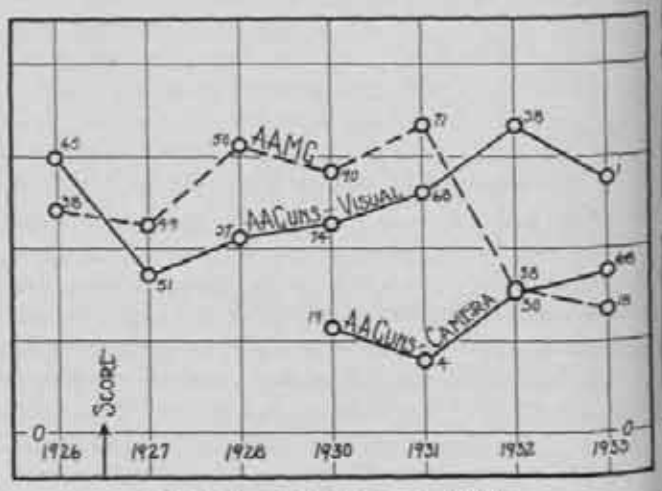


CHART 2 — PERCENTAGE OF HITS

The two graphs are at different scales with the common zero line indicated

Chart 3.—Rates of fire.—It is in the increased speed of firing antiaircraft guns that the great and steady advance resulting from the Aberdeen firings is most evident. From an average rate of less than 11 shots per gun per minute in 1926 there was a year by year increase until it reached 23 in 1933, three shots per minute faster than the "normal rate" set in the score. There has probably been some increase in the skill of the gun crews, but most of this advance was caused by the replacement of the slow firing M1918 guns with modern M1 and M2 mounts. It is probable that for the time being the peak in speed has been reached for target practices under the present score. The bonus for exceeding the normal rate is small, and most battery commanders feel that a rate of greater than 20 shots per minute before the adjustment correction gets in is a waste of ammunition. Under service conditions there i· no reason why the rate of fire should not be as close to 30 rounds per minute as possible, for the first few close bursts will cause an enemy plane to execute more than the gentle maneuvers used in target practices. For caliber .30 machine guns the rate of fire increased steadily from 423 shots per gun per minute in 1926 to 571 in 1930. For 1930 the rate fell off sharply, due to the new score which made the bonus for fast firing small; the TR 435-55 in effect that year made the "time-out" restrictions much more rigid. The rate continued to rise for the next two years to a maximum of 582 in 1933, the continued increase probably being due to greater care in the preparation of matériel and ammunition and to the use of stronger driving springs.

Chart 4.—Hits per gun per minute.—In the last analysis the technical efficiency of a battery is best measured by the number of hits per gun per minute that can be placed on the target. Since hits per gun per minute arise from a combination of the percentage of hits and rates of fire, chart 4 is merely the result of merging charts 2 and 3. As in chart 2 the effects of varying ranges from year to year have been removed. For gun practices visually observed the advance in efficiency was great. If results of target practices can be taken as a measure, our gun batteries were nearly three times as efficient in 1932 as in 1927, and the drop indicated in 1933 means nothing for the reason that only a single practice was visually observed that year. The more precise results obtained by cameras bear out this steady advance, and indicate that our practices for 1933 were better than for 1932. With machine guns, results were uniform for 1926 and 1927, but in 1928 the hits per gun per minute jumped by almost 50% to a level substantially maintained for the next three years. The low percentage of hits for 1932 and 1933 was but little affected by the increased rates of fire, and for these two years the efficiency dropped to a level 30% below that of 1926 and 1927.

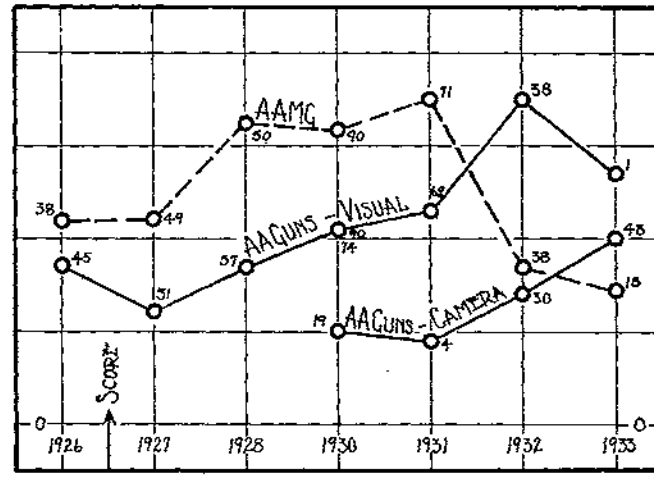


CHART 4 — HITS PER GUN PER MINUTE

The two graphs are at different scales with the common zero line indicated

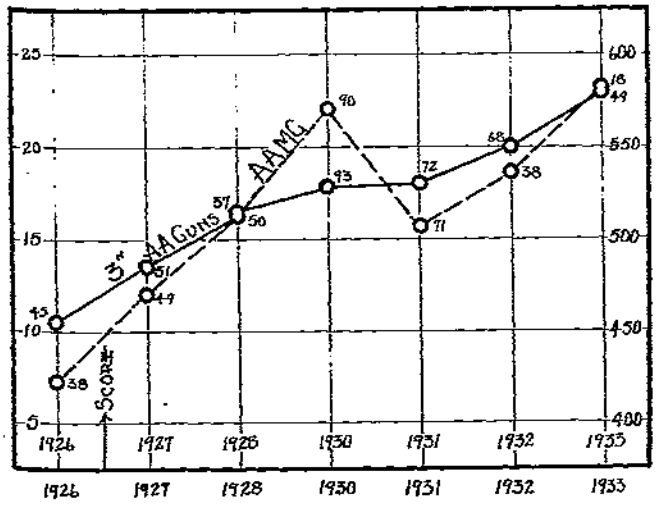


CHART 3 — RATES OF FIRE

The scale for guns is on the left and for machine guns on the right

DISCUSSION

In this analysis of antiaircraft target practices, 435 gun and 354 machine-gun practices were considered. This data is therefore somewhat more reliable than that for seacoast artillery where a total of 500 practices included were divided among several types of weapons. There is a certain unreliability in the results of gun practices observed visually, but there were so many practices each year that the errors tend to neutralize each other, except that the number of hits were uniformly higher than when the camera was used.

For the seven years from 1927 to 1933 the record of antiaircraft gun target practices is one of a steady and constant advance. Named in order of importance it is probable that this uniform increase in hits per gun per minute was due, first, to the modern guns, directors and electrical data transmission systems in the hands of troops, second, to the effect of the score upon the efficiency of personnel and, third, to advances in antiaircraft gunnery through improvement of methods and better instruction of battery officers. It is as easy to fire our new guns at 25 shots per minute as it was to fire the trailer-mounted guns at 15. Sperry directors are basically more accurate than the

R. A. Corrector, and in addition they correct for nonstandard ballistic conditions and allow rapid and accurate application of adjustment corrections. Electrical data transmission practically eliminates dead time and reduces personnel errors. It is only from a consideration of the marked effect on the efficiency of seacoast artillery that it can be said that antiaircraft artillery has benefited in a like manner. It is reasonable to conclude that a part of the increased speed is due to better care of matériel and ammunition, and that some of the advances in gunnery methods came about through the spur of the score.

It is the results of antiaircraft machine gun target practices for this period that gives pause. After three good years the violent decline that persisted for the years of 1932 and 1933 is too consistent to be ignored, for it is the sign of some deep-seated defect that is widespread in the service. It is probable that one or more of the reasons mentioned in the following paragraphs account for the decline in hits per gun per minute:

a.—The aftermath of target-practice-condition sights.—In 1926 and 1927 practically all firing was by tracer control. Stimulated by the score, and in many cases, an honest desire to get away from the inaccuracies of tracer fire, there arose a system of fire control that was designed to get more hits in target practice. Knowing the groove the target would follow, the proper leads were computed mathematically and set on specially constructed sights. When the target reached the proper point a short burst from eight guns was let loose. So few rounds were fired on each course that for some practices from 15 to 25 courses were flown. These artificial systems had a wide vogue from 1928 to 1930. The TR 435-55 issued in 1930 tended to curb these artificial systems, as it limited the number of courses and provided that each course would be scored and that tracer control would be used for certain courses. The *coup de grace* was dealt by the comments of the Chief of Coast Artillery in Coast Artillery Memorandum No. 12, issued early in 1932. These comments severally criticized all systems of fire control not adapted to war conditions. A system used by a winner of the Knox Trophy in a previous year was declared to be "entirely unsatisfactory for use in actual combat." That these sighting systems improved target practice scores is evident from the graph in chart 4, for the hits per gun per minute were highest from 1928 to 1931. That they were unsound for the general training of troops for war service cannot be denied. There was, however, always the chance that from them some service condition fire control system would be devised. By 1932 all special systems had been discarded, and from a viewpoint of general training the few preceding years were practicaly lost. Forced back to tracer control, it was found that the officers, and especially the gunners and the key noncommissioned officers, had lost that subconscious knack of knowing when the tracer was passing through the target. For this reason the standard training of batteries was below that of 1926 and 1927, with resultant fewer hits. The theory that this is the principal reason is weakened by the fact that the 1931 results were better than those for 1930, and that those for 1933 were even lower than for 1932. The reduction in percentage of hits should have started in 1931 when the 1930 TR 435-55 went into effect; and experience gained in the firings of 1932 should have resulted in better tracer control in 1933.

b. Ranges were too great.—In 1932 the ***mean*** slant range passed 900 yards and reached 973 yards in 1933. This means that a great many courses were fired well beyond this range. Two things may have happened: At ranges near 1,000 yards the stereoscopic vision of the human eye becomes very unreliable and the gunner cannot determine accurately whether or not the tracer is passing through the target. The burn-out point of the caliber .30 tracer bullet is between 900 and 1,000 yards, and if the tracer burns out short of the target it is safe to assume that the pointing is poor. In the score and in this analysis it is assumed that hits vary inversely as the square of the slant range. It is probable that on account of the two causes set forth above the probability of hitting falls off much faster than this assumption at slant ranges greater than 900 yards.

c. Too few practices were fired.—Due in part to a general reduction in ammunition allowances and in part to the fact that each battery also fired some caliber .50 machine gun practices, the number of caliber .30 firings dropped from a maximum of 71 in 1931 to 38 in 1932 and 18 in 1933. It is the creed of many of the most successful machine-gun battery commanders that gunners can be trained only by firing a great amount of ammunition at towed targets. Since even the most experienced officers and noncommissioned officers know little of how to train a gunner to shoot, it follows that for tracer control self-teaching is best. With the target practice allowance divided between two calibers it is the opinion of many that skill in one does not necessarily lead to skill in the other. The great reduction in the number of practices fired may well account for a good part of the loss in efficiency during 1932 and 1933.

There may be other reasons that explain the present low status of antiaircraft machine gun firing; but at all events it should be a matter of great concern.

Conclusion

1. From 1927 to 1933 the efficiency of the antiaircraft gun batteries in our service tripled.

2. The efficiency of the antiaircraft machine gun batteries in our service is low due to the lack of a satisfactory method of fire control.

3. Although not yet evident in our antiaircraft gun target practices, it is probable that continued low target practice ammunition allowances will adversely affect all antiaircraft artillery.

Military English

By Captain Joseph I. Greene
Infantry

..*"The torrent of such verbiage rushes tumultuously down across the ages."*
—Pareto, in *The Mind and Society*.

THE language of military science is a stepchild among the technical realms of language. Its terminology is vague, incomplete, and often erroneous. It is a language that too often enables a writer (like the Emperor of Ethiopia, who enjoys a private language of his own) to couch his thoughts in words and phrases whose true meaning is known only to himself, if even to him. The customary phraseology of military English is even more vague and full of errors than its terminology.

It is this second fault that is the serious one. The names we give to military things, no matter how poorly derived or how confusing their duplication of meaning, make comparatively small difference provided usage gives them a restricted (or at least a clear) military sense. But the most precise military vocabulary becomes of little account when its terms are mixed like so many raisins into a stiff, inflexible, indigestible mass of hasty-pudding English.

Is our profession so abstract that the matter of its instruction and regulations falls naturally into a ponderous and murky style? Are its outlines so blurred that its language must also be hazy? And is the composition of its written matter so secondary in importance that inaccurate terminology and ineffectual, careless, and even meaningless verbiage make no difference?

Far from being one of the duller sciences, military science is one of the most interesting and fascinating of all. Its bases, at least, are specific and lend themselves to the utmost precision of statement. There is every reason to write of military things in language so clear and words so carefully chosen as to be unmistakable in their intent. For upon the clarity of military language may depend the success of an army and the existence of a nation. Lee's ambiguous order to Stuart at the beginning of the Gettysburg campaign, and the contradictory orders of British General Headquarters to Gough's Fifth Army in March, 1918, are but two examples of what may hang upon the choice of a few words.

There is no reason why military English should remain a jargon—a mass of hastily composed, half-considered, and less than half-understood obscurities. There are specific remedies that, applied, would make our military language a sound body of speech that would be not only readable but comprehensible. It is the purpose of this article to suggest these remedies—to show how we can form a well-ordered field of technical English that means with the least approximation what it is intended to mean. Let us examine first the matter of military terminology.

There is every reason to write of military things in language so clear and words so carefully chosen as to be unmistakable in their intent.

MILITARY TERMINOLOGY

"The meaning of a word is not absolutely definite; there is always a greater or less degree of vagueness. The meaning is an area, like a target: it may have a bull's-eye, but the outlying parts of the targets are still more or less within the meaning in a gradually diminishing degree as we travel farther from the bull's-eye. As language grows more precise, there is less and less of the target outside the bull's-eye, and the bull's-eye itself grows smaller and smaller; but the bull's-eye never shrinks to a point, and there is always a doubtful region, however small, surrounding it."

—B. Russell, in *The Analysis of Mind*.

For some reason, in military language, we are extremely careless about the labels we place on things. We find, let us say, a need for a new term. How do we go about getting it? The first thing we do—and often the worst thing from the viewpoint of accuracy—is to see whether or not an old tag will do. When this source, as it often does, provides a familiar-sounding word which can be construed in the new sense, we then have a single word for both the old and the new. Thus the newness of the new becomes less startling; and in the course of a generation, perhaps, the old is gradually forgotten and goes into retirement with those who still remember what it used to mean. But by then the word may have acquired a still newer meaning, and there we are again. "Skirmish line," "march" (applied to a motor movement), "mass" (in its several meanings), and "musketry" are terms of this kind.

When we cannot dig up an old label for a new thought, we often turn to the terminology of foreign armies—especially since the new thought itself may come from such a source. And here how often we make a bungling or unnatural adaptation, as in "intelligence," "combat group," and "main line of resistance." Yet, sometimes, particularly when we take over a foreign term without attempting translation, we do enrich our own vocabulary; for example "chevaux de frise." But just as often we clutter it up needlessly with such duplicate words as "morale," "liaison," "matériel," and "portée."

Least often of all, perhaps, do we make ourselves a new term out of whole cloth. In all other sciences this is done by preference. It is done carefully, and not so much with the idea of using a word that fits the new thing or thought, as to give it a distinctive and unmistakable label.

Here we find the true purpose of terminology. So long as we know accurately what is meant, it makes no differ-

ence what we call a thing. We could call an advance guard "A," a flank guard "B," and a rear guard "C." They would still be the same things. We could, moreover, define these symbols in almost exact terms. And when advance guards changed, in the course of the growth of military science, instead of continuing to speak of A, we could do away with A and replace it with a new symbol such as D, with a new meaning, which would be far better than attempting to give A a new definition.

We cannot, of course, render military language into the symbols of algebra. We should soon reach the abstruseness (but at the same time retain the clarity) of higher mathematics if we did. But what we can do is choose our new terms without fear of their newness, seeing to it at the same time that they are free of possible confusion with the old, and free, also, of entangling alliance with the terminology of foreign armies.

I do not mean to convey that we are always careless in our terminology. Some of it shows the consideration terminology ought to receive. But already, as an illustration, we are in a mess over such a group of modern terms as "mechanized artillery," "motorized artillery," "mechanical cavalry," "cavalry mechanized," "truck-drawn artillery," "portée artillery," "tractor-drawn artillery." We would do much better than that by assigning Roman numerals or letters of the Greek alphabet.

What is needed to set us straight is a complete overhaul of our military terms. We should examine them all and rid ourselves of those in which there lies the least chance of confusion, replacing such words with new terms. We occasionally do this now. The discarded term "approach march" is an instance. But we should make a thorough job of the whole business, for once and all.

Moreover, the new terms adopted at the time of such a general revision should be chosen with the utmost care. The work should be done by a group of officers selected for their special knowledge of English and their known ability as military editors and writers.

This group should make its first object the study of the suitability of words for military use, and its second the definition of the terms arrived at. It should have no hesitation in adopting new terms, but where it seemed desirable, restriction of the meaning of old terms could be applied.

In a small way, present regulations embody such restrictions. The words "secure," "advance on," "interval," "distance," "seize," "hold," and numerous others now have a specific military meaning by regulation. An extension of this list, along with the discard of confusing worn-out terms and the adoption of new ones, is highly desirable. A few of the words that need such official restriction badly are: "dispersion" (which should never be used as a synonym for "deployment"); "hold" (which, having already a restricted sense as defined in Part 1, *Staff Officers' Field Manual*, should not be used in the different sense found in "holding attack"); such phrases as "in the general vicinity of" and "in the immediate vicinity of" (which indeed are largely meaningless, for who can define "general vicinity," "vicinity," and "immediate vicinity," except by using the brief, better terms of locality, "around," "close to," and "near?"); "general" (which now has seven or eight military uses, far too many for even a word so general as "general"); "immediate" (which is first a time word, and only leads to misunderstanding when it is freely used in its place sense); and many more.

An interesting commentary on the present condition of military English is embodied in the fact that one effort to form an official dictionary of military terms a few years ago was unsuccessful. There was too much difference of opinion as to the meaning of many of the terms defined. This effort simply attempted the impossible.

Once our terminology has been established on an accurate basis comparable to that of any other art with a scientific basis, it should become a matter of written regulations. In brief, an official military dictionary of terms and usage should be published to the services, and should thereafter receive continuous revision. It would not be necessary to wait until such a dictionary were complete before acquainting the services with the work in hand. Indeed, it would be much better to make known the revised terminology piecemeal, and thus accomplish the change gradually.

After the main task was finished and a dictionary issued, no haphazard terminology should be permitted to arise. With each new development, any new words that accompanied it should receive careful consideration and, if necessary, amendment, before they were adopted as officially correct.

"Canned" Language

It is easy to imagine these suggestions greeted by a howl of "canned" language, implying that a single right way of saying a thing cannot be imposed upon so varied and complex a region of thought as that of war. But the more complex a science becomes, the more necessary an accurate terminology. As Pareto says in *The Mind and Society*, "So the more advanced sciences develop languages of their own as a result both of coining new terms and of giving special meanings to terms of ordinary parlance." We now have a special language of a sort, but it needs plenty of attention before it is capable of accurate, definite, expression.

"Canned" language is not a result of accurate terminology. It comes rather from a terminology that is both inflexible and inadequate, and from military expressions that have outlived their usefulness. When, at Las Guasimas, Joe Wheeler shouted, "We've got the damned Yankees on the run!" he was inadvertently speaking "canned" language. When we attribute to a hypothetical enemy our own methods of warfare to the exclusion of other methods we are thinking "canned" thoughts. When we talk of "lines" of attacking troops we are using "canned" terminology. "Canned," in fact, means first of all, "preserved."

Military Writing

The most carefully formed terminology imaginable is of no value unless the English in which it is employed is of just as high an order. And it is here, by all odds, that inprovement is chiefly desirable. If only we can get things written in a readable, correct fashion, we can limp along at a decent gait even with our present terminology.

This is not the place to point out the common faults of military writing. That has been done too well by such men as the Fowlers in their *Dictionary of Modern English Usage* and in other standard manuals. The faults of military writing in general (not all of it is bad) are the faults of bad writing of any kind.

The cure is simple. We should stop expecting every officer who happens to be an expert in some field to be a capable writer. It would not, it is true, do any harm to insist that officers who originally prepare written instructional matter do their work in a painstaking manner. But it is too much to expect them all to be a Henderson, a Mahan, or a Liddell Hart.

The final preparation of military writings is a matter of editing, and editing is a special field, requiring special training. It is not, as so many think, a mere matter of checking punctuation and capitalization. Proper editing consists largely in revision and complete rewriting. A military editor should be able to take a mass of dull, heavy, even poorly written material and make it readable and interesting. Short, possibly, of tables of organization and lists of nomenclature, there is hardly a single kind of military instructional matter that cannot be made into good reading.

But a special ability and training is requisite. An editor in the true sense of the word cannot be made "by order." Let us, then, find our editors and use them where they will do the most good. Let us keep a supply always coming up by giving young officers with that particular bent, special opportunities and special training. Even a thing as hastily prepared as a daily newspaper requires a tremendous amount of editing. How much more care, then, should go into the construction of the books and pamphlets that we use in teaching the methods and intricacies of national defense!

* * *

If this article appears harsh in its strictures on the quality of existing military writings, it is simply because there is so much room for improvement. "As dry as regulations" is a true simile but unnecessarily so. "Dryness" is only one fault. Our instructional matter will not for a moment—with a few excellent exceptions—stand comparison with the equivalent tools of any other art or science. The fault is general; it lies at no particular door. Fortunately, the remedies are far from impracticable.

Signal Communication

By Major Jerry V. Matejka
Signal Corps

This article does not necessarily convey the views of the War Department but is merely the expression of the undivided opinions of the author. Lest this statement, which is inserted at the author's request, be taken to imply that all or any other articles do necessarily convey the views of higher authority, we refer our readers to our blanket disavowal on the contents page.

As long as there remain men with arms ready to fight, at least one means must be available to control their actions.

FOR the past fifteen years arms other than the Signal Corps have been charged with the responsibility of providing the signal communication required by brigades and lower units of their arms. During this period there have been radical developments in weapons, vehicles, and planes, all aiming at greater mobility and fire power. As a result of these developments we can expect a complete reorganization of our combat units in the near future. Since mobility without control is chaos and since an effective communication system is essential for exercising control, it behooves us to look well to this requirement. There are many officers, both in and out of the Signal Corps, who feel that in any reorganization, vital improvements must be made in the existing arrangements for providing signal communication for our tactical units.

No individual can become an expert communication specialist, and no arm can provide efficient signal communication, unless that individual or arm makes signal communication his or its primary mission. Obviously, the other combat arms cannot furnish their own signal communication as efficiently as the Signal Corps can do it for them. Furthermore, the front-line combat officer should not be burdened with distracting, detailed, and highly technical duties which could be performed for him by others especially trained for that purpose. You don't go to an Ordnance sergeant to have your tooth pulled; he has two hands and a pair of pliers, but since your tooth is not a king-pin, you go to a dentist to have it out.

One objection that officers of the other combat arms advance against the proposal to have the Signal Corps handle their communications is that since the operation and maintenance of communications is the unit commander's responsibility, he must have complete military control over the communications personnel. This point is readily conceded. It does not follow, however, that this

personnel must belong to the same arm. A competent commander will have no difficulty in exercising his full authority over personnel of any arm assigned to his command. This fact is recognized in the system of command as applied to the higher echelons and there is no reason why it would not hold for units from the brigade down.

As long as men remain with arms ready to fight, at least one means must be available by which to control their actions and receive their reports. The exacting requirements for an efficient communications system can be met only by personnel trained to use all available means with a facility that is born of thorough familiarity and long practice. The commander of this personnel, who must also be its instructor, must therefore be a specialist.

It is here that our present organization is faulty. One cannot become an excellent communications officer without almost the certainty of becoming a less efficient commander. Since it is good commanders we want in war, let us not distract our potential commanders with such side issues; instead let's give each commander an officer on his staff whose only function is to see that his communications are handled properly.

It is doubtful if a captain who is a superior brigade communications officer gains any knowledge or experience in that assignment that will qualify him to command a battalion. If he does not, it is wrong to promote him to that command; and if captains who make excellent communications officers are not to be promoted, ambitious officers will avoid that assignment. The ultimate result will be to close the door of promotion in the faces of potentially excellent commanders, or to place our dependence for communications upon unambitious and incapable officers.

In case of mobilization, the trained communications officers now available will be available no longer. They should and probably will be our battalion and regimental, or even higher, commanders. In that event the arms must look to the Organized Reserve for communications officers. Many Reserve officers are now being trained to be good platoon and company commanders, but can the same Reserve officer be made a good communications officer as well? Reserve officers who are interested primarily in signal communication will enroll in the Signal Corps Reserve, and those not interested should not be depended upon too greatly.

A signal communication system must operate rapidly, accurately, and continuously. Casualties cannot be permitted to interrupt its functioning. Frequent relief of operating personnel is just as essential in a communication system as in an outpost. Present war-strength organization may provide *initial* personnel for this purpose, but it does not provide a satisfactory system of replacement. Casualties in forward units will be high, for the system must be operated and maintained, above all, when hostile action is most violent. In the World War the percentage of Signal Corps casualties was second only to that of the Infantry.

Every successively higher unit to the rear should be able to fill emergency requirements of its subordinate units for key replacements. Therefore, there must be pools of these specialists somewhere in rear. If we are to economize effort the Signal Corps should provide these pools.

Every signal communication system must be so unified by training that it can instantly become a part of the system of all higher units. It is not enough that training be excellent and uniform in a regiment. It must be the same in that regiment as in every other unit of the army, since that regiment must be capable of functioning with all other units without confusion.

Standardization of technique assures proper functioning of equipment, standardization of procedures makes every man speak the same language, and the discipline which causes a man to obey without question an authority whose physical presence cannot be felt guarantees the effectiveness of the whole. The instruction of personnel in these matters must be centralized in some one agency for the whole army. Congress recognized the need for a Signal Corps when it was created. Its basic function is that of performing this duty and it should be charged with it.

The commander of every combat unit above the company of infantry (and similar units in the other arms) should be provided with a Signal Corps officer on his staff, who is also to command the Signal Corps troops attached. Each of these units should be provided with a permanent Signal Corps organization which becomes part of the unit when it takes the field. This detachment should revert to its proper Signal Corps unit for training while in garrison.

If this plan is to be used in war it is important that the Signal Corps be charged with the responsibility now, in order that plans can be prepared to meet the requirements. To charge it with this task without allowing sufficient time for preparation would not only be unfair to the Signal Corps and to the arms dependent upon it, but hazardous in battle. It is more important for the system to work than to fix the blame for failure after it has failed.

★

IN ALMOST EVERY CATEGORY *of munitions, the types with which the American Army is supplied were produced during or prior to the World War. Since that time experimentation has produced models of greatly increased efficiency, but with one or two exceptions none of these has been procured in usable quantities during the past thirteen years.*—MACARTHUR.

Office of Chief of Coast Artillery

Chief of Coast Artillery
MAJOR GENERAL HARRY L. STEELE

Executive
COLONEL HENRY T. BURGIN

Personnel Section
LIEUT. COL. R. T. PENDLETON

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

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

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

Classification of Coast Artillery Officers

BASED ON GENERAL RATING AS OF JUNE 30, 1935.

Ratings	Gen. Officers	Colonels	Lieut. Cols.	Majors	Captains	1st Lieuts.	2nd Lieuts.	Totals
Superior	....	24	49	44	35	9	....	161
Excellent	....	28	80	155	224	132	36	655
Satisfactory	....	1	6	15	25	43	40	130
Unsatisfactory	....	....	....	.....	1	....	....	1
Not Rated	2	....	1	3	9	11	38	64
	2	53	136	217	294	195	114	1011

CHANGES IN GENERAL RATING RESULTING FROM 1935 GENERAL REVISION OF EFFICIENCY REPORTS AS COMPARED WITH THE PREVIOUS YEAR

	Colonels	Lieut Cols.	Majors	Captains	1st Lieuts.	2nd Lieuts.	Totals
From Excellent to Superior	5	8	10	10	3	....	36
From Superior to Excellent	2	1	4	3	....	....	10
From Satisfactory to Excellent	....	....	9	12	21	12	54
From Excellent to Satisfactory	....	....	1	1	....	....	2
From Satisfactory to Unsatisfactory	....	....	....	1	....	....	1
Totals	7	9	24	27	24	12	103

SERVICE SCHOOL STATUS OF COAST ARTILLERY OFFICERS. THE FOLLOWING DATA DOES NOT INCLUDE OFFICERS WHO ATTENDED THE COAST ARTILLERY SCHOOL PRIOR TO 1919.

COAST ARTILLERY SCHOOL. (Adv., Bty. Officers and Reg. Course)

	Colonels	Lieut. Cols.	Majors	Captains	1st Lieuts.	2nd Lieuts.
Graduates	26	127	214	274	54	0
Now attending C.A.S.	0	0	0	8	24	0
Non-graduates	(a) 29	(a) 9	(b) 3	(c) 12	117	114
Number eligible to attend	0	1	0	9	117	114

(a) 29 Colonels and 8 Lieutenant Colonels are over age limit or have attended the C. & G.S.S. and not the C.A.S. (b) 2 Majors attended the C. & G. S. Sch. and not the C.A.S. and 1 attended the C.A.S., but failed to graduate. (c) 1 Captain attended the C. & G.S.S. and not the C.A.S. and 2 attended the C.A.S. but failed to graduate.

COMMAND AND GENERAL STAFF SCHOOL

	Colonels	Lieut. Cols.	Majors	Captains	1st Lieuts.	2nd Lieuts.
Graduates	38	130	73	3	0	0
Now attending the C. & G.S.S.	0	0	11	10	0	0
Non-graduates	(a) 17	(a) 6	(a) 133	(a) 281	195	114
Number eligible to attend	0	2	112	269	195	0

(a) 17 Colonels, 4 Lieutenant Colonels, 21 Majors and 12 Captains are over the age limit.

ARMY WAR COLLEGE

	Colonels	Lieut. Cols.	Majors	Captains	1st Lieuts.	2nd Lieuts.
Graduates	41	51	5	0	0	0
Number now attending	0	4	5	0	0	0
Non-graduates	(a) 14	(b) 81	(c) 207	(d) 294	0	0
Number eligible to attend	0	59	57	3	0	0

(a) 14 Colonels are over age limit. (b) 15 Lieutenant Colonels are over age limit; 1 graduate of Leavenworth not on G.S.C.E.L.; and 6 Lieutenant Colonels are non-graduates of Leavenworth. (c) 2 graduates of Leavenworth are over age limit; 4 graduates of Leavenworth are not on the G. S. C.E.L; 133 Majors are non-graduates of Leavenworth; 11 Majors are now attending the C. & G.S.S. (d) 4 Captains are over age limit; 287 captains are non-graduates of Leavenworth.

Hawaiian Separate Coast Artillery Brigade News Letter

BRIGADE COMMANDER, BRIGADIER GENERAL ROBERT S. ABERNETHY
CHIEF OF STAFF, COLONEL BENJAMIN H. L. WILLIAMS, C.A.C.

S-1, LIEUTENANT COLONEL E. C. DESOBRY, A.G.D.
S-2, LIEUTENANT COLONEL H. C. DAVIS, JR., C.A.C.
S-3, MAJOR W. F. LAFRENZ, C.A.C.
S-4, LIEUTENANT COLONEL 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 EARL BISCOE, *Commanding*

Sixty-Fourth Coast Artillery
COLONEL WILLIS G. PEACE, *Commanding*

By Lieutenant John R. Lovell and Private Robert N. See

SECRETARY OF WAR VISITS HAWAIIAN DEPARTMENT

OF the many prominent official guests of the Hawaiian Department during recent months, none was more enthusiastically received and feted than the Hon. George H. Dern, Secretary of War, who arrived in Honolulu September 30 for a week's stay, before embarking for the Philippine Islands where he took an active part in the ceremonials attending the inauguration of the new commonwealth government.

Again the Hawaiian Department staged a mammoth review, for which the troops of our Pacific outpost are fast becoming famous. The Hawaiian Separate Coast Artillery Brigade did itself proud. The Coast Artillery massed band won high praise from the thousands who crowded the Schofield Barracks parade ground to witness the spectacle.

INSPECTS ARMY UNITS

It was not "all play and no work" for the Secretary of War. During his brief stay he was conducted on a tour of all military posts and reservations by Major General Hugh A. Drum, Department Commander, and visited the Navy Yard at Pearl Harbor as guest of Rear-Admiral Harry E. Yarnell. Of special interest to the Secretary was a demonstration of the antiaircraft units at Fort Shafter, under supervision of Brigadier General Robert S. Abernethy, commanding the Hawaiian Coast Artillery Separate Brigade.

VIEWS SEARCHLIGHT PARADE

A "searchlight" parade staged under the lighted brilliance of 21 billion candlepower, by the 64th Coast Artillery of Fort Shafter, was a unique and thrilling demonstration. This night review was a complete surprise to all members of the Secretary's party, who were guests for the evening at the quarters of Major General Drum. Just as the Secretary finished dinner, 27 searchlights of 800 million candlepower each, flooded the parade ground, augmented by color effects that added splendor to the already brilliant scene. "Officers front and center" was the command following the adjutant's call and the review of the entire regiment was under way. The display was visible from all parts of the city and motorists flocked to the heights to obtain a better view, while hundreds more attracted by the unusual spectacle, sped to the Fort Shafter reservation. The huge lights were placed at all angles and formed a ceiling of light more dazzling than day. Other distinguished guests who witnessed the night review were Governor Poindexter, Miss Helen Poindexter, Mayor and Mrs. Fred Wright, and Admiral H. E. Yarnell.

Battery C, 16th Coast Artillery, at annual target practice

General MacArthur Visitor

On October 9, soon after the departure of Secretary Dern, Honolulu was visited by another important military personage when General Douglas MacArthur passed through on his way to assume new military duties in the Philippines. The ever ready 64th Coast Artillery had planned for a guard of honor and a fitting military reception, but due to a limited amount of time these functions were cancelled at the General's request. General MacArthur refused to comment on military affairs but commended the efficient work of the Department Commander, and was quoted in the local press to the effect that in his opinion General Drum will "some day" be selected as Chief of Staff of the Army.

Railway Guns in Action

Although target practices by units of the Hawaiian Separate Coast Artillery Brigade have been unusually long and Honolulu citizens have become accustomed to the boom of heavy guns, one practice in particular drew much comment in the local press and again demonstrated the ability of the "Hawaiian Gunners" to protect the Oahu coast. Battery "C," 16th Coast Artillery, Fort Ruger, commanded by Major Sweet, was the organization that made front page news with its target practice, held at Fort Kamehameha. Eight-inch railway guns hurled destruction at a target towed by the tug *Cuba*, 10 miles at sea, with such good results as to earn the praise of General Abernethy and members of the press who witnessed the firing.

New Shoulder Patch

In the future one will need but a single glance to determine a coast artilleryman in Hawaii, if the new design for shoulder patches is approved by the War Department. Brigadier General Abernethy has long contemplated a change from the conventional "H," indistinguishable from the Department insignia, to something really distinctive; if the work of his staff officers in selecting a new design bears fruit the Hawaiian Gunners will have as smart an adornment as any insignia in the military service. Diamond Head, famed Oahu landmark and the artillery red forms the background. Superimposed on this is an artillery shell; an ellipse in orange forms and border.

Secretary of War Dern inspects antiaircraft equipment. Above, left to right: ——————— Maj. Gen. Hugh A. Drum, Secretary of War Dern, Brig. Gen. Robert Abernethy, Col. Willis G. Peace, and Col. Campbell Hodges. Below: Brig. Gen. Abernethy and the Secretary of War inspect antiaircraft gun.

Overs and Shorts

Brigadier General John W. Gulick, former Chief of Coast Artillery, was an honored visitor at Brigade Headquarters when the U.S.A.T. *Grant* stopped here en route

Courtesy Recruiting News

The 16th Coast Artillery on Parade

to the Philippines. A guard of honor commanded by Major A. V. Rinearson rendered military courtesy to General Gulick when he arrived.

Governor James M. Curley of Massachusetts was numbered among the October distinguished guests of the Hawaiian Department, and enjoyed a tour of all army posts in the islands.

Major General Hugh A. Drum was guest of honor at a Sojourners' banquet held September 11. In his remarks he stressed the importance of the "Civilian Command" a reserve defensive unit in this Department. General Abernethy, a national vice-president of the Sojourners also was a speaker at the dinner.

The Hawaiian Coast Artillery massed band, composed of bands of the 15th, 16th and 54th Coast Artillery Regiments and directed by Warrant Officer George W. Dahlquist, 64th C. A., recently entertained mainland audiences through a national broadcast originating from KGU. The Army musicians staged the concert in typical Hawaiian setting, the banyan tree of the capital grounds forming the "props."

The Hawaiian Department is "rolling along" these days. Some 2,000 modern vehicles, latest type transportation, are now in daily operation and the transportation problems have grown to such proportions that special officers have been appointed to serve their respective commands. Major C. E. Hocker has been appointed transportation officer for the Coast Artillery Brigade.

Brigade Sports

Corporal Veldon D. Rogers, Fort Ruger, defeated Lieutenant Robert A. Stunkard, A.C., in the finals of the Honolulu Sector tennis singles championship. Lieutenant Stunkard and Sergeant Howard of Luke Field, defeated Captain S. R. Hinds, Infantry, and Corporal Rogers to win the doubles title.

The Sixty-Fourth Artillery won the 1934-1935 Honolulu Sector athletic supremacy trophy, for participation in boxing, basketball, baseball, track, field and swimming.

At a recent "Christmas" party held at headquarters, Hawaiian Separate Coast Artillery Brigade, Army and Navy athletes gathered to receive presentation of awards for participation in tennis, swimming, and baseball, and team trophies for these sports. General Drum and Admiral Yarnell represented the Hawaiian Department and the 14th Naval District.

General Abernethy presented the Sector-Navy baseball trophy to Subron Four, Service champions for 1935, while the Department cup for the title-winning team was presented to the same club. The Sector-Navy trophy and Sector cup in tennis were presented to Luke Field representatives, while Ft. Kamehameha received the swimming trophy. The Sector Supremacy trophy was presented to Colonel Willis G. Peace of the 64th C.A. (AA). Individual awards were leather jackets for the Fort Shafter baseball team, Army champions, and gold, silver and bronze medals for the winners of individual championships in swimming.

Fort Monroe News Letter

Brigadier General Jos. P. Tracy, U. S. Army,
Commanding.

Colonel Russell P. Reeder, 2d C.A.
Commanding Harbor Defenses of Chesapeake Bay

Colonel Horace F. Spurgin,
Commanding 1st Bn., 51st C.A.

Lieutenant Colonel Robert C. Garrett,
Commanding 3d Bn., 52d C.A.

Lieutenant Colonel Frank S. Clark
Commanding 1st Bn., 2d C.A.

By Major O. B. Bucher, C.A.C.

THE firing batteries of the 2d, 51st and 52d Coast Artillery completed their annual service practices about the middle of October. The results were very satisfactory and several "excellents" are expected. The 2d Coast Artillery manned AA searchlights, and 3" AA guns. The 51st fired the 155-mm. and the 52d fired the railway guns and mortars. These batteries started firing for the Coast Artillery School Officers on October 25th. Battery "C," 2d C.A., under command of Captain F. R. Chamberlain, Jr., gave the onlookers a thrill when his battery brought down a sleeve on the first course of the first record practice.

Through the courtesy of the Virginia National Guard the Virginia Beach small arms range has been made available for the Fort Monroe troops. This range is probably one of the largest and best equipped in the Middle Atlantic States. The troops were transported by the mine planter *Schofield* to Little Creek near Fort Story and by truck to their camp at the rifle range. The 52d C.A., under Lieutenant Colonel R. C. Garrett, C.A.C., has completed this training.

Twenty-three National Guard Officers and fifteen Reserve Officers reported on September 16 to pursue the course at the Coast Artillery School. They are now in the throes of absorbing large doses of information pertaining to artillery subjects. Before the close of the course they will fire the 75's, the 155's, 8" RR and 10" DC; in addition they will fire the 3" AA guns and the caliber .30 and .50 AA machine guns.

Just how to keep Johnny C. Artillery from being a dull

boy and at the same time preserve the street lights, shrubbery and ornamental cannons has long been a problem at Fort Monroe. With a small school area and an overworked parade ground few satisfactory play areas remained.

Keenly realizing this situation, the executive committee of the Post Parent Teacher's Association set about finding a solution. Mrs. L. L. Davis and Mrs. James Beattie were appointed by the president, Mrs. R. E. McGarraugh, to head a playground committee. Colonel R. P. Reeder,, willingly cooperated by alloting them an area on Reybold Fill.

The summer was spent in leveling the grounds. In the interim, Lieutenant Harry Tubbs, was busy begging, borrowing and "chiseling" this and that from here and there to build his apparatus. Shortly after the opening of school, swings, parallel bars, see-saws, sand piles and courts for both hand and volley ball were ready. A strong, low, log fence, excellent for stationary equitation; surrounds the space.

October 22 was designated as official opening day. Major E. M. Benitez, E. & R. Officer, outlined a splendid program for the occasion. Events for the field meet were planned by Staff Sergeant James Beattie.

The Fort Monroe Band led the entire post school in procession from the parade ground to the new play area. Here the parents were assembled to hear a few well chosen remarks of greeting by Colonel Reeder, concluding with his presentation of the grounds to the children.

For the first time in five years the post has a football team with a schedule of nine hard games. To date the team has won two games and lost two, Major J. L. Hartman, V. C., is head coach assisted by Lieutenant T. F. Hoffman, 2d Coast Artillery, Lieutenant Paul Elias, C.A.C., and Staff Sergeant James C. Todd, C.A.C. In addition to his job as assistant coach, Lieutenant Elias is playing a "whale" of a game at guard.

Headquarters Harbor Defenses of San Francisco

COLONEL H. E. CLOKE, 6th C.A., *Commanding*

STAFF

Lieutenant Colonel O. H. Longino, Executive.
Captain W. W. Scott, Adjutant.
Captain G. M. O'Connell, Plans and Training.

THE summer season has passed leaving us memories of one C.M.T.C., and three Reserve Officer Training Camps. The C.M.T.C. was conducted almost entirely by a detail of reserve officers of the 517th Coast Artillery and the 6th Coast Artillery. The success of the camp, and it was a great success, was entirely due to the zeal and skill of these reserve components.

A great deal in the way of improvement and revivification of Fort Scott has been made during the past year. The Officers' Club has been enlarged by glassing in the porch and adding a wing; dances, previously held in the gymnasium are now held at the club. A wide lane has been cut through the eucalyptus forest in front of the District Commanders' quarters and another cross-wise from the Commanding Officers' quarters, giving gorgeous views of Yacht Harbor, Alcatraz and Berkeley, the hills of Fort Barry and the new Golden Gate bridge. The gully through the forest has been cleared and graded, and is now a very picturesque Japanese garden.

The lower half of the parade ground, formerly a rather steep slope, has been leveled and now provides us with an excellent site for a parade ground and baseball diamond. Parking spaces have been constructed, not only near the centers of activity, but also at two locations on the cliffs, one overlooking the Golden Gate, and the other along Lincoln Boulevard. Hundreds of automobiles utilize the spaces each Sunday.

The entire road system on the reservation has been

Top: The glassed-in porch of the Officers' Club
Center: The Japanese Garden
Below: New double set of Officers' quarters

renovated, widened where needed, dangerous corners eliminated, and the banks graded and planted.

Minor improvements, new flower gardens and shrubs, new paths and lawns are too numerous to mention. Suffice it to say that old residents of this beautiful post will be happy to see it more attractive than ever, and those visiting it for the first time will become acquainted with one of the Coast Artillery's finest stations.

The willing coöperation of the Navy made it possible for Battery "A" to fire its annual target practice with six-inch guns at a high speed target towed by a destroyer. To design a target that would survive the rough water and rip tides of the "Potato Patch," combined with the high speed feature, presented a real problem; but under the direction of Lieutenant Hempstead one was finally developed which survived the trial and record runs. The practice was excellent. Long range firing with 6" Barbettes at Fort Barry at speeds from 20 to 25 knots was successfully conducted, even under trying conditions of fog and haze.

A number of changes have taken place on our roster since our last letter. Lieutenant Colonels Loughry and Longino, Captains R. C. Jones and Luce, Lieutenants Coit, Ashman and Miner have joined us. Major E. B. McCarthy and Captain Heaney have gone to C.C.C. duty in Pocatello, Idaho. Major Bates and Major Archibald have been moved out on R.O.T.C. details in the High Schools of Sacramento and San Francisco respectively. Lieutenants Skinner, Barber and Parks are now in school at Fort Monroe, and Lieutenant Brownlee has left us for duty at the Military Academy.

In addition to the many other functions the 6th Coast Artillery has to perform, the West Point Preparatory School also comes under the control of the Harbor Defense Commander, who is the Commandant of this school and is responsible for its efficiency. Several vital changes have been made in the operation of this school during the past few months. The personnel consists of Colonel H. E. Cloke, Commandant; Captain William S. Lawton, Assistant Commandant; Lieutenant Edward W. Moore and Lieutenant Walter J. Renfroe, Instructors. The school has been provided with its own mess, and construction of additional classrooms was made by utilizing space in the attic. The capacity was increased from 40 to 50. This school is proud of its record and is conducted along parallel lines with the U. S. Military Academy.

Corregidor News Letter

BRIGADIER GENERAL JOHN W. GULICK, *Commanding*
COLONEL WILLIAM S. BOWEN, C.A.C., *Executive*

59th Coast Artillery
COLONEL PAUL D. BUNKER
60th Coast Artillery (AA)
COLONEL ALLEN KIMBERLY

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

AT this writing the members of the garrison are experiencing a mixed feeling of regret and pleasure; the former because we are about to lose Major General Kilbourne who has been so intimately associated with Corregidor and the numerous improvements that have been made. While we are fully conscious of the fact that his assignment to command the 2d Division, the Army's strongest combat unit, is a compliment to him, we are very sorry to have him leave. Of all the places he has served Corregidor is probably the nearest to his heart and he will miss it as we will miss him.

The regret is assuaged by our good fortune in having as our new Harbor Defense Commander, Brigadier General John W. Gulick, former Chief of Coast Artillery. General Gulick visited the Philippines in 1931 while on an official inspection trip. From this visit and from his wide perspective of the Corps as a whole he is very familiar with the special problems of these defenses.

Captain R. K. Kreuter, with Mrs. Kreuter, and Captain W. L. Wright accompany General Kilbourne to Fort Sam Houston to continue as aides-de-camp.

To supplement gunners' instruction with that outdoor activity that "is so necessary in the tropics," this rainy season has seen a very extensive program of beautification of the post and improvement of drainage. (The Bilibid prisoners omit the gunners' instruction.) The Topside parade ground has been widened by cutting away the north and south slopes, which have been smoothed down and sodded. The increase in size makes possible a combined review of all four regiments without crowding. A large project of erosion control and beautification is almost completed in rear of the Middleside Barracks occupied by the 60th and 91st. The slopes above the road were very unsightly and in places the gullies had almost undermined the roadway. Extensive masonry walls have been built, and from the top of these walls the slopes have been revetted with stone at an angle of about 45°. In addition four batteries of the 60th, using troop labor, have built masonry "spud-houses." The storage of vegetables and other supplies in these houses has relieved crowding in kitchens and hallways. The 59th have beautified the vicinity of their barracks by landscaping, the outstanding feature being ornate patterns of white beach stones. The antiaircraft gun firing point has been moved some distance to the north of its old position to prevent interference with other activities and to allow all guns to be emplaced in line. The position for each battery has been graded and a new platform constructed for officials.

The 1935 Philippine Department Map Exercise has been completed, ending with the gathering of the commanders and the principal staff officers at Fort William McKinley for the final critique. This year the problem was in two phases rather than three; and for the second phase the requirement was a plan of each commander rather than complete orders. The entire problem consisted of the attack of a fortified zone by an army of three corps, followed by an exploitation of a success. The value of the training that comes from exercises of this nature is shown by the fact that the preparation of plans and orders was accomplished in a much more orderly and rapid manner than for the previous problem.

The entire garrison was invited to attend the Promotion Party celebrating the elevation of General Kilbourne to the rank of Major General and the mass advancement of some sixty other officers. It was one of the liveliest occasions on this post since they took the Nipa Club apart in 1924. A large crowd attended the party. The "Artillery Punch" was of a disarming pink and the music was gay.

Throughout the rainy season indoor sports have set the pace. The Service Club, a gigantic gymnasium built during the war by the Y.M.C.A., gives room for three bowling matches, a basketball game and a regimental dance all at the same time, with a Post Exchange and a beer garden on the side. In the Officers' Bowling Tournament the 59th won the first half but folded up when Tom Forman left on the transport. The second half ran to a tie between the 92d and the Staff, with the latter winning the play-off. In the final play-off for the championship the Staff won in straight games. The Officers Duck-pin Tournament is now under way with the 59th so far in the lead that they probably cannot be defeated.

The Philippine Department Bowling Tournament was held on this post, with each regiment in the Islands entering a team of enlisted men. The strong 91st team, already post champions, took third in the ten-pins and second in the duck-pins, with a combined total pinfall higher than that of any other team. Master Sergeant Allen C. Spencer, M.D., bowling with the 60th team, in ten-pins took the high single of 246 and the high of the tournament for six games of 1,197.

In a game that went to an overtime period, Battery F, 59th C.A., ended the long rule on the courts of Battery A, 60th C.A., by taking the American Basketball Championship by a score of 43 to 38. Battery B, 91st C.A., (PS), won the Filipino Championship and the series of games to determine the post championship is yet to be played. Basketball has been a very popular sport this year and several strong teams have been developed.

The fair golfers are no longer content to have the men run their golfing; they have formed the Women's Branch of the Corregidor Club. Mrs. Kilbourne is President, Mrs. Case is Chairman, while Mrs. Boyer and Mrs. Baldwin are members of the Golf Committee. Payment of a small fee entitles each member to attend a golf breakfast and to participate in two matches each month. There are some thirty members, and great interest is being shown in the first regular series of matches to be held for some years.

The Corregidor Players successfully presented "The Thirteenth Chair" with an all star cast. Colonel Paul D. Bunker is president of the Players and took one of the principal parts in the play. Mrs. Bunker directed this production.

Topside Barracks, Corregidor, the longest barracks in the world.

NEWS AND COMMENT

ORDER OF THE ILLUSTRIOUS

Major Albert D. Chipman, C.A.C.
Major Charles I. Clark, CA-Res.
Major William F. Marquat, C.A.C.
Lt. Milton G. Mauer, C.A.N.G.
Lt. John Paulding, C.A.N.G.
Lt. Col. E. W. Thomson, CA-Res.
Capt. R. E. DeMerritt, C.A.C.
Lt. W. P. Carlin, CA-Res.

STAR MEMBERS

Major Albert D. Chipman, C.A.C.
—cum laude
Thirty subscriptions
Lt. W. P. Carlin, CA-Res.
One subscription

NEW MEMBERS

Colonel C. C. Dawes, C.A.N.G.—cum laude
Forty-two subscriptions
Colonel R. E. Mittelstaedt, C.A.N.G.—cum laude
Thirty-three subscriptions
Major Evan C. Seaman, C.A.C.
Twenty-four subscriptions
Major Robert M. Carswell, C.A.C.
Twelve subscriptions
Colonel R. H. Williams
Eleven subscriptions
Major James D. Brown, C.A.C.
Seven subscriptions
Lt. Col. Roy S. Atwood, C.A.C.
Five subscriptions
Major Ira B. Hill, C.A.C.
Two subscriptions
Captain M. A. Herbert, C.A.N.G.
One subscription

NOTE: Star members indicates those who have been awarded the citation two or more times.

Line forms at the top. There is plenty of room—no crowding.

For details and further information see page 307, July-August issue of the JOURNAL.

Election of Officers

AT this time each year it becomes necessary to hold an election for members of the Executive Council, U. S. Coast Artillery Association. It will be recalled that the Executive Council consists of nine members, elected by popular ballot from among Coast Artillery officers. The constitution provides that members of the Council serve for two years. In order that the governing body be continuing, five members are elected one year and four on the alternate years. The constitution further provides that five of the nine members come from the Regular Army, two from the National Guard and two from the Reserves. The Secretary-Treasurer of the Association is not elected but is appointed by the President. The officers whose term of office is about to expire are:

Colonel H. E. Cloke, C.A.C., Vice President.
Colonel William H. Carpenter, C.A.C.
Lieutenant Colonel E. E. Bennett, C.A.C.
Lieutenant Colonel H. H. Morehead, C.A.N.G.
Lieutenant Colonel H. P. Newton, C.A.-Res.

In keeping with the established custom, the President of the Association appointed a committee to canvass the field and place before the Association nominees to replace those officers whose term is about to expire. There is no shortage of officers especially well qualified to serve on the Council; the problem confronting the committee was not to find suitable candidates but to select those who could be easily assembled for the transaction of business. In order to insure a quorum, at least five members should be officers whose residence in Washington probably will continue for at least two years. The committee submits for the consideration of the members the names of the following officers:

Vice President: Colonel Francis H. Lincoln, C.A.C.
Additional members of the Executive Council:
Lieutenant Colonel R. S. Atwood, C.A.C.
Lieutenant Colonel Clifton M. Irwin, C.A.N.G.
Major LeRoy Lutes, C.A.C.
Major John Caswell, C.A.-Res.

A brief word concerning the status and location of the nominees may be in order. Colonel Lincoln is now Executive Officer for the G-2 section of the War Department General Staff. Lieutenant Colonel R. S. Atwood, a recent arrival in Washington, is on duty with the Organized Reserve of the Third Corps Area and instructor of three antiaircraft reserve regiments. Major LeRoy Lutes graduated from the Army War College in June, 1935, and is now on duty in the National Guard Bureau, War Department.

All of these officers are well and favorably known to the members of the Association. Lieutenant Colonel Clifton M. Irwin hails from the great northwest. He is the Commanding Officer of the 249th C.A. (HD), the organization that won the Association trophy awarded to a National Guard regiment in 1933. Unofficial reports indicate that this regiment is one of the best in the National Guard component and that much credit is due Colonel Irwin for his untiring energy and devotion to duty. Major John Caswell, C.A.-Res. is a resident of Washington connected with one of the largest and best known brokerage firms in this City. He has been unusually active and interested in all that pertains to the Coast Artillery and the National Defense. He has rendered long and valiant service to the Association, has been indefatigable in working for its best interest, a past president of the Washington Chapter

of the Association and has held many other important positions connected with Coast Artillery activities.

While the foregoing have been placed in nomination it should be kept in mind that no member of the Association is to be deprived of a voice in the nomination of officers. If any member does not approve of the committee's recommendation there is not the slightest objection to entering his personal choice on the ballot in the space provided for that purpose. Printed ballots will be distributed about December 1. For reasons of economy it is not intended to mail ballots individually to each member of the Association. They will be sent through regimental and post commanders, National Guard instructors, instructors of the Organized Reserves and similar agencies. It is requested that individuals accomplish the ballots and return them to the agency from which received; they will then be forwarded to the Secretary. In the event that a member of the Association should fail to receive one of the printed ballots it will be entirely satisfactory if he records his vote informally. If so desired, the sample ballot appearing below may be used. Ballots should be mailed in time to reach the Secretary of the Association not later than January 4, 1936. The retiring members of the Executive Council have given generously of their time and have earned the thanks of all the members of the Association.

THE UNITED STATES COAST ARTILLERY ASSOCIATION BALLOT

For Vice-President (1936-38)

☐ Colonel Francis H. Lincoln, C.A.C.
Vice Colonel H. E. Cloke, C.A.C.

For Additional Members of the Executive Council (1936-38)

☐ Lt. Col. R. S. Atwood, C.A.C.
Vice Colonel W. H. Carpenter, C.A.C.

☐ Lt. Col. C. M. Irwin, C.A.N.G.
Vice Lt. Col. H. H. Morehead, C.A.N.G.

☐ Major LeRoy Lutes, C.A.C.
Vice Lt. Col. E. E. Bennett, C.A.C.

☐ Major John Caswell, C.A.-Res.
Vice Lt. Col. H. P. Newton, C.A. Res.

Fill in names of your candidates if so desired.

☐ .....

☐ .....

.....
Signature

.....
Rank and Organization

.....
Address

INSTRUCTIONS AND INFORMATION

1. Vote for only Vice-President and four (4) members of the Executive Council. The above list is the slate prepared by a nominating committee to replace those members whose term of office expires on December 31, 1935.

2. Record your vote by making an "X" in the appropriate square or indicate your choice by writing in the name of your candidate. Ballots received with signatures, but no individual votes recorded, will be considered proxies.

3. Each candidate was considered in connection with the geographic location of his residence and also the component of which he is a member. It is considered advisable to have at least five members of the Council resident in Washington in order to facilitate transaction of business.

4. No member is to be deprived of a voice in the nomination and selection of the new members of the Council. If you do not approve of the Committee's choice, enter your personal choice in the space provided.

5. Ballots received after January 4, 1936, will not be counted.

6. Mail ballots to The Secretary, U. S. Coast Artillery Association, 1115 17th St., N. W., Washington, D. C.

"The Artillery Acquitted Itself Magnificently"

SO stated General Pershing in his final report on the American Expeditionary Force. The Coast Artillery is now acquitting itself magnificently in the matter of supporting the JOURNAL. At the date of going to press two National Guard regiments have subscribed 100%. The 202d C.A. (AA) Illinois National Guard, under the fine leadership of Colonel C. C. Dawes, was the first to cross the goal line. Colonel Dawes sent in 42 subscriptions, one for each officer of the regiment, and all prepaid. The second regiment to crash through the line for a touchdown was the 250th C.A. (TD) Calif. N.G., under the capable command of Colonel R. E. Mittelstaedt. This regiment has an officer personnel of 65, including Chaplains and Medicos, all now subscribers to the JOURNAL; incidentally the latter were carried along with the forward rush of the line officers. We hope that the spiritual advisors and guardians of health will find much of interest in the JOURNAL even if it is intended primarily for the perusal of line officers. After all, if it were not for the Coast Artillery Corps perhaps these officers would be without a commission in the National Guard of the United States. In passing we want to pay our respects to Lieutenant M. G. Mauer of the 250th, who has been most active, loyal and helpful in advancing the interests of the JOURNAL. To him is due much credit, "may his tribe increase."

The Guard is setting the pace and blazing the trail for the Regular Army. With a tinge of chagrin we have to confess that the two regiments above mentioned were ahead of any of the Regular Army units in attaining the 100% score, but we are pleased to announce that this condition did not last long, for only a few days after receipt of the subscriptions from the 250th C.A. (TD) we received subscriptions from all the missing members of the 61st C.A. (AA), Ft. Sheridan, Illinois, Lieut. Col. C. B. Meyers, Commanding.

The worthy example of all of these deserves emulation. Such generous support merits unstinted praise and points the way for others to follow. We would like to devise a special decoration to bestow upon the commanding officers of the above mentioned regiments. Too bad that the subscriptions were not received in time to make them charter members of the "Order of the Illustrious" for indeed their names, like that of Abou Ben Adhem "lead

all the rest." To nominate them for ordinary membership would be a travesty on justice. The least we can do is to confer upon them the decoration *cum laude*. This we have done, and in addition they have the thanks and gratitude of the Executive Council of the Coast Artillery Association.

A third regiment of the National Guard has sent in subscriptions for all field officers and battery commanders. Still another has authorized the subscription for each organization. Normally epidemics are to be avoided but this seems to be contagious and with the continued support and coöperation of unit Instructors and Regimental Commanders we hope that it will sweep the entire Coast Artillery and leave no one untouched.

San Francisco Chapter

ON October 15 the San Francisco Chapter of the Coast Artillery Association held an interesting meeting preceded by a dinner, the President, Colonel C. J. Mund, presided. Seventy-two members were present. Following the dinner there was a short business meeting at which the following officers were elected for the ensuing year:

President, Col. H. E. Cloke, C.A.C.
Vice President, Lieut. Col. W. W. Breite (OR)
Sect'y-Treas., 1st Lt. M. G. Mauer (NG)
Directors: Col. C. J. Mund (OR), Maj. J. D. MacMullen (RA), Capt. O. G. Kuklinski (NG).

Colonel Cloke, in taking over the duties of his new office, stressed the necessity of planning for a revivification of our coast defenses. The "Trophy Committee" Lt. Col. Albert L. Loustalot, Chairman, suggested that consideration might be given to the possibility of awarding a JOURNAL subscription to the youngest (in point of service) commissioned officer. This question was opened for discussion but no definite action taken. At the conclusion of the business meeting Major C. D. Y. Ostrom discussed the 4th Army Maneuvers recently held in the States of Washington and Oregon. Major Ostrom was Assistant Chief of Artillery, therefore, was well informed concerning all details of the maneuvers particularly the artillery phases. With the assistance of large wall maps the general plan of both attack and defense were presented in a most understandable manner. The conclusions drawn from this exercise indicates a lamentable shortage of anti-aircraft artillery.

The next meeting of the chapter will be held during December or January under the auspices of the Regular Army contingent and Colonel Cloke promises an interesting and instructive meeting.

EDITOR'S NOTE: The San Francisco Chapter is one of the most active in the Association. Apparently their meetings are pervaded by a spirit of comradeship and good will combined with useful instruction on military subjects. We would like to see other chapters follow their example.

Coast Artillery Officer Honored

LIEUTENANT E. JEFF BARNETT, one of Houston's outstanding business men, has recently been appointed Chairman of the National Defense Committee of the United States Junior Chamber of Commerce. Lieutenant Barnett is also National Vice-President of the Reserve Officers' Association; Vice-President of the Department of Texas Reserve Officers' Association; National Chairman of the C.M.T.C. activities of Reserve officers of the United States, and a member of the Military Affairs Committee of the Houston Chamber of Commerce. In addition to all of this he is the manager of *Houston* (a monthly magazine published in that city). Lieutenant Barnett has served a term as President of the Houston Chapter of Reserve Officers' Association and was one of the founders and the Vice-President of the Eighth Congressional National Defense and Joint Legislative Committee. He is a charter member and Vice-President of the Houston Chapter of the U. S. Coast Artillery Association.

From the above it is evident that Lieutenant Barnett has a national reputation as an organizer and conductor of patriotic organizations, especially interested in promoting the cause of National Defense. It would be a fine thing if other Reserve officers would take a leaf from his notebook and interest themselves in the betterment of the Army by educating the public to realize and appreciate the services rendered by the several components of the military establishment.

Over the Top

A FEW days before going to press we received from the Executive Officer of the 61st C.A. (AA) seven subscriptions, making this the first Regular Army regiment to attain the distinction of having the officer personnel 100% subscribers. We extend our thanks to those officers who have made this possible; also we want to publicly thank all those who have interested themselves in the success of the JOURNAL. During the past month more than 200 new subscribers have been obtained due to the interest and coöperation of some willing workers. This manifestation of confidence in the JOURNAL is most gratifying and puts it squarely up to us to produce a better magazine. This we are more than anxious to do but it will require much help. First the question of articles:

When better articles can be obtained the Journal will publish them.

It may not be amiss to mention that the increase in the number of subscribers will make it possible to slightly increase the schedule of pay for accepted articles. Heretofore the amount we have been able to pay was pitifully small; usually we felt compelled to ask the author to accept it in the nature of an honorarium. Of course we cannot possibly remunerate authors on the basis of intrinsic worth, but hereafter we will be able to slightly boost the rate. Now for the deluge of manuscripts!

245th Coast Artillery Establishes Right to Streamer for Revolutionary War

By Captain Charles R. Morrison

ON December 1, 1924, the Historical Section of the Army War College advised that the date of origin of the 245th Coast Artillery (Old 13th) as shown in the outline history would in all probability be questioned by other organizations claiming to be the oldest in the Army, but with further extensive research on the part of the Historical Section of The Adjutant General's Office, the acknowledged date of origin (when it was known as "King's County Militia") is March 11, 1776, and the Revolutionary War and War of 1812 streamers are now authorized for the Regimental Colors.

Much of the early research work, in the effort to establish the original organization of the 245th, was done by Captain Charles R. Morrison, Supply Officer of the regiment, but later the work was carried on to its successful conclusion by Lt. Col. C. Pemberton Lenart who is in charge of the Historical Section of the Adjutant General's office, Albany, N. Y. To these two officers must be given the credit for finally establishing, to the War Department's satisfaction, the claim of the regiment to display the Revolutionary War and the War of 1812 streamers on its regimental colors.

With this authority the 245th Coast Artillery is the first Regiment in the State of New York to receive this award and for the present is acknowledged to be one of the oldest active Regiments in the country. Actually, its direct progenitor was a company of minute men organized in 1654 by the Dutch in Brooklyn to help suppress lawlessness and smuggling. When the 64th Regiment of Infantry was organized in 1776 this company of minute men evidently became a part of this regiment and fought through the Revolutionary War and the War of 1812.

Family and authorized histories established a continuity of service of individuals through the right flank company of the 64th Infantry to the "Village Light Guard" and then later, when the village of Brooklyn was incorporated, to the "Brooklyn Light Guard." In 1847 the State Militia was composed wholly of independent companies, comparatively few of which were uniformed, and its heterogeneous composition attracted the attention of the Legislature with the result that a new division of twelve regiments was authorized for Brooklyn. The 13th Regiment became the first of the new division. The Brooklyn Light Guard then became the right flank company of the new regiment and was known at that time as Company A. In the present regiment it is designated as Battery A.

It has been ascertained that personnel from "the Old 13th" formed a part of every regiment organized in Brooklyn and that led to the expression, "Mother of Regiments." The 13th has participated in every war of our Nation and in each has achieved some signal distinction. It is little wonder that the personnel of the 245th Coast Artillery are proud of this heritage and strive to be worthy of being connected with the oldest and best regiment of the state.

The best proof of this is the fact that the 245th has a larger number of long-service men than any other regiment. The creed of loyalty to the Regiment was given to it by Chaplain Henry Ward Beecher in January, 1878:

> "Already, the Thirteenth has won a name to be honored. Let it grow more illustrious and as time goes on and we pass away, may others take our places and fill up the measure of the glory of the 'Old Thirteenth.' "

The Colors now carry these streamers:

REVOLUTIONARY WAR
WAR OF 1812
CIVIL WAR—GETTYSBURG
WORLD WAR
LORRAINE
ST. MIHIEL
MEUSE-ARGONNE

This is the past. The 245th Coast Artillery is the future. They carry on.

EDITOR'S NOTE: Other than the 62d C.A. (AA) we do not know of any regiment whose colors are entitled to wear this streamer. If there are any we would like to have the opportunity of announcing it to the world.

What the Instructors Are Doing

IN furtherance of the plan to increase the subscriptions to the JOURNAL we recently furnished each instructor, Organized Reserves, with the name of Reserve officers (now on active duty in connection with the C.C.C.), who are members of the Association and subscribers to the JOURNAL, suggesting that each instructor interest himself to the extent of contacting those who are non-members and non-subscribers. The results have been most gratifying and have demonstrated beyond a doubt that these officers who have been on Uncle Sam's payroll for varying periods of time are willing and ready to support the Association and the JOURNAL; it is only necessary to present the facts in the case with special emphasis on the kind of service rendered by these agencies. The coöperation of instructors has resulted in the addition of many new names to our list. Outstanding service has been rendered by Major R. M. Carswell, Richmond, Va., Lt. Col. Roy S. Atwood, Washington, D. C., Lt. Col. S. M. Hawkins, Detroit, Michigan, Capt. D. J. Rutherford, Seattle, Washington, and others whose names will be added to this list at a later date.

Things the Army Does Besides Fight

THE fact is very frequently overlooked that military education and training cover a multitude of interests and activities in addition to those essentially military, and that this training is of great value to the soldier after he leaves the service. Frequently it is the means by which he can procure lucrative employment in civil pursuits. To bear out this contention there are reproduced extracts from

a letter sent by an ex-soldier to his former battery commander who in turn forwarded it to the JOURNAL:

"I feel that I owe you a debt of gratitude, I thought I would drop you a line and let you know about it. I have landed a job here in town in the Knights of Pythias Children's Home as a cook (and head cook at that). We have 149 children and staff members to cook for and that is near the amount that we had in good old Battery "G" of the Fourth Coast Artillery in Panama. So I got busy and applied the methods you taught me, and not bragging a bit, all I receive are compliments on everything from cooking to cleanliness. Especially the CLEANING! I applied the emery cloth method to the top of our stove and griddle, a little good paint on the ends and front; shined all the pipes the same way; the pots and pans are scoured in all the corners and all that sort of thing—you know how we did it! And the best thing of all was the fact that I did not forget to use a clean towel to wipe off all dishes as they came back for second helping. For all these things I am very very grateful to you and I am writing you this in order to *thank you very much for the rigid instructions that you gave me.*"

Discipline is a much misunderstood word, therefore, it is a source of satisfaction to find one who understands the effects of its practical application and who appreciates the fact that his Army training was responsible for landing a good job. Battery commanders would do well to impress this upon members of their organizations.

Washington University Points the Way

IT has come to our attention that the articles published in the JOURNAL are of interest and value to many R.O.T.C. students, notwithstanding the fact that normally their time is fully occupied with academic work. Last year 13 students of the senior class, Washington University, St. Louis, Mo., thought so highly of the JOURNAL that they sent in their subscriptions. This has now become an established custom and we have this date (Nov. 4th) received 30 subscriptions from members of the Senior and Junior classes. Incidentally we believe that the P.M.S.&T., Major Albert D. Chipman, C.A.C. prepared a course of collateral reading and included the JOURNAL in the list of selected books and periodicals. This proved to be of great value and articles on Coast Artillery subjects appearing in the JOURNAL have been made the basis of classroom discussion.

We cannot too highly commend the students of Washington University for their professional zeal and we believe that the narrative method of treating subjects will give them a better understanding than can be obtained from text books. Also the JOURNAL furnishes an excellent background for a true understanding of the functions of the Coast Artillery Corps and the part it plays in the scheme of National Defense.

Washington University is the first R.O.T.C. unit to adopt this plan; we believe that it has sufficient merit to warrant its adoption by others and we hope that the trail blazed will become a much used road. The JOURNAL should be a clearing house for the dissemination of information pertaining to R.O.T.C. units and more especially for a discussion of the problems confronting the P.M.S.&T's. Each of these undoubtedly has some pet theories which time has demonstrated to be of value. If the proponents of these theories will furnish the manuscript the JOURNAL will be only too glad to publish them for the benefit of others. How a particular problem was met and solved is of absorbing interest to all those who may have the same problem; this applies with special emphasis to the R.O.T.C. camps. We hope that this thought will fall on fertile ground and that we may be able to develop a live, interesting R.O.T.C. column.

Warrants for Cadet Non-Coms.

ONE of our correspondents raises the question as to warrants for noncommissioned officers of R.O.T.C. units. So far as we know this is a question that has been neglected if not completely overlooked. Noncommissioned officers of the Regular Army and National Guard are issued warrants showing their official status. Why not extend this same idea to R.O.T.C. units? If there is a demand for these warrants the JOURNAL gladly will undertake to produce a blank form warrant arranged in such a way that necessary data can be filled in. We would like to hear from some P.M.S.&T's on this subject, also will appreciate receiving a copy of any R.O.T.C. warrant now in use.

Promotion in the National Guard

NOW that the troublesome question of stagnation in promotion, the "hump" and all related subjects has been satisfactorily settled, so far as the Regular Army is concerned, up comes the National Guard with quite similar problems. It seems that many lieutenants in the Guard serve from 10 to 15 years in that grade; in some regiments the rate of promotion does not exceed two or three files a years for the lieutenants and about one file every two years for the captains. What is to be done—that's the question? We would like to have comments on this subject from those who have a feasible plan to propose.

★

WHEREAS NATIONS WILL NOT COOPERATE *in the quest of an ideal, unless it is in their material interest to do so, they will coöperate for purposes of political or economic security against a common menace.*—CANADIAN DEFENSE QUARTERLY.

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*
LIEUT. COL. 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.
MAJOR E. T. CONWAY, C.A.C.
CAPTAIN L. L. DAVIS, C.A.C.
CAPTAIN WALTER J. WOLFE, C.A.C.

SECTION I

Projects Completed Since Last Issue of the Journal

PROJECT NO. 964 — RUBBER-JACKETED SURMARINE MINE CABLE.—This cable has been mentioned several times in the JOURNAL. The Board, after evaluating reports from several sources, decided that this cable should be standardized, and so recommended.

PROJECT NO. 990—TEST OF DULUX, NON-OXITE AND OTHER PAINTS.—The Coast Artillery Board for some time has been making more or less continued tests in an attempt to find a paint better than the Ordnance issue paint for guns and gun carriages. Further tests are to be made, but the report on this project was to the effect that no paint reported upon so far is superior to the Ordnance issue olive drab paint. It was found that the appearance of both gun and carriage could be improved by toning up the paint with a coat of varnish after the finish began to get dull.

PROJECT NO. 1017—STEREOSCOPIC TRAINER, T5; and PROJECT NO. 1018 — OPHTHALMIC TELEBINOCULARS (STEREOSCOPE).—The tests on these instruments were outlined in the last issue of the JOURNAL. The Stereoscopic Trainer is an expensive, complicated device, while the Ophthalmic Telebinocular is comparatively simple and inexpensive. Each instrument is designed to test stereoscopic acuity and to provide means of training. It was found that the telebinoculars serve the Coast Artillery purposes both in the matter of selection and in training nearly as well as did the more complicated instrument, and the Board recommended that one of the telebinoculars be issued with each stereoscopic range or height finder.

In the course of this test several hundred persons were examined and some rather surprising conditions were uncovered. It was found that it is not the man with the best eyesight, measured by the usual standards, who has the best stereoscopic vision; also that there was a very marked difference in the stereoscopic ability of different persons, and the Board is firmly convinced of two features:

a. That a great amount of selective work is necessary within an organization in order to get the best operator for a stereoscopic instrument, and

b. That the best man having been selected, his effectiveness can be greatly improved by systematic training.

If the Board's recommendations are approved by higher authority, some drab hours for certain individuals are to be added to the battery's training schedule, but of course much of this work can be done indoors during bad weather.

PROJECT NO. 1033—FUSE SETTERS, M5 M2A1 AND T8.—The commanding officers of several antiaircraft organizations had complained of the malfunctioning of fuse setters. A rather thorough test conducted by the Board indicated that careful shop adjustment before the issue of the device was highly necessary. It was not recommended that any material change be made in the fuse setter at this time.

PROJECT NO. 1037 — OPTICAL GAS MASK E6R40-E7R15-E4R11.—While this mask is an improvement in many respects over those tested before, certain defects were found which, in the opinion of the Board, can be remedied.

PROJECT NO. 1041 — CONVOY ILLUMINATION. — As stated in a previous issue of the JOURNAL, the Board has been engaged for some time in trying to find a means whereby the driver of a truck on a night convoy can determine the whereabouts of the next preceding truck while utilizing so little illumination that a hostile aerial observer could not discover the column. The Board designed a sample light with colored glass and tried it out. From the preliminary test it seemed to meet the requirements, and the Board recommended that several of these lights be given a service test. Several other schemes were suggested,

the manufacture and trial of which were beyond the capabilities of the Board. One of these was the utilization of fluorescent paint on a plate, the paint to be vitalized as often as necessary by exposure to sunlight or artificial light.

PROJECT NO. 1045—REEL UNIT, TYPE RL-31-T3.—This device is designed to permit the laying and taking up of field wire by several different means. It is hand-operated, and can be placed on the floor or on the tailboard of a truck or in a reconnaissance car. The unit is so arranged that the reel of wire can be carried similar to a litter, or it can be propelled like a wheelbarrow. It was found that laying and taking up wire by the wheelbarrow method was not practical due to the fact that the rims are of greater circumstance than the cylinder on which the wire is wound. However, all in all, the unit was found to be very satisfactory, and it was recommended that, after a few minor changes it be adopted as standard and issued to all mobile coast artillery units.

SECTION II

Projects Under Consideration

PROJECT NO. 953—RADIO-CONTROLLED HIGH-SPEED TARGET.—A preliminary test or two indicates that the work on the radio-controlled high-speed target is in the right direction. Involved in the complete control designed for this boat is a very complicated radio system. The matter of keeping down radio interference without adding too many complications, is the feature of the design that is now taking up most of the time of the men working on the project. It is a fine looking boat and contains some wonderful mechanism; seems a pity to shoot at it.

PROJECT NO. 1003—DRILL CARTRIDGES FOR 3-INCH ANTIAIRCRAFT GUNS.—About a year ago the Board submitted a report on these cartridges and recommended that certain changes be made in the design. The Chief of Ordnance has made the changes and the cartridges are back again for further test. It is hoped that such test can be completed during November.

PROJECT NO. 1021—SPONGE STAVES, 155-MM. GUNS.—This is another reopened project—reopened because the Chief of Ordnance has made certain changes in the cleaning, ramming, and loading matériel of this gun, and the new matériel is here for test. From a preliminary inspection it appears that the best combination of implements has not yet been made.

PROJECT NO. 1023—PORTABLE KITCHEN, GASOLINE-BURNING.—It is presumed that, in this day and age, if the Army is to get anywhere, gasoline will be provided. Since much gasoline is required for motive power, a small amount might be spared for cooking. Proceeding on this theory, a gasoline kitchen has been designed and submitted for test. It has been farmed out to the commanders of various units and detachments, and reports have been received from those who have used other units of this type. It is safe to say that the Board's report will state that, in general, the kitchen is a satisfactory unit but that it can be considerably improved by minor alterations. Some of the organization commanders who have used this kitchen have installed it in a truck with other kitchen accessories, and by utilizing another truck as pantry and serving table have afforded for their respective organizations a field messing service approaching in completeness that of a railway dining car. Such service is all right; convenient, efficient and commendable, if trucks are available in sufficient number to permit restricting the duty of two of them solely to that of subsistence.

PROJECT NO. 1025—SHIRTS, FLANNEL, OLIVE DRAB.—The year set aside for this test has not yet expired but it is felt by the Board that sufficient information has been received concerning these garments so that a conclusive report can be rendered. Report will be made in a few days.

PROJECT NO. 1027—TABLES, MESS.—This is also a one-year test, due to be completed in January, 1936. One feature wherein these tables differ from the standard table is in the matter of casters. At least one organization commander reports that his men do not favor this table because:

a. The casters score and scratch his highly polished dining-room floors.

b. That a man sitting at a table may consciously or unconsciously push it, thus causing it to roll across the room with the possibility of upsetting any men eating at the other side of the table.

PROJECT NO. 1031—DIAPHRAGM GAS MASK, E3R139.—The test on this mask has been delayed for some time awaiting the arrival of some new telephones, which are claimed to be an improvement over the standard fire control telephones. The Board delayed this test feeling that a more conclusive report could be made on the masks were they tested with the latest model telephone equipment. The new telephones are on hand and an early report will be submitted.

PROJECT NO. 1038—STORAGE OF RUBBER-JACKETED SUBMARINE MINE CABLE.—As stated in the list of finished projects above, recommendations were made to standardize the new rubber-jacketed submarine mine cable. Just how to store this cable has not yet been determined, and present test contemplates reports from several different harbor defenses. In this connection it might be stated that there is a theory that both the rubber and the metal coverings of submarine mine cable take more or less of a set when the cable is allowed to remain on a drum for a long period of time. To test this theory with a view to taking remedial action, instructions were issued to re-reel a certain amount of cable. The Chief of Coast Artillery, at the suggestion of the Coast Artillery Board, selected certain harbor defenses in which the commanding

officer was directed to re-reel certain pieces of cable in such a manner that the surface of the cable that was originally nearest the core of the reel would be, after re-reeling, farthest away from the core of the reel. This operation is to be carried on in connection with the yearly cable test. It is admitted that it will add another element of discomfort to the cable-testing ordeal, but cable is expensive material, and it is highly necessary that every effort should be made to keep it in serviceable condition as long as possible.

Project No. 1039—Data Transmission System T-11.—This is a system designed to transmit gun pointing data from the plotting room of a fixed emplacement to the gun. It is a follow-the-pointer system and, as stated in the last issue of the Journal, is to be tried out at Fort Monroe, Va., and Fort Hancock, N. J. There have been a number of delays in the installation of the system at Fort Monroe and it is not known just when the firing test can be conducted.

Project No. 1040—Blankets, Woolen, O.D.—Just what these blankets are the Board does not know. They have not been received at the post.

Project No. 1042—Motorcycle Requirements, Coast Artillery Corps.—From reports received from various sources there appears to be a great divergence of opinion as to the merits of the motorcycle. They are noisy, irritating devices that have been accepted for years as a necessary evil. Whether or not they can be entirely replaced, for convoy work, by short-wave radio and light passenger cars, the Board has yet to determine.

Project No. 1044—Machine Guns, M1, Caliber .22.—This gun has been received and turned over to one of the organizations at Fort Monroe for test. As previously stated in the Journal, the Board is not greatly in favor of standardizing this equipment for coast artillery use.

Project No. 1046—Antiaircraft Machine-Gun Fire Control Methods and Equipment.—This is an extensive test to be undertaken next spring, and is in continuation of the report submitted as Project No. 1012. A considerable amount of ammunition has been set aside for this test, and the Chief of Ordnance is making up several devices for fire control. It is understood that he will also have ready a new model mount to be used in these firings. It is hoped that all arrangements can be made so as to start the tests by March, 1936.

Project No. 1047—Kitchen Tents.—One of these tents has been received. In general appearance it looks like a pyramidal tent in long pants. If the sloping surfaces of this tent were carried down to the usual height of the wall of the Sibley or pyramidal tent, it would then be about the same as the pyramidal tent. In the new tent the walls are about six feet high and each can be swung outward to a horizontal position, thus providing a fly porch effect. The Board has had practically no opportunity to make a service test of this tent as it arrived after the field activities of the local garrison were over for the season.

Project No. 1048—Device for Greasing Guns (Brown).—This is a device for forcing grease into the grooves of a cannon. An ordinary swab may grease the tops of the lands, but there is no positive way of forcing the grease into the angles of the grooves of the rifling. The new device, designed by Mr. C. A. Brown, consists of wooden discs centered on a central shaft, and is to be used as a pull-through. It is so designed that there is some friction between the forward disc and the inside surface of the bore, but the force is applied to the rear disc so that grease confined between two discs is subjected to pressure when the device is pulled through the gun. This pressure is intended to cause the grease to flow in a radial direction and thus fill up the grooves of the rifling. The operation of the device is dependent upon two conditions that are rather difficult to realize or adjust: one of them is the friction between the leading disc and the bore of the gun, and the second is the consistency of the grease. In all the tests made by the Board so far, nearly everything about the emplacement except the bore of the gun was thoroughly greased. The device has merit and may, with alterations, be a useful adjunct to the battery equipment.

Project No. 1049—Field Jackets.—Two so-called Nicholson jackets and one commercial jacket were submitted to the Board for test. These jackets are similar in design to the so-called wind-breakers seen on every golf course and now worn by out-door men of all occupations. The Nicholson jackets are made of what seems to be issue woolen olive drab cloth and are provided with a zipper in place of buttons. The sizes furnished were too small to be worn by the members of this Board, but before the winter is over other persons can be found to wear these jackets so that a report can be made. It is not known just where the garment is supposed to fit into the list of uniform articles of clothing, but all reports received so far are very favorable.

Project No. 1050—Radio Direction Finder.—Five radio direction finders have been supplied the Board. These are somewhat similar to those installed along the coastline and utilized by a navigator in establishing his position at sea. Such an instrument seems to have rather an important place in harbor defenses, but the test of these particular instruments is being held in abeyance pending some decisions to be made by higher authority.

Project No. 1051—Time-Interval Apparatus EE-85-T5 and Associated Equipment.—A very fine set of instruments has been received providing time-intervals for mobile artillery. Preliminary investigation of this matériel indicates some conditions that the Board feels are defects; the test is being delayed pending a discussion of these conditions.

PROJECT NO. 1052—COAST ARTILLERY MEMORANDUM NO. 16.—This is the Memorandum issued each year discussing, comparing, and criticizing the target practices of the coast artillery batteries during the preceding year. Only about 50% of the target practice reports for 1935 have been received as yet by the Board. Only a minor amount of preliminary work can be done until all the practice reports have been received. Of course, each battery commander wishes to know where he stands in the year's work. A person never knows just how good he is until he knows how good the other fellow is. No reports can be made until the returns are all in.

PROJECT NO. 1053—FREQUENCY METER SET, SCR-211-T1.—This is an instrument designed to measure the frequency of a transmitter or a receiver. It is thought that such an instrument is needed in the Coast Artillery service. So little test work has been done on this instrument that nothing can be stated at this time as to its effectiveness.

SECTION III

Miscellaneous

The following subjects selected from the correspondence of the Coast Artillery Board may be of some interest to readers of the JOURNAL:

SLEEVE TARGET.—For some time the Board has been making efforts to have towed for machine-gun firing a large flat, or flag, target with many more square feet of surface exposed to fire than is the case with the present standard sleeve target. This is an attempt to find out where the shots go that do not hit the target. In small arms firing the bull's-eye is surrounded by a large area not "bull's-eye." However, instead of there being supplied a larger target it is understood that there are to be supplied two new type sleeve targets, one much smaller in overall dimensions than the standard sleeve target and the other approximately the same size as the present standard target. This new type target is a complicated affair, and it appears possible for one bullet, striking in the proper place, to make as many as six holes. Consequently, to arrive at an approximation as to the number of bullets that actually hit the target and as to how many of those same bullets would have hit an airplane, it will be necessary to make use of a reduction formula of some kind.

BOAT TELEPHONE.—While planting mines someone found that his boat telephones did not work. He borrowed from some mobile organization a field telephone and found that it did work. The question was then raised, why not use field telephones instead of the specialized boat telephone? The Board looked into the matter and came to the conclusion that the boat telephone was just as likely to be in working order as a field telephone, and that in general it is designed to meet the special requirements of mine work better than is the field telephone, therefore no change in Tables of Basic Allowances was recommended.

COMPUTING SIGHTS, ANTIAIRCRAFT MACHINE GUN.—The Chief of Ordnance is making up for the use of the Coast Artillery Board in the forthcoming spring tests, the designs for a number of computing sights. The general principle on which these sights are made is that the sight is correct for and will indicate to the gunner the proper lead for certain typical courses of an aerial target. In designing the sights it is necessary to plot elements, including the leads, for a large number of courses. The Chief of Ordnance has been requested to put in tabular form such computations with a view to using them in the actual adjustment of fire (using central control) in the forthcoming tests of machine-gun equipment. It is not contemplated that a fire control officer will have time to look at the target and then enter a table to find the sight setting, but the Board wishes to try out the matter of making quick approximations for the proper sight settings and to have available these tables for check of such approximations.

DISARMAMENT BY INTERNATIONAL AGREEMENT *and as a means to peace was always at bottom an absurdity because, as recent history has proven, nations will not agree to reduce their armaments in international conference when people feel themselves threatened and when dangers of war do not arouse countries whose citizens remember that they are taxpayers as well as patriots. Thus international conferences to promote peace, when peace is actually in danger, are futile, and when peace is assured, futile. Unhappily, it is the former condition which prevails in the world today.*—FRANK H. SIMONDS.

THE FOREIGN MILITARY PRESS

Reviewed by Major Alexander L. P. Johnson, Infantry

CANADA — *Canadian Defence Quarterly* — January, 1935.

SEA POWER AND THE PACIFIC PROBLEM. By the Editor.

In the opinion of the writer the fourteen years which elapsed since the signing of the treaty of Washington, instead of eliminating or dulling the problems of the Pacific, have rather tended to make them more difficult of solution. The results of the Sino-Japanese and the Russo-Japanese wars, the history of the Open-Door policy, the Washington treaties, and the attitude of western powers in the Manchurian conflict are, at least so the Japanese believe, examples of repression which western powers continually apply to Japan. Now that Japan is actually supreme in the northwestern Pacific and her position absolutely secure, she is giving public expression to her policy. This is summarized in the "Hands off China" doctrine signifying that Japan intends to reserve her right to a major though not exclusive share of China's markets and resources.

The author points out that even though Japan renounced the Washington treaties, she is not likely to forget that the non-fortification clauses with respect to Guam, Hongkong, and the Philippines are to a considerable extent responsible for her present predominant position in the East. Japan likewise knows that with Russia ever ready to take advantage of any Anglo-Saxon —Japanese conflict, naval parity with the United States and Great Britain would be of little value against the combined naval strength of the Anglo-Saxon powers. The author, therefore, concludes, that Japan is utilizing her demands for a strong technical position at sea to barter for badly needed political and economic concessions. The author sums up Japan's demands under five headings:

a. Secure outlets in the Far East for her products and secure sources of food supplies and raw material.

b. Recognition of Manchukuo.

c. Naval Supremacy in the western Pacific.

d. Continuation of the non-fortification agreements.

e. Sovereignty over the mandated islands.

The author believes that Japan will ultimately accept a naval ratio similar to the one now in force in exchange for some satisfaction of the demands listed above. In the author's opinion, Japan's stand is fundamentally economic. The attitude of Great Britain and the United States towards Japan, he believes, is inconsistent. Both demand equal trade opportunities in Manchukuo while they resist Japanese trade in the British possessions and in the Philippines respectively.

Among the specific problems affecting Japanese-American relations, the author states, our immigration policy occupies first place. In his opinion, the tactless handling of the problem by the United States Senate resulted in an unwarranted wounding of Japanese racial susceptibilities. The circumstance that Japan employs a similar policy towards the Chinese and Koreans because of a feeling of superiority, perhaps suggests to Japan that the thoughtless utterances of certain senators and congressmen indicate a similar superiority complex on the part of the United States towards all Asiatics. In recent years, however, Japan's policy in China overshadowed the immigration controversy because of its humanitarian aspects and threat to existing or potential interests of the United States in that region.

The author ascribes the humanitarian element to the strength of American missionary activities in China, which for many years have served to antagonize Japanese-American relations. Although the attitude of the United States has been truly altruistic, Japan construes it as being directed against her interests. This view was strengthened by the declaration of the United States in 1920, when it became clear that Japan sought to control China, that "we would not rest content with verbal remonstrance" if Japan attempted to carry out her designs. The Washington conference, Japan feels, forced her to sign certain treaties. The famous "Hoover doctrine" of non-recognition is the culminating link in the chain of events which tended to intensify Japanese bitterness. All these issues, in the author's opinion, make the strongest appeal to Japanese racial pride.

As to sea-power, the author states that armaments are merely an expression of policy. If efforts to limit armaments are to succeed, it will be necessary to reach a common ground not only on policy but also with respect to the deeper strata where policies originate. Although Japan's problem is basically economic, it has been aggravated by racial controversies. Great Britain's stand is likewise economic, but it has been compounded by adherence to the Hoover doctrine. The case of the United States, while influenced by economic factors, is essentially a matter of national pride and prestige—highly inflammable imponderables of the realm of emotions, which can be ignited by a spark.

In the author's opinion, recognition of Manchukuo and abrogation of the Hoover doctrine, though blows to national pride, will in reality be the greatest contributions to world peace. In conclusion he quotes General Smuts to the effect that British Far Eastern policy "should be based on friendship with all and exclusive alliances and understandings with none," and that "the ultimate object of that policy should continue to conform to that general American orientation which has distinguished it since our (British) association with the United States in the Great War."

ECUADOR—*Revista Militar*—No. 13, 1935.

HEAVY MACHINE GUNS IN THE OFFENSIVE—GERMAN, FRENCH AND ITALIAN DOCTRINES. By Lieutenant General R. A. Villacís.

a. The German Doctrine. The German machine-gun company consists of four sections of three Maxim, model 1908, caliber 7-mm. heavy machine guns having a range of 3,500 meters. The gun weighs 56 kg. The first three sections are transported in special machine-gun carts while the personnel marches on foot. The fourth section, known as the "accompanying section" is transported with its personnel in a wagon drawn by four horses.

Normal employment of the machine-gun company seeks to augment the fire power of rifle companies and the light machine guns. Special missions include barrages across defiles, flanking and enfilade fire, antiaircraft fire, and fire action in the pursuit. The post of the company commander is normally near the battalion C.P. He maintains his own O.P. in addition to those established by elements of his company. The section leader is responsible for the conduct of fire. He must maintain constant contact with the commander of the supported rifle unit.

The element of surprise is especially emphasized. Effort is made to find opportunities for sudden bursts of fire. Reconnaissance must locate alternate gun positions. Machine-gun units have authority to occupy firing positions within the sector of adjacent units. In the attack, before rifle companies contact the enemy, the heavy machine guns, echeloned in depth, cover the deployment of the battalion. When riflemen make contact with the enemy, heavy machine-gun companies may break up. Sections are then attached to rifle companies for direct support. The basic principle appears to be that the battalion commander will attach sections to rifle companies in wooded terrain, in night attacks, in fog, in local actions, and in cases of exceptionally strong hostile resistance. During movements of the battalion the fourth section provides antiaircraft protection.

Indirect fire may be used up to 3,000 meters; against high or low targets to a range of 2,500 meters. The present tendency of the German Army seems to be to attach a heavy machine-gun section to each rifle company. Thus, the rifle company consists of three rifle platoons and a heavy machine-gun section.

b. The French Doctrine. The basic idea of the French tactical doctrine, the author writes, is that movement without fire superiority is impossible. The battalion must employ its entire fire power, including machine guns, mortars and one-pounders, to provide this indispensable "base of fire." The object of the "base of fire" is to neutralize known or suspected targets, to combat those which escape the radius of action of artillery. It is the center of gravity of the advancing assault elements whose gains it must safeguard and maintain.

The author summarizes the basic principles of the employment of heavy machine guns in the attack as follows:

a. Subdivision of the company;
b. Echelonment of guns in depth;
c. Displacement to successive positions;
d. Action at short, medium and long ranges.

Heavy machine guns are never left in reserve. The multitude of missions precludes inactive pieces. Accordingly, the entire company forms the "base of fire." In exceptional cases, when overhead fire is impossible, sections or platoons may be attached to rifle companies. Decentralized control is the rule in pursuit.

Direct fire is employed at all ranges with preference for short and medium ranges. Indirect or masked fire is employed at long ranges only. Its use in the attack is exceptional. If used at all, it is as harassing fire, concentration fire, fixed barrages to cover advanced elements temporarily held up, or to supplement the fire of artillery.

c. The Italian Doctrine. The Italian Army employs the Fiat, Model 1914, machine gun, caliber 6.5-mm.; maximum range 3,000 meters; weight of gun 34 kg. Italian regulations prescribe the employment of heavy machine guns by platoons, each consisting of three squads with one gun each. The employment of separate squads is exceptional. The attachment of platoons to rifle companies is the normal procedure, hence the conduct of fire is the function and responsibility of the platoon commander.

The principal mission of heavy machine guns include flank protection, barrages in areas favoring hostile counter attacks, antiaircraft fire against low-flying planes, and fire support to maintain the ground gained by the attack. During the approach, heavy machine guns support the movement of the battalions without being tied either to the ground or to the supported units. They must render effective support, hence must take advantage of the terrain to facilitate their forward displacement. They support the attack principally by neutralizing the fire of hostile light and heavy machine guns which retard the advance of the attacking infantry.

AUSTRIA—*Militarwissentschaftliche Mitteilungen*—July, 1935.

THE INTERNATIONAL SITUATION TO JUNE, 1935. By Major General Emil Paschek.

The changes which occurred in the international field during the first six months of the current year, the author states, warrant the label: "Struggle for the Reconstitution of Europe." Since last March, according to Lloyd George, "the Old World has been like a disturbed beehive," or "like a madhouse," as Premier Baldwin put it. In the words of the late Clemenceau, "the rotten peace merely became a war by other means." The author quotes General Smuts to the effect, that "Europe wastes its strength in family quarrels while a billion Asiatics under Japanese leadership are awakening."

Apparently, the author states, France succeeded in coming to terms with Italy and Russia, and thus exerted great pressure upon Great Britain while at the same time her grip upon the League of Nations became more nearly complete. However, the author believes that this is only

a transitory stage. Although Germany cast off her shackles of unilateral disarmament on March 16, she is not yet in a position to make her influence felt. In the author's opinion, the rearmament of Austria, Hungary, and Bulgaria is only a question of time. When that comes, it will remove from these countries the danger of complete defenselessness.

The important international events of the first half of the current year were:

1. The Roman accord between France and Italy to settle the Danubian problem in accordance with Italian views, last January.
2. The Saar plebiscite during the middle of last January.
3. The tri-partite agreement of last February as a preliminary concession to Germany in the matter of armaments.
4. The adoption of universal, compulsory military service by Germany on March 16, and the consequent protests of Germany's opponents.
5. The triple accord of Stresa, last April, and the condemnation of Germany by the Council of the League of Nations. The Franco-Soviet accord.
6. Symptoms of relaxation of the tense situation last May following the German-British naval understanding, Mussolini's apparent restraint in Ethiopia, and the postponement of the settlement of the Danubian problem.

In the author's opinion, the Franco-Soviet pact, though allegedly defensive in character, actually marks the beginning of a new and at the same time a very delicate reorientation of the French foreign policy. He believes it will cause Great Britain, which is strongly menaced by the growing power of the Soviets, to turn even more towards the United States. It will make for more intimate relations between Germany and Poland. In France public opinion is quite divided. Among other reasons for this attitude is the uncertainty of the new Soviet loan and contingent export agreement. The Czechoslovak-Soviet pact is similar to the French-Soviet accord except that M. Benes sought safeguards for his country against involvement in any war except with France.

Mussolini attempted to bring about a settlement of the Danubian problem. Representatives of Austria and Czechoslovakia actually made some progress in their negotiations. The representatives of Hungary, however, declined to accede to any settlement without material revision of the territorial clauses of the treaty of peace.

With respect to armaments the author notes the provisions of the recent military accords for close coöperation of the French, Czechoslovak and Soviet aviation, and increased mechanization. He particularly notes the growth of the military power of France, Russia, and the Little Entente.

The military program of Germany provides the creation of 12 army corps, a total of 36 divisions. Peace strength of the new German army, as announced on March 25, will be 550,000. The period of compulsory military service is fixed at one year, but the older contingents, including the class of 1901, will serve shorter periods. While the new German Navy will be one-third the strength of the British Navy, Germany proposes to organize an air force second to none.

In conclusion the author expresses the opinion that a conference to limit armament may succeed at some future date, and that the general accord which then may be reached, will in all probability be based upon the state of armaments as they will exist in 1937, when the several powers expect to complete their present armament program.

GERMANY—*Militar Wochenblatt*—May 11, 1935.

CHEMICAL WARFARE FROM A FRENCH POINT OF VIEW. By Major General Otto Schultz.

The author discusses an article on chemical warfate written by Pierre Cot, former French Minister of Aviation, published in the Italian daily, *Giornale D'Italia*. According to the author, M. Cot states that the Frenchman dreads nothing more than aerial warfare and that he can conceive of nothing more terrible than the dropping of gas bombs on Paris. No death seems to him more horrible than the one caused by gas. M. Cot does not believe that we can place too much reliance upon our gas masks and other protective measures. He points out that the Germans on the Eastern front in 1915, along a sector of 10 km. frontage, killed 5,000 men and put out of action 25,000 others within the space of one hour. Poison gas reduced the effective strength of a Siberian regiment from 4,000 to 400 inside of 20 minutes. It does not appear just what protective measures and appliances were at the disposal of the Russians. Considering the date, it is probable that they had very little if any at all.

M. Cot writes that German and British views regard 25 tons of mustard gas necessary to cover one square mile. The French believe that it would take 400 tons of phosgene to cover an area of 12 square miles. The development of the airplane, the author points out, greatly facilitates dropping gas on targets many times farther removed than was the case during the World War. During the World War gas in an artillery projectile represented about 30 per cent of the gross weight. The present aerial bomb carries about 90 per cent of its weight in gas. Improvement in aerial navigation has eliminated the hazards of night flying, fog, and clouds. These will, in the future war, become allies of the flyer.

The author states that all peace-time maneuvers demonstrate the impossibility of preventing a hostile air fleet from reaching its objective. Antiaircraft defense proved very feeble under the most favorable conditions and wholly ineffective under adverse weather conditions. Major General Groves, British expert, is quoted to the effect that French aviation could drop 600 bombs on the city of London within 24 hours. The experts of the world are hard at work trying to produce deadlier gases, and present gas masks may be wholly ineffective.

M. Cot apparently does not derive much comfort from the American point of view, which regards gas as the most humane weapon. He points out that the enemy may also employ high explosives and incendiary bombs. M. Cot does not have much faith in any international agreement to abolish aerial bombardment. In his opinion the only remedy lies in the abolition of war itself.

General Military Information: According to Krasnaya Svyezda, No. 82, current series, official Soviet military periodical, the Austrian Army is employing dogs to carry wire reels in laying telephone to front line units with marked success. The dogs are provided with gas masks.

Krasnaya Svyezda, No. 81, reports that the Roumanian Air force consists of seven escadrilles: 2 naval, 1 pursuit, 3 line, and 1 guard escadrille. Each escadrille consists of two groups of 1 to 3 squadrons. There are in all ten observation squadrons, 11 pursuit, 3 day bombardment, and one night bombardment, with five additional training squadrons. Roumania has 940 airplanes of which 490 are actually assigned to front line service. They are of various types and makes.

Thermit Bombs. The Czechoslovakian Air Force has been experimenting in the vicinity of Prague with thermit bombs. One of these bombs melted a steel axle of a locomotive in a few minutes. Efforts to put out the blaze with sand, cement, and asbestos powder proved equally ineffective. Water actually increased the potency of the bomb. These experiments suggest the thought that these bombs might prove particularly effective against warships. According to the Czechoslovak Press, these bombs are far more dangerous than gas bombs because a single plane could carry a large number of them and thus cause a serious conflagration.

Russian Data on Chemical Warfare. Shigur, Russian chemist, in a pamphlet declared that the production of material essential to chemical warfare has increased four to five times since the World War, indicating that all states are preparing for gas warfare. In his opinion, mustard gas will represent about 50 per cent of all war gases in any future war. It will be particularly effective against motorized troops. Shigur believes that 30 tons of mustard gas released by airplanes could stop a motorized division. These troops, he states, must be provided with proper means of protection. In future gas warfare, aviation and chemical warfare troops will play a most important part. Artillery will be employed for gas warfare only when all other means fail.

The Polish 30-mm. Infantry Mortar. After successful tests the Polish Army adopted the Caliber 30-mm. infantry mortar. The weapon weighs about 7 kg. The projectile weighs 700 grams. Its maximum range is 700 meters, minimum range 100 meters. It is a smooth-bore, muzzle-loading weapon firing a winged shell with a sensitive percussion fuse. It fires gray and red smoke shells for artillery target designation. Each company of infantry will carry nine of these mortars.

Pre-military Training in Japan. According to reports, pre-military training in Japan will henceforth begin at 14 years of age. It is reported that the Imperial Ministry of War contemplates calling for active service this year some 30,000 railroad men. Their instruction will probably cover mobilization and troops movement.

GREAT BRITAIN—*Journal of the Royal Military Service Institute*—February, 1935.

CYCLIST UNITS. By Captain R. L. K. Allen, p.s.c. The Royal Welsh Fusiliers.

The author protests the elimination of the Army Cyclists Corps, which formerly existed in the British Army.

British tactics contemplate the use of divisional cavalry on duties involving long marches, fighting to secure a position, to cover a withdrawal, to hold a position until late at night, or to carry out such missions before dawn. The author believes that these multitudinous tasks will leave little rest for men or animals, hence it will prove a most uneconomical use of the cavalry with the infantry division. He argues that a cyclist organization could relieve the cavalry of certain duties, leaving to the latter its more legitimate tasks.

The author believes that cyclists would be highly mobile in any country with average roads. They could maintain an average speed of ten miles an hour for eight to ten hours a day, and seven miles an hour at night. Under favorable conditions cyclists can ride across country. They can move noiselessly day and night. Their advantage over cavalry is that, on dismounting, they can leave their machines lying on the ground. They have no problem of feeding and watering the stock. Frequently it would be possible to employ cyclists to supplement cavalry on reconnaissance. In a village or in woods, the author believes, cyclists would be superior to cavalry. The rate of march of cavalry is half that of cyclists; moreover on dismounting, the necessity of horseholders reduces the effective strength of the cavalry for dismounted action. The ability of the cyclist to move silently makes him more desirable for night reconnaissance than the trooper.

The author believes that cyclists could be used very effectively on patrols, on outpost duty, as flank guards, in ambush and in delaying actions. They can readily be sent to distant points. He argues that the cyclist can cross rivers more readily than a horseman either by wading or swimming. After crossing he can haul his machine over by means of an "endless rope." During battle the cyclist would form a valuable mobile reserve. By way of contrast, the author points to the fact that motorized infantry held as a mobile reserve is highly vulnerable to ground and air attacks, is more susceptible to road blocks, has no maneuvering power, and cannot dismount rapidly enough to fight. They are easy victims of an ambush, are subject to mechanical troubles, and cannot always depend upon a steady supply of fuel.

In the author's opinion, the necessary war-time economy in horses can be effected by the use of cyclists. They can relieve not only the cavalry of much of its work, but may render equally valuable services in relieving armored cars of stationary tasks.

BOOK REVIEWS

THE BLUE EAGLE FROM EGG TO EARTH. By General Hugh S. Johnson, USMA, 1903. Doubleday Doran, 1935. 438 pp. $3.00.

Reviewed by Colonel P. D. Bunker.

Here is a two-fisted book if ever there was one: the story of the NRA by one who actually *was* the NRA. But, fortunately, it is not restricted to the comparatively narrow limits of the New Deal; it embraces almost the gamut of human activity. How? By devoting the first hundred pages or so to that part of the author's life which lay between his birth and his resignation from the Army in disgust at not getting to France. (Who was it that said only 39% of the Regular officers ever got to France?)

Anyway, many people will say that this first quarter is the best part of the book. Most of us contemporaries of the General have read some of his writings before and realize that he can really write. I remember one of his Philippine stories that was published in the *Red Book* years ago. The promise of those early efforts in writing is fully realized in this book. At times quizzical and spoofing, the narrative is always honest and straightforward, with no attempt at fine writing, evasion and, least of all, self-aggrandizement. Take, for example, his description of his arrival at West Point and his career in the Academy. I happen to have been a classmate, reporting upon that same sunny September day in 1899 as he did. He may have worn those very yellow and very sharp-toed shoes that he said he did, but he forgets to add that, after a month at Highland Falls, his toes were coming through said sharp points as he marched into Beast Barracks. He does not forget, however, to cast some much-needed light on the peculiar philosophy of life prevalent among the hellions of F Company.

The frankness and sauciness of this autobiography is probably unique in the annals of literature and, taken all in all, one of the most remarkable documents of our times. The author was lucky enough to be on the spot when excitement broke and, in spite of not getting to France, saw more service than many other officers who, though the spirit of soldiers of fortune may have been theirs, were elsewhere when the fireworks started. He tells anecdotes entertainingly and with gusto. It's a gift.

Pertaining principally to the New Deal, the rest of the book should be of fascinating interest to all of us who want to know the real ins and outs of that complicated phenomenon. Of course, the author is naturally biased in favor of the NRA but that does not detract from the value of what he says concerning the events of 1932-4. One thing is clear: he believed sincerely in the Blue Eagle; he was no politician trying to feather his nest; he was a soldier living up to his Army training—he had a job to do and was doing his damnedest to do it to the very best of his ability. I doubt that any other man in the country could have accomplished half as much.

We Americans seem to think that we can change usages and customs instantly by merely passing a law about it. Other nations work patiently for generations on schemes no more difficult than the NRA. General Johnson was given the job of changing the commercial procedure of the nation overnight. Naturally, the opposition was great, if not bitter, because many industrial leaders were also trying to bring the country out of the depression. It is a credit to our country that so many great industries fell into line.

The famous automobile code is treated at length. His so-called fight with Henry Ford is discussed openly and with fairness. The author shows no animosity toward any of his opponents in the various fights over the codes; he becomes bitter only when he feels that his co-workers and officials who should be co-workers resort to underhanded work for their own personal and political ends.

It was probably unfortunate that Johnson was in San Francisco at the time of the general strike. He states that the NRA was not supposed to deal with strikes and yet, because he was there and because leaders on both sides came to him, and because he was never afraid of responsibility, he did advise and give orders. This seemingly tended to antagonize the Department of Labor, and Johnson soon felt that Secretary Perkins was not only working against him but also had influenced others in his own organization to do the same.

In September of 1934 General Johnson felt that his usefulness in the NRA movement was at an end. He therefore resigned and his resignation was accepted. But later, when the NRA came off second best with the Supreme Court, he was called back to administer First Aid. If it were not practically impossible to refuse such a call, most men would have indignantly turned it down —but Johnson did not; he came back to the colors.

The book is in no sense an apology nor a bid for sympathy; it is simply Johnson's story of the Blue Eagle, from the inside. His friends know that he could hardly have acted differently and are proud of his showing; strangers who read the book will obtain a much more true and vivid picture of the author than they could gather from newspaper reports.

ESCAPE. Edited by Captain H. C. Armstrong. Robert R. McBride & Co., New York, 1935. 331 pages, illustrated. $2.75.

Each time we read an escape story we marvel at the daredevil courage of these men who risked so much for freedom. You must be an escaped war prisoner to really know what it means to be hunted by your captors, to live from one moment to the next in the horrible agony of being caught and returned to prison to be shot or tortured. The odds are always against the escaper. The prisoner of war, except for his courage, is defenseless. Facing him are walls, barbed wire, armed sentries. To escape he must do so bare-handed, using only such crude instruments as he can find or fashion. Yet many of them did accomplish the seeming impossible.

Captain Armstrong has collected the eleven most thrilling escape stories of the World War. These stories are told by the escapers themselves—five Frenchmen, three Englishmen, a German, an Australian, and an American. And no one is more eminently qualified to judge the most exciting escape stories than Captain Armstrong, for he was an Escaper. Captured at the siege of Kut-el-Amarah and marched 1,600 miles through Syria into the interior of Turkey, he made his escape from there to an island in the Mediterranean. Readers of this thrilling work should not miss the introduction by Captain Armstrong.

N.J.A.

SOUTHEAST OF ZAMBOANGA. By Vic Hurley. New York. E. P. Dutton Company. 237 pp.; 8 halftones. $3.30.

Reviewed by Colonel Paul D. Bunker

Some time after emerging, in 1923, from the university in Seattle, the author said, "To hell with it all; I'm going to wear a white suit and plant coconuts." He ran his finger over the map in search of a poetically named place—and found Zamboanga. This book is the chronicle of a year's existence near the shores of Sarangani Bay in Cotobato province where the author tried to start his coconut grove—and gave it up as a bad job.

The Introduction, by Hurley's classmate, Max Miller, contains the following gem of misinformation: "Mindanao is pronounced min-dan-owah." We can readily imagine the rage of the author at discovering this manifestation of an over-zealous but ignorant proofreader. Such a slip, small as it undoubtedly is, induces a feeling of skepticism in the mind of any reader who knows his Philippine geography. However, the book itself seems authentic enough.

No further proof of genuineness should be needed after one glance at the picture of the author's shack, stark and barren on the edge of the cogon, where he started his foredoomed venture. He planted a few coconuts and started to fight the cogon. Gradually it was borne in upon him that he was up against hopeless odds. He was pulled out and landed in the Petrit Barracks hospital just in time.

The book, though often in the present tense, gives evidence of having been written long after the event. Otherwise there would be a more vivid "atmosphere." It is readable and lacking in the fantastic yarns affected by many writers on the wilderness. Ideas are sometimes repeated in successive paragraphs. Paragraphs consist often of single sentences. The whole gives a staccato effect. Something like this. Seems to me I've heard one of his crocodile stories before. But in general, the book seems honest enough. It won't set the world on fire, but it would be a fine book to give to some young chap who has his head in the clouds and thinks he can start from scratch in the jungle, without experience and money, and carve out a fortune. It can't be done, even in Mindanao.

THE CAMPAIGN OF THE MARNE, 1914. By Sewell Tyng. Longmans-Green & Co., New York-Toronto, 1935. 341 pages $3.75.

Reviewed by Major General H. D. Todd, Jr., Retired.

The book begins with a description and discussion of the German Von Schlieffen Plan and the French Plan XVII. Notwithstanding the fact that these plans represented the labors of the best military minds of the countries concerned over a period of more than forty years they both, as the author shows, "fell into the discard."

It should be noted however that in the plan as turned over to him by Von Schlieffen, Von Moltke "introduced many modifications with unfortunate results and in so doing lost sight of the basic principles that governed its conception." A simple formula formed the basis of the Schlieffen Plan, a wide enveloping maneuver by a right wing of overwhelming strength while the left and center remained temporarily on the defensive. The author clearly describes the modifications made by Von Moltke and the operations conducted under the new plan.

The weakening of the right flank might justly be criticised but declining to "cross the corner of Dutch Limbourg that projects into Belgium" and thus avoid violating the neutrality of Holland should, it is thought, be a point in favor of Von Moltke.

As the campaign progressed it is interesting to read how greatly the German plan was assisted by Plan XVII—a plan that caused the French to make the original effort with their right wing.

Many officers in our Army have never understood why the known skill of the French Intelligence Service did not discover the details or at least the general scheme of the German plan. It is therefore of interest to read in a footnote that Maurice Paleologue, formerly an official of the French Foreign Office and Ambassador to Russia, has alleged that the French Intelligence Service had full information of the Schlieffen Plan as early as 1904, through the betrayal of a high-ranking German Officer; but as Mr. Tyng points out, "any information thus ob-

SYLVIA ANDERSON 72 HOMER AVENUE BAYSIDE LONG ISLAND Style A
helen lamson 5 montgomery street easton pennsylvania Style B

STYLE BEAUTY ECONOMY

These three may be obtained with this attractively bordered printed stationery that has been created particularly for your own personal correspondence.

This series of harmoniously colored papers includes these combinations:

White paper — French grey border — Garnet lettering
Blue paper — Powder blue border — Blue lettering
Ivory paper — Beige border — Brown lettering

In addition any of these papers may be had with either of the two distinctive styles of type shown above.

50 bordered sheets with name and address
50 envelopes with address

ALL FOR ONE DOLLAR

An attractive bargain you can't afford to miss

In ordering please state quantity, style of type and choice of paper

THIS IS NOT A PAID ADVERTISEMENT

tained, however, does not seem to have been given credence." Plan XVII failed and "caused incalculable fruitless sacrifices." However, according to the author, much can be said in extenuation of Joffre and his officers. As a reaction to the disastrous defensive policy followed in 1870 it was but natural that a strong offensive should become the governing idea in all French war plans, and as Mr. Tyng states, "It may well be doubted whether without a firm belief in this doctrine the French armies could have found courage to retreat before the enemy for two agonizing weeks and, turning in their tracks overnight, launch an offensive that produced the victory of the Marne."

From reading this and many other accounts of the Marne campaign, it would appear that there never was any determined effort to establish quick and reliable communication between the German armies and G.H.Q., nor between the Armies themselves.

To the American soldier, this seems incredible. Allowing for the comparatively undeveloped status of the wireless system and for the extreme difficulty of maintaining under the circumstances an efficient telephone net, the necessity of installing advanced G.H.Q's within courier distance of the headquarters of the various armies would appear self-evident.

The Commander in Chief of the armies forming what was in many respects the most efficient fighting machine the world has known, being ignorant for days of the positions of those armies, and each army commander being also ignorant of the operations of his neighbors, presents a picture that is amazing.

As the author states "while the French High Command exercised a constant and direct supervision over developments along the front, the German General Staff, despite its great reputation, maintained little practical control over operations after the completion of concentration."

These conditions were attributed to an "effort to follow the method that Von Moltke the elder had successfully applied in the War of 1870"; but partly too it was due to inadequate communications and to the location of the Chief Command too far from the seat of action. Moreover there was apparently not only very inefficient courier service but there existed no system of liaison officers and consequently the German High Command not infrequently remained for twenty-four hours or even longer with no news at all from one or the other of the armies, generally at the very moment when the most important developments were taking place. Such loose methods of control—just the opposite of those of the French—undoubtedly contributed largely to the German defeat at the Marne.

In conformity with the judicial treatment of his subject that exists throughout the book, the author considers that "it is impossible within short compass to attempt an intelligent comparative criticism of the merits and defects

An Ideal Present for the Boy

HERE'S REAL FUN
Plus Actual Pistol Training

By special arrangement with the manufacturer we offer you the famous bull's-eye pistol, the most accurate and inexpensive training pistol ever manufactured.

Through the simple medium of a No. 33 heavy rubber band, the bull's-eye pistol drives a No. 6 chilled shot with uncanny accuracy and speed. It's an easy matter to "kill" the celluloid birds (see cut) at twenty to twenty-five feet. Especially effective on flies or other small insects at slightly closer ranges.

Use this inexpensive bull's-eye pistol to keep your trigger finger in trim. You will get real fun plus actual pistol training. Order a bull's-eye pistol set today. The box contains three toy birds, extra No. 33 rubber bands, a supply of shot, and small die for stamping bull's-eye targets. And the cost is only $2.50 postpaid.

The Coast Artillery Journal
1115 17th Street, N. W. Washington, D. C.

Death! Then What?

By Captain J. H. Doherty, F.D.

It is time that you gave some consideration to your estate. It is not only good business to have your house in order but it is a duty that you owe to yourself and your dependents. This pamphlet contains important information and suggestions for the administration of an estate. Not only will it be of inestimable value to you in knowing what to do and how to do it, but it will be of even greater value to your widow or other dependents in settling up your affairs and in knowing how to receive all benefits from the Government in the way of gratuity pay, pensions, insurance, and a long list of related subjects.

You cannot afford to be without this concise and authoritative pamphlet printed in convenient size with heavy paper cover. A copy should be filed with the vital records of each officer.

Price 25c per copy, postpaid

ORDER FROM

THE COAST ARTILLERY JOURNAL
1115 17th Street, N.W. Washington, D. C.

THESE ARE NOT PAID ADVERTISEMENTS

of the two great military organizations that opposed one another in the opening act of the colossal drama of the World War." He does, however, record with the utmost clearness the events that followed when the systems clashed. In the description of the first phase of the Campaign of the Marne, known as the Battle of the Frontiers, we can accurately follow the operations resulting when the modified Schlieffen Plan was opposed in the field by the French Plan XVII. The failure of the French offensives in Lorraine and in the Ardennes and the successful advance of the German right wing through Belgium are not only clearly described but the narrative shows that the events logically resulted from the plans that were followed.

What can be called the enormous field of literature that was evidently carefully studied by Mr. Tyng contains many incidents not generally available. The great German machine which smashed its way through Belgium did not always work with smoothness and efficiency. In the opinion of Mr. Tyng, the defense of Liege, as a feat of arms, deserves a high place in military annals. The Germans, however, were bitterly disappointed. Instead of a quick smashing attack lasting forty-eight hours the reduction of the Belgian fortress had required a continuous battle and siege of more than eleven days and an expenditure of men and munitions beyond all expectations."

Also, our Regular officers who always have to lead masses of amateurs into battle will relish "Despite carefully laid plans, a notable failure of coördination had characterized the operation, and an almost total lack of liaison between the attacking troops and their directing staffs." In certain instances German units opened fire on one another in the darkness and confusion, and the losses (this will be most pleasing to American artillery officers) sustained by the infantry before the heavy artillery came into action were out of all proportion to the results achieved. The whole affair was a "severe blow to the pride of the German Army."

Even the "All Highest" became peevish, and remarked bitterly to Von Moltke, ". . . and your invasion of Belgium has brought England in against us." His Majesty should however have thanked Von Moltke for eliminating from the Schlieffen Plan the invasion of Holland. The laurels of the operations resulting in the capture of Liege belong to the heroic commander, General Leman. The French High Command for some unaccountable reasons would not believe that the Germans had planned to envelop the French left; but history shows, according to Mr. Tyng, that one man, and that man an Englishman, Kitchener, made the best estimate of the situation. "He anticipated a sweeping invasion of Belgium by the German right wing armies, and he feared that if the British forces assembled around Le Cateau, they would soon find themselves in the forefront of the main German attack." He accordingly proposed that Amiens should be the center of the British zone of concentration.

Kitchener was correct, and beginning with Le Cateau

we read not only of the great resistance offered by the British but also of the more or less critical relations that soon existed between Sir John French and the French High Command. The author's narrative here is comprehensive and undoubtedly accurate. One chapter is headed "Von Kluck Disobeys." A number of histories refer to the "disobedience" of Von Kluck, but the reviewer has never believed such a term either fair or correct. Von Kluck's mission was to envelop the French left, and in his efforts to do so his Army had gotten a day's march ahead of the II Army. He was apparently succeeding in carrying out his mission when he received orders to follow the II Army in echelon. Such an order under the circumstances was astounding, and it is believed that Von Kluck reasoned correctly when he concluded that this order was based on ignorance of the position of his Army. It is further believed that one following Mr. Tyng's recital of all the facts will conclude that the man who greatly contributed to the German defeat at the Marne was the commander of the II Army—Von Bulm.

The acts for which Von Kluck has been criticised were due, in the opinion of the reviewer, to conflicting orders and to his not being informed of the conditions existing in the other German armies, particularly in that of his next door neighbor the II Army. It should be remembered that Von Kluck's army marched, in hostile territory, three hundred miles in thirty days and on almost every day both the advance guards and main bodies of his columns were engaged in battle. His army was so well organized and so skillfully led, that in the opinion of the reviewer, Von Kluck should be considered one of the best army commanders in the World War.

Poor Heutsch. Here again, owing to the labors of the author, we are able to understand thoroughly the chain of events concerning this officer. While opinions in regard to him differ strongly[1], the book shows that he did not play as prominent a part in the operations following his memorable visit (in one day to all the German army headquarters except that the I Army) as he has been credited with. Disquieting and conflicting information had been arriving at G.H.Q. and "apparently realizing at last that a lack of first-hand information was preventing the High Command from assuming its proper rôle, Von Moltke determined to send Heutsch to the front, at the same time authorizing him, in the event that a movement in retreat had already been initiated, to endeavor to direct in it such a way as to close the breach between the I and II Armies, and to direct the retirement of the I Army on the line Soissons-Fismes, while the II Army simultaneously fell back behind the Vesle." "For some unaccountable reasons, Von Moltke failed to reduce Heutsch's instructions to writing." Such was the mission of this Lieutenant Colonel—a serious mission when many times during the World War lieutenant colonels were "expendable."

We also read that "despite the welter of controversy, it

[1] According to Mr. Tyng who quotes from the "Nation at War" General Peyton C. March—"Somewhat facetiously remarks that the Allies should erect a monument to Heutsch's memory."

Flags of America

By Colonel William H. Waldron
United States Army

No collection of adventure tales could be more thrilling than those which tell the History and Evolution of the American Flag. The characters are flesh and blood. They flashed across the pages of American History and engraved their names in the annals of the Nation.

A replica of each of the 48 Flags, every one of them in their original colors, together with a concise story of how they fit into the History of America, are presented in permanent form, in "Flags of America."

The attractive cover, the splendid color illustrations, the superior topography, and the highly interesting text, all combine to make "Flags of America" a contribution to Patriotic American Literature which is worthy of a place in the library of every officer of the Army.

Order from the

The Coast Artillery Journal

Price 50 cents, Postpaid

U. S. Army Regulation Sabers

Spartan—Blade, proved steel, heavily nickel plated, deep etching. Plain bone grip. Scabbard, steel heavily nickel plated. The saber we recommend for all officers.

When ordering state length desired or give height.

Price, f.o.b. factory $10.00

Presentation Saber. All silver or silver and gold plated. Prices and detailed description furnished upon application.

MINIATURE U. S. ARMY SABERS

Exact reproduction of the regulation saber, heavily nickel plated, can be furnished with plain or etched blade. A useful and practical gift as a letter opener.

Price—Ornamented Scroll blade .$1.50
Plain Blade 1.35

A charge of $1.50 will be made for etching name on blade, this applies to both regulation and miniature sabers.

Write for further information or place order with

The Coast Artillery Journal

1115 17th St., N.W. Washington, D. C.

THESE ARE NOT PAID ADVERTISEMENTS

Wear the U.S.C.A.A. Insignia

Official emblem to be worn on civilian clothes, by officers of all components of the Army.

Bar is of bronze, gold-plated, center enameld red (for Coast Artillery), with panel of black and gold at ends designating an officer. Bar equipped with gold-plated shank back button. Illustration is actual size. Bar, is only part that shows, when worn. Neat and distinctive in appearance.

Lapel Bar and Lapel Ribbon Now Official U.S.C.A.A. Insignia

The new $\frac{3}{8}$" wide lapel ribbon comes in the same color combination as the lapel bar.

PRICES

One lapel bar 75c
24" length lapel ribbon $1.00

COMBINATION OFFERS

Two or more lapel bars ..... 50c each
Two of more 12" lengths of ribbon ..... 50c per 12" length
One lapel bar and 12" length of ribbon $1.00

Any combination of 50c items, totalling $5.00 or more, subject to 10% discount, when shipped to one address.

Send all orders to

The Coast Artillery Journal
1115 17th St. Washington, D. C.

Second Edition

Outlines of the

World's Military History

By Colonel
William A. Mitchell

Prof. of Engineering and the Military Art at West Point

From 1500 B. C. to 1918 A. D.
From Thothmes III to Pershing

Special de luxe Edition - - $3.75
Standard Edition - - - - $3.00

Order from

The Coast Artillery Journal
1115 17th Street, N.W. Washington, D. C.

THESE ARE NOT PAID ADVERTISEMENTS

now seems settled that in his subsequent conduct, Heutsch did not exceed the verbal authority conferred upon him by the Chief of Staff; and again this was the conclusion reached by a military Court of Inquiry appointed at Heutsch's request in 1917, after he had been promoted to the rank of Colonel. He did not order the retreat of the German armies. Their retreat followed the decision of Von Bulow to order the retreat of the German II Army, and according to the facts brought out by Mr. Tyng, "Von Bulow's decision was a sound one." Mr. Tyng's discussion of "The Marne in Retrospect" is excellent. In a few pages the reader is able to grasp the underlying causes of the events that culminated in the German retreat.

The following may be of interest to the soldier reader:

"If it were necessary to select a single spot on the whole battlefield of the Marne and say there the battle was won; it might well be the little village of Marchais-en-Brie, two kilometers northwest of Montmirail."

"A night bombardment suddenly unleashed—an unconventional procedure at this stage of the war—threw terror into a few infantry companies of the German 7th Corps and opened the way to a brigade of the French 36th Division that rushed boldly forward and established itself north of the town before the enemy could recover."

The author appears to be correct in his statement in reference to Marchais-en-Brie, for its capture by the French caused Von Bulow to move his right wing Corps ten kilometers toward the east to a position where the right wing of the German II Army faced west instead of south and consequently ended all further possibility of closing the breach between Von Bulow and Von Kluck.

The last chapter is entitled "Joffre the Victor," but long before that is reached it is believed that the educated soldier has become convinced that Joffre was a great soldier.

In Mr. Tyng's words, "The events of the Campaign of the Marne lead to the unavoidable conclusion that it is to Joffre, primarily if not solely, that France owes the first and most far reaching of her great victories of the War.

Now in reference to Sewell T. Tyng. He is evidently not only a scholar and a linguist, but it also endowed with great capacity for research. He has accomplished a stupendous work. The text proper on this one campaign covers 341 pages. The appendices giving the original plans of both armies, directives, orders of battle, and letters cover 42 pages. Seven pages are required to mention the works cited in the text.

The value of the book lies in the fact that its foundation was laid upon the official histories of the four nations concerned, supplemented by the histories of many of the Corps, divisions and regiments engaged and these again added to by the personal writings of officers of all grades.

There is a saying to the effect that if you read Ropes on Waterloo, you need not read anything else.

It is believed that a similar statement can be made in reference to Tyng's Campaign of the Marne.

THE SOLDIER'S HANDBOOK

Special Coast Artillery Edition

AN illustrated book that tells the soldier in a simple interesting way what he needs to know, written in a language he can understand. It contains a wealth of information that will greatly facilitate the training and instruction of recruits in addition to being of great benefit to the old soldier.

The Soldier's Handbook was originally prepared for the Infantry. Thirty-eight pages of the text have been completely rewritten to adapt it to the needs of the Coast Artillery. The book contains 166 pages and more than 50 illustrations. It is well indexed, convenient and a compact source of basic military information based on instructional matter contained in an innumerable number of War Department documents that are not generally available for distribution to the individual.

The book is issued in a convenient pocket size 6" x 4" x ½". The basic idea is to give the soldier a book he needs at the price he can pay.

Single copies $.50 postpaid.

To organizations in lots of 10 or more a discount of 20% f.o.b. Washington.

Special discounts allowed on quantity orders.

THE COAST ARTILLERY JOURNAL

1115 Seventeenth Street, N. W. **WASHINGTON, D. C.**

THIS IS NOT A PAID ADVERTISEMENT

Coast Artillery Orders

(Covering the Period September 1 to October 31)

Colonel F. K. Fergusson, from 62d, Ft. Totten to Org. Res., 1st Corps Area, Hartford, revoked.

Colonel L. P. Horsfall, from 62d, Ft. Totten, to Org. Res. 1st Corps Area, Hartford.

Colonel L. B. Magruder, from 2d C. A. Dist., New York, to 7th, Ft. Hancock, October 15.

Lieutenant Colonel H. C. Allen, from Coast Artillery Board, Ft. Monroe, to General Staff Corps, Washington, D. C.

Lieutenant Colonel E. A. Stockton, Jr., is detailed in the Bureau of Insular Affairs, September 16.

Major N. L. Adams, from 51st, Ft. Monroe, to instructor, Illinois N. G., Chicago, October 1.

Major H. B. Bliss, assigned to duty with Quartermaster Corps.

Major J. R. Clark, retired, September 30 upon his own application.

Major J. P. Hogan, promoted Lieutenant Colonel, October 1.

Major B. T. Ipock, retired, on account of physical disability, September 30.

Major H. S. MacKirdy, assigned to duty with Quartermaster Corps.

Major C. F. Maguire, retired, on account of disability, October 31.

Major Gooding Packard, promoted Lieutenant Colonel, October 1.

Major J. S. Smylie, from instructor, C. A. No. Car. N. G., Wilmington, to Inspector General's Dept., Boston, October 15.

Major P. B. Taliaferro, retired, on account of physical disability, September 30.

Major G. W. Whybark, assigned to duty with Quartermaster Corps.

Major S. E. Wolfe, from University of Cincinnati, Cincinnati, to Org. Res., 7th Corps Area, St. Louis.

Captain O. D. Bowman, from 62d, Ft. Totten, to U. S. Disciplinary Barracks, Governors Island.

Captain E. E. Count, Jr., from Hawaii, to Assistant Military Attache, Tokyo, sailing Honolulu, October 16.

Captain J. V. deP. Dillon, detailed to duty with the Judge Advocate General's Department.

Captain E. E. Elliott, from 61st, Ft. Sheridan, transferred to Field Artillery, 2d Division, Ft. Sam Houston.

Captain J. L. Harbaugh, Jr., transferred to Judge Advocate General's Department, August 1.

Captain David Hottenstein, detailed to duty with the Judge Advocate General's Department.

Captain C. M. Mendenhall, Jr., from Hawaii, to 3d, Ft. MacArthur.

First Lieutenant O. B. Beasley, transferred to Corps of Engineers, September 6.

First Lieutenant C. C. Carter, from aide Commanding General Third Corps Area, Ft. Monroe, to 3d C.A. Dist., Ft. Monroe.

First Lieutenant E. S. Eckhart, C.A.C., resigned.

First Lieutenant R. F. Haggerty, from 11th, Ft. H. G. Wright, to Ordnance Dept., Watertown Arsenal, September 12.

First Lieutenant H. W. Mansfield, from 63d, Ft. MacArthur, to Ordnance Dept., Ft. Sam Houston, October 1.

First Lieutenant S. M. Mellnik, from Hawaii, to 11th, Ft. H. G. Wright.

First Lieutenant B. L. Paige, from Hawaii, to 11th, Ft. H. G. Wright.

First Lieutenant J. F. Rodenhauser, from 61st, Ft. Sheridan, to Ordnance Dept., Aberdeen Proving Ground, October 1.

Second Lieutenant S. R. Beyma, from 2d, Ft. Monroe, to Hawaii, sailing New York, December 28.

Second Lieutenant S. F. Giffin, from 51st Ft. Monroe, to the Philippines, sailing New York, December 31.

Second Lieutenant T. F. Hoffman, from 52d, Ft. Monroe, to Hawaii, sailing New York, December 28.

Second Lieutenant G. L. Kushner, from 52d, Ft. Monroe, to the Philippines, sailing New York, December 31.

Second Lieutenant J. H. Lewis, from Hawaii, to 9th, Ft. Banks.

Second Lieutenant T. K. MacNair, from Panama, to 52d, Ft. Hancock.

Second Lieutenant R. R. Moorman, from 52d, Ft. Monroe, to Hawaii, sailing New York, December 28.

Second Lieutenant H. S. Tubbs, from 51st, Ft. Monroe, to Hawaii, sailing New York, December 28.

Second Lieutenant Y. H. Wolfe, from 52d, Ft. Hancock, to Panama, sailing New York, January 14.

Index, 1935, Volume LXXVIII

AUTHORS

Adams, Captain E. F. 330
Allen, Colonel Wayne R. 154
"Arcades Ambo" 109

Barnett, Lieutenant Jeff 408
Bennett, Captain A. J. 31
Beard, Wm. E. 44
Berry, Lieutenant Robert W. 283
Bertolet, Lieutenant John H. 205
Bowman, Lieutenant Ralph O. 18
Boyd, Major Leonard R. 37, 117
Bucher, Major O. B. 470
Bunker, Lieut. Col. Paul D. 238, 487, 488
Burgin, Colonel Henry T. 439
Burns, Major Walter W. 125
Byrne, Brig. Gen. John J. 157

Campbell, Captain James T. 386, 443
Case, Captain Homer 345, 459
Caygill, Major Harry W. 262, 358
Chaffin, Colonel A. D. 124
Chamberlain, Lieutenant E. W. 228
Chambers, Captain A. K. 102
Chennault, Major Claire L. 323, 419
Cloke, Colonel Harold E. 225, 471
Colby, Captain Elbridge 57
Cochran, Captain H. W. 224, 304, 397
Colton, Major Roger B. 172
Conable, Major Morris E. 364
Cravens, Major W. M. 76

Davis, Captain Leonard 19
Dawes, Colonel Charles C. 99
de Camp, Captain J. T. 378
Denny, Captain C. S. 30
Denson, Lieutenant Lee A. 279
Doherty, Captain J. H. 365
Drew, Major William N. 213

Engelhart, Lieutenant E. Carl 193

Farnsworth, Lieutenant E. E. 163
Fisher, Captain George J. B. 13, 277

Gerdenich, Maten G. 344
Gill, Lieutenant Burgo D. 198
Gordon, Robert W. 259
Green, Major Fred M. 83
Greene, Captain Joseph I. 115, 463
Grinder, Lieutenant R. H. 67

Haw, Major J. C. 23
Hagood, Maj. Gen. Johnson 249
Hill, Lieut. Col. R. A. 51
Hudgins, Captain Lewis A. 130
Hughes, Lieut. Col. E. S. 384
Humphrey, Brig. Gen. E. H. 91

Johnson, Lieut. Col. A. L. P. 150, 232, 313, 483
Johnson, Captain J. J. 79

Kilbourne, Maj. Gen. Charles E. 437

Landreth, Major Earl 446
Lane, Captain Vincent A. 409
Lanham, Captain C. T. 427
Lemly, Lieut. Col. Rowan P. 187
Lovell, Lieutenant John R. 62, 226, 305, 400, 468
Lutes, Major LeR. 185

MacMullen, Major J. D. 49, 78
Marshall, Lieutenant Albert 406
Marquat, Captain William F. 209, 295
Mauer, Lieutenant G. M. 76
McCatty, Major Kenneth 274
McGuire, Captain James A. 349
Morrison, Captain Charles R. 477
Moss, 1st Sgt. John M. 252

Nikolaieff, A. M. 373

Pendleton, Major R. T. 128
Pitzer, Captain John H. 455
Powers, Major J. D. 69, 140
Pratt, Fletcher 5

Ramon, Lieutenant A. L. 299
Reierson, Lieutenant J. E. 175
"Rewarded" 253
Rodman, Burton 176

Sadtler, Captain Robert 98
Sawyer, Lieutenant John A. 283
Schumacher, Major Henry A. 405
See, Private Robert N. 305, 400, 468
Seltzer, Lieutenant James W. 146
Sevilla, Lieutenant P. C. 31
Smallwood, Lieutenant Eugene C. 65, 144, 223
Smith, Major Bernard 335
Smith, Lieutenant Colonel Rodney H. 245
Stanley, Lieutenant John 415
Stark, Major H. W. 242
Sunderland, Colonel A. H. 201
Sweeney, Lieutenant Francis R. 33

Thomson, Lieut. Col. Earl W. 239, 403
Thompson, Lieutenant Ernest B. 199
Thompson, Captain Louis H. 115
Todd, Maj. Gen. H. D. 317, 414, 488
Townsend, Lieutenant H. F. 133

Vestal, Colonel Samuel C. 11, 183

Waitt, Captain Alden 269, 381, 424
Wall, Major P. L. 396
Warner, Lieut. Col. Oscar C. 77
Warren, Lieutenant L. P. D. 290

TITLES

A

Actions Speak Louder Than Words 308
Adowa, the Battle of, *Smith* 334
All God's Chillun Ain't Got Wings, *"Arcades Ambo"* 109
All Time High Scorer 334
Another Plan, *Drew* 213
Antiaircraft Artillery, Pursuit in Coöperation with, *Chennault* 419
Antiaircraft Machine Guns, Data Transmission and Remote Control Sight System, *Denson* 279

Antiaircraft Machine Gun Fire Control, *Sunderland* ... 201
Antiaircraft Records, *Townsend* ... 133
Antiaircraft Records Sections, an Improved System for, *Berry and Sawyer* ... 283
Antiaircraft Spotting, Training Panel for, *Ramon* ... 299
Are Soldiers Militarists? *Vestal* ... 11
Artillery Acquitted Itself Magnificently ... 475

B

Battle of Adowa, *Smith* ... 335
Bigger and Better ... 395
Bombardment Aviation, Some Facts About, *Chennault* 323
Book Reviews ... 79, 158, 238, 317, 414, 487
Brazil, the Military Mission to ... 207
British Capture of Manila, *Landreth* ... 446

C

Castle of Rip Raps, *Beard* ... 44
Chaco, War in the, *Farnsworth* ... 163
Changes in the Chief's Office ... 307
Charters for Local Chapters ... 213
Chemical Security, *Waitt* ... 269, 381, 424
Chemicals, How, When and Where? *Fisher* ... 13
Chemical Warfare, Humanitarian Aspects of, *Sadtler* 98
Chemical Warfare School, *Fisher* ... 277
Chemical Warfare Training and Morale, *Bertolet* ... 205
China, the Peace of North, *Colby* ... 57
Cincinnati Chapter Very Active ... 146
Classification of Coast Artillery Officers ... 467
Classification of National Guard Batteries ... 157
Cleveland Chapter ... 215
Coast Artillery Activities ... 63, 139, 219, 301, 397, 467
Coast Artillery Board Notes .. 60, 137, 229, 311, 410, 479
Coast Artillery Officer Honored ... 476
Coast Artillery Orders ... 72, 149, 235, 311, 413, 493
Coast Artillery Trainer, a, *MacMullen* ... 49
Coast Defense, Rhodes and Morale in, *Pratt* ... 5
Command of Land and Air Forces in Coast Artillery, *Smith* ... 245
Comparison of National Guard and Regular Army Score, *Warner* ... 77
Concerning Manuscripts ... 218
Corporal, the Next, *Sweeney* ... 33
Corregidor News Letter ... 142, 222, 301, 397, 398, 472
CPX Truck, *Bowman* ... 18
Credit Hours for Trophies ... 214

D

Data Transmission and Remote Control Sight System for AA. Machine Guns, *Denson* ... 279
Death! Then What? *Doherty* ... 364
Defending Our Last Frontier, *Gordon* ... 258
Department of Enlisted Specialists ... 451
Developments in Organization, Armaments and Equipment of Coast Artillery Corps, *Burgin* ... 439
Doings of 621st C.A. ... 76
Doubling the Efficiency of the Coast Artillery Reserve, *Haw* ... 23

E

Efficiency Reports, *Hughes* ... 384
Efficiency Reports, Some Ideas on, *Lemly* ... 187
Efficiency Reward in the Army, *"Rewarded"* ... 253
Election of Officers ... 74, 474
Elements of Leadership, *Kilbourne* ... 437
Emblem, Coast Artillery Association Adopts ... 75
Emergency Fire Control Methods, *Campbell* ... 386, 443
Employment of Gas in Riot Duty, *Allen* ... 154
Enlisted Specialists, Department of ... 451
Extension Course Record ... 75

F

Field Training of 265th C.A., FNG, *Wall* ... 396
Fifty Million Frenchmen Can Be Wrong, *Lanham* ... 427
Fire Adjustment, *Davis* ... 19
Fire Control Methods, Emergency, *Campbell* ... 386, 443
Fire Control, Notes on AA. Machine Gun, *Sunderland* 201
First Regiment, the ... 147
Foreign Military Press, *Johnson* ... 150, 232, 313, 483
Fort Knox, Summary of Reports of Joint Exercises at .. 47
Fort MacArthur Notes, *Smallwood* ... 65, 144
Fort Monroe News Letter, *Powers, Cochran, Bucher* ... 69, 140, 224, 304, 397, 470
Fort Totten Goes to School, *Grinder* ... 66

G

Gas in Riot Duty, the Employment of, *Allen* ... 154
General Steele Elected President of Association ... 243

H

Harbor Defenses of Los Angeles, *Oldfield* ... 223
Harbor Defenses of Manila and Subic Bay ... 66, 301
Harbor Defenses of San Francisco, *Cloke* .. 143, 225, 471
Hawaiian News Letter, *Lovell* ... 63, 226, 305, 400, 468
Humanitarian Aspects of Chemical Warfare, *Sadtler* .. 98

I

Improved System for AA. Records Section, *Berry and Sawyer* ... 282
Improvised Plotting Car for 155-mm. Gun Battery, *Bennett and Sevilla* ... 31
Indispensable, the ... 388
Individual Trophy ... 333
In Memoriam ... 3
Intelligent 27, the, *Rodman* ... 177
Interbattery Communication by Radio, *Conable* ... 364
It Started in San Francisco ... 395

K

Kansas City Officers Organize Chapter ... 146
Keeping Two Jumps Ahead, *Greene* ... 116
Kitchen, a Reconnaissance Car, *Burns* ... 125

L

Leadership, Elements of, *Kilbourne* ... 437
Legislation, C.A. Association Opposes Proposed ... 212
Let's Have Better Reserve Officers, *Warren* ... 290
Lexington and Concord, *Green* ... 82

M

Machine-Gun Fire Control, *Sunderland* ... 201
Manhattan Chapter Doings ... 75
Manila, British Capture of, *Landreth* ... 446
March of the 69th, *McCatty* ... 274
March of the 145th Field Artillery, *Pitzer* ... 455
Maybe They Have Developed a Slice ... 393
Mechanical Miniature Range, *Chambers* ... 102
Mess Kit Sterilizer, *Burns* ... 125
Military English, *Greene* ... 463
Military Mission to Brazil ... 207
Minute Men of the Next War, *Hagood* ... 249
Modified Drill on R.A. Corrector, *Reierson* ... 175
Morale in Coast Defense, Rhodes and, *Pratt* ... 5
More and Better Training ... 393
Motor Convoys, *de Camp* ... 378

N

National Defense, Reserve Policies and, *Hill* 51
National Guard Notes 77, 154
National Guard, Promotion in the 478
National Guard, State Uses of the 103
National Guard Training, Notes on 155
National Guard Trophy, Presentation of, *Stark* 242
Naval Parity, *Vestal* 183
Navy Scores Again 392
New Plan for Award of Trophy to Reserves 389
New Recruit Class, the, *Lutes* 185
News and Comment 73, 145, 212, 307, 391, 474
New York C.A. Brigade 75, 157, 217
Next Corporal, the, *Sweeney* 33
Notes on National Guard Training, *Thompson* 155
Notes on Reserve Activities 403
No Knox Trophy 74

O

Officers and Service School, *Pendleton* 128
Old Stuff, *Marquat* 209
Order of the Illustrious 307, 391, 474
Orientation, Rapid, *Thompson* 199
Over the Top 476

P

Panama Canal Department News Letter 68, 139, 219, 303
Peace of North China, *Colby* 57
Planning a Tactical Problem, *Thomson* 403
Plotting Car, an Improvised, *Bennett and Sevilla* 31
Popularize It by Publicising It 392
Power Speech Amplifier, *Moss* 252
Presentation of National Guard Trophy, *Stark* 242
Press Censorship in War Time, *Caygill* 262, 358
Promotion in the National Guard 478
Pursuit in Coöperation with Antiaircraft Artillery, *Chennault* 419

R

R.A. Corrector, Modified Drill on, *Reierson* 175
Radio Energy Radiation and Propagation, *Colton* 172
Radio, Interbattery Communication by, *Conable* 364
Rapid Orientation for Mobile Seacoast Batteries, *Thompson* 199
Range, a Mechanical Miniature, *Chambers* 102
Reconnaissance Car Kitchen and Mess Kit Sterilizer, *Burns* 125
Reflections of a Reserve Officer, *Marshall* 406
Refresher Course at C.A. School 308
Remote Control Sight System, *Denson* 279
Reserve Activities, Notes on 403
Reserve, Doubling the Efficiency of the Coast Artillery, *Haw* 23
Reserve Officers, Let's Have Better, *Warren* 290
Reserves, New Plan of Award of Trophy to 389
Reserve Policies and National Defense, *Hill* 51
Rhodes and Morale in Coast Defense, *Pratt* 5
Riot Duty, the Employment of Gas in, *Allen* 154
Rip Raps, the Castle of, *Beard* 44
Rough on Majors 391

S

Saint Louis Chapter Organized 217
San Francisco Chapter, *Mauer* 76, 218, 476
Schools, Service, Officers and, *Pendleton* 128
School, Staff and Student Officers, CAC 394
Seacoast Batteries, Rapid Orientation for, *Thompson* 199
Searchlights, Tactical Employment of, *Marquat* 295
Second Corps Area News, *Lane* 409
Secret Cause of German Successes on Eastern Front, *Nikolaieff* 373
Service Schools, a Practical Suggestion, *Gill* 198
Seven Years A-Scoring, *Cate* 345, 459
Soldiers' Handbook 215
Some Facts About Bombardment Aviation 323
Some Ideas on Efficiency Reports, *Lemly* 187
Sperry, *Engelhart* 193
Spotting, Training Panel for AA, *Ramon* 299
State Uses of the National Guard 103
Sterilizer, a Mess Kit, *Burns* 125
Stupidity of the Military, *Chaffin* 124
Summary of Reports on the Joint Antiaircraft-Air Corps Exercises at Fort Knox 47
Sweet Music 309

T

Tactical Employment of Searchlights, *Marquat* 295
Tank Ju-Ju, *McGuire* 349
Things the Army Does Besides Fight 477
Three Salutes, *Gerdenich* 344
To See Ourselves as Others See Us 216
Trainer, A Coast Artillery, *MacMullen* 49
Training Directive for Coast Artillery 309
Training for the Trophy, *Hudgins* 130
Training Panel for AA Spotting, *Ramon* 299
Trophies 331
Trophies, Credit Hours for 214
Trophy, Individual 333
Trophy, Presentation of the National Guard, *Stark* .. 242
Trophy Presented to 507th 243
Trophy to Reserves, New Plan of Award 389
Trophy, Training for the, *Hudgins* 130
Troubles of an Editor 145
Truck, a CPX, *Bowman* 18

U

Umpire System of GHQ-CPX, 1934, *Humphrey* 91
U. S. Coast Artillery Association 4, 242

W

War in the Chaco, *Farnsworth* 163
Warrants for Cadet Non-Coms 478
Washington University Points the Way 478
What! Another Gadget? *Denny* 30
What Instructors are Doing 477
What is the Answer? 73
Who Started Such a Mess? *Adams* 330
Will It Happen Again? *Boyd* 37, 117

ORGANIZATIONS

64th C.A., Annual Target Practice of, *Chamberlain* .. 228
69th, March of the, *McCatty* 274
145th Field Artillery, March of the, *Pitzer* 455
202nd C.A. (AA) at Century of Progress Exposition, *Dawes* 99
245th C.A., *Morrison* 477
250th C.A. Activities, *MacMullen* 78
251st Calif. National Guard Makes Fine Record 77
265th C.A., Field Training of 396
970th C.A. (AA) Employs New Training, *Barnett* .. 408
974th C.A. (AA) Endorses New System, *Schumacher* 405