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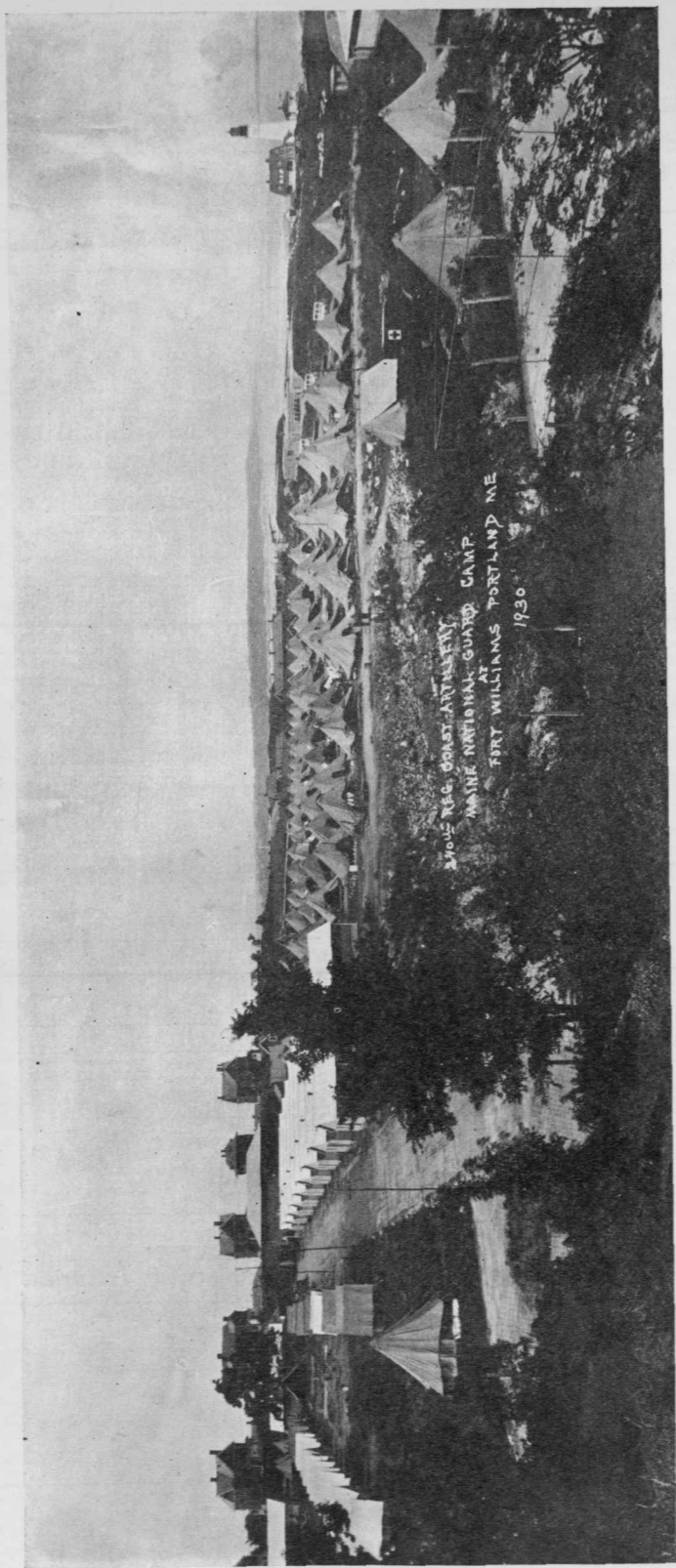
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240TH C. A. (MAINE N. G.) ENCAMPMENT AT FORT WILLIAMS, MAINE

The lighthouse in the picture is the famous Portland Head Light—the second lighthouse constructed in America by General George Washington

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Number 4

National Defense and the Educated Man

By GEN. C. P. SUMMERALL

A PRIME purpose of higher education is to train men for positions of leadership and responsibility. A broad, well-balanced education fits a man to fill efficiently positions of responsibility, both public and private, in war as well as in peace. We might compare the untrained child to iron ore and the college graduate to a finished tool. The grade schools convert the iron ore into iron; the high schools and preparatory schools change the iron to steel; the colleges take this steel, refine, shape, and temper it, and give it a fine working edge. Consequently, the War and Navy Departments look to the colleges of America to fill a large portion of the positions of leadership and varied responsibility in the event of a major national emergency.

The country expects the college man to become a leader in business, statecraft, the ministry, the professions, and in the sciences and arts. The nation has the right to expect him to accept the responsibilities of citizenship and leadership when the clouds of war loom darkly on the horizon. Our past history shows ample evidence that the trust placed in our college man has not been in vain—he has always been among the first to volunteer his services and he has borne the responsibilities placed on him cheerfully and well, in peace and in war. Success in a crisis does not come by inspiration. It comes as a result of preparation and capacity carefully developed by experience and habit. The college man has a decided advantage over the uneducated man because of the broader vision, wider perspective, and greater adaptability which he derives from his studies and experience; and as a result of his opportunities, more is demanded of him, and rightly so.

The rank of the United States among the great powers of the world, her wealth, strategic position, and commercial expansion, have increased her international contacts and consequently have increased her opportunities for misunderstandings and even for conflicts in foreign policies. It is a well-recognized principle of international law that the right of self preservation is the first law of nations, just as it is of individuals. A government unable to repel aggression from without or to suppress rebellion from within, fails in its principal duty to the members of the commonwealth which it represents.

In the light of recorded human experience, it is manifestly our duty

to support at all times a military establishment commensurate with our risks. As a nation we are traditionally opposed to preparedness for aggression. George Washington and the statesmen who have succeeded him have strongly advocated a policy of preparedness—not *for*, but *against* aggression. They realized that the diplomat who represents his country in intergovernmental controversies is impotent unless his nation is sufficiently powerful in a military way to make it hazardous for others to depart from the normal and peaceful method of international intercourse.

During the Civil War, France, realizing that we were engaged in a bloody struggle to preserve our union, and expecting no embarrassment on account of the Monroe Doctrine, placed Maximilian on a throne in Mexico and backed him with her troops. Polite diplomatic notes of protest produced nothing but evasive and equally polite replies for several years—then, after the close of the Civil War, Mr. Seward sent to France a note demanding the withdrawal of the French armies from Mexico. To make this demand more than a “*beau geste*,” General Sheridan was sent into Texas with an army of 50,000 veteran troops. The French government clearly understood that note and promptly withdrew its armies from Mexico. Without firing a single shot—merely by backing a diplomatic note with adequate force—the United States kept the Monroe Doctrine intact and made possible the downfall of a régime on her borders which might easily have become a breeder of innumerable hatreds and incessant wars in the Western Continent. Our ability to back up the just demands of those charged with our foreign affairs enabled them to achieve our legitimate political ends without resort to war.

Fifty years later the absence of that backing forced us into war. From 1914 to 1917 our government uttered protest after protest; in our comparatively unarmed condition on land our words were unheeded. The belligerents were evenly matched. It was believed then, and it appears certain now, that if we had had an efficient army of adequate size to back up our efficient naval force, our country would have been the arbiter of peace without the shedding of a single drop of blood. Our reputation was that of weakness; we were looked upon by those who did not know us as a people who worshipped the dollar. These impressions gave the Central Powers more confidence and increased the arrogant and dictatorial tone of their notes. As a result, we were morally and physically forced into the World War and sacrificed two hundred and forty-four thousand eighty-two men in killed and wounded in convincing the enemy that we were a power to be reckoned with—a people who held honor as their most precious possession.

The declaration of war in April, 1917, found us almost unprepared to wage war on the scale it had assumed in France. Slowly but surely we expanded our Army to four million men. It was comparatively easy to

get the men, but in order to convert them into an effective combat force we had to procure and train more than one hundred and eighty thousand officers. The experience gained in producing these officers convinced Congress that in the college men lies the source of supply of leaders able and willing to shoulder the manifold responsibilities that fall to the lot of one who commands men and is charged with their training and welfare.

As a consequence, the National Defense Act of 1920 provided for the Reserve Officers' Training Corps. That act recognized the fact that adequate national preparedness must be undertaken seriously along sound lines, and that it can never be improvised or procured in a hurry. The colleges, through the Reserve Officers' Training Corps, are furnishing excellent officers to the three components of the Army of the United States—the Regular Army, the National Guard, and the Organized Reserves.

The profession of arms demands men tempered by education and training. They must be readily adaptable to new conditions and have minds that are trained to grasp new ideas quickly and accurately. During the World War it took us a year and a half to put an American Army in the field. In war the most precious thing is time. The time element can neither be eliminated nor improvised; but we can eliminate wasted effort, and speed up the training of the great body of citizens which will be called to the colors, by training in time of peace the best available officer material. We have in our schools and colleges a body of potential officers second to none in the world. Were the Government to fail to provide these men with a broad education which will fit them for their duties in both peace and in war, it would be remiss in its duty to the people; it would be guilty of failing to carry out the things for which the Constitution was established and ordained—to provide for the common defense, to promote the general welfare to insure domestic tranquillity, and to secure the blessings of liberty to ourselves and our posterity.

Some may ask: If our country is never forced into war, what value has the R. O. T. C.? President Richards of Lehigh University, and former Dean of Engineering at the University of Illinois, answered that question when he said to a committee of Congress: "I consider military training a particularly good thing for engineering students. It is recognized by many of the outstanding engineering colleges of America. The engineer needs to have this military training just as much as he needs trigonometry, calculus, or other subjects." Dean Lord of the College of Business Administration of Boston University said: "The business man needs to know how to lead as well as how to follow. The R. O. T. C. gives practical occasion for both leading and following. Scores of young men become noncommissioned or cadet commissioned officers and learn to carry the responsibility of leadership. We consider it fully as important as English and mathematics and economics and foreign language and history."

It is possible to quote from leading educators in every state in the Union opinions fully as illuminating as these. Suffice it to say that the physical training, the poise of body and mind, the habits of discipline, courtesy, and respect for constituted authority, obtained in the Reserve Officers' Training Corps, more than compensate for the money, time, and effort devoted to this form of military training. Health, good habits, clear and logical thinking, industry, organizing ability, and success come from such physical and mental discipline. The true spirit of national service manifests itself in the Reserve Officers' Training Corps—a corps whose members accept and train for the obligations of citizenship. As long as this spirit prevails, we can feel sure that the blessings of liberty for which our forefathers fought will be jealously guarded. The students of today hold in their hands the future welfare and security of our country.

Joint Antiaircraft Air Corps Exercises, Aberdeen Proving Ground, Maryland

May 12-17, 1930

By CAPT. C. E. ATKINSON, C. A. C.

IN THE JOURNAL for May of this year there is an article which sets forth, in detail, the general plan for the conduct of the Joint Antiaircraft Artillery and Air Corps exercises held at Aberdeen Proving Ground during the period May 12-17. The War Department directive for the exercises, given in this article, states the objective to be:

1. The development of tactics and technique of the joint defense of an airdrome by the Air Corps and Antiaircraft Artillery.

2. To test the soundness of the organization and equipment for the Antiaircraft Brigade Intelligence Battery, Coast Artillery Corps, by organizing a provisional battery from troops designated to take part in these exercises.

The War Department directive also appointed a Board to draw up plans for the exercises. In accordance with this plan Aberdeen Proving Ground was selected as the hypothetical airdrome to be defended. The terrain to be covered is clearly indicated in the sketch map. The board realized that the air defense of a locality should be more or less an all-around defense. However, the necessary ground troops for an all-around defense were not available, necessitating the limiting of the exercises to the peculiarly shaped area inclosed within the heavy lines on the sketch map. The defensive organization, therefore, was only a part of that which would be necessary under actual service conditions. The sector to which the exercises are limited is approximately forty degrees.

Having decided upon the above, the board then drew up a problem which is repeated for the benefit of those who may not have read the previous JOURNAL article. Based on the problem the exercises were divided into a number of phases which are also given.

THE PROBLEM

MAPS: General Maps. U. S. Geological Survey, one to five hundred thousand. State of Virginia and States of Maryland and Delaware. Geological Survey, one to one hundred and twenty-five thousand. Tolchester, Choptank, St. Mary's, Patapasco, Patuxent, Nomini, Mt. Vernon, Fredericksburg, Harpers Ferry, Warrenton, Spotsylvania, Winchester, Luray, and Gordonsville, Quadrangles.

GENERAL SITUATION

THE POTOMAC RIVER forms the boundary between two small states—BLUE (north) and RED (south). War has been declared re-

cently and both sides are mobilizing. RED was known, prior to the declaration of war, to have a predominance of air forces.

The ABERDEEN PROVING GROUND, MARYLAND, in BLUE territory, is known by RED to be the location of the nearest important BLUE airdrome and air depot to the frontier.

Upon the outbreak of war RED learned from sympathizers in BLUE territory that heavy consignments of airplane stocks and materials were being shipped into ABERDEEN PROVING GROUND depot and it was definitely determined that among other material received were a considerable number of fuselages and partially assembled planes. RED further learned that immediately prior to the declaration of war certain anti-aircraft artillery troops had arrived in the vicinity of ABERDEEN. The exact number of troops was not learned. Up to and including midnight 10-11 May, 1930, no RED or BLUE airplanes had been observed by either side crossing the frontier.

BLUE GHQ was in possession of the general knowledge that the RED air forces included pursuit, bombardment, and attack planes.

SPECIAL SITUATION (BLUE)—At 11:00 p. m. 11 May, 30, the BLUE Commander of the ABERDEEN PROVING GROUND airdrome and supply depot received the following instructions from BLUE GHQ:

Reliable information has been received that RED air force completed its concentration in the vicinity of RICHMOND late on 11 May, 30. Indications of preparations for early offensive air action have been observed. It is essential that planes and material now being processed by the ABERDEEN depot be supplied and delivered to points covered by previous instructions not later than midnight 17-18 May, 30.

SPECIAL SITUATION (RED)—At 11:00 p. m. 11 May, 30, the RED Air Force Commander received the following instructions from RED GHQ:

Reliable information indicated increased activity at BLUE airdrome and supply depot at ABERDEEN PROVING GROUND, MARYLAND. It is important that utilities and stocks located at that point be destroyed at earliest date. The use of the airdrome, as a base of operations for the BLUE air force should be effectively neutralized until midnight 17-18 May, 30.

1ST PHASE—8:30-11:00 a. m., Monday, 12 May, 30

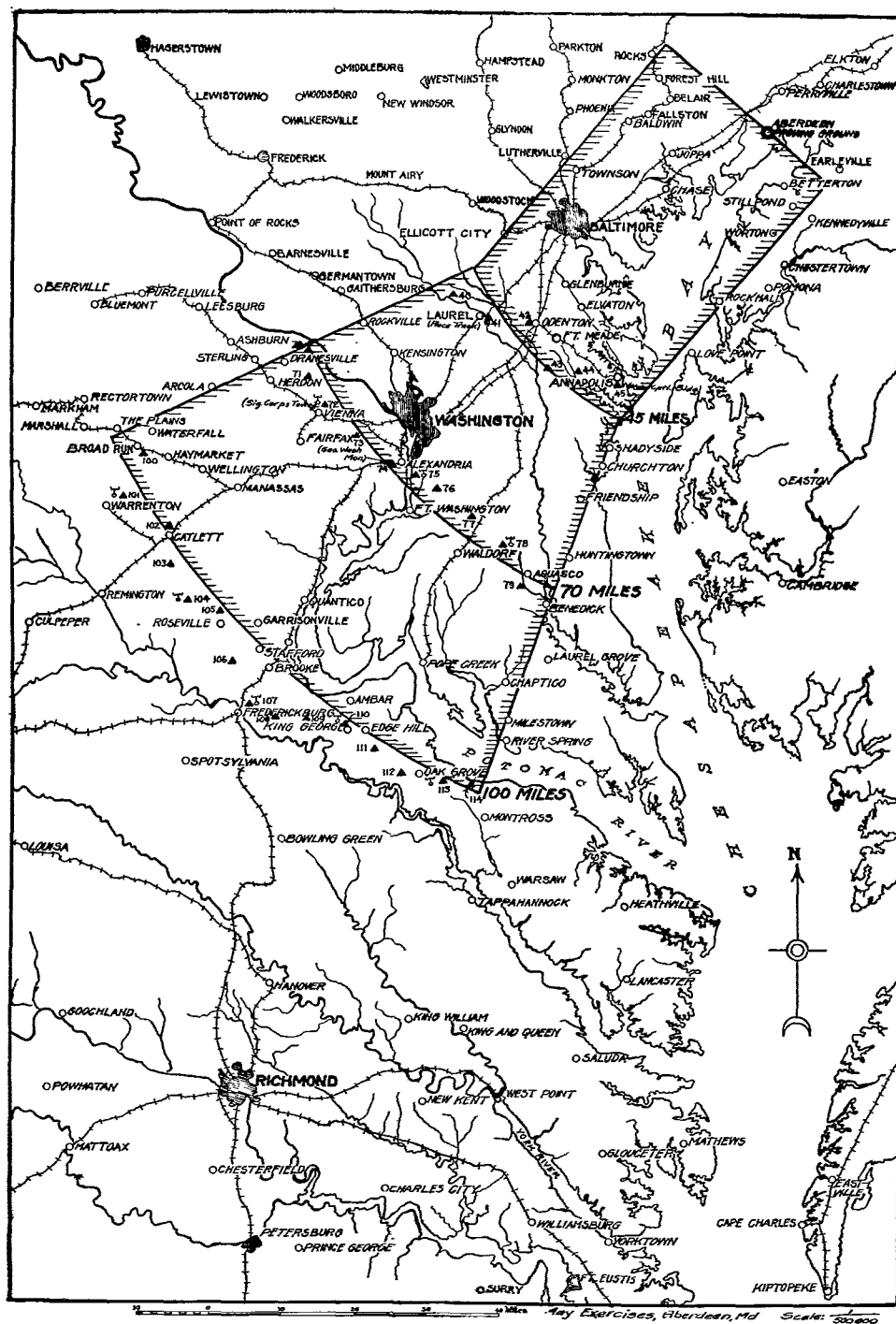
Opposing Forces

Blue—Defense to be fully manned.

Red—Flights of bombardment and attack flying straight courses toward objective in various parts of the sector.

Objects

- a. To test alertness and functioning of the observation net.
- b. To test desirability of observation posts in belts at stated intervals with and without observation posts in between.



- c. To determine the proper density of observers as a function of the distance from the defended airdrome.
- d. To test the ability of antiaircraft artillery observation posts to receive and transmit to antiaircraft artillery defense alerting warnings of approaching planes.
- e. To determine the time hostile planes would be under fire of antiaircraft artillery guns and machine guns.
- f. To determine the efficiency of the code system used for transmitting intelligence information.
- g. To test the organization and functioning of the airdrome command post, its staff, and intelligence center.
- h. To determine time or distance from the target, when or where aircraft should cease attack and antiaircraft artillery begin firing.
- i. To determine the best system of evaluating intelligence information furnished by the intelligence battery.
- j. To determine what air force agencies or activities should be incorporated in the permanent features of an airdrome in order to render most practicable a joint A. C.-A. A. defense.
- k. To determine the best location, relative to each other, of various agencies employed in command functions, receiving, transmitting, evaluating intelligence, etc.
- l. To determine the minimum distance from a defended area at which observations can be made and still be of value for interception purposes.

2ND PHASE—1:30-4:00 p. m., Monday, 12 May, 30

Opposing Forces

Blue—Same as 1st.

Red—Same as 1st.

Objects

Same as 1st.

3RD PHASE—7:30-10:00 p. m., Monday, 12 May, 30

Opposing Forces

Blue—Same as 1st.

Red—Single bombardment planes flying straight courses in various parts of sector.

Objects

- a. To test alertness and ability of the observation net to function at night in the detection of planes.
- b. To test the ability of the antiaircraft artillery to locate and illuminate bombing planes.
- c. To develop and test fire control methods in the antiaircraft artillery in the handling of the searchlight platoons and gun batteries, when two, three or more planes simultaneously approach an objective from different avenues of approach.
- d. To determine the best method to approach a target in order to make illuminations by searchlight most difficult.
- e. To determine the extent to which ground observers can see airplanes at night.
- f. To investigate the possibility of planes flying so as to render observation intelligence materially incomplete.

4TH PHASE—8:30-11:00 a. m., Tuesday, 13 May, 30

<i>Opposing Forces</i>	<i>Objects</i>
Blue—Same as 1st.	Same as 1st.
Red—Same as 1st.	

5TH PHASE—1:30-4:00 p. m., Tuesday, 13 May, 30

<i>Opposing Forces</i>	<i>Objects</i>
Blue—Same as 1st.	Same as 1st.
Red—Same as 1st.	

6TH PHASE—7:30-10:00 p. m., Tuesday, 13 May, 30

<i>Opposing Forces</i>	<i>Objects</i>
Blue—Same as 3rd.	Same as 3rd.
Red—Same as 3rd.	

7TH PHASE—8:30-11:00 a. m., Wednesday, 14 May, 30

Opposing Forces

Blue—Same as 1st.
 Red—Same as 1st, except Red planes to approach objectives flying irregular courses.

Objects

- To test objectives of preceding where applicable and in addition:
- a. To determine the best method of getting intelligence to pursuit already on patrol.
 - b. To determine altitude at which daylight ground observation is most difficult.
 - c. To determine altitude at which daylight ground observation is easiest.

8TH PHASE—1:30-4:00 p. m., Wednesday, 14 May, 30

<i>Opposing Forces</i>	<i>Objects</i>
Blue—Same as 1st.	Same as in preceding.
Red—Same as 7th.	

9TH PHASE—7:30-1:00 p. m., Wednesday, 14 May, 30

Opposing Forces

Blue—Same as 1st.
 Red—Same as 3rd, except attacking planes to approach objective flying irregular course.

Objects

Same as in preceding.

10TH PHASE—8:30-11:00 a. m., Thursday, 15 May, 30

<i>Opposing Forces</i>	<i>Objects</i>
Blue—Same as 1st.	Same as in preceding.
Red—Same as 7th.	

11TH PHASE—1:30-4:00 p. m., Thursday, 15 May, 30

Opposing Forces

Objects

Blue—Same as 7th.

Same as preceding.

Red—Same as 7th.

12TH PHASE—7:30-10:00 p. m., Thursday, 15 May, 30

Opposing Forces

Blue—Same as 3rd.

Red—Same as 3rd, except attacking planes to approach objectives flying irregular courses.

Objects

Same as preceding.

13TH PHASE—8:30-11:00 a. m., Friday, 16 May, 30

Opposing Forces

Blue—Same as 1st.

Red—Attacking force to launch a coordinated air attack against defended area.

Objects

Same as 7th with the following additional:

To test system of local observation posts for alerting machine gun batteries of antiaircraft artillery defense upon the approach of attack planes.

14TH PHASE—1:30-4:00 p. m., Friday, 16 May, 30

Opposing Forces

Objects

Blue—Same as 13th.

Same as 13th.

Red—Same as 13th.

15TH PHASE—7:30-10:00 p. m., Friday, 10 May, 30

Opposing Forces

Blue—Same as 1st.

Red—Attacking forces to launch night bombing attacks of single planes simultaneously at varying altitudes.

Objects

To test preceding objectives where applicable and the following additional:

a. To determine and test a system for the use of fire units of machine gun batteries of antiaircraft artillery against night operations of attack planes.

16TH PHASE—8:30-11:00 a. m., Saturday, 17 May, 30

Opposing Forces

Objects

Blue—Same as 13th.

Same as 13th.

Red—Same as 13th.

A reading of the plan makes it apparent that the exercises were somewhat extensive in scope and in terrain covered, in fact, probably more ex-

tensive than any held heretofore with such a comparatively small body of troops. The second directive, that of testing out an Intelligence Battery, was a brand new plaything which called forth a certain amount of imagination and, as far as previous knowledge or training of such a unit was concerned, allowed all who took part in its organization and functioning to start from scratch.

With the directive from the War Department there was enclosed a proposed table of organization for an Intelligence Battery. At the start, it was found that for the conduct of the exercises, it was entirely unsuited and therefore was not used. A provisional table was made up, and altered from time to time as the detailed plans for the Intelligence Battery progressed. This table, at the termination of the exercises, was finally put in proper shape and submitted with the report.

RECONNAISSANCE

The actual field preparation for the exercises commenced about the middle of April. Using the plan as a guide, the Intelligence Battery was organized, trained, and placed in the field. The maps used were those quadrangles which covered the defended area, scale 1:125,000. These were pasted together and the sector covered by the exercises drawn thereon. Fifteen observation stations were located on the one hundred-mile belt, ten on the seventy-mile belt and six on the forty-five-mile belt. In locating these stations on the map, there were two main considerations in mind: first, the apparent visibility to the southwest and flanks, and second, proximity to good roads to facilitate wire laying. The stations were spotted approximately six miles apart by air and from five to eight miles apart by road varying in some instances to as much as ten miles depending on the availability of roads between stations.

These map positions were verified and the stations definitely located on the ground by a field reconnaissance of each belt. In some cases, due to the terrain and roads, it was found necessary to change the map location of a few stations, but on the whole, the map reconnaissance was found to be quite accurate. The presence of heavy woods and forests, not shown on the map, reduced the visibility in some cases even where the station had been located on comparatively high ground. It was also found that in some cases much better observation was obtained by the use of conveniently located buildings and towers. In one instance, a State forest fire tower was utilized, and in another, the dome of the State Capitol at Annapolis. The positions of a few stations on the forty-five-mile belt were altered just before the exercise started to facilitate the tying in of our telephone lines to the commercial lines which were used for communication between that belt and the intelligence center at Defense Headquarters.

By the use of a combination of Geological Survey Quadrangles, printed in 1906, and modern road maps, it was found that an adequate reconnais-

sance could be made without going in to the field. Where time is an important factor, this is of interest, and it is believed that in most cases of normal terrain, a map reconnaissance is sufficient.

CODE

A code, closely following the requirements of Training Regulations, was devised. A very simple code was desirable to facilitate the speed of transmission and at the same time contain all the information necessary for a proper evaluation. It was originally intended that the code would be used only for radio transmission and that messages, following the form of the code message, would be sent in the clear over the telephone. It was found, however, that by using the code at all times, over the phone and radio, time was saved. It was believed that by designating at the beginning of the message, the station from which the observation was made, a location was thereby determined of the plane observed. The Board, however, altered the code to the extent of a prefix to the station number which indicated the direction of the flight from the station. The rest of the code was not altered. This was designed to obviate confusion, when two or more adjacent stations reported on the same plane, in determining whether or not it was the same plane in each case or more than one plane. However, I believe that the times of observation which appear in the message, are an equally good determination of this point and that the added direction placed in the code is not necessary.

COMMUNICATIONS

The heart of any Intelligence Battery is in its communication system which must of necessity be quite extensive. In this particular problem, such was the case. Approximately one hundred and fifty miles of field wire were laid and eleven radio sets used. All the wire was laid by the 1st Signal Company which went into the field for this purpose on May 6th. A Signal Corps officer was placed in charge of this work in each belt and the working details proportioned in accordance with the amount of wire to be laid in each case. Following is a table showing personnel and materiel used in this work:

100-Mile Belt:

- 1 officer, 30 enlisted men
- 5 Trucks, Class B
- 1 White, Reconnaissance
- 1 Truck, $\frac{3}{4}$ -ton, G.M.C.
- 1 Truck, tank, gasoline, 750 gal.
- 2 SCR 132, radio sets (mobile)
- 1 SCR 136, radio sets (mobile)
- 2 SCR 136, radio sets (not mobile)
- 2 SCR, 109-A, radio sets

- 20 Telephones, EE5 and EE4
- 100 Miles wire, W-50 and W-40
- 100 Batteries, BA-9, spare
- 5 Reels, RL 17 payout
- 10 Sets, lineman's equipment
- 15 Flashlights
- 10 Tents, radio

70-Mile Belt:

- 1 officer, 32 enlisted men
- 2 Trucks, Class B
- 2 Trucks, $\frac{3}{4}$ -ton, G.M.C.
- 1 White, Reconnaissance
- 1 Truck, tank, gasoline, 750 gal.
- 5 Sets, radio, 109-A, complete
- 15 Telephones, EE5 and EE4
- 60 Batteries, BA-9, spare
- 72 Batteries, BB-29 in addition to the
12 with each 109-A
- 2 Reels, payout, RL-17
- 6 Sets, lineman's equipment
- 40 Miles wire, W-50 and W-44
- 5 Tents, radio

45-Mile Belt:

- 1 officer, 26 enlisted men
- 2 Trucks, Class B
- 2 Trucks, $\frac{3}{4}$ -ton, G.M.C.
- 1 Truck, tank, gasoline, 300 gal.
- 15 Telephones, EE4 and EE5
- 60 Batteries, spare, BA-9 and BA-1
- 1 Message center, with complete
equipment
- 6 Sets, lineman's equipment
- 25 Miles wire, W-50 and W-44

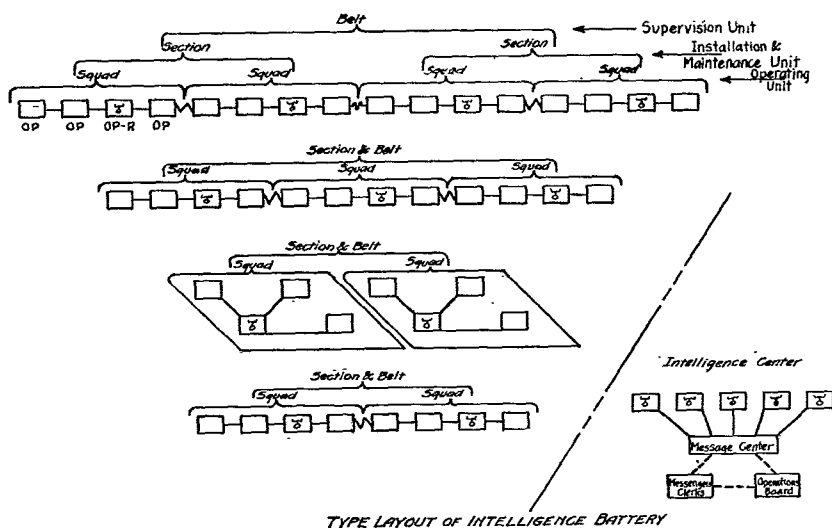
The transportation, with drivers, was furnished by the 62nd C. A., the materiel, with the exception of the telephones and radio sets on the one hundred-mile belt, was received from the Army Supply Base, Brooklyn, N. Y. The radio sets on the one hundred-mile belt were obtained as follows:

3 SCR 136	_____	62nd C. A.
1 SCR 132	_____	69th C. A.
1 SCR 132	_____	1st Signal Company

At the beginning of the exercise it became apparent, due to the delay time on messages, that the organization of the five sets and the net control

station of the one hundred-mile belt was not satisfactory and it was necessary to establish another net control station and thereby two nets. Consequently the SCR 136 sets were organized into one net with an SCR 132 at Defense Headquarters as the net control station and the two SCR 132 sets were organized into another net with an added SCR 132 at Defense Headquarters as the net control station. The 109-A net (seventy-mile belt) had only four stations in it and functioned satisfactorily.

Static and commercial broadcasts interfered to a great extent as is shown in the "log of difficulties in communication."



The time elapsed between that of observation at an observing station and receipt of the message at the intelligence center is given below:

45-mile belt (all telephone)	1.1 minutes
70-mile belt (radio and telephone).....	8.0 minutes
100-mile belt (radio and telephone).....	10.0 minutes

The delay on the seventy and one hundred-mile belts was due to interference, weak signals, and congestion. It is evident that a complete telephone net such as was used on the forty-five-mile belt is highly desirable.

The following table gives the number of messages from each observing station for each phase, with the totals, and is an indication of the amount of aerial activity in the vicinity of the various stations. Stations 74 and 75 which sent out the greater number of messages, were just south of Bolling Field and therefore were in a position to see most of the Red planes leaving and returning to the field and their activity above it. Having Bolling Field, the Red base, within the area covered by the exercises was

a mistake and such a condition should be avoided in future maneuvers of this sort. Station 114 was the eastern station on the one hundred-mile belt in a locality where very few flights were made.

Station		Phases																Totals
No.	1	2	3	4	5	6	7	8	10	11	13	14	15	16				
40	1	5	1	1	1	.....	3	1	.....	4	4	4	1	.....	26			
41	6	4	1	1	3	.....	2	3	.....	5	6	6	1	.....	38			
42	3	5	3	2	4	2	3	2	2	4	7	8	2	2	49			
43	3	5	6	1	2	3	1	2	2	6	7	14	1	3	56			
44	1	1	2	1	2	2	1	1	1	2	5	3	4	.....	26			
45	4	3	2	1	1	1	2	4	1	4	2	1	2	2	30			
70	.....	.....	2	.....	.....	.....	2	1	1	.....	.....	4	.....	1	11			
71	2	.....	2	1	.....	.....	.....	1	1	1	1	8	1	1	19			
72	2	2	2	3	3	.....	.....	2	.....	1	2	7	1	1	26			
73	1	5	.....	5	4	2	.....	.....	1	2	6	14	4	3	47			
74	9	7	6	7	5	9	4	5	6	2	22	13	8	6	109			
75	10	7	3	4	7	11	4	5	4	10	29	33	7	10	144			
76	7	4	1	2	.....	.....	1	1	2	7	.....	5	2	9	41			
77	3	3	3	2	.....	.....	3	3	1	2	3	7	2	1	33			
78	3	1	3	6	1	.....	1	2	1	3	5	6	4	.....	36			
79	1	1	3	4	.....	.....	2	1	2	4	3	2	5	1	29			
100	1	1	.....	1	.....	.....	.....	.....	.....	.....	2	3	2	2	12			
101	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	2			
102	.....	.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	1	.....	4			
103	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	1	4	1	1	9			
104	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	1	.....	1	1	6			
105	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	3			
106	2	.....	.....	1	.....	2	.....	.....	.....	1	1	4	.....	.....	11			
107	3	.....	.....	.....	.....	2	3	2	.....	5	3	1	.....	.....	19			
108	2	.....	.....	2	.....	1	.....	1	.....	2	2	2	1	.....	13			
109	.....	.....	1	3	1	.....	.....	1	1	2	3	5	1	1	19			
110	.....	1	.....	.....	2	.....	.....	.....	.....	.....	.....	4	.....	.....	7			
111	1	2	1	0	2	.....	2	2	.....	.....	5	3	.....	.....	18			
112	.....	2	.....	.....	.....	.....	1	1	.....	.....	1	1	.....	.....	6			
113	2	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	4			
114	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
Totals	67	60	43	52	43	35	36	42	26	67	121	163	53	45	853			

Messages from amateur stations which participated in the exercises were as follows:

Fort Howard, Md.	73
W 3 S N	
Quantico, Va.	23
W 3 A W S	
St. Johns College, Md.	13
W 3 A H L	
Falls Church, Va.	27
W 3 A G	
Clarendon, Va.	2
W 3 A W	

ORGANIZATION

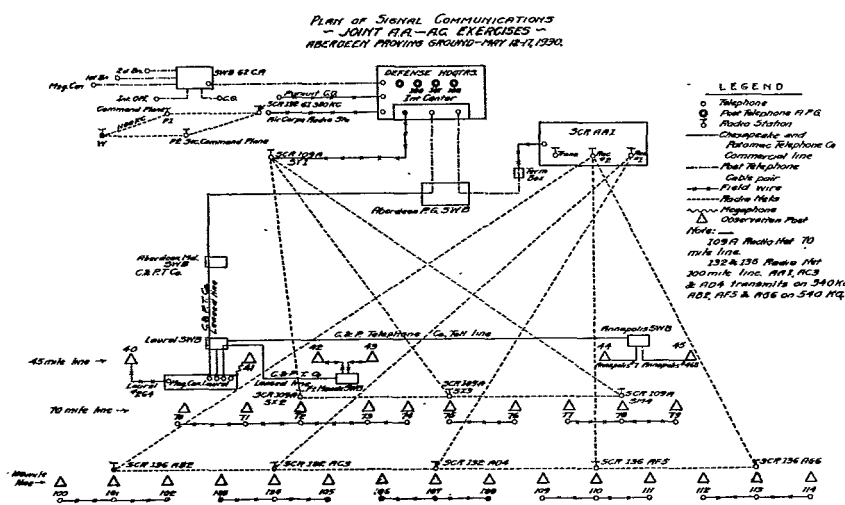
The Intelligence Battery was organized in such a way as to use the minimum number of men possible and still adequately fulfill the mission assigned. Having arrived at the necessary number of stations in each belt, two men, an observer and a telephone operator were placed at each observing station and at each combined radio-observing station, a radio operator was added. Aside from the wire laying details and truck drivers, there were, therefore, seventy-nine enlisted men in the field as observers, radio, and telephone operators. In addition, the Intelligence Center at Defense Headquarters was manned by sixteen men making a total in the field of ninety-five men. Adding truck drivers and wire laying details, the total for the battery was one hundred and eighty-two enlisted men and seven officers. It should be noted here, that the overhead such as first sergeant, mess sergeant, and the necessary personnel of the maintenance section was not included or used. Had this been done, the total would have been near two hundred and twenty. An officer was placed in command of each belt (called platoons) and the grades of the personnel constituting each platoon was so arranged that noncommissioned officers could be placed in charge of either two or three stations. In most cases it was found possible to have a noncommissioned officer at each station, particularly the remote ones. This method of distribution worked very well and it is believed to be desirable.

OPERATIONS

The Intelligence Center of the Battery was located at Defense Headquarters thus avoiding the use of extra telephone lines and switchboards. It is believed that such should always be the case in that there is, thereby, a great saving in time and personnel as well as materiel. The three radio receiving sets were located in the vicinity of Defense Headquarters and telephone lines run in to the center. Messages received by radio from the one hundred and seventy-mile belts were transmitted from the radio stations to the Intelligence Center where they were recorded in triplicate, one copy going immediately to the Operations Officer on the Defense Commander's Staff, one to the officer in charge of the Intelligence Center and the third remained in the message book as a permanent record. The forty-five-mile belt messages were received direct by telephone, the procedure otherwise being the same. The officer in charge of the Intelligence Center evaluated the information and pertinent intelligence was plotted on a vellum overlay of the defense area. In this manner it was possible to plot the position of enemy planes as they crossed the one hundred, seventy, and forty-five-mile belts and thus establish a track. By the use of a scale of airplane speeds in terms of time and distance, it was possible to predict the arrival of enemy planes at the airdrome while they were flying straight courses. In the later phases of the problem, when the enemy was allowed to fly irregular courses, the piecing together of intelligence data became

more and more difficult. However, a very fair degree of accuracy in this respect was maintained throughout the exercise, and in all cases of enemy flights it was possible to give the Defense Commander sufficient accurate information in time enough so that our own planes were able to take off and intercept the enemy well in advance of the defended airdrome.

At the conclusion of each attack the leader of each Red formation landed and submitted a map showing the courses actually flown. These courses were later plotted on the overlays for each phase. This furnished a ready means of comparing the intelligence officers' deductions with the actual events and in most cases were identical in point of time but somewhat awry as to courses.



The operations for the pursuit squadron were decided on after a sufficient number of messages had been received to indicate the probable force and intentions of the enemy. It became readily apparent during the course of the exercises that the Pursuit Commander or his Operations Officer should be present at the Defense Operations Office when not flying, in order to be familiar with the situation at all times. This saved many valuable minutes in the transmission of orders. The average time between the issuing of orders to the pursuit and their take off was about ten minutes. This time would have been materially increased to the detriment of the defense had it been necessary to explain in detail the enemy situation prior to each pursuit order.

The Air Operations during the exercises are covered in detail in the report of the Defense Commander and are here quoted in part:

“AIR OPERATIONS—The air organization was also of a provisional nature. Most of the pilots were working together for the first time and the commander had less than a week's experience with any of the personnel assigned to him. It was noted that on the average from two to three minutes was sufficient time for transmission of orders to the pilots, from two to three minutes for the entire formation of eighteen planes to leave the ground, and from two to four minutes to assemble the individual planes into a flight and squadron formation. In other words, with pursuit on the ‘alert,’ that is, with planes fully serviced and loaded for a mission, flying personnel (with all flying equipment) at the operations office ready to receive order, from ten to fifteen minutes is sufficient time for pursuit aviation to receive orders for a mission and be in the air ready for combat. It was assumed in the problem that pursuit should complete its attack on hostile aviation before the effective range of antiaircraft guns (in this case eight miles) was reached. The general plan of the pursuit was to cover a sector thirty miles wide with three formations of six planes each. It appears that this gives sufficient strength for patrol and interception work in the area covered. The question of relative fighting strength of aviation units was not considered as a part of this problem. Radio voice communication between the radio ground station at Defense Headquarters was successfully maintained on nearly all flights. Visual communication of simple messages between flights and planes in the flight was quite successfully maintained. No observation aviation was present in these exercises. To what extent observation missions over the sector, in radio communication with Defense Headquarters would have amplified the reports of the ground observation stations, it is impossible to say.

“For the purpose of identification a pursuit plane was detached from a flight attacking an enemy formation, to accompany that formation to the objective, as an indication to the antiaircraft and to local observers that friendly pursuit had intercepted that formation. While not all attacking

formations were intercepted in sufficient time to be effective and some of them failed entirely of interception, nevertheless it appears that for the most part the interception of friendly pursuit was quite effective.

“Radio telephone communications from the ground to the leader of the pursuit squadron in flight was quite satisfactory. Its efficiency improved with the progress of the exercises until at the end of the period the Pursuit Commander was able to maintain radio telephone communication uninterruptedly while driving his airplane at about two hundred and forty miles per hour for about ten thousand feet. It was found, however, that the work of receiving and recording messages, occasionally tuning the set, together with the normal work of flying the plane, watching for hostile formations, and maintaining contact with the pursuit formations in the air, was somewhat too much of a task for one man. It seems probable that the best results would be achieved if the Pursuit Commander were flying in a two-place pursuit plane with another pilot at the controls, leaving him free for the essential duties of command.

“The number of attacks by Red aviation and the results are shown by the following tabulation:

1ST PHASE		9TH PHASE	
3 Attack	2 Interceptions	No flights on account of weather	
2 Bombardment	2 Interceptions		
2ND PHASE		10TH PHASE	
3 Attack	No Interceptions	3 Attack	1 Interception
3 Bombardment	3 Interceptions	1 Bombardment	1 Interception
3RD PHASE		11TH PHASE	
2 Bombardment	2 Illuminations	2 Attack	No Interceptions
		5 Bombardment	4 Interceptions
4TH PHASE		12TH PHASE	
3 Attack	2 Interceptions	No flights on account of weather	
2 Bombardment	2 Interceptions		
5TH PHASE		13TH PHASE	
2 Attack	2 Interceptions	3 Attack	3 Interceptions
2 Bombardment	2 Interceptions	5 Bombardment	2 Interceptions
6TH PHASE		14TH PHASE	
3 Bombardment	3 Illuminations	2 Attack	1 Interception
		6 Bombardment	5 Interceptions
7TH PHASE		15TH PHASE	
3 Attack	2 Interceptions	3 Bombardment	2 Illuminations
2 Bombardment	2 Interceptions		
8TH PHASE (rain)		16TH PHASE	
1 Attack	No Interceptions	1 Attack	1 Interception
1 Bombardment	1 Interception	1 Bombardment	1 Interception

The limitations on enemy flights given in the plan made the identification of aircraft comparatively simple. Owing to the large amount of civilian flying in the area covered by the exercise, enemy flights were limited to formations of three planes. In the earlier phases straight courses were prescribed. Later on irregular courses were allowed and finally single flights and irregular courses. As the phases progressed, the problem became more and more difficult for the defense. However, the list of interceptions above also indicate that with the increasing difficulties, the elements of the defense became more proficient.

These limitations on enemy flights also precluded maneuvering during attacks. During daylight bombing missions, the bombers were usually accompanied by attack planes but at night there were flights of three bombers only and toward the end of the exercise, single bombers. On some of the bombing attacks, the planes flew very low employing woods and hills to mask their approach. This appears to violate the principles of bombing tactics but was employed quite regularly. All bombing missions at night were at high altitudes up to fifteen thousand feet.

Identification of aircraft at night did not present the difficulties that might be expected. The observation posts were able to detect quite accurately by sound and the intelligence reports from the belts were of great assistance to the searchlight batteries. There being no pursuit aviation at night, the burden of defense was on the anti-aircraft artillery. It was possible to give the artillery about a half hour's notice of approaching aircraft in such detail as to aid them considerably in promptly picking up the planes with the lights and in directing the listening devices. It is not believed that searchlights and listening devices in the belts of observation stations would have materially increased the efficiency of the system.

CONCLUSIONS

Based on the experience gained in these exercises, a table of organization for an Intelligence Battery was drawn up by Maj. R. H. Van Volkenburgh, C. A. C., and myself. It should be noted that this proposed battery is made up to cover a sector of forty-five to sixty degrees and that it would therefore take six of these organizations to provide a three hundred and sixty-degree defense. This number might be reduced depending on the terrain and the particular situation. The table was prepared to conform to certain set conditions which were prescribed by the Board. These conditions were as follows:

(a) The organization to be a peace organization, recognizing its inadequacy for *war* service.

(b) That the unit be such that it could be made an organic part of an Anti-aircraft Artillery Brigade.

(c) That the unit consist of not more than approximately two hundred men.

(d) That the sector which it is contemplated that the battery will be able to cover will be about sixty degrees.

(e) That three belts of observation will normally be required with the possibility of additional scattered posts in the area between the inner and middle zones.

(f) That the outer belt be normally one hundred miles from the line which encloses the defended area.

(g) That the center belt be from twenty to thirty miles within the outer belt and that the inner belt be between forty-five and fifty-five miles from the objective.

(h) That the unit be self sufficient, that is, that it be able to provide for supply and subsistence during training and bivouac periods and that it be able to provide and maintain its communication systems in the field.

All of these conditions were fulfilled except (c). It was found to be impossible to keep the total men at or below two hundred and still fulfill the other conditions. As it is, the absolute minimum was used. It is not believed the battery could function properly with fewer personnel. In time of war, the personnel of each observing station would have to be increased to about eight men in order to provide for the relief of observers. All men in an Intelligence Battery of this sort should have a thorough knowledge of all systems of communications. In addition, the noncommissioned officers should be given such training as would enable them to properly evaluate messages. By so doing, a proper evaluation of all messages at each station, prior to transmission, would tend to cut out useless and duplicated information thus speeding up the work of the Intelligence Center.

It is believed that using this proposed table and layout as a guide, a skeleton organization could be organized and trained, and by placing this unit in the vicinity of Air Corps fields for station a high degree of proficiency in this particular type of intelligence could be attained.

In the matter of position and number of belts, it is believed that a belt one hundred miles from the defended point is desirable and that this distance should not be increased. The next belt should be about eighty to eighty-five miles rather than seventy. The next belt should be about fifty miles out and between the latter two there should be staggered stations. With such an arrangement of observers, more accurate information and plots could be obtained.

The speed of modern combat planes is such that a belt closer than fifty miles to the defended point could not give advance intelligence early enough for our planes to use.

Under most circumstances, stations need not be closer together than

five miles; and in some cases of excellent visibility, this distance could be opened up to ten miles. It is suggested that the equipment of an Intelligence Battery include collapsible fifty-foot observation towers for use in terrain where good observation can not be obtained otherwise.

It is a question as to whether or not the use of one thousand five hundred men for a three hundred and sixty-degree intelligence would be justified in view of the fact that they must be classed as non-combatants. It is believed that, in this country, profitable use could be made of radio amateurs, boy and girl scouts, veterans unfit for active service, and a certain proportion of well-informed and trained civilians. Using a few trained and organized Intelligence Batteries as cadres, expansion of an intelligence system in time of war might be effected on the above lines. The Board in its conclusions makes the following statement on a three hundred and sixty-degree defense:

“The Board believes that the all-around (three hundred and sixty degrees) defense of a particular locality, independent of the defense of neighboring localities, will seldom be necessary. It is thought that a general intelligence system for giving warning of the approach of hostile aircraft will be necessary in the Theater of Operations and, under certain conditions, in portions of the Zone of the Interior. This general intelligence system should employ a comprehensive net work of commercial and military wire and radio communication for the rapid transmission of the reports of observers to the intelligence center and for the rapid transmission of the evaluated intelligence to the centers of antiaircraft defense. This general system should be supplemented by special intelligence systems for the defense of isolated or especially important localities. The proposed brigade intelligence battery would be of particular value in such special situations.”

It having been apparent during the exercise that difficulty with radio transmission, due to static and interference, could not be eliminated, telephone or telegraph communication over commercial circuits only should be used.

When radio is used, the number of receiving stations at the Intelligence Center should be in the ratio of one to not more than four in the field.

All communications within the defense area should be coordinated by one officer.

All stations in a belt should be connected with field lines and there should be no inter-communication between these stations by radio.

If radio is to be used, the Signal Corps should develop a light, portable, and efficient short wave unit for such use. The present sets lack sufficient power and are too bulky and complicated for even normal mobility.

In order to prevent designed interference by the enemy, a schedule of frequency changes should be devised.

Where time and terrain permit, all field telephone lines should be in the air on poles and not along the ground.

When radio is used, the net control stations of the Intelligence Center should be located three to five miles therefrom to prevent interference by local stations of the defended area.

Wire-laying trucks, designed as such, should be assigned to an Intelligence Battery. The present equipment (Liberties, Whites, and G.M.C.'s) are not adequate.

A simple sight, without magnification, should be devised so that an observer would be able to hold his head in a natural, unstrained position while observing. This is of great importance, since the period of time such an organization would be in the field in time of war, would be considerable.

On the whole, the problem presented by these exercises was primarily one of communication. The discovery and identification of hostile aircraft, the transmission of that information to the proper office and the use of that information after receipt is the whole story in a nutshell. Considering the provisional nature of the Intelligence Battery and Defense Headquarters, and the difficulties of installation and maintenance encountered, the efficiency of the observation was far greater than expected.

The lessons learned in this exercise are of sufficient importance to warrant the holding of further exercises of this nature.

PROPOSED ANTI-AIRCRAFT ARTILLERY BRANCH INTELLIGENCE BATTERY
104ST ARTILLERY CORPS

1	2	3	4	5	6	7	8	9	10	11
Units	Specialist Ratings (Janes)	Headquarters	Headquarters Section	Intelligence Center Section	S.P. Supervision Section	Section Headquarters	Squads	Total Squads	Total	Remarks
1. Command		1							1	
2. Intelligence				2	5				7	
3. Signal		1		2	5				8	
4. Total Personnel										
5. 1st Squadron			1						1	(1) Total provided for 3 Section Head.
6. Staff Sergeant				2					8	
7. Radio Sergeant				(1)		(3)			10	
8. Radio			(1)						11	
9. Motor Transport									11	
10. Sergeant			2		5		1	11	18	(2) Rounds normally to 111
11. 1st Squad			(1)						11	Radio & observation
12. Supply			(1)						11	stations including
13. Intelligence							(1)	(11)	121	and 2nd Squad radio
14. Corporal			1	2					3	stations as situation requires.
15. Communication				(1)(b)					11	(3) About one half mile
16. Platoon			(1)	(1)					12	be on or off.
17. 1st Squad			1	32	5	50	10	110	73	(4) Also telephone
18. 2nd Squad	5th		(2)	(6)	(5)	(30)	(1)	(11)	141	(5) Operators
19. 3rd Squad	5th		(1)	(1)					11	(6) For a liaison
20. 4th Squad	5th		(2)						12	
21. 5th Squad	5th		(2)						12	
22. 6th Squad	5th		(2)						12	
23. 7th Squad	5th		(3)	(1)(b)			(3)(24)	(94)	101	
24. 8th Squad	5th		(3)	(1)					16	
25. 9th Squad	5th		(3)	(6)			(1)	(11)	(25)	
26. 10th Squad	5th		(3)	(6)					16	
27. Radio	5th			(6)					110	
28. 11th Squad	5th		(2)	(6)					121	
29. Total			21	36	10	95	11	121	245	
30. Aggregate		1	21	36	15	95	11	121	261	
31. Overhead Intelligence						6			6	
32. Motorized side line				1					6	
33. Truck, Radio				5			1	11	16	
34. Truck, Radio			2			10			12	
35. Truck, Radio				1					6	
36. 1st Squad			1		5				6	
37. 2nd Squad			1						4	
38. 3rd Squad			1						1	
39. 4th Squad			1						1	
40. 5th Squad				10		10			20	
41. 6th Squad				12			8	18	30	
42. 7th Squad				8			1	11	16	
43. 8th Squad				5			5	55	55	
44. 9th Squad				5			5	55	55	
45. 10th Squad				15			5	55	70	
46. 11th Squad				5		2.5			3.00	
47. 12th Squad				10		10	3	33	43	
48. 13th Squad				1		10			10	
49. 14th Squad			21	36	15	95	11	121	243	

Driving Home the Bombardment Attack

By 1ST LIEUT. K. N. WALKER, A. C.

GENERAL

WHEN a bombardment unit clears its airdromes with a mission of destroying a vital objective deep within a hostile territory, it will be opposed vigorously by the enemy's defense forces; the hostile pursuit aviation and antiaircraft artillery. The unit will be confronted with a task no more difficult than that which confronts the infantry when it jumps off on a well-planned and coordinated attack. As the infantry receives the support of other ground arms, so does the bombardment unit receive the support, either special or general, from the other classes of aviation—observation, attack and pursuit, necessary to drive home the bombardment attack. In examining the tactics which a bombardment unit will employ to insure its arrival over and the attack of the objective, it will be found that this class of aviation operates at high altitudes and low; by day and by night; in formation and by series of single airplanes.

A brief review of bombardment organization and equipment may assist somewhat in the understanding of the present accepted bombardment tactics. Bombardment aviation is organized into squadrons, groups and wings. Two or more combat squadrons with a service squadron and other auxiliary units compose a group; two or more groups with necessary auxiliary units compose a wing. Each squadron is equipped with thirteen airplanes, of which a maximum of ten are expected to be always in commission. The group, with four combat squadrons, for example, is expected to put a maximum of forty airplanes in the air.

The number of squadrons which will operate against a particular target will depend upon the type of objective and the hostile opposition expected. It is impossible to determine, in the abstract, the strength which must be employed against any particular type of target. It will, to use the overworked phrase, "depend upon the situation." However, bombardment tactics are developed with a view to the proper employment of whatever number of airplanes must be used to accomplish a mission, rather than being based upon specific types of objectives which bombardment aviation will attack. The tactics developed are adapted primarily to the squadron and group organization. When more than one group is employed against a particular objective, the wing tactics consist of one group guiding upon the other, maintaining such intervals as are necessary for coordinated action and mutual support.

Bombardment aviation employs two types of airplanes; the heavy bombardment airplane capable of carrying a two thousand four hundred-pound bomb load; the light bombardment airplane capable of a one thousand two hundred-pound bomb load. Ordinarily the units equipped with

the heavy bombers will operate at night. Those equipped with the light bombers will operate in daytime. Each, however, are suitable for and may operate both day and night. While at the present time the heavy bombardment airplanes only are in service use, light bombardment airplanes are under construction. The heavy bomber must be capable of high speed of at least one hundred and twenty-five miles per hour and must have a radius of at least three hundred miles; the light bomber a high speed of one hundred and sixty miles per hour and a radius of action of two hundred miles. Each bomber is twin-engined—one engine placed outboard on either side of the fuselage. In the nose of the fuselage extending forward of the leading edge of the wings, are placed the pilot, the bomber and the front gunner. In the rear portion of the fuselage are located the rear gunners. An alternate arrangement of rear gunners is to place them in the engine nacelles. By such an arrangement, excellent vision for the pilot and the bomber are afforded. Flexibly mounted machine guns cover all areas open to the approach of hostile attacking aircraft. The airplane is equipped with radio telephone with which communication between airplanes may be maintained and formations controlled in flight. With the rapid advance of aeronautical development the above conception of the proper types of bombardment airplanes will be changed from time to time, when increased performance will make possible greater loads and cruising range.

For purposes of discussion, bombardment tactics will be reviewed under the following headings:

Day operations at high altitudes.

Day operations at low altitudes.

Night operations.

Special support by other classes of aviation.

DAY OPERATIONS AT HIGH ALTITUDES

In conducting day operations at high altitudes—meaning altitudes above ten thousand feet—a bombardment unit will normally perform a mission with its airplanes in formation. The formation lends itself to the delivery of a mass attack; to defensive machine gun fire superior to that which may be brought against it and affords a measure of security against antiaircraft fire. That a mass attack is delivered from a formation is, of course, obvious. It is necessary, however, to investigate the types of formations adopted to understand their defensive powers when opposed to hostile pursuit and antiaircraft artillery.

Although it is not desired to consider in detail all points concerning the bombardment formation, it is believed that the discussion which follows will indicate sufficiently the features upon which the foregoing statements are predicated. First, the formation must be simple, compact and capable of ready control by the formation leader. It must be capable of

maneuver and so flexible that distances and intervals between individual airplanes may be readily opened and closed. Its arrangement must be such that all angles of approach by hostile aviation are well covered by defensive machine gun fire. In this connection, emphasis is placed upon a formation arrangement whereby the maximum fire may be concentrated against that angle most favorable to attack by single seater pursuit. The formation must be so flown that a simultaneous attack by a superior number of hostile pursuit is difficult.

To meet these requirements, the normal formation consists of a number of three or five airplane elements. Within elements the airplanes are echeloned rearward from the leading airplane to the right and left and slightly upward in altitude, forming a V. Each element flies to the rear of the preceding element. The elements are echeloned *downward* from front to rear. With such arrangement all areas enclosing the formation are well covered by machine gun fire. By the "staggered down" feature embodied in echeloning elements downward from front to rear, all rear gunners are provided with unblanketed fire to the upper rear hemisphere, which is the angle of approach most favorable to the attack of hostile single seater pursuit. To appreciate the fact that approach from the upper rear hemisphere is most favorable to hostile pursuit consider the difficulties of the frontal or flank attack, or the attack from the lower rear hemisphere of a formation. In the frontal attack, the speed of approach of the pursuit is the sum of the speeds of the pursuit airplanes and the bombardment formation. This great speed limits the time in which the attacking pursuit is in position to deliver accurate aimed fire to but a few seconds. In the flank attack the target is moving at right angles to the line of fire of the pursuit—aimed fire is again difficult. In the attack from the lower rear hemisphere, the pursuit airplane pulls up from a dive beneath the formation. The speed of the pursuit airplanes is materially reduced in the upward climb and the airplane "hangs" beneath the formation within range of the bombardment machine guns a longer period of time than is available for the pursuit airplanes to deliver aimed fire. In an attack from the upper rear hemisphere, the speed of approach is the difference between the speed of the formation and the attacking airplane; the front guns of the latter may be aimed from the beginning of the dive to completing the attack; the speed built up in the dive insures rapid withdrawal upon completion of the attack; the formation is moving generally in line of fire of the attacking pursuit airplane. Pursuit will attack from all angles, however, and as above noted, all angles of approach are well covered by machine gun fire, but with the maximum gun fire available to the upper rear hemisphere.

As the upper rear hemisphere is most favorable to pursuit attack, the formation is as narrow laterally as is consistent with concentration of

defensive machine gun fire, to make difficult the simultaneous attack by large numbers of pursuit airplanes from this angle. Thus, a bombardment group formation of four squadrons can be easily flown within an area five hundred feet wide and one thousand feet long. It will be most difficult for equal or superior number of pursuit airplanes to launch a coordinated, concentrated attack against a group formation of this character. Even though forty pursuit airplanes could deliver a simultaneous attack against such a formation, it would be bringing but eighty machine guns into action, against either one hundred and sixty or two hundred and forty guns mounted on forty bombardment airplanes. As the rate of fire of the flexibly mounted machine gun is nearly twice that of the machine gun mounted to fire through the propeller, it is apparent that the bombardment formation should have the best of the argument, by sheer force of fire power.

Pursuit will attack by long range fire, as well as by close range fire. A group formation as compact as that above discussed is undesirable, in that machine gun fire, delivered in the plane of the formation, may miss the airplane at which aimed, but hit another airplane. When such fire is anticipated the bombardment formation may increase interval and distance between airplanes to from one to two hundred feet in from about one to three seconds. A hostile pursuit force may attack with a number of airplanes flying to the rear of the formation and delivering long range fire, while other airplanes deliver close range fire, approaching the formation from several angles. The open formation will be used against such an attack. Accuracy in fire will be an important factor in the relative number of pursuit and bombardment airplanes hit. The fact remains that the bombardment formation is still delivering a superior volume of fire against the attackers.

Pursuit may employ a time-fuzed fragmentation bomb which may be dropped on a bombardment formation from above. Two-seater pursuit is being developed. A hostile force equipped with airplanes of this type, may form on the flanks and in front of a bombardment formation, and concentrate against it the fire of the flexibly mounted rear guns. While the bombardment formation is the recipient of either or both of the above types of attack, other pursuit may attack the formation from the rear with their fixed guns. For the defense against this type of attack, support by friendly pursuit may be required.

A formation designed for defense against hostile aircraft is not entirely suitable for the avoidance of antiaircraft gun fire. A compact defensive formation is less maneuverable and it provides a larger target against which all antiaircraft batteries within range may be concentrated. That formation most suitable for operations over areas defended by antiaircraft artillery, consists of one in which the airplanes are flown with considerable intervals and distances, i. e., where the airplanes are dispersed rather than

concentrated. One type of dispersed group formation, known as the "dispersed column" is cited to illustrate. In this formation each squadron will have ten airplanes, the normal number. The airplanes are flown in two elements of five airplanes each, one behind the other. When opening up to a dispersed column, the leading squadron maintains the lower altitude. The second and third squadrons take positions on the flanks and above to the rear of the leading squadron, each maintaining a distance of approximately one thousand five hundred feet from the leading squadron. The fourth squadron flies to the rear of the leading squadron at a distance of approximately three thousand feet and about two thousand feet above the leading squadron. Within squadrons, the second elements are echeloned upward in altitude to the rear of the first or leading element. The individual airplanes are flown from four hundred to six hundred feet apart in their respective elements. Within such a formation, the airplanes are constantly changing speed, altitude and direction in maintaining the assigned distances. When antiaircraft fire is anticipated or experienced, each airplane, guiding upon the one in front of it within its respective element, engages in decided maneuvers. Endeavor is made to change altitude, speed or direction, or a combination of these, within the time of flight of the antiaircraft shell to the altitude at which the airplanes are flying. With these distances between airplanes, one antiaircraft shell can injure but one airplane. Should all batteries within range concentrate on one squadron, the other squadrons are not in danger. If the batteries do not concentrate their fire, the probability of hits is reduced. When attacking a compact defensive formation, all batteries may concentrate their fire against *the formation*, with the probability that slight errors in fire, directed against a particular airplane will hit another airplane in the formation, and that a shell which hits or detonates near one airplane may seriously damage another airplane.

In a group formation such as described above, forty individual and separate targets are presented to the antiaircraft artillery. By plotting an antiaircraft gun defense, the area in which effective fire may be delivered is of course determined. The time during which the formation will be within range of the batteries may be calculated. A formation flying at a speed of from two to three miles a minute will be within effective antiaircraft range but for a short space of time. These tactics present a problem to the defending antiaircraft artillery far greater than that presented when the bombardment formation approaches an objective in a compact formation.

In bombing from such a formation, each airplane is held to a straight course for those seconds (not to exceed twenty) required to perform the timing operation and release the bombs. Upon release of bombs the airplanes again assume a maneuvering course until the defended area is passed through.

When a bombardment unit takes off to perform a mission, it will normally open to a dispersed formation. The compact defensive formation is required only for defense against hostile aircraft. The bombardment pilots are subjected to less strain in flying the dispersed formation than in the defensive formation. The route selected for the mission will avoid, as nearly as possible, the known or suspected areas in which hostile pursuit is certain to be operating, and where antiaircraft artillery is sure to be emplaced. A route around open flanks will be preferred to a route which requires the formation to cross the combat zone of the enemy, wherein hostile pursuit is certain to be operating, and where antiaircraft artillery is sure to be emplaced. If, however, there is no alternative, the formation will proceed to the objective through the hostile combat zone. As it is possible that the hostile pursuit will attempt to intercept the bombardment formation as it crosses the hostile front lines, the air force commander will arrange that, at the time and place where the bombardment unit crosses the lines, friendly pursuit will be present in force. By such action, the bombardment formation may be enabled to maintain the dispersed formation while flying over the combat zone. Should hostile pursuit be present, the friendly pursuit should be able to effectively prevent the former from attacking the bombardment formation. A combat zone of twenty to thirty miles in depth may be crossed in from ten to fifteen minutes. Unless the enemy pursuit succeeds in engaging the bombardment formation without being prevented by the friendly pursuit the bombardment should be able to traverse the combat zone in dispersed formation and thus limit the effect of antiaircraft opposition. If, however, the hostile pursuit is present in force and is not prevented from attacking the bombardment formation, the latter will assume a defensive formation. It is unlikely that hostile antiaircraft will fire when its own pursuit is present and engaged in attacking the bombardment formation. A coordinated attack by pursuit and antiaircraft would be difficult of accomplishment without considerable danger to the pursuit. The antiaircraft doctrine, which in effect is that when friendly pursuit is present in force, the antiaircraft artillery withholds its fire, is logical and will doubtless be applied.

Upon passing through the combat zone, the bombardment route will avoid the antiaircraft batteries grouped around vital points in the system of rail communications, important supply establishments, etc. Should hostile pursuit be absent or prevented by friendly pursuit from attacking the bombardment formation when the bombardment formation crosses the hostile front, it is expected that hostile pursuit units in the air and on the alert at airdromes will be notified of the presence of the bombardment formation. These pursuit units will endeavor to intercept the bombardment formation as quickly as possible. The time required for interception will be that necessary for transmission of information to the pursuit units; the time required to issue orders, clear the airdrome and climb to the alti-

tude at which the bombardment formation is flying, if the pursuit unit be on the ground; the difference in speeds between the bombardment formation and friendly pursuit; and the accuracy with which the hostile pursuit units carry out the interception. Should interception by hostile pursuit be effected before the objective is reached, the bombardment unit will assume a defensive formation and engage in a running fight until the objective is reached. If the hostile pursuit force fails in preventing the bombardment formation from reaching its objective, but continues attacking the latter when it arrives within range of the antiaircraft artillery, the bombardment unit will assume a dispersed formation, release its bombs therefrom, and be prepared to close up to a defensive formation upon clearing the range of the antiaircraft batteries. The time required for a bombardment formation to open or close, to assume one formation or another, is measured in seconds, rather than minutes. It may appear wise in theory for the antiaircraft to refrain from firing when a dispersed formation is assumed, on the proposition that pursuit will then dive in to engage the bombardment airplanes, or for pursuit to refrain from attacking a defensive formation on the assumption that antiaircraft artillery will then open fire. However, it is submitted that the extreme nicety of coordination of such tactics will cause delays which, measured in time, will be such to allow the bombardment formation to proceed a great deal of the time without being subjected either to the fire of pursuit or antiaircraft. If the action of pursuit and antiaircraft can be so coordinated and perfected that antiaircraft can fire during the intervals between successive pursuit attacks, without danger to the attacking pursuit, it may be then habitual for friendly pursuit to support a bombardment formation. Friendly pursuit should be able to break up any coordinated attack by the hostile pursuit, thus permitting the bombardment unit to maintain an open or dispersed formation without sacrifice of the scheme of defensive machine gun fire.

DAY OPERATIONS AT LOW ALTITUDES

Considerable thought, in both this and in foreign countries, is being devoted to the employment of low altitude tactics for bombardment aviation. The tactics will closely parallel those now adopted by attack aviation. Altitudes flown will vary between the tree tops and five hundred feet. When flying over areas definitely known to be unoccupied by troops of any kind, this altitude may be increased to aid navigation.

The employment of low altitude tactics is not intended to limit, in any way, the function of bombardment aviation. Its normal objectives will continue to be those material objectives outside the radius of action or beyond the power of destruction of attack aviation, and outside the range of artillery. Low altitude tactics is but another method by which bombardment units will carry out their missions.

Missions will be conducted at low altitudes when the weather conditions are such that a limited ceiling obtains. Low altitude operations will also be alternated with high altitude operations to bring about that uncertainty which will prevail when the enemy is doubtful as to the manner in which the bombardment attacks will be conducted.

While a formation similar to the defensive formation outlined for high altitude operations can be flown at extremely low altitudes, it is believed that for low altitude operations, the bombardment formation most suitable is one similar to that flown by attack aviation. In this formation, each squadron employs nine airplanes divided into three, three airplane elements. The second and third elements are echeloned to the rear and to the right and left of the leading element and at the same altitude. Thus, each squadron will form a V of three airplane elements. When two or more squadrons are employed on a mission, the squadrons follow the leading squadron in column, at distances of approximately one thousand feet between squadrons.

When conducting a mission, the route selected will avoid particularly areas occupied by hostile ground troops, to evade rifle, machine gun and .37-mm. gun fire. Upon approaching the objective, if it be a precision target, the elements will close upon the leading element in each squadron. The squadrons will either close up to distances of two hundred feet between squadrons, or will increase their distances to approximately two thousand feet. The first method may be employed when the bombs are equipped with delay fuzes of from ten to fifteen seconds. The latter method may be employed when the bombs are equipped with five second delay fuzes. By the first method detonation will occur when the entire formation is beyond the danger radius of the bombs. By the second method, the bombs dropped by one squadron will detonate after it has passed beyond the danger radius of the bombs and before the following squadron is within that danger radius.

If the formation is intercepted by hostile pursuit, the elements within squadrons close upon the leader, maintaining their original echelonment, or taking position in column behind the leader. The squadrons close to at least five hundred feet between each other.

In peacetime maneuvers, considerable difficulty has been experienced by hostile pursuit in intercepting low flying formation, even with the wings of military airplanes painted a bright yellow. When the wings and fuselage are well camouflaged, it is believed that it will be practically impossible for pursuit pilots at high altitudes to see a formation flying just above the tree tops. A great deal of assistance will be required from ground agencies to aid hostile pursuit in effecting interception.

It may become necessary for pursuit to maintain units both at extremely high altitudes and at altitudes of around five thousand feet, to defend against bombardment units which may employ either type of

tactics. Obviously an additional burden is then placed upon the defending pursuit. The engines of pursuit airplanes, supercharged for good performance at high altitudes, do not give equal performance at low altitudes. It may be necessary to equip part of a defending pursuit force with engines designed to give the best perception, the bombardment unit will close up to a defensive formation. The hostile single-seater pursuit will be restricted in its maneuvers. If two-seater pursuit intercepts and surrounds a bombardment formation, and if the methods of bombing the formation and attacking from rear, as described previously, are used, the situation will be similar to that which confronts the formation flying at high altitudes. If interception of this type of hostile aircraft proves to be the rule rather than the exception, supporting friendly pursuit may be necessary.

Although increased accuracy than that now secured is expected from antiaircraft guns firing at low angles of elevation, it is believed that the problem of effectively ranging upon a low altitude formation will be always greater than against a formation at high altitudes. The greatest menace to the unit employing low altitude tactics will be that of hostile rifle, machine gun and .37-mm. gun fire. A great deal of this fire may be avoided in selection of the route which the formation will follow to the objective. At the bombardment objective, it is expected that in addition to antiaircraft gun defense, a system of machine gun defense, and even rifle defense may be established. Obviously, if bombardment aviation employs both high and low altitude tactics, an additional burden is placed upon the antiaircraft which defends a bombardment objective, requiring both guns and machine guns. Greater surprise is ordinarily obtained in the low altitude attack than in the high altitude attack. The defending forces must be ever on the alert to meet an attack from either high or low altitudes.

NIGHT OPERATIONS

Night attacks against a bombardment objective will be conducted by individual airplanes, rather than by large formations. This does not mean that but one airplane will attack an objective at one time, followed by another at a considerable interval. On the contrary, three or more individual airplanes will attack simultaneously, from different directions and at different altitudes. Predicated upon the assumption that the single airplane will be illuminated prior to its arrival over that point where its bombs will be released, it is believed proper to employ tactics which will lessen the chances of such illumination. Whether or not the illuminated airplane is hit by a shell fragment, the bright light in the bomber's cockpit will affect adversely precision bombing. Colored filters for the cockpit and colored goggles for the bomber will eliminate the glare somewhat, but the

illuminated airplane will have less chance of performing accurate bombing than one not illuminated.

A night operation which might be performed by a group is outlined to illustrate briefly the method used in a night attack. In conducting the group mission, each squadron is ordered to make three attacks at five-minute intervals. Each attack is to be made by three airplanes. The time of the delivery of the first attack of each squadron will be prescribed. Three routes will be prescribed by the group commander between the airdromes and the objective. The latter commander will also specify the directions of approach to the objective and the altitudes from which the airplanes, following each route, will approach. Upon release of bombs each airplane will make a one hundred and eighty-degree turn, diving to a lower prescribed altitude and leave the objective by the same route which was followed to the objective. With the exception of those airplanes making the first and last attacks on each of the three routes, one airplane will be approaching the objective at one altitude, while another airplane will be leaving the objective at a lower altitude. The two airplanes should cross at a point where the antiaircraft is endeavoring to locate and illuminate the incoming plane.

By such tactics a more difficult problem is presented to the defending antiaircraft artillery, than if the bombardment airplanes approached the target, one at a time. If all gun and searchlight batteries concentrate on one bombardment airplane, the others approach the objective unmolested. If an attempt is made to illuminate and fire at each airplane, dispersion results.

In the example given above, thirty-six airplanes deliver an attack within a period of fifty-five minutes. The droning of the engines of the airplanes approaching and leaving the objective at different altitudes should create a confusion of sound which should affect adversely the efficiency of the listening devices. With the muffling of engines and use of geared propellers, the drone of the incoming bombardment will be materially reduced.

This method of conducting a night attack is particularly important when hostile pursuit airplanes are cooperating with the searchlights. Once illuminated by several searchlights, it is most difficult, if not impossible, for a bombardment airplane to get out of the glare. Pursuit airplanes may approach the illuminated bombardment airplane with complete surprise. The defending machine gunners will not, ordinarily, see the attacking pursuit until the staccato sound of its machine guns are heard. If it attacks by long range fire, it may not even be seen. The approach is so rapid and direction so uncertain that the bombardment gunners will have extreme difficulty in meeting a pursuit attack. Thus, when night pursuit is operating all measures herein discussed and those to be treated under "special support by other classes of aviation," will be of utmost importance.

SPECIAL SUPPORT BY OTHER CLASSES OF AVIATION

All bombardment operations receive special or general support by other classes of aviation. General support by observation, pursuit and attack aviation is considered to be as follows:

Observation: Reconnaissance missions performed particularly for the higher command, but which gains information of value to bombardment units in depicting particular bombardment targets.

Pursuit: Operations conducted over areas in which bombardment units, in addition to units of other classes of aviation, may operate.

Attack: Operations conducted against objectives which are not particularly bombardment targets but which will contribute to the mission of bombardment units. Such missions carried out simultaneously as to time with bombardment missions will cause diversion of the hostile pursuit. That is, the hostile pursuit has two or more formations to intercept and attack rather than one, thus lessening the chances that either will be intercepted. When the attack missions are conducted against hostile aircraft on the ground which might be employed against the bombardment units, general support is also performed.

The special support of bombardment aviation consists of those missions performed by the other classes of aviation to enhance primarily the success of the bombardment mission. Thus, observation units will be charged with securing photographs of specific bombardment objectives. Such photographs are of the utmost value to the bombardment commander, in planning the method by which the objective will be attacked; the direction of approach to the target; the division of the objective into particular targets for each subordinate bombardment unit. Upon completion of an attack, observation units will often be charged with reconnoitering the objective, securing photographs thereof and reporting the results of the bombardment attack. As study of the objective, prior to a bombardment attack, is of the utmost importance to the success of the mission, special support will be performed ordinarily by observation aviation in securing information and photographs of each bombardment objective.

In day operations the strength of the hostile pursuit in the area wherein the bombardment objective lies may be such as to make desirable the support of a bombardment formation by friendly pursuit. Friendly pursuit, in providing such support will rendezvous with the bombardment formation before it enters hostile territory and accompany it to and from the objective. When an objective lies beyond the radius of action of the friendly pursuit, the latter will accompany the bombardment formation as far as possible into hostile territory and then return to the front lines or to the pursuit airdromes. The pursuit unit which returns to its airdrome will reservice, clear its airdromes, and will meet the returning bombardment formation within the hostile lines at a predetermined point and accompany

it to friendly territory, or to its airdromes. The primary mission of the supporting pursuit will be to engage hostile pursuit which attempts to attack the bombardment formation. The friendly pursuit remains always within supporting distance of the bombardment formation and by its action or presence prevents a coordinated attack against the formation. It is not expected that the supporting pursuit will be able to prevent hostile pursuit from making some attacks against the bombardment formation. However, it should be able to prohibit a coordinated attack. Against an uncoordinated attack a bombardment formation is particularly capable of taking care of itself.

Pursuit support is not required at night. Attacks by hostile pursuit against bombardment airplanes in flight are practically impossible unless the bombardment airplanes are illuminated by searchlights. Friendly pursuit cannot attack the hostile pursuit unless the latter is illuminated, which is unlikely.

Attack aviation will support a bombardment mission by neutralizing so far as is possible the antiaircraft artillery defending the bombardment objective. Fragmentation bombs may be employed against known antiaircraft gun emplacements. Smoke may be used against areas in which the antiaircraft batteries are likely to be. In supporting a low altitude operation by bombardment, attack can be used to clear the way of any balloon barrages established around the objective. The attack unit may lay a smoke screen over which the bombardment unit will fly, thus affording the latter a measure of protection from hostile machine gun and rifle fire. The support which attack aviation may provide for bombardment is of great assistance to bombardment in many night operations. In supporting a night bombardment mission, the attack airplanes will operate in the area surrounding the objective, throughout the period in which the bombardment attack is conducted. The attack airplanes will attempt to put out of action by use of either or both fragmentation bombs and machine guns, all searchlights which attempt to illuminate the incoming bombardment airplanes. The noise created by the low flying attack airplanes will contribute to the confusion of sound which should affect adversely the efficacy of the listening horns. By the use of parachute flares, the attack airplanes arriving shortly before the bombardment airplanes, may illuminate the target. By such support, attack aviation may make an important contribution to the success of the bombardment attack.

CONCLUSION

An attempt has been made to outline, in a most general way, those methods by which a bombardment attack may be driven home. There are many alternative methods which are believed practicable but which follow to an extent those above discussed. How efficacious the tactics may prove to be can only be discovered in war. It is believed, however, that proper

application of these tactics will lead to successful bombardment operations.

By no means may it be assumed that bombardment units, applying these or any other tactics, can avoid casualties. A certain loss in men and material is a price which must be paid for success. This is true for any military force. The results obtained will be determining factor as to whether or not the price paid is too high.

It must be remembered by those responsible for the defense against bombardment operations, that a bombardment unit will not be stopped by the presence of a strong defense or a mere show of force. It is generally conceded, by those who are competent to judge, that an air attack well launched is most difficult to stop. The bursting of antiaircraft shells or the presence of a hostile pursuit force will not prevent a determined bombardment commander from accomplishing his mission. To stop a bombardment attack, the bombardment airplanes must be shot out of the sky.

In the final analysis, the most efficacious method of stopping a bombardment attack is to destroy the bombardment airplanes before they take the air. As a bombardment unit will be upon its airdrome *at least* sixteen out of every twenty-four hours, the *best defense* would appear to be *an offensive* against the bombardment airdrome.

Smith "Brother" No. 2

By CAPT. J. H. HARRINGTON, 59th Coast Artillery

ON FEBRUARY 14, 1930, Smith No. 2, one of the famous Corregidor "Smith Brothers," fired record target practice. Battery A, 59th Coast Artillery, which the writer commanded, is assigned to this battery which consists of one 12-in. gun, Model 1895MI, on a barbette carriage, Model 1917.

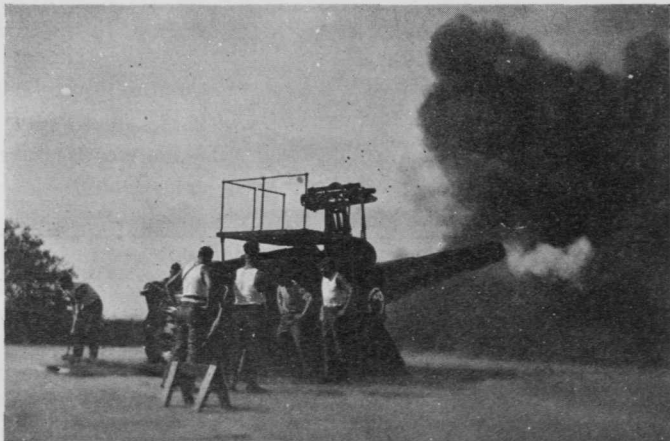


FIGURE 1

Intensive training for some time prior to the practice brought the battery to a high state of proficiency. Both the range and gun section were capable and confident. 1st Lieut. John O. Kelly, 59th Coast Artillery, was Range Officer and 2nd Lieut. Daniel M. Wilson, 59th Coast Artillery, Emplacement Officer.

The authorized allowance of ammunition for the practice was sixteen rounds, four for fire adjustment and twelve for record. The nine hundred-pound cast iron shell with broad band was used with powder Lot D. P. 420-17.

The projectiles were very close to prescribed weight, the greatest variation being three pounds less than proper weight. The powder was blended on February 10, 1930, and at the time of firing had a temperature of 79° F. The weight of the powder charge was two hundred and eighty-two pounds. All charges were carefully prepared after blending. Powder bags were filled, weighed and rolled, after which all charges were gauged. Charges were then replaced in the containers and stored in the same magazine they had been stored in for two weeks previous to the blending.

Primers, both electric and friction, were drawn from the Ordnance Department. They were tested for fit, and a few of each fired. All prim-

ers functioned satisfactorily, the electric primers being used throughout the practice. The wind velocity during the trial series was twenty-four miles per hour with wind azimuth 4500 mils, almost a perfect following wind. This did not change during the record series. As there was but little tide change ($-.2$ ft.) no correction for that was made. Meteorological data taken at 8:30 a. m., February 14, 1930, were used during trial and record series.

A trial shot point was selected at azimuth 79.00, range seventeen thousand two hundred yards and the trial shot method of fire adjustment used. The first trial shot was fired at 9:14 a. m. This shot landed two hundred and ten yards "short" and forty yards "right" of the trial shot point. At 9:14:45 a. m. the second trial shot was fired, this one landing one hundred yards "over" and thirty-four yards "right." The third trial shot, fired at 9:15:27 a. m. landed two hundred and ten yards "over" and thirty-seven yards "right." The fourth trial shot landed ninety yards "short" and forty-three yards "right." No range correction was applied as a result of the four trial shots. A deflection correction, calculated to throw the shots forty yards to the left, was applied on the deflection board.

The assumed probable error in range for trial shots was eighty yards. The developed probable armament error in range for trial shots was one hundred and twenty-nine yards. The normal muzzle velocity for this projectile (nine hundred pounds) is 2325 f. s., that assumed was 2352 f. s., the change being due to temperature of powder. The muzzle velocity developed during the trial shots was 2344 f. s., and this muzzle velocity was used during the record series. The pressure developed during the trial series was thirty-two thousand nine hundred pounds per square inch.

The bilateral method of spotting was used. The use of the B_3'' , station at Fort Frank made this method of range spotting particularly desirable. Lateral deviations were measured at the B_3' station, which is located about two hundred yards from and almost directly in rear of the gun. After entering into the record series, deflection corrections were telephoned from the B_3' station to the gun pointer. It was impossible for the gun pointer to "jump the splashes" after the first round was fired due to the dust arising from the parapet. The entire area for some distance in front of and on either side of the emplacement had been "soaked down" for about a week before the firing. In spite of this wetting, the dust, leaves and branches flew up so as to preclude any possibility of the gun pointer making deflection corrections. When the rate of fire is considered, it can be readily understood why the gun pointer could not "jump the splashes."

Prior to and during the practice there was no indication of excitement or nervousness on the part of the personnel. Although a high rate of fire was maintained over quite a considerable period of time, the gun and ammunition details worked with smoothness and precision. That the range

section worked efficiently is a foregone conclusion. The record series was entered with the following corrections:

Muzzle Velocity—2352 f. s.

Lateral Deflection—.14 Left

The Mine Planter, *Col. Geo. F. E. Harrison*, left Fort Mills dock shortly after 6:00 a. m., February 14, 1930, with two pyramidal targets in tow, and, having arrived on the course, it was waiting for the command "Commence towing."

Target No. 2 was assigned to Battery Smith No. 2.

Record series was started at 9:28 a. m. The first three rounds averaged twenty-four yards "left" in direction and eighty-three yards "short" in range. The first round was sensed a "hit."

The next three rounds were "line" for direction and averaged one hundred yards "short" in range. The sixth round was sensed a "hit." This shot blew the target out of the water, demolishing it.



FIGURE 2

Figure 2 shows the splash of this "hit" and the target may be seen in the splash about twenty feet above water level. Figure 3 shows the remains of the target after being smashed. Of the remaining six rounds two were fired on the No. 2 target and four were fired on the No. 1 target. They averaged seven yards "left" in direction and four yards "short" in range with the twelfth shot sensed a "hit." This shot cut the tow rope at the bridle of the target, setting it adrift.

An "up" correction was applied to the Range Percentage Corrector on the ninth round. Adjustment was obtained.

The battery had previously been thoroughly instructed in changing targets, and the change from No. 2 to No. 1 target was made without delay. However, the Safety Officer stopped the firing after the eighth round to check the change of target, for which "time out" of thirty-five seconds was allowed. Between the tenth and eleventh rounds the Safety Officer stopped the firing on account of the field of fire being unsafe, for which "time out" of two minutes and eighteen seconds was allowed. The last round was fired at 9:35:54. Total time was 7'53," with "time out" 2'53", time for record fire was 5'01" or one round every 25.08". Some speed!

Record series was fired between a maximum range of seventeen thousand two hundred yards, and a minimum range of sixteen thousand six hundred and eighty yards, the D.A.P.E. in range for the record series being sixty-nine and six-tenths yards. The D.A.P.E. in direction for the record series was seven yards. Average lateral deviation was nine and seven-tenths yards. The developed muzzle velocity as a result of the record series was 2344 f. s.



FIGURE 3

Powder pressure developed during the record series was thirty-eight thousand four hundred pounds per square inch.

There were no material failures.

A brief summary of the record practice follows:

Method of pointing—Case II

Number of guns—1

Rounds fired—12

Hits obtained—9

Time—5'01"

Score—126.8

Hits per gun per minute—2,309

Average time per round—25.08"

Average range—16,914 yards

Rating—"Excellent"

At a battalion parade on Monday, March 17, 1930, the streamer from the demolished target was presented to Battery "A," 59th Coast Artillery, through Sgt. Stanley Belzyk, Gun Pointer of Gun No. 2, Battery Smith. Brig. Gen. C. E. Kilbourne, U. S. Army, Harbor Defense Commander, Harbor Defenses of Manila and Subic Bays, made the presentation.

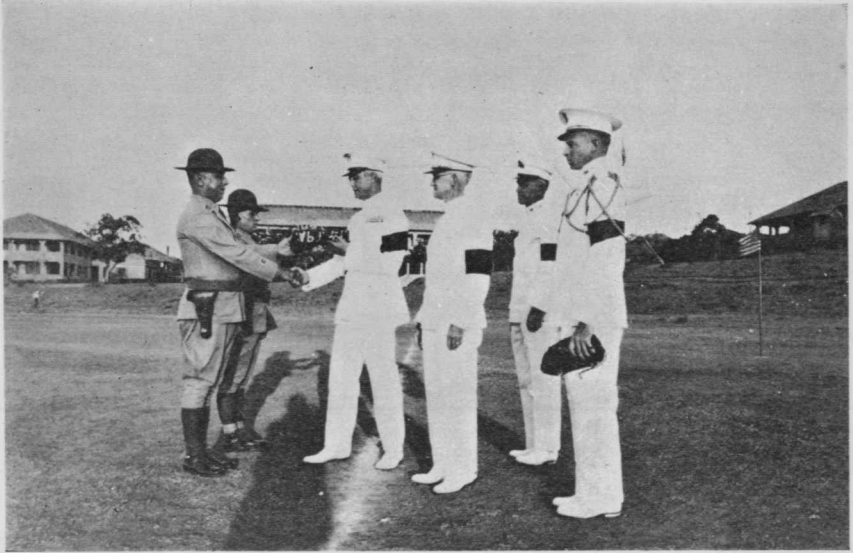


FIGURE 4

The streamer, which is the pride of the battery, now hangs in the day room of Battery "A," 59th Coast Artillery, as a reminder of an excellent practice and as an incentive to other excellent practices yet to come.



FIGURE 5

Caretaking Problems of the Harbor Defenses of Galveston

By 1ST LIEUT. T. W. MUNFORD, C. A. C.

EDITOR'S NOTE: *The following article was not written by Lieutenant Munford for publication. It consists of extracts from an official report made by him just before he had completed his detail as caretaking officer at Fort Crockett. The report contained information of possible importance in the solution of caretaking problems at other posts and is published so that it may be available to other officers on this duty.*

PART I. PRELIMINARY DESCRIPTION

THE armament of the Harbor Defense of Galveston was placed on caretaking status during the latter part of 1921. At this time the 60th Antiaircraft Artillery Battalion was stationed at Fort Crockett and charged with the care of the fixed armament in addition to their regular training mission. This organization was withdrawn from Fort Crockett about May of 1922 and transferred to the Philippine Islands, at which time a caretaking detachment was left behind for the purpose of maintaining the fixed armament pertaining to the defenses. The exact nature of the orders and instructions issued at this time governing the caretaking policy to be pursued with the defenses is unknown, nor is there any definite data pertaining to the status of the armament regarding its condition at the time the 60th Battalion (AA) departed from Galveston.

Eight 9-inch .2 British howitzers, tractor-drawn, arrived at Fort Crockett some time between 1921 and 1923. These guns were placed on inventory and inspection report in 1927. The carriages, accessories, tools, and other salable articles were sold at public auction and the gun tubes were kept on hand for purposes of donation to civic and patriotic organizations. Three of these gun tubes have been disposed of in this manner. Two of the remaining five were obligated to the 36th Division, Texas National Guard, during the summer of 1927, but have not been called for, because of insufficient funds to cover the transportation to Mineral Wells, Texas. Repeated efforts have been made, subsequent to 1927, attempting to get civic and patriotic organizations interested in asking for these gun tubes. None of these efforts have met with success. The five remaining gun tubes are at present stored in the open.

It is evident that during the period 1921-23 the fixed armament deteriorated to a deplorable state of affairs. In 1926, the guns and carriages of the Harbor Defense were in only fair condition. They showed evidence of energetic efforts having been devoted to their care for a period of at least three years. This armament had deteriorated to such bad condition that these efforts were inadequate to restore them to satisfactory condition in a three-year period. A great amount of energy has been devoted during

the period 1926 to 1930 towards improving the condition of all armament in this Harbor Defense. These efforts have met with success, and it is believed that at this time all batteries are in as good, if not better, condition than is the case at most Harbor Defenses where the batteries are manned by active organizations. With the exception of a few minor defects which always exist in nearly every battery and which are continually in the state of correction, all batteries are in serviceable condition and ready to be placed in service immediately. The bores of the two 10-inch D. C. guns at Battery Hampton, Fort Crockett, are still in an unsatisfactory condition. Undoubtedly, subsequent to firing a target practice, some battery commander neglected to properly care for these guns. The unsatisfactory condition existing consists of the following:

Some pitting over a limited area of the bore from rust or some corrosive cleaning material; adherence of a copper-tin alloy in spots to the lands and grooves which is the result of a wad of tin-foil having been placed between the projectile and propelling charge for the purpose of a de-copperizing and cleansing agent. This practice was employed by the French artillery during the World War and was adopted by our service for a brief period following the World War until it was learned that the tin melted from the heat of the propelling charge and that the copper from the rotating band amalgamated with this melted tin, forming a very hard alloy which adhered to the bore of the gun in the form of a very thin coat. This alloy, which is now present in the bore of the two 10-inch guns at Battery Hampton, does no particular damage other than that it mars the appearance of the bores and is subject to unfavorable comment from inspecting officers. Both guns of this battery were fired in 1928 and 1929, primarily for the purpose of trying to remove this alloy coating. No appreciable improvement was noted subsequent to the firing, in spite of diligent efforts which were made subsequent to the firing to take advantage of any loosening up effect from the firing. These gun bores can be sponged for approximately one hour and present a very creditable inspection. However, after about three hours the alloy adhering to the lands and grooves tarnishes, thereby causing the gun bores to present an apparently unsatisfactory condition. Every known means, even at the risk of injury to the gun bore, has been used to remove this unsatisfactory condition, but all efforts have met with failure.

The post of Fort Crockett was turned over to the Air Corps by the Coast Artillery for temporary occupancy of the 3rd Attack Group, Air Corps, in July, 1926. The conditions under which this transfer was made are fully covered in War Department correspondence. Copies of the correspondence were distributed to the Commanding Officers of the 3rd Attack Group, Air Corps, and the Harbor Defenses of Galveston. This correspondence fully covers the caretaking policy and the relationship of all

members of the Caretaking Detachment to remainder of the troops stationed at Fort Crockett.

For a period of about one year subsequent to the arrival of the 3rd Attack Group, friction arose and existed between the Coast Artillery and Air Corps as a result of the 3rd Attack Group Commander issuing instructions and orders in violation of the existing caretaking policy. All differences were finally settled about September of 1927, and since that time the relationship of the two arms of the service has been most congenial. Continued good relationship between these two arms of the service is due to the diplomacy and generosity which are employed.

The post of Fort Crockett is completely turned over to the Air Corps with the exception of the following buildings and utilities which are still under Coast Artillery control:

- Two sets permanent officers' quarters.
- Ordnance storehouse No. 1.
- Ordnance machine shop.
- Artillery engineers' building.
- Office space, second floor, Post Exchange Building.
- Barracks building 1046.
- Ordnance warehouse No. 2.
- Engineer store yard.
- Engineer warehouse near Battery Hoskins.

The batteries and magazines of Fort Crockett and the telephone and fire control switchboards.

In addition, instructions from the Commanding General, Eighth Corps Area, specified that nine permanent sets of married noncommissioned officers' quarters will be definitely set aside for occupancy of married enlisted men of the first three grades who belong to the Caretaking Detachment, when needed. In this connection, during my four-year tour at Fort Crockett the Caretaking Detachment has been considered by Corps Area Headquarters, Commanding Officer, Fort Crockett, and the Commanding Officer, Harbor Defenses of Galveston, to consist of Battery G, 13th Coast Artillery and the Ordnance Detachment. The nine sets of married noncommissioned officers' quarters referred to above consist of eight two-story permanent stucco sets and one frame building bungalow type in the south line of non-commissioned officers' quarters.

PART II. CARE OF ARMAMENT

Distribution of Duty. For the purpose of proper organization and definitely fixing responsibility, the Harbor Defenses of Galveston has been administratively subdivided as follows:

a. Harbor Defense Headquarters.

(1) Office of the Commanding Officer.

(2) Office of the Harbor Defense Adjutant.

(3) Personnel Section.

b. Artillery Engineer Department.

c. Ordnance Office.

d. Outside Work Detail.

The above subdivisions are further subdivided under each department and detailed instructions relating to details and responsibilities are covered in Harbor Defense orders. The senior noncommissioned officer assigned to each department is in general charge of and charged with the details pertaining to that department. A caretaker is permanently assigned to each of the three batteries at Fort Crockett, and two caretakers each are assigned to Fort Travis and Fort San Jacinto. All caretakers come under the immediate jurisdiction of the senior noncommissioned officer in charge of the Outside Work Detail. Each department has assigned to it permanently a number of enlisted men for routine maintenance. Continuous effort is made to provide for a roving outside detail, large enough to effectively make progress on the maintenance of all armament. This detail consists of the number of men which are left when all special duty assignments have been made and past experience has showed that the effect of such a detail is not felt when it falls below six in number. Consequently, careful economy in distribution of men on special duty must be employed in order not to reduce the roving detail below a sufficient number. All progress which has been made during the past four years has been as a result of maintaining this detail at sufficient strength, and it has been noted that when this strength falls below six that all progress ceases and that instead of standing still, the condition of Harbor Defense activities rapidly grows unsatisfactory and goes backward.

Attention is particularly invited to the fact that mortar carriages must be dismantled and overhauled biennially. The carriages of the two mortar batteries were last dismantled and overhauled in May and June of 1929, and this program will have to be repeated some time in 1931. There are on hand complete sets of counter recoil springs and washers for four mortar carriages now stored in a magazine of Battery Mercer. These springs should be cleaned and repainted not less than six weeks prior to beginning of dismantling the carriages of the first battery, in order to allow the paint to set and harden, thereby avoiding breaking and skinning of paint from the springs and exposing them to danger of serious rusting before the carriages are again dismantled.

It was formerly required that the springs of the 12-inch B. C. guns be exercised biennially. The springs of the carriages of Battery Kimble were last exercised in 1925; those of Battery Hoskins were last exercised in 1927. Recent instructions have discontinued the practice of exercising springs of 12-inch carriages in a storage status; consequently, no attention

has been devoted to this work during the last three years. It is believed, however, that the springs of the four carriages of the batteries named above should be dismantled and inspected for the purpose of providing an assurance that they are not rusting and not subject to serious injury.

It will be noted that all breech blocks of the major-calibre guns are dismantled, the mushroom heads and split rings being stored in the magazines, the gas check pads being sealed and stored in Ordnance warehouse No. 1. This practice is carried out because it was found that the split rings were being seriously pitted by rust as a result of excessive moisture accumulating on their surfaces from the absorption of moisture by the gas check pads. None of the breech blocks have been injured to the extent that they are unserviceable.

Unfavorable Climatic Conditions from a Preservation Point of View. The climatic conditions at the vicinity of Galveston are the most adverse which can be imagined, which is due mainly to the ever-existing dampness and presence of a high percentage of salt in the air. The prevailing wind throughout most of the year is from southeast to southwest. This wind sweeps over an unlimited water area and passes over a branch of the Gulf Stream just before reaching Galveston Island. Galveston Island is the first solid struck by this wind for a distance of no less than ten thousand miles, and since the height of the coastal area above mean low sea level is practically insignificant, a large percentage of salt, dampness, chlorine, and other corrosive agents contained in the air is dropped over the surface of the eastern and southern shore line of Galveston Island. There also exists on Galveston Island, many roads, and other engineering structures made from mud shell. The chemical action of salt and chlorine upon a metal or other surface covered with shell dust is violent and most corrosive; consequently the problem of adequately overcoming the difficulties incident to preservation of metal and other surfaces at these defenses is practically impossible of solution.

The extreme damp period exists from about the 15th of December until about the 15th of June, always when the wind is blowing off the Gulf of Mexico. When winds are blowing from the land, atmospheric conditions are at the lowest state of humidity and such periods are most favorable for painting and carrying out preservation activities. During this period of extreme dampness all metal surfaces both inside and outside the magazines are usually visibly covered with a heavy coat of water as a result of condensation. Battery magazines frequently run and drip in water from condensation. In order to overcome problems of water on the surfaces of magazine walls, ceilings and floors, and on all objects stored within the magazines, a study of these conditions has been made for the purpose of employing the most suitable means of reducing this unsatisfactory condition to a minimum. Instructions have been issued to all battery caretakers which are covered in orders from Harbor Defense Head-

quarters that all magazine doors and ventilators will be kept tightly closed during this period of extreme dampness, except when the wind is blowing from the north. Even when the wind has switched to the north, magazines will be kept tightly shut until the wind has been blowing from that direction for a period of twenty-four hours, thereby giving it an opportunity to absorb and carry away all excessive moisture outside the magazines. The magazine doors and ventilators will then be opened and every effort will be made to create as much draft as possible to permit the wind to pick up and carry away the excessive moisture existing in the magazines. Magazine doors and ventilators will again be closed just as soon as the magazines have dried out and will be kept closed until the weather has changed again, and another wind is blowing from the north. The procedure just described was employed during the past unfavorable condition with excellent results.

During the period of June 15 to December 15, the percentage of moisture, salt, etc., carried by the air is almost as great as it is during the remainder of the year. However, this is the warmest period of the year and evaporation is at a much higher rate. Consequently, the presence of moisture on all surfaces is not as noticeable as it is during the period of December 15 to June 15. Corrosive agents are as prevalent during one period of the year as they are during another.

It has been found to be practically useless to clean bright metal surfaces during the period of extreme dampness, except during the brief period when the wind is from the north. More harm than good results if bright metal surfaces are exposed for any period of time during this adverse period, except when the wind is from the north.

Extensive experiments for the purpose of discovering the best methods to employ for obtaining satisfactory preservation of armament have been made at these defenses during the past eight years. It has been found that frequent renewal of light transparent rust preventatives on breech blocks and in gun bores has given the best results. The advantage of using such preservatives is that those exposed bright metal surfaces are always available for inspection and rust and corrosion can be readily detected for correction. Especially has it showed that it is impossible to maintain a coat of paint on projectiles without devoting more time to this work than the importance of the subject rates. Consequently, all projectiles are kept encased with a heavy coat of grade A rust preventative. All projectiles stored in these defenses have been so coated for the past three years and no signs of rust or other deterioration have been noted since this policy was adopted. It has been found necessary to renew with a thin coat of paint jobs on the armament about once every three months. It is not necessary to scrape the guns and carriages and metal parts of accessories which should normally be painted down to the bare metal, more often than once every three years. The Ordnance Department has been extremely co-

operative and the allowances for cleaning and preserving materials of all types for this station have no limit. It is to be expected that customary economy to prevent waste of cleaning and preserving materials will be exercised. However, if more material is required, it can always be obtained merely by the asking.

Fire Control Equipment. As a result of the ever present dampness and salt laden atmospheric conditions, a satisfactory maintenance of fire control and all other electrical equipment is extremely difficult. Nothing but constant and energetic effort will maintain such equipment in a satisfactory condition. Existing regulations require that there be a technical fire control inspection made by a representative of the Eighth Corps Area Signal Officer annually, at which time complete communication and fire control equipment will be installed at all batteries. Compliance with these instructions imposes a great burden upon this limited personnel. Each time it exposes all such equipment to the most adverse conditions, without routine maintenance service for a period of no less than three weeks. Following this exposure it will be absolutely necessary to completely overhaul every telephone and every other piece of fire control and communication equipment prior to storing it in the Artillery Engineer's storeroom, for if this is not done, the equipment will deteriorate so much during the ensuing year that it will be next to impossible to again prepare the communication and fire control system for the succeeding inspection. Decided effort must be made to reduce the exposure of this equipment to the shortest time possible. This requires cooperation between the Artillery Engineer's Office and Signal Officer, Eighth Corps Area, in order to afford the Artillery Engineer opportunity to prepare for the inspection and to have the inspection made without leaving the equipment in the batteries for any extended period. Routine maintenance tests on all equipment and the entire communication system, including underground cables are of utmost importance, and no other activities should be allowed to take precedence over this work.

Detailed Care of Batteries. The manner in which battery caretakers perform their duty with relation to the armament for which they are responsible is of primary importance. Successful maintenance of armament cannot be expected unless battery caretakers are carefully chosen, and unless they are fully informed concerning their duties. Frequent inspections of every important detail pertaining to the batteries must be made to insure proper care. The time spent making these inspections is not time wasted, but on the other hand will in the long run mean much time saved in restoring portions of the armament to satisfactory condition, which unsatisfactory condition could have been avoided had proper inspections been made. Existing instructions to battery caretakers based upon training regulations which prescribe the manner of caring for armament require the caretakers to personally see to oiling and greasing mov-

ing parts, traversing and elevating the guns, preservation of bright metal surfaces, painting, maintaining magazines and police of battery parades and parapets. These instructions are useless unless inspections are made to insure their obedience and to require their enforcement.

PART III. ADMINISTRATIVE DUTIES

Activities of Harbor Defense Commander. The Harbor Defense Commander is at present charged with responsibility relating to the following duties and activities.

- a. Harbor Defense Headquarters.
 - (1) Office of the Commanding Officer.
 - (2) Adjutant and Personnel Adjutant.
 - (3) Harbor Defense Ordnance Officer.
 - (4) Artillery Engineer Department.
- b. Commanding Officer, Third Battalion, 13th Coast Artillery.
 - (1) Battalion Headquarters.
 - (2) Battalion Supply Officer.
 - (3) Battery "G," 13th Coast Artillery.
 - (4) Ordnance Detachment.
- c. Third Attack Group Meteorological Station.
 - (1) Two enlisted men, 7th Signal Service Company.
- d. Maintenance of all activities named above:
 - (1) Coast Artillery Armament, Fort Crockett.
 - (2) Coast Artillery Armament, Fort San Jacinto.
 - (3) Coast Artillery Armament, Fort Travis.
- e. Contacts and performance of normal duties with relation to local civil community, which involve all of aforementioned activities.
- f. Administrative subordinate to Commanding Officer, Fort Crockett, in matters involving disciplinary action pertaining to personnel under his command.
- g. Activities pertaining to Harbor Defenses of Galveston as separated from those under jurisdiction of Commanding Officer, Fort Crockett.

Relationship of Coast Artillery to Remainder of Garrison. Since the arrival of the Third Attack Group at Fort Crockett, effort has been made to completely segregate the activities pertaining to the Harbor Defenses of Galveston from those falling under the normal jurisdiction of the Commanding Officer, Fort Crockett. This has been done for the purpose of eliminating causes of friction between the two independent commanding officers, of which the Harbor Defense Commander is normally the junior, and for avoiding outside interference from the remainder of the garrison stationed at Fort Crockett in the proper performance of duties pertaining to the Harbor Defenses. It is impossible to wholly isolate Harbor Defense activities from other post activities since the duties and responsibilities

pertaining to the two commanders in many cases overlap and are interdependent upon each other. However, the policy of carrying out this isolation as far as possible has resulted in a practical solution to many delicate questions and has been found to be a sound one. A separate personnel section for the Harbor Defenses has been maintained for the purpose of accomplishing independent control over Harbor Defense personnel and to maintain continuously a personnel section trained in the performance of personnel details, in order to provide for such trained personnel in the event of removal of the Third Attack Group from Fort Crockett upon sudden notice. The office of Harbor Defense Headquarters is considered by the Adjutant General as being the basic office of command at Galveston, and certain reports and correspondence which would normally be signed by the commanding officer of a post, are made up for signature of the Harbor Defense Commander in the Post Personnel Office for this reason.

Meteorological Station. The equipment pertaining to Harbor Defense Meteorological Station is in storage, and this station is on an inactive status. Shortly after the arrival of the Third Attack Group at this station, special authority was granted by the Adjutant General for the establishment of a Third Attack Group Meteorological station, and two enlisted men from the 7th Signal Service Company are normally furnished by the Signal Officer, Eighth Corps Area, for manning this station. It appears to be inconsistent for this station to be under the jurisdiction of the Artillery Officer. However, it was finally decided by the Artillery Officer that it would be less work and worry if this department were placed directly under him. This matter was submitted to the Commanding Officer, Third Attack Group, for consideration, and it was decided to carry out such a policy. This was accomplished about one and one-half years ago and has worked to the mutual advantage of the service and the Coast Artillery.

Concessions and Licenses.

a. *Licenses.* There are about twelve revocable licenses, over which the Harbor Defense Commander has jurisdiction, existing. Copies of these licenses are on file either at Harbor Defense Headquarters, the Artillery Engineer's Office, Post Quartermaster's Office, or Post Headquarters. Reports are required periodically, verifying whether or not terms of the licenses are being complied with by licensees.

b. *Concessions.* There is one concession existing over which the Harbor Defense Commander has jurisdiction, namely, the East Beach (Fort San Jacinto) concession. The Harbor Defense Commander has in effect a contract with Mr. McIntosh, and has appointed him as a military policeman for the purpose of enforcing peace and order and exercising sanitary control over the East Beach area. Mr. McIntosh has proved most dependable and has performed these duties in a most satisfactory manner.

Ordnance Activities. Until about a year ago, the Artillery Officer was Post and Harbor Defense Ordnance Officer, and performed all duties pertaining to that office. Upon arrival of Capt. Charles E. Hart, Ordnance Department, at this station, all ordnance activities were turned over to him. Captain Hart is on duty at his station primarily in connection with work pertaining to the Third Attack Group. If, for any reason, he should be transferred without replacement by another Ordnance Officer, ordnance duties should again be assumed by an Artillery Officer. The major portion of ordnance duties at this station pertains to the Harbor Defenses and Harbor Defense armament.

Getting Things Done

A Common-sense Discussion of Practical Leadership

By CAPT. R. L. URBAN, 330th Infantry

A YOUNG lieutenant once inquired (in my presence) of a graying major as to the most essential quality that an officer should possess. Without the least hesitation the major replied, "There is only one test of a good officer and that is leadership."

To the most of us the accuracy of the major's assertion is at once apparent, especially with reference to the officer in command of troops. But what is this mysterious quality known as leadership? Is it something common to a few, or is it an inherent characteristic of all? May it be acquired? Is it true that great leaders are born and not made? These questions are but a few of many which might be raised in connection with a discussion of the subject.

Briefly, leadership is the ability to handle men. There are many ways of handling men, therefore there are many kinds of leaders. But we, as officers of the Army of the United States, are interested in only the highest type of leadership, that type which obtains obedience willingly, nay, even anxiously.

Now, the ability to lead men may not be inherent in all, but neither is it common to only a few. One of the best foundations for this very desirable quality called leadership, is a good nervous system. Most officers of our Army have good nervous systems and are presumably capable of normal reactions. It then remains only to give them the proper background—to build up the right sort of experience—in order to make them into leaders. That answers the question, to my satisfaction at least, as to whether leadership may be an acquired trait. I might go so far as to assert that it usually is acquired.

Someone might raise the question as to what is the "right sort of experience." I am going to anticipate such a question by stating that an officer learns to command by commanding, but that he should be constantly aided during his period of tutelage by an experienced officer. "Commanding," as I use the term, is far more comprehensive than the meaning which will immediately occur to some. Indeed many officers are (and some of us might be surprised to find a few officers of Regular experience in this class) limited in their interpretation of the meaning of the word to the drill field.

Let us consider the young lieutenant just graduated from an institution where he has gained his military knowledge. He has been taught the finer points in the military art; he has practiced shouting commands at drill until he has acquired the proper voice inflection; he knows which

foot should strike the ground when the command of execution is given; he knows how to explain the various movements, and he has learned something of the care of men. He must be a leader! He is—if he can handle men. Faced with practicality, he may find his education not yet complete. He has the theoretical background—give him the right sort of experience and he will probably develop into a leader.

I have defined leadership as the ability to handle men. Carlisle would censor me for defining one term with another, so what do we mean by “handling men”? It is simply getting your men to produce what is wanted, when it is wanted; and, as before mentioned, the highest type of leadership is interested in anxious and willing production. Ideal? Yes! But practical. How to go about obtaining such a desirable position with your men depends mainly upon you. Your temperament and mine are different. We cannot proceed to the same end along exactly the same lines, but certain fundamentals of procedure should be common to both of us.

We take over new commands. Our first step is to learn the names and faces of our men. To establish arbitrary time limits is dangerous, but I am going to risk criticism by estimating that a lieutenant should acquire this knowledge of his platoon in the first two weeks after assumption of command. A captain should acquire the same knowledge of his company in the first two months, and his second in command should do the same. Having gone this far, we continue by studying the habits and characteristics of the individuals placed under us. A battalion commander and officers of higher rank cannot be expected to know the enlisted personnel of their commands, nor can general officers be expected to know all of the commissioned officers in their commands, but no leader can make a mistake by constantly studying the tools with which he expects to work.

Having learned quite a little of our men, we study their reactions to our presence and we find that we tend to one of two extremes in our methods of handling them. We tend to be “naggers,” always “on their necks,” or we tend to be too lenient, too much of “good fellows.” Neither policy is sound—we must strike the middle course. We must always exercise the best possible judgment in our dealings with the men, collectively or singly. We must be impartial. We must be broad-minded. We must be fair. We must never forget that we are not handling automatons incapable of emotions, but that we have the care and responsibility for human beings like ourselves, capable of thought, appreciation, love, hate, and fear. So, above all we must be fair in our actions towards our men. An army sergeant, who has probably now been retired for length of service, once said to me: “The men don’t mind an officer being hard, lieutenant, so long as he is fair.” I have never forgotten that sentence, because I felt that that old sergeant knew whereof he spoke.

So we overlook many slight infractions, and disturb our men as little as possible when they are off duty, in order not to be "naggers." We participate in their games when opportunity permits, sacrificing some of our own time in order to think up new games to suggest and demonstrate. We want our men to believe in us and to feel that we are for them. At the same time we are aware of the truth of the old adage that "familiarity breeds contempt," so we let them come to understand that a barrier of rank does exist and that the steps over that barrier are for us alone to climb. They will come to appreciate our use of those steps at the proper time. We never tell our men to do something we fear to do ourselves, even in play. We form a "hot alley" for them and are the first to pass down it. The boys rap us with their belts. To us it is a passing sting; to them it is a legitimate chance to rid themselves of certain grievances they may have had. Many deep-seated problems are thus easily removed. Try it sometime when things are going wrong with your command. But never lose your grip, be always the master. I once knew a first lieutenant to face a board of inquiry because he had failed to complete the building of the portion of a trench system assigned to his platoon on a certain night. His captain charged him with having lost control of his men. The lieutenant was not an effeminate type at all, and the defense counsel constantly stressed the fact that he was always cheerful. The captain stated that he had heard one of the lieutenant's men refer to him as "Sally" or something equally disparaging. It was evident throughout the inquiry that the lieutenant had tried to be too much of a "good fellow" with his men. The reaction was contempt.

We never participate in our men's play if they are gambling. We cannot gamble with them and retain their respect. We do not disturb them, however, so long as they are quiet and not interfering with the efficiency of our commands. We must be broad-minded. Gambling, drinking, red-lights, may all spell the one word "vice" to us, but we must realize that we are not reformers. We are responsible for an efficient command, and so long as vice does not interfere with that efficiency, it belongs to the private lives of our men. We advise them, warn them, protect them against vice as best we can, but we do it as friends. When one of them goes to an extreme that causes danger or injury to others, to the government, or threatens disgrace of the uniform, then we act officially. And that does not necessarily mean a court-martial. The best leader resorts to the court-martial least. It should be looked upon as the last resort. If you gain the love and respect of your men, you will have surprisingly little need to invoke the court's aid.

Love and respect of your men are to be sought, then, when you try for ideal leadership? Yes! And the best way to gain love and respect from your men is to love and respect them. That is the principal reason for learning your men as thoroughly as possible. When you have come to

know them, you will realize that few have no undesirable traits and that all possess some redeeming features. The scapegoat of your command, and you will have a scapegoat, may rise to unexpected heights if properly handled. But how can you handle anything properly if you do not know its characteristics, its limitations and its possibilities? Know your men.

And now some officer of World War experience, who joined his command in action or on the eve of an engagement, is going to say, "Fine stuff, but what's a chap going to do when he is thrown in suddenly with a bunch of green men, as I was?" That is a question worthy of the asking. There is only one thing to do—"saw wood." Your procedure, though more difficult, should not be altered. Learn first the men you have to use directly—your platoon leader, section sergeants and corporals, if you are a platoon commander; your officers and sergeants, if you are a company commander, and keep working on that little job of learning your tools at every opportunity. If you are versed in the science of handling men, you will have found that in many instances the reactions of all men are practically uniform, so your task is relatively easy. The officer who has handled one command efficiently, finds the handling of a new command less of a problem, even though conditions may be less favorable.

Try to be practical in your thoughts, speech and actions toward your men. Knowledge that a superior is flighty fails to instil confidence in his ability. Likewise, if you are irrational, you will not gain the confidence of your men. Gaining the confidence of your men and gaining their love and respect are practically synonymous. You will not gain either if you are impractical. And I do not mean that you should lack imagination. Imagination is necessary to good leadership, but must be reserved for use at the proper moment. I once heard a newly assigned colonel making his initial address to the officers of a veteran regiment. He commented unfavorably upon the first message officers invariably sent back during an active advance: "I have established my P. C. at such and such a place." "The place," said he, "of the platoon commander is at the head of his platoon, pistol drawn. The place of the company commander is at the head of his company, pistol drawn. The place of the battalion commander is at the head of his battalion, pistol drawn. The place of a colonel is at the head of his regiment, pistol drawn." The inference was that command posts, or "P. C.s" as they then were called, were disgraceful hideouts for cowardly commanders. Now practically, had the colonel's thought been put into execution, what would our attack have resembled? I have never doubted that colonel's courage; indeed it was not being questioned. But did he exhibit a practical conception of the meaning of *leadership*? The practical conception of leadership, as we know it, is not to walk in front of, but to direct, to command, to coordinate; and you cannot realize to the fullest that conception until you know that your place is wherever you may lead to the best advantage. If it is in front of your

command, "pistol drawn," be there; but do not indulge in a lot of senseless heroics. A good leader, in action, will be busy trying to make the best use of his command.

I should not like to do that officer the injustice of having misinterpreted his speech. There is little doubt that he was attempting to inspire us, and at the time his idea appeared quite good to me, a newly made platoon commander. Further consideration, however, resulted in the conclusions set forth above. His idea, if correctly stated and interpreted, was contrary to our training. And that brings forth this admonition—be careful how you present unofficial ideas of warfare or conduct to your men. Our military system is the result of evolution and embodies what we consider the best of the accumulated knowledge of ages of discipline, warfare, and leadership. The officer before mentioned was presenting an idea as old as the world, but one that becomes antiquated with the last war. In the last war a new value was placed upon leadership. It was found to be something of extreme importance, something gained through a costly training process, something to be protected, to be used to the utmost, and to be dissipated as sparingly as possible.

Here the question might arise as to the relationship between leadership, or the conduct of an officer toward his men, and his conduct toward brother officers—subordinates, equals, and superiors. It has often been remarked in the military service that a man cannot command until he has first learned to obey. The truth of this statement may be questioned, but there is little doubt that the good of the Service demands of an officer the same type of loyalty to his superiors that he desires of his men. We, as officers, may be ordered to perform tasks which we instinctively feel to be wrong. In immediate contact with the enemy the order may mean the annihilation of our commands. Should we exercise independent leadership in this case? The temptation is strong, but here is where the test of the soldier as well as the leader occurs. As officers, we must be leaders. As leaders of soldiers, we must be soldiers. The rule of action in this case is already established. There is no question of individual judgment as to what is right or wrong. One duty as applied to the soldier is unchangeable: "The first and last duty of a soldier is obedience." One rule of warfare may have justified your superior's action: "Never hesitate to sacrifice your command if the result is worth it." The larger an officer's command, the greater is his perspective. He is trying to attain results which usually are beyond the comprehension of his subordinate commanders. Failure to perform our assigned tasks may mean failure to our cause. We must carry on as ordered to the best of our respective abilities, even as we expect our subordinates to carry on. Socially, to all officers at all times we should conduct ourselves as gentlemen. We should always be ready to help one another in any way without imposing an obligation. Conduct toward fellow officers is of necessity somewhat differ-

ent from that toward our men. The chief difference lies in assumed training and education. For instance, in giving a subordinate officer orders, you tell him what to do, but not how to do it. In giving orders to enlisted men, you must frequently not only tell them how, but show them how your orders are to be carried out. It is principally for the officer who handles enlisted men that my article is written.

In handling his men, one thing which a good leader never forgets is that he gets the best results from well-fed men. Accordingly, he must keep a watchful eye on the mess. He must not berate the cooks in front of the men, but must encourage them to do better and strive for a feeling of good-fellowship between men and cooks. Talk up your mess. Develop a pride in it and it will be good.

To be in the best position to teach your men, you must know your subject. No commander can inspire confidence if he is not thoroughly conversant with the matter he is attempting to impart. It, therefore, behooves an officer to study. Each night he should glance over the material which he expects to take up next day. Eventually he will find himself in the position of an authority on the various questions his men will ask. He must rely upon his subordinates to put out the subject matter, but he should also be the mentor of his subordinates. He holds his rank because he is supposed to be better qualified than those beneath him. It is, therefore, up to you as an officer to be well posted.

I make no pretensions to authoritative knowledge on the subject of leadership. The thoughts presented are the results of a military experience which could be much broader, but if followed, I believe they will result in the cultivation of *esprit de corps*. *Esprit de corps* means unit pride that results from a belief in self, in one another and in the whole. That old slogan of Dumas' "Three Musketeers" is the alpha and the omega of *esprit de corps*: "All for one and one for all." Cultivate that feeling in your command and you will find yourself possessed, if you have been conscientious, of as fine a command as any in the Army. Not only that, but you will find that to your command, to others and to yourself, you are a leader.

Japanese Coast Defense

By 1ST LIEUT. E. CARL ENGELHART, C. A. C.

THERE is but one artillery corps in the Japanese Army, and it mans all types of artillery from horse-drawn field guns up the scale through antiaircraft, heavy mobile, and railway guns to and including heavy fortress artillery.

Heavy Fortress Artillery is the Japanese equivalent of the American Coast Artillery, and because of this similarity will be termed "Coast Artillery" in this article. The Japanese Fortified Zone corresponds to the American Coast Defense, and like the latter is usually designated by the geographical name of its location. Unlike the American Coast Defense, the Japanese Fortified Zone includes a wide area surrounding the actual artillery posts. The Fortified Zone will be called a "Coast Defense" in this article.

The Japanese Coast Defense Commander is usually a major general. More often than not this officer has had service in the field grades with the Artillery. The senior artillery officer in the Coast Defenses is the Coast Defense Artillery Commander. He is in direct charge of all fixed artillery in the Coast Defenses and such heavy mobile batteries which may have been assigned to the Defenses. He advises the Coast Defense Commander in all matters involving the Coast Artillery, and in accordance with the orders of the Coast Defense Commander he directs the artillery engagements.

A Coast Defense is usually divided into several sectors for administration. The Coast Defense Garrison includes the Sector Garrison, Anti-aircraft Artillery, and the Direct Control Detachments. The latter, as the name implies, are under the direct command of the Coast Defense Commander. They consist of the General Reserve (principally Infantry), Distant Antiaircraft Lookouts, Coast Defense Lookouts, and the Coast Defense Communications Detachment.

A sector has for its nucleus a group of batteries. The Sector Garrison is composed of the Battery Garrisons, Searchlight Detachments, the Sector Infantry Garrison, and the Sector Reserve. When the Sector Commander happens to be an Artillery officer, he is also the Sector Artillery Commander. If the Sector Commander is an Infantry officer, then he is also the Sector Infantry Garrison Commander. A Battery Garrison consists of both Artillery and Infantry troops, Artillery to man the guns and Infantry for the protection of the emplacement.

Responsibility for defense of the coast is divided between the Army and the Navy. Quoting from the Japanese Artillery Regulations:

Defense of the coast is the chief mission of the Coast Artillery. The Coast Artillery will, however, cooperate with the Navy and Aircraft De-

tachments in order to destroy enemy war vessels and aircraft and to deny the enemy opportunity for unrestricted operations. In case of a landing attack the Coast Artillery will cooperate with other branches of the service, particularly the Infantry, and will endeavor to frustrate the plans of the enemy.

Coast Artillery has predominant fire power, good equipment, and excellent cover, and can freely engage enemy vessels. If the assistance of the Navy cannot be obtained, it is necessary that the Coast Artillery be prepared to destroy enemy vessels single-handedly. However, it is extremely important that the Coast Artillery cooperate with the Navy.

The need for such cooperation is more apparent when it is considered that the Navy Defense Command within the Coast Defenses is responsible for the laying of all mine fields, submarine and torpedo nets, and protective booms. In addition to such war vessels which may be assigned to coast defense work, the Navy may also have gun batteries on land, an Aircraft Detachment, subaqueous listening stations, and searchlights inside the limits of the Coast Defenses.

The Japanese Artillery Regulations state on the subject of cooperation:

In order to cooperate with the Navy the Coast Defense Commander must acquaint all of his Artillery unit commanders with the principal agreements which have been made with the Navy Defense Command and with the important movements, plans, and preparations of the Navy. Each Artillery unit commander will directly cooperate with the Navy unit commanders in order to fully accomplish his own mission. At all times close liaison and communication must be maintained with the Navy.

All Artillery unit commanders should be fully cognizant of the following information concerning the Navy and should cooperate in these matters when necessary:

Organization of Navy organs of information such as watch-towers, lookout stations, etc.

Matters pertaining to air defense.

Location, cover and concealment of mechanical mines, submarine nets, torpedo nets, protective booms, etc.

Construction and use of Navy communication system.

System of warning (alert and alarm) on sea.

Use of Navy shore searchlights.

Battle plans for various types of enemy attacks.

Use of aircraft in scouting.

Mine sweeping and navigation.

Method of communication between Army and Navy.

Distinguishing features of friendly and enemy vessels.

Reports and information concerning the enemy navy are usually issued by superior authorities to the various Artillery unit commanders. By maintaining close touch with neighboring Navy watch-towers, lookout

stations, subaqueous listening posts, aircraft detachments, and radio stations information must be obtained to enable the Artillery to fully accomplish its mission.

Each Artillery commander will report to the proper Navy Commander such of his dispositions which may affect the Navy, so that complete cooperation can be maintained. When an enemy submarine is discovered, its position, navigating condition, course, and the time should be immediately reported directly to the Navy Defense Commander, the Navy Aircraft Detachment Commander, or to the commander of any other Navy units which might be concerned. It is important that close connection be kept between the Sector Artillery Commander and Battery Commanders, Searchlight Commanders, Navy Land Battery Commanders, Navy Look-outs, Navy Searchlight Commanders, and the Navy Defense Commander.

Communication with the Navy is usually through the Headquarters of the Coast Defenses or else through the nearest Navy communication unit. In special situations the Sector Artillery Commander and Artillery unit commanders may establish a separate communication system with the proper Navy commanders.

Communication with the Navy will be consistent with the rules prescribed both by the Army and by the Navy. Radio, flags, flash, sound, and rocket signals are ordinarily used for communicating with Navy vessels at sea.

Navy personnel from units concerned will be attached to artillery units for liaison and to assist in identifying friendly and enemy vessels.

All of the foregoing quotations from the Japanese Artillery Regulations refer to war conditions. Needless to say, normal peace-time routine does not call for very extensive cooperation between the Artillery and the Navy. Periodic joint maneuvers involving a coast defense problem are held, however, and it is on these occasions that both Artillery and Navy personnel have an opportunity to do more than simulate cooperation.

Cooperation with the Navy seems to have solved one problem for the Japanese Coast Artillery. Fast destroyers tow the targets for target practices.

EDITORIAL

The United States Coast Artillery Association

AS THIS is written applications for membership in the Coast Artillery Association are climbing towards the 2,000 mark. Many who are eligible for membership (officers stationed in the Philippines and others) have not had sufficient time to return the signed application card.

Due to the great interest which has been manifested in the Association it is believed that many members will be proud to be carried on its rolls as CHARTER MEMBERS. In order to offer all eligibles every opportunity to become charter members the Committee has arbitrarily designated January 9, 1931, as the limiting date upon which applications will be received entitling the applicant to charter membership. The Committee also designates January 10, 1931, as the date of the initial meeting in Washington, at which time organization will be effected and members of the Council installed.

In the distribution of application cards the official lists of the War Department were largely used. In general these lists record only the names of officers of the three components of the United States Army. While a large number of names was obtained it is realized there are many eligible and desirable candidates who are not at present officially connected with the Army. It is especially desired to include former officers of Coast Artillery who have resigned or who held emergency commissions in the Coast Artillery during the war. All who are interested in the success of the Association are requested to furnish the names and addresses of such eligible candidates to the Editor, COAST ARTILLERY JOURNAL, 1115 17th St. N. W., Washington, D. C., who will provide them with application cards.

Numerous letters have been received from interested applicants commenting upon the proposed Constitution. While the comments have been numerous the objections made have not been serious and, in nearly all cases, have been accompanied by the signed application card. For this reason the Committee believes that no necessity exists for changing the proposed Constitution and since the number of applications necessary for organization (100) has been greatly exceeded the Association will come into being under the Constitution originally proposed.

A number of letters have been received requesting information concerning the formation of local branch associations and the affiliation of such local associations as exist at the present time. In drafting the Constitution

the Committee recognized the desirability of branch associations and contemplated the affiliation of local associations with the national organization. With this in view Article XIV was made a part of the Constitution. This article is extremely general in its provisions and was so made, intentionally, in order to permit great flexibility in the organization of local branches and in permitting those already organized to proceed with their usual activities without disruption or change. The recognition of existing local organizations, the Committee feels, is a duty of the Council, when elected. The Committee believes that the Council, realizing the great usefulness of local organizations, will gladly extend to them invitations to affiliate with the national organization.

In order that the Council may have definite information upon which to act it is requested that the Editor, COAST ARTILLERY JOURNAL, be furnished a copy of the Constitution and a list of officers of such local associations as now exist in order that they may be formally invited to affiliate immediately after the initial election of officers. Since no definite information can be obtained as to the number of local organizations as actually exist at present the Council will be dependent upon the local organizations themselves for this information.

The Committee, in order to expedite the formation and functioning of the Association, assumed authority as a nominating committee and recommends certain candidates for members of the Council which are named on the ballot sent to all applicants.

The candidates so recommended are eligible for office under the provisions of the Constitution and were selected with geographical considerations in mind with a view to facilitating the transaction of business. The name of the Editor of the COAST ARTILLERY JOURNAL was included due to his availability to serve as Secretary of the Association.

The Committee has no desire to limit consideration to the names of candidates appearing on its recommended slate. If the voter so desires, he may scratch any or all of the candidates named, substituting therefor names of candidates whose election is desired by him. The ballot to be effective requires a definite indication of choice to be made by the voter before the name of each candidate favored by him.

The ballot card when signed and returned will also be considered a proxy when no choice of candidate for one or more offices is indicated thereon. Proxies to be voted by the Committee may be mailed to the Editor, COAST ARTILLERY JOURNAL, or to any other applicant eligible for active membership in the Association.

This announcement, furnished each applicant by post and published in the COAST ARTILLERY JOURNAL will be considered sufficient notification of the date of the initial meeting of the Association and the counting of ballots in the initial election.

THE UNITED STATES COAST ARTILLERY ASSOCIATION BALLOT

Instructions: Candidate favored should be indicated by check. Any candidate named hereon may be scratched and another substituted. A card received with signature but no other indications will be considered a proxy.

PRESIDENT (for two years)

MAJ. GEN. JOHN W. GULICK, U. S. A.
Chief of Coast Artillery

VICE-PRESIDENT (for one year)

COL. JOSEPH P. TRACY, C. A. C.

MEMBERS (for two years)

BRIG. GEN. HOWARD S. BORDEN, O. R. C.

COL. BOWMAN ELDER, CA-Res.

MAJ. STEWART S. GIFFIN, C. A. C.

Editor, THE COAST ARTILLERY JOURNAL

CAPT. JOHN H. WILSON, C. A. C.

MEMBERS (for one year)

LIEUT. COL. J. A. GREEN, G. S. C. (C. A. C.)

LIEUT. COL. E. A. MCTAMANEY, C. A. (Ill. N. G.)

LIEUT. COL. JAMES S. ERVIN, CA-Res.

(Signature)

(Rank and Organization)

COAST ARTILLERY ACTIVITIES

Office of Chief of Coast Artillery

Chief of Coast Artillery
MAJ. GEN. JOHN W. GULICK

Executive
COL. H. L. STEELE

Plans, Organization and Training Section

MAJ. J. B. CRAWFORD
MAJ. R. V. CRAMER
MAJ. S. S. GIFFIN
CAPT. J. H. WILSON
CAPT. H. N. HERRICK

Materiel and Finance Section

MAJ. J. H. COCHRAN
MAJ. C. H. TENNEY
CAPT. F. J. MCSHERRY
Personnel Section
LT. COL. H. T. BURGIN

Chief of Coast Artillery Continues Inspection

The Chief of Coast Artillery, having visited all Coast Artillery posts in the Continental United States east of the Mississippi, will continue his inspection during this month. General Gulick will sail on the *Chateau Thierry* from New York on October 23 and will arrive in Cristobal (accent on second syllable) on October 31. While in Panama he will visit the fortifications on both sides and obtain first-hand knowledge of existing conditions. In Panama as in nearly all of our foreign stations the Coast Artillery may be considered the elite arm and much consideration has been given to its organization, emplacement and employment. In no other place is Coast Artillery as important as in the defenses of the Canal. Not only is defense against hostile naval vessels of the highest importance but here the antiaircraft artillery is given its supreme test in defending the canal against air attack. Brig. Gen. Andrew Moses, an officer of great artillery experience, commands the Panama Coast Artillery District.

General Gulick will spend four days in Panama, leaving on the *St. Mihiel* on November 4. He will arrive in San Francisco about November 14, and will confer with the Commanding General of the Ninth Corps Area and with the District Commander concerning Coast Artillery matters in that Corps Area. While in San Francisco he will visit the harbor defenses and inspect the troops and batteries. General Gulick was much pleased with the report of the joint exercises conducted at San Francisco during the summer and no doubt will express his approval, personally, to Col. John T. Geary, who commands the Harbor Defenses of San Francisco.

On November 18 he will visit Fort MacArthur (Los Angeles) and San Diego. Fort MacArthur is the home station of the 63rd C. A. (AA) which recently moved to this station from Fort Scott.

Fort MacArthur is a delightful station. It is a new post, meaning that the quarters are modern and possess many innovations which add to the comfort of the garrison. Its armament is also new. Fort MacArthur possesses two modern 14-inch railway guns but so far has been unable to fire them. This comes from locating a post in a beach resort. This is no reflection on the tactical location of the armament. It just happens so. But it furnishes a good rule for the tactical location of sea-coast guns. If in doubt, select the most popular beach and place the post there. It is certain that the garrison will not object. Firing locations for the 14-inch railway guns have been sought in the vicinity of Los Angeles for some time and have been the subject of much discussion. General Gulick will go into this matter on his visit and will be able to make a personal reconnaissance upon which to base his recommendations. Fort Rosecrans (San Diego), the gem of Coast Artillery stations (to some), will also be inspected.

Leaving Fort Rosecrans General Gulick will visit posts in the Northwest, arriving at Portland on November 21. On November 23 he will inspect Fort Worden and the other posts in the Harbor Defenses of Puget Sound. On November 23 he will leave Seattle by rail and return to Washington.

While on the west coast General Gulick will welcome every opportunity to visit National Guard and Reserve Headquarters and hopes to meet as many officers of these units as possible. California is a State in which the standing of the Coast Artillery is of the highest order. This is as it should be, of course, but it is further assisted by the fact that Brig. Gen. Richard E. Mittelsteadt is the Adjutant General of the State of California and also the Colonel of the 250th Coast Artillery (HT). Nor does the Coast Artillery fail in representation in Reserve activities, because Maj. W. E. Breite, Coast Artillery Reserve, of San Francisco, is a national officer of the Reserve Officers Association and is President of the California State Chapter. General Gulick anticipates a very pleasant and profitable inspection trip.

The Coast Artillery School

The Coast Artillery School opened for instruction on September 6. The opening session was conducted in the presence of General Gulick, Chief of Coast Artillery, and the new Commandant, Brig. Gen. Stanley D. Embick.

This seems an opportune time to offer the congratulations of the JOURNAL to General Embick upon his recent promotion. General Embick

was recently on duty with the War Department General Staff as executive officer of the War Plans Division. Upon the expiration of his detail with the General Staff (June 30) he was ordered to the Coast Artillery School as Assistant Commandant. At about the same time he assumed this duty he was appointed a Brigadier General and was ordered to assume command of the Third Coast Artillery District and the Coast Artillery School, relieving Maj. Gen. Henry D. Todd, Jr., upon his retirement. General Embick is a graduate of West Point and has had wide experience as an artillery officer. He is a graduate of the Coast Artillery School and following his graduation was on duty as an instructor at the school during the years 1903-05. Upon his relief from duty at the school he was detailed in the office of the Chief of Coast Artillery. He also served as a member of the Board of Ordnance and Fortifications. He has served two details on the General Staff and also two details in the office of the Chief of Coast Artillery. During the war he served as American Secretary of the Supreme War Council and following the war was on duty with the Peace Commission. Following this duty he became a student at the Army War College and upon completion of the course was detailed as an instructor. General Embick holds a French decoration as an officer, Legion of Honor, and was awarded our Distinguished Service Medal for his services on the Supreme War Council.

General Embick's promotion created a vacancy as Assistant Commandant which was filled by the detail of Col. Percy P. Bishop, also an officer of distinguished service who holds the Distinguished Service Medal.

The first session of the school was held in the large assembly room and was witnessed by the entire commissioned garrison of the post as well as by the ladies, as has become customary. General Gulick was introduced by General Embick, who made a short address. Among other things General Gulick said:

"The Coast Artillery has a broad and varied mission which demands training of a higher order than ever before in our history. Our officers must be prepared and trained to conduct fire at moving targets on the water, under the water, and in the air. There must be no mysteries in connection with any of these services or any idea that one is more important than another or that the situation demands a special type of officer to be employed exclusively in any one service. I am confident that the Coast Artillery, as heretofore, will meet the situation."

In another part of his speech he made direct reference to a subject which has received considerable discussion:

"Statements have been made that our seacoast armament is obsolete or obsolescent.* I do not concur in such statements. Our armament is

* NOTE: General Gulick has expressed himself more strongly than this. He believes that the words "obsolete" and "obsolescent" should be removed from a Coast Artilleryman's vocabulary.

superior to that possessed by any power for similar purposes. With improvements in mounts, ammunition and fire control our guns will be equal to any guns carried by ships of the navies of today. Taking into account the tendency of naval development, our guns will soon be superior to those carried by ships. The most important improvement lies in the development of a mechanical fire control embodying some of the devices adopted for antiaircraft guns. I hope to see such a system in operation in the near future.

"At the risk of being called a reactionary I will say that in my opinion no developments have taken place which have reduced the inherent advantages of fixed seacoast guns. On the contrary, more extended experience and recent tests have again clearly demonstrated the advantages of fixed guns.

"As the result of the advent of aircraft a new weapon is provided which will play an important role in the attack and defense of harbors. The fundamental principles of war remain unchanged and defensive measures for this new weapon will be found as they have been found in the past for other new weapons. The progressive and orderly development of antiaircraft defenses essential. Its development must keep pace with the development of aircraft and of air tactics. This demands the closest cooperation between the Air Corps and the Coast Artillery. I am happy to say that this essential cooperation now exists to a larger degree than ever before and to the mutual advantage of both arms. I look forward to more extended joint exercises and maneuvers. These bring about a better understanding and more complete cooperation."

The Chief of Coast Artillery also expressed himself on the impressions gained by him during his recent visits of inspection.

"I am very much impressed with the high standard of our commissioned and enlisted personnel and with the intelligent manner in which they are carrying out difficult tasks and duties. Command of caretaking detachments presents an excellent opportunity for the development and exercise of initiative. I have been much pleased with the many evidences of high morale and initiative throughout the Coast Artillery. As I see it, the Coast Artillery can look forward to the future with complete confidence."

Following the opening session the real work began on the following Monday with students enrolled in four courses. In addition there is a Special Course for National Guard and Reserves as well as the usual enlisted Specialists' Courses. The students now enrolled in the four regular courses of the officers' division are listed below:

ADVANCED COURSE

Maj. M. J. O'Brien	Capt. I. J. Bowler
Maj. C. S. Doney	Capt. G. Blaney
Maj. E. H. Underwood	Capt. T. R. Bartlett
Capt. A. C. Chesledon	Capt. W. R. Maris
Capt. M. G. Armstrong	Capt. E. H. Stillman
Capt. E. R. Barrows	Capt. J. C. Stephens
Capt. C. R. Adams	Capt. B. L. Milburn
Capt. B. T. Ipock	Capt. A. V. Winton
Capt. R. T. George	Capt. F. Lofquist
Capt. F. L. Topping	Capt. G. R. Townsend
Capt. V. P. Foster	Capt. H. H. Blackwell

BATTERY OFFICERS' COURSE

Capt. J. W. Vann	Lieut. L. L. Lemnitzer
Capt. H. C. Archibald	Lieut. W. I. Brady
Capt. J. T. deCamp	Lieut. J. F. Cassidy
Lieut. M. A. Hatch	Lieut. D. Hottenstein
Lieut. J. L. Hogan	Lieut. G. I. Kelley
Lieut. O. A. Nelson	Lieut. D. G. Pamplin
Lieut. J. L. Harbaugh, Jr.	Lieut. J. B. Carroll
Lieut. F. B. Dodge, Jr.	Lieut. A. B. Nicholson
Lieut. C. M. Wolff	Lieut. I. Hincke
Lieut. R. W. Crichlow, Jr.	Lieut. P. Tasker
Lieut. L. O. Shutt	Lieut. V. L. Richardson
Lieut. W. H. Webb	Lieut. E. A. Merkle
Lieut. J. G. Renno	Lieut. J. V. Howell, Jr.
Lieut. L. R. Bullene	Lieut. J. McGraw
Lieut. W. G. Holder	Lieut. F. B. Keeler

ADVANCED MOTOR TRANSPORTATION

Capt. H. E. Pendleton	Capt. N. E. Harlan
Capt. P. W. Lewis	Lieut. J. D. Mosier

ADVANCED ENGINEERING

Capt. F. A. Hollingshead	Lieut. D. B. Latimer
Lieut. E. Barber	Lieut. E. C. Wallace

Battery Standings in Target Practice Announced

After much check and double check, not to mention tearing ^{up} chair, the annual ratings of Coast Artillery batteries as computed from ^{the} ^{target} practice records has been forwarded to the Adjutant General with ^{the} recommendations of the Chief of Coast Artillery. These ratings were based on the period ending June 30, 1930, and included consideration of target practice reports received since January 1, 1929. Hereafter the ratings will be made for the period of the fiscal year and not the calendar year. The following table shows the standing by regiments:

REGIMENTAL STANDINGS
(Based on Battery Ratings)

Stand- ing	Regi- ment	No. batteries firing	Excellent	Per Cent				Location
				Very Good	Good	Fair	Poor	
1	6th	3	100	.....	.....	.....	.....	S. Frisco
2	63rd	3	100	.....	.....	.....	.....	L. Angeles
3	8th	1	100	.....	.....	.....	.....	Portland
4	91st	5	80	20	.....	.....	.....	P. I.
5	4th	5	80	.....	30	.....	.....	C. Z.
6	60th	6	50	50	.....	.....	.....	P. I.
7	11th	2	50	50	.....	.....	.....	L. Island S
8	13th	2	50	50	.....	.....	.....	Pensacola
9	16th	2	50	50	.....	.....	.....	Hawaii
10	51st	2	50	50	.....	.....	.....	Monroe
11	92nd	4	75	.....	.....	25	.....	P. I.
12	2nd	4	50	25	25	.....	.....	C. Z.
13	64th	9	33.3	44.5	11.1	11.1	.....	Hawaii
14	55th	6	50	16.7	16.7	16.6	.....	Hawaii
15	65th	6	16.7	66.7	16.6	.....	.....	C. Z.
16	7th	3	66.7	.....	.....	33.3	.....	S. Hook
17	61st	3	33.4	33.3	33.3	.....	.....	Ft. S'ridan
18	10th	1	.....	100	.....	.....	.....	Boston
19	14th	3	66.7	.....	.....	.....	33.3	P. Sound
20	15th	3	33.3	33.3	.....	33.3	.....	Hawaii
21	62nd	5	20	20	60	.....	.....	Ft. Totten
22	12th	3	.....	66.7	.....	33.3	.....	Monroe
23	59th	7	42.8	.....	14.3	28.6	14.3	P. I.
24	52nd	4	25	.....	50	.....	25	Monroe
25	41st	2	.....	50	.....	50	.....	Hawaii
26	9th	2	.....	.....	.....	100	.....	Boston
27	3rd	2	.....	.....	50	.....	50	L. Angeles
28	1st	1	.....	.....	.....	.....	100	C. Z.

DISTRICT STANDINGS

1	4th	—	50	50	.....	.....	.....
2	P. I.	—	59.1	18.2	4.6	13.6	4.5
3	9th	—	72.7	.....	9.1	.....	18.2
4	C. Z.	—	43.8	31.3	18.7	.....	6.2
5	T. H.	—	36.4	36.4	9.1	18.1	.....
6	2nd	—	37.5	12.5	37.5	12.5	.....
7	3rd	—	25.0	33.4	25.0	8.3	8.3
8	1st	—	33.4	33.3	.....	33.3	.....

At the same time that the rating by regiment was computed the batteries which received a rating of "Excellent" were also announced. Our readers are given this information in the following table:

Corps Area	Regiment	Battery	Harbor Defenses of or Station
1st	8th	Hdars.	Portland
	11th	K	Long Island Sound
2nd	7th	B	Sandy Hook
		D	Sandy Hook
	52nd	C	Sandy Hook
	62nd	C	Eastern New York
3rd	51st	A	Chesapeake Bay
4th	13th	B	Pensacola

6th	61st	A	Fort Sheridan, Ill.
9th	6th	A	San Francisco
		E	San Francisco
		K	San Francisco
	14th	A	Puget Sound
		G	Puget Sound
	63rd	A	Los Angeles
		B	Los Angeles
		E	Los Angeles
Panama	2nd	C	Cristobal
		E	Cristobal
	4th	A	Balboa
		D	Balboa
		G	Balboa
		I	Balboa
Hawaii	65th	B	Fort Amador
	15th	C	Pearl Harbor
	16th	C	Honolulu
	55th	D	Pearl Harbor
		E	Pearl Harbor
		F	
	64th	A	Fort Shafter
		E	Fort Shafter
		I	Fort Shafter
P. I.	59th	A	Manila and Subic Bays
		F	Manila and Subic Bays
		C	Manila and Subic Bays
	60th	A	Manila and Subic Bays
		C	Manila and Subic Bays
		F	Manila and Subic Bays
	91st	B	Manila and Subic Bays
		D	Manila and Subic Bays
		E	Manila and Subic Bays
		G	Manila and Subic Bays
	92nd	B	Manila and Subic Bays
		C	Manila and Subic Bays
		D	Manila and Subic Bays

During the period considered some batteries fired in more than one target practice season. In these cases the most recent practices were taken to determine the standing.

The battery which will win the Knox Trophy is, of course, mentioned in the second table. However, the announcement cannot be made at this time since the Chief's office has not yet arrived at its conclusions.

San Francisco Reserve Officers Honor General Hines

The San Francisco chapter of the Reserve Officers Association recently held a farewell testimonial dinner at the Elks Club in honor of Maj. Gen. John L. Hines, retiring Corps Area Commander, Ninth Corps Area. General Hines has been assigned to duty in command of the Philippine Department. He was relieved in the Ninth Corps Area by Maj. Gen. Malin Craig, who was recently in command of the Panama Canal Department. General Craig was present at the dinner which furnished the occasion to welcome him to the Corps Area as well as to bid General Hines adieu. Brig. Gen. R. E. Mittelstaedt, Adjutant General of the State of California, introduced Capt. Allison M. Church, President of the San Francisco Chapter of the Reserve Officers Association, who acted as toastmaster. The dinner was attended by most of the senior Army, Navy and Marine

Corps officers residing in the vicinity of San Francisco.

Maj. Gen. David P. Barrows, commanding the 40th Division; Col P. G. Lasche, Dr. Robert G. Sproul, President of the University of California, and Chief Justice Wm. Waste of the State Supreme Court were among the principal speakers and tendered the highest praise to General Hines for his efficient administration as Corps Area Commander. General Barrows, due to his long experience in the Philippines as a student of the political situation there, was particularly well qualified to discuss conditions in the islands and lauded General Hines highly as possessing the qualities required in the commander of the military forces. Mr. Robert I. Bently, Chairman of the California Packing Corporation, spoke as the representative of the Chamber of Commerce. Additional speakers were the Most Reverend Edw. J. Hanna, Archbishop of San Francisco; Rear Admiral William Cole, Commandant of the Twelfth Naval District; Rear Admiral G. W. Laws, Commandant of Mare Island Naval Yard, and Maj. Gen. Logan Feland. Others at the speakers' table were Maj. Gen. F. L. Winn, Rear Admiral W. E. Shoemaker, Brig. Gen. F. M. Caldwell; Cols. E. S. Hartshorn, T. S. Bowen, P. M. Hazzard, John T. Geary, R. O. Van Horn, G. Maury Cralle, Wallace DeWitt, J. R. R. Hannay, E. T. Hartman, John U. Calkins, Jr., Charles Lutz, Allyn G. Wright, L. C. Schmitt, Maj. W. W. Breite, National Vice President, Reserve Officers' Association, and Maj. Irvin J. Wiel of the National Executive Reserve Board.

Maj. W. W. Breite, Coast Artillery Reserve, was principally responsible for the arrangements for the dinner and is to be congratulated upon its success.

The War College Class

Along with other institutions of learning the Army War College began its sessions during last month. Its sessions began on September 1. On the envied list are the following from the Coast Artillery:

Lieut. Col. Lloyd B. Magruder	Maj. Frederick A. Mountford
Maj. Herbert H. Acheson	Maj. Edward W. Putney
Maj. Richard Donovan	Maj. Edward A. Stockton
Maj. George W. Easterday	Maj. Edward N. Woodbury
Maj. Thomas H. Jones	

Fort Leavenworth Courses Open

The opening session of the Command and General Staff School was held on September 8. Although the list of students has been published previously it is repeated for the convenience of JOURNAL readers who may have forgotten just who are the inhabitants of that cloister-like structure overlooking the wild Missouri:

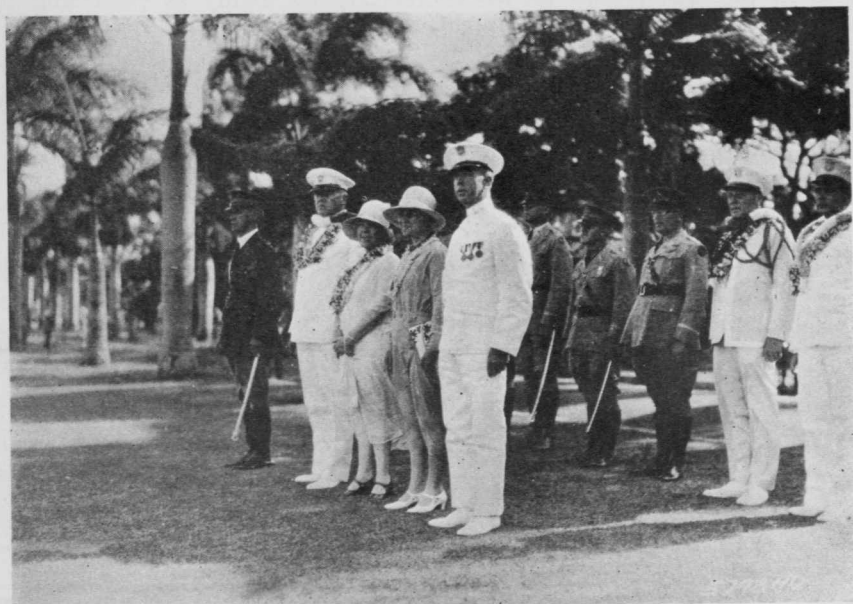
FIRST YEAR CLASS

Maj. Gordon deL. Carrington	Maj. Evan C. Seaman
Maj. Frank Drake	Capt. Henry F. Grimm
Maj. Ward E. Duvall	Capt. Vernon W. Hall
Maj. John H. Hood	Capt. William Sackville
Maj. Edwin C. Mead	Capt. John L. Scott

SECOND YEAR CLASS

Maj. Karl F. Baldwin	Maj. Ira B. Hill
Maj. Henry R. Behrens	Maj. Charles Hines
Maj. Enrique M. Benitez	Maj. Clarence B. Lindner
Maj. William M. Cravens	Maj. Clarence T. Marsh
Maj. Charles R. Finley	Maj. Robert E. Turley
Maj. William M. Goodman	Maj. William C. Washington
Maj. Richard B. Webb	

The 64th Coast Artillery (AA), Fort Shafter



MAJOR GENERAL FOX CONNER AND PARTY REVIEWING THE 64TH ON THE OCCASION OF COLONEL SEVIER'S FAREWELL TO THE REGIMENT

Front row (left to right)—Col. Granville Sevier, 64th C. A., Commanding 64th; Maj. Gen. Fox Conner, U. S. A.; Mrs. Fox Conner, Mrs. L. W. Oliver, Col. L. W. Oliver, General Staff, Chief of Staff.

Back Row—Capt. Nyal L. Adams, 64th C. A.; 2nd Lieut. Wm. F. Niethamer, 64th C. A.; Capt. John F. Monahan, Chaplain, 64th C. A.; 1st Lieut. J. Trimble Brown, A. D. C.; 1st Lieut. Richard E. O'Conner, A. D. C.

General Conner said to Colonel Sevier: "If I could, I would speak to each individual member of your regiment and commend them personally for the work they have done. This splendid work was made possible only by the wonderful spirit of cooperation that exists between you and the officers and enlisted men of the 64th Coast Artillery."

61st Coast Artillery (AA), Fort Sheridan, Ill.

Now that the press of summer training duty is over the regiment is getting down to the business of improving its situation at its new post.

Its most pressing need is one connected with the storage of artillery equipment. However, four new gun sheds, of galvanized iron and steel

frame type, are under construction and will be ready for use at an early date. In connection with the gun sheds it is desirable to have them capable of complete inclosure and provision made for heating so that the men may carry on in comfort during periods of extreme weather for which the lake front is famous.

The Chief of Coast Artillery visited Fort Sheridan on September 23, and expressed himself as well satisfied with everything connected with the 61st. The Fort Sheridan garrison includes a battalion of Field Artillery, a squadron of Cavalry and a battalion of Infantry in addition to the antiaircraft regiment (which is really a battalion). General Gulick upon arrival was provided with an escort of honor and had other occasions to observe all the troops of the garrison. He stated that the 61st holds its own with the troops of other arms, both in the appearance of the personnel and in the condition of equipment (as a matter of fact he said it a little stronger than this). The Chief of Coast Artillery was given an opportunity to meet all officers and the ladies at Major Cunningham's quarters and said, in effect, that both the officers and ladies were a fine bunch and that he was gratified to have them represent the Coast Artillery at a post such as Sheridan where other arms of the service are also stationed.

General Gulick not only wished to drop in on the 61st and see how it was getting along but he also wanted to examine into the situation at Sheridan with a view to its selection as the principal center of antiaircraft training in the Middle West. This question had been taken up previously with the Corps Area Commander, Gen. Frank Parker. The principal consideration was to determine whether or not a suitable firing point existed. This was found on a bluff overlooking Lake Michigan, and it was also found practicable to use the water area as a firing range. The safe field of fire is almost 180 degrees and up to an extreme range of forty thousand yards there is very little interference from shipping or other vessels. Therefore, it seems probable that next summer's training will be conducted at home. There is only one disadvantage to this scheme. It does not give the regiment much opportunity to show its stuff through the countryside. However, a march for all mobile outfits is now prescribed by regulations, and Major Cunningham can be depended upon to take full advantage of the opportunity.

Colonel Barnes, a recent visitor at the Chief's office (and, incidentally, at the JOURNAL office) was enthusiastic over the proximity of the 61st at Sheridan as well as the probable location of an antiaircraft training center at the same location. Colonel Barnes is on the Corps Area Staff and is particularly concerned with the training of Reserve units. He reports *real* cooperation on the part of the 61st and a willingness to assist in every possible way. It is beginning to look as though the effort to make Chicago Coast Artillery-minded is bearing fruit.

The 69th Coast Artillery (AA), Aberdeen Proving Ground

The 69th is still plugging away at the firing tests but will not plug much longer. On or about (we bet on "about") November 1, the regiment will move to Fort McClellan for station. "And where is that?" you may well ask. It is situated in the State of Alabama, five miles north of the flourishing little city of Anniston (thirty-five thousand), sixty-four miles from Birmingham (west) and one hundred and four miles from Atlanta (east). There are twenty thousand acres in the reservation.

Temporary quarters are numerous. Four barracks (new), capacity about four hundred, are of permanent construction. *One field officers' set and fifteen battery officers' sets (permanent construction) have just been completed.* The post is garrisoned at present by Company "K," 22nd Infantry, 1st Plat., 4th Tank Co., and the usual detachments.

Fort McClellan has been used principally as a summer training camp and has training facilities for five thousand men. Sherman Heights is a small town adjoining the post. A bus line runs to Anniston during the summer. Schools—presumably in Anniston.

Col. J. B. Taylor, Commanding the 69th, will make a reconnaissance of the route about October 15. He states that there is a shortage of prime movers.* (This is a popular expression which means: A truck which can tow an antiaircraft gun.) It is assumed that these will be forthcoming by the time the move is made.

*NOTE: Wanted—a better expression for this term.

Captain Griggs, so we hear, has been doing very well with his machine gun practices. We hope that there is an article forthcoming as to the methods he is using. Right here it might be stated that there has been much rabid discussion of machine gun firing methods recently. It is no longer looked upon with favor to fly the target down the groove with the data all set for that particular course. There have been mutterings caused by Captain Milburn's article which we hope will break into print. It's the old story that any target practice held under conditions which would not be met in service are of no value.

The 69th equipment, which Lieutenant Goff exhibited at the Army Relief Carnival at the Army War College, appeared to be in excellent condition. Perhaps a new pair of white gloves might have discovered some dust but it was not apparent to the naked eye. Visitors seemed to exhibit more interest in antiaircraft equipment than formerly. The Coast Artillery exhibit this year, furnished in part by the 69th, was an excellent one and attracted many visitors. (The 62nd, the 51st, the Submarine Mine Depot, and the Chief's Office also deserve a share of the credit.)

240th Coast Artillery (HD), Maine N. G.

This regiment conducted its annual field training at Fort Williams, Maine, during the period July 5-19. Colonel Fogg and the other officers of the regiment are very enthusiastic over the results of the target practices and the success which attended the conduct of the camp.

A total of eight practices were fired by the batteries of the regiment—ninety-six rounds in all, from the ten and 12-inch guns. Ranges were as great as nineteen thousand. Two targets were towed by the U. S. S. *Raleigh* (light cruiser). Aerial observation was furnished by the 101st Observation Squadron (26th Division Aviation).

The use of National Guard Air Units for observation of fire was an innovation which began with this year but will probably continue hereafter. From descriptions of the practices furnished by the National Guard aviators it is presumed that this is their first experience at Coast Artillery target practices. Lieuts. Norman W. Bertelsen and Henry B. Harris in a Curtis (O-11) Falcon observed the fire and seemed to be astonished at the accuracy of the big gun fire. Lieutenant Bertelsen did the piloting while Lieutenant Harris reputed the deviations. Radio communication was maintained with the *Raleigh* as well as the firing batteries.

Lieutenant Bertelsen said: "The accuracy of these big guns as we observed it from the air was almost unbelievable. Every shot was exactly on the line (for deflection), at least ninety per cent were within one hundred yards of the target and seventy-five per cent would have sunk any ship had it been where the targets were."

The observer seemed to get a great kick out of the firing. He says "each shot would send a spray of water one hundred feet into the air. The impact of the shell on the water would stun great numbers of fish which were gathered up after the practice by fishermen who waited at a safe distance until after the practice was completed." This Coast Artillery method of fishing is well known to old-timers but is especially profitable during mine practices. Pelicans also join the fishermen in some places, much to the fishermen's disgust and sorrow.

The 240th is congratulated upon its excellent showing and the evidence of its efficiency furnished by the reports of practice. Since the Harbor Defenses of Portland are now in the hands of a small caretaking detachment the 240th looks upon the guns located here as their own particular responsibility.

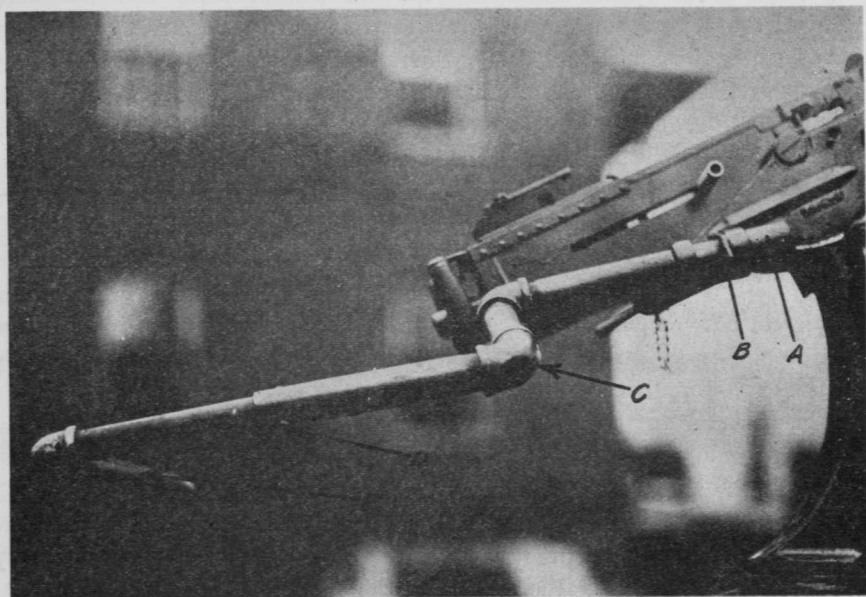
PROFESSIONAL NOTES

Back-Rest for Antiaircraft Machine Gun

By CAPT. L. E. SPENCER, 62nd C. A. (AA).

Most of us have realized the difficulties of the antiaircraft machine-gunner in trying to keep his sights on the target because of the vibration when firing; at the same time endeavoring to operate the gun and reduce stoppages.

It was felt that a means could be devised that would permit of maintaining alignment of the sights, at the same time leaving the hands free to operate the gun.



Having noticed the extension used by the 60th Artillery (AA), in conjunction with the Schmidt sight, it was believed that a back-rest could be used that would permit of pointing the gun with the body and also assist in gaining a steadier aim.

With this in view the device as illustrated in the enclosed photographs was tried out and gave very good results. It consists of a piece of gas pipe the size of the stock for the shoulder-rest as issued, and inserted in the same fitting "A." To hold the stock rigidly in place, a lock nut "B" was used on the stock and clamps securely against the fitting.

An offset consisting of a six-inch nipple with two elbows was attached to the stock. This not only permits of the gunner being directly behind the sights, but also permits of an adjustment to meet the different statures of men.

To the elbow "C" was attached a nipple in which holes were bored to permit of an adjustment, a smaller pipe fitting in this nipple with corresponding holes, in which the pin "D" was inserted.

The back-rest "E" consisted of a pipe slightly curved to fit the shoulders and back of the gunner. This was covered with either leather or rubber hose for comfort. The gunner was instructed to hold the device under his right arm and to press tightly with his back against the curved back-rest just below the shoulder blades.

This arrangement enabled the gunner to direct the gun in elevation and traverse by movements of the upper body, and it was proved that by pressing firmly in this manner, vibration was materially reduced as well as leaving the hands free for operation of the gun.

The materials were all recovered from salvage, and were such as can be found on most any post.

The actual construction of the device was completed by the battery mechanic, Private First Class Vanos of Battery "E," 62nd Artillery (AA), using the equipment of the post plumber.

From the first test it became apparent that pointing was much steadier, and that the gunner had the requisite freedom in the use of his hands.

It is probable that further studies and tests might suggest means of making this rest more comfortable and thus increasing its effectiveness.

A point to be considered might be the change of the longitudinal member from the right to the left side in order to secure the utmost freedom to the gunner in the use of his right hand.

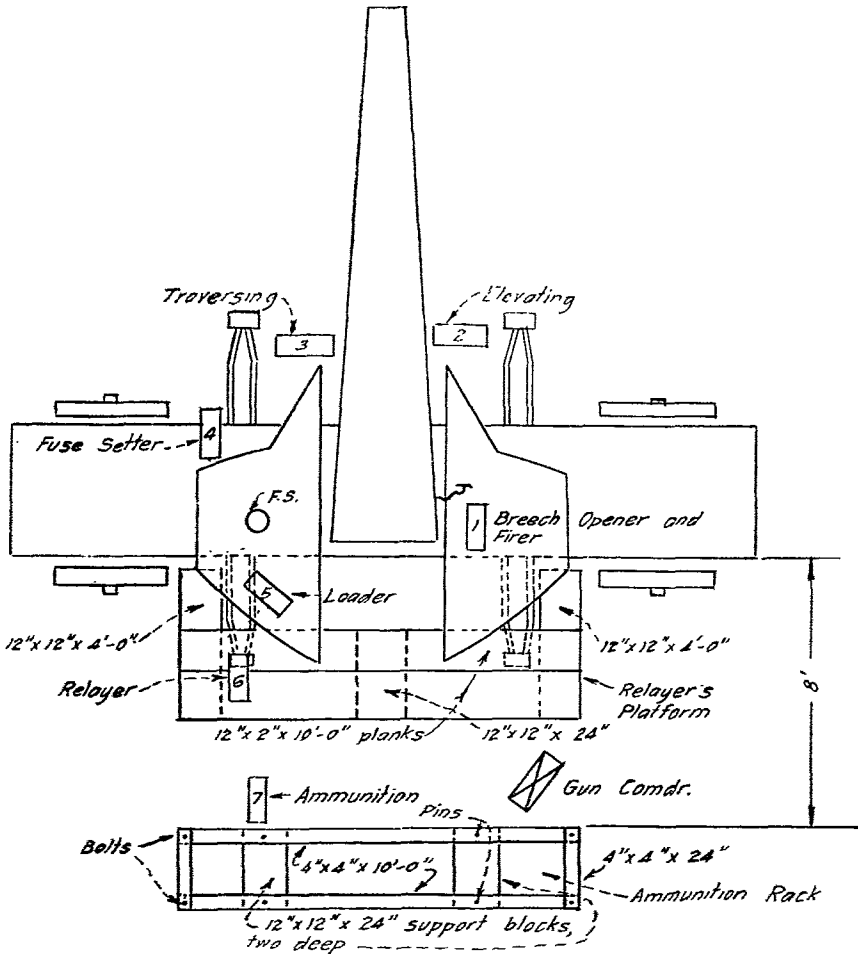




Increasing the Volume of Fire of the 3-inch AA Gun—Model 1918

By: 1ST LIEUT. J. E. REIERSON, C. A. C.

The drill as described herein and used in the 63rd C. A. (AA) at Fort MacArthur, has, so far, developed a maximum rate of fire of over one hundred and twenty-five rounds per battery per minute and an average of approximately one hundred and fifteen, for sustained fire. This is double the normal rate with this type of gun.



7 5 3 1

6 8 2

FIGURE 1

The battery is equipped with the Vickers system of data transmission and pointing. The fuze-setter M2, 1929, is used and is mounted on the gun, thanks to a recent modification by the Ordnance. The firing lever has been replaced by a lanyard (cable) which is on the right of the breech. The latter is not entirely satisfactory as it has a tendency to get snagged. Perhaps a heavier, shorter cable and the removal of the guard rail would remedy this defect. The removal of the guard would help the breech operator not a little.

Figure 1 shows a schematic diagram of the cannoneers before and after being posted. To facilitate calling off, the details are numbered in a counter-clockwise direction from the breech operator. Only seven cannoneers plus the gun commander are required to man the gun—a total of thirty-two men* for the firing battery. A platform consisting of two

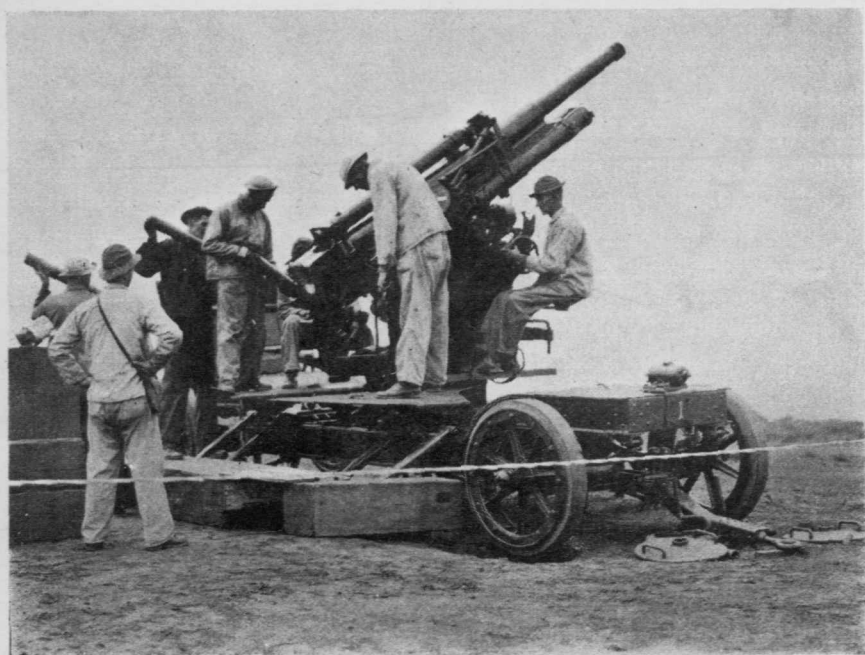


FIGURE 2

boards and three blocks is used to assist the relayer. A brief description of the duties of the details insofar as they differ from those laid down in training regulations follows:

Breech Operator No. 1—At the command *Commence firing* (gun loaded) he pulls the lanyard with the left hand and while the gun is going into battery he strikes the breech operating lever with the heel of his open right hand, thereby opening the block with the least effort and as soon as is possible.

* For guns free from back-lash.

Elevating No. 2—At the command *Target* he elevates or depresses the gun so the outer black (gun) pointer matches the outer red (indicator) pointer and inner black matches the inner red and reports “elevation on target.” Once having matched the outer pointers he should give all his attention to the inner pointers.

Traversing Detail No. 3—At the command *Target* he matches the pointers in the same way as does the elevating detail. If the angle between gun and target is over three hundred mils the gun commander will command *Swing right (left)* and No. 3 will then release the clutch while numbers 6 and 7 traverse. He engages the clutch at the command *Halt*. In some guns there is considerable back-lash in the gear train of the traversing mechanism. This can be measured by holding the wheel stationary and slowly swinging the carriage to the right until the clutch just begins to slip, then reading the inner black pointer. The carriage is now swung to the left in the same manner, and pointer read, and the difference in readings is the amount of back-lash in the traversing mechanism. Practically all of the back-lash is in the gear box and clutch. There is scarcely any back-lash between the black pointers and the traversing rack. The following methods may be employed and to some extent will eliminate this error:

1. Matching the red pointers with the black when the target is traveling from left to right, as the tendency is for the muzzle of the gun to move to the left in loading but as there is no back-lash in a counter-clockwise direction when the gun is traversed clockwise the black pointers will move with the traversing wheel, and there will be little difficulty in matching.

2. Lagging the red pointers with the black with an amount equal to the back-lash or the error in direction caused by the loader in shifting his weight from his left to his right foot in loading. This situation pertains when the target is traveling from right to left as the tendency, as stated above, is for the muzzle to move toward the left while loading. The back-lash being in a counter-clockwise direction the gun will be free to move through the entire amount of the back-lash or any part of it. The amount can be determined in drill by observing the pointers while the piece is loaded. The breechblock should not be opened as this would introduce an additional error. The reading of the black pointers should be made at the click of the firing pin.

The following method entirely eliminates back-lash regardless of how much there may be and is recommended where the back-lash is over three mils: force is applied to the carriage in the opposite direction from that to which the piece is being traversed. This force (pull) is applied at the support where the gun pointer's seat used to be. One end of a rope approximately ten feet long is run through the support and knotted above and below. To the other end is attached a sixteen-inch door spring five-

tenths-inch in diameter. The spring has a ring on one end to which the rope is tied and a handle on the other. A piece of cord about three feet long is tied to the ring and is knotted at a distance equal to the stretch plus the length of the spring. This distance may vary slightly for different guns due to the variation in loading but the writer has found a nine-inch pull is sufficient to wipe out all back-lash without causing any clutch to slip. The knot would be twenty-five inches from the ring for the above. An additional cannoneer, No. 8, is required to hold the handle with one

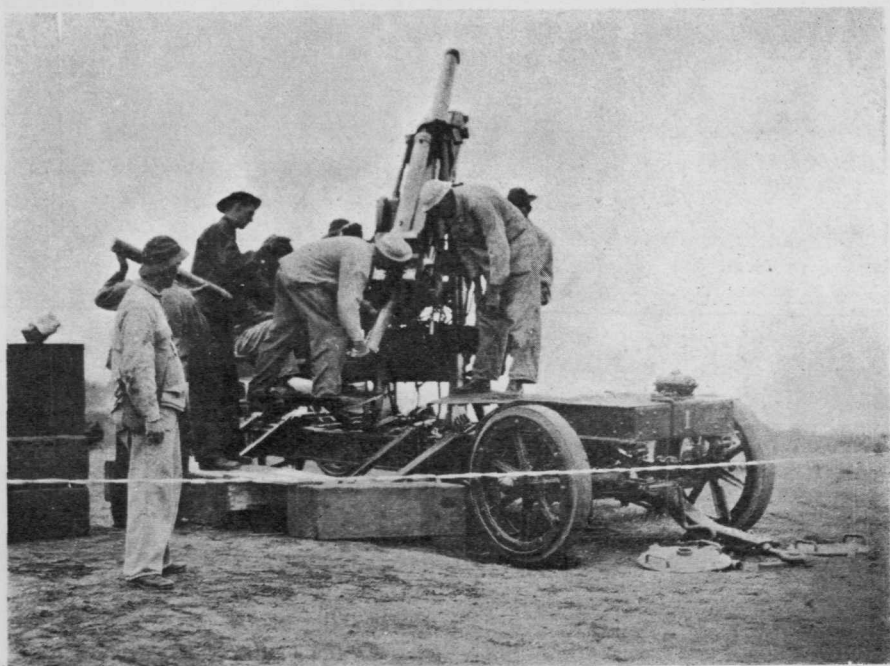


FIGURE 3

hand and the knot of the cord with the other. He pulls the handle until the knot in the cord just touches the handle where the spring is attached. The line of pull is ninety degrees from the axis of the bore and as stated above is applied in the opposite direction to that of the traversing; for example, if the gun is being traversed right, No. 8 will be on the left of the gun. This entirely prevents the gun moving into back-lash regardless of the rate of fire. The intervals between successive bursts from any gun will now appear nearly equal.

Fuze-setter No. 4—At the command *Target* he matches the receiver pointer with the fuze pointer until *Cease tracking* is given. He sets the data with the right hand and cuts the fuze with the left. The ammunition having been dropped in the fuze setter at the command *Stand by* he cuts the fuze immediately and continues to set the data. It should be noted

that once a fuze is cut with the lower (left) wheel it may be continuously cut by the upper (right) or data setting wheel. This is very advantageous as it allows the first shot to be fired approximately one and one-half seconds sooner and allows subsequent fuzes to be cut as soon as the ammunition is dropped into the fuze setter, thereby not holding up the loader. This detail, with the possible exception of No. 3, has the most difficult duties on the gun. He must be a two-gun-man so to speak. He must be able to both cut and set at the same time. This man should be short,



FIGURE 4

rugged, and capable. He should be thoroughly trained and the best way is with loaded ammunition. It's a big job and it takes a good man to fill it. It should be noted that thirty may not be the normal index on the corrector scale. Also that one graduation on the corrector does not equal one corrector, or two do not equal one unit of fuze setting. Springs in the tripping and stopping mechanism must be replaced frequently or the lower wheel will not be stopped after two turns, thereby causing incorrect fuze-cutting.

Loader No. 5—At the command *Stand by* (figure 2), he takes a fairly upright position with his weight shifted to his left foot, his left hand resting lightly against the forward end of the cartridge case and the right lightly against the base—any pressure on the case may cause an erroneous setting. At the preparatory command *Commence* (figure 2) he grasps the

case firmly and at the command *Firing* he removes the ammunition from the fuze setter then shifting his weight to his right foot at the same time bending the right knee that he may lean well forward and be convenient to the breech (figure 3) and therefore out of the line of the axis of the fuze setter. He places the projectile on the block (figure 3) by lowering the ammunition (approximately the same elevation as the gun) to it rather than moving it from the rear along the axis of the bore. At the instant the projectile touches the upper surface of the block the left hand is re-

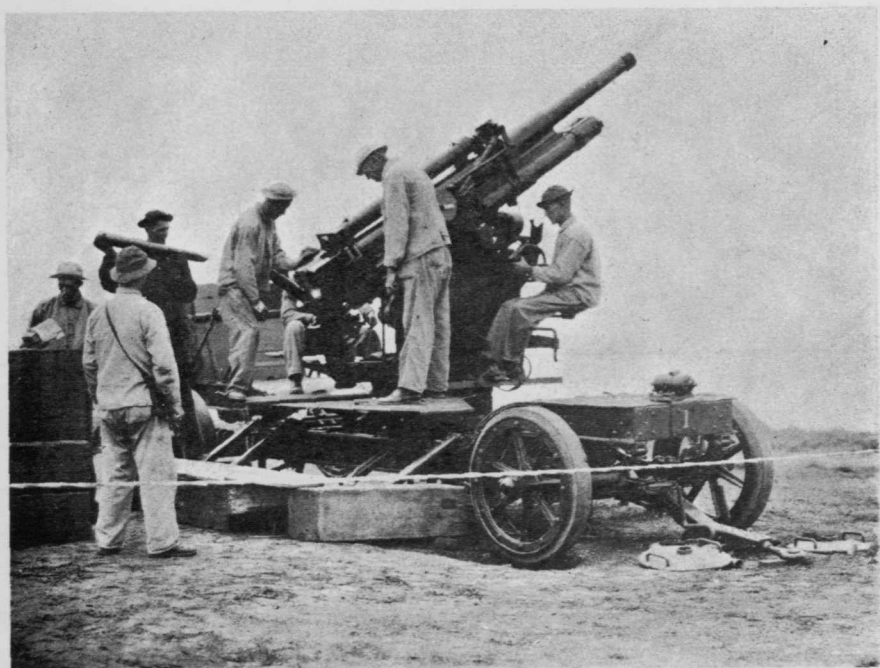


FIGURE 5

moved from the case and moved to the guard rail while the ammunition is rammed with the right (figure 4).

Care must be taken that the fingers are not bent around the base of the case when this part arrives at the breech as the result will be some badly bruised fingers. At the start of the ram the fingers should straighten and at the same time push the projectile forward so that the thumb may be moved in rear of the base. As the thumb gets in rear, the hand is closed and rotated ninety degrees counter-clockwise. The thumb and index finger only are against the base (figure 4). The fist follows through until the block pushes it out of the breech recess. The left hand may assist in pushing him back (figure 5) into position as for *Commence firing*. In getting into the latter position he is bent at the waist: with buttock well back. The latter describes a curve concave to the fuze setter. Failure to

do the latter will cause the left hip to bump the projectile and therefore slow up the rate of fire. Care must be taken that the projectile is not removed or even grasped tightly if the fuze setter (No. 4) is turning the left (lower) wheel. The rule is not to do the above if the left arm of the fuze setter is in motion. It should be noted that the projectile can be removed from the fuze setter before it has been cut. Failure to observe the above will cause the fuzes to burn too long. Care should also be taken not to rotate the ammunition while removing it. This man should be short, quick, supple and strong.

Relayer No. 6—At command *Stand by* he takes position convenient to the fuze setter and receives a round of ammunition from No. 7. He grasps the rear end of the projectile with the left hand and the base with the right. At the command *Commence firing* he drops the ammunition in the fuze setter and rams it with the right hand, immediately after the previous round is removed by the loader. Care should be taken that the axis of the ammunition nearly coincides with the axis of the fuze setter before it is dropped as it is safer and surer of releasing the hand wheel. A tall man is best for this duty. A platform assists him in feeding the fuze setter (see figure 1).

Ammunition No. 7—At the command *Stand by* he procures a round of ammunition from the rack, grasping it about five inches from the base with the left hand and the upper end of the case with the right. He steps forward with the right, thus placing the round convenient to No. 6. This points the projectile at the fuze setter. A rugged, quick man fills the job.

What is desired in a gun section is carefully selected men, individually well trained, and thoroughly indoctrinated in team-work.

Flash and Sound Ranging Activities

During and since the World War much study has been given, both in this country and abroad, to the matter of locating enemy batteries by means of accurately recording the flash and sound of their guns. Special instruction and equipment, as well as specially trained officers and enlisted men, are necessary for this highly technical work. In order that they may function efficiently they are organized, equipped and trained as observation batteries and battalions.

Recently the Field Artillery took over from the Coast Artillery the latter's activities in connection with land sound ranging. Henceforth the Coast Artillery will concentrate its efforts on subaqueous sound ranging, which has to do with the location of ships or other sound-producing agencies which are not visible because of fogs, mists, haze, smoke or other causes.

COAST ARTILLERY BOARD NOTES

Communications relating to the development or improvement in methods or materiel for the Coast Artillery will be welcome from any member of the Corps or of the Service at Large. These communications, with models or drawings of devices proposed, may be sent direct to the Coast Artillery Board, Fort Monroe, Virginia, and will receive careful consideration. J. C. Ohnstad, Lieutenant Colonel, C. A. C., President.

Projects Completed During September

<i>No.</i>	<i>Title</i>	<i>Action Taken</i>
661	Illumination of Mortar Pits and Gun Emplacements for Night Firing.	Completed September 19. Recommended that the standard platform fixtures SF-5 be not adopted as standard; that no modifications of existing mortar pit lighting installations be made pending development of a more satisfactory type of fixture; that the Chief of Engineers develop a lighting device along the lines suggested in Report and submit same for test.
803	Test of "Distributor," Submarine Mine.	Completed September 18. Recommended that it be adopted as standard for use in connection with the single conductor mine system; that the distributor not replace the transformer for mine projects which employ the 19-conductor system until the exhaustion of present stocks of transformers, and that provision be made for sub-mine practice with the distributor by the issue of spare gaps at the rate of one per sub-mine authorized to be expended.
805	Mitchell Spotting Board.	Completed September 15. Recommended that no further action be taken toward the development of the Mitchell Spotting Board.
807	Development Program for Seacoast Fire Control Materiel (Primary Armament) (CA Board origin).	Completed September 8. Recommended that a Development Program be adopted covering the following projects pertaining to seacoast fire control equipment: Continuous data Transmission System; Vertical Base Seacoast Computer, Horizontal Base Seacoast Computer and Ballistic Computing Device.

Projects Under Consideration

<i>No.</i>	<i>Title</i>	<i>Action Taken</i>
665	Source of Power Supply for EE-5 Telephones.	Report delayed pending completion of service test of batteries.
681	Test of Fast Towing Target.	Awaiting result of study by Navy Department.
689	Special Seacoast Target Practice for Training of Aerial Observers.	Awaiting reports of practices.
694	Test of Erosion Charts.	Awaiting further test.
701	Comments on Target Practice Reports.	Comments are submitted as reports are received.

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|---|--|
| 707 Test of Artillery Lantern M-1 and Lantern Mask T-1. | Awaiting receipt of report of test conducted by 92nd C. A. |
| 727 Standard Single Conductor Mine System. | A continuing project. |
| 764 Reminder List for Antiaircraft Artillery Target Practice. | Under study. |
| 796 Test of Elevating Mechanism (T-4) for 12-inch Ry. Mortar Carriage. | Modification of carriage in progress. |
| 797 Test of Ordnance Tractor Caterpillar "30" M1. | Test to be conducted at Aberdeen Proving Ground during AA tests. |
| 798 Test of Flash Message Switch for Use with Monocord Switchboard. | Under test at Aberdeen Proving Ground. |
| 799 Trajectory and Fuze Setter Charts for 3" AA Guns. | Undergoing test at Aberdeen Proving Ground. |
| 800 Test of Radio Direction Finders. | Under study. |
| 801 Portable Terminal Center, Telephone Lines of Mobile Artillery. | Under study—awaiting reports. |
| 804 Test of Trailers for Fire Control Equipment of Tractor Drawn Artillery. | Under study. |
| 806 Use of Glider Targets and Aircraft for Targets instead of Towed Targets for Antiaircraft Artillery. | Under study. |
| 808 Antiaircraft Communications. | Under study. |

COAST ARTILLERY ORDERS

Col. Percy P. Bishop, from headquarters, 1st Corps Area, Boston, to Coast Artillery School, as Asst. Commandant, August 15.

Col. Louis R. Burgess, from Org. Res., Erie, Pa., to Philippines, sailing New York, October 28.

Col. W. R. Doores, from duty with Field Artillery Reserve Group, Harrisburg, to Org. Res. (Coast Artillery), Erie, Pa., October 1.

Col. S. D. Embick, appointed Brigadier General, September 1, and detailed Commandant, Coast Artillery School.

Col. W. F. Hase, from Philippines, to 12th, Fort Monroe.

Col. Charles H. Hilton, to San Francisco, sailing New York, October 28, instead of October 10.

Col. Harirson S. Kerrick, orders to appear before retiring board, Omaha, revoked.

Col. G. A. Nugent, 12th, Fort Monroe, to 11th, Fort H. G. Wright, November 1.

Col. Allen D. Raymond, from Org. Res., Topeka, Kan., to Omaha, Neb., to retiring board for examination.

Col. M. G. Spinks, G. S. C., from Panama to Inspector General's Dept., Washington, D. C.

Col. R. E. Wyllie, from Panama; to home, retired, December 31.

Lieut. Col. L. C. Brinton, Jr., from Panama, to Reserve Officers' Training Corps, Boston.

Lieut. Col. C. C. Burt, from Inspector General's Dept., to Finance Dept., October 1 and from headquarters, 3rd Corps Area, Baltimore, to Office Chief of Finance, Washington, D. C.

Lieut. Col. F. H. Lincoln, 12th, Fort Monroe, to 13th, Fort Barrancas, October 1.

Lieut. Col. James L. Long, promoted to colonel, September 1.

Lieut. Col. R. I. McKenney, from Org. Res., Providence, R. I., to 11th, Fort H. G. Wright, October 1.

Lieut. Col. R. M. Mitchell, promoted colonel, and from Org. Res., Harrisburg, to Panama, sailing New York, October 28.

Lieut. Col. Walter Singles, from Panama, to 8th, Fort Preble.

Lieut. Col. Will P. Watson, Ca-Res., to active duty, from Hamilton, Ohio, to Aberdeen, Md.

Lieut. Col. R. H. Williams, promoted colonel, September 1.

Maj. J. D. Brown, 6th, to Panama, sailing San Francisco, November 25, instead of October 23.

Maj. C. A. Chapman, from headquarters, 3rd C. A. Dist., Fort Monroe, to R. O. T. C., University of Illinois.

Maj. J. F. Cottrell, from War Mothers Pilgrimage to 8th, Fort Preble, October 5.

Maj. Barrington L. Flanigen, placed on duty requiring aerial flight in connection with Air Corps Tactical School, Langley Field, as student, September 8.

Maj. Charles A. French, placed on duty requiring aerial flight in connection with Air Corps Tactical School, Langley Field, as student, September 8.

Maj. Paul H. French, from Panama, to R. O. T. C., Georgia School of Technology, Atlanta.

Maj. F. P. Hardaway, from Org. Res., St. Louis, Mo., to Panama, sailing New York, December 2.

Maj. J. P. McCaskey, Jr., from Org. Res., Harrisburg, Pa., to Org. Res., Providence, R. I., October 1.

Maj. E. K. Smith, from 51st, Fort Monroe, to instructor, Mass. Natl. Guard, Boston, September 1.

Maj. G. A. Wildrick, promoted lieutenant colonel, September 2.

Maj. R. W. Wilson, from duty at Washington University, St. Louis, September 15, instead of September 1.

Capt. Maitland Bottoms, 12th, Fort Monroe, to Hawaii, sailing New York, December 5.

Capt. Aaron Bradshaw, Jr., from instructor, Natl. Guard, New York, to 62nd, Fort Totten.

Capt. G. W. Dunn, Jr., 7th, Fort Hancock, to R. O. T. C., A. and M. College, Miss.

Capt. H. S. Johnson, from Hawaii, to 6th, Fort Winfield Scott.

Capt. William Hesketh, from War Mothers Pilgrimage, New York, to 62nd, Fort Totten, October 5.

Capt. J. T. Lewis, from instructor, Coast Artillery School, Fort Monroe, to Coast Artillery Board, Fort Monroe, December 1.

Capt. R. W. McBride, 62nd, Fort Totten, to R. O. T. C., University of Illinois, Urbana, Ill.

Capt. L. C. Mitchell, from War Mothers Pilgrimage, Paris, to 51st, Fort Monroe, October 1.

1st Lieut. J. C. Delaney, 3rd, Fort Stevens, to Panama, sailing San Francisco, December 13.

1st Lieut. E. A. Dolph, 62nd, Fort Totten, previous orders to Panama revoked.

1st Lieut. J. W. Dwyer, 52nd, Fort Monroe to Hawaii, sailing New York, February 20.

1st Lieut. E. E. Elliott, to 12th, Fort Monroe, instead of to Hawaii as previously ordered.

1st Lieut. James R. Goodall, 12th, Fort Monroe, to Panama, sailing New York, September 11.

1st Lieut. P. T. Gregory, from War Mothers Pilgrimage, Paris, to 62nd, Fort Totten, October 1, and to Panama, sailing New York, December 2.

1st Lieut. R. R. Hendrix, 14th, Fort Worden, to Hawaii, sailing San Francisco, November 20.

1st Lieut. H. B. Kraft, from Letterman Hospital, San Francisco, to Army retiring board for examination.

1st Lieut. J. A. McComsey, to sail New York for Panama, December 2, instead of as previously ordered.

1st Lieut. H. E. Magnuson, from replacement depot, Fort McDowell, to Hawaii, sailing San Francisco, November 20.

1st Lieut. C. M. Mendenhall, from War Mothers Pilgrimage, Paris, to 62nd, Fort Totten, October 1, and to Hawaii, sailing New York, December 5.

1st Lieut. S. H. Morrow, to 52nd, Fort Hancock, instead of 51st, Fort Monroe, as previously ordered.

1st Lieut. Leon W. Pickett, from Sarasota, Fla., to student, Coast Artillery School, Fort Monroe, September 5.

1st Lieut. Isaac H. Ritchie, 61st, Fort Sheridan, to detail in Ord. Dept., September 1 and to Augusta Arsenal, Ga.

1st Lieut. H. W. Smith, 6th, Fort Winfield Scott, to duty at replacement depot, Fort McDowell, Calif.

1st Lieut. Gervais W. Trichel, from duty with Sperry Gyroscopic, Brooklyn, to Coast Artillery School, Fort Monroe, as instructor, November 10.

1st Lieut. G. E. Waldo, retired, disability in line of duty, September 30.

1st Lieut. A. D. Whittaker, Jr., from Philippines to home, October 8, and await retirement.

1st Lieut. N. D. Young, 10th, Fort Rodman, to Panama, sailing New York, December 2.

1st Lieut. G. E. Young, from War Mothers Pilgrimage, New York, to 62nd, Fort Totten, October 5, and to Panama, sailing New York, December 2.

1st Lieut. M. H. Zwicker, from War Mothers Pilgrimage, Paris, to 13th, Key West, October 1.

2nd Lieut. R. C. Broadhurst, 55th, Hawaii, to 61st, Fort Sheridan.

2nd Lieut. K. L. F. de Gravelines, from Hawaii, to 14th, Fort Worden.

2nd Lieut. A. E. Dennis, detailed in QMC, September 12, and to Philadelphia Textile School as student.

2nd Lieut. C. R. Dutton, promoted to first lieutenant, August 1.

2nd Lieut. C. H. McGuire, from Panama, to 13th, Fort Barrancas.

2nd Lieut. W. F. McKee, from detail in Air Corps, Fort Sam Houston, to Panama, sailing New York, October 23.

2nd Lieut. N. A. McLamb, from Panama, to 13th, Fort Barrancas.

2nd Lieut. W. F. Neithamer, from Hawaii, to 10th, Fort Rodman.

2nd Lieut. P. D. Peery, 61st, Fort Sheridan, to 6th, Fort Winfield Scott, sailing New York, September 27.

2nd Lieut. K. E. Rasmussen, 62nd, Fort Totten, to Philippines, sailing San Francisco, November 19, instead of as previously ordered.

2nd Lieut. M. B. Raymond, from Hawaii, to 13th, Fort Barrancas.

2nd Lieut. Jacob G. Reynolds, from detail in Air Corps, Fort Sam Houston, to Hawaii, sailing San Francisco, November 20.

Mast. Sgt. E. E. Feehley, 7th, retired at Walter Reed Hospital, September 30.

Mast. Sgt. H. M. Forbes, 64th, retired, Fort Shafter, August 31.

Mast. Sgt. S. O. Bridgens, 3rd, Fort Rosecrans, retired, August 31.

Tech. Sgt. M. J. Buckley, 6th, Fort Winfield Scott, retired, September 30.

1st Sgt. Lafayette F. Decker, 14th, retired, Fort Worden, September 30.

1st Sgt. E. J. O'Rourke, 69th, retired, August 31, Aberdeen Proving Ground.

1st Sgt. G. S. Pinter, 60th, Fort Mills, retired September 30.

1st Sgt. J. R. Thompson, 4th, retired at Fort Amador, August 31.

Sgt. W. L. Day, Fort Monroe, to 69th, Aberdeen Proving Ground, August 15, for temporary duty with statistical section.

Sgt. W. H. Ingle, 51st, Fort Monroe, to 69th, Aberdeen Proving Ground, August 15, for temporary duty with statistical section.

Corp. L. M. Thomas, 13th, Fort Barrancas, to 69th, Aberdeen Proving Ground, August 15, for temporary duty with statistical section.

Pvt. James Kravitz, 12th, Fort Monroe, to 69th, Aberdeen Proving Ground, August 15, for temporary duty with statistical section.

Pvt. M. D. Smith, 10th, Fort Adams, to Fort Totten, for course of instruction in single conductor mine system.

Pvt. D. F. Stroup, Fort Monroe, to Fort Totten, for course of instruction in single conductor mine system.

YOU TELL EM

The Supply Is Limited

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Ten copies of Coast Artillery Field Manual, Vol. 1, have been received by these headquarters.

I wish to thank you for the intelligent action taken in regard to our request for these publications. It is very much appreciated that you furnished as many copies as possible.

Sincerely yours,

Lieutenant Colonel.

Sorry It Was Late. Seems to Be Popular

3718 Avenue J,
Brooklyn, N. Y.,
September 24, 1930.

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Will you kindly see that my copy of the September issue of the COAST ARTILLERY JOURNAL is sent to me, as none has reached me up to the time I left the house this morning.

Very truly yours,

Captain, Ca-Res.

3718 Avenue J,
Brooklyn, N. Y.,
September 25, 1930.

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Copy of September issue received today, so please disregard my letter of yesterday in re non-receipt.

Yours truly,

Captain, Ca-Res.

The Time Is Ripe. You Are on the Right Track. The U. S. C. A. A. Council Should Decide This. Sample Constitution Coming Up

Headquarters, ——— C. A. (Reserve)

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

What is all this stir about the Coast Artillery Association any way? What is it and what is it expected to do? It has everybody guessing.

I know you have not time for a long discussion of it, but a word or two as to its purpose would be welcome.

I ask because apparently it would be advantageous for people on jobs like mine to start local branches when the time is ripe. But unless we know what it is all about we cannot get very far.

I would suggest that if it is desired that we do start them, some one should give us a little help—first, by letting us know when the time is ripe (I gather that we should wait awhile); second, that you furnish us a model constitution for a local branch, said constitution to be as simple and brief as possible. (We will have to mail out copies of it, probably, and we do not want to use too much Government stationery.)

I think I could start a branch in each of my three regiments. First, I thought of a branch for the entire state outside the Metropolitan Area, this being my territory, but probably regimental branches would be better. I think it more likely to succeed locally, for example, if it were a local organization. Same for another regiment whose members are located principally in two cities. In fact, it might be even better in *those* cases to have city chapters. The third regiment is very small and scattered over all the rest of the state with no more than two or three officers in any one city or town, so a regimental chapter would seem appropriate for it.

Would be glad to receive further information.

Sincerely yours,

Unit Instructor.

It's Not Often We Get Thanked for Reminders (No Sad Commentaries)

146 Ave. Des Champs Elysee,
Paris.

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Kindly continue my subscription to the JOURNAL but hold further copies there until I send you an address. I am not at all sure of my next permanent station and for the next four months will be hard to catch at any address. Otherwise I could have answered more promptly your thoughtful renewal reminders. Incidentally, permit me to thank you for the really courteous tenor of those renewal reminders.

Your policies, as Editor, have my full sympathy. As far as I am concerned it has become a pleasure to read the JOURNAL. Formerly I would hastily glance through it for the sole purpose of marking something which might be necessary as a text or reference for some vague future possibility. For the last year I find myself reading about ninety per cent of each issue. Needless to say I get about ninety per cent more out of it than formerly. If your subscription list has not had a considerable increase it is a sad commentary on the personnel of the branch. I have not seen a copy



if you want a cigarette
that is milder and of
better taste..

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Chesterfield offers richness, aroma, satisfying
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that's what smokers get in Chesterfield in full-
est measure—the flavor and aroma of mellow
tobaccos, exactly blended and cross-blended.
Better taste, and milder too!



They Satisfy

without *interesting* and readable meat not only for the technician, but for the tactician, the youngster in the line, the Reserve officer, and, not infrequently, even my wife.

Enthusiastically yours,

Gold Star Pilgrimage.

**You Are Getting Hard Boiled, Aren't You? Back Slapping Is O. K.
If You Mean It.**

THE EDITOR, the COAST ARTILLERY JOURNAL

Dear Sir:

I want to extend my hearty congratulations to you upon the article on the reserve by Lieut. Col. E. A. Evans, Coast Artillery Reserve.

Of course, the devil of it is that Evans' success must undoubtedly be due almost entirely to his own personality and not one man in a hundred could accomplish what *he* has. However, if we will use discrimination in the selection of our Reserve field officers we may eventually have many more like him.

What pleased me is his idea that something should be expected and exacted of Reserve officers. The big trouble is that the officer sent on this duty gets no instructions or information, either as to the general policy or the details of procedure. When I finally bore down a little, I began to accomplish something and only three or four took offense and they were all men who were not assets anyway.

I have often wondered if the Reserve would not be far more successful if it had more meetings and drills—at least more than is customary in this Corps Area. However, without materiel to drill on it is a tough proposition.

But to get back to the main thesis. I certainly think the JOURNAL should educate Regular officers to the idea that they should really exact a reasonable degree of performance from the Reserve. All who have never been on the job, and most who have, are obsessed with the idea that the thing to do is to join the Rotary Club and Golf Club, call everybody "Jack" and slap them on the back, and call it a day.

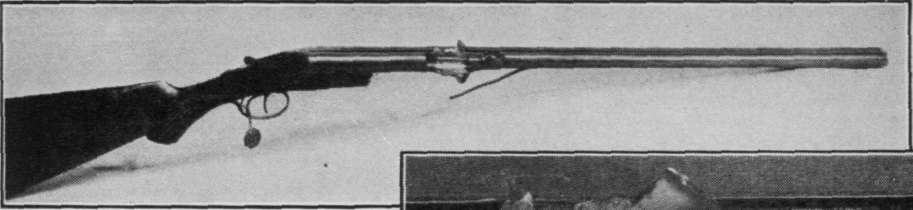
More power to the JOURNAL if it gets out some more good articles like that of Evans. Please send me three copies of the number containing Evans' article—I want them for the regimental commanders under this office.

Sincerely yours,

Unit Instructor.

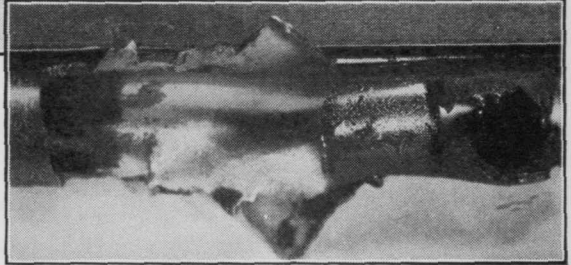
P. S. This is *not* for publication in "You Tell Em."

No. 8 OF A SERIES OF TALKS ON AMMUNITION QUALITY



The Result of an Obstruction in the Bore

SAFETY FIRST!



Close-Up of Burst

It takes but ONE shot to burst a gun . . .

WHILE the number of gun accidents is extremely small, such as do occur are sufficiently serious to serve as a warning to all shooters. Ninety-nine gun bursts out of a hundred are due to carelessness. "Familiarity breeds contempt!" It takes but one shot to burst a gun!

Ninety-five per cent of all bursts are caused by obstructions in the bore. The illustrations above show the result of a test made at Brandywine Laboratory, where a shotgun was deliberately blown up by stuffing the barrel with cotton waste. This burst can be explained thus: When the shot charge travels up the bore it is moving at a certain definite velocity; when it meets an obstruction, the shot charge carries the obstruction along with it. It can readily be seen that there must be a sudden change in velocity at the instant of impact because the combined weights of the shot charge and the obstruction are greater than the shot charge alone, and their common velocity is therefore lower than the velocity at which the shot charge was moving. This sudden change creates a secondary wave pressure which can act radially only against the walls of the barrel, thereby producing a bulge or a

burst at that point. The most common causes of bursts due to obstructions are:

1. Sectional cleaning rods left in the barrel.
2. Snow, mud or water.
3. Cleaning rags.
4. Smaller size shells—such as a 20-gauge in a 12-gauge gun.

WARNING: *Look Through the Barrel Before and After Cleaning and Before Going on the Hunt.*

Among causes of bursts other than those due to obstructions are the following:

1. The use of modern heavy loads in ancient guns.
2. Reboring a gun to obtain a longer chamber weakens the walls—the gun should be proved again by the manufacturer.
3. Shooting heavy loads in light guns.
4. Shooting heavy loads in short chambers.

WARNING: *Use Shell Lengths Not Greater Than the Chamber Length of the Gun.*

The du Pont Company with its experience of 128 years and its present resources can supply to ammunition companies the type and quality of powders required to maintain the reputation of ammunition manufacturers and the confidence of the shooters.



E. I. du Pont de Nemours & Co., Inc., Smokeless Powder Department, Wilmington, Del.

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For information on Target-Shooting, write to National Rifle Ass'n, Barr Bldg., Washington, D. C.

Yet Napoleon Established the Legion of Honor

THE EDITOR, the COAST ARTILLERY JOURNAL

Dear Sir:

I suppose that I should not write to you because I am only a little girl twelve years old but I like to read the JOURNAL because it tells me so much about *life* and what the boys are doing. I just can't help writing you about what you said in the September issue about giving everyone in the Coast Artillery a Badge, Pennant, and Trophy for their target practices. I think it is a *perfectly lovely* idea.

My daddy says he has never yet seen a battery given any sort of efficiency award that more (bad word) trouble and dissatisfaction hadn't resulted than any possible benefit to the few. He says there are some officers who don't care (perhaps) and they are not affected either way; then there are the majority who try hard and believe that they have the best outfit in the Army, not because they think they are so (bad word) much better than the others but because their morale is high and when some one else is officially designated as better they think the judge is blind and what is the use of trying. Finally there are the officers who get patted on the back in this awfully public manner. Do they really enjoy it?

Daddy talked a lot when I asked him about it. He said, how can any one say if a Stradivarius violin is better than a Rodin statue? He also said if allowance is made for slant range and rate of fire and things like that, why shouldn't there be factors for weather, grade of ammunition, experience of the battery commander and whether or not he has false teeth. I don't know just what he means by this, Major Giffin, but probably you do. Of course I don't mean I think you have false teeth. Daddy said if the men in the batteries have approximately equal potentialities throughout the service and differences in climate and materiel and other things beyond the control of the battery commander were factored out, the result would be a comparison of the officers, and if God made some better than others why should they get cups? If we factored out the personal equations, too, then everyone would get the same score. And that brings me back to your lovely idea which Dad says is very advanced, but he is afraid it is too advanced. But I think it would be nice if everyone could wear something because they would all be happy and it would make the uniforms much cuter. Won't you please try to do something more about it before Christmas?

Your little friend,

DUMMY.

(That is not my real name; people just call me that.)

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BOOK REVIEWS

Mad Anthony Wayne. By Thomas Boyd. Charles Scribner's Sons. New York. \$3.50. 338 pages. Bibliography and index.

A vivid and interesting work about a crack soldier. He marched in the Quebec expedition, squelched a mutiny with his big fists, then served from Brandywine to Yorktown under Washington in command of the Pennsylvania Line. His most noted exploit was the storming with the bayonet of Stony Point. At Yorktown a scared American sentry put a slug in his leg and this wound never healed. Years later it caused his death.

After two American expeditions had been cut to pieces in Ohio, Wayne organized and trained a new army. In a long campaign he completely subjugated the Ohio tribes. This forced the surrender by England of the Lake forts and trading posts. An excellent general, tireless in training and caring for his troops, and after being surprised twice, not to be caught napping. He was always anxious to attack. Among timid and sluggish men such as Charles Lee and Henry Knox, this willingness to fight was thought madness!—G. M.

Charlemagne, First of the Moderns. By Charles Edward Russell. Boston: Houghton Mifflin Co. 1930. 6½" x 9½". 294 pp. 20 illus. \$4.00.

Exactly eleven hundred years before the outbreak of the World War there died one of the greatest figures of history; a soldier whose campaigns formed one of Napoleon's greatest inspirations; a conqueror who went to war only as a last resort at a time when battle, murder and sudden death were every-day occurrences; a statesman who governed an empire of diverse races in a manner never since excelled; a man of learning in an ignorant age who rescued the classics and sagas from oblivion; an educator who anticipated our public school system by a thousand years; a patron of the arts who introduced church music into northern and western Europe and established the first Academy of Letters; a democrat in an age of despotism; a man of mercy in a period of extreme cruelty; such was Charlemagne, "by the Grace of God, King of the Franks and Protector of the Holy Church," as set forth by Mr. Russell in this new book.

That many of Charlemagne's reforms were discarded at or soon after his death is not to his discredit, it simply shows how far ahead he was of his times. For example, the world was not ripe for universal education in the eighth century, only monks could read and write in those days, so it is not surprising that when the indomitable spirit of Charlemagne passed on, the schools which he founded, at which his own sons and the offspring of swineherds and butlers sat together on an equality at the feet of the most learned men of Europe, should for a time fall into oblivion. Nevertheless they were not without effect on subsequent generations as many schools still extant are the outgrowth of those schools. Among such may be mentioned the University of Liège, the University of Utrecht, the Sorbonne and many schools in France, Belgium, Germany and Switzerland. If he had done nothing else this alone would make the great King famous, but in fact his activities were multifarious, they covered the entire range of human relations and he excelled in all.

Another instance of his remarkable vision was the project for a ship canal to join the Danube with the Rhine, via the Main, but the engineering skill of that day was unequal to the task and it was not until over a thousand years later that the canal was completed and it now "forms the axis of a gigantic plan to unite the Rhine, North and Black Seas in a network of streams."

The governance of Charlemagne's empire was a wonderful thing. "To us in this day the most perplexing question that arises is how he managed to govern

THE UNITED STATES COAST ARTILLERY ASSOCIATION

DESIRES

to include in its membership all persons eligible to join. Many former officers of Coast Artillery (emergency and resigned) are eligible for membership but can not be located from the records available. Readers of the JOURNAL having knowledge of any such would be performing a service for the Association by sending in their names and addresses.



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it and cause it to hold together overnight. There never was a greater *mélange* of antagonistic races, peoples, languages and interests, and no empire ever contained more intractable and irreducible elements. Yet here they dwelt not alone in peace, but in amity and seeming forgetfulness of ancient feud." With it all was a solicitude for the poor and weak, the serfs and underlings, which must have been intensely annoying to the nobles to whom such were merely cattle, to be dealt with at pleasure. Not until the French Revolution, a thousand years later, was the cause of the proletariat so ably championed, and probably no one born to the purple has ever been so essentially democratic as Charlemagne.

Truly this great King, as described by Mr. Russell in this scholarly work, was a light of the greatest brilliance shining in an era of darkness.

The author's well-known liberal views crop out frequently and his sympathy for the masses and contempt for the High Command are strikingly evident. The following is a typical example of his diatribes: "The most interesting question that these annals continually provoke is whether the typical ruler of that age was more child, more constitutional liar, or more congenital imbecile." The democracy of Charlemagne therefore appeals strongly to him and he stresses it on every occasion.

Mr. Russell notes that Charlemagne and Napoleon, both rulers of France, were the two outstanding characters of history between Julius Caesar and our own times, and that one was responsible for the establishment of the Holy Roman Empire, the other for its abolition. Technically of course he is right, but that is not the whole story. While Charlemagne was the first to bear the Imperial title, his immediate successors were emperors in name only. Not until Otto the Great did the Empire again become a world power. At the other end of the scale Napoleon's action was merely the tardy recognition of an already existing fact. For all practical purposes the Empire had been defunct for centuries, certainly since the Treaty of Westphalia in 1648, and most historians would probably put it still earlier.

With reference to the old controversy of Charlemagne's coronation as Emperor, Mr. Russell reaches the conclusion that the King must have known what was going to happen that day and, notwithstanding the contemporary record of his secretary to the contrary, this seems to be the only logical finding. A King sufficiently powerful to order a Pope to appear before him in Germany for trial, would not have been crowned by that same pontiff against his wishes, neither would he have used the Imperial title so freely as he did had he not acquiesced in the arrangement.

As a general Charlemagne's greatest characteristic was celerity of movement. In this he anticipated Napoleon and considering the heterogeneousness and comparatively undisciplined nature of the armies he led over very inferior roads, his achievements in this line are the wonder of modern students. Many of his campaigns were characterized by that most difficult of operations, a concentration of different columns in the face of the enemy. On one occasion he had three armies moving against Bavaria: the first marched north from Italy, he led a second from France, while a third moved south from northern Germany, yet the concentration was effected and the enemy surrendered without striking a blow. Not once did he fail in an operation which had taxed all the resources of the greatest modern generals assisted by railroad and telegraph. It is no wonder that Napoleon studied his campaigns with avidity.

Many and excellent are the illustrated plates in this volume and the bookmanship is beyond reproach. The work is recommended to any one who would know more of the transition period between the dark ages and modern history.

—R. E. W.