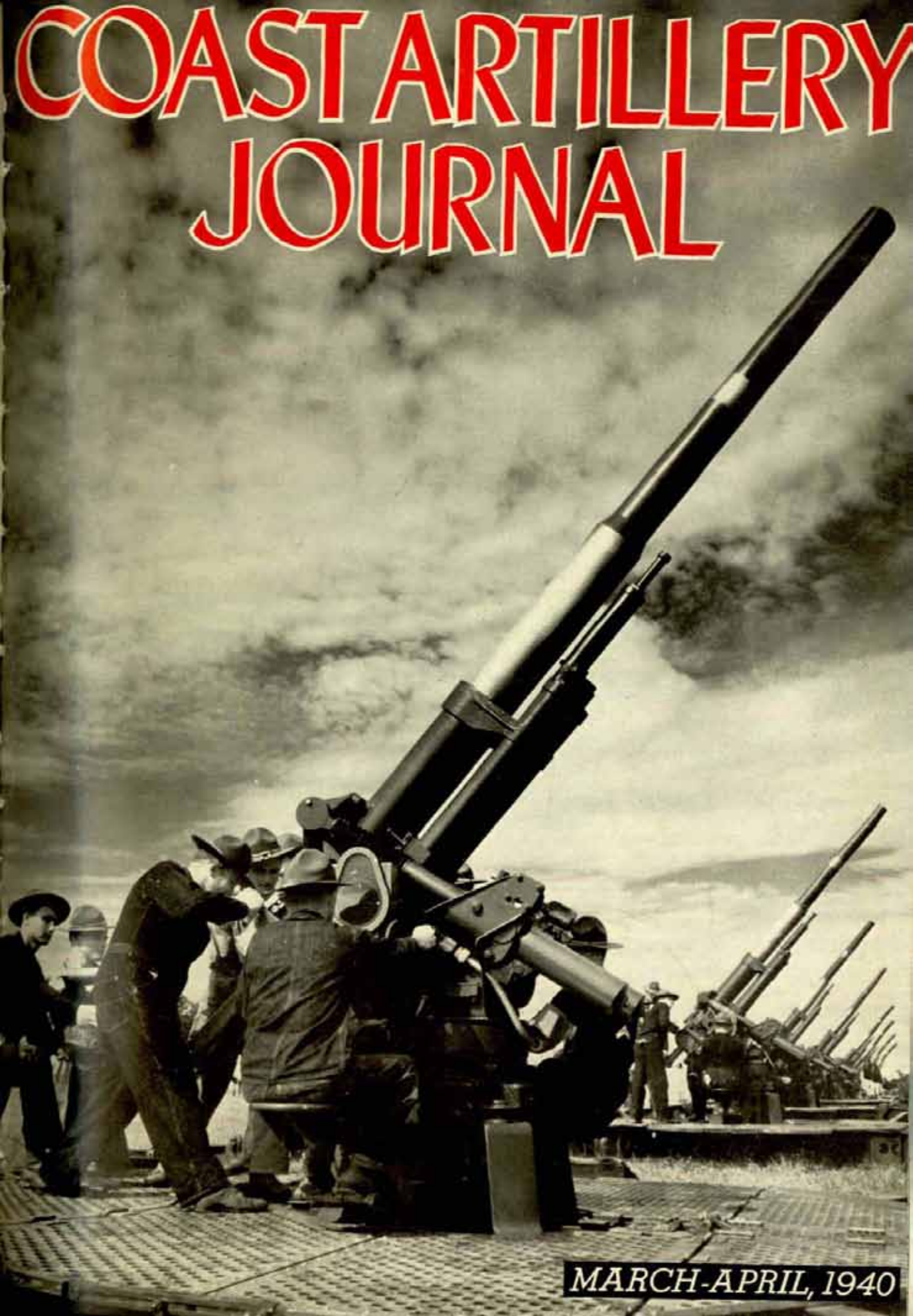
COAST ARTILLERY JOURNAL



MARCH-APRIL, 1940

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
APR 1940		**00-03-1940 to 00-04-1940**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
The Coast Artillery Journal. Volume 83, Number 2, March-April 1940	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Coast Artillery Training Center,Coast Artillery Journal,Fort Monroe,VA,23651**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

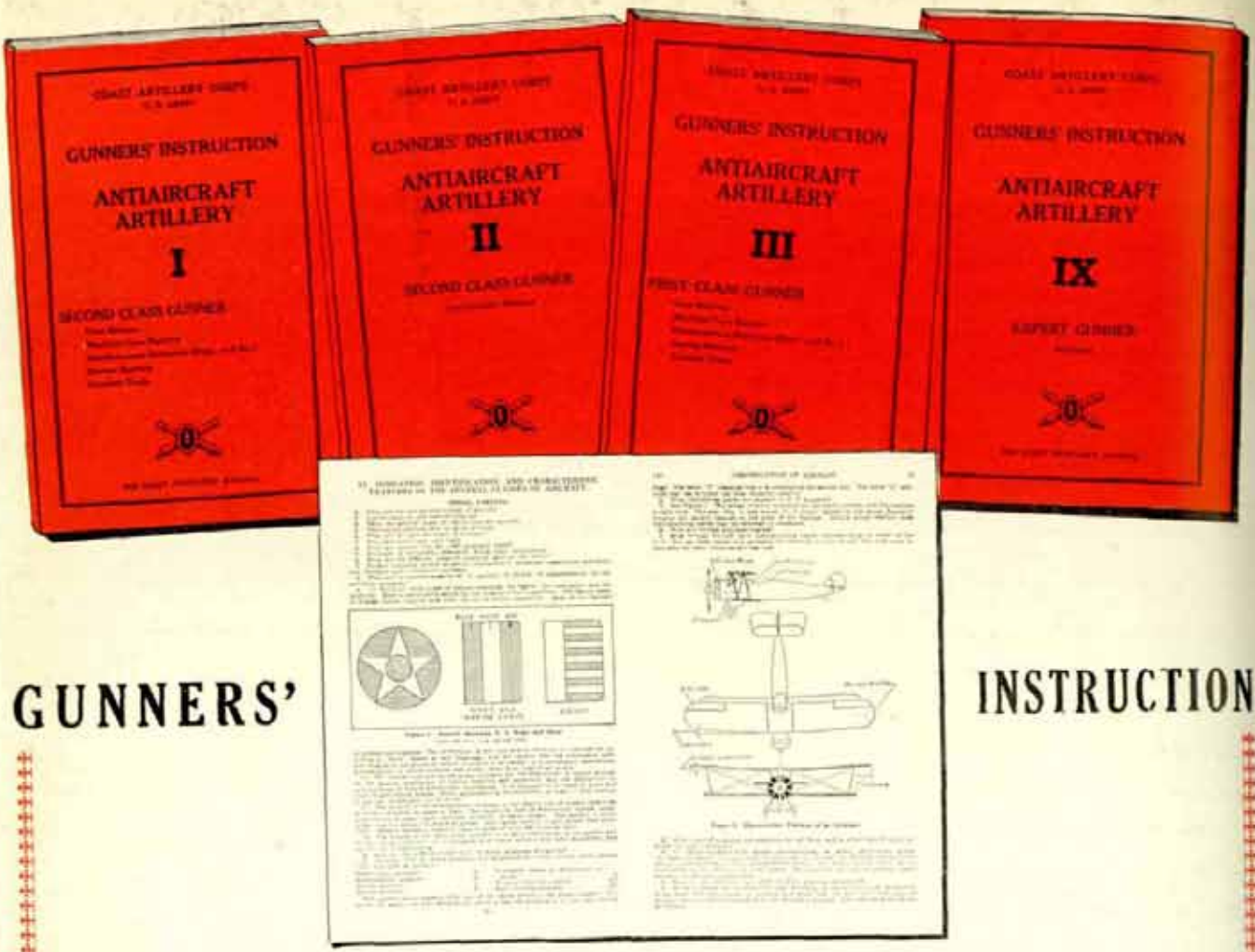
12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**116**	



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COAST ARTILLERY JOURNAL

FOUNDED IN 1892 AS THE JOURNAL OF THE UNITED STATES ARTILLERY

MAJOR AARON BRADSHAW, JR., *Editor*

VOLUME LXXXIII MARCH-APRIL, 1940 NUMBER 2

CONTENTS

PUBLICATION DATE: APRIL 1, 1940

Published bi-monthly by the United States Coast Artillery Association. Editorial and executive offices, 1115 Seventeenth Street, N.W., Washington, D. C. Terms: $4.00 per year. (Coast Artillery Association members, $3.00 per year.) Single copies, 75c. Entered as second-class matter at Washington, D. C.; additional entry at Richmond, Va., under the Act of March 3, 1879.

National Guarding

Honorable Mention
Prize Essay, 1939

EDITOR'S NOTE

* * *

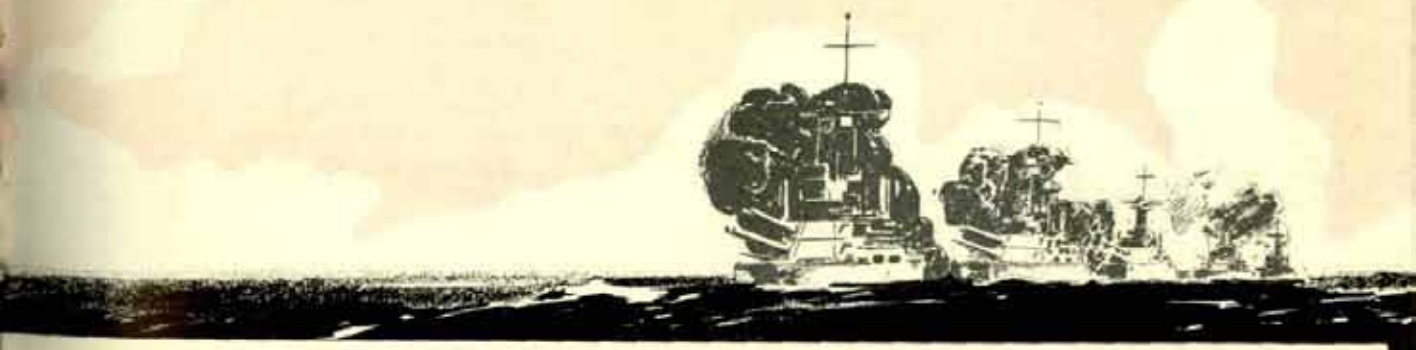
The essay board of officers selected "National Guarding Our Harbor Defenses" as the honorable mention prize essay in the 1939 competition. As this essay was written before September, 1939, our readers will detect certain variances from organization and training conditions of today. It should be borne in mind that publication of this essay does not reflect any official sanction of the recommendations contained therein. This, of course, is true of all articles published in The Coast Artillery Journal.

Our Harbor Defenses

By

MAJOR BEDFORD W. BOYES

Coast Artillery Corps, N.G.U.S.



"Are we utilizing our coast defenses to the best advantage?" is a question frequently asked by the American who thinks about national defense. Those of us in the National Guard, add the following corollary to this question: "Is the present policy for the employment of National Guard troops as Coast Artillery correct?"

In dealing with these problems, the first objective—coastal frontier defense—will be summarized in order to refresh our views on this complex subject. The second objective—utilization of National Guard troops in coast defense—will be explored in some detail, with specific suggestions for necessary changes.

It is definitely the policy of this country to maintain a small and highly-trained military establishment and a large and powerful naval force. The plan suggested in this essay for guarding our coastal frontiers conforms to this principle of our military policy.

So much has been said and written on the importance of coast defense that repetition almost becomes redundant. Yet the inability to secure appropriations commensurate with some National Guard Coast Artilleryman's idea of the need for this defense might indicate that an opposite school of thought exists. On this assumption, a sketchy answer to the question "Why coast defense?" will be attempted.

Although much is taken for granted regarding the inviolability of our borders and our safety from a major invasion, the fact remains that our national policy is one of armed security. The greatest fleet this country has ever owned sails the seas as a bulwark against aggression. But even this strong naval force cannot provide insurance against invasion. In the words of Admiral Sir Herbert Richmond, "It must be obvious that there can be no such thing as complete security; that is, total immunity from injury. Any nation which should desire invulnerability would need a navy so immense that it would hardly fail

to be regarded as a danger to all the other powers,"—not to mention a source of unbearable expense.

Conceding that our coastal frontiers can be attacked, what could a naval invasion of the continental United States hope to achieve? The possible objectives are grouped under the following headings:

1. Major invasion
2. Political disturbance
3. Naval raids on important harbors or landing beaches and minor harbors

It is important to bear in mind that not all portions of our long continental coast line are of critical strategical importance. "Comparatively few areas," writes Major Fielding Eliot, "are suitable for landing, and of these only a few are conveniently placed with regard to possible enemy objectives. The harbor defenses, therefore, in denying the enemy the use of convenient methods of landing, force him to the precarious expedient of landing over an open beach and subsequently supplying his forces by the same difficult and uncertain means; while even in this he is confined to particular and limited areas by typographical, hydrographical and strategical factors."

Major Invasion

The successful invasion of the United States, so long as adequate naval forces are available to make the enemy's line of communications ineffective, appears to be an untenable proposition. However, Japan did not wait until the Russian fleet was destroyed before starting an invasion of the latter's territory.

Questions of national policy, combined with future drastic rearrangements of the policies and jurisdictions of other countries, could provoke an attempted invasion of the United States. For instance, we read much today of "hemisphere defense." It is conceivable that this policy might involve our naval forces in extensive operations off the shores of South America, leaving the coast of the United States temptingly unguarded.

Nor can we safely argue that a major landing attack or raid in force, even though it had no chance of success, would not be tried. History furnishes many an example in which political expediency forced the military command to attempt the impossible. "War is not conducted by logic," writes Julian S. Corbett in *Some Principles of Maritime Strategy*, "and the order of proceeding which logic prescribes cannot always be adhered to in practice. War is a complex sum of naval, military, political, financial, and moral factors."

All authorities apparently agree that only naval supremacy would permit a successful landing and invasion of the United States. The flexible defense so admirably developed by General Liman von Sanders in the Dardanelles campaign defeated superior British forces amply supported by a powerful navy which had absolute sea control. In the first landing at Helles, 12,000 Turkish rifles withstood 20,000 Australian rifles and "pinned them to the ground within a mile of the shore," according to Major Sherman Miles. Prior to the landing, he continues, "the *Queen Elizabeth, Cornwallis* and *Albion* and other ships, battered at it [the Turkish defense] for a full 24 hours—and still the Turkish rifle and machine-gun fire broke out whenever the big guns laid off." The British were pinned to the ground by greatly inferior Turkish forces. "One can only conclude," Major Miles continues, "that there are few organisms in the world weaker than an army when its feet are still wet with salt water."

Political Disturbance

That the political factor in coast defense is potent there can be no doubt. The soldier knows that the fleet establishes the first, or outer line of defense, of this country and is responsible for denying the enemy the control of the sea. But that the great mass of civilians, especially those living on the coasts, will be content with this reasoning is doubtful. An example of the effect of a frightened public mind on military operations is well within the memory of many of us.

During the Spanish American War our fleet was small, but the Spanish fleet was smaller. There was no question that a naval battle would result in the defeat of the Spanish navy. Yet, this certain knowledge of superiority did not prevent American newspapers in every Atlantic coast city from screaming, "Protect us from the Spaniards!" For weeks, our fighting ships played watch-dog to appease the coastal population.

Will these same groups be less jittery the next time an enemy fleet is reported on the high seas? The same pressures would probably be brought to bear again and the same fears would again be voiced. Moreover, today the fears would be augmented by those created by the aerial bomber and the gas attack. The average citizen is going to think that the ocean is a pretty large place and the problem of finding and defeating a first-class navy a difficult one to cope with.

Furthermore, if our navy and air force happened to be in the wrong ocean, it is conceivable that our citizens might have strokes of apoplexy unless some immediate and effective form of protection were provided.

Naval Raids

The threat of naval raid calls for immediate harbor defense. The "book" says that a successful large-scale overseas expedition can be conducted only if the navy convoying the expedition controls the sea. However, a raid to seize a harbor as a preliminary to joint operations, or to destroy port facilities is also considered a definite possibility. A raid might also be used to create a diversion for a blow to be delivered elsewhere. Eliot sums this up in the statement, "The Army will always have to be ready to deal with swiftly delivered raids."

The mere threat of such a raid would hamper naval operations and nail a substantial portion of the defending fleet to the coast.

The capture or destruction of a single port would not win the war, but is surely an important stake in any struggle. And if several ports could be put out of action, even temporarily (á la Zeebrugge), the navy would be badly embarrassed.

Since a major landing cannot be attempted without control of the sea, would an enemy try a minor landing at a place away from important harbor areas? The probable barrenness of results appears to make such an attempt indefensible. A small raid could only be made to gain information, accomplish minor destruction, or to arouse the fears of the populace. It could hardly hold a beachhead or carry out an important mission.

Estimate of the Situation

Having discussed lines open to the enemy in an at-

tempted naval attack on the United States, let us now consider what our military forces can do about it.

This country needs coastal frontier defense by land because:

(1) There is always the possibility of naval attack on our coast despite our excellent navy and the great natural barriers of the oceans.
(2) Such an attack is most apt to occur immediately after the outbreak of war. It might even actually announce the hostilities.
(3) Principal harbors would be the objectives of direct surprise naval attack.
(4) Harbor defenses are the strong points in our coast defense and are the primary objectives of naval attack. Consequently, they must be given priority in war preparations. This is the point of major importance in planning our national defense.

"If the United States," writes General Hagood, "has an adequate navy, plenty of submarines, and aggressive air force and *all of its harbors sealed against enemy ships*, (the italics are mine) the chances of invasion must surely be small."

Defense of Coastal Frontiers

Coast Artillery tactics divide the operations of defense of coastal frontiers into three phases: (1) operations which take place on the high seas and have for their object the control of the sea, (2) operations which occur on the coast and in the water adjacent thereto, and (3) operations on United States territory after the enemy has landed.

In all three of these phases, coast artillery plays an important rôle, with major emphasis, of course, during the second phase. In the second phase the importance of harbor defenses is tremendous—they not only actually fight the enemy warships, but also deter him from attacking. As examples of such deterrents we have Heligoland in the World War and Fort Monroe in the Civil War. These defenses never fired a gun at a battleship but accomplished valuable strategic missions merely because they were there. Admiral Mahan wrote something to the effect that a coast fort was worth more in proportion to its cost than a battleship of equal cost. In these days of $100,000,000 battleships, his statement is more than applicable. Admiral Schofield said, "Harbor defense earns fully, in the battles it may never fight, the cost of its construction and maintenance." As an economizer of man power, the harbor defense has no equal.

The third phase should be the last from every point of view. Too much emphasis has, perhaps, been placed on the use of field armies after the enemy is well ashore. The cost of driving out an enemy is apt to be far greater than that of denying intrusion. The place to crush an invasion is at the beach, for there the advantages lie with the defender. The ocean is a restless and unreliable road to land, small boats are vulnerable to almost any kind of fire and, even on the beach, attackers' fighting power is minimized.

The first phase, however, is far more important to the Corps than is initially apparent. The military doctrine of this country, I believe, envisages a major war involving attack on our coastal frontiers in the following progressive steps:

(1) Overt warlike acts or, less likely, declaration of war.
(2) Concentration of the United States Fleet in the ocean which is likely to be the combat zone.
(3) Delay or destruction of the enemy fleet, while our coast defense establishments are being brought to war strength.

This reliance on a time interval sufficiently long enough in which to mobilize the fighting forces of our army might not work out so well in practice. A surprise thrust at a key position, such as an important harbor, early in the game might well achieve results far better than those which could be hoped for later on.

Because of the assumption that an enemy could not or would not attack our coast until we were prepared to receive him our harbor defenses have suffered. But is this a reasonable assumption? Can we wholly rely on a fleet to keep a determined enemy away from our shores until our reception arrangements are complete? Can a navy protect all the important harbors on a threatened coast until troops can be transported or trained to man the defenses? Might not the "overt acts" announcing the opening of war consist of daring raids on our principal naval bases for purposes of destruction? Might not our fleet be caught off base and a raid in force thrust home soon after the beginning of hostilities? Would not the fleet feel more secure if its supply bases and harbors were safe?

Man Power

On the correct answers to these questions rests the safety of our coastal frontier defense. If harbor defenses must be at full strength immediately after the outbreak of war then some means for accomplishing this end must be sought. The solution to the problem may lie in utilization of the man power that resides in the harbor defense areas. Let us examine this proposition.

The military doctrine of the United States, as stated by the Command and General Staff School, declares that: "The successful conduct of war is dependent on prompt and efficient mobilization. On the outbreak of war, the National Guard supplements the Regular Army in constituting the first line of defense. On the declaration of a major emergency the covering forces, consisting of units of the Regular Army and the National Guard, proceed with their war strength equipment to the theater of operations."

In the June, 1939, issue of the *Army and Navy Journal*, the Protective Mobilization Plan is outlined along these lines: eighteen National Guard and four Regular divisions, five reinforced infantry brigades, corps troops for four corps, army troops for two armies, and certain GHQ and

harbor defense troops to be mobilized on M-day at maintenance strength. It is expected that the maintenance strength of the National Guard will increase to mobilization strength by M plus 10 to peace strength by M plus 30. Thereafter the units are to be built up to war strength by voluntary enlistment. Reserve officers will probably not be used until after M plus 60.

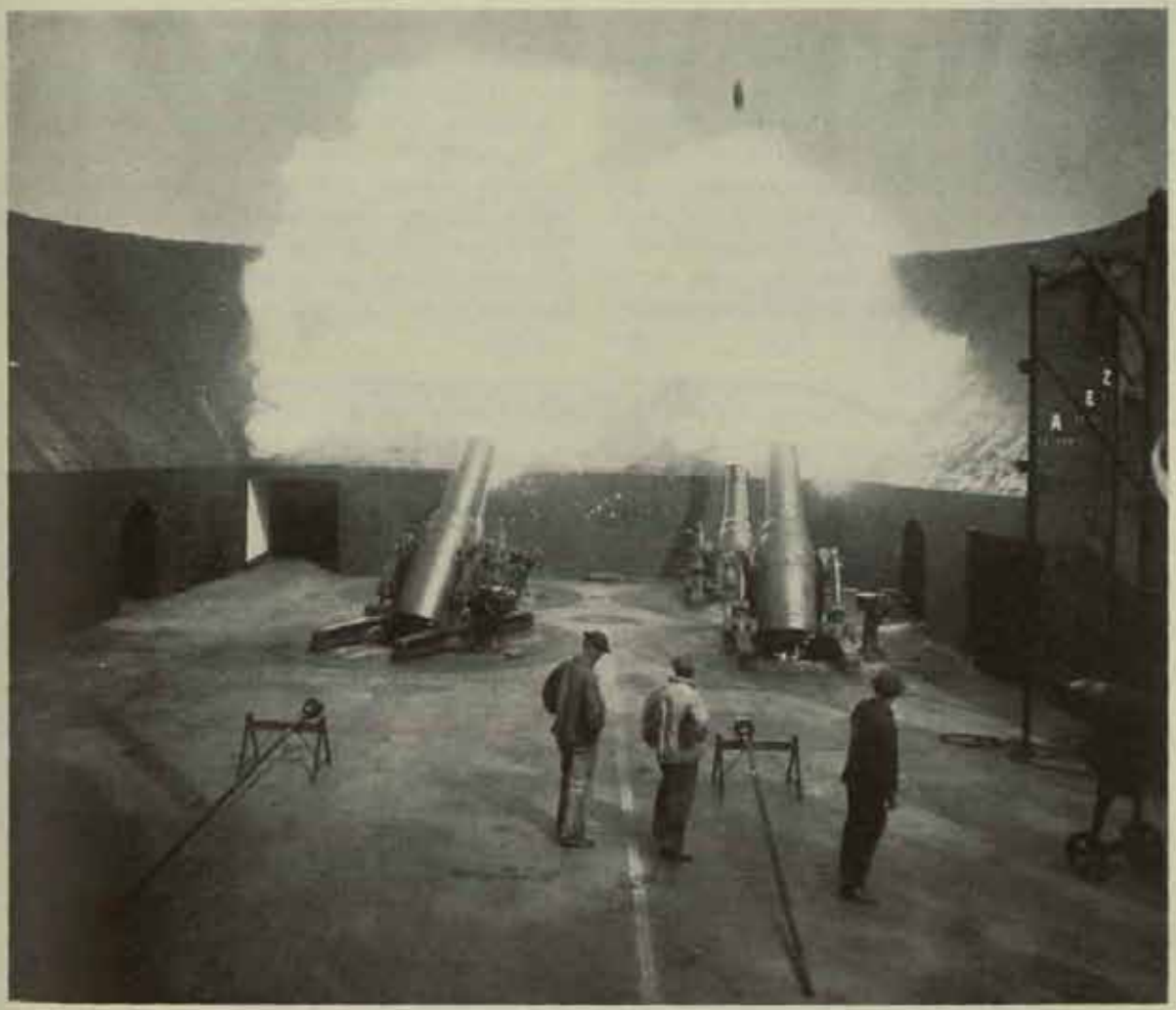
These elements constitute the covering forces which are to be available in the early days of a major emergency. They are to proceed "as is" in so far as personnel is concerned, but will take with them to the theater of operations their war strength, equipment. Those closest to the point of invasion would find themselves at once in the combat zone.

Since the strong points of coast defense are the harbor defenses, it follows that they must be given priority during the mobilization period. On this premise rests the plan now to be discussed. Extensive preparation of the harbor defenses would give two major advantages: (1) naval base security *immediately* on outbreak of war and (2) protection and moral support for the civilian population and their property.

The query immediately arises: "Where is the man power to be obtained to man all essential elements of all the harbor defenses?" There are several sources.

Organized Reserves

Reserve Coast Artillery officers could be quickly mobilized and could probably whip volunteer outfits into some sort of shape within thirty days or more. Such units would be poorly trained and their ability to fight the batteries is correspondingly doubtful, for there is much more to the business of conducting fire even in peacetime than simply manning the guns and fire control equipment. M-day plus 90 would probably be the earliest date on which a harbor defense commander would expect these new units to function effectively. The British peacetime plan contemplated six months training as necessary after mobilization.



Regular Coast Artillery

Regular troops could be transferred from posts not on the threatened coast, assuming that only one coast might be subject to attack. But the number of skeleton regular units is small, as is shown in the following table:

Regular Coast Artillery Regiments, Continental United States

Coastal Frontier	*No. of Regiments*	*Assignments*
Pacific	3	HD
Pacific	2	AA
Atlantic	7½*	HD
Atlantic	1	RY
Atlantic	1	TD
Atlantic	1	AA
Gulf	½ (13th CA, less D and E)	HD
Gulf	1	AA
	15 skeleton regiments	

*Two regiments, the 5th and 9th, consist only of headquarters and headquarters batteries.

As but a few of the existing harbor defenses are manned even by skeleton Regular units, the need for expansion is patent. In wartime, rather than expand these troops to man harbor defense elements, it is probable that units not in the theater of operations would be given mobile assignments. Therefore peacetime expansion is definitely indicated and is now actually taking place on a limited scale. The small number of harbor defense regiments shown above, all have secondary assignments such as truck, tractor-drawn, railway, or antiaircraft artillery. It seems doubtful that they would be used in harbor defenses as seacoast artillery when the need for mobile and antiaircraft artillery is so great.

Our requirements in trained antiaircraft outfits grow each year. At present, it is more difficult to train antiaircraft units than seacoast artillery units. A sudden and huge wartime expansion demands the use of all possible skilled personnel. Consequently, it also seems reasonable to suppose that Regular troops would be employed as antiaircraft units as far as practicable.

While the outlying defenses—Canal Zone, Hawaii, Philippines, etc.—are better manned and equipped on the whole than those in the United States, it is certainly possible that they might need strengthening in emergencies. For this purpose, only Regular troops are suitable within the first few weeks after M-day.

Prior to the World War, the Coast Artillery numbered nearly 20,000 and its sole job was harbor defense. Today the corps is materially less in numbers (about 14,000) and in addition to harbor defenses, it mans railway, antiaircraft, 155-mm. mobile guns, mobile searchlights and sound-ranging equipment and some minor elements. Before the war, the Coast Artillery Corps, according to Major Eliot, formed 27.8% of the authorized strength of the Regular Army; today it forms but 10.7%, and carries on with all these extra duties! It would hardly appear that the Regular Coast Artillery offered a reservoir of man power to make up the harbor defense shortage.

If the volunteer troops, under Reserve officers, would take a long time to organize and train and if the Regular troops have their hands full with important duties, where then can we find a reservoir of reasonably well trained troops from which to draw manning parties for continental harbor defenses?

National Guard

The answer, very simply, is to employ the National Guard to augment the Regular harbor defense troops in manning essential installations immediately after the war starts.

After all, what could be a more appropriate function for the Guard? It springs directly from the Constitution of the United States, which says that Congress shall "provide for calling forth the militia to execute the laws of the Union, suppress insurrections, and repel invasions." As the organized militia, the National Guard has as its very *raison d'etre*, the job of repelling invasions in the *defense of the nation*. We have seen that this defense begins at the sea beaches. It is only logical then to build our National Guard organization with its feet in salt water.

The *Encyclopaedia Britannica* describes the functions of the British Territorial Force (closely akin to our National Guard) as follows: "the possibility of an invasion of the British Isles was always in the mind of the nation; the functions of the territorial force were therefore to supply garrisons for naval and other fortresses; to repel raids; and, by voluntary agreement, to furnish units for the expansion of the (Regular) Expeditionary Force." To repel raids and supply garrisons for coast forts is also, I think, the primary objective of our own National Guard.

Of course, this idea is not new. It has been suggested many times, and in many different forms. It was an actual situation at the zenith of the Coast Artillery Corps seacoast defense system just before the World War. General Arthur Murray, chief of artillery, boasted that, *with the assistance of the Coast Artillery National Guard*, he could man every gun, lay every mine and close every harbor in the United States within twenty-four hours.

General Johnson Hagood expresses this idea clearly and succinctly when he says, "From the National Guard, organize a Coast Artillery reserve—as was done in 1910—ready to go into the fortifications at a moment's notice and sufficient in number to supplement the Regular Coast Artillery in completely manning all the forts and having them ready, sealed against hostile attack, twenty-four hours after the outbreak of war."

On the assumption that National Guard Coast Artillery should augment the Regular harbor defense troops, the problem resolves itself into several parts:

(1) How many additional Guard regiments are required?
(2) Where can they be obtained?
(3) What effects would this increase have on (a) the Guard and (b) the Regulars?
(4) What other effects would it have?
(5) When should this adjustment become effective?

How Many Additional Guard Regiments?

In 1934, the author was a member of a board appointed by the Governor of California for the purpose of determining the advisability of having the Coast Defenses of California become the responsibility of the California National Guard. The stimulus to this action was the disturbed public mind resulting from knowledge of inadequate local defenses revealed by various Chambers of Commerce. Public demand asserted itself in no uncertain terms.

The board reported that "the most glaring deficiencies in the defense of the California coast line are found in its harbor defenses and antiaircraft artillery. The small Regular garrisons are inadequate to man even a small proportion of the armament considered vitally necessary. There are no harbor defense troops in the (California) National Guard, and there is but one regiment of mobile seacoast

artillery (California National Guard) and two skeletonized regiments of antiaircraft artillery (one Regular and one National Guard) available." In 1939, these conditions are much the same, with few exceptions such as the organization of the 65th Coast Artillery (AA) at Ft. Winfield Scott. In all likelihood, this report is typical of all coast defenses in the continental United States.

The board concluded that to take over existing defenses *in toto* was impracticable, unnecessary and undesirable, but that certain Coast Artillery units should be organized in the vicinity of fortifications to which they would be assigned.

The plan, in brief, is to organize National Guard units to augment the peacetime Regular Coast Artillery troops stationed at harbor defenses so that the combined forces would man all existing equipment on M-day. Let us consider the practical application of this plan.

Before the World War, the National Guard Coast Artillery was harbor defense artillery. It supplemented the Regulars, also essentially harbor defense troops, in completing a coast defense force that was the envy of the world. Since then the field army virus has infected the Guard as it has the Regulars, with the result shown in the following table:

NATIONAL GUARD COAST ARTILLERY, CONTINENTAL UNITED STATES

Coastal Frontier	*No. of Regiments*	*Assignment*
Pacific	2	HD
	1	AA
	1	TD
Total	4	
Atlantic	10*	HD
	6	AA
	2	TD
Total	18	
Gulf		
Miscellaneous	None	
(Illinois)	1	AA
(Missouri)	1	AA
(Arkansas)	1	AA
Total	3	

*Includes two separate battalions.

Summarizing, we find that we have totals of National Guard Coast Artillery units in the United States as follows:

Harbor Defense	12
Antiaircraft	10
Truck Drawn	3

Combining these statistics with those of the Regular units already tabulated gives some hard, bitter facts. Here they are:

ORGANIZED COAST ARTILLERY REGIMENTS

Regular Army and National Guard

	Regular	*Guard*	*Total*
Harbor Defense	11	12	23
Antiaircraft	4	10	14
Truck Drawn	1	3	4
Railway	1	0	1
	17	25	42

Distribution on Coastal Frontiers

	Regular	*Guard*	*Total*
Atlantic Coast	10	18	28
Gulf Coast	2	0	2
Pacific Coast	5	4	9
	17	22*	39*

*AA in Illinois, Missouri, and Arkansas are not included

Totals Compared to Number of Forts

	C.A. Regiments	*All Forts*	*Garrisoned Forts*
Atlantic Coast	28	40	37
Gulf Coast	2	9	6
Pacific Coast	9	16	15
Totals	39	65	58*

*Garrisoned, or with caretaking detachments.

Most of the National Guard regiments are almost completely organized with the required number of batteries and equipment. But the reverse is true of the Regulars. Few Regular regiments are anywhere near complete; most are skeletonized and two actually consist only of a regimental headquarters and headquarters battery!

The forts range from mere shells not garrisoned, though some "manned" by caretaking detachments, some with small garrisons, up to the active forts (such as Winfield Scott) which are partially manned. Ignoring those forts which are of so little value that they are abandoned, there remain fifty-eight forts on the coasts of the continental United States, which probably should be manned in wartime. For this purpose we now have eleven skeleton Regular harbor defense regiments and twelve fairly complete National Guard regiments.

It is painfully apparent that harbor defense personnel is woefully short of the necessary requirements. California is a striking example. With seven important garrisoned forts, it has *no National Guard harbor defense troops* and only two Regular harbor defense regiments.

In California, the three Harbor Defense areas of San

Francisco, Los Angeles, and San Diego are of primary importance. These areas are manned by skeleton units of the Regular Army. According to the report to the Governor of California submitted by the board previously mentioned, by "limiting the requirements to the manning of essential *existing* armament, and providing nuclei for the remainder, the absolute minimum appears to be three regiments (containing harbor defense, railway, and antiaircraft elements), and the strengthening of the existing regiments."

To correct this situation I have calculated increases for regiments roughly in proportion to the number of forts to be garrisoned. Obviously, the armament, strategy, tactics and other factors must be considered before accurate figures can be obtained. However, using California in general and the Harbor Defenses of San Francisco in particular as a basis of comparison, I believe the numbers of regiments in the table below are good enough to give a foundation for discussion:

HARBOR DEFENSE REGIMENTS, CONTINENTAL UNITED STATES

Frontiers	*Forts*	*Present Regiments*		*Additional Guard*	*Total*
		Regular	*Guard*		
Atlantic Coast	37	7	10	5	22
Gulf Coast . . .	6	1	0	2	3
Pacific Coast . .	15	3	2	5	10
	58	11	12	12	35

On the basis of the increases suggested above, the nineteen active harbor defenses in the continental United States would have assigned to them National Guard coast artillery, harbor defense troops, seacoast and antiaircraft, sufficient in number and type to augment the Regular garrisons in manning all existing essential equipment in forts that now are garrisoned or in charge of caretaking detachments.

The new Guard regiments would be fitted to the armament and other elements of the harbor defenses concerned. If a typical regiment consisted of a regimental headquarters and headquarters battery, band, and three battalions of three batteries each, approximately 700 officers and men would constitute its maintenance strength. Twelve such regiments would require about 8,400 officers and men. Some of the existing Guard regiments could stand enlarging. Altogether, perhaps 9,000 additional Guard Coast Artillery troops would be involved. Adding these to the present 14,000 Regular troops develops a total of 23,000.

At the present time, New York is the only state with a Coast Artillery National Guard brigade headquarters. The reasons for this exception are not quite clear. If they are valid, the regiments in California also should be organized into a brigade.

Since in all probability only one coast would be threatened at a time, could not this number of twelve additional Guard regiments be reduced?

A method that suggests itself immediately is to transfer units from the unthreatened coast to the theater of operations. This has much the same advantages and disadvantages as those already discussed pertaining to the Regular troops. The advantages are the availability of reasonably well trained troops within a week or ten days. The disadvantages include delay owing to travel, etc., loss of training time during movement, difficulties inherent in occupation of strange defenses and withdrawal of trained personnel from localities. The last point would most surely bring political repercussions from the population of denuded seaports. While transfer of troops is a good solution to the problem, is there a better one? I think there is.

Let us utilize the man power of the areas adjacent to the

several harbor defenses by organizing it into National Guard harbor defense Coast Artillery.

Where Can the Additional Regiments Be Obtained?

On a national basis the plan entails converting many existing regiments into Coast Artillery and it also necessitates forming new National Guard units, but the end justifies the means. If our primary national defense objective is support of the battle fleet and protection of important harbors, then it follows that troops for this purpose must have priority over those required for other purposes.

Let us consider first the availability of man power for the organization of these Coast Artillery units. The following table shows that there would be no difficulty in enlisting enough men to organize the proposed units.

All of the harbor defenses and most of the forts are reasonably close to ample reservoirs of man power. Even Columbia, Oregon, and Key West, Florida, could probably be manned by Guard troops enlisted in their vicinities.

Harbor Defenses and Nearby Cities

Harbor Defenses	*Cities*	*Approximate Populations (1930 Census)*
ATLANTIC COAST (1st C.A. Dist.)		
Portland, Maine	Portland	70,000
Portsmouth, N. H.	Portsmouth	15,000
Boston, Mass.	Boston	781,000
New Bedford, Mass.	New Bedford	112,000
Narragansett Bay, R. I.	Newport	27,000
Long Island Sound, Conn.	New London (8 miles across sound)	30,000
(2nd C.A. Dist.)		
New York, Eastern	New York	6,930,000
New York, Southern	Brooklyn	2,560,000
Sandy Hook, N. J.	Trenton	130,000
Delaware, Del.	Wilmington, Del.	106,000
	Delaware City	1,000
(3d C.A. Dist.)		
Chesapeake Bay, Va.	Newport News	35,000
	Norfolk	130,000
(4th C.A. Dist.)		
Charleston, S. C.	Charleston	62,000
Key West, Fla.	Key West	13,000
	Miami (250 miles)	110,000
(8th C.A. Dist., 2 H.D.)		
GULF COAST		
Pensacola, Fla.	Pensacola	31,000
Galveston, Texas	Galveston	53,000
PACIFIC COAST (9th C.A. Dist., 5 H.D.)		
Puget Sound, Wash.	Seattle	365,000
Columbia, Oregon	Port Townsend	4,000
	Astoria (12 miles)	10,000
San Francisco, Calif.	San Francisco	634,000
Los Angeles, Calif.	Los Angeles	1,238,000
San Diego, Calif.	San Diego	148,000

While highly desirable, the organization of these twelve new regiments may not be possible under the current budget. In that event, some (or even all) of these units could be obtained by converting existing troops of the other arms into Coast Artillery. Again, the question of priority of need arises and here the answer is in favor of Coast Artillery. Furthermore, many troops of the other arms can be trained more easily and quickly than Coast Artillery. From a training point of view, the latter should have priority over the other combatant forces.

In California, which lacks even one harbor defense National Guard regiment, there are two complete brigades of infantry—four full regiments and two brigade headquarters. This state sorely needs three harbor defense regiments, totaling seven battalions at least. If each of the infantry brigades gave up two battalions (one from each regiment), only three new battalions would be required.

Military technicians are becoming more and more essential as mechanization and motorization increase. Thirty years ago, save for a few technical sergeants, the vast majority of soldiers were basically, "simple soldats." Today, the odds loom large in favor of the electricians, mechanics, radio operators, truck, tractor and tank drivers, operators of sound-ranging equipment and so on. Coast Artillery has a somewhat higher percentage of these important technicians than the other arms. It seems reasonable that the peacetime-trained Guard should have its Coast Artillery elements well organized. The arms requiring less technical training can be more easily developed from recruits secured *after* mobilization.

What Effect Would the Guard Increase Have On the Regulars?

The spirit of cooperation between Regular and National Guard Coast Artillery does exist. There can be no doubt of it. But the practical application of this spirit has been given all too little opportunity to go really into action.

In time of war, Regulars and Guard would work together. Shoulder to shoulder, they will receive the first shock of combat. How logical it is to prepare for this critical period by accentuating peacetime cooperation.

Possibly the greatest gain would be the intimate understanding and knowledge established between the Guard and the Regular noncommissioned personnel. This relationship would be a permanent one. For example, the Guard Coast Artillery in San Francisco has been actually functioning for about thirty years. Many officers and noncommissioned officers of the 250th Coast Artillery have been members for fifteen to twenty years. Then too, many Regular noncommissioned officers of the 6th Coast Artillery at Fort Winfield Scott have been there for several "hitches." Think of the work-a-day value of close cooperation and training which can be developed between these two groups.

Cooperation also involves responsibility. There should

be some coördinating agency. This might well consist of the various harbor defense commanders working with the States' Adjutants General.

The Regulars assigned to the harbor defenses would find it necessary to *add* to their normal duties. For the assignment of battery, fire control and other elements to the Guard, would call for some aid in instruction, a certain amount of supervision, and so on.

It would probably be advisable to have the Guard man positions on Saturday afternoons. Since this is normally "free" time for Regulars, this calls for a readjustment of schedules. In the beginning this might be an inconvenience, but the Regulars with whom I have talked feel that the new schedule would soon be accepted as regulation.

The freedom given the Regulars by this plan would permit their employment in wider and more technical fields. With the possible exception of mine laying and control, the telephone and radio system, and ordnance, signal and quartermaster functions, the Guard troops could relieve the Regulars of much of the routine garrison duty.

A major emergency always calls for expansion of organizations, which usually results in additional vacancies and promotions. Would utilization of National Guard Coast Artillery units diminish the Regular's opportunities? It would appear to *increase* rather than decrease promotions by sending the Regulars into the field. There the formation of new regiments and brigades would be much more apt to occur than within the harbor defenses.

Training. The Guard's year is divided into the armory training period and the field training period.

As its name implies, the armory training period has its activities in the armories. However, there are many days each year during this period when actual field (outdoor) training is carried on—such as motor transport, communications, orientation and small-arms training.

In some cases, as in San Francisco, it would be simple to move the troops to the harbor defenses for "armory" training. But in others, such as on Long Island Sound, the movement would present a real problem. But by and large at least one armory drill period in each quarter should be spent by each Guard battery manning the equipment in the harbor defense which is its wartime assignment.

This drill period could be on scheduled Saturday afternoons, from three to four-thirty, to meet the legal armory drill requirements. In most instances, transportation by truck or boat can be provided from harbor defense or National Guard equipment.

One of the chief advantages of having Guard troops man harbor defenses is to obtain familiarity with the installations they are destined to occupy in time of war. Proximity is not enough; there must be actual occupation of the harbor defenses and training in their use.

The annual field training period of fifteen days offers a suitable opportunity for practical work on the equipment assigned for wartime. But it is suggested that this local training be alternated with periods in some other harbor defense, and the reason for this paradox is recruiting.

Enlistments. Perhaps the biggest peacetime problem the National Guard battery commander experiences is that of recruiting. In some units, the annual turn-over of enlisted personnel is about 50%, or, as one battery commander expressed it, 100% of 50%. By this he meant that about 50% of his battery remained unchanged through one or more three-year enlistments, while the other half was constantly changing for one reason or another.

The "permanent" 50% includes most of the key

personnel, but the "revolving" 50% is most important in the effective functioning of the unit.

As civilians, Guard personnel must obtain leave from civil occupations in order to attend field training. In most cases, this means that the fifteen days of field training is the only vacation a Guardsman will get.

To say that recruiting depends on a summer encampment removed from the "home town" atmosphere is perhaps putting it too strongly. Nevertheless there is a very definite recruiting value in offering a field training period in remote terrain—fifty miles or more from home. Perhaps a compromise of four or more armory drills in the local harbor defenses annually, together with field training during alternate years would prove a happy solution.

Other Factors Involved

The first part of our continent liable to attack would be our coast, so on our coasts we have organized defenses to be manned by both Regular and National Guard Coast Artillerymen. The principle is right, but the degree of application, in the opinion of many citizens, is wrong. The necessity for more troops in the harbor defenses is the obvious conclusion. This would be a popular project with civilian communities near harbors requiring defense.

These communities have an opportunity for splendid National Guard publicity with the slogan *"Guard our harbor."* This should help in the continuous problem of recruiting. The Chambers of Commerce in many Pacific coast cities are definitely in accord with the idea.

So far as the other factors of National Guard value to local communities are concerned, such as pride, parades, money, troops for emergencies, etc., there is nothing to lose by having many Guard units organized as Coast Artillery to augment local harbor defenses.

While a detailed study of armory facilities has not been made, I have talked with National Guard officers from every state that has harbor defense regiments. They tell me that, for the most part, minor additions and changes in existing armories would permit the training of additional Coast Artillery units.

In essence, the guard is a "home station" organization. The same units remain in the same communities for generations in many cases. This very permanence of organization fits in perfectly with the fixed fortifications of harbor defenses. The manning of these installations by Guard troops is a "natural."

Yet, troops assigned to harbor defenses are not necessarily lost to the mobile forces. Coast Artillerymen have repeatedly proved their ability to man mobile heavy artillery and antiaircraft weapons most effectively. Training within the harbor defenses affords an excellent basis for general artillery functioning in the field.

Armed with rifles, pistols, machine guns, hand grenades and beach mines, the modern Coast Artillery unit can play a most effective part in beach defense if need be.

Should hostilities begin suddenly, the fact that every essential position in the threatened harbor defenses could be filled in twenty-four hours or less would most surely stiffen the backbone of our defense. The knowledge that our organization can expeditiously man the fortifications should prove a powerful deterrent to attack.

A prompt mobilization of trained troops in the harbor defenses would serve to prevent sabotage of vital installations. If every essential position is manned, there is little likelihood of alien operators doing much damage.

Conclusions

The thread of reasoning through this essay runs something like this:

(1) The United States can be attacked.

(2) A strong navy is required, since attackers will probably come by sea; but the navy may be unable to prevent an invasion: therefore an army for defense is needed.

(3) The army's chief function is the defense of the coastal frontiers.

(4) Fortifications are essential parts of the coast defense because they secure important harbors as fleet bases and points of concentration and deny them to the enemy. They relieve the fleet of the task of guarding protected harbors and give it freedom of action. They protect vital industrial and military installations and accomplish these objectives most economically.

(5) Harbor defenses are the strong points of our coastal frontiers and as such should have priority.

(6) The best way to get the necessary garrisons, next to having large Regular Army garrisons is to utilize National Guard troops organized in the communities to be defended.

(7) Enough troops—Regular and Guard—should be always available to man all existing essential equipment in at least those harbor defenses on a threatened coast.

(8) Since "Time Dominates Warfare," it is not wise to try to train newly recruited units for this task.

(9) These additional Guard troops can be obtained by authorizing new organizations or by converting existing units of other arms to Coast Artillery.

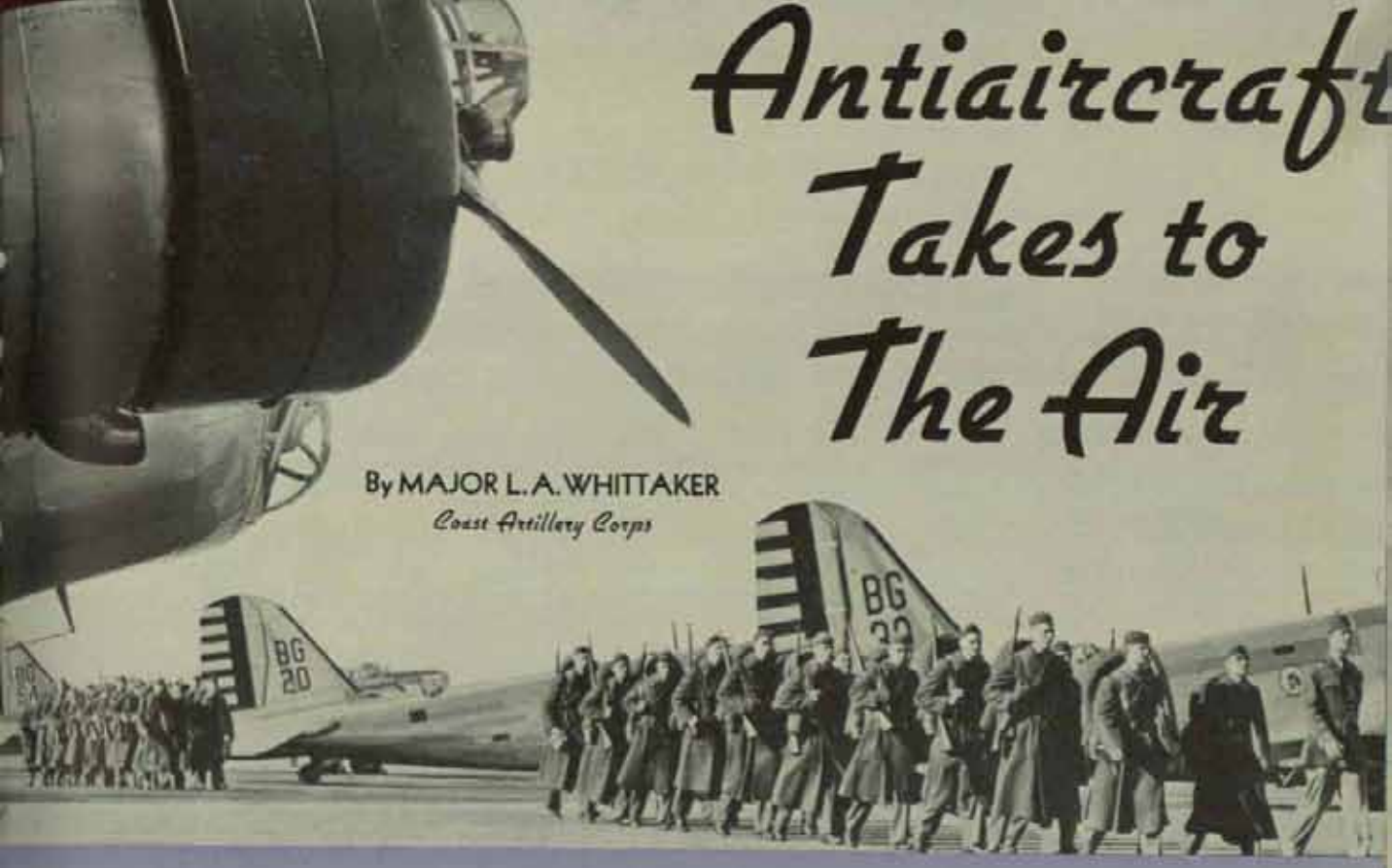
(10) There are ample Guard units to permit this conversion without injury to the organizations affected.

(11) Coastal populations will heartily support such defense measures.

(12) This readjustment for the strengthening of national defense can be made with a minimum of time, effort and expense

Antiaircraft Takes to The Air

By MAJOR L. A. WHITTAKER
Coast Artillery Corps



As the 2d Battalion, 65th Coast Artillery (AA) arrived at March Field after the flight from Hamilton Field.

On January 13, 1940, there took place the first mass troop movement by airplane in the United States, in which a complete combat unit with weapons and camping equipment, were transported from Hamilton Field to March Field, California.

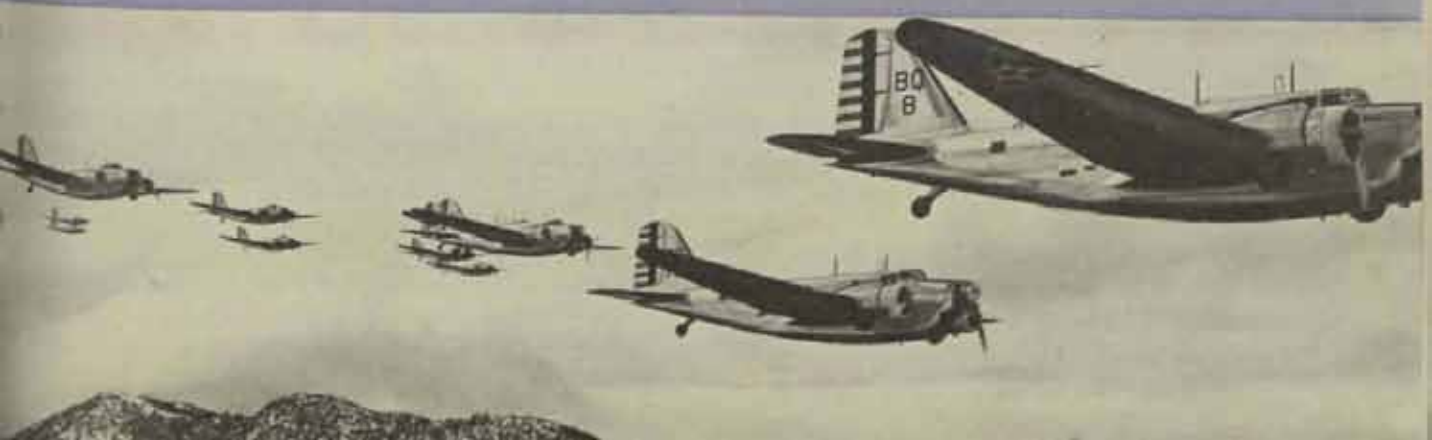
The 2d Battalion, 65th Coast Artillery (AA), consisting of 342 enlisted men and twelve officers, was organized into three infantry companies and a headquarters detachment. Each soldier carried complete field equipment, two additional blankets, rifle, field belt and bayonet. Six .30-caliber machine guns and ammunition for all arms, as well as field ranges, kitchen equipment and rations were loaded into the planes. Thirty-eight bombers of the B-18 type were used in the movement, each of thirty-five planes carrying ten men, and three being utilized as cargo planes.

Owing to a severe storm, the entire flight was forced down at Bakersfield, where it was necessary for the troops to spend the night. They were sheltered at the Kern County Fair grounds, and resumed the flight to March Field the next day.

The Air Corps' efficiency assured success of this movement. Another contribution to success was the readiness of the American soldier to volunteer for extra duty. When the call for volunteers was issued, over 450 names were received. Almost all of the troops were recruits with but a few months service. It was expected that many would be air sick, and special precautions were taken to supply each man with a container to take care of the situations which might "come up."

The Coast Artillery is pleased to have the distinction of furnishing this battalion; and the general reaction of the troops was "When do we do it again?"

Here are several of the troop-carrying B-18 bombers wending their way over rugged terrain.



Where Buford held the ridge at Gettysburg

Man on Horseback

By *Fletcher Pratt*

It is in the last degree improbable that any of the officers in Eylau cemetery, peering out into the snow scurries of 1807, as glittering Murat thundered past at the head of 14,000 horsemen, realized they were taking part in the closing event of an era that began with the destruction of the last of the legions at Adrianople, more than fourteen centuries before. They were more concerned about the cold and the Russian infantry; and they were not men given to long-range speculation of any kind. They watched, then; and saw for the last time cavalry armed with cold steel wreck infantry defending itself with hot lead.

Not that there was any cessation of effort on the part of the cavalrymen. They tried the thing again at Wagram, at Leipzig, and notably at Waterloo, but some accident—the slope of the ground, Scharnhorst's batteries, or the

Illustrated by
H. Charles McBarron, Jr.

sunken road of Ohain—seemed always to give the man on foot the advantage during the rest of the Napoleonic struggles. Local accident seemed again to have intervened against the man on horseback, on the battlefields of Latin America, the Crimea, and North Italy, but these were local wars. It was only when the commanders of the American Civil War failed to use their big masses of cavalry as such masses had been used by Ziethen and Murat that the case seemed to call for explanation; and the explanation found was that of a terrain unsuited for cavalry operation, and a people who did not understand it save for the brilliant exceptions of Forrest and Stuart.

It has taken three-quarters of another century to demonstrate that at least three officers on the Northern side understood the uses of cavalry very well; that the true brilliance rested with the men who beat both Stuart and Forrest; and that the Union cavalry technique in its final form was not a mismanaged form of the war that had gone, but a startling anticipation of the war to come. And not merely of the war to come in 1914; for the more attentively one studies the Civil War, the clearer it appears that the Union cavalry movements of 1864 are the perfect pattern for the probable infantry operations of future war.

In a sense this anticipation also was an accident, but only in the very broad sense that after the surge of the French Empire rolled back from la Haye Sainte, chance should order the next major war to be visited on a nation whose only cavalry tradition had been derived from Indian skirmishes; and that it should be opposed by armies whose cavalry was drawn from a landed class that considered mounted action the only chivalric method of making war, the mounted charge the crown of every horseman's existence.

From the start of the war the Confederate cavalry was good in the traditional fashion; from the start it achieved a decisive superiority over the Union horse, which was composed of a few squadrons of Regulars trained in the

scatter tactics of the Indian wars, and a considerable number of farmers on plough-horses. Cavalry contacts in 1861 and the early part of 1862 were so uniformly Confederate victories that when General John Pope came east "Who ever saw a dead Cavalryman?" was already a catchword in the Army of the Potomac.

II

All things considered, Pope was probably the weakest general Lee faced, but there is one thing to be said in his favor. He insisted that combat intelligence was the only kind on which a commander should base his own operations, and that cavalry alone had the mobility to get such information and bring it home while it was still warm. McClellan had relied on spies; they filled his nights with dreadful bugbears about a Confederate army—250,000 strong. At the same time, as the result of several distressing encounters between his own troopers and Jeb Stuart's command, he had given orders that his cavalry should not get out of sight of its supporting foot, which was about like putting it in rocking chairs.

Pope did not regard the early work of Stoneman and Pleasonton as exhilarating examples of cavalry technique, and when he organized the Army of Virginia his first care was to find a new chief for his mounted arm. He discovered the man in one he had known during frontier days—John Buford, then a mere brevet major in the Inspector General's Department, while men in West Point classes junior to his already had their stars. He was a big, blond, slow-moving man with a curly beard, who had been in the West since his graduation in '48, had played quartermaster during a celebrated thousand-mile march to Utah, and had more currently seen one or two of those distressing encounters with the Rebel squadrons.

A man from the Inspector General's Department is in a peculiarly good position to make observations in minor tactics. Except for his subsequent actions we have no clue as to the precise nature of Buford's observations (the only papers he left were reports distinguished for their brevity). But those actions speak with the tongues of men and of angels, and the thing they say is that John Buford found the existing minor tactical doctrine of the United States Cavalry entirely wrong.

It is probable that he explained his views to Pope; he explained something to the General, who jumped his new chief of cavalry through the grades to brigadier and put him in charge of the horse of Banks's II Corps. In theory this made Buford only equal to the cavalry brigadiers of the two other corps, but he had five regiments, and those the largest, while Bayard of the III Corps was given four weak regiments and Beardsley of the I Corps was kept in army reserve with three regiments. Buford had 3,000 of the 5,000 cavalry with the army, and within ten days of his appointment was at the front, testing his ideas in battle.

It seems clear that he thought the horse had no more place on the battlefield than the elephant; rejected utterly the European idea of heavy cavalry delivering a violent shock which was so wholeheartedly adopted south of the Mason-Dixon Line. There were several press artists at the front, good observers. They have given us drawings of cavalry under other officers charging in three or four lines or by checkerboard companies, tightly knotted. On only two occasions are charges under Buford pictured; in both his horsemen are riding forward in a loose, irregular line, for all the world like an assault wave of World War infantry. More remarkable still, only one man in the line has his saber out in either drawing; all the rest grip pistols, and the captions show that these "charges" are pursuits of an enemy already on the reflux.

Nor did Buford (apparently) make any bones about admitting that the Union could never meet the Confederate cavalry on equal terms—as cavalry, in the saddle. His departmental experience assured him that the defect was mainly one promoted by Nature, which had given the Southerners so much the better mounts. He accepted it and turned it into a virtue, and there is a striking passage in the records of August 13, 1862, which shows how he did it. Kilpatrick, with a force of Union cavalry, encountered some Rebel troopers on that date. His report tells how he routed the first detachment he met in a rousing surprise charge, held his own against a second and was only driven from the field when a third fell on his flank. What lies behind this mass of Rebel riders he can only surmise from their number and presence in such a place.

On the same day Buford's brigade was in action. "A strong line of dismounted skirmishers was thrown out," he reports, "who soon drove away the enemy pickets," and goes on to tell how his men took cover, using the support of their artillery. Confederate cavalry swoops down on them and goes back again, with a good many saddles empty. Buford does not retire till two brigades of enemy infantry have come into action, have been identified and are feeling for his wings, when he gets to horse and rides away, with insignificant loss.

The source of this new tactic is evidently the Indian wars, in which the saber had already become vestigial during the early fifties, and where a massed cavalry charge only afforded a good target for Indians who lay on their bellies all over the landscape. The interesting thing—we can see it now—is that contemporaries were right in maintaining that Buford's was not a cavalry technique. It is precisely the method of a modern fast motorized column of infantry, with the difference that the transport runs on oats instead of gasoline.

III

The first clashes of the campaign took place at Cedar Mountain, where General Banks's corps was badly broken in an ill-advised attack on the nearly triply superior force of Stonewall Jackson, and at Madison Court House, out on the right flank toward the mountain corridors, where Buford fought Stuart. Bayard was covering Banks's front that day while Buford was away on his mission for Army HQ to the west; and Bayard failed to break the Rebel screen. Both he and Banks wrongly estimated the enemy

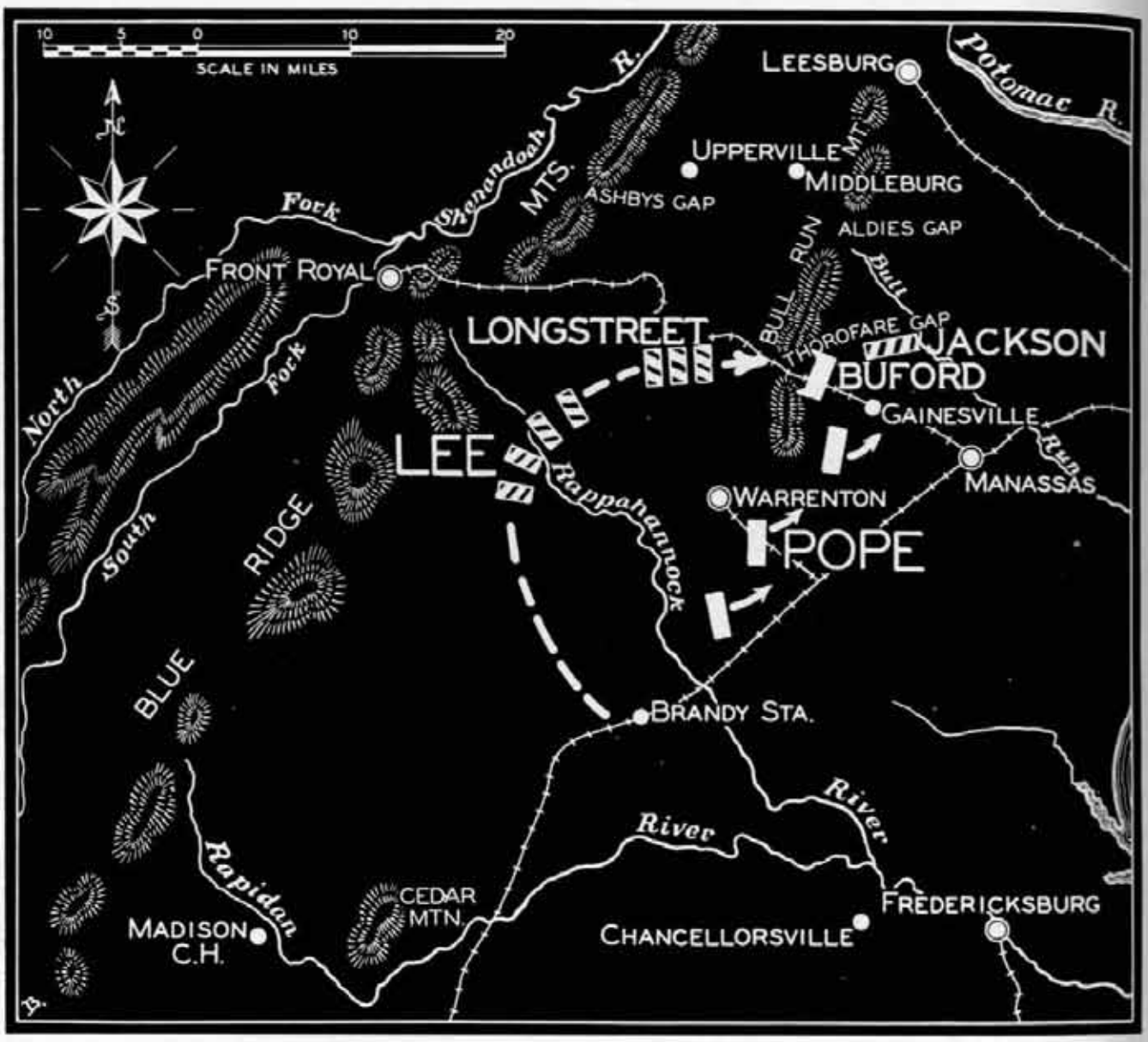
JOHN BUFORD

He found the tactical doctrine of cavalry entirely wrong.

were in no great force, and Pope's orders being ambiguous, there was an attack and disaster.

Stuart attacked Buford from the saddle; Buford defended from the ground. He was heavily inferior in numbers, his men not quite used to the new tactic; but he managed to pull out with the command still in shape to march and fight, and what was more important, a good bag of prisoners, including Stuart's personal adjutant who had in his pocket a letter from Lee clearly outlining the ground plan of the campaign. That letter told Pope what to do and he did it—namely, retired to the angle where the north fork of the Rappahannock meets the Manassas Hills and prepared to hold the line till reinforcements reached him through Washington. Buford covered his right flank, in broken ground.

It was out of this arrangement that Lee drew his wonderful plan for Second Manassas, sending Stuart on a long raid around the Union left to draw their attention thither, then Jackson on an equally long circuit, behind the hills and through Thorofare Gap around the other flank onto Pope's rear. One critic has remarked that the execution of such a plan required a Stonewall Jackson. It required more than that; it required that the Union cavalry should be what it had always been—prone to energetic and futile charges against the first enemy element it encountered or to equally energetic flight. But the



Map 1: Second Manassas.

Union cavalry on the sensitive flank was not what it had been; it was Buford with his "motorized column." He clung to Jackson's skirts like a burr; when he encountered the enemy, spread skirmishers, brought up his guns, and shot it out till the enemy's full strength was developed. Before Jackson had gone two days Buford knew his full strength and purpose; and history has had nothing to add to the reports in which they were described in every detail.

Pope correctly planned to turn and throw his full force on Jackson. The move failed through the fumblings of inefficient corps commanders and the fact that the General simply could not write a clear, definite order, and Lee followed Jackson through Thorofare Gap. Now as Pope wheeled back to deal with Jackson, the Union right had become its left, and Buford on that flank was at Thorofare Gap when Longstreet came through it at the head of Lee's column.

The tragedy of the campaign was that the Union cavalry leader did everything right and the Union high command everything wrong. The Gap, though not a true pass, has fairly good ground for a defense. A whole day before Longstreet began climbing the slope, Buford had correctly identified seventeen regiments of the Confederate infantry, Stuart's horse, and the Rebel reserve artillery, had reported their presence, and asked for support. Pope had only to put in one of the corps which were wandering muzzily about Gainesville; he would have the Confederate wings cut apart and could deal with both at his leisure.

What he actually did was altogether lose sight of Buford in a fog of war, even withdrawing the single division of Ricketts' which was giving the cavalry brigade distant support. Longstreet rushed on; Buford dismounted his men and made a defense truly heroic, holding 27,000 men of the main Rebel army with his little 3,000 for six whole hours, till the Confederates were around both his flanks

and partly in his rear, till they brought up their big guns, sending off appeal after appeal. Pope was beyond paying attention, Longstreet broke through, and Second Manassas followed as inevitably as four follows two plus two.

After the defeat the duty of covering fell on Buford's brigade; both Bayard's and Beardsley's commands were too worn out with mere riding to be of service. In action at Lewis's Ford, Buford took a wound believed for a long time to be mortal, which effectively eliminated him from the campaigns of Antietam and Fredericksburg, though he held a nominal staff position during both.

It is noteworthy that after Second Manassas Stuart reorganized the Confederate cavalry into sharpshooter and saber companies and increased the attached artillery. This was not "proper" cavalry technique either, but at least it furnished a partial reply to the intolerable nuisance of Buford's new method.

IV

Chancellorsville found Buford back in the saddle, now in command of one of the three divisions of the new Cavalry Corps, but bad weather, Hooker's impatience and General Stoneman's case of piles spoiled whatever chances the horse had in that campaign. Brandy Station came next; Pleasonton commanded the corps there, an old-style cavalryman who preferred mounted action and the saber, but the new technique was spreading, and the battle turned into a wild mêlée of charges mounted and dismounted, skirmishers on foot and horseback. Pleasonton accomplished nothing positive and his command was badly mauled; but Stuart was cut up too, and found it quite impossible to clear the Union horsemen from his path for an advance by Lee outside the Blue Ridge, so that the great invasion of Pennsylvania went wide, up the valley of the Shenandoah.

All along the mountain gaps there was fighting through that June—at Aldie's, Upperville, Middleburg, Ashby's. Buford did most of it in person and Buford's new system all. "There was no regular line formation," says one who was there, "but the Indian mode of fighting was adopted on both sides, by taking advantage of every stone, fence, bush or hollow." The index of tactical victory swung to and fro; strategically the gain was all to the Union, for Stuart could get no certain news of Hooker's movements. and the very incidence of the fighting ticked off the steps in Lee's progress. By turning his horse into a flying wing of infantry, Buford had forced his opponent to do likewise, and the great invasion moved half blind.

Stuart fretted; Lee, under the impression the Union main force was south of the Potomac and could be held there, shot him off on a spectacular raid between Hooker and Washington, and marched on. But the day was past when the Northern high command could be disordered by such empty menaces. Hooker, and Meade, who succeeded him about this time, simply fanned out Gregg and Kilpatrick with two small cavalry divisions on Stuart's trail, and kept right after Lee, with Buford hanging to him as he had hung to Jackson before Second Manassas. Stuart was not caught, but neither did Lee learn Meade's whereabouts till the last day of June, when his scouts brought in a German farmer with a Washington newspaper in his pocket, which told of the Army of the Potomac already in Pennsylvania and feeling west toward the Confederate communications. The Rebels could get food from the country, but not bullets; they had to turn back.

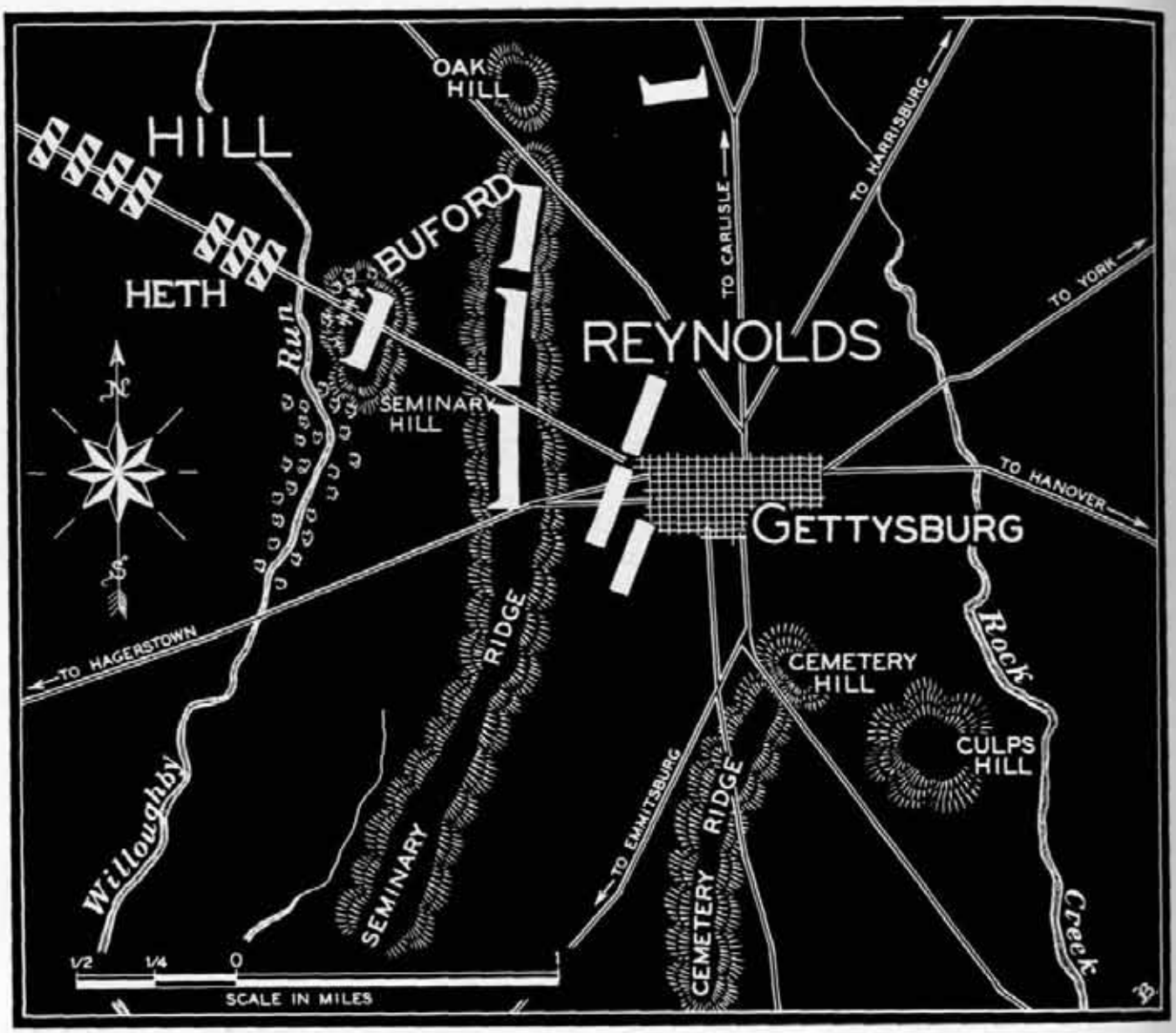
Meade had expected Lee to come down on him, and was all ready, with a line of intrenchments along Pipe Creek, but his plan was an engineer's plan, physically perfect but faulty in psychology. His troops were already north of the Pipe Creek line; retreating before battle is probably the world's best way of discouraging your men, and the Pipe Creek position imposed no compulsions on Lee, who had only to drop a containing force and throw the rest of his army toward Philadelphia in order to force a fight on his own terms.

But John Buford had been assigned to scout through Gettysburg on the 30th of June, and in the chain of causations that led through the next three days to the hour when Pickett's high tide ebbed, was to play the first and perhaps the greatest rôle. Late that afternoon he had ridden through the town, driving a Rebel detachment before him to the west (Map 2). The road there runs across a chain of ridges; he took possession of two and flung his pickets far on the heels of the retreating graybacks, both west and north, nearly ten miles beyond headquarters. Before his men bedded down they had been disposed as skirmishers, the horses had been sent to the rear and the artillery posted for a regular infantry battle; couriers were burning up the roads with dispatches to Pleasonton, Reynolds of the I Corps, and Howard of the XI.

The Confederates had been encountering some absurd local militia, armed with nothing more lethal than shotguns. As Heth with the first division of Hill's Confederate corps came along the road from the west in the flat dawn light of July 1, he thought the first elements of Buford's deep defense were more of the same, and did not bother to deploy or report anything unusual. There was a little wood on the first ridge Buford held; as Heth's men came in sight, three cannon-shots came from it and then a storm of rifle fire that surprised and disconcerted the Confederate advance. The Rebels deployed and formed for an attack; and as they were forming Reynolds was rushing in with the I Corps as fast as his men could march.

At 9:30 Buford beat off that first attack. Heth waited for artillery. At 10:00 Reynolds rode forward ahead of his men, and climbed with Buford into a steeple, where the cavalry general pointed out the Confederates advancing west and north, and away behind the huge mass of Cemetery Ridge, an ideal position. "Tell General Howard," said Reynolds as he came down, accepting Buford's suggestion, "to form on that ridge."

It was the crucial order of the battle, and now came the crucial moment. Buford's dismounted horsemen had just retreated from the first hill and were mingling with



Map 2: Buford at Gettysburg.

the first regiments of the I Corps, the black-capped men of the Wisconsin Iron Brigade. Heth charged again at 10:30, under his guns; the Iron Brigade and dismounted cavalry went in together in a counter-charge. "There's those damn black-hatted fellers again! That ain't no milishy, that's the Army of the Potomac!" someone heard the Rebels cry, just before they broke.

Heth's leading brigade was through for the day, nearly all killed or captured. It was noon and afternoon before he could get his front rearranged, his other brigades into line. Meanwhile the I Corps had reached the field complete and Howard's stubborn Germans of the XI Corps were just beginning to file in behind. But Ewell had now appeared on the north road, with a third of Lee's army behind him, and if they got through, it would be onto the rear of the I Corps. Buford had had part of one brigade out that north road since early morning; in the lull between Heth's drives, he got the rest of his men into the saddle, took them to the north and dismounted them again, for an encore of the performance he had just given.

Doubleday, who had succeeded to the command of the I Corps when Reynolds was killed in the morning, complains that this line of Buford's was too far out, leaving his right flank in air. Perhaps so; but Buford showed himself a capital tactician on other occasions, and this time he made his first defense so far to the north that Ewell and Hill were unable to establish communications with each other and coördinate their attacks. Moreover, Ewell, like Heth before him, had to deploy at an unreasonable distance from the line where he was to do his main fighting, in mid-afternoon, with Howard all in line against him. In his advanced position Buford was eventually overwhelmed by main force, but when he was finally driven in, Hancock was already at hand, the XII and part of the III Corps were closing in and it was too late for Lee to win his battle that day—or any other.

During the evening Buford's division was taken out of line and sent back to guard the trains. It was completely shattered, but it had gained two hours—the two hours most needed—for Reynolds; and two hours again for

Howard, each time by standing off a Confederate corps. It was more than any other cavalry leader in the Union army could or would have done. One can imagine an able ordinary Cavalryman—say Kilpatrick or Pleasonton—at the head of Buford's men in the morning, and the result. A brilliant charge on Heth's head of column; a brief showy victory, the division broken by the steady surge of Confederate regiments behind, and Ewell or Hill or both on Cemetery Ridge by noon. And if the picture seems overdrawn, it is only necessary to remember that this is exactly what happened when Kilpatrick did come on the field in the evening, with the difference that Cemetery was already gripped tight.

It was Buford's last service, except for minor bickerings during the retreat from Gettysburg. In December, '63, pneumonia and his old wound brought him to bed, and there in Washington he died what the Vikings called "a straw death."

In 1807 at Eylau cavalry for the last time wrecked infantry.

Guerilla Warfare

There is a classical Chinese proverb that "Victors they are kings, vanquished they are bandits," meaning that when rebels win they establish a new dynasty, but if they lose they are historically dismissed merely as outlaws. Most Chinese philosophy is equally pragmatic, and much Chinese history has been in application thereof.

Today the ancient aphorism might be revised to read: "Against Chiang Kai-shek they were bandits, against the Japanese they are guerillas."

For the greater part of the approximately one million guerillas who have been participating in the Sino-Japanese undeclared war are simply in the Chinese tradition that is manifest in the folklore Mrs. Pearl Buck translated into English a few years ago under the title of *All Men Are Brothers*. But the Chinese expressions that translate into the English "bandit"—the most common literally meaning "red beard"—have not the same connotation in the Chinese that "bandit" has in English. The classical Chinese bandits, generally organized into large and internally well disciplined bands, were of the Robin Hood rather than the John Dillinger strain, at least in popular concept. And they even rationalized their activities as *ti t'ien hsing tao*—to carry out the way of heaven. Further, this rationalization was accepted in the somewhat baffling Chinese attitude to things, which in many ways meant rigorous mass regimentation and in other ways was almost anarchistic. It is sufficient to say here that all government and opposition to it alike invoked heaven; any existing government was rarely if ever popular, and a bandit of today might be the ruler of tomorrow.

In modern times, indeed, almost all Chinese rulers, national and provincial, got their start as bandits. Also, it has been the accepted practice that when any bandit band became too powerful the established authority in their area would seek to enlist them, on the basis of suitable financial arrangements; "if you can't lick 'em, hire 'em" is the Chinese version of an American political axiom. Virtually every regular army of China has a large quota of ex-bandits. With the break-up of the old Manchu Empire, in 1911, there was naturally a vast increase in banditry, although at all times in Chinese history it has been both a widespread and accepted aspect of civic life.

Nor is the rôle of the bandit different today than in previous comparable periods of Chinese history: whenever there has been an alien invasion, he has generally become a "patriot." True, bandits have often "sold out" to invaders, but again we come up against a somewhat baffling Celestial attitude: to "sell out" in China doesn't mean sincerely serving the person you sell out to, but is rather a tactical procedure to deal with him more decisively at a

more propitious moment. The Japanese are fully aware of this in their relations with Chinese "puppets"; but lest there be misunderstanding, a clear distinction should be made between such a figure as Henry Pu Yi—who is a Manchu, not a Chinese—and any of the so-called puppets who are Chinese.

In further introductory clarification, it may be noted that the name "guerilla" is adapted from the West, and in application in China it denotes a way of warfare rather than most of those engaging in it. There are, as will be brought out later, some Chinese guerillas who quite closely correspond to the soldiers similarly designated in Western military annals; but it cannot be too much emphasized that the bulk of them are in the *Chinese* bandit tradition, which means that even if a peace is made they will continue pretty much as they are now—only they will then be officially branded as bandits, perhaps by a "puppet" government that is actually coöperating with them! Less than five years ago many thousands of the most efficient current guerillas were "Red bandits" in all the official communiqués of General Chiang Kai-shek's régime.

Although the name "guerilla" was not then employed, the first guerilla fighting against the Japanese was launched in Manchuria late in 1931, just after the Nipponese

n China

By Wilbur Burton

armies occupied Mukden. Those participating in it were called "volunteers." They were, in fact, the former bandit bands when Chang Hsueh-liang was the warlord of Manchuria, augmented by soldiers from his disrupted armies —many of whom had originally been bandits. "Volunteer" was, in a way, a very suitable designation, since there is practically no such thing as a volunteer in the Chinese regular armies. They are bought over bandits, drafted coolies, or recruited by a family conscription system. That is, each family must supply so many men with the eldest son being exempted; and, of course, the well educated are exempted by ancient custom—common soldiering being for the illiterate—although there have been many exceptions to this in the current warfare.

After Manchuria, the next development in Chinese guerilla warfare was in the battle of Shanghai in 1932, and here was something a little beyond ancient tradition. The Japanese, it will be recalled, operated from the Hongkew part of the International Settlement, and the Chinese 19th Route Army did not venture to attack them there *as an army*. But several hundred of the best marksmen

CHU TEH. For years a foe of Chiang Kai-shek, Chu Teh has sworn fealty to Chiang and now leads the Eighth Route Army—spearhead of the guerilla war.

changed from their uniforms into civilian attire and filtered into Hongkew, concealing themselves in the top stories of the maze of buildings and wreaking great havoc among the Japanese patrols. In addition, the leading Chinese gang chief of Shanghai—a truly super-Capone—sent a few hundred of his gunmen into Hongkew, who also proved very effective. All these sharpshooters were collectively designated at the time as "plainclothes snipers" and it took the Japanese three weeks to get rid of them, often by spraying the top stories of whole blocks with machine-gun fire. (The writer's own house at the time, in which he was *not* present, was riddled, although it did not appear subsequently that there had been any sniper there.)

From the Shanghai war of 1932 until that of 1937, there was a lull in China proper in so far as Sino-Japanese military activity was concerned—most of the fighting of this period being by General Chiang Kai-shek against the "Red bandits,"—but guerilla warfare continued in Manchuria, often on the outskirts of such cities as Harbin and Mukden. In so far as food was concerned, the guerillas—or "volunteers"—lived off the country, just as they had in the days when they were simply bandits. They were armed mostly with rifles, although some had a few machine-guns, and these and the munitions for them came from several sources: from raids on Japanese outposts

Even pack artillery specializes in hit-and-run tactics. Mules are an absolute requirement in a country abounding with difficult mountain trails, impassable for motors.

from the Soviet Union, and through Mongolia from China proper. Too, some were purchased (with money contributed from China) from Japanese gun-runners. The guerillas, knowing the country intimately, and operating in relatively small bands—from two or three hundred to sometimes, but not usually, as many as a thousand—could attack and retreat so quickly and effectively that not many were caught or killed even when they were repulsed. For long they kept the country in turmoil, with the Japanese resorting to such measures as forbidding the planting of kaoliang within a quarter of a mile of railway tracks since it furnished cover for raids that constantly disrupted communications.

In these years of Manchurian guerilla warfare, several significant factors demonstrated the differences between the Chinese and Japanese as fighters. They displayed in common a stoical, fatalistic sort of courage, but the Japanese were only effective in mass formation. There, in offense or defense, they were fully the equal of any similarly large and similarly equipped force; but in guerilla warfare they were no match for the Chinese. A Japanese alone or operating in a small band seemed lost, while the Chinese—probably because of the long bandit tradition—appeared to be all the better when in a small unit or alone and maneuvering amid trees or rocks or kaoliang. Also, especially in cold weather, the Chinese revealed superior hardihood. What either a Chinese or a Japanese can live and fight on in food would utterly amaze an American soldier. The writer has in his day dined with all three, and what even Chinese and Japanese officers eat would—in both quantity and quality—reduce an American private to utter speechlessness, at least for a time, with reference to the mess sergeant. And the Japanese diet is generally even less than that of the Chinese.

But the Japanese is generally far better clothed, although even in his warm silk and wool and leather he invariably suffers more than the Chinese clad only in cotton-quilted material with shoes also of cotton, or straw—or maybe none at all. The Japanese often cannot breathe cold air directly into his lungs, and so wears a grotesque mask of gauze over his nose and mouth, something never seen among the Chinese. And it is probable the Japanese have suffered more casualties from the cold throughout the Sino-Japanese warfare than they have from Chinese bullets.

Another difference brought out in the Manchurian "testing-ground" was in resourcefulness. In use of machinery of any kind the Japanese have so far shown themselves much superior to the Chinese, but the Chinese are much better able to get along with little or no machinery.

In maintaining modern lines of communications, first over Manchuria and now in China proper, the Japanese have established a record not surpassed by any other nation, but with any break in organization they are severely handicapped. They show no adaptability at living off the country—except through mass organization. In example, the only time the Japanese ever obtain Chinese military supplies is by victory in a pitched battle while the Chinese constantly seize Japanese supplies simply by lightning-like raids.

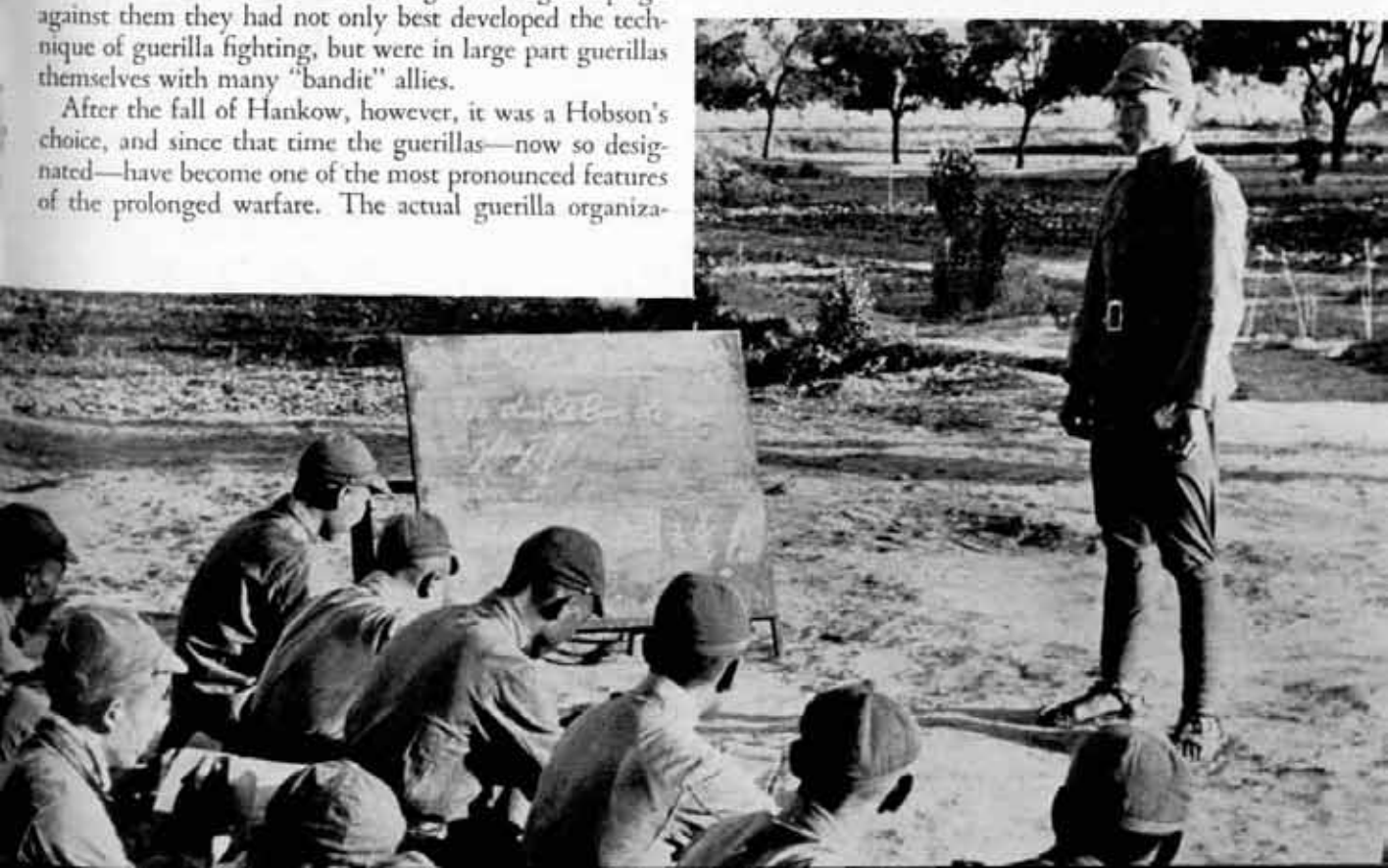
There is a classical Chinese story of a general in ancient times who was sent to a distant area to subdue an uprising. His food supplies ran short, and the country through which he was traveling being sparsely settled, there was not enough obtainable by the usual methods for replenishment. Whereupon he halted, put his men to plowing and planted a crop, patiently waited until it matured and could be harvested; and then with adequate supplies he proceeded to the successful accomplishment of his objective. Such is Chinese resourcefulness.

When the Sino-Japanese situation in mid-1937 reached the phase denoted by Tokyo as the "China Incident" or "China Affair," the foreign (mostly German) military advisors of General Chiang Kai-shek concluded on the basis of the factors brought out that the best policy of the Chinese would be to wage almost exclusively guerilla warfare. They advised General Chiang accordingly, but he did not immediately agree. For one thing, the very nature of guerilla warfare lessens the direct authority of the commander, and General Chiang is a man of long-range vision. Further, although peace had now been made with the Communists, he did not feel that they could be trusted too far; and through his long campaign against them they had not only best developed the technique of guerilla fighting, but were in large part guerillas themselves with many "bandit" allies.

After the fall of Hankow, however, it was a Hobson's choice, and since that time the guerillas—now so designated—have become one of the most pronounced features of the prolonged warfare. The actual guerilla organizations, in units from a few hundred to a few thousand, comprise almost a third of the total Chinese forces, while the regular forces often engage in the guerilla type of warfare. Further, General Chiang himself has organized many guerilla bands.

It is impossible to classify accurately the guerillas of today, except that all are anti-Japanese. General Chiang has long had his own personal secret police, generally known as the Blue Shirts, and exercises much control through them in places where it is not obvious. But how many of the guerilla bands actually take orders from General Chiang cannot even be guessed. Certainly those connected more or less with the Communists are the more numerous, while undoubtedly the greatest number of all —regardless of alliances of the moment—are fundamentally in the old bandit tradition of wholly independent but internally well-disciplined bands.

For food and other basic needs, they all live off the country; and sometimes, indeed, they are outright bandits in so far as their own fellow-countrymen are concerned. When they dislodge the Japanese from a town they often loot it no less thoroughly than the Japanese already had. At other times, they display a high order of social consciousness. In any event, they are at present accepted with a fatalistic sort of patriotism, for they are very effectively anti-Japanese and Japan simply has not enough soldiers to



This instructor is teaching the Latinization of Chinese to a group of the Chinese Red Army. A translation of the writing on the blackboard reads "Let us slay the Japanese."

pacify the areas in China she now occupies as long as the guerillas are as active as now.

Among guerilla variants, there is at least one college in southern Hunan that is directed by General Chiang for training his own. One thousand men *and women* at a time are given three months' training in military science, special guerilla tactics, political work, espionage and counter-espionage, and the Japanese language, for work behind the Japanese lines. A major purpose in this training is to promote coöperation between the guerilla units and General Chiang's regular army.

In another variant, the Chinese magistrates who function *in the Japanese occupied areas* are often secretly guerilla leaders, organizing the young men of their areas into guerilla bands right under the noses of the Japanese. A "guerilla-magistrate" may ostensibly be a Japanese "puppet," entertaining the Japanese officers and drinking "bottoms up" with them, while the guerilla band he secretly commands lies in wait nearby to pounce upon them when the party is over! Everybody around—excepting the Japanese—knows of these guerillas and is willy-nilly contributing to them, but it is unlikely anyone will "squeal." Not only would the individual responsible for such treason most probably be discovered, but in ancient Chinese tradition his entire family would have to suffer for it. It is such aspects of China as this that makes effective conquest by the Japanese so difficult.

Guerilla enterprise is constantly being expanded, with considerable development in sabotage during the past six months. It has been found, for example, that a cube of sugar put into a gasoline tank will soon so carbonize the cylinders of the engine that it will stop. Nor can the presence of the sugar be detected until an airplane or tank is in use. A chunk of coal hollowed out will hold enough explosive to wreck a furnace. Specially contained charges of dynamite are smuggled from General Chiang's areas into the Japanese occupied areas for guerilla bands to use on railways. There are women in many of the guerilla bands who, among other things, engage in espionage and carry messages.

Half or more of all the guerillas today are operating inside Japan's far-flung lines. As has been emphasized, they can do this with virtually complete impunity in so far as being betrayed by their fellow countrymen is concerned, and Japanese soldiers are simply not numerous enough to police the entire population. Considering Chinese economic conditions in times of peace and the social origin of the overwhelming bulk of the guerillas, it is easy to understand that they find this sort of life not only more exhilarating but even materially better than their normal existence. Indeed, this explains the high morale of all the Chinese soldiers: they live better in the army than they generally do at home, while they are endowed with a very fatalistic attitude toward death.

The civilian masses, however, are much worse off in wartime than peacetime, and in view of what Chinese government has often been like, especially in modern times, the Japanese are not as bad an alternative as Westerners unfamiliar with China might assume. Peace under the Japanese, therefore, might conceivably loom as desirable; and this is one long-range factor on the Japanese side: if they can hold on until civilian mass morale does break on a qualitative scale, then the guerillas could no longer operate with their present efficiency and the areas occupied could be more or less pacified.

This apparently has happened to an appreciable extent in Manchuria, all of which the Japanese have held since the latter part of 1932, but even there much guerilla activity still continues. Last year there were at least 500 engagements between the guerillas and the Japanese. In so far as the principal areas are concerned, however, Manchuria seems relatively well pacified. The Japanese, nevertheless, are maintaining fully a half million troops there, although a large part of these may be explained by the uncertainty in relations with the Soviet Union rather than by actual military needs within Manchuria.

In China proper, and almost entirely because of the guerillas, no appreciable pacification has so far been achieved. Never a week passes without at least one guerilla raid on the outskirts of such strongly held places as Peking, Shanghai and Canton. However, there has recently been some decline in guerilla activity in the area around Peking. But save for there in China proper, Japanese control is not effective anywhere more than five miles beyond a large concentration of troops, nor is any Japanese outpost secure from guerilla attack unless it is manned by at least 1,000 soldiers. This is not the writer's presumption; it is a conclusion based on the first hand data of many foreign observers in various parts of China.

Several times daily (or more often nightly) over occupied China, guerillas are staging a surprise attack on Japanese patrols or outposts of a few hundred; and while such attacks are by no means always successful, they usually result in some Japanese fatalities—and of course, Chinese as well, but generally more Japanese than Chinese. For, as is obvious, the guerillas have the advantage in such a foray; and the only way they could be successfully countered militarily would be in guerilla manner—in which the Japanese have so far not proven adept.

All reports of the guerillas indicate that they are well armed, often including trench mortars although as a general rule—and for necessary mobility—they have only rifles and small machine-guns. As long as there are Japanese nearby, additional supplies can be obtained almost any night!

Virtually all the guerillas save in some areas of the north are not only from the poorest Chinese social strata, but in the course of the prolonged warfare they have lost all ties with their families and native communities. In the northern areas, where three-fourths of the peasants own their land, there has been guerilla organization along the lines of the Red Spears of the 1926-27 nationalist revolutionary period. "Red" here did not have its suggested political significance; instead the Red Spears were equally opposed to Chang Tso-lin and the then Bolshevik-

The automatic pistol is a deadly weapon in the close confines of cities. Notice the blood stains on the trousers of this sniper.

directed Nationalist régime in Hankow that was seeking to extend its sway to Peking: they simply wanted to be left alone by both sides. Today, as guerillas, they are simply opposing alien invasion. However, if and when they can be convinced the Japanese will be no worse than the native tax collectors were, they might be pacified into fatalistic acceptance of the "new order in East Asia" and so become merely hard-working Chinese peasants again.

But the much more common type of landless and now homeless guerilla poses one of the biggest problems of Chinese reconstruction regardless of the outcome of the warfare in political terms. Having nothing to go back to, and long accustomed to living as guerillas, they cannot be expected to lay down their arms because politicians somewhere proclaim a peace, nor will it matter materially to them whether the new order is Chinese or Japanese. Bereft of the present mass support, they could not operate with their present potency; on the other hand, this would not mean that the average citizen would coöperate actively with the authorities to liquidate them. It has never been a popular Chinese habit to assist the authorities to solve a murder or report the whereabouts of the nearest bandit band: instead the average Chinese simply accepts murders and authorities and bandits as equally ineluctable manifestations of the inscrutable will of heaven.

So in any peace the guerillas, like the poor, will still be with us, only they will be called bandits again.

The Rock Beleaguered

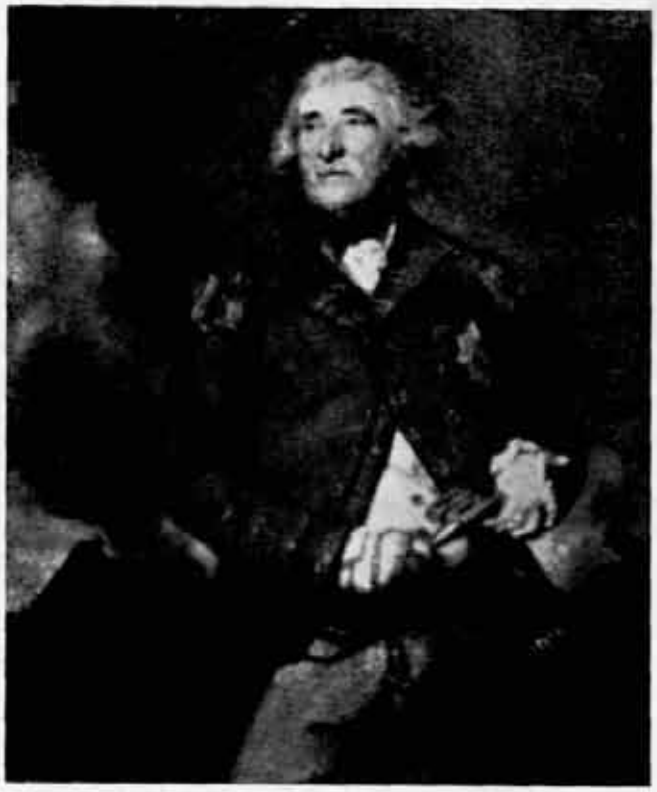
By Major Charles Winslow Elliott
U.S. Army, Retired

The Story of the Siege of Gibraltar
1779-1783

The acquisitive attention recently bestowed by the Führer upon a certain indubitably Teutonic citadel that still remained without the somewhat elastic boundaries of the German Reich, had its counterpart at the other end of Europe 250 years ago. In 1779, His Most Catholic Majesty, King Charles III of Spain, was an exceedingly unhappy and troubled monarch. A tiny segment of his vast territories—something less than three square miles—had lain securely, since 1704, between the sharp-clawed paws of the British lion. Gibraltar, the mighty Rock of Jebel Tariq, towering above the narrow straits, "the very image of an enormous lion, crouched between the Atlantic and the Mediterranean," guarded the passageway, not for the tall ships of Spain, but for those of insolent and heretic Britain. And not one, or all of his numerous vexations, irked the irritable Bourbon in the Escorial as did that blood-red standard that for seventy-five years had floated defiantly from The Rock. To recover Gibraltar, said the Marquis of Florida-Blanca, Charles' statesman-minister, "my master would break the Family Compact and every other engagement with France."

By 1779 the long-suffering patience of Spain had worn very thin. Her grievous complaints against England were so numerous and varied that when Florida-Blanca and the King undertook to set them down on paper they found subject matter for an indictment that made the American Declaration of Independence sound like a mild remonstrance. There appeared to be no indignity, injustice or outrage that haughty Albion had omitted to practice upon the Empire of Spain and the Indies. King Charles' neutrality, in the desperate struggle that England waged on the one hand with France and on the other with her rebellious American colonies, had been treated as an international fiction. There seemed to be faint probability of either redress for past wrongs, or a cessation of affronts in the future. The exasperated King and his premier decided to remonstrate with cannon-balls for a change. Spain would assist Louis XVI—and, incidentally General Washington—in humbling the overweening power of Great Britain. The combined navies of Louis and Charles far outnumbered that of King George; their armies were to his as a division to a corporal's guard. And Gibraltar, the key that locked the door of the Mediterranean, for the repossession of which Charles so fervently longed, would come back to the crown of Castille.

On June 16, 1779, the Marquis de Almodovar, Spanish Ambassador at London, handed to Lord Townsend a manifesto of many pages, on which were recounted in endless detail the reasons why King Charles no longer considered himself susceptible of appeasement. He had already agreed secretly to an armed alliance with France. Within a few weeks a formal declaration of war issued from Madrid and doubled the potential power of England's enemies. Spanish preparation for an attack on Gibraltar had been long in progress. Early in 1778, Mr. Hardy, the English consul at Cadiz, warned the Governor of the Rock that vast quantities of munitions were being collected for some extensive operation. Every Spanish shipyard was feverishly hammering out new frigates and gunboats.



Lieutenant General George Augustus Eliott, Governor of the Town and Fortress of Gibraltar

The Governor of the Town and Fortress of Gibraltar, since 1775, had been an able English soldier, Lieutenant General George Augustus Eliott. He was sixty-two years old, a veteran of Dettingen and Minden, with long service behind him in cavalry, field artillery and infantry. Now he was to play the leading part in a coast defense problem never before exceeded in importance or magnitude. Hawk-nosed, thin-lipped, with heavy jowls and a stubborn, dimpled chin, this austere Scotch soldier whom Carlyle thought "sour and intractable" was to build an undying reputation almost solely on a single military achievement—his defense of the great Rock during the siege from 1779 to 1783. When he first arrived at his post and inspected the works, he found them badly adapted to the conformation and contours of the mountain, the magazines scantily supplied and the garrison numerically far below the number needed for the proper maintenance of the positions. He at once sent his chief engineer, Colonel William Green, to explain to Lord Townsend in London the nature of these deficiencies and to urge immediate remedies. Green, who had been on duty at Gibraltar for over fifteen years, knew exactly what he wanted to make the fortress impregnable. He was evidently a convincing advocate of his plans for in his several interviews with King George he succeeded in obtaining full powers to go ahead with the improvements suggested. Backed by the hearty coöperation of General Eliott he

began, on his return, to make the Rock sufficiently formidable to defy any assault or bombardment.

So long as peace continued between England and Spain, the relations of the garrison with the people of the surrounding country were extremely amicable. Some of the British officers and their families occupied homes in San Roque and other nearby villages, commuting daily, as it were, to and from the fortress. Others made a practice of ranging far and wide in Spanish territory on hunting expeditions, rides, or as curious tourists. General Eliott himself, paid a visit of courtesy on June 19, to the camp of the Spanish commander at San Roque, General Mendoza. He was much mystified by the evident embarrassment and absence of cordiality on the part of his host. Scarcely had he returned to the garrison when the English consul at Tangier, Mr. Logie, came in with the information that war had already been declared. On the 21st, all communication between Gibraltar and the mainland was cut off and some of the officers summering at San Roque were obliged to return to their commands in such haste that they had to abandon their personal effects. Those who were pleasantly touring the adjacent provinces were arrested by the Spaniards but politely furnished with passports and permitted to leave the kingdom. Two or three managed to get back to the Rock by disguising themselves as native fishermen and making the trip from the Portuguese port of Faro in open rowboats.

General Eliott immediately summoned a council of war, primarily to concert measures for securing supplies from the Moroccan coast and establish a means of communication with England. Working parties of soldiers strengthened the northern defenses; the sand dunes on the Neutral Ground were leveled to prevent their being used as cover by enemy parties. A sloop-of-war attached to the station came in with two prizes, one of them American, among whose passengers was discovered a major of the Continental army, previously a prisoner at Gibraltar. He had escaped with two British deserters and all three were now recaptured. The unlucky Yankee went back to his cell; the two less fortunate deserters, we are grimly informed, were punished "according to their deserts."

The troops under Eliott's command numbered slightly over 5,000 men, including the 12th, 39th, 56th, 58th and 72d Regiments, three regiments of Hanoverians, a corps of Royal Artillery, a body of engineers, and one company of artificers. Lieutenant General Robert Boyd, colonel of the 39th, who had been eleven years at Gibraltar, was the second-in-command. A naval force, under Admiral Duff, was attached to the station, the 60-gun *Panther*, three frigates and a sloop-of-war. In the 18th century the defenses of the Rock had little of their present day elaborate and intricate character. Along the waterfront, north of the town proper, were several batteries emplaced in heavy masonry bastions, extending from the Old to the New Mole. At the southern extremity of the peninsula, Europa Point, were additional batteries, and on the northern side, high above the Neutral Ground, were strong positions known as "The Lines" and Willis's Battery. On the Mediterranean, or eastern flank, the precipitous nature of the cliffs made impossible any approach by an enemy in force and small outposts only were required for observation. The complex system of subterranean galleries with which the Rock was to be honeycombed later, was not yet envisaged.

Official notice from the government at London that a state of war existed between Great Britain and Spain reached Eliott on July 6. Ten days later the enemy completely blockaded the port of Gibraltar with a numerous squadron, including 74's, frigates, xebecs and many galleys and half-galleys. Under the command of Admiral Barcelo, this redoubtable flotilla was based at Algeciras across the Bay. In spite of the cordon established, small trading vessels from the Barbary coast, Portugal, Holland, Venice and even from England, occasionally slipped through bringing provisions for sale at profiteering prices to the local merchants. In the Spanish lines across the flat neck of the peninsula the work of erecting batteries, digging trenches and laying out camps, ammunition dumps and mortar emplacements went on incessantly all summer. Fresh troops were added to Mendoza's army in July, Guards, regulars and militia, and Don Martín Alvarez de Sotomayor took over the command. Included in the besieging host was a strong body of Catalonian troops, who were carefully segregated in their own camp, apart from the Spaniards.

Until September General Eliott contented himself with close observation of the enemy activity, and with unstinted labor on his own works. He appreciated fully the fact that his principal concern during a protracted siege would be his supply of food. Shortly after the investment began he issued an order that the garrison must thereafter mount guard "with unpowdered hair." The flour with which the redcoat whitened his pigtail would be needed later as an ingredient of the bread he would eat. Regimental commanders were directed to seek out the marksmen in their ranks and embody these in a separate corps of sharpshooters. Early in September a council of war discussed the advisability of abandoning the policy of watchful waiting. The consensus favored the baring of the lion's teeth. On the next day the batteries opened fire on the Spanish land works, the first gun touched off by an officer's wife while the Governor stood by and melodramatically gave the signal by exclaiming, "Britons! Strike home!"

In the expectation of immediate retaliation and to lessen the danger from flying splinters and falling stones, the pavements of the town were ploughed up and the towers of several buildings leveled. The enemy, however, were too busy with their construction labors to accept the challenge. Their working parties, reports the historian of the siege, "bore the fire very patiently." British gunners found that their shells were plunging so deeply in the soft sand around the Spanish trenches that the explosions did little damage. A certain Captain Mercer of the 39th then recommended the preparation of 5½ inch shells with

short fuses, and these, on trial, were more effective. The little missiles were "despatched with such precision, and the fuses calculated so precisely, that the shells burst over their heads and wounded them before they could take cover." With enormous labor the garrison troops dragged to the highest point on the Rock a big gun which was mounted on a prepared platform and a traversing carriage. This piece was thereafter known as the Rock Gun and from its position the crew had a bird's-eye view of the entire Spanish line.

By October Sotomayor's force had increased to 14,000 men. Still refraining from any serious firing, they labored like beavers on their new batteries, multiplied their new trenches and dug a long bayou from the main positions to the advanced works. In the town, provisions began to fail and the prices of foodstuffs skyrocketed to fantastic figures. Thistles, dandelions and wild leeks comprised the vegetable component of the civilian rations. The Governor himself, whose personal abstemiousness in the matter of food was notorious, experimented with his diet and discovered that he could subsist himself satisfactorily on an exclusive fare of boiled rice, living for eight days on four ounces a day. An officer of the 72d Foot dryly confided to his diary that this Spartan ration was thought insufficient by soldiers who had to work ten hours a day with pick and shovel around the bastions. In December desertions began to be noted by both sides. Some of the hard-worked and ill-paid Spanish troops willingly risked the danger of being shot by their own patrols in No-Man's Land, or certain hanging if caught in the attempt to gain the British lines. Soldiers of the garrison frequently tried to descend the almost vertical escarpment of the Rock on the eastern side, but most of them were either killed by falls, or caught and summarily executed by the Governor. One returned British deserter escaped this fate. A mule belonging to the King strayed into the Spanish lines at night. He was courteously returned under a flag of truce and restored to his allegiance, "an instance," we are told, "of politeness which we did not expect!"

Christmas came and went without incident other than a scanty dinner. In January, 1780, food was so scarce among the hapless civilian population that few could buy it from the profiteering merchants who still had stocks in store. Curiously enough, fish, which should have been plentiful and easily obtained, was almost an unknown luxury. Early in the month the garrison suffered its first casualty when a civilian woman was hit by a shell fragment in the town. Then came the tremendous news of the smashing victory gained by Admiral Sir George Rodney and his fleet over a great Spanish convoy off the coast of Portugal on January 16th. On the 17th, and for several days following, Rodney's cruisers and provision ships beat their way up to the Mole and landed stores. A battalion of the 73d Regiment (McLeod's Highlanders), brought out from England as a reinforcement for General Murray's little army at Minorca, was also put ashore. General Eliott "thought it proper to detain them"—a wise decision as it turned out, for it saved them from the captivity that awaited Murray and his men when Minorca fell to the French later on. Four hundred barrels of powder, captured by Rodney, were purchased by Eliott for the use of the Gibraltar guns, but the artillerists, on comparing its efficiency with that of their own English product found it decidedly inferior in quality.

During Rodney's sojourn in the western Mediterranean the specter of short rations stalked in the Spanish camp for a change. The enemy supply ships were unable to approach them and little came overland from the interior. For a time the besieged suffered less from hunger than did Don Martín's troops. When the British admiral departed on February 13th, bound for the West Indies, the blockade of the Rock was resumed by Barcelo's fleet. The Spanish ships had huddled in safety behind a protecting boom at Algeciras, a gigantic 22-inch cable, buoyed by floating casks, until the formidable Sir George was over the horizon. In a few months the rations of the British were again reduced. The issue to each soldier, *for two months,* consisted of 3 pounds of pork, 2½ of salt fish, 2 pints of peas, a pound of flour, ¼ pound of raisins, a pound of rice, 5 ounces of butter, and 1½ pounds of oatmeal—the last item, presumably, consumed appreciatively by the recently arrived Highlanders. The salt cod, purchased by Eliott from a Newfoundland fishing schooner, proved, without vegetables, to be "very pernisious."

April and May, writes the diarist of the siege, were barren of excitement. There was little firing and the question of provisions occupied the attention of the garrison while the Spaniards plied their shovels and filled sandbags. A Swedish vessel, passing too close to Europa Point, was brought to and forced to come in. To the infinite disgust of the troops, her cargo proved to be about the sole article of subsistence that was definitely not desired, *salt!* Leather was becoming extremely scarce and both officers and men submitted to the indignity of wearing the rope-soled *alpargatas* native to the country. The small British fleet that remained attached to the defense throughout the siege proved invaluable in protecting the water flanks. In June, 1780, Barcelo determined to destroy it through the employment of fire ships. On the morning of the 7th the frigate *Enterprise,* at anchor off the New Mole, perceived bearing down on her from the Spanish side of the Bay, several craft which, on being hailed, made no reply. Almost immediately they burst into flames and separated, approaching the harbor in the form of a fiery crescent. Three others were then lighted and directed towards the *Panther* which lay anchored off Buena Vista. Captain Leslie of the *Enterprise,* acted with coolness and promptitude. He fired three guns to give the alarm, cut his cable and drove close inshore. The *Panther* opened a brisk cannonade on the now drifting fire ships, manned her boats, and in spite of the terrific heat, grappled the flaming menaces and towed them clear of the shipping. The incoming tide then carried them under the walls along the waterfront where they were later extinguished. Luckily for the British, the wind,

which had at first favored the oncoming fire ships, failed before they were close enough to seriously endanger their intended victims. Two of them were ignited by their crews at so great a distance that they were carried by the current harmlessly to sea. The military garrison of the Rock also responded to the alarm and the batteries poured a heavy fire on the blazing flotilla. One of the ships, nearing the Mole, was repeatedly struck by bar shot and her head actually turned so that the current dragged her south into Rosia Bay. In the end the smouldering hulks proved a godsend to the besieged. The charred planking was broken up and distributed to the troops and civilians as firewood. Because the colliers that Rodney had expected to bring with his fleet had failed to make the rendezvous on time, the Admiral had sailed without them and fuel was now almost as scarce in Gibraltar as food had been.

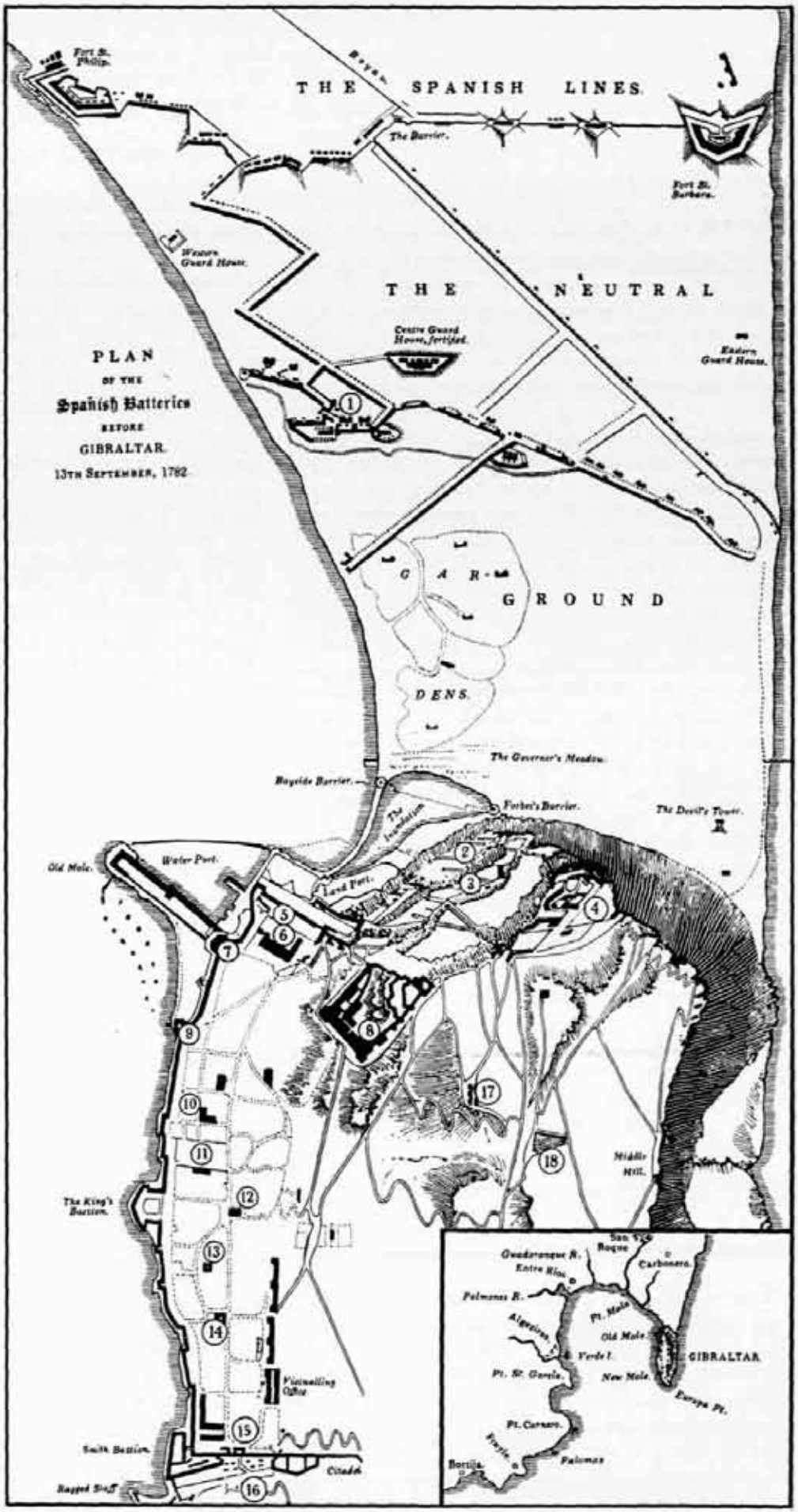
The summer of 1780 passed with little excitement other than the occasional arrival of a daring blockade runner from Tetuan or Tangier, with small but welcome cargoes of supplies. These were all too often luxuries rather than staples; wine, sugar, oil and honey, instead of the much needed flour, meat and vegetables. Barcelo redoubled his vigilance and on the land side Sotomayor's soldiers still burrowed and built, tirelessly throwing up new emplacements and strengthening old ones. Scurvy ravaged the garrison troops, the miserable victims filling the hospitals. Again British luck held. A Dutch convoy was sighted off Europa Point and boats from the naval contingent scurried out to intercept the laggards. Boldly they cut out a Danish dogger which incautiously ventured too far from her guardian men-of-war. This time the prize was loaded, not with salt, but with commodities desperately needed—lemons and oranges. "The lemons," says Captain Drinkwater in his day-by-day account of the siege, "were immediately administered to the sick, who devoured them with the greatest avidity. The salutory effects were almost instantaneous; in a few days, men who had been considered irrecoverable, left their beds to congratulate their comrades on the prospect of once more being useful to their country." The surplus lemon juice was carefully preserved by adding to sixty gallons extracted from the fruit, five or ten gallons of brandy—a dilution which doubtless did nothing to lessen the popularity of the beverage with the soldiers.

The last two months of the year were marked by an experiment conducted by the artillery in the hope of hampering the labors of the working parties bringing up materials to the new batteries in the Spanish front lines. The guns at Willis's showered them with small shells, so directed that they ricocheted across the sands, a species of fire that "threw mules into confusion" and obliged the fatigue details to return after hastily depositing their "burthens" on the beach. In January, 1781, the Emperor of Morocco, influenced by the bribes and persuasions of the Franco-Spanish allies, expelled all British from his dominions and forbade them the use of his ports. Blockade running with foodstuffs from the Barbary coast fell off and the half famished Redcoats again tightened their belts. Bread, as always, was the scarcest article on the table; in February biscuit crumbs were selling at a shilling a pound. In April it was learned that another fleet was en route from England with stores. The starving populace was frantic with eager expectation. Admiral Darby, convoying nearly a hundred vessels, arrived off the Bay, his ships of the line remaining outside while several frigates led the store-ships up to the Mole. We are told that "the extasies of the inhabitants at this grand and exhilarating sight are not to be described." They optimistically assumed that the siege was over and their troubles, dietetic and otherwise, were at an end. Their delight was premature. General Sotomayor had no intention of permitting a second relief of the fortress without interference. A stupendous bombardment was opened from the Spanish lines. One hundred and fourteen guns and mortars belched death and destruction from the moment the first transport commenced unloading. For days and nights thereafter the town and its defenses were subjected to a tornado of shells and bombs. Only between two and five in the afternoon was there any cessation of the shower of projectiles. Spanish national customs were too deeply ingrained to permit even war to interfere with the daily *siesta*. At all other hours the great 13-inch mortars and 26-pounders were never allowed to cool. Exploding bombs laid the town in heaps of rubble. Some of the shells even reached the Rock Gun on its lofty pinnacle. Nevertheless, the unloading of the stores went steadily on. Casks of flour were rolled up to the King's Bastion and piled as temporary traverses before the casemate doors. When a barrel was hit and split open, the hungry soldiers considered it "lawful prize," scooped up the flour and fried it later in the form of pancakes, a dish, we are told, which they became very expert in cooking.

As the buildings of the town disintegrated under the terrific hammering, the troops of the garrison got badly out of hand and an orgy of plundering began. The Redcoats were bitterly resentful of the heartless profiteering to which the merchants had long subjected them. They helped themselves freely to the carefully hoarded supplies piled in the now shattered warehouses and godowns. First preference, naturally, was for the plentiful supplies of liquor and wine in the cellars. From the wreckage of small cafés, parties of soldiers salvaged bottles and casks which they speedily carried off to secluded haunts of their own on the mountain sides. There they barricaded themselves against interference and proceeded, as Captain Drinkwater says, "to regale themselves with their spoils." Discipline, for a time, relaxed its firm hold on hungry men crouching in a ravine about a cask of *aguardiente*. One group discovered a secret cache in which some tradesman had hidden a live pig, together with many bundles of cinnamon imported from the East. The precious spice bark served as fuel for the fire on which the porker was roasted and a cask of vintage wine supplied a beverage. General Eliott, who was above all things a stern disciplinarian, took prompt steps to discourage looters. At first the offenders were merely confined and reprimanded; when this

References:

1. Old Windmill
2. Queen's Lines
3. Prince's Lines
4. Willis's Battery
5. Grand Battery
6. Picquet Yard
7. Montague's Bastion
8. Castle
9. Orange Bastion
10. Irish Town
11. Grand Parade
12. Spanish Church
13. Lieutenant Governor Boyd's Quarters
14. Governor Eliott's Quarters
15. South Port
16. Red Sands
17. Artillery Magazine
18. Pocoroco



The Situation on September 13, 1782
(From Drinkwater's *History of the Siege*)

was found inadequate he resorted to "more rigorous measures."

On April 20th, the stores being all ashore, Darby departed with his fleet, anxious to get out of the Mediterranean before the prevailing easterly winds should change. Several colliers and ordnance transports were left behind to be unloaded at leisure. The former were scuttled at the New Mole to protect them from enemy shell-fire. The Spanish bombardment continued vigorously long after the sailing of the fleet. Mortar boats were used by Barcelo, but many of their bombs proved to be duds and in some of these the British ordnance officers found sand instead of powder. It was evident that in some of the Spanish arsenals illicit profits were being made. Casualties, however, were frequent among the garrison troops. Many of the soldiers developed a sort of apathy which seemed to prevent them from even seeking cover when they could clearly perceive the great bombs hurtling through the air towards them. Hardly a day passed without men being hit even at the Rock Gun position. Once a shell fragment cut the apron of the reveille gun and fired it long before the usual hour. A soldier who had robbed a wrecked shop and garnered a handful of gold watches, hid them carefully in the muzzle of a cannon. Spanish gunboats appeared unexpectedly sooner after and the gun was fired by its crew—watches and all. Thus, says our siege historian ironically, "the foundation of his future fortune was dispersed in a moment!"

For the summer of 1781 the record is one of continuous firing by both sides. Many of Don Martín's troops were drawn off to aid the French in the siege of Fort St. Philip at Minorca where General Murray was desperately clinging to England's last toe-hold in the Balearics, blockaded by the Duc de Crillon and a French army. In August the bombardment decreased to three shells in twenty-four hours although the gunboats and mortar ships never slackened their incessant harassment. Again and again the cordon drawn by Barcelo was pierced by fast little vessels bearing mail and supplies, but the latter were never in sufficient quantities to liberalize the short rations of the garrison. An English soldier, lying in a hospital with both legs amputated, had a remarkable and terrifying experience. A Spanish bomb, fuse sputtering, crashed through the roof and dropped directly on his bed. Too weak to roll it off, he watched the fuse burn down—the shell exploded—and two years later the fellow was living comfortably in England on his pension of a shilling a day! So many men died during amputations because of the loss of blood before they reached the surgeons' tables, that the Governor ordered all sergeants to be instructed by the medical officers in the use of tourniquets. Desertions were still frequent but not often successful. Sailors from the fleet, rowing about the harbor at night, harpooned what they imagined was a big fish. When they hauled in their prize they found they had captured a drowned deserter whose attempt to swim to the enemy beaches had failed.

In the autumn of 1781 the Spaniards erected a new and powerful battery closer to the northern edge of the defenses and extended their works on the sandy Neutral Ground with infinite labor and expenditure of materials. Their new lines were now complete and ready for use. Eliott determined to organize a sortie and wreck them before they could be put to effective use against him. After careful preparation, secret orders were issued on the night of November 26 for a sally by 1,900 men under the command of General Ross. Formed in three columns, they began their march at 3:15 A.M. Before they were fairly without the barriers alert Spanish sentries detected the movement and gave the alarm. The columns then dashed forward and quickly entered the works, the astounded occupants making scarcely any resistance. Trains were set to the magazines and flames to the wooden parts of the parapets, embrasures and the countless fascines used for revetment. The pioneers accompanying the troops completed the dismantling of the elaborate gun emplacements and in an hour the British were back in Gibraltar. They had lost four privates killed, a lieutenant and twenty-four men wounded, and had one man missing. Not a single musket was left behind, although one unhappy Highlander reported that in a scuffle with some doughty Spaniard he had been divested of his kilts. In one of the dugouts the official daily report of the Spanish commander was picked up, completed and ready for submission to the C. in C. in the morning. It was brief, hardly comprehensive, and a bit premature in its final sentence: "Nothing extraordinary happened this night"!

The Spaniards were stunned at this catastrophe—a year's hard work cancelled in a single hour! A week later they were "roused from their revery" and patiently set about restoring the parallels and emplacements. Throughout the winter they pounded the Rock stubbornly, much encouraged by the news from Minorca that the French had taken Murray and his little garrison in the fort. A British transport, with the 97th Regiment on board, ran the blockade in March, 1782, and landed her troops. The reinforcement was of little value to Eliott as the newcomers did not become acclimated for months and added to the surgeons' troubles without lessening the burdens of the fighting garrison. A big Spanish shell burst in Willis's and took off the legs of two men, one leg of another, and wounded a fourth man in both legs, thus accounting for seven legs in a single shot.

April brought rumors of a great concentration by the Allies against the hard-pressed fortress. The Duc de Crillon and his 20,000 Frenchmen were coming over from Minorca to take over the siege. At Cadiz and other nearby towns, tremendous preparations for a supreme effort were patently on foot. Eliott redoubled his defense precautions. Grates for heating solid shot to cherry-red temperatures were designed, constructed and distributed to the batteries. The sergeants and drummers were ordered to turn out with firelocks, a startling innovation not relished by the noncommissioned grades. Experiments were even carried on by the engineers in the use of cut stone cannon balls for the 13-inch mortars. New embrasures were opened in the face of the Rock, and "carcasses," in-

cendiary shells, were piled up beside the guns. In July a French deserter came in, confirming the report that Sotomayor had faded from the picture, leaving the Duc de Crillon in command at Algeciras. He informed the Governor that in spite of the impressive dispositions pointing to an overwhelming bombardment and assault, the prospect was exceedingly "disrelished" by the mass of the besieging corps. Through the hot August days the enemy were busy with the digging of a long bayou from the old Spanish lines to the new forward batteries. Ten thousand men piled over 1,600,000 sandbags in a single night.

On August 18 a flag of truce brought to the Mole an officer of the French army with a letter to Eliott from the Duke. Two very exalted young gentlemen had arrived from Paris in the camp across the Bay, to witness the spectacle about to be staged. The Comte d'Artois, brother of King Louis XVI, and the Duc de Bourbon, desired to present their respects to the gallant commander of the fortress that defied their royal relative's might. In passing through Madrid, the princes had come across a bag of mail for the officers of the garrison and were "pleased to take charge of it," desiring now that they be allowed to deliver it to the addressees. The Duc de Crillon, with equal courtesy, forwarded to General Eliott a consignment of fresh vegetables, fruit and ice, remarking that he was aware that his adversary subsisted personally on a strictly vegetarian diet. Nevertheless, he begged permission to add a few fat partridges for the gentlemen of the Governor's household, presuming "that they would not be disagreeable." Such were the amenities of 17th century military intercourse. The English commander, somewhat overcome by this excess of politeness replied with all the urbanity he could muster, but entreated the Duke to refrain from similar condescensions in the future. It was his invariable rule, he wrote, never to procure for his own table any provisions not equally available to his command. And so they went back to throwing bombs at each other in place of compliments.

Over at Algeciras and throughout the Allied camps and works the final arrangements for the grand attack slowly matured. On the recommendation of a distinguished French military engineer, the Chevalier Jean d'Arcon, who volunteered the novel suggestion, it was decided to entrust the principal rôle in the final bombardment, to a fleet of floating batteries. D'Arcon, who offered to design and construct them, guaranteed that he would make them "impregnable, unsinkable, and incombustible." The Duke was inclined to be dubious, but agreed to furnish the ships and materials. The Chevalier selected ten vessels of from 600 to 1,400 tons, and cut them down to hulks. One side of each was then protected with three successive layers of squared timbers, three feet thick. Within this stout wall he placed a layer of wet sand, and within that a supporting wall of watersoaked cork, the whole bound together with strong iron bolts. A hanging roof of tough ropework netting covered with wet hides provided the overhead protection for the gun crews. Beneath each roof was a reservoir of water from which ran a network of pipes to all parts of the ship, forming a sort of sprinkling system designed to extinguish promptly fires ignited by hot shot. Each of these original monsters carried from eight to twenty heavy guns of new manufacture, with a suitable supply of spares. The crews numbered from 750 to 250 men. One large sail, bent on a sort of jury-mast, was provided to propel each ship. D'Arcon assured the French generalissimo that these floating batteries would be able to approach the seaside defenses of Gibraltar closely, with complete impunity, and be able to deliver so heavy and rapid a fire that the bastions would be quickly destroyed and the entire fortress rendered incapable of further resistance.

On the land side, de Crillon had emplaced 200 pieces of heavy ordnance. Eighty-three thousand barrels of powder were stacked in the magazines. Forty thousand troops stood ready to swarm into the British positions when the defending batteries had been ground to bits by the guns of the fleet. So imposing was the display of offensive power that it seemed to the confident Allies impossible that a failure to break the bulldog grip of Britain on Gibraltar could result. Indeed, remarks Captain Drinkwater of the 73d Regiment, "in the enthusiasm excited by the magnitude of their preparations, it was thought highly criminal even to whisper a doubt of the success."

On the morning of September 13, 1782, the completed battering ships got under way and lumbered across the Bay "in most admirable order." They had been entrusted to the Spanish Navy, and the Admiral himself, sailed in the huge "*Pastora* flagship, mooring her only 900 yards from the King's Bastion." The others, "in a masterly manner," took posts to the right and left of the flagship, the most distant being about 1,200 yards from the waterfront. For wooden ships of the day to anchor at so short a range from heavy land batteries argued complete confidence in their invulnerability. Eliott had long been ready for them. No sooner had the first floating fort dropped its anchor than the guns of the Rock began to roar. The furnaces and grates were stuffed with solid shot now glowing red; every battery that could be brought to bear was fully manned and in action. With the speed and precision acquired by long months of practice, the guns rained a deluge of shot and shell on the fleet and land works of the Allies. The simultaneous and continued fire of over 400 heavy pieces represented the greatest concentration of artillery in action ever yet known in the history of war.

The gunners on the Rock, presented with such excellent targets as the stationary floating batteries, well within range, hardly wasted a shot. But M. d'Arcon's newfangled contrivances at first appeared to fully warrant the optimism of their inventor. The heaviest shells from the shore guns merely rebounded from the cordage and hide roofs and splashed into the sea. Solid iron balls from the big 32-pounders appeared to make little impression on the thickly planked sides of the ships. Again and again the hot shot set the vessels on fire but the smoke turned to clouds of steam as the sprinkler systems drenched the decks and sides. Little attention was paid by the besieged

to the terrific cannonade from the French land positions although this fire caused many casualties. The problem was the silencing or sinking of those formidable leviathans on the water side.

All morning and until near mid afternoon the lethal pandemonium continued. Fountains of broken rubble erupted in the bastions around the guns that never ceased to vomit red-hot shot. For many hours there was no appearance of fire superiority on either side. Then aboard the great *Pastora*, where flames had been repeatedly observed and as often extinguished, the billowing steam gave way to rolling clouds of black smoke and tongues of yellow flame. She was afire in several places and the fire was out of hand. Others in the line began to blaze. The Spanish gunnery became first erratic, then ceased altogether. Gradually the British gunners got the upper hand. Near midnight the *Pastora* was a glowing volcano; several others were burning fiercely or so crippled as to be helpless. The light thrown out by the mounting flames illuminated the scene for a mile around, "a mingled scene of sublimity and terror." The floating batteries had no lifeboats and their terrified crews huddled on stern and poop, their screams and shouts for help plainly audible to the British.

Then the Navy took a hand. The British Marine Brigade under Captain Curtis, encamped at Europa Point, launched twelve gunboats and swarmed about the blazing batteries. To save the crews from the fiery death that confronted them, Curtis gallantly braved the danger of exploding magazines and took off as many as could be persuaded to surrender. Some of them, fearing execution if captured refused to leave the decks until driven into the water by the advancing flames. Nine officers, two priests and 334 soldiers and seamen, together with a few Frenchmen, were successfully brought away. Many of them were seriously wounded or horribly burned. Before 11:00 P.M. three of the ships blew up and three others, their powder magazines wetted by their crews, burned to the water's edge. Admiral Moreno prudently quitted his flagship in time to save himself; other Spanish officers left even earlier in the few unbroken lifeboats.

The Grand Attack was a complete failure. In spite of the unprecedented bombardment, the garrison suffered only slight casualties and the defenses of Gibraltar, though considerably knocked about, were not seriously damaged. For five months thereafter the siege was continued, but in so desultory a manner that it was clear the Allies had little hope of reducing the fortress. On the 6th of February, 1783 the Duc de Crillon informed General Eliott that the preliminaries of a general peace had been signed at Paris. On March 12th, the blockade ended and the two commanders met outside the barriers in a friendly interview.

Three years, seven months and twelve days had elapsed since the commencement of the blockade. The Rock remained British by the terms of the peace treaty; General Eliott was created a Knight Commander of the Bath, and four years later raised to the peerage as Baron Heathfield of Gibraltar. The present day tourist visiting the still impregnable outpost of Britain's world power, finds the stern old soldier, cast in bronze, standing on his pedestal in a little park near the officers' quarters, a reminder to present and future garrisons that England holds, so long as her life-line extends from London to Bombay, the gateway of the Mediterranean.

The old and the new in Puerto Rico

The 198th Wins Association Trophy

By Lieutenant Colonel H. W. Stark, Coast Artillery Corps

Battery B, 198th Coast Artillery at Bethany Beach, Delaware

198th C.A. Wins Trophy

The United States Coast Artillery Association annually awards a trophy to the Coast Artillery National Guard regiment designated as the most efficient for the training year. The score for the award this year is based solely on the results of target practices for the 1938-1939 training year. The Chief of Coast Artillery has announced as the winner for 1939 the 198th Coast Artillery (AA), Delaware National Guard, a unit that won honorable mention in 1938. Three regiments were recommended for honorable mention for 1939.

The following list shows the winner and the units receiving honorable mention:

Winner

198th Coast Artillery (AA), Delaware National Guard

Honorable Mention

249th Coast Artillery (HD), Oregon National Guard
261st Coast Artillery (HD), Delaware National Guard
264th Coast Artillery (HD), Georgia National Guard

The announcement that the 198th Coast Artillery (AA), Delaware National Guard, has been awarded the U. S. Coast Artillery Association trophy for 1939 comes as welcome news to the officers and men of the National Guard of the little "Diamond State." Ever since 1934, when the 198th won this trophy for the first time in its history, the regiment has striven to repeat this signal accomplishment. In great measure, the award serves to recompense the 198th for the extended effort made necessary since last fall by the President's limited-emergency proclamation, whereby the National Guard has been called on to assume an added load in organization and training. In this connection, it is considered worthy of comment that the Delaware National Guard has been enlarged approximately seventy per cent as compared with an average of about twenty-one per cent in all other states. Delaware thus has the largest percentage of increase of any state. The 198th Coast Artillery is a complete antiaircraft regiment under the present National Guard tables of organization. It is one of the few National Guard antiaircraft regiments that has been a complete regimental unit since initial organization. The regiment received its Federal recognition in July, 1921. At that time a considerable number of its personnel had wartime service in the Delaware World War unit, the 59th Pioneer Infantry, or previous service in the old Delaware 1st Infantry. Colonel George J. Schulz, the present commanding officer, has been with the regiment since its organization, and has served as its colonel since February 6, 1932. That the regiment has been able to win the award for the second time since Colonel Schulz has commanded it, is an indication of the energy and effort he has exerted towards the improvement of his regiment.

Of the regimental units, Headquarters, Headquarters Battery 1st Battalion (gun), and the Medical Detachment

are located in Wilmington where they occupy a new and modern armory. The 2d Battalion (machine gun), has its headquarters at Dover, with batteries located at Newark, Dover, Milford, and New Castle. The newest state armory (erected in 1939) is at Milford and is occupied by Battery F. The officers of the regiment are largely graduates of the University of Delaware, where they received their initial military training as members of the ROTC.

And now, for a discussion as to how a regiment can win the Association's annual trophy for excellence in target practice. There just isn't any rule that can be followed blindly in order to attain this result. Success depends almost entirely on three factors. In order of importance, these are: good luck, good weather, and good coöperation.

Good luck means that no serious interruptions to the target-practice schedule are occasioned by failure or breakages in matériel that cannot be remedied on the spot. Ordinarily, only a limited number of spare parts and little repair service is available locally. Therefore, if a major failure develops, a serious delay in the progress of the target-practice schedule occurs.

Weather is highly important in a fifteen-day training period, especially so from the antiaircraft target-practice viewpoint. To crowd eight different and distinct service practices, as are now required from the firing units of an antiaircraft regiment, into this brief training period is a problem which taxes the ingenuity of the staff, even in the best of weather. And when storms, clouds and low visibility come along during the fifteen-day period, this problem is further complicated.

In so far as coöperation is concerned, this is the only factor that can be assured in advance. By careful planning and teamwork, many avoidable delays can be eliminated.

Looking back on the 1939 field-training period of the 198th, it can be said here that all three of the factors discussed were highly satisfactory and contributed to the success of the target practice schedule.

A detailed description of the manner in which the 198th conducted its target practices during the 1939 field-training period can not be set forth in detail here. Therefore, the following remarks are quite general. In 1939, each gun battery had a strength of three officers and seventy men, while each machine-gun battery and the searchlight battery was composed of three officers and sixty-five men. Immediately following the annual armory inspections in April, an armory-training period began that was almost entirely devoted to the selection and training of the key men required to man the different articles of armament. This plan of armory training is of necessity a virtual repetition of that of the previous year owing to the annual large turnover of men in a National Guard unit. This means that no one section or manning detail is complete at the beginning of this cycle of training.

Armory-training methods for target practices included coördinated drill of gun batteries from the battalion commander's station; tracking of a miniature serial target by the range sections; simulation of bursts of projectiles along the path of the miniature target to represent lateral and vertical deviations for spotters; the operation of a platoon of five miniature searchlights from the armory drill floor; and outdoor emplacing of guns when weather permitted. For the machine-gun battalion, the training included tracking and simulated firing on a miniature target under target-practice conditions. Some benefit was derived from the use on the indoor ranges of the caliber .22 machine guns which became available during the year.

Governor McMullen of Delaware tries his hand at AA machine-gun target practice under the tutelage of members of the 198th Coast Artillery

For its annual field-training period, the regiment went to Bethany Beach, Delaware. Its strength at that time was forty-six officers and 713 enlisted men. Bethany Beach has been utilized by the regiment for its annual camp since 1927, and its location has distinct advantages in many respects, particularly from an AA target-practice viewpoint. All firings can be conducted from state-owned land over water areas directly in front of positions with a minimum of interference from marine traffic. The 3-inch guns conducted their practices from a position about four miles from the camp area, while the machine guns were emplaced in a beach position in front of a discontinued Coast Guard station. Therefore it was possible, with two towing planes available, for gun and machine-gun units to fire at the same time without interfering with each other.

The main objective was to complete all preliminary and record service practices as early as possible during the fifteen-day period. With this end in view, all activities were subordinated to target practices, and full advantage was taken of the weather and other favorable conditions tending to the completion of the practices. One factor that contributed towards this objective was the scheme of battery training adopted by the regimental commander whereby each firing unit could devote an entire day at a time to training at the gun positions, with no interference from routine camp-training activities. Under this plan, a firing unit could use the entire day in any manner the battery commander saw fit in order to prepare it for target practice. Consequently, most of the firings were held late in the day when light and visibility were at their best. There were no departures from standard fire-control equipment nor were special devices employed during the practices. The major items of antiaircraft equipment available were three 3-inch AA guns M3 on M2A1 mount, one T8E3 director, two sets of altimeters M1920, thirty-

two Browning machine guns, caliber .30 M1918 with M1 AA mount 1920, and three Sperry antiaircraft searchlights M1939.

The 3-inch AA guns were emplaced by the normal method and each battery fired several trial-shot problems before firing preliminary practices at the towed target. Record practices were gone into when each battery had made sufficient progress in its preliminary practices. Methods of fire control, operation of the fire-control instruments and the principles of gunnery were followed in accordance with standard texts and regulations. Headquarters and Combat Train, 1st Battalion, obtained meteorological messages and installed the necessary wire communications. Regimental Headquarters Battery supplied a trained recording section to obtain the necessary data for target-practice analyses. The success of the gun units can be attributed to hard work on the part of all personnel, cooperation and coördination of the available facilities and the advantage of good weather. Record practices consisted of forty-four rounds per battery, two guns per battery being fired at an average slant-range of 5,500 yards and at average altitude of 3,300 yards.

Three Sperry searchlight units M1939 (less transportation facilities) were received by the regiment just a week preceding the camp period. An extended effort was necessary in order to familiarize searchlight-battery personnel with this entirely new matériel in order to fit it for a searchlight practice during the camp period. One preliminary practice was held during the first week and results when analyzed promised a successful record practice. Unfortunately, bad weather on the night of the scheduled record practice prevented its completion. Because there was no lighted landing field in the vicinity of the camp area from which a target plane could take off or land at night, the searchlight battery suffered an abnormal handicap.

The machine-gun units began their training by first firing at free balloons. During this time effort was made to select specially qualified gunners from men who had never fired the machine gun previously. Each unit had at least one day of this type of firing before proceeding with preliminary practices on the towed target Type B-12. These preliminary practices, fired by four guns in each unit, were for the purpose of getting the new gunners accustomed to take the proper vertical and lateral leads from tracer observation in order to register on the target. Record practices were not gone into until each unit had demonstrated ability to hit the towed target during its preliminary practices. A total of thirty-seven complete practices were fired by the four machine-gun batteries of the battalion, including thirty-three preliminary and four record. Each practice consisted of five courses and approximately 2,200 rounds. Slant ranges were kept at approximately 800 yards, since this was observed to be about the burn-out point of the caliber-.30 tracers. However, for at least one record practice during the series, the background of an overcast sky made the tracers stand out to a marked degree and gunners were able to judge leads more accurately. Sleeve targets were dropped nearby in the camp area, holes counted promptly by a disinterested officer and within a half hour or so after the completion of each practice, the firing unit knew the number of holes it had scored. A short base-line of 1,000 yards was laid out on the beach, two old wind and parallax computers M1920 were used as observing instruments from the base-end stations, and a plotting board on the scale of fifty yards to the inch gave the required altitudes, slant ranges, ground speeds, and so on. Short cuts in the computation of target-practice scores were made possible by the use of prepared tables from which could be easily picked out the various components of the score for each course.

It is rather interesting to note that the 1939 target-practice record of the 198th is quite in keeping with its record of past performances. An examination of the *Memorandum* published each year by the Office of the Chief of Coast Artillery, which gives the results and ratings awarded for the preceding calendar year, shows that the number of firing batteries of the 198th that have won the rating of "Excellent" since 1932 to be as follows:

1932: 3 1933: 5
1934: 7 (Regiment won Coast Artillery Association Trophy)
1935: 1 1936: 6 1937: 5 1938: 6

Battery C has the unique distinction of having been rated "Excellent" each year since 1932. It is doubtful whether this record can be equalled by any National Guard Coast Artillery battery in the United States. For the past three years (1936, 1937, 1938) the regiment has won honorable mention in the competition for the Association Trophy.

The spirit of coöperation in the Delaware National Guard is the result of years of effort from those who have given freely of their time and energy in the past, and has been the most valuable factor in the progress of the National Guard as a whole. Coöperation is a natural attribute of Delaware, a small state where the inhabitants have the advantage of close and intimate contact with each other, and this is readily apparent among the men of the Delaware National Guard. The Adjutant General, Brigadier General Weller E. Stover, who retires from service for age this year, has had long and intimate service with the Delaware Guard, and the 198th has profited much by his counsel and guidance. Colonel Schulz knows what his outfit can do, and does not hesitate to make demands on it when necessary.

With the greatly augmented personnel of the regiment due to increases in the National Guard and the new and up-to-date antiaircraft equipment which is rapidly becoming available, the regiment faces new future problems. With the healthy spirit of coöperation and teamwork that its personnel has displayed in the past, it should be able to more than maintain its record of excellence. The award of the Trophy for 1939 will be an added incentive to maintain its record of past achievements.

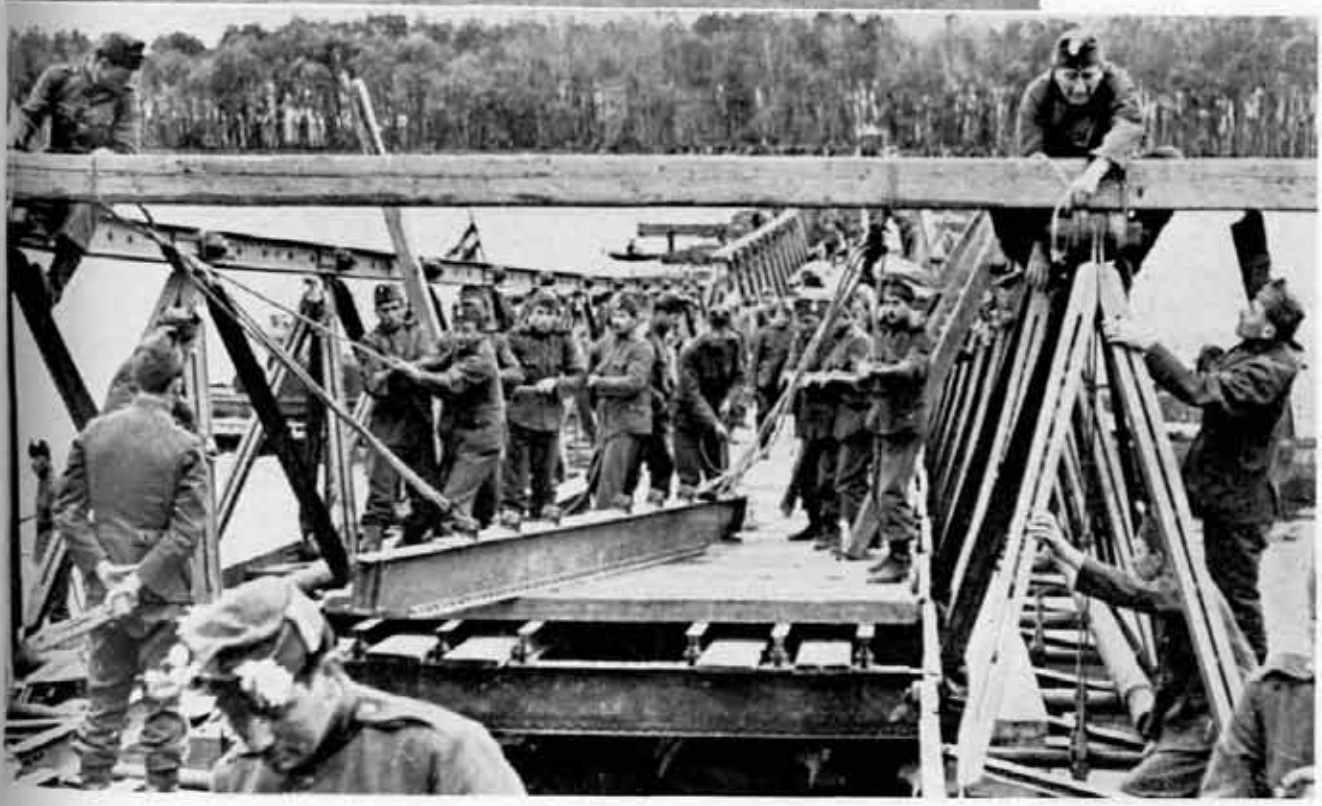
The regimental motto of "*First Regiment of First State*" is significant of its traditions and accomplishments.

THE BALKANS

Top—Jugoslav Infantry. Bottom—Jugoslav Cyclist Infantry

King Carol inspects Rumanian Tanks →

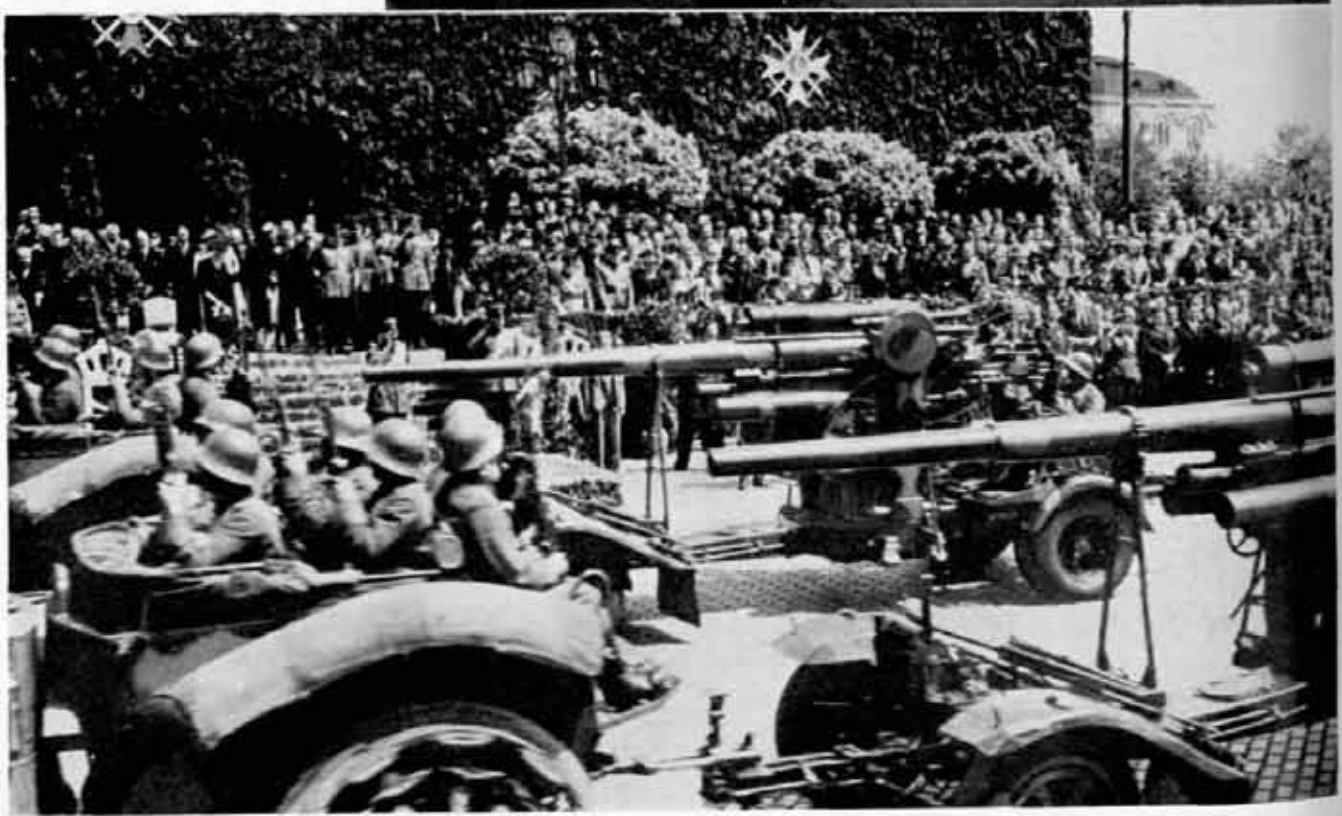
↓ *Rumanian Infantry*



Hungarian Engineers bridging the Danube

Turkish Infantry

Turkish antiaircraft searchlights



Bulgarian antiaircraft guns pass in review before King Boris

Top—Greek Royal Guards in ceremonial dress. Bottom—A Greek pack train

The Taking of Montfaucon

Major Elbridge Colby
Infantry

I stood on a flat plain one day and watched a battalion of a foreign army start forward on maneuver in typical triangular formation, a formation chiefly valuable because, with a full two-thirds of its striking power in assault, it is still easily capable of changes in direction. I saw an error of direction made. An adjustment followed in the most complicated fashion possible—the entire formation swung on a pivot instead of carrying out a simple brief shift, which the triangular formation was designed to make easy. But it is not the plan that is important in war; it is the adjustment to circumstances. To understand this truth and to be prepared to apply it are the chief reasons for the scrutiny of military history.

For one, I believe that few things are more irritating than the kind of military history which tells of battlefield events, points out "errors," and then ends in a holier-than-thou attitude to say, substantially: "You see? If these things hadn't happened, it would have been all right." There is no icy certainty on the field of battle. In spite of military criticism from Aesclepiodotus and Aelian to Liddell Hart and J. F. C. Fuller, plans almost never go through with precision. Things happen. The unexpected happens, like the amazing succession of accidents at Gettysburg. Errors, of course, do happen too. The wisest remark Marshal Foch ever made was this: "We did not make too many mistakes." The soldier must take things as he finds them and act accordingly. His equipment, training, and morale are never perfect for a given situation. He must be an opportunist. This one thing, at least, the soldier of the future must realize.

The taking of Montfaucon, then, will be narrated here with due regard for fact and without regard for criticism. Conditions were what they were. When things did not go according to plan, the reason for it was that things never do go according to plan. Delays occur; opportunities are lost; confusion comes; control lags; results are rarely maximum. This story, then, will indicate how wars *are* fought, not how they should be fought. Let others teach how to fight them in their theoretical schools. This is history, and set down—I hope without offense—with the freedom of history.

I

The taking of Montfaucon was a vital step in the course of the greatest battle American soldiers ever fought. It initiated our major effort in France. St. Mihiel had been transformed into a limited-objective operation in order to make this possible. Between the Argonne Forest and the Meuse River, nine front-line American divisions were to jump off on a twenty-mile front on the morning of September 26, 1918. These troops were to crack the left flank of that German army which even then the British and French, farther west and northwest, were pushing vigorously back toward the old frontiers of France. The Americans were to go far in and take Romagne and Cunel (map 1) the first day—more than seven miles in and across four lines of trenches.

But Montfaucon barred the way. On the right was the valley of the Meuse; on the left, almost against the Argonne Forest, were the valleys of the Aire and the Bar. Between the valleys rose what is called the Barrois Plateau (map 2). And along this plateau or ridge line—if we can call it such—the center of the American effort was to sweep northward. Had this high ground been a flat elevated railway, it might have made fair going for the troops, in spite of interlocking artillery fire from distant guns at sharp angles to right and left. But the narrow plateau was not flat. It was cut close in to its very top by ravines and valleys leading down to the Meuse and the Aire, to the east and the west—ravines and valleys that presented stiff local obstacles to the advance of a Doughboy—local lines of resistance for a deeply intrenched enemy well supplied with machine guns. On this plateau of jagged contours stood the Butte de Montfaucon, selected by such eminent geographers as Johnson, Niox, and Joanne as an excellent illustration of the military value of such land forms the world over, isolated erosion remnants of sandstone and clay, a sky-silhouetted fragment giving observation over far fields, commanding a region, and supporting all proximate defensive effort, indeed, a prime example of what the modern military jargonist calls "key terrain." Studying the front where it would be soon attacking, the American First Army staff said: "Montfaucon, the dominating height of all in the sector . . . should be considered an objective to be attained as soon as possible."

The army scheme of maneuver for the attack was based upon careful scrutiny of the maps. However, the heavy shading of forests put down by French cartographers evidently attracted more attention than the actual ground forms. Information otherwise available also directed the eye and mind to the forests. Beyond the front, pointed out the First Army, there were several important woods—the Bois de Forges over on the right; the group of woods north of Avocourt (Bois de Montfaucon, Bois de Cheppy, Bois de Chehemin, Bois de Malancourt); and the Argonne Forest to the left. In that quartet of woods north of Avocourt, said the French, the German 117th Division had concentrated thirty-three batteries of artillery. According to American information those guns were drawn back well within the German battle zone.

The woods indeed loomed large in the military mind. An intelligence summary said: "This wooded region has been repeatedly subjected to heavy shell fire which in the end left the terrain in the worst conceivable condition. The whole ground was pitted with shell craters; the half-destroyed timber had sprouted up in a thick second growth, and across the tangled and broken ground ran elements of old trenches, wire entanglements, and obstacles of every sort in almost inextricable confusion. It was a terrain difficult to cross under any circumstances." So thought the Germans too! An estimate of the situation prepared by the German side on September 18th—when they were obviously getting nervous in this area—said of this same wooded territory which lay in front of the V American Corps, that "advance through the heavy underbrush . . . would be very difficult."

With the woods and the difficulties of the woods thus looming large in the minds of the facing armies, the natural thing happened; the Americans planned their most rapid early advances elsewhere, and the Germans their strongest resistance elsewhere too. Both turned their eyes to another spot—to Montfaucon.

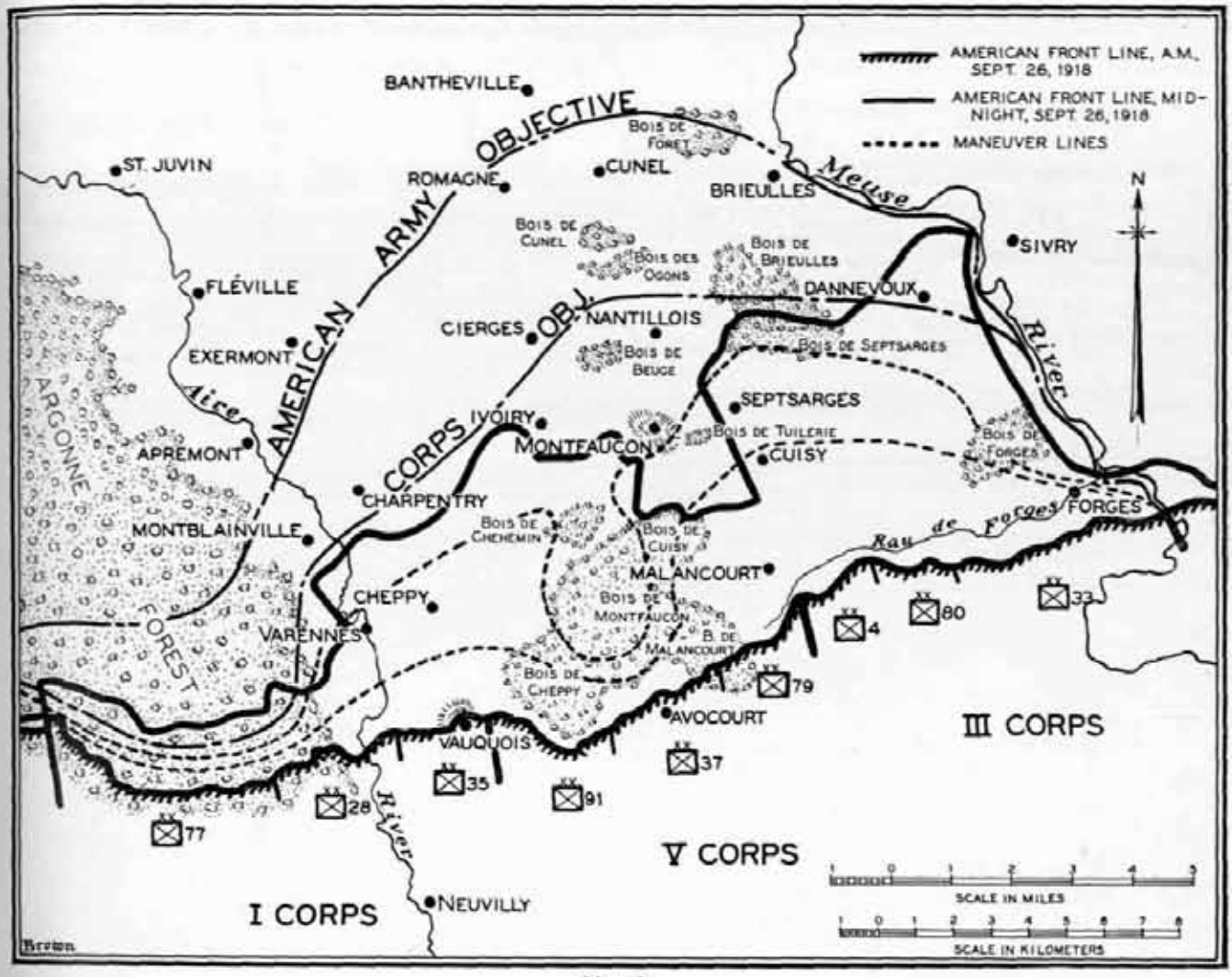
The American First Army scheme of maneuver is as plain as day on the map drawn up before the battle. Short of the over-optimistic army objective and the equally optimistic corps objective lines, the map (map 2) bore two "maneuver" lines. These, it will be noted, left great bulges at the Argonne Forest and at the group of woods in the center, and a slighter one at the Bois de Forges over on the right. Penetrations were to be effected along the valley of the Aire and along the Barrois Plateau, past the famous Butte de Vauquois and straight over the Butte de Montfaucon. These penetrations were to pinch the Germans out of Montfaucon. That was important.

It is true that many of the troops in the nine front-line divisions which made this attack were unseasoned. This disability was perhaps inescapable. St. Mihiel still claimed a number of excellent divisions. And this drive must start, said Foch. "Do you wish to go to battle?" he asked Pershing. Pershing answered that he did, and then divisions had to be grabbed up willy-nilly for the task.

The height of Montfaucon as seen from a point southwest of Cuisy.


SEDAN
Meuse
Chiers
River
CHEMERY
Bar
STONNE
MOUZON
BEAUMONT
River
STENAY
BEAUCLAIR
FOSSE
BARROIS
BRIQUENAY
HINDENBURG
DUN
Meuse
CUNEL
ROMAGNE
PLATEAU
Aire
Aisne
ARGONNE
FOREST
MONTBLAINVILLE
MONTFAUCON
River
HINDENBURG LINE
River
SEPT 26 A.M.
LAVOCOURT
VAUQUOIS
SCALE IN MILES
SCALE IN KILOMETERS
MONS
ARRAS
BELGIUM
FRANCE
SEDAN
NOYON
ALLIES' LINES
AMERICAN GAINS MEUSE-ARGONNE
REIMS
SEPT 6 A.M.
VERDUN
CHATEAU-THIERRY
St MIHIEL
River
N
W
E
S

Map 1.



Map 2.

In the I Corps on the left, the 77th and the 28th Divisions had been on the Marne, but the 35th—which was the spearhead of the corps—had had no battle experience. And in the V Corps in the center none had been in battle. In the III Corps on the right, the 33rd and the 80th were raw, but the maneuver lines show how little was expected of them. The 4th had fought with success in the Aisne-Marne and from the Ourcq to the Vesle, and at St. Mihiel.

Against the "key" of Montfaucon, where the defense trenches were thickest and enemy artillery registration most devastating—along the top of the ridge line—went the 79th Division. This was a green outfit which later distinguished itself in the work east of the Meuse. Yet here it stood in a critical zone, frequently decimated to furnish replacements for other units until its morale was all but gone, recently brought from the States, sixty per cent of its infantry and fifty per cent of its artillerymen recruits since May 25th, and thus with interrupted and insufficient training. An inspector had visited it at Camp Meade and recommended more training before it went overseas. But before his report could be acted upon, the division was on the water—on the way to France.

Alongside of the 79th was the almost equally green 37th. But the 37th was not expected to make much early progress through the heavy underbrush of the ruined woods—if we are to believe the "maneuver lines." On its right was the veteran 4th. The 79th and the 4th were to drive the deepest and most important wedge.

The 79th and the 4th, however, were in different corps. And since the army order came down to the troops and was repeated piecemeal, the description of that scheme of maneuver along the corps and division boundary lines was liable to change. Things happen in war, we have said. They did happen in this September of 1918. Army said:

> V Corps will attack on the front, Malancourt inclusive to Vauquois exclusive . . . III Corps by promptly penetrating the hostile second position will turn Montfaucon and the section of the hostile second position within the zone of action of the V Corps.

III Corps changed the wording a little, but the meaning remained nearly the same:

> This corps will break the hostile positions and resistance between the Rau de Forges and the Bois de Forêt (*i.e., drive direct ahead to the north*). To penetrate promptly the hostile second position in order to turn Montfaucon and the section of the hostile second position within the zone of action of the V Corps and thereby assist in the capture of the hostile

An airplane view of the ruins of Montfaucon looking north. Note the tank tracks and organized shell holes in the foreground.

second position, west of Montfaucon. To await the arrival of the V Corps at Corps objective, then to advance.

Thus, having penetrated, these veterans were to help or "assist" their rookie comrades *by sitting still and waiting*. The 4th Division, its veterans close on the flank of the green 79th, read the III Corps order, and pared down the idea of aiding the troops on its left, by issuing its own order in the following words:

> The 79th Division, V Corps, attacks on our left . . . This division will attack the hostile position between the Rau de Forges and the Bois de Forêt and exploit its success by advancing northwards . . . The 4th Division will assist (if necessary) the Division on its left by turning Montfaucon not by an advance into the area of that division but by steady progression to the front and energetic action by the left combat liaison group or by reserves, against hostile detachments on the left flank.

Nor should we omit mentioning that the order of the 7th Brigade, which actually made the front-line attack there, contains no mention of Montfaucon at all, none of assisting the 79th Division, nor of turning the position.

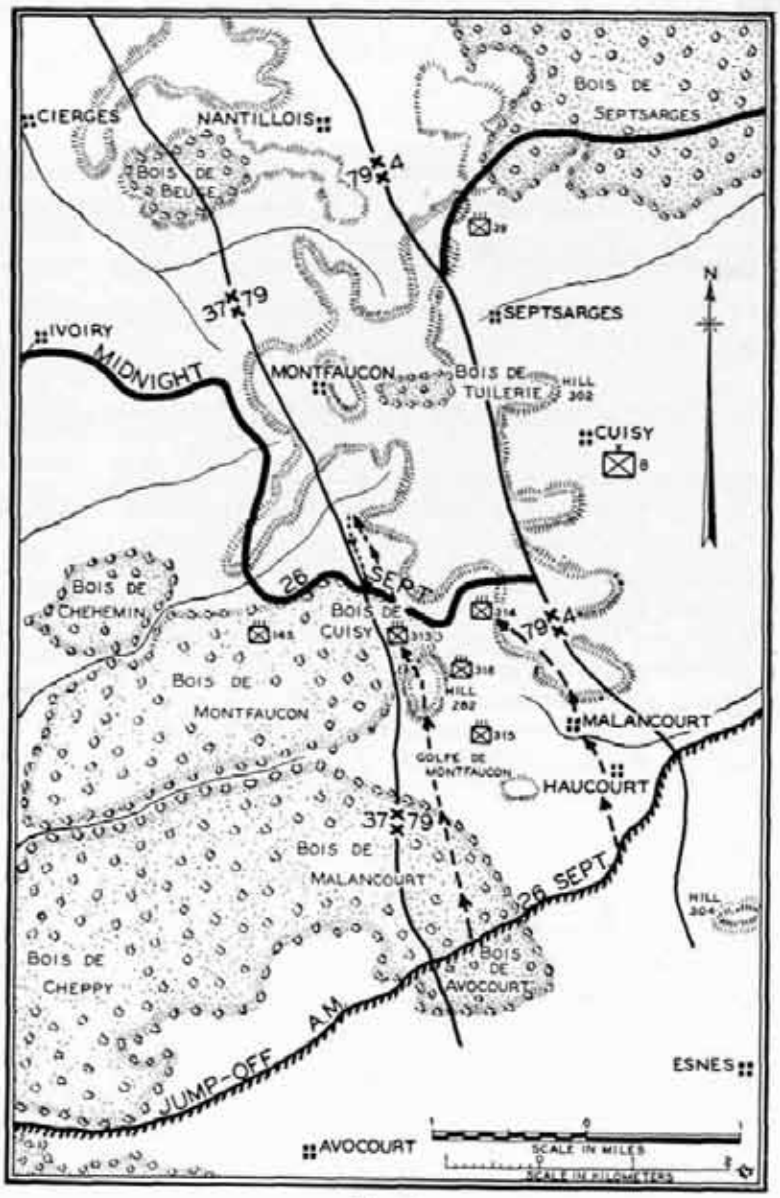
So, in practice and in the reality of execution, a scheme of maneuver goes glimmering when boundaries are given and troops are habituated to attacking down an alley. That morning every one of the divisions in the battle actually drove straight ahead.

II

We return now to the 79th which finally captured Montfaucon, albeit twenty-four hours late, and see how an unseasoned division of good Americans behaves in combat.

Arrived from the States late in July, the troops of the 79th had gone to a training area, found the water there

insufficient, moved to another area, begun a training schedule, got themselves a new and strange brigadier, gone up to take over a defensive sector, held it quietly for ten days—for secrecy's sake they were told to keep quiet—dealt with a single German raid, side-slipped at the last moment to narrow their frontage for an attack, fumbled in the dark amid borrowed battalions of the 33d Division which came over and in and out just to screen the front line, and finally at 5:30 a.m., September 26th, after two weeks of debilitating inactivity in rain and clinging mud, jumped off on time in the great attack, supported by a strange and borrowed artillery brigade just as inexperienced in battle as the front-line Doughboys themselves. They were raw troops, hardly even "shot over." Fifty-eight per cent of them, it was said, had pulled on their first uniforms since the end of May. The division had been filled up, depleted, filled up again, depleted again, filled once more in a hurry, and finally shipped to the war in the great "Transport Miracle" of the summer of 1918. Their training program was actually cancelled to send them into the front line. For nearly three weeks they had changed station, stood in front-line trenches, or marched from place to place through mud and rain. But these were American soldiers, if drafted soldiers, and they had the American spirit. Their zone of action partially faced the tangled and damaged forest area of the center. As they went forward in the mist of the morning of September 26th, they were fighting their first battle. What is more, they were faced, in their sector, with the job of capturing in five and a half hours the notorious Butte de Montfaucon, with its twin strong points, the town of Montfaucon on the left and the Bois de Tuilerie on the right, both high against the skyline. And there were open fields in front swept by German machine guns.



Map 3.

They attacked (map 3) with brigades in depth, the 157th leading, with the 313th Infantry on the left and the 314th on the right. Was this the best way? An inspector said afterwards that the formation had caused difficulties in liaison and control. But the 37th and the 4th had the same formation! The telephone between Division and the 157th Brigade went out as early as 7:00 that morning, and the brigade lost touch with the 314th as early as 8:30. The shape of the ground tended to pull the leading regiments apart. Control in any case would have been difficult, moving twenty thousand men over such shattered ground, particularly with officers and men almost equally inexperienced in what they must face that September dawn on the high ground between the Meuse and the Argonne Forest.

There is a fine story that James M. Cain has told, he who wrote *The Postman Always Rings Twice*. Cain had left his school-teaching in Maryland to become a runner at 79th Division Headquarters. He has told[1] of being sent to keep contact with General Nicholson, of getting lost, and of an interview next day between "Nick" and the division commander.

"Where the hell have you been? What do you mean by breaking liaison with me?" stormed Major General Kuhn.

"I've been taking Montfaucon! That's where I've been!" retorted "Nick."

They took Montfaucon, indeed; but the taking was hard, and was not accomplished until the second day.

The fighting divisions of the AEF in general averaged 394 riflemen per hundred yards of front—said to be "approximately normal for major operations" and conformable to "British and French statements as to the best practice." Here the V Corps drove at Montfaucon, in the

[1] In *The American Mercury*.

vicious center of the attack, with three green divisions with a rifle frontage of 321 per hundred yards, just seven per cent more than the "absolute minimum" of 300. After reading contemporary documents which vivify the effort —action documents, not merely reports written afterwards—it is almost a wonder that they took the toughest spot on the whole front at all. In the opinion of General Summerall, their artillery support was flagrantly insufficient. Commanding the V Corps a month later against far less stubborn German resistance, he provided far more artillery support.

On the left, the 313th Infantry stepped off on time in the dimness of the foggy day. Six hours of artillery hammering had smothered the initial German resistance. Forty-five minutes after the jumpoff, Colonel Sweezey reported "everything progressing" and "no fire from the enemy." He thought the smoke screen put down by a chemical-mortar platoon "seemed very effective" but evidently did not know then what had actually happened up front. The smoke was laid at the jumpoff hour, but some of the 313th were not expecting it. Some yelled "Gas!" Some stopped to don masks and thus slowed their progress. Some even dashed momentarily back to their own trenches. But as a whole the line went forward!

The 313th overran the first enemy position with comparative ease and got through the tangled traces of the Bois de Malancourt within their sector without serious fighting. By eight o'clock they had gone three kilometers, and now began to move out into the open. Before them, across the low swale called the Golfe de Montfaucon, loomed the rising slopes of Hill 282, whence the Germans opened with machine guns as the Baltimore boys started out of the woods. By now the quickly paced artillery barrage was miles ahead; the time-table was faster than the men could possibly go, and some of the batteries of 75's had already reached the effective limits of their fire. The infantrymen would have to fight for this ground by themselves, and fight they did. It took them five hours to take that German strong point; but they took it, and kept on.

By midday the 313th was facing that little nose of the larger Bois de Montfaucon, called the Bois de Cuisy, "seriously harassed by machine-gun fire" and calling for tanks and artillery. Artillery was started forward, but could not go. Roads were softened by rain and shattered by two years of shell fire. Passage across country was often next to impossible, slow in any event, because of mud, pools of water, fallen trees, dense underbrush, deep trenches, networks of wire, and an "endless stretch of shell holes like the roughened surface of the sea in a high wind." Thus, unsupported, and with rear units somewhat closed up and mixed with theirs by the delays and checks of the resistance already met, the 313th maneuvered and attacked the Bois de Cuisy. There it came to a stop and began to reorganize its shattered and jumbled raw battalions and mop up the woods. But worst of all, down from higher PC's came a message that a counter-attack of massed enemy troops from Ivoiry was driving back the 37th Division on the left of the 313th. Colonel Sweezey determined to hang on.

On the right, the 314th had likewise clambered over the most forward German positions almost without opposition except for German high-explosive shelling on the very front lines. By ten o'clock the regiment had overrun Haucourt and Malancourt, meeting some opposition here. As the fog lifted on the slopes of the hill beyond Malancourt, its leading units were just visible. And there a storm of fire checked the advance, coming mainly from machine guns which had survived the artillery barrage, and nests that had been passed by in the thickness of the foggy morning. The fire came "from all points of the compass" and there was now a dirty job of mopping-up to be done. This checked the advance of the 314th—indeed, held it up from 9:00 in the morning until 2:00 p.m. This regiment, too, called for artillery support and for help from the infantry in rear. Most of the rest of the day it pegged ahead generally along the road that runs almost direct from Malancourt to Montfaucon. The troops worked forward along the ridge until new tornadoes of fire drove them off their direction line, and then much of the regiment sloped down into dead ground formed by a hollow between two noses of land. They were now out of touch with their brigade commander, out of touch with the 313th on their left, though they occasionally got a message back direct to Division. But there they were when night fell, battered, weary, and far behind "schedule."

III

In the meanwhile, commanders higher up were trying to get definite information of progress. Colonels were not always sure where their forward elements were. The leading brigadier was out of touch with the 314th, and his news of the 313th was behind time. He was being told to keep close to the front line, and in the same breath not to move his command post so often, though the division commander was generally out of touch with the brigadier, as we have seen, and had little to tell the people back at Corps. French planes flew over and dropped ragged little messages and scraps of maps with lines roughly streaked across them, trying to show where they thought they had seen the leading units. At 10:40 a.m., V Corps reported to First Army: "Rough sketch of 37th Division sector just dropped by aviator may be taken for what it is worth. Line north edge of Bois de Montfaucon and running from there in a northeasterly direction." But such a line put the 79th far ahead of where it really was at that hour, though there was reason to accept this line as correct, for the 4th Division had already been reported beyond Cuisy.

Two hours later optimism must have reigned, because Colonel Tenney Ross, Chief of Staff of the 79th, was being told to be sure "to submit a report" as soon as that division should "reach the corps objective" many kilometers north up the map near Nantillois, and well beyond the formidable hill of Montfaucon. At four in the afternoon the Army liaison officer at V Corps headquarters messaged

to Army: "Aviator reports our patrols were seen entering Montfaucon." The Corps intelligence summary of the same day gave the front line as beyond Montfaucon—a location not true in fact until it was repeated almost verbatim twenty-four hours later. At 7:30 p.m. Corps G-3 sent word to Army that the 79th was a kilometer north of Montfaucon. Within the next half hour the liaison officer twice sent word: "V Corps has received confirmation of the capture of Montfaucon and has accepted it as an established fact;" and "the report of the capture of Montfaucon has been verified by aviation reports, balloon reports, and by statement prisoners were captured within 100 yards of Montfaucon." Even the faraway French XVII Corps heard that Montfaucon was taken. The American daily communiqué announced it to the world. But it wasn't so!

The reports were all of them wrong. Liaison had been shattered and the only news was unreliable. In front of Montfaucon men were still dying. In the 79th Division they knew well enough that Montfaucon was still ahead and not behind. Colonel Sweezey of the 313th had been calling for artillery support and tanks even to take the Bois de Cuisy. At one o'clock, held up by machine-gun nests north of Malancourt, Colonel Oury of the 314th had demanded artillery help in attacking the "Hill south of Cuisy," although in an all-afternoon fight he finally overcame those machine-gun nests, working around them by small groups without even the help of machine guns or one-pounders.

Beyond the division and corps boundary on the right, the seasoned men of the 4th were going along the low ground off the main ridge line on past Septsarges. To the west the 37th Division, far from being held up in the woods as the "maneuver lines" had predicted it would be, had gone through them with fair ease and was now beginning its first real fight of the day out towards Ivoiry. In front of Montfaucon—where the bulge was supposed to be made almost offhand by the raw 79th—the difficulties of enemy fire were thickest. The 313th had used the available remnants of the brigade reserve, a company and a half of the 313th—the rest of the reserve had been lost in the darkness of the night before and the dimness of the morning fog—and had taken the Bois de Cuisy with the desultory aid of some French tanks.

"Nothing must hold up the Army. Let nothing stop you." The word went forward. "You must get by Montfaucon tonight." "The 79th Division is holding up the

American troops in Montfaucon on October 2d, 1918. The ruined house, center, was used as the Crown Prince's observatory during the Battle of Verdun.

whole army." Carrying language like this scribbled on little pieces of paper, runners stumbled through shell fire toward the forward command posts.

Under pressure of such urgings, Colonel Sweezey of the 313th Infantry, in spite of previous failures to advance unsupported out of the Bois de Cuisy against the slopes of Montfaucon, again reorganized his regiment in the wood for another attempt. The 145th Infantry of the 37th Division on his left wanted to stop and intrench, but the attack on the "key" position must go on once more, or at least there must be a try for it. At 3:25 in the afternoon, they were still pegging through the woods. Arrangements were requested for fire on Montfaucon by corps artillery when the line should be ready to emerge.

Thus the 313th, or what was left of it, out of touch with its sister regiment on the right, was still on the move. The division chief of staff said at 5:35 p.m. that the "advance should be rapid" because it was "believed" American troops had already taken Montfaucon. It was nearly 8:00 before the supporting tanks were ready. Artillery support could not be obtained, for communications were broken. Nevertheless, in spite of all this the attack broke out of the Bois de Cuisy heading across the big fire-swept draw and towards the ruins of Montfaucon two kilometers away.

A slight nose projected westwards from the high ground on the right. Fire was bad enough from the very emergence from the woods; but as the leading elements passed that nose and breasted the space in full view of the machine-gun defenders of Montfaucon's open southern slope, a hurricane of lead came down upon their bowed heads. Exhausted by a day's fighting, unaided by artillery, and now at the first heavy blast deserted by their tanks, they stopped in a crash of casualties. Every battalion commander, every field officer except the colonel himself, was down. Leaders formed an outpost line. The regiment made a tired bivouac in the Bois de Cuisy itself. On that night Montfaucon was not taken.

To the right, the 314th had been peppered by machine guns from the hill after the regiment became disorganized in the heavy fog of the early morning. Its commanders brought it somewhat under control again, but it was out of touch with its brigadier. Some of its units sloped leftwards down toward the defiladed ground between the noses north of Malancourt. Others sought shelter in German trenches on the high ground northwest of the town. Machine guns and one-pounders had not come up. It had been a fight of riflemen against pillboxes and machine-gun nests, and riflemen could not get far. So, right and left of the Malancourt-Montfaucon road, the 314th hung on.

IV

Where, all this time, were the seasoned soldiers of the 4th Division who were to have assisted the advance of the V Corps by turning Montfaucon as the army order directed?

They had actually made—as their division order had dictated—"steady progression to the front." Although they had not quite gained a position "east of Nantillois" as the reports had it, by 12:30 p.m. they had come through Septsarges and up the ridge or saddle between the Bois de Septsarges and the Heights of Montfaucon. There they were halted for five hours, perhaps by a storm of German fire over the crest, perhaps because they were already on their corps objective, perhaps by a previous directive—later changed—to delay at that point and guide thereafter on the V Corps. Their left was at least three kilometers ahead of the right of the 79th, and a vertical gap had thus been created.

The Heights of Montfaucon, as a glance at the map will indicate, stretched—except for the long nose reaching down toward Malancourt—across the 79th Division sector. On the left of the height itself, was the town of Montfaucon (garrisoned by the German 450th Regiment); on the right the Bois de Tuilerie (garrisoned by the 1st Battalion of the 11th Grenadier Regiment). These two points stood in front of the first-line elements of the 79th Division, which had not been able this day to gain against them.

Yet during the advance of the 4th Division, there occurred one of those accidents of which battlefield events are made. The 1st Battalion of the 39th Infantry was following in support. It had lost its way in the fog and angled —quite naturally—along the higher ground on the corps boundary, finally reaching the eastern slopes of the Heights of Montfaucon. Two platoons flanked that hill, got into the German communications trenches, and captured a hundred prisoners from the 11th Grenadiers. At 3:00 p.m. that battalion "broke off this indecisive engagement and proceeded to join its regiment"—perhaps because it found it was not following in support in accordance with its orders.

Commentators have said that the door was then open to outflank Montfaucon and that the 1st Battalion of the 39th missed its opportunity. It was certainly complying with its orders "according to plan" and might well be needed to protect the flank of its advanced colleagues of the same regiment, or to "leapfrog" them. Yet it is problematical whether the door was really open or not. The Germans who held this point at the Bois de Tuilerie may indeed have consisted only of a two-company, much depleted battalion. But captured in these woods next day were at least four German 77's, and no one counted how many machine guns. The German unit had, however, considered itself imperilled. At 11:00 a.m. it had sent back a message to its own 233d Brigade: "Enemy on the front of the division on our left has passed through the hollows of Cuisy and then has swung in the direction of Montfaucon. The 1st Battalion is defending itself in the eastern edge of the small wood east of Montfaucon. Enemy is attacking strongly." At 1:10 p.m. they reported: "Enemy who broke through the division on our left took Hill 302 north of Cuisy with great strength. The 11th Grenadier Regiment checked the great part of its attack on the main line, but on the left is completely enveloped. . . . Two companies hold the wood east of Montfaucon."

American troops in Montfaucon. The ruined church appears in the background.

They were calling by message for help. But before it arrived, the battalion of the 39th Infantry had broken off and ceased to threaten.

Now, in the 4th Division, it was said that this morning engagement of that battalion was indecisive, and was properly broken off. But later in the day there was an additional development in the same area. The 7th Brigade of the 4th Division was far ahead, as we have seen. Its flank was exposed, though the 8th Brigade was following on. At the jumpoff the 8th Brigade had moved up to Hill 304, just in rear of the front line. At 4:00 p.m. it pressed ahead to occupy a new forward position in old enemy trenches near Cuisy. By two o'clock in the afternoon, the commander of the 79th Division, who knew that his right regiment had been checked, was aware that the 8th Brigade had been ordered to move in the lateral direction Cunel-Romagne (map 2). That would bring it diagonally into his own sector and ahead of him and his stationary 314th Infantry. This certainly looked like the flanking action which the army order had mentioned. A liaison officer reported that General Bullard of the III Corps had ordered it that way "to help the 79th Division take Montfaucon and continue the attack."

As a matter of fact, what the III Corps order actually said was for the 8th Brigade to "advance at once and take up an advanced position on the left of the 7th Brigade, with the center (37th) division of the V Corps on the left and the 79th Division, the right division of the V Corps in his rear, the last named division being unable to advance." At 7:00 p.m. the formal 4th Division order on this movement said: "The 8th Brigade will proceed with all possible speed . . . to take up a position on the army objective, establish outposts there, and liaison with the 7th Infantry Brigade on the right and the 79th Division in its rear." Although these orders made no mention of Montfaucon, of "assisting" the 79th Division, or of turning the position, their phraseology, and the geography of the situation certainly give that idea.

At eight o'clock that evening, the 79th Division was using every effort to overcome the difficulties of defective communications in order to advise all its regiments that the 4th Division was going to make such a move "to protect his left flank and to assist the advance of the 79th Division," and to warn front-line elements that outposts or moving units of the 8th Brigade might come in front of the forward elements of the 79th. They did not want another Bethel or Newmarket Bridge—troops firing into friendly troops in the dark. But they didn't have it; there was no such risk; for the friendly troops were never in front of them. Between 3:00 and 8:00 that night the 8th Brigade went as far as Cuisy—and then stopped! It stopped, in fact, at the very hour that the 79th Division was trying to warn its units of the very movement that was taking place. Up above someone countermanded the order—why, no one has ever said. Nor have I found any

record that the 79th was ever informed that the order for this move—so important to that division, since the move was in its sector—was countermanded.

How fully the 79th Division troops were influenced by this abortive project it is not possible to say. Certainly the word went down to lower units by every available means, although there is evidence that it did not reach some of them until daylight. The message said that the movement was to take place, that 4th Division elements would be in front of them. It is only reasonable to assume that tired troops, on receiving such news, would be more than willing to stop where they were and let the fresh reserves of seasoned Regulars from the right, move on out in front. We know, of course, that the 313th on the left made a final desperate and costly effort toward the town of Montfaucon before dark. And we know that the 314th made no such effort toward the Bois de Tuilerie. The reader can draw his own conclusions as to whether the announcement of the move planned for the 8th Brigade had any effect on the 79th Division. There is no concrete evidence as to any conclusion actually drawn on the battlefield and reduced to writing.

Here, at any rate, was an incident of the battlefield. The movement was under way. First Army orders may well have been read to contemplate in advance just such a movement, even though it crossed a corps boundary. Later the First Army report even said that "to drive salients into the defensive zone by frontal attacks and follow by attacks against the flanks thus created was the only feasible method of assault." But the flank attacks were never made. One was apparently commanded, but countermanded. We know now that the Germans were in a mood to withdraw that night. This time the door was indeed open, but no one went through.

V

Just before midnight on the 26th of September further demands were made for immediate progress. V Corps sent word to the now quiescent 79th: "Commander in Chief expects the 79th Division to advance tonight to position abreast of the 4th Division in the vicinity of Nantillois." This meant that the weary and badly mixed green troops who had been unable to capture Montfaucon and the Bois de Tuilerie in an all-day effort, now had it to do at night and had to go at least a kilometer beyond. It meant collecting scattered commands in the dark, and notifying regiments now out of contact. This, in the blackness of night on a battle-torn terrain.

Yet the 79th would try. Its commander replied that he "would make every effort" to advance his troops, was "leaving no stone unturned" to get in touch with his brigade commanders, and would "move any troops forward with which he could get in touch." He had been trying to reach the general of the 157th Brigade since four o'clock in the afternoon. He had received no news of the 316th (in reserve) since the jumpoff (and was not to hear until at least noon next day). The front-line brigadier, himself in the woods and hollows, was completely out of touch with his right regiment on the high ridge to the right.

Contrast, if you please, the earnest anxiety and effort on the actual ground of battle with the cool precision of the corps attack order even then being produced far from the actual fight:

> The enemy has been driven back on the whole front of attack. The American First Army will continue its advance to the Combined Army First Objective; the V Corps will continue its advance at 5:30 o'clock today. Divisions will advance independently of each other to the Combined Army 1st Phase line. . . . Upon reaching the Combined Army First Objective troops will be organized to resist counter-attack and strong reconnaissances will be sent toward the exploitation line of the 1st Objective.

Out on the ground, one could hardly be so cool. The division commander had not wanted to relieve his front-line brigade by his reserve brigade until after Montfaucon had been taken. Montfaucon was not taken. But he had to act, caught between the enemy and orders from above. At one minute after midnight he appears to have told the brigadier of the 158th to "move forward at once" and advance through the 157th Brigade "to a position abreast of the 4th Division." The brigadier's 158th Brigade was scattered across the sector in the dark. Some of its units had been marched up so far that they were almost inextricably mixed with forward troops, notably the 316th, following the 313th on the left. Some units were even in the front line, filling one of those small gaps that often open in battle. Others had been harassed and checked by pillboxes and snipers' posts passed over by the leading units, and were far back in the night. The division commander also seems to have realized the difficult situation; for an hour later he revised his instructions and said:

> Advance at once with the 315th Infantry in the Division sector. The 314th reported across the Malancourt-Montfaucon road about 1½ kilometer north of Malancourt. Has been instructed to move forward at once. If it has not moved, take command of the 314th and advance as rapidly as possible without regard to progress on right and left. If the 314th has moved, support it.

A general resumption of the attack along the whole front had been ordered for daylight. This night move was preliminary. A direct thrust forward at night might possibly be carried out with fresh troops well in hand. But this time it was not, however, made with the troops designated. These scattered troops were not even in hand and ready by 6:00 a.m. of the 27th. The brigadier was relieved.

The situation seemed to require a sudden and unusual reorganization in the midst of battle. Command was shifted. The front and rear regiments on the left became the new 157th Brigade (map 4). Those on the right became the new 158th Brigade. The brigades were now abreast and not in column. The senior colonel was the commander of the leading regiment of the two on the right. But he couldn't be reached, so the colonel of the

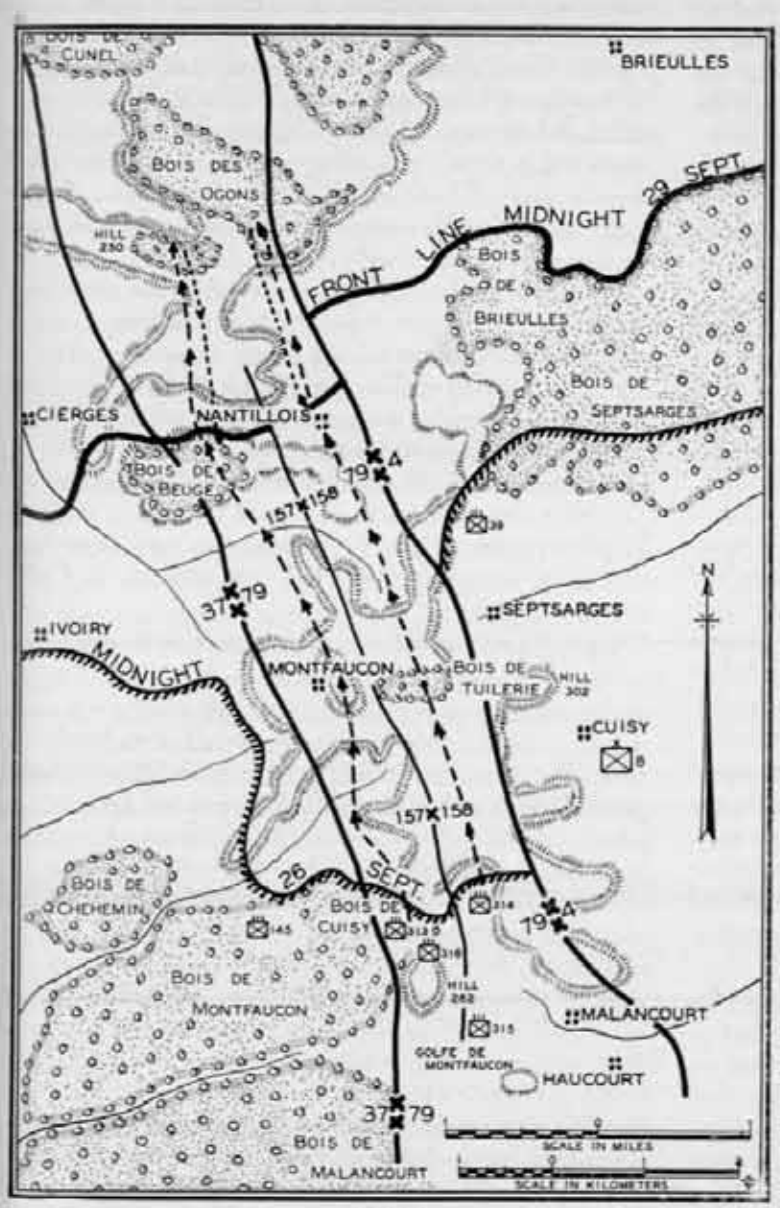
rear regiment was given command until his 315th Infantry advanced far enough for him to get in touch with the leading 314th Infantry, and then its colonel would take over. At seven the attack was to be resumed, and the rear regiments were to leapfrog. The force moved forward, but Colonels Sweezey and Oury, in the lead, moved forward too, and stayed in front—and there was no leapfrogging!

VI

At that same hour of 7:00, an aviator noted that "Montfaucon seemed deserted." The 313th on the left (with two of its own battalions and one and a half battalions of the 316th) went up to and through Montfaucon, but fighting step by step, and occupied the town at 11:45 a.m. The 314th, on the right and somewhat in rear, pushed along the ridge line in the face of machine-gun fire, used one-pounders and machine guns to overcome enemy artillery and machine guns too, and finally drove through the Bois de Tuilerie. Both regiments were supported by tanks. German resistance here had definitely weakened.

Both regiments swept over the heights to face new problems and fresh German fire, from the Bois de Beuge on the left and Nantillois on the right, and distant artillery at angles from right and left. From across the Meuse, from the Argonne slopes to the west, enemy artillery ranged steadily, and apparently with good observation, on the high ground which the 79th had now attained—twenty-four hours later than the schedule had said it should. This same well-directed artillery fire had held the forward units of the 4th Division almost motionless for the same length of time; every time a unit moved out of the Bois de Septsarges or over the ridge line, it was blistered back with shells.

About 3:00 in the afternoon, the 79th tried to advance north down off the high ground, but well-placed machine guns checked the effort. Then, without food or water the division hung on, waiting for artillery to get up to give it better support, and waiting for reorganization to strengthen its further efforts. The advance against Montfaucon which the projected "maneuver lines" had indicated would probably be easy, had been tougher than any along the whole front—possibly excepting that of the 77th Division over to the west in the Argonne Forest itself. For two whole days more these relatively raw troops of the 79th collected themselves, kept their aggressive spirit despite terrible punishment, and fought forward. There were many stragglers as well as many casualties. Enemy artillery and machine guns contested every advance against the Bois de Beuge and Nantillois on the 27th and 28th, and against the Bois de Cunel and the Bois des Ogons on the 28th and 29th. Blistering streams of machine-gun bullets tore into the units on both days. High-explosive crashed about them. And on both days there were bitter struggles. On the 28th there was a counter-attack to be checked on the left; on the 29th there was a near-panic on the right beyond Nantillois. And always there were heavy concentrations from enemy artillery. The 4th Division on the right could still hardly emerge from the Bois de Brieulles or the Bois de Septsarges without being swept back to cover. The 37th on the left could not get beyond Cierges. The amazing thing was the performance of the green 79th under the driving power of its division and brigade commanders. Instead of being broken by losses, weakened by straggling, discouraged by positive reverses, by lack of effective artillery support (especially counter-battery), or by shortage of food, the men of the 313th and 316th kept on going. Too many automatics and rifles were out of action from mud and dirt, but the units kept on. When



Map 4.

practically every other unit along the whole line of the American attack had bogged down, when fresh German troops had been put in against them, and German artillery had their range with miserable exactness, these two regiments drove forward on September 29th, one of them so depleted as to be reorganized into a single battalion.

These regiments still fought on across an additional ridge and into the woods of Hill 250 west of the Bois des Ogons. It is immaterial that they lost direction and bore too much to the right in the division zone. The 313th, again in the lead, took a faulty turn amid the trees. The 316th following, failed to follow and angled northwest to the far edge of the small woods, where they were probably the first Yankee Doughboys to gaze upon the Trench of Mamelle and the silhouetted outlines of Romagne. Green they were, but they were fighters beyond a doubt. There they stood, sending word back that with slight reinforcement they could go on out in the open, when a message reached them at nightfall that Corps had ordered a defensive to be assumed back on the line of the Bois de Beuge, just two kilometers in rear of where they stood. In accordance with these instructions they withdrew. It was October 5th before American infantry again reached the ground which they had gained.

Space will not permit further explanation of what happened during those three days until, on September 30th, these tired and thirsty men saw the seasoned soldiers of the famous 3d Division coming in to take over the line. These veterans of the Marne had a reputation, and there was great satisfaction in what was left of the 79th to see, even amid the shelling that marked this daylight relief, the confident and businesslike way in which the men of the 3d filtered into the forward positions.

VII

Separate studies might be made of the artillery support during this attack on Montfaucon—of how strange and unseasoned divisional artillery was attached to the 79th for this major effort, while its own artillery brigade was still far away in a training area issuing orders that horses would not be hitched to telegraph poles and that pistols would be turned in by the men and kept in safety.

Artillerymen have pointed out that guns were placed too far back and the objective too far forward; that the barrage rate of advance was too fast for foot soldiers moving and fighting over such terrain as they faced the first day; that artillery could not advance across such torn and soggy ground and was unable to support the Doughboys properly after the first advance.

Another study might be made of the traffic congestion at Malancourt and Avocourt, where the 79th had to share vital routes with adjacent divisions, and where vehicles blocked the roads so badly that it took twenty-four hours to move ten kilometers. Roads were bad and got worse, and hauling rocks from fields by hand was not a remedy. The absolute seriousness of the situation can perhaps be judged from the fact that for their outstanding efforts to reduce a traffic jam at Avocourt on the first day of the attack, the V Corps cited in orders the corps inspector, the corps salvage officer, the corps ordnance officer, and the corps judge advocate general!

A separate monograph might also be prepared on the form and manner of the attacks beyond the Bois de Beuge and Nantillois, their repulses, their resumption, their successes. A study might also deal with the passage unimpeded through the western edge of Montfaucon on the morning of September 27th effected by a small patrol from the 37th Division, three hours ahead of the 313th's attack. But such things would be beside our present story.

The taking of Montfaucon, as it appears in the records, is mainly significant in three particulars. The "maneuver lines" of the army map seemed to indicate that the task would be easier than going through the woods, and that Montfaucon, although an important keypoint, could be allotted to the zone of unseasoned troops for a rapid penetration. But it did not work out that way. The army field order's scheme of maneuver also seemed to indicate that a battle-hardened division of Regulars whose previous fighting had been "down the alley" would outflank and turn the heights of Montfaucon. It did not work out that way, either. Many are inclined to believe that an important battlefield position, manned by a weak and un-reinforced enemy, may "fall of itself," as the phrase goes, if only troops go by it to penetrate an adjacent sector. It did not work out that way, either!

Few of the orders and plans worked out as they were imagined. They almost never do. Not that troops are not up to the task, but rather that events never do go according to plan. In all of this narrative, I have tried to present only facts proven by documents, and to avoid any air of criticism. No reader realizes perhaps as well as I do the incapacities of the green divisions of the V Corps in this engagement, for it has been my good fortune to study at length hundreds of battlefield documents, and these show that errors were made. But I do not criticize, and why should anyone?

If any general remarks are to be given here in conclusion by way of a judgment on these troops, they should be remarks made by persons on the spot, who had the human as well as the technical, the current as well as the historical view. At Chaumont, when certain deficiencies were pointed out as well to be avoided later, it was said: "Considering the fact that this was the first time under fire for some divisions and that none had received the prior training considered necessary, these operations were highly creditable to all concerned."

And an inspector, commenting specifically on the work of the 37th and 79th Divisions, remarked: "There was confusion, there was lack of resolution. At times there were conditions bordering on panic. But the fact remains that these two green divisions, entering battle for the first time, crossed three highly organized enemy positions and captured a good many hundred prisoners each. Their maiden efforts were, under all the circumstances, all that could be expected."

Northern California Aircraft Warning Service

By Major D. W. Hickey, Jr., Coast Artillery Corps

There are now four aircraft warning services in readiness along the Pacific Coast. One of these, the Northern California aircraft warning service, centering in San Francisco, resembles the other three both in design and function. Organized in 1939 by the 65th Coast Artillery (AA) with the coöperation of civilian companies, it was given a thorough two-day test last year.

Fortunately, those who were directed to build new aircraft warning services during the past year, already had the example of a working organization in Southern California. This had been organized by the 63d Coast Artillery, and had been given two tests during the preceding two years. The 1938 test of the Southern California warning service was so successful, and the reports furnished by the 63d Coast Artillery and the sponsoring Southern California Edison Company were so complete and lucid, that we were able to start with full benefit of the experience of that network. The Northern California service owes a debt of gratitude to her older sister in the south.

The Ninth Coast Artillery District supervised the organization of all Pacific Coast States aircraft warning services. It directed, in part, that:

1. We organize, test, and operate an aircraft warning service for the Northern California sector.
2. The unit be primarily a citizen organization.
3. That information was to be collected mainly by telephone, with radio as a secondary means of communication.
4. Information was to be collected *without cost to the government;* that is, by privately owned or government owned communications means, and by utilizing as observers the employees of the participating companies and services. No commercial telephone, telegraph, or radio were to be used in communicating information of approaching hostile aircraft.
5. The organizations participating were to be held to a minimum. The Pacific Gas and Electric Company was to sponsor the Northern California aircraft warning service, its privately owned telephone lines forming the backbone of the system.
6. The Northern California Aircraft Warning Service was to collect and evaluate information of the passage of hostile aircraft over a sector within a radius of 200 miles from San Francisco.

The Pacific Gas and Electric Company owns and operates power plants and substations all over Northern California, from the coast to the high Sierras. It has an extensive telephone system, centering in Oakland, which serves these installations.

Our first task was to plot all of the facilities of the P.G.&E. on a large-scale map of California. There turned out to be eighty-two widely scattered stations, connected by telephone with Oakland, that would be suitable for use as observation points. These stations would have been a rather good warning service in themselves, but we had set our goal for a considerably more elaborate network.

A glance at the map showed immediately that there were numerous gaps in the system through which airplanes could fly with impunity. We had often thought of the United States Forest Service in connection with warning services, and we knew that this government organization had done excellent work in networks of the kind in the past. When we called upon the Forest Service officials in San Francisco we found them anxious to become a part of our service. They gave us the locations of each of their observation stations, fire towers, ranger stations, and other permanent facilities throughout the section in which we were concerned. There proved to be 554 separate points at which the Forest Service was willing and able to take part in our network. These points were plotted on our map.

Still there were gaps. So we called upon the California Department of Natural Resources, which operates the state forests and parks. These people also were anxious to help. They added ninety-two potential observers to our number.

The Southern Pacific Railway System, not to be outdone, offered the services of every station agent and telephone line within our radius. This coöperation added 154 possible observers.

Despite these numerous additions to the original list of observers, the coast line remained poorly protected. So we approached the Navy, the Coast Guard, and the Lighthouse Service and received their full coöperation. We then had the use of coastal facilities.

Even so, with the map thickly dotted by the stations throughout the area, there were weaknesses in the coverage. We found two amateur radio organizations that were prompt in agreeing to assist the warning service. These units—the American Legion radio net, and the Army amateur radio system—offered 103 observers, some of whom were in localities where we needed stations.

At the final count we had 995 usable observing stations, all capable of reaching San Francisco or Oakland by telephone or radio, without cost to the government.

In order to prevent the collapse of the system under its own ponderous weight, we decided to limit the size of the network to 300 stations. In addition, we had to decide whether to build a checkerboard system of stations, or to organize along the lines of radii and arcs. At first we concluded that a checkerboard system, with a station at or near the center of each eight-mile square would give the best

coverage, but when we surveyed our facilities, we realized that we could not use this system. The geography of this part of California follows curves and straight lines, which practically dictated the use of the radii and arcs system.

Arcs of 50, 100, 150 and 200 miles, centering in San Francisco, were drawn. Stations were selected which most closely followed the lines of these arcs and were situated from five to eight miles apart. Then began the hunt for stations which would follow the radii. There were a number of obvious radii, and some which were less conspicuous but which proved to lead to important centers outside of San Francisco, so these were used.

Our next task was to submit the list to the participating companies to see if the stations could be hooked together without cost to the government. In a few cases our plans had to be revised because of various difficulties but the stations were finally selected. They were divided among the participants on the following basis:

Pacific Gas and Electric Company	56
National Forest Service	57
Southern Pacific Railway System	65
California Forest and Park Services	29
American Legion Radio Net	76
Army Amateur Radio System	26
United States Navy	5
United States Lighthouse Service	5
	319

In a number of localities we had access to the facilities of more than one participating company. For example, in a number of towns there are short wave operators on the one hand, and telephone equipped observers on the other. This gave us short wave radio nets and telephone nets superimposed, so that we had a duplicate set of facilities at certain critical points. The results of the duplication provided 319 observers in 272 different localities.

At this stage of the proceedings the Pacific Gas and Electric Company went into action. That company detailed Mr. Harry N. Kalb, assistant engineer, as the civilian organizer. First he tested each of the telephone lines from the P.G.&E. stations through to Oakland. Then he discovered that each of the many United States forests in California has its own telephone network which enabled him to tie in the P.G.&E. trunk lines with the forest systems to our advantage. He arranged to have these connections made and tested. He did the same for the California forests and parks.

When considering the Southern Pacific observers, we found that their lines all came into the Southern Pacific building in San Francisco, only two blocks away from the P.G.&E. building, where we were to install our information center. The superintendent of telegraph for the Southern Pacific tested his own lines through to San Francisco.

We had then 207 observers connected by telephone to the Bay Area; some to Oakland over forest and P.G.&E. lines, and the remainder by railway lines to San Francisco.

The radio amateurs are in well-organized networks. The American Legion network is active throughout the year as a disaster setup, and is used annually during the Legion mobilizations. The Army amateurs are under constant supervision by Signal Corps officers, and are given frequent tests in the capacity for which we intended to use them.

The Coast Guard stations are connected only by long-distance public telephone, so for the time being, they dropped out of the picture. The Lighthouse Service stations and the Navy radio compass stations are radio served, and work into the Navy receiving station in San Francisco.

After managing to hook up all observers with San Francisco or Oakland, we were forced to spend some money to bring all lines into the information center in the P.G.&E. building in San Francisco. Six submarine circuits were leased for the period of the test to bring the P.G.&E. lines from Oakland to the information center. Other telephone lines were leased to bring in the railway lines, and to connect the information center to the control stations of the three radio nets.

The observers are all employees or members of the participating services or companies. As they had never before acted in this capacity they were each given a booklet of instructions to acquaint them with their jobs. The booklet contained a short description of aircraft warning services and showed how flash messages are made up and telephoned in. It outlined the duties of an observer, and contained silhouettes of the commoner types of military aircraft. Since this booklet was of a general nature and covered no details for an individual test, a mimeograph was furnished, through the headquarters of the participating companies, which outlined the details for the test of August 1st and 2nd, 1939. At the same time each station was furnished a supply of flash message blanks, a publicity release, and a "canned message," to be sent in at a given time on the day of the communications test. In addition to these supplies, technical instructions, pertaining to the necessary cross-connections, were issued by Mr. Kalb, and by the communications engineers of the other organizations.

In order to disseminate our information to the army commands and the Civil Advisory Committee, it was necessary to lease telephone facilities. A leased telephone loop carried warnings and predictions to the command post of the Pacific Coastal Frontier, the 20th Pursuit Group plotting section, the operations office at Hamilton Field, and to the command posts of the AA artillery commands in the Harbor Defenses of San Francisco. A leased teletypewriter circuit, with two instruments operated by the 3d Signal Company, carried point-by-point data to the 20th Pursuit Group. A Signal Corps radio set operated by 65th Coast Artillery radio personnel carried warnings and predictions to the antiaircraft units at Fort Winfield Scott, and to Hamilton Field. The Civil Advisory Committee was alerted through the office of the Chief of Police of San Francisco, via public telephone.

1—Message clerks at receiving telephones, messengers, and message supervisor at the time-date machine. 2—The message supervisor, operations officers, and plotter. Three flights are being plotted on the chart. 3—The dispatcher, teletypewriter operator, and records clerk. Shown also are the phones to the army commands and the public telephone. 4—The illuminated map. Close inspection of the picture will show a trail of lighted lamps indicating a flight of airplanes being tracked.

The information center was placed in the auditorium of the P.G.&E. building in San Francisco. This was a good choice, because of the demand for audience space. The test of August 1st and 2d was held during the preliminary play period of the Fourth Army CPX and many of the hundreds of officers on duty with the CPX witnessed the operation of the warning service during the tests.

Eleven message clerks, each equipped with a telephone, were seated at a long table. The flash messages came over these telephones. As soon as they were recorded on the message blanks, they were placed in the time-date machine, and then handed in turn to the plotter, the operator of the illuminated map, the teletypewriter operator, and the records clerk. This procedure worked very quickly, the message frequently going as far as the teletypewriter operator before it stopped.

The plotter recorded the place, direction of flight, time of observation, and checked the number and type of aircraft observed. The operator of the illuminated map turned on the lamp coinciding with the reporting station, and placed the information from the message on his information panel. The teletypewriter operator transmitted, by a code which he had devised, the contents of each flash message to the plotting section of the pursuit group, which, in turn, used the information to work out pursuit interception problems.

The operations officer made frequent predictions to the Civil Advisory Committee as to the time of arrival of flights over important cities and other military objectives. His was the duty, also, of making the same warnings and predictions to the army commands.

Figure 1 shows the message clerks at the receiving telephones, the messengers, and the message supervisor at the time-date machine.

Figure 2 shows the message supervisor, the operations officer, the plotter, and three flights being plotted on the plotting chart.

Figure 3 shows the dispatcher, the teletypewriter operator, the telephone to the army commands, the public telephone, and the records clerk.

Figure 4 shows the illuminated map. Each station has its own 6-8 volt lamp which is turned on when the station reports a flight. Close examination of the picture will show a trail of lighted lamps, indicating a flight of airplanes being tracked. In addition, a green lamp indicates that the army commands have been alerted, a yellow light that the Civil Advisory Committee has been warned, and a flashing red light shows that the antiaircraft artillery has picked up the enemy and is in action. While this map is not essential to the working setup, it proved a fine means of exciting the interest of the general public, the visiting army officers, and the officials of the participating companies, and of clarifying the exact situation for everyone.

Several hundred visitors viewed the information center's activities during the tests, and, as light after light came on, there was a great deal of interest. The picture of events given by the map created suspense and some mild betting about the outcome of each flight. The metropolitan newspapers gave considerable attention to the tests and to the information center, their interest being stimulated largely by the display of the illuminated map.

The personnel of the information center came from the 65th Coast Artillery. They were:

1 officer in charge
1 operations officer
2 radio operators
11 message clerks
5 messengers
1 NCO dispatcher
1 operator, illuminated map
1 NCO, electrical, assistant
1 NCO, clerical, message supervisor
1 NCO, radio
1 NCO, artillery, plotter
1 NCO, records clerk
1 operator, teletypewriter
2 outgoing telephone operators

All equipment was built by personnel of the 65th Coast Artillery.

For several days before the test the men of the information center were drilled carefully in the workings of the warning service, each one rehearsing his rôle. In addition, the men were drilled in the spelling and pronunciation of the names of all observing stations.

The day before the actual operations was our choice for the communications test. That was the day for the canned messages to be sent to information center at the prescribed times. At the conclusion of this test errors in reporting and failures to report were compiled and turned over to the communications officers of the participating companies. These gentlemen corrected the mistakes during the night July 31-August 1.

During August 1st and 2d we had five alert periods of three hours each. These took place from 8:00-11:00 a.m. and 1:00-4:00 p.m. each day, with an additional period from 8:00-11:00 p.m. on the second day. During each period all stations were on the alert, reporting all flights of three or more airplanes which passed within sight or hearing. None knew the proposed courses of the various flights, or when to expect them over their stations.

During each daylight period there were three flights of airplanes aloft, and at night there were two. These flights consisted of from three to six bombers or attack planes. They flew courses designed to give as many of the observing stations as possible an opportunity to see or hear them. These were purely test flights, with no tactical significance. They followed more or less circuitous routes, always ending in an attack upon Fort Winfield Scott, or upon a military objective in an adjacent sector. The 1st Wing, General Headquarters Air Force made available fourteen separate flights, of which nine originated in the Northern California area, and flew for approximately three hours, finally making attacks upon Fort Winfield Scott. Three other flights originated in Northern California, but passed into other sectors, one to Oregon, and two to Southern California. Two flights originated in adjoining regions, and flew into the Northern California sector to make attacks upon Fort Winfield Scott.

The 65th Coast Artillery (AA) and the 6th Coast Artillery (HD) were in the field at Fort Winfield Scott protecting that place from air attack. The two regiments manned their armament and prepared for action as warnings were given of approaching enemy airplanes, and went into action as the targets came within range. They established their A.A.A.I.S. in the approved manner, and picked up all flights within two to eight minutes before the planes reached the bomb release line.

Of the fourteen flights, all were detected immediately and carried throughout their time in the air. About one station in four, over which the planes flew, failed to send reports. This may be explained by the limited visibility in some of the sections of the Northern California mountains in which we had selected observing stations. Again, pressure of business, particularly forest fires, prevented some of the stations from participating all of the time.

The average elapsed time between observation of the flight and receipt of the message in the information center improved from 6.2 minutes per message in the first alert period, to 4.9 minutes for the final period. The over-all

average for telephone messages was 5.5 minutes, compared to 6.5 minutes for messages sent in by radio.

Telephone messages came in over lines which averaged well over 100 miles in length. These lines had no boosters or amplifiers, and many of them are party lines. Communications officers know that this means faint reception and occasional repeats.

Radio messages were slower during the daylight hours because of the shorter range of the transmitters during the day. At night they were more rapid, but there was, nevertheless, considerable interference from amateurs who were not taking part in the exercise. Exclusive radio channels for aircraft warning services are indicated in time of war.

Inter-sector communications were maintained during all times through the medium of army and navy radio channels.

Numerous warnings of approaching flights, and predictions of time of arrival were sent to army commands and to civil communities. The warnings were dispatched on an average of sixty-two minutes before the airplanes arrived at the indicated locality, and the predictions of time of arrival averaged within one and one half minutes of being exact.

We learned a number of things by experience, chief among them being:

1. An aircraft warning service, utilizing existing civilian installations and personnel is effective and efficient.
2. The fewer the participating companies, the easier the control.
3. The participating companies can carry the added burden of an aircraft warning service without interference to their regular business.
4. Telephone communication is superior to radio communication in the collecting network.
5. Civilian organizations and government agencies are glad to coöperate in the establishment of an aircraft warning service. Their employees are disciplined and enthusiastic, and make good observers.
6. A warning service, such as the one now organized in Northern California, can be ready for action in a few days.

✓ ✓ ✓

NOTE: The Northern California Aircraft Warning Service is an excellent example of the important work performed by Coast Artillery personnel in developing this phase of antiaircraft defense. However, the organization and operation of an aircraft warning service is not a Coast Artillery function unless specifically directed by the higher commander concerned. Tables of organization provide no *Coast Artillery* personnel for this purpose.

The Editor.

A dual-mount machine gun used by the Swedish antiaircraft force

What Every Reserve Officer Should Know

By Captain Arthur Symons, Coast Artillery Corps Reserve

Well, all right! You're a Reserve officer. And so what? Few people are impressed. Almost any girl would rather look at Gary Taylor Gable before his morning shave than at you in dress blues—if you had dress blues. The Regular Army thinks you're probably a good kid, with possibilities—but just possibilities. The National Guard thinks you're a good idea, like carrots in mulligan stew. Pacifists think you're a misguided sub-moron. And the final bitter pill—a large section of the general public doesn't even think about you at all. It has its own troubles.

Are you properly deflated? Swell. Now we can get down to cases.

As a Reserve officer, you are to be congratulated. You have a better-than-average education, it has never been proved that you're not a gentleman, your physique is such that you probably won't collapse running for a streetcar, and your interest in national defense hints at qualities more noble than those of the herd. But unless you're one of the exceptions, you're far from a soldier, my friend.

It isn't your fault, of course. For fifty weeks of the year, less a few evenings, you are a civilian, with pork chops to earn and a life to live. For the other two weeks—in some years—you wear a uniform and haunt an Army post trying to adjust yourself to a new and different life. Just about the time you can distinguish a warrant officer from a flying cadet, the finance officer hands you your pay, and a line of grim-jawed men, armed with your chits, take it away from you again.

But buck up, old boy, there's hope. You can't be expected to know as much about the military as the professional, but you *can* develop a military frame of mind in one or two easy lessons at home—if you have any real desire to be the soldier your uniform says you are.

Let's start with one of the first attributes of the soldier. *Obedience* is the word. I'll bet that within the past year you have been guilty of at least one act of direct military disobedience. No? How about that letter from unit headquarters you neglected to answer because it didn't seem very important—and besides you couldn't find a penalty envelope without going into your footlocker? Do you always answer your unit instructor's communications promptly? Don't tell me—let me guess. Because if you did answer those communications as military regulations require—within twenty-four hours—the good major, who's a hell of a fine scout and lets himself out on a limb many a time to save your military hide, wouldn't have to write so many indorsements to higher headquarters himself explaining *your* delays, and in many cases taking the rap.

A soldier would keep up on his military correspondence. And in unavoidable delays he would explain those delays to higher headquarters.

Then, there's an item called *coöperation*. The Army, with better than 150 years of experience behind it, seems to think that coöperation is important. There's even an entry in the efficiency report dealing with it. The efficiency report states that coöperation is "acting jointly and effectively with another or others, military or civilian, to attain a designated objective." Well, did you heed the appeals of your unit commander and unit instructor to turn in a fair average of Extension Course work? Did you coperate with those who tried hard to put your unit on top? Did you? I betcha. The statisticians who tsk-tsk-tsk about the uneven distribution of wealth might look into the uneven distribution of Extension Course lessons completed. Boy, would they have figures with which to do some tall viewing-with-alarm!

Now, how is your military frame of mind? Soldiers, being disciplined individuals, show respect and courtesy to their superiors. Do you—all the time? Maybe. Of course it's out of the question, when the gang meets at the Hofbräu after the unit meeting, to stand at attention and use the third-person form of address when you're gassing with the Colonel about the boner you pulled at camp last summer. But even with a beer in the hand and four down the hatch, the word "sir" is in order. If you're a lieutenant and your captain telephones to ask if you'll be at the unit meeting tomorrow night, check the proper answer: (a) Aw hell, Drizzlepuss, I've got a date with a blonde, and besides I've made my five meetings this year. (b) No. Captain, I'm afraid I can't make it. I have a rather important social engagement.

Or suppose you are the lieutenant, and the captain works for you in civil life, and you're very good friends. When would you use the following form of address: (a) in the office with no third party present, or (b) during a unit meeting—"Jones, you're the dumbest man that ever brushed his teeth with shaving soap."

A superior officer is a superior officer in uniform or civvies, on duty or off, and a soldier with a military frame of mind doesn't forget the fact.

Another trait that indicates the soldier is his willingness to get things done. If the colonel appoints you to the chairmanship of the dance committee, he honestly doesn't give a hoot if you don't know Toscanini from Singin' Sam. He

Good Gad, Superman! This is a B. and O. Railroad map.

wants a dance, and a good one. If you don't know how, find out how—and get moving. Don't tell him you're incompetent—go ahead and whip up a dance. You'll never know just what you can do until you go ahead and do it. If the colonel told you that your platoon would take Hill 999⅞, you wouldn't point out the impracticability of the plan—or would you? Come machine guns, come artillery, come bayonets, your platoon would take that hill or die trying, and you along with it. That's the Army; that's the soldier. The principle is the same whether the task is to instruct CMTC's in prophylaxis or force a river crossing in war. Git goin', and to hell with the word "can't." Just another 4 x 8 in the military frame of mind.

A soldier is neat and clean. Are you? Do you shave every morning, whether you need it or not? Is your suit pressed, is your linen clean, are your shoes shined, has your face been washed recently? Elementary stuff, to be sure, but how about it? If you're a sloppy slug in civil life, you'll be no example to a platoon of selective-service men during the hectic mêlée of wartime training. To many men, a taste for military cleanliness and order is something hard to acquire, but once acquired it's hard to eradicate. But it's one of the marks of the soldier.

The next quality, fellow Reserve officers, is something my usually rash character hesitates to put a name to, and it's a negative quality at that. Perhaps a few instances of how *not* to act might explain things. Don't be like the Reserve colonel, famous throughout a corps area as the rich man who runs his business from camp during each fourteen-day tour of active duty, giving enlisted clerks hours of his personal typing to do each day, and who then neglects to press a greenback into their underpaid hands. And don't be one of the barflies who is always marked "present" when somebody else buys the drinks, and who disappears by the time his turn rolls around. Don't be the man who excuses his personal sloppiness by slurs at the noncom in charge of the orderlies. Don't be the bird who gets the extra five-spot at the paytable and neglects to turn it back to the unlucky finance officer. Don't be the drizzle who yips "Who pays for the gasoline?" while the colonel is outlining a tactical problem using privately owned transportation. Don't be the pinchpenny who doesn't subscribe to the publication of his branch, and who doesn't belong to the Reserve Officers' Association.

I have the word I was looking for: Don't be *cheap*. Soldiers aren't.

Another negative quality is *carelessness*. An army is a precision machine, but it's only as precise as its poorest part. Are you the bird who always comes late to formations? Are you the itch who comes through with the wrong map nine weary miles across country from camp? Are you the drip who points his pistol at the firing line when his attention is distracted? If you are, you're probably the sort of mug who'll lead a unit in the presence of the enemy and forget to put out scouts, or who'll forget to make messing arrangements for his troops. The dope who gets as far as the parade ground for retreat without his saber is probably the same numbwit who will find himself on outpost duty without any ammunition. Carelessness has no place in the scheme of the soldier.

And for goodness' sake, learn to use a little *initiative!* If there is something to be done, *do it!* The whined excuse, "But nobody told me to," is out of place in the Army as a step-in on a gun carriage. The best order is the one that doesn't have to be given. My seventeen-year-old secretary says "I've already done that, Mr. Gunner," about ten times during an average day. The officer who can say that is the man I want commanding one of my platoons. Another phrase no junior officer had better use in my hearing is, "What do I do now?" My favorite CCC skipper told me, the second day after he took over the camp from a fussbudget who should have been taking occupational therapy at an institution for feeble-minded, "Lieutenant, when an emergency arises in my absence, take care of it. Do *something!* If you do the wrong thing I'll back you to the hilt, but if you do nothing, Gawd help you when I return!" Don't sit by and let things slide—mould events for the good of the service. That's only one manifestation of initiative, but until you learn initiative in all its ramifications, your uniform will be nothing but expensive wrapping on a low-grade product.

Another mark of the soldier is *loyalty*. Your superiors may be everything your parents taught you never to be—but they're still your superiors, and the representatives of the country you have sworn to uphold. Weaken them, and you weaken your country. When I first went on CCC duty, I couldn't understand the attitude of my captain who charged the men for damage to government property. Surely the government could better afford to pay for a window broken in a scuffle, than an enrollee who sent home all but five dollars of his monthly pay. But the skipper was loyal to his country; I soon learned that part of my job as an officer in the Army was to protect the government "from all enemies, public and private." The person who wantonly or carelessly destroys government property, even twenty-five cents' worth, is an enemy of my country even as a foreign government that sinks one of our ships, but merely to a lesser degree. As an officer, you will protect the government from more than bullets if you are loyal.

Learn the business. Success in civil life is a combination of knowledge, work, and luck. Take away any of these three elements and you have removed 33⅓ of your chance for success. Anybody can work hard, some of us have luck, and all of us in the Reserve have our opportunities to improve our military knowledge. A Reserve officer can't hope to learn everything about the military, not even everything about his branch. But he can take advantage of the myriad opportunities presented to him to increase his knowledge. Extension Courses, unit conferences, social functions, summer camps, service schools—all have their place in the Reserve educational scheme, and the Reserve officer who doesn't take advantage of them to the best of his ability isn't much of an officer. "Impersonating an officer" is a crime in this country—don't be a criminal. Besides, how can you have a military frame of mind if there is little of the military in that mind?

Arrogance has no place in the military frame of mind. It doesn't go in the United States Army. Besides, what have you to be arrogant about? The enlisted man at whom you may sneer is simply yourself, but for a break or two somewhere along the line. Chances are that he knows more about his job as a soldier than you do. Many enlisted men hold commissions in the Reserve. The officer of the Regular establishment doesn't have to throw up a defense of arrogance. He's a leader, he knows his stuff and he knows he knows it. To him, a soldier is a most important part of the Army. The Regular officer respects him and his rights, just as the soldier respects the officer and his rank. Discipline, the separation of officer and man, imposes an obligation on the officer, rather than *vice versa*. Your uniform should never make you forget that you are an American, and that the United States is a democratic country. The officer of the Army of the United States leads, not drives, citizens, not serfs. You can be dignified, even aloof if you care to be (it isn't nearly as much fun), but don't be arrogant.

A few words on the care and feeding of superior officers might not be amiss. Because your CO calls you Joe at 10:30 p.m. at the blackjack table, don't get the idea that he is Herb at 10:30 a.m. on the drillfield. Let him take all the leads when it comes to familiarity. If you don't, he'll regret his first move towards softening, and he'll freeze up worse than a Jawja fiel' han' in an Alaskan blizzard. If the CO borrows your shaving soap, that's no license to use his last clean shirt. Ask his wife for a dance, even if it shreds your heart to tear yourself away from the girl you brought. You might get a break—it's even possible that she's all booked up. Look the CO in the eye when you speak to him, and stand at attention. When he gives you hell, *don't* look either like a whipped puppy or a defiant child. Remember, he made mistakes too, and he probably remembers them. Jump to obey his orders even if they're wrong—he's responsible—and if that's the way he wants it, that's the way he wants it. Maybe he knows something you don't know.

We Reserve officers have a job to do—an important job. In the case of a war, more than half the officers will come from our component. From where I sit, we're doing a fair job right now, but when we become satisfied we might as well devote all our time to digging petunias.

Are you equipped, *right now*, to lead your unit into battle? If the answer is yes, you're either damned good or wofully ignorant of what will be expected of you. If the answer is no, what are you waiting for?

☆ ☆ ☆ ☆

The Ins-and-Outs of Military Hair

By Captain Frederick P. Todd

Illustrated by H. Charles McBarron, Jr.

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

You can't write today about military fashions in hair in anything except a humorous vein. It just seems silly to us that hard-boiled soldiers once could have devoted a large measure of their time and effort to the set of their curls or the shape of their beards. And as for any officer who does this today—well, he is regarded with thinly disguised suspicion, to say the least.

Yet this business of coiffeur was far from silly to the soldier of the past. Indeed, its importance transcended anything we can imagine today. It was not merely a question of current fashion or private oddity—not a matter alone of race, creed or social importance. The hair was a part of the soldier's uniform and usually as important as his tunic or his medals. A particular hairdo was regulation or not regulation and the wearer soon found out which was which.

So well was this significance recognized in days of old that, to the initiated, the cut of a military beard or the droop of a mustache readily defined its wearer's rank and importance, frequently his branch and length of service, and, in some cases, his very regiment and state of mind. Readers of Sherlock Holmes will be reminded of the time when, in *A Study in Scarlet*, the detective astounded the stolid Watson by his identification of a "retired sergeant of Marines" by means of his "regulation side whiskers." I was as credulous as Watson until I had read the orders which govern the wearing of hair in His Majesty's Royal Marines and realized that Holmes could hardly have made a mistake.

There have been times, of course, when it wasn't necessary to write any orders on the subject. If a soldier was part of some strong social, political or religious upheaval he took off or put on his hair as a sign of his allegiance. This has frequently happened in revolutionary armies of civilian origin. Under Cromwell, the parliamentary soldiers cropped their hair as a striking gesture of contempt for the then fashionably flowing ringlets of the royalist. They got dubbed "roundheads" for their trouble and under Charles II the ringlets were replaced. Before the World War it would have been difficult to find an Italian officer without a mustache. After the Fascist March on Rome quite the reverse was true. In 1698 Peter the Great "modernized" his army by shaving off every last beard. In 1917 the Russian soldier again took off his whiskers, prompted, no doubt, by the same symbolism. Certainly this was true in the case of the Chinese soldiers who lost their cues in 1912, and the French demi-brigades under Carnot and Napoleon, whose unkempt hair was a sign of their faith and proof of their invincibility.

In such instances as these, the army led (or forced) civilian styles. It is easy to understand why this happened. But less cogent reasons have prompted other remarkable standardizations. In France under Napoleon III every soldier appears to have been required to wear a beard and mustache combination called the "imperial"; in pre-World War Austria the flowing mustache was equally obligatory; and in Germany of the same period the cropped head was distinctly *de rigeur* for field marshals and under. England, too has had its hirsute traditions; there was a time within the memory of most of us when it would have been unthinkable for an officer to appear with a bare upper lip. In a collection of several hundred photographs of British officers around 1900, I find only one minus a mustache (he was a Scotsman) and none with beards.

One of the earliest examples of this larger significance of military hair is offered by the Roman army under the Caesars. The simple legionnaire was smooth shaven while the barbaric world with which he warred was largely bearded. This smooth face, then, became more than a simple fashion, it was the soldier's badge of his civilization and of his membership in a disciplined force. As provincials were enlisted into the Roman army they shaved and donned Roman attire, and by these tokens became part of the civilized world. The signs of Imperial decay

Ressaldar Major
6th Bombay Cavalry, 1897

Cue, Napoleonic Era

Marbot, 1799

were patent when this practice ceased and the barbaric influence grew strong enough to permit of bearded soldiery.

But these are signs more social than military, affecting often soldier and civilian alike. On the sea of style they are the occasional massive swell. The little waves and ripples are more easily missed and so more deserving of our study.

One of the most interesting is the use of copious hair to denote service or perhaps mark some honorary rank or trusted function. The origin of this is obvious. The presence of hair on the face differentiates man from boy and hence it came to distinguish veteran from novice in more primitive military circles. While the ordinary Roman legionnaires were clean shaven it appears that the older soldiers were bearded and there is some reason to believe that the older line officers were also so distinguished. Certainly the practice was followed by the trusted subaltern whose job it was to carry the standard of the maniple. Coupled with a bear's or lion's head thrown over his helmet, the full beard was his insignia of rank.

Even through eras where fashion has been decidedly outraged the practice has survived. Old-timers in the feudal armies carried on the tradition and full whiskers became a veritable trade mark of the professional soldier of the Renaissance. Not until beards definitely went out of fashion around 1700 did the practice cease and even then not completely.

From that time on the beard became, instead, the insignia of certain specialists. Chief among these were the sappers, a small group attached to all regiments of the eighteenth and nineteenth centuries who performed minor feats of field engineering. They invariably headed parades, wore tall bearskin hats and leather aprons, and carried glittering, heavy axes. Just as invariably they wore huge, bristling beards. The British retained these pioneers,

Hussar, Napoleonic Era, 1806

French Heavy Cavalry, Cuirassiers, 1813

Garrison orders of Gibraltar, 1803, Officers

Hair clubbed, 1781

Roundhead

Cavalier

complete with whiskers, in some regiments as late as this century, while a recent photograph of the French Foreign Legion shows that the bearded sapper has by no means died out in that doughty unit.

Back in the 1840's we had sappers ourselves in some of our more swanky militia regiments. A celebrated print of a Tammany parade shows them, with axes, aprons and beards. One marvels how these men fitted their great beavers into the civilian working day—how they managed the more prosaic and usually bare-faced duties in bank or grocery store. One wonders until he learns that the beards were rented for each occasion, along with the professional band and the officers' horses.

In its heyday, seventy-five years or so ago, the full beard again assumed great importance as a military distinction. German sergeants, Russian cavalry kettledrummers, French Zouaves and a host of other petty dignitaries adopted or were assigned them as an insignia of rank. But after a decade or two the practice lapsed and only the Indian Army and perhaps a few native organizations observe the full whiskers today.

Regiments and other separate organizations as well as individuals have been permitted distinctive hairdress. The long hair and cue were abolished in the French armies by Napoleon about 1806. As a mark of honor, however, he permitted the regiments of his Old Guard to retain their old-fashioned coats and their long cues. Throughout all subsequent campaigns down to Waterloo his "grumblers" proudly retained these rights and after the final peace many suffered royal suspicion and worse, rather than relinquish the cherished pig-tails.

An equally interesting survival is the employment of long, vigorously chewed mustaches as the insignia of cavalry. It springs apparently from those Hungarian irregulars who, in the seventeenth century, were introduced into European armies as light horse. It was a business at

Bombardier, Russian, time of Peter the Great

French Demi-Brigade

Voltigeur, King's Guard, France, 1863

Uhlan, Austrian, 1893

German General Officer, World War

British Yeomanry, 1898

which they were the acknowledged masters and as imitators sprang up they copied the hussar dress and facial hair along with the tactics. Throughout the entire hairless eighteenth century the light horse preserved the tradition of carefree ferocity and the huge mustaches that went with it. The "cavalry type" is standard equipment even today.

It must not be thought that these mustaches and other appendages were simply permitted; they were usually required. It made no difference if some lips refused to sprout; there were other means. Marbot, in his *Journal*, tells of such an experience. In 1799, when as a youth of seventeen he joined the Bercheny Hussars, his hair was short and his lip was bare. According to the custom of the regiment, he was required to buy a false cue and side locks and on his face to paint a pair of huge bristling mustaches. These he wore through the heat of an Italian summer until he could at last produce the real article on his own.

One strikes many examples of such temporizing in the literature of those days, but perhaps the baldest comes from Denmark. Sometime around 1795, when light cavalry had become very fashionable, a troop of "Bosnians" was added to each of the Danish horse regiments. Since real Bosnians were scarce around Copenhagen the army fell back on ordinary Danes, dressed up in Turkish finery, complete with turbans and flowing pants. And on the face of every man blossomed a huge black mustache—drawn in charcoal. One wonders how they looked in a rainstorm.

Napoleon's hussars always carried their hair long, collected in a cue behind the neck and in two beribboned braids or "love-locks," weighted down with lead, before the ears. The ears themselves were decorated with large brass rings and the final effect was not unintentionally piratical. The use of ear-rings continued for half a century at least, for we find them in the ears of our own dragoons in the days of the Mexican War.

As if to stand out sharply in contrast, most of the more formal heavy cavalry—life guards, horse grenadiers, cuirassiers and the like—rigorously kept the smooth upper lip or at least twisted the points of their mustaches skyward. Artillery too, on the whole, seems to have preferred to shave—convinced no doubt that theatrical costume ill befitted their character as scientists.

Imperial Russia provides us with countless examples of regulated hair cuttings. During the reign of Nicholas I soldiers seem to have used the mustache in the sense of a service stripe, the longer the tips the more the service. And inasmuch as men were in for twenty-five year terms, the results were spectacular. For years in that land of unlimited manpower it had been the practice to select men for the various guard regiments who possessed the same physical qualifications. Thus you had one regiment composed entirely of blonds with blue eyes, another of brunettes and so forth, on the order of choruses. In general, too, each guard regiment had a Czar's company which was required to cut its beards in the current style of the Czar's beard. Of course, this was a national style and was widely worn outside of the army as well.

Eighteenth century Europe was for the most part smooth-shaven but not as much bewigged as we usually imagine. Among the military it is doubtful if many of the rank and file wore wigs. The wig adorned the men of fashion (or those who wanted to be) and was an expensive proposition. A judicious use of horse hair lowered the price to some extent but then styles were always changing. A man would buy a bob one week, perhaps, and the next find his friends in pig-tails. And then, too, it was unhandy on the battlefield.

Instead, the soldier dressed and powdered his own hair. This may appear more rational and doubtless was at first, but, towards the end of the century many a soldier must have longed for a wig to wear. The practice of hair dressing, of course, varied widely, usually upon the whim of some sovereign or high commander, and probably did

Roman standard-bearer

Barbarian

Renaissance soldier, German

not begin much before 1730. Before that time the bulk of the soldiery let their hair hang loose and even after that date—as long as fashion continued to wear the wig—it was left unpowdered and tied up in a simple knot behind. As late as 1753, so Hanway tells us in his *Travels*, the crack Prussian Guards powdered their hair only when on special guard duty, a practice which the writer commends as giving "the soldier a respect for his own person." Powder, pomatum, and pretty curls were the property of élite organizations or were reserved for very special occasions. Not until wigs fell into disfavor about 1770 did the real hair problems arrive.

For some forty years thereafter the armies of Europe and, to a lesser extent, of America were tormented by a series of the most preposterous regulations about hair. Styles jumped from club-tails to maccaronis to pig-tails, and back to club-tails again. So kaleidoscopic was this succession that it is said that in every regimental adjutant's office stood a dummy with a pattern of the latest model curls to which barbers could refer.

Some idea of what a soldier of this period went through may be gained by a glance at the Standing Orders of the garrison at Gibraltar for 1803. Officers in the first place had to have their hair cut "by one Established Regimental Hair Dresser" in the first week of every month (and no oftener) by what the Commandant chose to call a "simple Rule, viz:"

> The top to be cut as close as possible, being left no longer than is necessary to admit of its being turned with Curling Irons of the smallest size; the back line of the top is not to exceed a line formed by passing a packthread from the back of one Ear to that of the other vertically over the crown of the head; the hind hair to be parted from that of the top in the shape of a Horse shoe, which will occasion the sides to extend to half an inch behind the Ear, & which, therefore, forms the extreme breadth of the top; the remaining hair so parted off behind the string, is to be combed back, to grow down in one even length, from the crown & the back of the ear, so that the whole of it may tie into the Queue; No part of the hind hair, so parted off from the front, or brush top, is to be thinned off, & none of the short hair in the neck to be cut away.

This order continues breathlessly to say that the hair must be "moderately filled and mixed with Powder & Pomatum," the powder is to be "well combed into the roots so as to look white." Moreover, there were a few paragraphs on the different styles to be worn by the battalion officers and by the Grenadiers "when they are ordered to appear in their Bearskin Caps." It seems that when you changed your hat you must also change your hair arrangement. And the orders warned solemnly against having the hair look "stiff & constrained."

It was at this post that the barbers were so busy that junior officers were obliged to have their hair dressed the day before a field day. As a result they were forced either to sit up all night or to sleep on their faces lest they ruin the artistic arrangement of their curls.

It is interesting to note that, by this time, those officers "whose beards will grow sufficiently high to admit of having *side* Whiskers" could have a set if they desired. Alas, the side whiskers too had to be kept "combed up with Pomatum & Powdered."

The enlisted man fared no better. His section of the orders concerning hair is longer than that devoted to the officers and even more replete with gruesome paraphernalia. After an initial greasing he must place "a small Pad or Cushion covered with black Sheepskin, & stuffed with Bran" on the back of his head. This device was "known by Soldiers under the appellation of a Mouse." It has grown some since, if it is what I think it is.

At all events he got the Mouse on behind his neck, carefully worked the hair over it and rubbed in more soap, flour and grease. After a few additional steps he was ready to get to work on his Queue. To do this:

> the back hair is next to be covered with soap lather, well beat up with flour in a box, until it becomes a stiff paste, which is to be laid on with a small brush (commonly called by House Painters, a sash Tool) & then, regularly & neatly

Sapper, French, 1840's

Zouave of the Guard, France, 1854

German foot artilleryman, 1870's

marked with a comb the teeth of which should be about ten to the Inch, each mark coming directly down from the crown, where the hind hair is parted off from the top, to the tie, after which the whole hair is to be lightly powdered with a thread or cotton Puff, until it is perfectly white; but not so as to fill up the marks of the comb. When this is done, all loose powder, that has not attached itself to the paste, where it is directed to be laid on the hind hair, is to be blown off, so that none may be chance fall on the Clothes. The Queue, which is to be made to receive the whole of the Man's hair, & to cover the string with which it is tied, is to be fixed on, so that, when the Man has his Coat on, the Queue may be even with the lower row of lace on the Collar, & lastly the flash is to be fixed on so as to cover the top of the Queue.

Of course, this was fairly extreme, even for those days, and the officers were not above grousing. Yet by 1804 the British pig-tail had grown so long that it was shortened by seven inches with still plenty left over. One does not wonder at the alacrity with which this long hair and tails came off when, in 1808, the War Office so ordered. A counter order arrived the following day but, it is said, by that time not a head of long hair remained in the British Army.

The pig-tail of this period was a device from six to twenty-four inches in length, made of whalebone for officers and metal wire for men, bound with black ribbon. From the end projected a tuft of false hair. Only in the early years did it actually consist of a man's natural locks; usually it was no more than a fake cue fastened to the back of the head. The Prussian army of the late eighteenth century wore their cues stiffened with sticks of plastic wood and reaching to the waist, together with "side curls and fore-tops," to quote our own General Wilkinson.

The history of American hair is no less unusual. In spite of the clean chins of the eighteenth century a Continental soldier must have seen a fairly representative group of facial adornments. If he were pitted against a Brunswick or Hessian grenadier battalion he would have noted that the noncommissioned officers and men were wearing small black mustaches, waxed and blackened with the same polish they used on their shoes. German officers, however, he would have observed, were always clean shaven. If he fought alongside of some of the rifle units, such as Morgan's 11th Virginia, he undoubtedly saw and perhaps was shocked by the profuse beards brought in from the backwoods. And he would surely have been impressed with foreign eccentricity had he been at Yorktown with the French.

Yet our Continental himself, save on certain cold days or when he had lost his equipment, was clean shaven with his natural hair cut short or tied in a cue behind. General Headquarters was hardly in a position to demand much uniformity of cut or precision of curl during the first years of the war. Even Steuben realized how fruitless it was to expect the soldier whose coat was a torn blanket to do much about dressing his hair. His famous Regulations only require the Continental to have it combed, along with washing his hands and face.

In fact it was not until August 19, 1780, that Washington felt able to order:

> . . . It is expected that the men for daily Guards will appear upon the Grand and other Parades shaved, combed and powdered and their Cloaths as clean as Circumstances will admit.

After this more attention was paid to the business. Regimental commanders wrote orders and quartermasters dug deeper into the flour barrels for the necessary "powder." Some improvement was made, yet Washington was still forced, in his orders of August 12, 1782, to complain that:

> . . . Notwithstanding the troops are verging so near to perfection some small improvements may yet be made; to wear the hair cut or tied in the same manner throughout a whole corps would still be a very considerable ornament. Where it cannot be done in a regiment, similarity in a company would add extremely to the beauty of it.

Probably they never quite got it right.

For fully fifty years after the British marched out of

Russian Kettledrummer, 1895

Bearded frontier militia, U. S.

Wind-blown Effect, 1812, U. S.

New York not a hair graced the chin or lip of an American soldier. Yet in other forms it remained to delight and aggravate the Army and to lie at the bottom of several *causes célèbres*. In first place among these was that exhausting affair with Thomas Butler, the crusty lieutenant colonel of the 4th Infantry.

In 1801 the Regular establishment wore the long hair done up behind. This mode was distinctly out of fashion with the progressives but was still proudly carried on by the conservative element in both the Army and the nation. By some soldiers it had come to be considered almost as a prerogative—a badge of their caste. Their consternation is understandable when, on April 1, 1801, General Wilkinson—prompted, it is said, by President Jefferson's hint that powdered hair and cues smacked too much of aristocracy—ordered the hair "to be cropped, without exception of persons." The order was received by many with "horror and disgust" and by Butler with downright refusal. At first Wilkinson took no notice, but as Butler continued to appear on parade in his uncropped condition and even to boast openly of his contempt, he was forced to take action. This he did in general orders of August 2, 1801, where prompted either by pity or sly humor, he ordered that Butler "at his particular request, and in consideration of his infirm health, has permission to wear his hair."

Butler, as firm in health as he was in conviction, must have resented this patronizing. He redoubled his attacks and the affair grew steadily worse. Finally in 1803 Wilkinson had him arrested and brought before a court-martial at Frederick, Maryland. Here Butler was found guilty of an assortment of charges and held in arrest until April of the following year. His hair was still long and for some reason which seems unreal at this distance, all the power of the government would not wrest the cue from off his head.

That spring he was released and ordered back to duty, Wilkinson writing wishfully that he hoped Butler "would leave his tail behind him." But not Butler. Into its fourth year went the struggle, now embracing everyone of importance including Jefferson, who had just cropped his own hair, and rapidly assuming a political significance of the first magnitude. One more Butler was arrested, once more was he tried and found guilty. This time the "Roundheads" were out to get results, but they were too late. Two weeks before the findings of the court were published the old colonel had died of yellow fever and the last cue had passed out of the Army.

What the American soldier lost behind his head he made up for on the edges. Sideburns crept lower and lower down the cheek and the real dandies went in for curls and crimps. Only three months after the heads were cropped, Wilkinson was forced to order that "whiskers and short hair illy accord, they will not therefore be permitted to extend lower than the bottom of the ear." But French revolutionaries and not the War Office were setting the styles and the younger elements of the Army followed regardless. The keynote of the first decade of the nineteenth century was that studied, windblown effect so noticeable in the paintings of Saint Memin and others.

During this early period and indeed for the first thirty-five years of that century no general regulation governed the wearing of hair in the American Army. After all, there was a limit to the bizarre effect one could squeeze out of a sideburn. But the hairy era lay just ahead. Sideburns, passing the line of the mouth showed a tendency to become beards. Foreign mustaches were making their entry with the new immigration, and young bucks were letting their hair grow longer with every year. At last in 1835 the powers-that-be in the War Department grew alarmed at the trend and fired the first gun of a losing battle against style which was to last until the surrender of Fort Sumter, twenty-six years later.

In 1835 General Orders cracked down on young lieutenants with the following blast:

> The hair [is] to be short, or what is generally termed cropped; the whiskers not to extend below the lower tip of the ear and in a line thence with the curve of the mouth.

With what success this order met is an open question. Its terms were vague and the Army was well scattered. There was much talk of barbers running a string through the mouth and up under each ear to locate the exact line along which to shave, but in the end it probably depended on the whim of the post commander. The AGO may have won the first round but five years later style got in a good punch to the face. On March 16, 1840, came a capitulation, perhaps only to encourage the new mounted service, but significant withal:

> Officers and men of the dragoons are permitted to wear mustachios of a fashion to be regulated by the Colonels of their respective regiments.

Pressure was growing as civilian faces grew hairier and hairier. In 1843 the attention of all officers had to be "specially directed" to this business about the hair, the Secretary of War deeming "it inexpedient to direct any modification." General Regulations began pointedly to italicize such words as *short* and *cropped*. Stronger grew the terms forbidding mustaches for "officers or men on any pretense whatever"; yet louder and even louder grew the cries of the Line. The Mexican War added further to the difficulty by introducing on the scene thousands of bemustached and bearded Volunteers, making control virtually impossible.

The advent of the camera now gives us the first real proof of the War Department's losing battle. In photographs taken at this period there is hair aplenty. The earliest one known of Robert E. Lee shows a mustache. One of Thomas J. Jackson, taken about 1846, shows sideburns which have crept down to the chin. And we know that Captain May—he of Resaca de la Palma—not only wore a full beard but was followed by a full troop of his dragoons, likewise adorned.

At last in 1853 the Department struck its colors. On January 6 it ordered that the beard could "be worn at the pleasure of the individual," adding, however, a reservation that, it must "be kept short and neatly trimmed," a reservation not without whimsy in the light of the facial glories which followed.

The floodgates were down and the Civil War did the rest. Every conceivable style of beard known to man, or certainly not far from this, came in with the civilian armies of 1861-1865. But it is not within the scope of this article to go into the various types. Full beards and Burnsides, *en carrés* and imperials, *spitzbarts* and *kranzbarts*, they filled the camps of both armies. They had no military significance and, indeed, little of a civilian character. In 1857 *Harpers Weekly* had complained that, while every European beard clearly interpreted the national peculiarities of its wearer, "among the Americans alone the beard seems to possess no character." During the Civil War this condition had not altered.

Only one observation, doubtful and open to criticism, can be made. The generals who in the end were most successful, whose reputations came out least scarred in 1865, appear to have worn a plain, unaffected beard. Certainly this is true with the six top-rankers. Certainly most of those who, through bare face or foreign style, differed very widely from this bearded simplicity got the ashcan sooner or later. A lesson to officers, perhaps, on the doubtful value of bucking military conservatism.

There is little more to record. Army styles closely followed civilian trends. In the seventies the beards began to go. The eighties saw the mustache almost universal in the Army, the nineties saw its popularity rapidly decline, and the new century found a military establishment growing more smooth-shaven with every year. By the time of our entry into the World War we were hairless as babes.

I should like to close upon a querulous note. There is no regulation in the army today which controls the wearing of the hair save one tucked away under Military Hygiene and Sanitation (AR 40-205, par. 7). "The hair," it runs, "will be kept short and the beard neatly trimmed." Another hairy age is approaching and already our mentors in the movies lean furtively towards the more ethereal forms of the mustache. Few dare to develop a full upper lip, but the roots of sin are there and it is only a matter of weeks between the Hollywood toothbrush and the handlebars of the nineties. Can we develop an American hairdo? Are there, to be found, in the inscrutable ebb and flow of masculine vanity, any styles around which we can build a native hirsutic tradition?

From Ballista to Breech Loader

Chapter 7: ANCIENT NAVAL WEAPONS

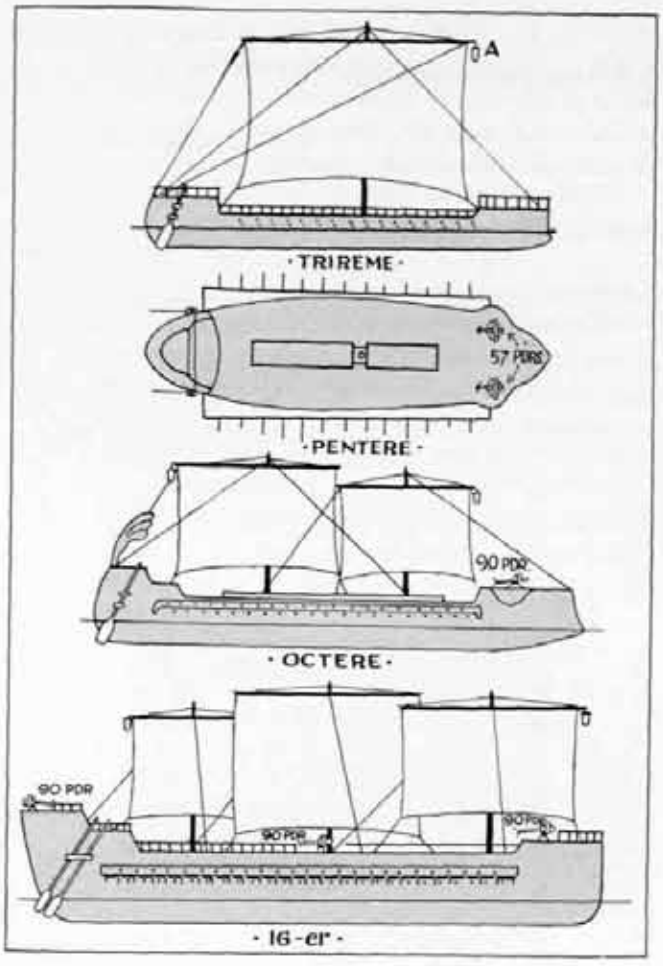
By W. A. WINDAS

The simplest naval weapon is, of course, the ram. Early Greek ships were designed with a ram as the main weapon. Speed and handiness were the ruling considerations and these were best combined in the trireme, or vessel with three banks of oars. Dimensions of the trireme were: length 105 feet, beam 15 feet, displacement, 70 tons, draft, 3 feet. Top oar speed (sails used only for cruising, not in battle) about 8 knots.

It was soon found that ramming tactics had disadvantages. A slight error in timing, and the rammer became the rammee. Moreover, the rammer dared not ram too hard, lest his beak stick fast and he be pulled down with his sinking foe. The first "missle" weapon used by ships was the Dolphin (A), a metal plummet weighing 200 pounds or more. It was dropped on from a high spar to an undecked portion of the enemy ship, where after a fall of 30 feet, it had a good chance of starting a plank.

In Sicily, after the Peloponnesian war Dionysius introduced real missile engines aboard ships. Larger vessels therefore became necessary, and the result was the pentere, with a single bank of oars, but 5 men per oar: length 100 feet, beam 22 feet, draft 4 feet, displacement, 140 tons. She carried two ballistae forward. This was the first real battleship and bore the same relation to a trireme as does a dreadnaught to a cruiser. In her crew of 250 men, there were 75 soldiers, against the trireme's 18. Her speed was less, about 6 knots. The two ballistae could throw 57-pound stones to 200 yards.

Ancient warships reached their largest size during the era of the Diadochi (successors of Alexander), especially during the times of Ptolemy and Demetrius Poliorctes.



The Story of Artillery Through the Ages

We hear of octeremes and even 16-bankers, but it is obvious that the words could not have referred to the number of superimposed banks of oars. An octereme probably meant a ship with 8 men in each rowing space, per beam. That is, a two-banked ship had 6 men on the upper oar and 2 men on the lower oar. The octereme's dimensions were: 150 feet long, beam 24 feet, draft 5 feet, displacement, 230 tons, speed about 7 knots. The crew numbered 550 (170 soldiers) and it mounted two ballistae forward.

The 16-er of Demetrius was probably the largest fighting ship ever propelled by oars. She was 180 feet long, 30 feet in the beam, drew 8 feet, and displaced no less than 640 tons. She had two banks of oars, 10 men on each upper oar, 6 men on each lower. Of its crew of 1,340 (more than some modern battleships) 440 were marines. Six ballistae were carried, arranged as shown in the sketch. Ashore, these weapons could throw a 90-pound stone to over 300 meters, and could nearly equal that range afloat. These engines had a trough or trail that was adjustable for elevation, and were probably the only ancient ballistae so fitted, although the practice was common enough on catapults, or arrow-throwers. These ballistae were carried on pedestal mounts. Only wealthy nations could afford ships of this size.

Two centuries later, the largest ship we hear of is a decereme, or 10-er. Doubtless these (and the octeres) were found to be more useful, than the huge 16-ers, just as Nelson considered the 74's to be more serviceable than the 120's, and as modern nations might possibly discover the 27,000-ton battleship to be more practical than those of 35,000 tons.

An Electric Splashboard

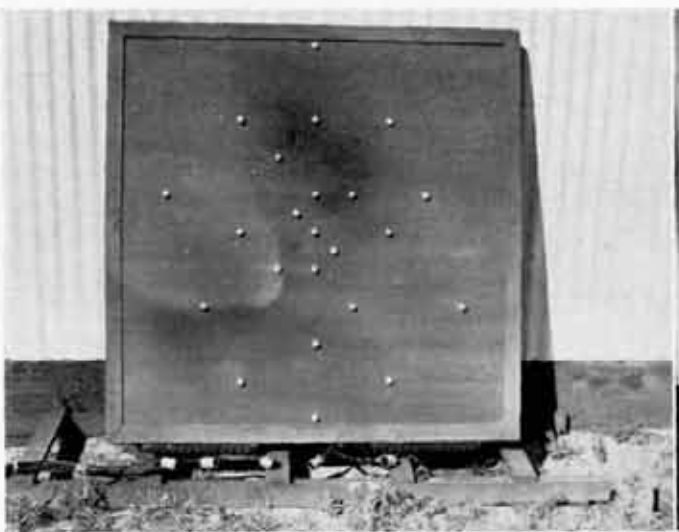
By Major William H. Sweet, Coast Artillery Corps

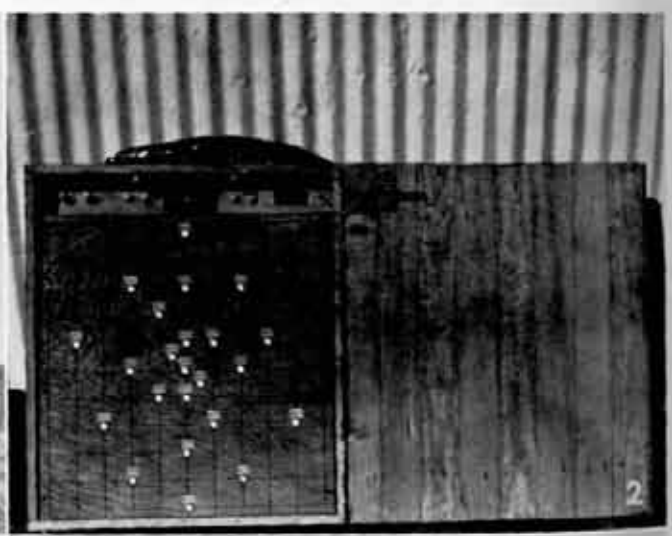
An analysis of drill and subcaliber firing usually shows the weakness of all battery sections except the spotting section. A study of records often discloses mean spotting errors that run as high as seventy-five yards. Since routine artillery drill does not train spotters, I have devised an electric splashboard that overcomes this difficulty.

The device is essentially a miniature range laid out in front of the BC station, using a reducing factor of 400 —normal range 12,000 yards, parapet space 30 yards. Since the battery baseline is 6,000 yards the miniature baseline comes to fifteen yards. Using the BC instrument as the directing point, the spotting stations were located 7½ yards to the right and left of the instrument. Thirty yards to the front of the BC instrument was laid a track capable of carrying an ordinary shot truck. This track, which was constructed of old pieces of two-by-four lumber, extended fifty feet to the right and left of a center line drawn to front of the BC instrument. At one end of the track a wooden reel was firmly fastened on wooden supports. A shot truck, with tires removed, was placed on the track and attached to the reel by an airplane towing cable which passed through pulleys attached to the track ties. A tightening clamp was installed at the other end of the track to take up the slack in the cable.

The shot truck carried a four-foot square reinforced piece of beaverboard. This was painted a sea-blue color and slightly tilted toward the BC instrument to give the effect of a 12,000 yard horizon. On its upper face the board carried twenty-three small 34-38 volt Ordnance light bulbs. See figure 1. The sockets were countersunk and spaced in accordance with desired splashes. The center light represented the target and was painted red. The bulbs extended three-fourths of an inch above the face of the board thereby equaling a twenty-five foot splash at 12,000 yards.

Of the two leads running from each socket one was attached to a common line and thence to a terminal on a 25-pair terminal strip mounted on the BC edge of the board. The other lead went to a single terminal on this





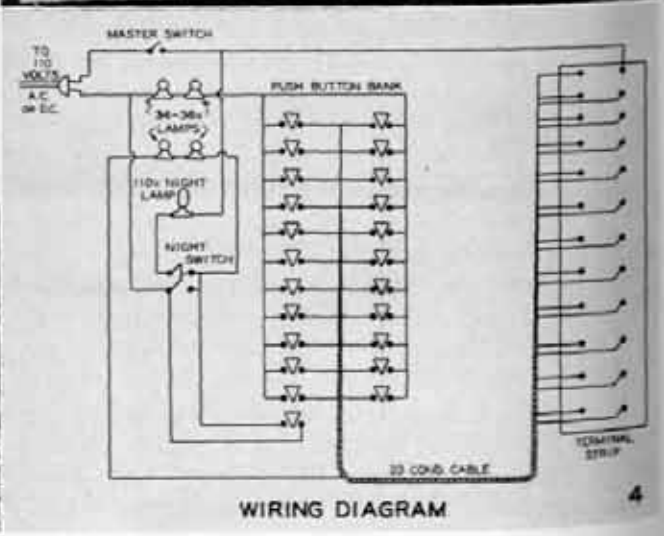


Figure 1: Splashboard. Figure 2: Control Box. Figure 3: Interior of Control Box. Figure 4: Wiring Diagram.

Figure 5: The Layout at Fort Barrancas.

same terminal strip. A built up field wire (24-pair cable) 150 feet long, ran from the terminal strip to a 25-pair terminal strip mounted on the control box at the BC station. See figures 2 and 3. The control board is of the common flush-type, with push buttons electrically connected to the splash board. Figure 4 is the wiring diagram of this control box. The control board is constructed so that the center light (target light) may remain constantly illuminated thus permitting night tracking. In daytime tracking, the bulb can be operated to splash a hit. Two extra lights placed in series act as transformers to reduce the voltage from 110 to 34. The control box is hinged and placed in a boxlike container the top of which does duty as a desk for the battery commander. One 110-volt lamp furnishes light for the desk. Since all push buttons are numbered this permits the battery commander to keep records of the light he splashed. A mimeographed form covering the practice operation furnishes data necessary for analysis.

To operate the board it is necessary to use one man at the reel for towing purposes (so many turns each observing interval) and another man at the splash board to keep its center line aimed on the BC instrument. Place your spotters with azimuth instruments and recorders at the ends of the miniature baseline connected by telephone to the spotting board in the plotting room. You are now ready to fire a miniature target practice with a camera record available after each shot is fired. Operated coincident to tracking a target at approximately normal ranges, it permits the battery commander to adjust fire under very close to service conditions. By using a stop watch and knowing the time of flight he can flash desired splashes at the proper time and can train his observers to pick up each shot of a salvo. By allowing for the build-up and fallaway time of the service projectile's splash he can train his spotters to meet service firing conditions, by adjusting the time of the electric splash to that of the service splash. An analysis of a practice quickly indicates the person responsible for errors. A resetting of the discs on the spotting board at the point of correct solution when compared with the setting actually made by the spotting board armsetters quickly pins down the person accountable. Sometimes the armsetter or recorders are responsible, but more often than not the error is chargeable to the spotters.

During winter months or bad weather ordinary wall tents will easily house the spotters' station and the control board. One large wall tent will take care of the shot truck, splash board, and the spotting board. At Barrancas we set this tent over the reel end of the track and reeled the shot truck in out of the weather when not in use.

By mounting the gun sights used in Case II firing on improvised geared bases at the spotters' stations the board permits training gun pointers in the fine art of jumping splashes as well as tracking the target. Of course, an ideal situation would be to emplace a couple of 155-mm. or 75-mm. guns on improvised Panama mounts on line with miniature baseline spotters.

During the past four months this board has been of much assistance in training the nine newly-organized Panama augmentation batteries recruited and organized at Fort Barrancas. Seven of these batteries have fired seacoast target practices and the average spotting error is approximately twenty-eight yards. This record is exceptionally good in view of the fact that only about eighteen days of intensive artillery drill was feasible. For the first five days of artillery training each battery spotting section trained on the electric splash board. By the time the battery was ready for subcaliber firing, the spotting section was thoroughly trained. On the day of the service practice I spent about an hour testing and tuning up the spotting section, which also gave a test as to the range officer's ability to adjust fire.

So far we have only been able to build one of these units, which necessitated locating it without reference to a battery position. The commanding officer was so impressed by the splashboard's effectiveness that he requested and received funds to build a unit at the site of each of the firing batteries located within the harbor defense. For a view of a type layout see figure 5.

I believe the same results could be obtained in AA gun practice if a similar device were used. To adapt this device to AA fire adjustment, it would be necessary to make it three-dimensional. This could be accomplished by using chicken wire instead of beaver board and using a three-dimensional construction instead of a flat surface. The unit could be suspended on a carrying cable about fifty feet above the director. An identical control box located at the director could be used.

In the construction and electrical arrangement of this board I am greatly indebted to Technical Sergeant Gilliam, Headquarters Battery, 13th Coast Artillery. He gave freely of his technical knowledge and off-duty time.

Suggested Service of the Piece, .50-Cal. Machine Gun, M2, on M2 Mount

By CAPTAIN J. E. REIERSON, Coast Artillery Corps

(The drill suggested herein is purely experimental, is *not* regulation, and has *not* been approved by the War Department. It does not have the force of regulations. Captain Reierson has tested this drill at Fort Monroe and has obtained satisfactory results. THE EDITOR.)

DETAIL	PREPARE FOR ACTION!
Squad Leader (Gunner)	Repeats command. Supervises unloading of mount, gun and equipment. Carries tool chest, one tripod leg, and sight pouch to gun position. Attaches legs to pedestal. Assisted by No. 1, rights tripod and places it over gun position. Checks level. Assists in placing pintle in pedestal. Assists in mounting[2] gun. Inserts gun attachment pin. Places sights in supports. Removes back plate and bolt. Assisted by No. 1, points axis of bore on aiming point. Aligns sights on aiming point by rotating lateral and vertical cables by means of special socket wrench. Directs No. 1 to couple cables. Assembles bolt and back plate.
No. 1 (Assistant Gunner)	Carries gun to position. Holds pedestal (upside down) while legs are being attached. Screws base-ring to pedestal. Assists squad leader in righting tripod and placing it over gun position. Tightens base-ring and clamp-nuts by means of wrenches. Assists squad leader in leveling[6] tripod. Assists in placing pintle in pedestal. Assisted by No. 2, mounts[1] gun in cradle. Tightens trunnion cap wing nuts. Attaches hose to water jacket and tightens by means of wrench. Couples cables when so directed. Attaches link bag to link shoot. If time allows, carries ammunition.
No. 2 (Amm. Detail)	Carries pedestal to gun position. Assisted by No. 3, carries cradle to gun position and places pintle in pedestal. Assists in mounting[1] gun. Assists No. 3 in carrying water chest. Carries ammunition, placing first chest in support.
No. 3 (Water Chest Operator)	Carries two tripod legs to gun position. Assists No. 2 in carrying cradle. Assisted by No. 2, brings up water chest and places it convenient to gun. Procures reserve water container. When directed by squad leader, turns chest crank until water returns from gun. Refills water chest with water. If time allows, carries ammunition.

DETAIL	MARCH ORDER!
Squad Leader (Gunner)	Repeats command. Removes and replaces sights. Removes gun attachment pin.[5] Assists in dismounting gun. Assists in removing cradle. Assisted by No. 1, tilts pedestal. Detaches tripod legs. Carries one leg, tool box and sight pouch to truck. Checks to see that all equipment and ammunition is properly loaded.
No. 1 (Assistant Gunner)	Detaches link bag. Uncouples cables. Unscrews hose attachment nuts. Loosens trunnion cap wing nuts. Assisted by squad leader and No. 2, dismounts gun. Assists in lifting cradle from tripod. Loosens clamp-nuts and base-ring. Assists in tilting pedestal. Holds pedestal while legs are removed. Carries gun to truck. Carries ammunition.
No. 2 (Amm. Detail)	Removes ammunition chest. Assists in dismounting gun by lifting breech end. Assisted by No. 3, removes and carries cradle to truck. Assists No. 3 in carrying water chest. Carries ammunition.
No. 3 (Water Chest Operator)	Coils and ties hose. Assists No. 2 in carrying cradle to truck. Assisted by No. 2, carries water chest. Carries two tripod legs. Carries ammunition.

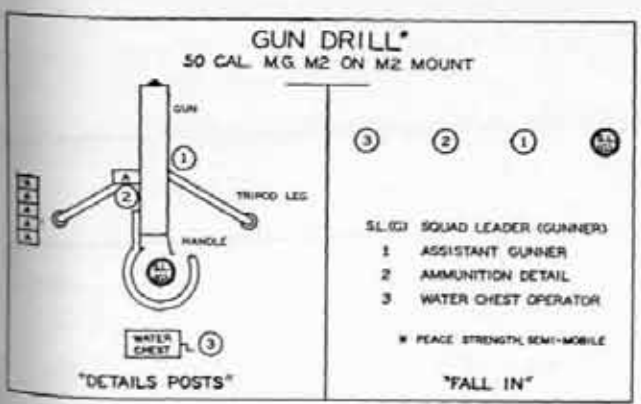
DETAIL	DETAILS! POSTS!	(*a*) EXAMINE GUN! (*b*) REPORT!	TARGET!	LOAD!	COMMENCE FIRING!	(*a*) SUSPEND FIRING! (*b*) CEASE FIRING!
Squad Leader (Gunner)	Commands "Details, Posts!" Procures tool kit and sight pouch and places sights in supports. Takes post in rear of gun.	(*a*) Commands "Examine Gun!" Checks sighting mechanism and gun to see that they are in adjustment and properly lubricated. (*b*) Reports "No. — in order!" or any defects he is unable to remedy without delay.	Repeats command. Reports "No.—on target!" as soon as sights are aligned on target.	Repeats command. Pulls retracting handle twice to the rear.	Depresses side-plate trigger lever.	(*a*) Removes hand from trigger lever and continues to track target. (*b*) Removes hand from trigger lever and ceases tracking. After belt has been removed, pulls retracting handle twice to rear and depresses trigger lever, if safe to do so.
No. 1 (Ass't. Gunner)	Procures oil, waste, cleaning rod, and patches and takes post at right of and facing gun.	(*a*) Assists gunner in adjusting gun. Cleans and lubricates parts if necessary. Checks cable connections, base-ring and clamp-nuts. (*b*) Reports "Bore and cables in order!" or any defects he is unable to remedy without delay.	Unclamps cradle clamping handle. Assists gunner by pointing arm toward target. Grasps cables with left hand and holds them clear of gunner.	Disengages cover catch and lifts rear end of cover not over 6 inches. Lowers cover as soon as belt has been placed in feedway by No. 2.	Holds cables clear of gunner.	(*a*) Holds cables clear of gunner. (*b*) Clamps cradle. Lifts cover. Catches live round. Clears away empty cases.
No. 2 (Amm. Detail)	Procures belt-loading machine. Takes post to left of and facing gun.	(*a*) Opens all ammunition chests. Checks to see that ammunition belts are properly reeled[3] and folded. Places a chest in support on mount. (*b*) Reports "Ammunition in order!" or any defects he is unable to remedy without delay.	Assists gunner by pointing arm toward target and pushing or pulling on back rest.	Places belt in belt feedway so that one round is beyond belt holding pawl.	Observes tracers[7] and target.	(*a*) Watches for other targets. (*b*) Removes belt from feedway as soon as cover is lifted. Replaces chest (or ammunition) if necessary.
No. 3 (Water Chest Op.)	Procures water if necessary and takes post near water chest.	(*a*) Examines water chest and hose connections on latter. Turns crank to see if water circulates properly. (*b*) Reports "Water Chest in order!" or any defects he is unable to remedy without delay.	Starts turning crank.	Continues turning crank.	Same.	(*a*) Continues turning crank. (*b*) Continues turning crank for 3 minutes.

In the war strength semi-mobile organization a squad consists of one corporal and four privates (or privates first class). The fifth man will be No. 4, an ammunition detail, and the carrying loads at "Prepare for Action" will be changed as follows:

DETAIL	1ST TRIP	2ND TRIP	3RD TRIP	4TH TRIP
Squad Leader	1 tripod leg, sight pouch, tool chest			
No. 1	2 tripod legs			Ammunition
No. 2	Pedestal	Gun	Ammunition	Ammunition
No. 3	Cradle	Water chest	Ammunition	Ammunition
No. 4	Cradle	Water chest	Reserve water container	Ammunition

NOTES:

1. No. 1 holds right trunnion hinged cap up and No. 2 the left. Former guides right trunnion and latter left trunnion into bearings.
2. Checks to see that recoil mechanism slide lug is in rear of actuated stop, thus placing holes in slide in position to receive gun attachment pin. Receives and guides breech end of gun.
3. Single link attached to reel and wound clockwise (from right side of chest). Exposed end of belt will show a double link.
4. Sights are carried in a special pouch with carrying strap, thus eliminating the large chest.
5. Pegs 8" x 8" x 30" are used if gun is emplaced in sand.
6. In war, command "Load" should precede "Target."
7. Corrects pointing if gun is firing by I.T.C.
8. After locking recoil mechanism by means of stop provided.



1—Prepare for action. Placing pintle in pedestal. Left to right: No. 3, No. 1, Gunner (squad leader), No. 2. 2—Prepare for action. Mounting gun in cradle. Left to right: Gunner (squad leader), No. 2, No. 1. 3—Fall In. Left to right: Gunner (squad leader), No. 1, No. 2, No. 3. 4—Details Post. Left to right: No. 3, Gunner (squad leader), No. 2, No. 1. 5—Commence Firing. Left to right: No. 3, No. 2, Gunner (squad leader), No. 1. 6—Commence Firing. The control box and match-the-pointer operator. Also the two flexible data transmission cables from box to mount. Left to right: Vertical match pointer operator, Lateral match pointer operator, No. 3, No. 2, Gunner (squad leader), No. 1.

The peace strength—semi-mobile squad

Target Practice Reports

AA Gun Batteries

The following method of locating point T in the preparation of antiaircraft gun battery target practice reports covering the detection phase is believed ingenious and sufficiently accurate for the purpose intended. This method was developed by Staff Sergeant Henry C. Goodwin, 4th C.A., Ft. Amador, Canal Zone, It is a method of locating point T by geometrical construction. The course of the target is given as shown on enclosure No. 2. The scale marked 3-T, Figure No. 1, permits the user to determine the time which it will take a target, traveling at a known speed along a known course, to reach any point on that course. To locate the point T by means of this scale:

(1) Place scale 3-T on Form AA-6a so that the line marked "Position of Tp" falls on the plotted point Tp and the proper speed line coincides with the plotted course of the target.

(2) Following along the course of the target it will be noted that the values in seconds marked on the rays representing travel time on scale 3-T approach and pass equal values in seconds marked on the time of flight curves on Form AA-6a. By inspection it can be determined between which two rays representing travel time and between which two curves of time of flight the point T must lie, since at point T travel time and time of flight must be equal. The exact point may be determined by graphical interpolation as follows:

(a) For convenience in plotting a larger scale is used

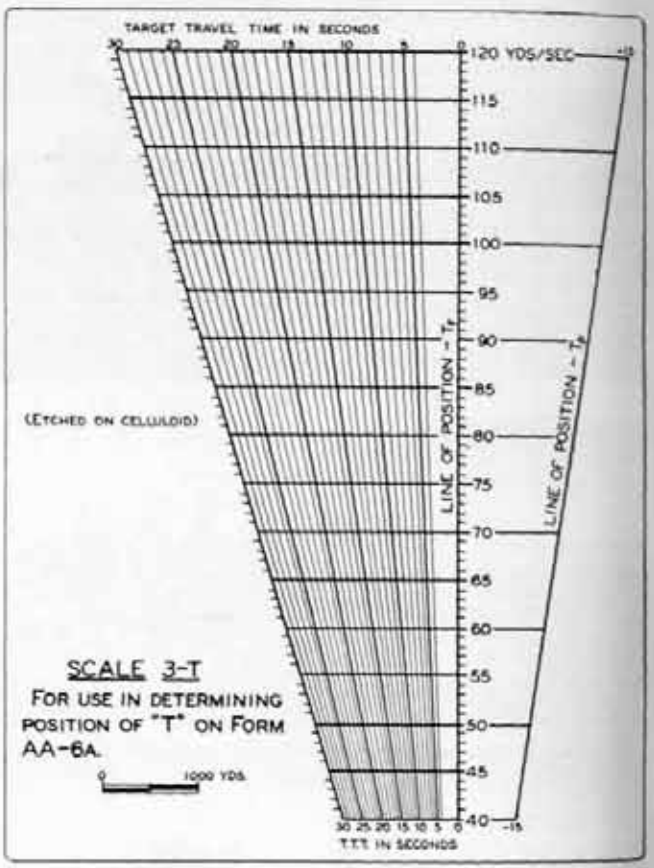


Figure 1

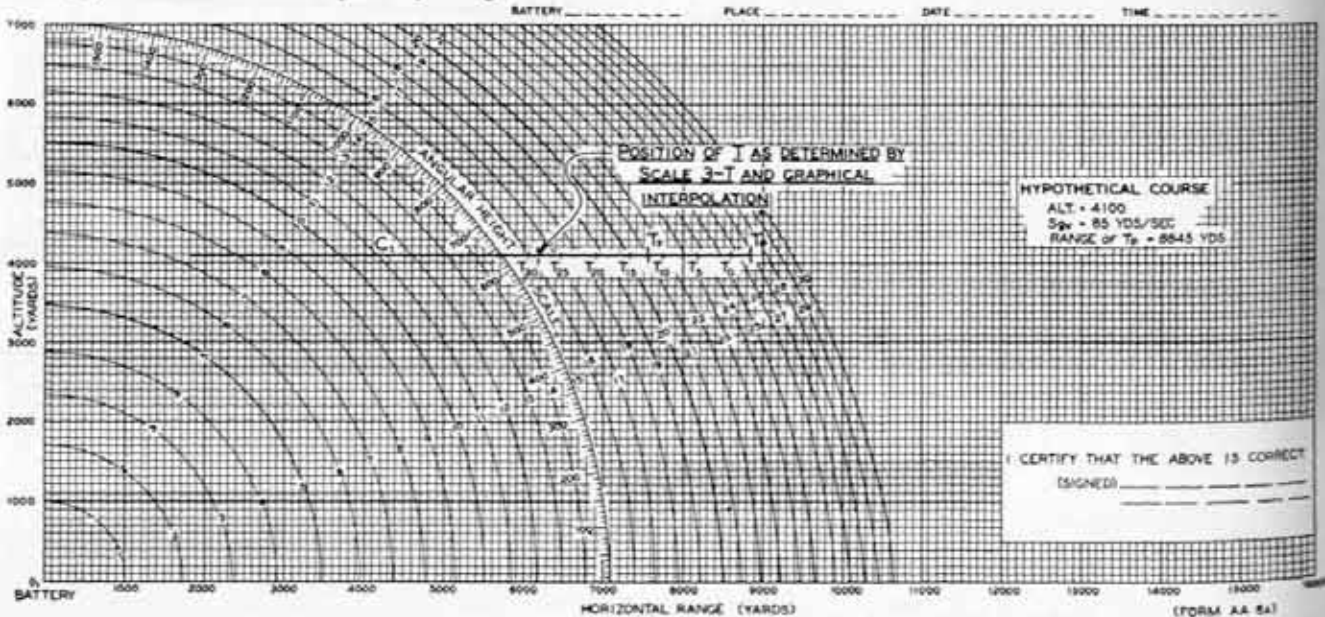


Figure 2

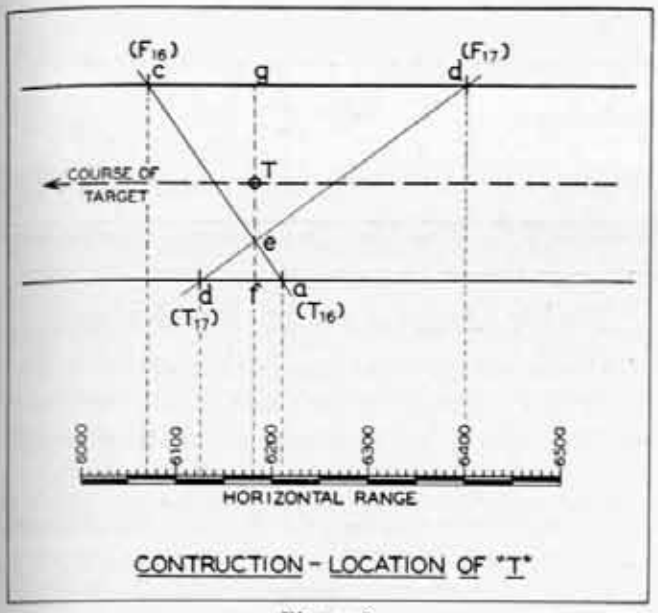


Figure 3

for this graphical interpolation than is used for plotting on Form AA-6a. A scale of 100 yards to the inch is satisfactory.

(b) Plot two horizontal lines. On the lower of these two lines plot two points using an abscissae the horizontal ranges to the points where the two travel rays, bracketing the point T, intersect the plotted course of the target on Form AA-6a.

(c) On the upper horizontal line plot two points using as abscissae the horizontal ranges to the two points where the time of flight curves, bracketing the point T, intersect the course of the target as plotted on Form AA-6a.

(d) Connect each point on the lower line to the point on the upper line representing an equal time value. The horizontal range to the point of intersection of these two lines is the horizontal range to the point T.

The theory of this method can be clearly understood by referring to figure No. 3. In triangles abe, cde, afe, cge

$$\frac{af}{ab} = \frac{cg}{cd}$$

It can be easily shown that the only error in the mathematics of this method is the fact that the horizontal distance between consecutive time of flight curves is not constant. However, if a favorable angle of intersection is obtained, this difference is not sufficient to materially affect the solution.

An antiaircraft gun battery camp in Panama.

The United States Coast Artillery Association

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

The Coast Artillery Journal

MAJOR AARON BRADSHAW, JR., Editor

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

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News and Comment

Major General A. H. Sunderland

As this issue goes to press, Major General A. H. Sunderland relinquishes the office of Chief of Coast Artillery after a four-year administration that will have a marked influence on the history of our Corps.

When General Sunderland took over the office of Chief of Coast Artillery in 1936, he brought with him the wisdom and experience of forty years of soldiering that ranged through all grades from cadet to brigadier general. During this time he had seen active service at home, in France, in Hawaii, and in the Philippines where he participated in various engagements with hostile tribes. Moreover, he had served as President of the Coast Artillery Board; in charge of one of the largest officer-candidate schools of the World War period; as an instructor at the U. S. Military Academy and as a member of the General Staff Corps. This combined experience as teacher, tactician and organizer stood the Nation in good stead when he assumed the position of Chief of Coast Artillery.

Few chiefs of our arm have been called upon to administer such a diversity of projects and none—other than in time of war—has been faced with the responsibility of initiating such an unprecedented peacetime augmentation of strength. That the enlargement of the Coast Artillery Corps took place in record time and without a hitch is a testimonial to the attainments of our departing Chief. The Corps that numbered a scant 18,000 men when he took charge, now bears on its rosters over 27,000 troops. Similarly, the officer strength has grown from approximately 950 to a number just short of 1,100. In the field of matériel, the Coast Artillery Corps has made important strides during the period of General Sunderland's tenure of office.

Our arm is fortunate to have had the benefit of four years of such representation and leadership. The officers and men of all components of the Coast Artillery Corps acknowledge their debt to General Sunderland and wish him a long and prosperous life.

French AA Ideas

The following excerpts are from a recent article on antiaircraft artillery by a French air officer:

"The war of 1914 -18, when plane speeds were 70-80 miles per hour and ceilings around 5,000 feet, led the French to adapt its regular 75-mm. (3-inch) field piece to antiaircraft fire. The Germans followed suit, using principally captured French 75's to make their own AA artillery. By the end of the war, both sides were congratulating themselves that owing to experience and the introduction of refinements they had reduced the average number of shells required to bring down a plane from 3,000 to 1,500.

"Up until 1932, the French Army still used the wartime 75 as their principal AA weapon. These guns had a muzzle velocity of 550 m/sec (1805 f.s.) and a maximum vertical range of 15,000 feet. The enlarged speeds and increased ceilings of planes made these guns obsolete, and in 1932 a new AA gun was developed. This weapon, which went into service in 1934, was still a 75, but had an increased velocity of 700 m/sec (2295 f.s.) and a vertical range of 21,000 feet.

"In the meantime, the Germans designed and constructed an 88-mm. (3.46 inches) gun, the celebrated 'Flak,' a weapon with a muzzle velocity of 2,790 f.s. and a vertical range of 25,000 feet. These guns proved their value in the Spanish Civil War. Up to the arrival of the German AA guns in Spain, Government planes had been bombing, virtually without loss, the rear of the Franco forces, troop convoys, barracks, supply columns, and so on. In the absence of any good AA artillery, the Loyalist planes habitually bombed from 4,500 to 6,000 feet, and were reducing speeds as much as possible to insure greater bombing accuracy. The German AA guns were introduced without warning, and the Government bombing planes were brought down with the first few salvos. So efficacious were the Flaks that from the time of their introduction, the Government bombing planes rarely carried out any attacks on the Franco forces.

"The French Army, conscious of their AA weakness, set to work and the Schneider 90-mm. (3.54 inches) AA gun was the result. Production of these guns did not begin until 1939, and even now is not on as large a scale as desirable. The first of these guns were delivered to the navy but were so badly needed by the army that they were taken over by that branch. At the present time the AA artillery defense of Paris consists of batteries of these 90-mm. naval guns, manned for the most part by sailors. Even with improvements, these guns are not considered by the French to be as good an all-around gun as the German 88-mm. Flak.

"By trial and error, planes have discovered at what altitudes AA artillery can be avoided. On photographic missions, flying at an altitude of 9,000 feet, planes did not return to their base. Other planes at 24,000 feet were not touched, and now it is stated that 15,000 feet is the optimum altitude for protection against AA fire. If there are clouds, the plane may carry out its mission at a lower altitude without coming too much under effective AA fire.

"Ship-based antiaircraft fire has been much more effective. To safely bomb ships having AA artillery protection planes must maintain an altitude of at least 18,000 feet. Both the German planes in expeditions over the Shetlands and Firth or Forth and British planes in flights over Heligoland, are convinced of this. To fire effectively at planes with speeds of 275-300 miles per hour at altitude of 18,000 feet, guns of a greater power than even the Flak 88-mm. are indicated. That is why warships with 5-inch guns are so much more effective than the Army with 3½-inch guns. To fight the modern plane, 4.1- or 5-inch guns will have to be developed for army use. If such guns are too heavy to be readily mobile, then they will have to be permanently emplaced at positions around Paris, Brest, etc., to provide an essential defense."

* * *

The German Air Force

The following material is extracted from *Flight:*

Germany appears to favour the high-speed, twin-engined lightly armed bomber, as typified by the Heinkels (He III and its derivative type), the Dornier Do 17, and the 215 which has been developed from it, and the new Junkers Ju 88. This formula is also being followed by certain other countries, which, like Germany, now regard with disfavour slower machines with heavier turret-mounted armament. Despite her partiality for aircraft of this sort, Germany is known to have a number of Junkers Ju 89's with four Junkers inverted, vee-twelve, liquid-cooled engines. The Ju 89 may be considered as the Service version of the Ju 90 commercial machine. It is possible that this type is regarded as a bomber transport; the familiar Ju 52 is now a standard machine in this category, and is known to be used for the transport of parachute troops.

It would appear likely that the Ju 89 has gun turrets, possibly with power drive, though simple manually operated mountings are used on the other types of bomber.

A new type in a new category is the Messerschmitt Bf 110 fighter-bomber, which is believed to be armed with shell-firing guns and large-bore machine guns. This type is already in service in considerable numbers. Single-seater fighters include the Heinkel He 112 and Messerschmitt Bf 109, together with modified versions of these designs, which, despite statements made by their manufacturers, are *not* identical with the machines used to break the world's speed record.

For specialized dive-bombing work the standard type is the Junkers Ju 87, which has special flaps to limit its diving speed. The single-seater fighter-bombers made by the Henschel and Blohm and Voss concerns are now obsolescent.

For strategical reconnaissance Germany employs adaptations of high-speed, twin-engined bombers, while the Henschel Hs 123 (counterpart of our Westland Lysander) is used for artillery spotting and general observation work.

Training machines include large numbers of obsolescent Service types, specialized single-seater fighter trainers (several of which are noted for their aerobatic qualities), and large numbers of small twin-engined crew trainers, apart from the normal *ab initio* two-seaters.

For coastal and over-sea work there are Heinkel monoplanes on floats, three-engined Dorniers (these, unlike the machines of their type supplied to Holland, are said to have liquid-cooled engines, though the drawing shows an air-cooled installation), and military versions of the twin-engined Dornier Do 18 with Junkers Diesels. It is believed that the single- and twin-engined Heinkel biplanes on floats are now used for training.

A type corresponding to our torpedo-spotter reconnaissance aircraft is the Arado Ar 95 biplane, which is regarded as a maid-of-all-work. This machine is powered with a B.M.W. radial.

It is not known which types will be selected to equip the new aircraft carrier *Graf Zeppelin* but warships in service at present are allocated Heinkel floatplanes, one type being a sesquiplane. Photographs have appeared of monoplanes installed carried on ships' catapults; the type concerned would appear to be of Arado design, and, in fact, resembles, except for the wing cellule, the Ar 95. The catapults are of Heinkel design.

* * *

Turkey

The Krupp Germania yard at Kiel, recently launched for the Turkish Navy the submarine *Batiray* equipped as a mine layer. The ship has a surface displacement of 1,044 tons and a submerged displacement of 1,357 tons. It has a length of 282 feet and a beam of 22.3 feet. The ship is powered with two 2-cycle Burmeister and Wain motors each having ten cylinders and developing 2,400 effective hp. with the engines turning up 480 r.p.m. The weight of each motor is twenty-seven tons, corresponding to a little less than 26.5 pounds per effective hp. The surface speed is twenty knots and submerged speed nine knots. The surface speed is considerable, especially for a ship of such small size, when one considers that most contemporary submarines of similar displacement make scarcely more than fifteen and one-half to sixteen knots.

The *Saldiraz*, a sister submarine, though not equipped as a mine layer has recently been delivered to Turkey by Krupp and in April made the trip between Kiel and Istanbul in eleven days. At the dockyards in Istanbul, two similar ships are being built according to plans furnished by Krupp. Other submarines are also under construction for Turkey in the Vickers construction yard at Barrow.—*Journal de la Marine Marchande.*

* * *

Turkey is believed to have decided to proceed to the methodical fortification of the Dardanelles. According to certain press information, the Turkish naval mission in England has obtained assurance that France and Great Britain would be able to furnish the necessary materials. The heavy guns would be furnished by English factories and the fortifications would be erected under the direction of French engineers. Turkey is supposed to have given up ordering war materials from the former Czechoslovakian and German firms. However, it was announced in Berlin the necessary equipment for a modern military fort has been ordered from the German firm of Holzman for about $9,200,000.

The English newspapers announced that the Bay of Chesme near Smyrna is going to be fitted out as a naval base. It is already believed to be fortified. With the permission of the Turkish Government the nonintervention patrols of the British Navy utilized this spot during the Spanish Civil War.—*U. S. Naval Institute Proceedings* from *Le Yacht.*

* * *

Bombing Gas Plants—What Would Happen?

Condensed from an article in the *Brooklyn Union Gas News*. What would happen to Greenpoint Works in case of aerial bombardment or other fire during the course of a war?

In view of the fact that this question has probably proposed itself to the minds of many, the following article from a recent issue of the London *Gas Journal* may prove informative and interesting:

The Bombardment of Paris in 1871. Effects on Gas-Works.

The following excerpt from the JOURNAL of August 1, 1871, is of peculiar interest today in view of the apprehension still felt in some quarters as to the possible effect of war damage to gas tanks.

"As regards the damage done to the several works in the course of the bombardment," we wrote then "we have some valuable details which we must put on record here for the information of those who persist in believing in the danger of stores of gas. The Governor of Paris entertained a notion of this sort, and thought the works at La Villette were dangerous to the fortifications in the vicinity. The Company assured him that there was not the smallest risk. 'If,' they said, 'a projectile made a hole in a gas-holder and set fire to the gas, the gas would simply burn out as a jet of flame. The constant pressure of the gas-holder would effectually prevent any access of air, and therefore there could be no such thing as an explosion.' This happened exactly at Ivry. A shell pierced the gas-holder, and lighted the gas. There was a huge jet of fire for eight minutes, the holder (tank) slowly sank, and all was over.

"A more curious incident occurred at La Villette. Here a shell penetrated a gas-holder and burst in the interior without igniting the gas. Nine fragments made their way out in different directions; but the employees of the Company, with great coolness and dexterity, stopped the holes with plugs prepared for such an emergency, and so saved the greater part of the gas. At La Villette, also, a shell perforated the bell of a governor, and set fire to the gas; but there was no explosion. The fire was promptly ex-

tinguished, but the furniture in the office was destroyed by the explosion of the shell. At Vaugirard, where a great number of shells fell, only one penetrated a gas-holder, and here again there was neither ignition nor explosion.

"These incidents, it is to be hoped, will set men's minds at rest forever as to the supposed dangers of gas-holders."

This Calls for a New Director

The following news item appeared in the December 15, 1939, number of the Air Corps *News Letter:*

BOY, PAGE RUBE GOLDBERG!

There filtered into the Information Division a communication, which reads as follows:

"Sacramento,
November 27, 1939.

. . . . . .

. . . . . .

DEAR SIR:

This is the description of a method by which *each* and *every bomb* dropped over an enemy Warship in the open Sea will *score a direct hit.*

The higher the altitude of the Bombing Plane, *the easier* will the Bomb *find* its target!

First, the descending Bomb is *slowed down* by a small Parachute. To this Bomb and Parachute combination is affixed a *rudimentary Ruder.*

Finally, *to the Ruder a Pigeon* is *harnessed* in such a way that it is *reasonably able to use its wings,* and *its attachment to the Ruder* must be such that when the Pigeon *struggles to fly in a certain direction, the Ruder will tilt so as to steer* the chuted Bomb in the *same direction!*

Thus the *distressed* Pigeon on its descent finds itself in the same Predicament as any other tired Bird crossing the Ocean—and the *'Instinct of Self-preservation' will force it to struggle to alight on the ship.*

So our descending Bomb will be guided toward its destination by two forces. That of the direct pull of the Pigeon's attempt to fly and that of the steering device!

From the foregoing it is clear that the higher the altitude of the Bomber, the *greater the Radius of Effectiveness.*

The *Parachute can be dispensed with* if a *transparent Wind-breaker* is designed for the Pigeon.

Such Wind-breaker will act as a *Parachute* in itself and *regardless of the speed* of the descending Bomb, the bird will be able to see and to use its wings.

That, however, is a minor problem for the Expert in Aeromechanics.

As to whether the *'Instinct of Self-preservation'* will function in the distressed Bird? Next to the 'Law of Gravitation' it is the most *reliable* element of our contrivance. Nature has provided both. If in Warfare we do not hesitate to depend on the *'Homing Instinct'* of the Carrier Pigeon, why not take advantage of an Instinct that is the very *root of all Life?*

At first I intended to take this matter up with some Aeroplane construction company, but it seems to me that this is a better way.

Therefore, Sir, I do respectfully submit this Idea for your kind consideration.

If the . . . . . will care to avail themselves of it I would naturally expect some sort of pay for it. Also, I am sure that the Intelligence of this method would be imparted to the Government of the United States.

If, however, you should decide against it, I would like to take it up with some expert in Aviation in America.

I am, dear Sir,

Very respectfully yours,

. . . . . ."

Various Naval Notes

According to the figures of the July number of the *German Marine Staff Survey,* there is a current Russian Navy program much larger than formerly assumed. In Leningrad alone four wharves are working at high speed with the building and fitting out of a battleship of 35,000 tons, three large destroyers, two airplane carriers, and seventy-two submarines. The fort and naval base at Kronstadt has been developed on a very large scale and the entrance to Leningrad is protected by eight miles of coast batteries and mine fields.

In the Far East a large naval strength has been assembled. In Vladivostok there are thirty speedy motor torpedo boats and sixty modern submarines of which half are of an ocean-going type and half are smaller.—*Tidskrift Sjovasendet.*

If Russia wants to impress the rest of the world with the growth of her new Navy she must be very much more definite. Mere boastful generalities cannot be accepted as establishing any "comparative data." The review of the Baltic Fleet, not long returned from a cruise in the Gulf of Finland, disclosed very little new tonnage in service. Possibly this may have been all part of the mystery with which the Soviet seems endeavouring to shroud its sea power.

Perhaps the best evidence that Russia really is concentrating upon naval development nowadays is to be found in the plans for expansion of the personnel. The decision to extend the period of compulsory service from four to five years and to select the best men for the sea service was announced earlier in the year. The automatic result of this measure will be to increase effective man power by twenty-five per cent. The time may come when Moscow will be more communicative to the "peace front" powers as to the actual strength of her fleet, but her present policy naturally induces skepticism in connection with her naval propaganda.—*U. S. Naval Institute Proceedings* from *United Services Review.*

Crichlow Slide Rules

The Book Department, Coast Artillery School, Fort Monroe, announces that it is now selling Crichlow slide rules at a price of forty cents each, postpaid. Orders should be sent direct to the Book Department and will receive prompt and careful attention.

Coast Artillery Activities

OFFICE OF CHIEF OF COAST ARTILLERY

Chief of Coast Artillery
MAJOR GENERAL JOSEPH A. GREEN

Executive
LIEUTENANT COLONEL K. T. BLOOD

Matériel and Finance Section
LIEUTENANT COLONEL H. B. HOLMES, JR.
MAJOR J. T. LEWIS
MAJOR S. L. MCCROSKEY
CAPTAIN C. V. SCHUYLER

Plans and Projects Section
LIEUTENANT COLONEL A. G. STRONG
MAJOR L. L. DAVIS

Organization and Training Section
LIEUTENANT COLONEL D. D. HINMAN
MAJOR AARON BRADSHAW, JR.
CAPTAIN J. E. HARRIMAN

Personnel
LIEUTENANT COLONEL F. E. EMERY, JR.

☆ ☆

Fort Monroe

BRIGADIER GENERAL FREDERIC H. SMITH, *Commanding*

COLONEL WILLIAM S. BOWEN
President, Coast Artillery Board

COLONEL ELI E. BENNETT
Executive, Third Coast Artillery District

COLONEL FRANCIS P. HARDAWAY
Post Executive; Commanding Harbor Defenses of Chesapeake Bay and 2d Coast Artillery

COLONEL RICHARD F. COX
Commanding 70th Coast Artillery (AA)

LIEUTENANT COLONEL DELMAR S. LENZNER
Commanding Submarine Mine Depot

LIEUTENANT COLONEL HAROLD F. NICHOLS
Acting Assistant Commandant, Coast Artillery School

By Major L. W. Goeppert and Lieutenant J. DuV. Stevens

Fort Monroe has finally emerged from the snow and ice of winter. That harbinger of spring, the friendly crocus, has already put in its cheerful appearance about the post. As if this were the signal, outdoor activity has returned with the impetus of nature's resurgence from the enforced quiet of the winter season.

Most of the recruits are winding up their initial training with small-arms firing, and the sod of the parade ground is again feeling the tread of marching men. A large number of Reserve Officers have joined the harbor defenses for extended active duty, the crack of bat against ball is being heard—all these herald a very active season for Fort Monroe in the ensuing months.

TRAINING

All organizations have been given a schedule for small arms firing which will assure the full completion of recruit training. Lieutenant P. H. Wallaston has recently returned from The Citadel at Charleston, South Carolina, where a detachment from the 70th Coast Artillery demonstrated AA equipment for the ROTC units at that college. Captain C. F. Tischbein and Lieutenants J. C. Steele, and E. C. Somerville have returned from Atlanta, Georgia, where with an AA detachment from the 70th Coast Artillery, they conducted a ten-day course of instruction in tactics and technique of AA artillery for officers of the 214th Coast Artillery (AA) Georgia National Guard. Battery F, 2d Coast Artillery, recently re-activated as such from Battery F, 52d Coast Artillery has been conducting 75-mm. firing for school instruction classes and will conduct its 8-inch railway target practice in April. Battery A, 2d Coast Artillery is firing 6-inch barbette for the Coast Artillery Board. Battery D, 2d Coast Artillery will fire a preliminary practice with Battery DeRussy during April. Battery C and E, 70th Coast Artillery will fire 3-inch AA and automatic AA weapons, at Fort Story in April for the special National Guard class of the Coast Artillery School. Battery B, 2d Coast Artillery will fire a preliminary 155-mm. gun practice in April.

Eighty National Guard Officers from various parts of the country are pursuing a special course of instruction at the Coast Artillery School. The course is of twelve weeks' duration and will terminate April 30. Coast Artillery School activities have been augmented by the inauguration of a special school for stereoscopic observers, under the direction of Lieutenant Colonel R. T. Pendleton and ac-

tively supervised by Lieutenant A. L. Fuller, Jr. This school fills a long felt need and is attended by four student officers: Lieutenants M. S. Carter, P. S. Stiness, C. W. Hill, and J. N. Howell, and twenty-eight enlisted students—nine from the Regular Army and nineteen from the National Guard. The enlisted students are all from antiaircraft organizations. After the completion of the present eight-weeks' course, two subsequent courses are contemplated.

Dramatics

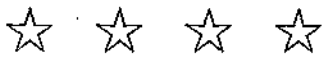
The Fort Monroe Dramatic Club recently presented another of its succession of box office hits, *Three Cornered Moon,* a cockeyed farce which is a travesty on the individualistic propensities of a wealthy family rendered destitute by the depression. The play was directed by Mrs. B. R. Painter and produced by Lieutenant M. L. Ogden. Settings were created by Captain D. J. Pamphlin. The stellar cast of Lieutenants Lazar, Finkenaur, J. E. Wood, Cornwall, Tedennick, and Mesdames Foote, Bosworth, and Miss Fernstrom disported themselves gaily in portraying their rôles.

Personnel

The officer strength of the Harbor Defenses of Chesapeake Bay has been augmented by the assignment of twenty-four Reserve Officers for six months of active duty and they are a welcome addition in the execution of scheduled training and firings. The following have been attached to the 70th Coast Artillery: Lieutenants C. A. Bucher, Jr., J. B. Douglass, L. S. Schwartz, H. L. Walton, J. L. Zipf, J. Cohen, J. S. Diefendorf, J. A. Grazier, W. J. Krzton, J. V. Lanterman, L. F. McGreevy, D. O. McKoy, C. B. Olson, and W. P. Schmader. The following have been attached to the 2d Coast Artillery: Lieutenants A. F. Jackson, F. L. Sanders, H. Broudy, K. M. Doering, W. P. Hickman, C. I. Kratz, R. C. Monsour, and P. M. Stoutmire. Lieutenant W. H. Kern, Jr., QM-Res., has been detailed as assistant to the utilities officers. Lieutenant W. B. Simms has returned from the Medical Field Service School at Carlisle, Pennsylvania. Lieutenant Delma Dixon, Army Nurse Corps, has joined the Station Hospital. Lieutenant Colonel M. D. Wheeler, QMC, post quartermaster, has departed for Boston and his position has been taken by Major W. S. Elliott, QMC, who comes to us from Washington.

Army Day

Army Day was celebrated appropriately on the post. Exhibits of antiaircraft matériel of the 70th Coast Artillery were viewed by many peninsula residents. The Coast Artillery School and Library and the U.S.A.M.P. *Schofield* were open to the public as were the seacoast batteries along the beach. A parade, held on the main parade ground, was enjoyed by a large crowd.



Harbor Defenses of Puget Sound

Colonel James H. Cunningham, *Commanding*

By Captain James E. McGraw

Aided by an extremely open winter, intensive outdoor instruction including antiaircraft and seacoast firing has been held during December and January. Battery A and G are busily engaged in preparation for their 1940 antiaircraft machine gun practices. This will be followed in March and April by antiaircraft gun firing by D Battery, by seacoast target practices by all 14th Coast Artillery batteries and by seacoast and antiaircraft practices by both batteries of the Panama Detachment.

With the two batteries of the Panama Detachment now virtually at full strength, all barrack space is now completely occupied and unless the Panama Detachment has left by July the CMTC will probably have to be placed in the National Guard camp on Artillery Hill.

One of the most recent post improvements has been moving the new Non-commissioned Officers' Club to a location near the post exchange. The club plays an important part in the morale of the noncommissioned officers and their families.

Recent arrivals on the post are Lieutenant and Mrs. Hoffman who came here from Hawaii and Chaplain and Mrs. Shock. With the arrival of Chaplain Shock there has been great improvement in recreational and religious activities. The church services held Sundays in the Officers' Club are crowded, and on Sunday nights just before the movie a weekly Sing Song is being held that packs the theater.

A State WPA project has been approved for Fort Flagler, which will permit much needed clearing and other work to be done. Salvaging of several buildings at both Casey and Flagler is continuing, quarters have been painted at Casey, and both these posts look much less deserted and forlorn than they have for years.

Four Thomason Act officers are still with us and on February 26 four additional Reserve officers arrived for a six months' tour of duty.

Hawaiian Separate Coast Artillery Brigade

BRIGADIER GENERAL FULTON Q. C. GARDNER, *Commanding*
LIEUTENANT COLONEL C. M. S. SKENE, *Chief of Staff*
MAJOR L. V. WARNER, *Adjutant General & S-1*
CAPTAIN G. SCHMIDT, *S-2 & Gunnery* — LIEUTENANT COLONEL J. H. LINDT, *S-3*
LIEUTENANT COLONEL R. M. PERKINS, *S-4*
CAPTAIN I. H. RITCHIE, *Com. and Engineer Officer* — CAPTAIN W. H. KENDALL, *Sec. Ath. Officer*
CAPTAIN S. E. WHITESIDES, JR., *Chemical Warfare Officer* — LIEUTENANT COLONEL R. S. BARR, *Ordnance Officer*
COLONEL E. B. WALKER
Commanding Harbor Defenses of Pearl Harbor
COLONEL CHARLES K. WING
Commanding 64th Coast Artillery (AA)
COLONEL W. D. FRAZER
Commanding Harbor Defenses of Honolulu

By Lieutenant Milan G. Weber

BRIGADE COMMANDER'S INSPECTION

General Gardner recently conducted his annual inspection of the brigade. This inspection included all troops, matériel, and buildings of the Harbor Defenses of Pearl Harbor, the Harbor Defenses of Honolulu, and the 64th Coast Artillery (AA), and covered a period of twelve days. The brigade commander expressed himself well pleased with the generally excellent condition of the entire command.

TARGET PRACTICES

The Harbor Defenses of Pearl Harbor were the first to begin 1940 target practices. First to command "Commence Firing" was Captain Hamilton P. Ellis, commanding Battery B, 15th Coast Artillery. This battery fired a 12-inch barbette gun practice on February 8. Battery A, 15th Coast Artillery, commanded by Captain Granger Anderson, fired two modified 155-mm. gun practices on February 9 and 13 in lieu of their regularly assigned armament.

Battery I, 64th Coast Artillery (AA), commanded by Captain Robert T. Frederick, and Battery B, 41st Coast Artillery, commanded by Captain William J. McCarthy, are now at the antiaircraft firing center near Nanakuli, conducting antiaircraft machine gun practices under the direction of Major Marvil G. Armstrong.

Battery D, 16th Coast Artillery, Captain Albert G. Franklin, commanding, conducted an additional assignment antiaircraft searchlight practice on January 11, 1940 and obtained a score of 141.7.

SERVICE CONDITIONS FOR TARGET PRACTICES

During target practice all batteries in this brigade must now be prepared for any emergency condition which might arise during actual combat. A list of service conditions likely to be met was furnished each battery and each organization is being drilled to continue fire in spite of various contingencies. The knowledge that such service conditions will be imposed has proved of great benefit in training. Batteries must now be prepared to conduct fire, with little or no advance warning, against targets anywhere in their field of fire using any or all emergency methods or matériel available. In so far as this Brigade is concerned, down-the-groove practices are a thing of the past.

With the big guns in Hawaii

Antiaircraft Artillery Course

A course in the technique of antiaircraft artillery has been prepared and is being given to all officers below the grade of lieutenant colonel in the two harbor defenses as well as in the 64th Coast Artillery. The course is proving quite valuable.

Fleet Exercises

Maneuvers involving practically all naval elements stationed in Hawaii were held in adjoining sea areas from January 29 to February 2. The Harbor Defenses of Pearl Harbor and Honolulu maintained an alert status during certain periods of these exercises to cover the debouchment of the fleet from Pearl Harbor, to test the defenses against simulated landings and to cover the return of the naval elements into the harbor. Among Army observers who accompanied the Navy during the week of these exercises were the department commander, Major General C. D. Herron, and Lieutenant Colonel R. M. Perkins of this headquarters.

Pavilion Club

Increasing in popularity to such an extent that a waiting list has been found necessary, the Pavilion Club is now an established success. Built over the water at Fort DeRussy and always popular at night with its dancing under the stars, the club is now a rendezvous for members after swimming or paddle tennis in the afternoons. Among the improvements of the past year are a concrete dance floor, a change in the location of orchestra stand so as to permit a better view and increase dancing space; Venetian blinds, new tables and lawn settees.

At the Club's annual meeting it was decided that in view of the increased membership of Medical and Air Corps officers, two additional vice-presidents should be elected in order to represent these branches. Officers elected at this annual meeting were the following:

President—Brigadier General Fulton Q. C. Gardner
Vice President—Colonel G. B. Foster, M.C.
Vice President—Colonel S. W. Fitzgerald, A.C.
Vice President—Colonel C. K. Wing, C.A.C.
Vice President—Colonel W. D. Frazer, C.A.C.
Vice President—Colonel J. L. Frink, Q.M.C.
Vice President—Lieutenant Colonel R. H. Van Volkenburgh, C.A.C.
Secretary-Treasurer—Major D. L. Dutton, C.A.C.
Assistant Secretary-Treasurer—Lieutenant D. W. Shive, C.A.C.

Volcano House Burns Down

Of interest to officers who have served a tour in Hawaii was the burning of the Volcano House on the Island of Hawaii on February 6. This historic hotel has housed many of the nations great and near-great during their visits to the Big Isle. Among those who have signed the register of this hotel are President Franklin D. Roosevelt who stopped there during his visit to the islands. The fire began early in the morning but fortunately all guests were aroused in time and there was no loss of life. Steps are now under way to rebuild the hotel on the old site.

Sergeant William H. Kernander, Headquarters and Combat Train, 2d Battalion, 55th Coast Artillery, who won the Knox Medal for 1939

Personnel Changes

It is with regret that we announce the death, on January 27, 1940, of Major French C. Simpson, who was on duty as Quartermaster at Fort Shafter.

Captain J. J. Johnson has been detailed as Assistant G-4 at department headquarters. His previous assignment as post exchange officer, Fort Shafter, is now held by Captain Clarence E. Rothgeb.

The Knox Medal

With the arrival of Staff Sergeant William H. Kernander, the Hawaiian Department gained an outstanding all-around soldier. Sergeant Kernander, who is now assigned to the 55th Coast Artillery, is the 1939 winner of the Knox Medal awarded by the Society of the Sons of the American Revolution in the Commonwealth of Massachusetts. Graduating as first man in the 1939 class at the Coast Artillery School, he was shortly thereafter assigned to foreign service in Hawaii.

A native of Daphne, Alabama, where he was born on April 26, 1909, Sergeant Kernander attended the Daphne High School receiving his diploma in June, 1928. He entered the service at Fort Barrancas, Florida, May 4, 1935 and after three years was detailed to the Coast Artillery School while in the grade of private first class. After graduation at Monroe he returned to Fort Barrancas and served as radio operator with the 13th Coast Artillery. He received his promotion to staff sergeant on August 1, 1939. Sergeant Kernander is on duty as radio technician and instructor for the Harbor Defenses of Honolulu.

The major factors considered in awarding the Knox Medal are scholastic standing, coöperation, diligence, conduct, attention to duty, military bearing and neatness, and character. Sergeant Kernander has amply demonstrated that he possesses these characteristics to an outstanding degree.

Panama Separate Coast Artillery Brigade

BRIGADIER GENERAL SANDERFORD JARMAN, *Commanding*

LIEUTENANT COLONEL C. R. FINLEY, *Executive*

CAPTAIN L. W. BARTLETT
Communications and Intelligence

CAPTAIN M. K. DEICHELMANN
Plans and Training

LIEUTENANT C. G. PATTERSON
Adjutant and Publicity

1st Coast Artillery (HD)
COLONEL RUFUS MADDUX, *Commanding*

72d Coast Artillery (AA)
LIEUTENANT COLONEL H. R. OLDFIELD, *Commanding*

LIEUTENANT W. M. SKIDMORE
Aide-de-Camp

LIEUTENANT W. L. HEROLD
Aide-de-Camp

LIEUTENANT F. A. BOGART
Munitions, Supply and Assistant Plans and Training

4th Coast Artillery (HD)
COLONEL W. R. NICHOLS, *Commanding*

73d Coast Artillery (AA)
LIEUTENANT COLONEL W. M. CHAPIN, *Commanding*

By Lieutenant C. G. Patterson

The advent of the dry season in Panama normally means target practices and Department maneuvers. However, this year three momentous events necessitated a change in the schedule.

Just four months after the formation of the Panama Provisional Coast Artillery Brigade (AA), Major General Daniel Van Voorhis, commanding the Panama Canal Department, issued General Orders Number 5, abolishing the sector system in Panama. The sweeping changes include grouping all the Coast Artillery into the Panama Separate Coast Artillery Brigade and all the Infantry and Field Artillery units into the Panama Mobile Force. Thus, overnight our headquarters expanded from that of the only Regular Army antiaircraft brigade into the headquarters of the largest Coast Artillery command in the Army. Fifty-eight officers and 2,500 men of the augmentation group have already arrived in Panama to swell the garrisons. We are justly proud that within our new brigade we have the oldest Coast Artillery regiment as well as the two largest regiments in the Army.

Brigadier General Sanderford Jarman, commanding the Panama Separate Coast Brigade is particularly well fitted for this command because of his wide experience and ability. Aside from eight years in the office of the Chief of Coast Artillery, he has spent four years on the War Department General Staff, and also commanded the antiaircraft artillery defenses of Hawaii and the 64th Coast Artillery (AA). In the fall of 1938 he was Chief of Staff of the Provisional Coast Artillery Brigade (AA) at Fort Bragg, North Carolina. His experience in the organization of the Provisional Brigade and the civilian warning net have helped to solve many problems in the organization of the Panama Separate Coast Artillery Brigade.

Distinguished visitors held the spotlight during the dry season. On February 5th, General Marshall, Chief of Staff, arrived by plane to make a four-day inspection of the canal defenses. Troop work on roads made it possible for General Marshall to ride to some AAA installations instead of walking those last grueling miles.

On February 18, we were honored by a surprise visit of President Roosevelt. Arriving at Gatun on Sunday morning he visited all posts on the Atlantic Side with the exception of Fort Sherman. The President returned on February 27th from a fishing trip and inspected the defenses on the Pacific side. We are particularly glad that our Commander-in-Chief had an opportunity to see the defenses at this time of intensive training and expansion.

While the President was fishing in Pacific waters, the Honorable Matthew J. Merritt, United States' Congressman-at-Large from New York arrived for a short inspection visit. Congressman Merritt and a large group of shipmates were guests of honor of the 72d Coast Artillery (AA) for a review and dinner. The 2d Battalion, 72d Coast Artillery (AA) is largely composed of former members of the 62d Coast Artillery (AA) from Fort Totten, Mr. Merrit's "home town."

TRAINING

While we were being inspected and reviewed, artillery preparations did not lag. Batteries of the 1st and 4th fired intensive training additional target practices, while gun batteries of the 72d and 73d fired burst problems. Antiaircraft searchlight practices from war positions have been completed by the 72d and 73d, although no scores have been turned in as yet. The 73d is preparing to leave for Rio Hato the last week in March. Inspection trips to Rio Hato indicate that Captain "Buddy" Wilson has done an excellent job of constructing a tent city to accommodate one regiment at a time, with tent floors, mess halls and all conveniences. It will be an unusual sight to warm the hearts of all artillerymen to see a convoy of mobile guns en route from Amador to Rio Hato.

PERSONNEL

Colonel Homer R. Oldfield arrived from San Francisco on February 9th to take command of the 72d Coast Artillery (AA) and Fort Randolph. Lieutenant Colonel C. R. Finley has moved to the Pacific Side and assumed the duties of brigade executive. Although no quarters are in evidence at the new posts, most officers ordered to Panama without dependents have found places to live in Panama. Panama City and New Cristobal are sporting many new modern apartment houses and bungalows.

General Jarman, commanding Panama Separate Coast Artillery Brigade, explains the functioning of AA materiel to the Honorable Matthew J. Merritt, congressman-at-large from New York.

Harbor Defenses of Cristobal

By Major V. W. Wortman

The transition from intensive indoor training to training outdoors was accomplished in spite of the delayed arrival of the dry season. Gunners' instruction boards had scarcely completed their examinations before jungle trails and roads to gun positions and installations had been cleared and batteries were engaged in artillery drill. Very shortly thereafter, a satisfactory degree of efficiency had been attained in coördinated range and gun section drill, and subcaliber firing was conducted. During the short period between the close of the rainy season and the end of January functional firing of matériel was carried on by the line batteries. Headquarters Battery, 2d Battalion, was busily engaged in training personnel in the operation of searchlights, power-plants, and message center, group and groupment command post procedure. Personnel was also trained to function in the operation of the harbor defense signal station, the Fort Sherman railroad and the necessary harbor boat service.

The harbor defense commanders' training period from February 12th to 20th was largely devoted to tactical communications and tactical handling of seacoast searchlights at night drill in discovering and illuminating craft at sea. This period culminated in the harbor defense commander's tactical artillery inspections.

The increased number of distinguished visitors in the harbor defenses during the past two months evidences the unusual interest in coast defenses in general and here in particular at the crossing of the shipping lanes of the Western Hemisphere. The President of the United States honored Fort Randolph with a brief visit and inspection February 18, 1940. Two days before, the American Ambassador to Panama and Mrs. Dawson visited Fort Sherman accompanied by Brigadier General and Mrs. Joseph A. Cummins. All honors were accorded Ambassador Dawson and he and his party were escorted over the post and then taken to historic old Fort San Lorenzo. On February 10, 1940, we were honored by a visit from the Chief of Staff, General Marshall. He was accompanied by members of his staff, the commanding general and staff, Panama Canal Department, together with the commanding general and staff, Atlantic Sector. A review in honor of Governor Inocenzio Galindo, of the Province of Colon, was held on the occasion of his visit during February. After the review the Governor was escorted to points of interest on the post and then returned by special boat to Colon.

4th Coast Artillery (HD)

By Major H. C. Barnes

During the past two months the 4th Coast Artillery has been mainly engaged in carrying out its part in the intensive training program, and in the initial target practices of the regular training season. As part of the intensive training, Battery D fired a 75-mm. practice, Battery I fired a 75-mm. and a 155-mm. practice, Battery G, fired a 14-inch railway practice, and Battery D again fired a 6-inch DC practice. The practice fired by Battery G was held at Fort Randolph and required the movement of the battery and personnel across the Isthmus and back by rail. This was accomplished without incident and in good time; an indication of the excellent state of training of the entire battery and of the fine coöperation on the part of the Panama Railroad. As part of the regular season the following practices have already been fired: Battery D, 75-mm. and 6-inch DC practice, Battery G the 155's, and Battery I the 155's.

Department maneuvers will not be held this year as training for the month of March was turned over to the regimental commander. This provided an excellent opportunity to conduct training in chemical warfare defense, antiaircraft machine guns, first aid and the all-important and ever-present problem of artillery maintenance.

Battery O, 73d Coast Artillery unloading supplies at Rio Hato, Republic of Panama.

Reviews and parades have come thick and fast. First, was a review at Fort Clayton for the new department commander; then a complete turn-out for our Commander-in-Chief, the President; and just lately, together with the 73d Coast Artillery, a night review for the brigade commander, General Jarman. These, along with our normal parades and other garrison duties have kept the regiment pretty busy.

In athletics, teams from Amador finished first in the sector boxing tournament and fourth in the sector baseball league. The track season is now under way, the regimental team being coached by Lieutenant Raymond J. Belardi, one of our most recent arrivals.

72D COAST ARTILLERY (AA)

By Captain M. B. Raymond

Life at Fort Randolph continues its active pace. Our main mission is the completion of the construction program. The work in progress includes completing the rehabilitation of all quarters, both officer and NCO; the construction of a motor shed for the fifty vehicles expected shortly; completion of supply rooms; laying a new sewer line; and construction of a new four-family NCO set of quarters. Those men not otherwise engaged are out in the jungle building and repairing roads and organizing the gun positions for defense.

In February Colonel Homer R. Oldfield arrived and assumed command of Fort Randolph and the 72d Coast Artillery (AA). One week later President Roosevelt visited the Canal Zone and included Fort Randolph in his itinerary.

The last two weeks have been devoted to searchlight target practice. The usual Panama weather prevailed with much rain and heavy clouds. It is interesting to note that after the completion of the last target practice the clouds disappeared and haven't been seen since.

The 72d is about to experience growing pains again. We expect some 400 men during March and the Service Battery, Headquarters Battery 1st Battalion and Battery E, and U, are to be activated.

Notwithstanding the number and variety of tasks, Fort Randolph and the 72d Coast Artillery (AA) has fast matured into a seasoned organization that has firmly established itself as a major part of the defenses of the Panama Canal.

73D COAST ARTILLERY (AA)

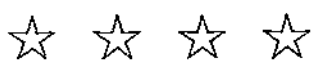
By Captain Arthur Roth

The 73d Coast Artillery (AA) formerly of Amador, Sheridan, and MacArthur and now of Amador, Fort Kobbe and Post of Corozal is spreading out to accommodate new recruits. After a period of overcrowding, the housing situation was improved by sending Battery A, to Fort Kobbe and Battery Q, N, S and T, to the Post of Corozal. Battery A occupied the tent camp at Kobbe while the batteries at Corozal have moved into barracks vacated by the 11th Engineers.

The housing situation for officers at Fort Amador remains unchanged. There are insufficient quarters and officers still arrive without dependents. A priority list has been established according to rank and to length of service in the department, and assignments are made on this basis. In the meantime, several officers have found apartments in the Bella Vista Area near the old Miramar Club. The housing conditions in the city of Panama are very satisfactory and rents are not excessive.

The regiment has utilized the dry season to improve outlying positions, repair roads and conduct routine training. All gun batteries spend four days every other week encamped at the battery position. This provides more time for training and maintenance. The searchlight batteries have been conducting night drill three nights a week. The annual service practices for these batteries are now being conducted from regular positions under wartime conditions with approaches from all directions. Plane control is entirely in the hands of the brigade, and the battery commander is not informed when record practice will be conducted until immediately preceding such practice.

Battery O, is at Rio Hato constructing the camp at the brigade target practice site. This work will be completed early in March.



Puerto Rico

BRIGADIER GENERAL EDMUND L. DALEY, *Commanding*

By Lieutenant Peter S. Peca

Coincident with the intensive field training in the States the Infantry-Artillery combat teams of the Puerto Rican Department have taken to the field for periods of over one month. The combat teams make up the security detachments at Borinquen Field, Lake Tortuguero, and Fort Miles. Units are rotated from one camp to another so that they are out in the field all the time. In combination with the field training all personnel in the department are required to take what is known as the "Daley" walk. This walk is taken for twenty minutes each working day after reveille. In order that all personnel shall have enough sleep everyone is required to abide by the "Daley" curfew. This requires Army personnel to leave parties, engagements, and other activities of a non-military nature by midnight.

During January combined maneuvers of all the arms on the Island were held. The maneuvers showed that the troops were well trained in all phases of their work and especially in camouflage. The department commander expressed great satisfaction with the appearance, training, and morale of the troops.

On February 1 the department commander authorized dependents to join personnel already stationed in Puerto Rico. Owing to limited housing and medical facilities their presence in Puerto Rico had not been deemed advisable prior to this time. With the increase in the number of apartment houses and homes, the expansion of the hospital, and the arrival of additional medical officers it has become possible to take care of families.

On the 10th of February General Marshall, Chief of Staff, arrived from Panama. He made an inspection of Borinquen Field where one battery of the 51st Coast Artillery and one battery of the 66th Coast Artillery are undergoing field training as part of a combat team. After inspecting all the other activities at Borinquen Field he proceeded to Fort Miles (formerly Camp Buchanan) where he saw the remaining units of Coast Artillery.

With reference to his inspection of the Puerto Rican Department of which the 51st Coast Artillery and the 66th Coast Artillery are an important part, General Marshall said:

> I have been greatly pleased by the high morale I have seen; by the splendid spirit the men have entered into the development of the military establishments in Puerto Rico; the fine work that has been accomplished; the appearance of the troops; and their efficiency. It is an inspiration to see how everything has been managed in the building up of this Department in a few short months.

* * *

1ST BATTALION, 66TH COAST ARTILLERY (AA)

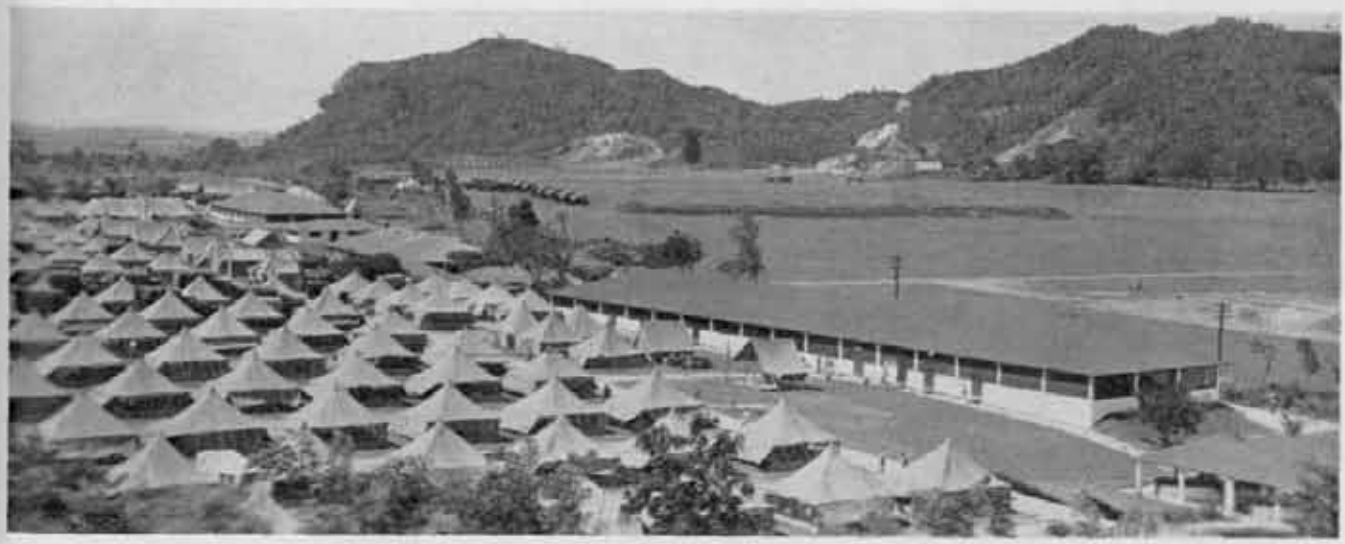
LIEUTENANT COLONEL OTTO G. PITZ, *Commanding*

By Lieutenant Harrison F. Turner

On February 1, 1940, two important changes took place affecting antiaircraft in Puerto Rico. First, our designation has been changed from 1st Battalion, 69th Coast Artillery (AA), to 1st Battalion, 66th Coast Artillery (AA). Secondly, the designation of Camp Buchanan has been changed to Fort Miles. With these changes the regiment begins to acquire a sense of permanence in Puerto Rico.

Department maneuvers have been successfully completed since the date of our last writing and much valuable experience in troop movement, supply, occupation of positions, camouflage, etc., has been obtained. The regiment as a whole benefitted materially from their participation in the first maneuver of the Puerto Rican Department.

The gun batteries conducted 3-inch firing at Borinquen



A view of Fort Miles, Puerto Rico, showing parade ground, tents, and mess halls

During his recent visit to Puerto Rico, General Marshall, chief of staff, inspected the general layout of Fort Miles. Left to right: Major F. O. Schmidt, G-1; Lieutenant Colonel C. W. Bundy, G-4; General George C. Marshall; Brigadier General E. L. Daley, commanding Puerto Rican Department; Major J. F. C. Hyde, department engineer

during January 3-11. The entire battalion moved there on January 3 and a special allowance of seventy-two rounds per battery was fired. Calibration shoots were the first order, then several courses, and finally a battle practice with all three batteries firing. Battery B, Captain E. A. Merkle, commanding, had the honor of firing the first antiaircraft gun in Puerto Rico. Battery D, Captain W. F. McKee, commanding, and Battery C, Lieutenant H. F. Turner, commanding, were the other batteries participating.

Battery C, plus one platoon of searchlights, moved to Borinquen Field on February 1 to join units from the Infantry, 51st Coast Artillery, and Field Artillery in forming a security detachment. The remainder of the 66th Coast Artillery (AA) has been assigned as part of the security detachment, Fort Miles. Captain Crim, Lieutenants Smith, Ludeman and Mial are the officers assigned to the Borinquen group.

Reconnaissances and road marches continue to be almost daily routine. Practically every road in the Island has been covered by at least one group from the regiment. Several roads have been determined to be impracticable for the movement of the regiment and various routes have been planned to occupy important positions in the Island. It is believed that the contacts with the citizens which road marches and reconnaissances promote have been of inestimable value in establishing amicable relations.

The social activity has increased appreciably with the arrival of several wives. Mesdames Pitz, Conway, Merkle, Mortimer, McKee, Turner, and Schweidel are now present in San Juan along with families from the other branches and parties are no longer a rarity. The Army Relief Carnival held at the Post of San Juan was the occasion for many of the newly arrived families to meet the other members of the Department. From the enthusiasm displayed it looks like many get-togethers will be held in the near future.

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1st Battalion, 51st Coast Artillery

Lieutenant Colonel B. L. Flanigen, *Commanding*

By Lieutenant O. K. Marshall

So varied is the activity in the Puerto Rican Department that it is difficult to differentiate between maneuvers, field training, and normal garrison training. Troops are constantly on the alert. With new guns to calibrate, antiaircraft machine gunners to train, reconnaissances to execute, and radio communications to establish and maintain, there have been few breathing spells. These activities have been accomplished in addition to tactical operations in conjunction with the annual maneuvers and period of intensive field exercises.

Shortly after January 1st, A Battery and B Battery alternated at calibrating their guns at Punta Salinas. An alternate position was occupied at Escambron Point, from which sub-caliber practices were fired at towed naval targets. While the troops in the States were protecting themselves from falling snow our troops were warding off falling coconuts while the firing was going on.

As soon as the calibration shoot was completed the batteries began to train on their new weapon, the .50-caliber machine gun, firing at both balloons and towed targets. Although ammunition available was not enough to fire a regular practice it did afford considerable training and the results were very satisfactory.

The mobility of the 51st Coast Artillery has been tried and proven many times. The Headquarters Battery, as well as the firing batteries, has made numerous marches away from Fort Miles. Considering the character of the roads, the obstacles such as slow moving carts, overloaded commercial trucks, numerous curves, and narrow bridges, our regiment can well boast of its marches to Borinquen Field, a distance of about ninety miles.

During department maneuvers during the latter part of January this regiment formed the Harbor Defenses of San Juan. The Harbor Defense Headquarters was established in the old fort of El Morro. Battery A, commanded by Captain Grinder, was located at Escambron Point. Battery D, commanded by Captain Burgess, was located at Punta Salinas. The entire communication set-up, radio and wire, orientation data, and everything connected with the establishment of the defenses was performed by 51st Coast Artillery troops. The new situation which confronted us in the defense of San Juan Bay provided us with a practical problem. Heretofore in a permanent defense all the communications, data, and other information necessary for firing a battery have always been available. The solution of our problem provided exceptional experience for the officers and men, and should stand us in good stead for a long time to come.

212th Coast Artillery (N.Y.N.G.)

COLONEL E. E. GAUCHE, *Commanding*

Owing to the greatly expanded activities of the National Guard under the President's limited emergency program, the 212th Coast Artillery (AA), New York's only National Guard antiaircraft regiment, has been continuously on the go for the past few months.

With the increase in strength of 63%, or from 725 to 1,187 men, authorized late in October the regiment, already cramped for space in its 55-year old armory, has been in the throes of recruiting as fast as the limited facilities for housing additional personnel have permitted.

The need for additional armory space was greatly aggravated by a large influx of the latest types of antiaircraft matériel. Nine new 3-inch guns, new .50-caliber machine guns and mounts and other items of equipment have been received in recent months.

The State authorities decided that the 212th should perform the additional field training during three week-ends, those of November 11-12, 18-19 and 25-26 at Fort Tilden, New York.

Despite the cold and generally windy weather that prevailed throughout the greater part of its tour the regiment obtained a great deal of valuable training in convoy work and establishing and maintaining camp in adverse terrain and bad weather.

The gun battalion tried out some of its newly acquired matériel by conducting trial shot and calibration firings.

The machine-gun battalion held 1,000-inch firings for recruits and those men who had joined since 1938—its last target practice year. The regiment having had to forego firing during the 1939 field training period owing to its participation in the First Army Maneuvers at Plattsburg.

The 102d Ordnance Company, N.Y.N.G., Captain William H. Brown, commanding, trained jointly with the 212th and rendered invaluable service.

The regiment is greatly indebted to Captain Paul A. Jaccard, 7th Coast Artillery, commanding Fort Tilden for his splendid coöperation and assistance in furthering the training activities of the regiment and contributing toward the comfort and well-being of the troops.

Among the many distinguished visitors who witnessed the activities of the 212th during its tour at Tilden were Major General William N. Haskell, commanding the New York National Guard; Colonel Joseph A. S. Mundy, Chief of Staff, 27th Division; Brigadier General William Ottman, commanding Coast Artillery Brigade, N.Y. N.G.; Colonel A. J. Cooper, commanding 2d Coast Artillery District; Colonel William A. Taylor, Assistant Adjutant General, New York; and Lieutenant Colonel Andrew H. Thompson, U. S. Property and Disbursing Officer, New York.

The regiment averaged 90.6% attendance for the tour.

One of the 212th's 3-inch AA guns in action at Fort Tilden

The 212th maintains radio communication at Fort Tilden with a plane of the 102d Observation Squadron

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First Coast Artillery District

COLONEL RODNEY H. SMITH, *Commanding*
MAJOR ROBERT T. CHAPLIN, *Adjutant*

COLONEL ROBERT C. GARRETT
Commanding Harbor Defenses of Portland and Portsmouth

COLONEL MONTE J. HICKOK
Commanding Harbor Defenses of Boston

COLONEL T. H. JONES
Commanding Harbor Defenses of Long Island Sound

MAJOR E. P. JOLLS
Commanding Harbor Defenses of Narragansett Bay

CAPTAIN CHARLES N. BRANHAM
Commanding Harbor Defenses of New Bedford

Training new units recently formed in this district is currently the paramount mission for the Coast Artillery in New England. With the successful recruiting campaign over, our major effort is now directed toward molding the new men into efficiently functioning organizations able to make effective use of their assigned armament. At the same time we are achieving on schedule all the normal training objectives of the regular winter program for the other older units in the various harbor defenses.

The District Commander and Mrs. Rodney Smith entertained with a buffet dinner on St. Valentine's Day at their home in Wellesley Hills in honor of the Brazilian Army Ordnance Mission, which had been inspecting Watertown Arsenal. The guests of honor were: Captain Bruno Martins, Captain Renato Guerreiro, Captain and Mrs. Edmundo Orlandini and Captain Carlos Frankel.

The mission, which expects to spend six months touring the arsenals of the United States and studying American Army Ordnance matériel and methods of manufacture, arrived in the United States in November on the return trip of the flying fortresses of the Army Air Corps, which had visited Rio de Janeiro to take part in the celebration of the 50th Anniversary of the founding of the Brazilian Republic.

Colonel and Mrs. Smith, who spent four years in Brazil where he was chief of the first United States Military Mission to that country, had a thoroughly enjoyable time reminiscing with their Brazilian guests. The visitors had the unique experience—for them—of being snow-bound by the heavy Valentine's Day storm and had to spend the night under the hospitable roof of their hosts. It was not until the next day that their cars could be dug out of the drifts.

HARBOR DEFENSES OF PORTLAND AND PORTSMOUTH

Staff Sergeant Gerald K. Moore, 8th Coast Artillery, recently promoted to that grade (Artillery), is in receipt of orders transferring him to the Coast Artillery School Detachment, Fort Monroe.

Lieutenants Ernest P. Gizzi, and Anthony S. D'Ambrosio, CA-Res., have reported for active duty, are assigned to Battery E, 68th Coast Artillery, Fort Preble, Maine.

Corporal Arthur J. Dusseault, Privates First Class Frank J. DeRoche, and Alfred O. Ellis, Battery A, 8th Coast Artillery, have been detailed as students in the Special Electrical Course, Coast Artillery School, Fort Monroe.

Sergeant Ross E. Daggett, Battery A, 8th Coast Artillery will take the examination for staff sergeant (clerical) April 16, 1940.

The two organizations now stationed at Fort McKinley—the Panama Coast Artillery Detachment, commanded by Captain Charles Treat, and the 2d Battalion, less Battery E, of the 68th Coast Artillery (AA), commanded by Major H. H. Cameron—have recently received large numbers of recruits, and training of each organization has been intensive.

All batteries at McKinley now boast basketball teams, and plans for boxing teams and bowling teams are under way. In addition to these sports, a minstrel show has been organized by Lieutenant Stephen D. Young, CA-Res. The post theater exhibits five shows a week, and an Officers' Club and an NCO Club are being opened.

Despite all the earmarks of a blizzard, the forty-eight mules remaining on hand since the exodus of the 5th Infantry for sunnier climes, were sold at public auction, their usefulness having been outmoded by the recent motorization of the 68th.

The 68th Coast Artillery exceeded its authorized strength of 1,000 men by January 4, 1940. The bulk of the recruits came from the 5th Corps Area.

Among the major items of equipment that have been received are the twelve 3-inch antiaircraft guns with major items of fire control equipment, ten of the new Federal searchlight trucks, six trailers, and one passenger car.

HARBOR DEFENSES OF BOSTON

Between five and seven on the afternoon of New Year's Day, Colonel and Mrs. Monte J. Hickok received the ladies and officers of the garrison at the commanding officer's quarters at Fort Banks. Among the distinguished guests was Major General James A. Woodruff, commanding the First Corps Area.

January 31st terminated the unit recruiting campaign conducted from harbor defense headquarters. All vacancies were filled and a waiting list was established for those applicants who were so unfortunate as to apply too late. Fort Banks, with its ideal location in Winthrop, within easy commuting distance of Boston, has always been most popular with soldiers.

On St. Valentine's Day, after two months of mild weather, clear roads, and almost perpetual sunshine the posts of Boston Harbor experienced a real snowstorm with drifts from five to six feet high. Automobile traffic was completely stopped and the regular boat service between the harbor posts was discontinued temporarily. After about twelve hours the storm was followed by a mild springlike day and the interrupted road and water traffic was resumed.

Captain Norman A. Congdon is now under treatment at Walter Reed General Hospital.

Lieutenant Robert James Goldson, Medical Corps, who has been on active duty as a Reserve officer at Fort Banks, recently passed his examination for appointment in the Regular Army and has accepted his new commission as first lieutenant in the Medical Corps. Lieutenant Goldson received his medical training at Providence College, Boston College, and Georgetown University.

Among the Reserve officers who have recently reported for active duty with the 9th Coast Artillery are Lieutenants Charles Bartlett Cox, Earl Richard Carle, and Eben S. Whiting. Lieutenant Cox is a native of Dorchester, and in civil life is a landscape architect and tree expert. Lieutenant Carle comes from Newtonville, is an alumnus of MIT and has specialized in architecture and construction. Lieutenant Whiting is a native of West Roxbury and a former member of the 211th Coast Artillery.

Sergeants Robert W. Evett and Joseph H. Valliere, successfully completed the entrance examination for the Coast Artillery School, Fort Monroe, and entered the special class commencing in March.

Present artillery activities, in addition to the regular maintenance and upkeep of matériel, include gunners' instruction. The large number of recruits now in these harbor defenses requires more than the usual number of instructors. To date the progress of the training has been satisfactory and it is expected that all candidates will qualify.

Harbor Defenses of Long Island Sound

By Captain Frank T. Ostenberg

The winter months at Fort H. G. Wright have passed quickly. Recruiting, recruit training, gunners' instruction, and intensive outdoor training on the guns have kept everyone busy. These months have not passed, however, without many hard fought contests in basketball, bowling, and small bore-rifle matches.

The 11th Coast Artillery inter-battery small-bore rifle match ended with Battery E, 11th Coast Artillery capturing first place. The standing is as follows:

	Points
Battery E	38
Headquarters Battery	32
Battery C	29
Battery D	26
Battery A	13
Battery B	9

The small-bore rifle team travels to New London, Connecticut, on a special boat, one or two nights per week, for shoulder-to-shoulder meets with the United States Marine Corps, Coast Guard Academy, and several civilian rifle teams. All matches have been exciting—ending with only a few points difference between the winning and losing teams.

The construction of new buildings goes on apace. It is expected that the new commissary, the garage, the ordnance, and the utilities buildings may be ready for occupancy within a few months. Seven mess halls in the National Guard camp area are completed and other new construction at Fort Wright is under way. The apartments at Fort Michie are also nearing completion.

Staff Sergeant Luther S. Pierce recently returned from school at Fort Monroe, and Sergeant Clyde K. Avery arrived from the Hawaiian Department. Technical Sergeant Melville F. Noyes, Finance Department, has left for Fort Sheridan, Illinois, after having served at Fort H. G. Wright for nearly ten years. Technical Sergeant Frederick W. Reese, Finance Department, has replaced Sergeant Noyes.

The post sergeant major, Master Sergeant James R. Cook, retired on December 31, and First Sergeant John Westfill, Battery A, 11th Coast Artillery retired on January 31.

Harbor Defenses of Narragansett Bay

The highlight of the winter season was the great blizzard on St. Valentine's Day, accompanied by winds of gale force which buried Fort Adams under snow drifts as deep as eight feet. The wind was so strong that it broke several mooring lines on the *L-43*, which was moored in the stone basin, normally a safe and quiet anchorage. Owing to the splendid work of the crew, no damage occurred. Three days after the storm, roads and streets were still cluttered with stranded cars.

Recruiting for the Panama Coast Artillery Detachment has been completed. The organizations are now undergoing intensive training in preparation for spring target practices.

The second of the winter series of combined Army and Navy dances was held in the Officers' Club early in March. The first one, on New Year's Eve, was attended by over 250 guests.

Harbor Defenses of New Bedford

By Captain Charles N. Branham

Old Man Winter (of the New England Winters) presented Fort Rodman, and vicinity, with his own inimitable version of an old-fashioned blizzard on February 14—presumably as a Valentine's Day gift. He did an excellent job and, as a result of his thoroughness no one at this post is likely to forget him until spring really comes and removes the last traces of the sturdy snow drifts yet remaining as evidence of his ability.

Headquarters and Headquarters Battery, 23d Separate Battalion, Coast Artillery, recently was activated and assigned to these Harbor Defenses. All Coast Artillery personnel then stationed at Fort Rodman were transferred to the new organization. Incidentally, the 23d Battalion is proud of its rating as a 100% JOURNAL subscription unit. The one regular officer on duty finds no difficulty in maintaining his (their) place on the Honor Roll.

Private First Class Daniel S. Warner, qualified by examination for the Special Electrical Course Coast Artillery School, and reported to Fort Monroe on March 2.

Corregidor

BRIGADIER GENERAL WALTER K. WILSON, *Commanding*
COLONEL FREDERIC A. PRICE, *Executive*
LIEUTENANT COLONEL R. B. PATTERSON, *Adjutant General & S-1*
MAJOR S. MCCULLOUGH, *S-2* — LIEUTENANT COLONEL C. E. COTTER, *S-3*
MAJOR L. R. CREWS, *S-4*

COLONEL R. P. GLASSBURN, *Commanding 59th Coast Artillery (HD)*
COLONEL WILLIAM C. KOENIG *Commanding 60th Coast Artillery (AA)*
COLONEL WILLIS SHIPPAM *Commanding 91st Coast Artillery (PS) (HD)*
LIEUTENANT COLONEL J. B. CRAWFORD *Commanding 92d Coast Artillery (PS) (TD)*

By Major S. McCullough

The United States High Commissioner to the Philippine Islands, Frances B. Sayre, officially visited Fort Mills on January 9th and 10th. The accompanying picture shows the High Commissioner and General Wilson with members of their staffs taking the brigade review. The High Commissioner is standing to the right of General Wilson, members of the High Commissioner's staff from center to left are Mr. Golden W. Bell, (legal advisor), Woodbury Willoughby, (administrative assistant), Lieutenant Colonel R. M. Carswell, (liaison officer), and Commander Charles B. McVay, 3d, naval aide; members of General Wilson's staff from center to right are Colonel Frederick A. Price, Lieutenant Colonel C. M. Thiele, Lieutenant Colonel R. B. Patterson, AGD, and Lieutenant H. M. Spengler (aide). The other picture shows the brigade, consisting of the 91st Coast Artillery Band, 59th Coast Artillery, 60th Coast Artillery (AA), 92d Coast Artillery (PS), and 91st Coast Artillery (PS), formed for the review.

Upon the High Commissioner's arrival at the North Dock at Corregidor a guard of honor rendered military honors and a 19-gun salute was fired. After inspecting the guard, Mr. Sayre and members of his party were taken to Topside parade ground where a brigade review was held. The High Commissioner was greatly impressed by the military appearance and set-up of the troops and by the precision of the military maneuvers. The innovation of rifle exercises to music by the 91st Coast Artillery (PS) drew his particular commendation. General Wilson entertained the High Commissioner at an official dinner and later in the evening gave an official reception at the Corregidor Club for the High Commissioner and his party.

On January 10th General Wilson and his staff escorted Mr. Sayre and his staff on a tour of inspection of the artillery defenses of Corregidor which was followed by a trip to the concrete battleship of Fort Drum. This defense unit, unique in character as a coast defense installation, proved to be of intense interest to the High Commissioner. Upon return to Fort Mills Mr. Sayre and his staff were entertained at an official luncheon following which the party boarded the U. S. Army Mine Planter *Harrison* for the return trip to Manila.

The past two months, exclusive of the Christmas holidays, have been devoted to target practices. Almost from daylight to dark you can hear the crack of sub-caliber firings or the boom of the larger caliber guns. All battery commanders are concentrating on making every preparation to insure a successful target practice. To date the following batteries have completed their target practices Battery A, 59th Coast Artillery (Hearn); Battery F, 59th Coast Artillery (Smith); Battery C, 59th Coast Artillery (Wheeler); Battery D, 59th Coast Artillery (Cheney); Battery G, 59th Coast Artillery (Leach); Battery A, 91st Coast Artillery (PS) (Rock Point); Battery C, 91st Coast Artillery (PS) (Ramsay); Battery E, 91st Coast Artillery (PS) (Grubbs); and Battery G, 91st Coast Artillery (PS) (Rock Point). The results obtained have been excellent. Further details are covered under the regimental news articles. Due to the comparatively short period of good weather and the many target practices to be fired a carefully planned schedule is essential and has been worked out this year most successfully.

During the period January 17th to January 25th, General Wilson and some of the troops from Fort Mills, participated in the Philippine Department Maneuvers. One of the most important defense sectors was under his command and the officers and enlisted men participating were highly commended for their work.

In the interregimental track meets, held in December, the 59th Coast Artillery defeated the 60th Coast Artillery (AA) 76 to 29 for the post track championship, American Division, and the 91st Coast Artillery (PS) won from the 92d Coast Artillery (PS), 77 to 42 to retain the post track championship, Scout Division, for another year.

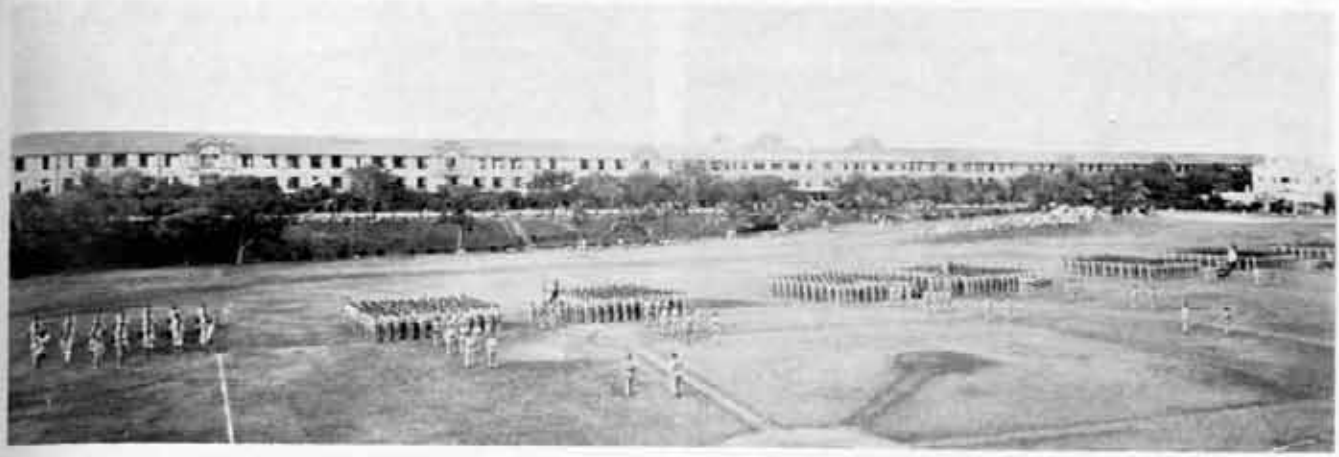
The golf season is still in full swing. Since our last report three more "holes in one" have been made. Captain A. C. Krukowski, M. C., Lieutenant H. D. Guard, MAC, and Mrs. C. A. Valverde are the ones who have joined the select circle. A new course record has been established by Colonel W. C. Koenig. He shot a sensational fifty-two which is six strokes under par. During December several Corregidor golfers participated in the Philippine Department golf tournament and returned with several trophies.

The weather during the past two months at Corregidor has been wonderful. It has been cool and pleasant with very little humidity or rain.

59TH COAST ARTILLERY

By Major L. H. Thompson

The past two months has been devoted to subcaliber and intensive drill in preparation for service practices. At



Brigade review for the High Commissioner to the Philippine Islands held at Fort Mills

this time two 12-inch barbette and two 12-inch D.C. batteries have fired but all scores have not yet been computed. Battery C and D firing 12-inch D.C. destroyed their targets, thus causing delays and additional courses, but despite this handicap both have a good percentage of hits. Battery A, commanded by Captain Simmonds, fired a smooth and well-conducted long-range practice (24,000 yards) but apparently Lady Luck was not smiling, for all shots were over or short just a little too far to secure hits. Battery F, commanded by Captain Fonvielle, was more fortunate in its long range practice, rolling up a fine score. Battery E and G will fire 6-inch guns owing to failure to receive 14-inch target practice projectiles. Battery B will fire 12-inch D.C. during the first week of February.

Athletic interest is centered in inter-battery baseball with Battery G considerably in the lead at this time.

The regiment loses the following officers on departure of the February transport: Captain Hendrix, Lieutenants Yost, Jordan and Leist, and will acquire, Major Chambers, Captains Sawtelle and Graves and Lieutenant Julian.

60TH COAST ARTILLERY

By Major Arnold D. Amoroso

This regiment has gained no officers since the last news letter, but we are destined to lose Major Allison W. Jones and Lieutenant Richard H. Mattern who return to the United States on the February transport. Major Jones is en route to Fort Hancock and Lieutenant Mattern to Fort Monroe. Major A. D. Amoroso has relieved Major Jones as adjutant, and commanding officer, 2d Battalion, Lieutenant R. D. Glassburn has relieved Lieutenant Mattern as commanding officer of Battery E and Lieutenant A. C. Peterson has assumed command of the Searchlight Battery. Lieutenant R. G. Ivey has been placed on flying status for the month of February and will be attached to Nichols Field for that period. Our regimental commander, Colonel W. C. Koenig, made history and has been receiving congratulations from far and wide having broken the course record for the Corregidor Golf Course, on January 18th by turning in a score of fifty-two. The details are supplied herewith for the benefit of those who may still have memories of their own endeavors on this course. He was playing a foursome and made seven birdies, one bogie and ten pars for a score on the first nine of twenty-seven and twenty-five on the second nine. In order to break the record it was necessary for him to sink an eighteen-foot putt on the 18th green.

After the Christmas Holidays the antiaircraft organizations entered into the intensive training period. Battery B, C and D successfully completed their detection phase of the 1940 season early in January. Two bombers were employed so that time would be conserved by requesting the second airplane to start into the sector at a new altitude as soon as the first airplane arrived at the objective. It was found necessary to start the bombers from a point thirty miles from Corregidor on each course to prevent the observers from tracking the target on its receding course. Antiaircraft information service posts were stationed in the sector, one of them on a boat. One of the airplanes was standard Air Corps color and the other was painted silver. The silver plane was much more difficult to pick up than the standard color plane. The sector for the phase was so selected that the observers had to look into the sun to pick up the attackers which presented a most difficult problem to the defenders. In spite of the clouds normally present in the vicinity, the targets were picked up at the maximum required altitudes, oftentimes above a thin layer of clouds. Training for the gun firing phase is progressing rapidly in spite of the difficulty in scheduling air missions. The Air Corps training directive does not include specific allowances for tow-target work and in order to keep abreast of their own training schedule, which must be carried out during the short dry season at the same time AA training is conducted, the Air Corps is obliged to reduce tow-target work to an absolute minimum. In spite of this handicap Air Corps coöperation has been outstanding. The searchlight battery now augmented by personnel of the machine gun batteries is concentrating on training for a special searchlight exercise. Training has been continuous since fall of 1939 when weather and curtailed air missions combined to prevent the 1939 annual service practice. In spite of this, the searchlight unit is in an excellent state of training and will

Mr. Francis B. Sayre, High Commissioner to the Philippine Islands, taking the brigade review in company with General Wilson

carry out the 1940 practice in February or March.

Since the last news letter basketball and track and field seasons have been completed. Baseball season is now well on its way.

Basketball. The 60th Coast Artillery team barely missed creating a three-way tie for first place in the department league by losing the first of its last two games to the 59th Coast Artillery by a one point margin—after a smashing game, tied at the end of the first, second and third periods. The 60th then went to Manila to defeat the 31st Infantry (Post of Manila) thereby knocking the Doughboy team out of a tie for first place, giving the 59th Coast Artillery the department championship and taking third place for itself. Rooters from Corregidor, including many from the 59th Coast Artillery, crowded the stadium during the final game with Post of Manila. Even though the 60th could not win the championship, it was a pleasure to make sure that the honor would continue to rest with a team from Corregidor.

Track and Field. In this sport, D Battery took the interbattery championship in easy style finishing 22½ points above E Battery. Other batteries followed in the order: F, Headquarters and C (tie), B, A. In the interregimental track and field meet the 60th Coast Artillery had considerable success in field events but in the track events and final score was outrun by the 59th Coast Artillery which took the post (American Division) championship.

Baseball. The inter-battery tournament is at midseason, some teams having already played second-half games. Battery C with seven won and one lost, leads the league, closely followed by B and D Battery. The other teams stand in the order: A, F, E, Headquarters and Medical Detachment.

The near future will bring the interregimental and department baseball tournament. A tryout of touch-tackle football is also in the offing. With target practice season already started, we contemplate a schedule crowded to the brim.

91ST COAST ARTILLERY (PS)

By Major V. P. Foster

During the months of December and January, the regiment confined its efforts to artillery target practice. In December and the early part of January, subcaliber missions were utilized in preparation for the service practices which started about the middle of January. Battery A opened the service target practice season on January 17th, by conducting an exceptionally good practice with 155-mm. guns. Not to be outdone by Battery A, the same 155-mm. guns were called upon again to confirm its "shoot" of the 17th, and Battery G of this regiment conducted another enviable practice on January 19th. Batteries Ramsay and Grubbs have completed their 1940 service practices with highly satisfactory results.

There will be a cessation of artillery practices until February 13th at which time Battery Geary, will be fired by Battery D; Battery B will fire its first of two scheduled practices on February 14th, followed a week later by its second practice. This organization will conduct its practices at Battery James. Seacoast practices will be completed on February 15th when Battery Frank-North will endeavor to carry away the honors for service practices, by conducting their practice on the Isle of Carabao. During the early part of March, Battery C, E and F will fire antiaircraft target practices as secondary assignments.

In the last sports of 1939, track and field, Battery G took inter-battery honors. On December 21, the 91st Coast Artillery (PS) track team added the seventh and final regimental victory of the year by capturing the post scout track and field championship. Exceptional times were made in the dashes: Ballesteros, 91st Coast Artillery (PS) turned the 100-yard dash in 9.8 seconds; performances in field events were far above average. Battery A, 91st Coast Artillery (PS) won the coveted annual athletic supremacy trophy by amassing a total of 4,283.12 points out of a possible 6,000.

The 1940 baseball season opened officially on January 8, 1940. At present, Battery A, 91st Coast Artillery (PS), last year's champion, again leads the way with a 1.000 standing, followed closely by Battery G. The inter-battery league will continue till the latter part of March, after which a regimental team will be formed consisting of the outstanding players of the regiment. Prospects are very encouraging and it is hoped that the department championship which barely evaded capture last year, will be taken into camp this year.

Of the new arrivals on the February boat we receive Major Bowler to replace Major Hogan who goes to the 60th. We also gain Captain E. F. Adams and Lieutenants East and R. A. Smith.

92D COAST ARTILLERY (PS)

By Captain O. H. Kyster

Since the last report, all batteries have been engaged in firing officers' adjustment problems, participating in Philippine Department maneuvers, and in intensive training for annual target practices.

Major Braly, Captain Kyster, Lieutenants Irvine, Harvey, Haynes, Croker and Kappes, and Battery B, C, and

THREE OF A KIND

These three officers, formerly stationed at Corregidor where the picture was taken, resemble each other to a startling degree. From left to right, they are Lieutenant Colonel R. M. Carswell, Major M. E. Conable and Major A. L. Lavery

D, 92d Coast Artillery (PS) participated in the Philippine Department maneuvers, taking 155-mm. guns from Corregidor for use in various phases of defensive maneuvers. All report very interesting and profitable experiences.

The regimental track and field Meet was held on December 14th. Battery C won with fifty points, Battery D won second place with thirty-four points and Battery F finished third with twenty-eight points. Corporal Federico Gilvison, Battery C, and Private Victorino Lucero, Battery B, tied for individual high score honors.

On December 21st the 91st Coast Artillery (PS) defeated the 92d Coast Artillery (PS) in the annual interregimental meet by the score of seventy-seven points to forty-two points.

Our regimental commander, Lieutenant Colonel James B. Crawford, has been ordered to the 65th Coast Artillery (AA) and after a brief trip to Hongkong, will sail for his new station on the February transport. The regiment sincerely regrets the departure of Colonel and Mrs. Crawford. Our new K. O. will be Colonel Jos. Cottrell from the mine depot at Monroe. We are looking forward to the renewal of old friendships with him and Mrs. Cottrell. Major E. L. Barr who also arrives on the February boat will replace Major Braly who goes to harbor defense headquarters. Lieutenants MacNair and White will go to the Philippine Army Training Camp at Wint.

West Point

By Lieutenant Alfred C. Gay

Branch instruction for the Corps of Cadets does not change radically from year to year, but the tendency recently has been toward a more general coverage. During the fall, the Third Class received ten hours instruction in matériel. This course was supervised by forty first classmen, about half of those who had indicated a desire to be commissioned in the Corps next June. No drills were held during this period, instruction being confined to a discussion of the limitations and possibilities of the various weapons. During February and March the Second Class received thirteen hours of instruction in seacoast and antiaircraft tactics. Emphasis is placed on the Coast Artillery mission and its relationship to other branches. During May, the Second Class will receive about twenty hours additional instruction and drill, principally in the duties of the range section. Finally, the instruction will be rounded out with a four-day trip to Fort Hancock where antiaircraft and seacoast firing will be observed.

A considerable extension in the privileges of the First Class becomes effective about March 1. Among the more important of these changes, first classmen will proceed to and from their section rooms individually; during Sundays and holidays they may leave the post with relatives or friends by signing out; their rooms are exempt from routine morning inspections except for one previously prescribed morning each week; cash will be drawn instead of "boodle checks" and may be spent at any authorized sales agency on the post; limits include all of the reservation except Officers' and Enlisted Men's Clubs and the Thayer grill and bar; during evening study hours they may visit the First Class Club. Four years of rigorous discipline not only molds the cadet into officer material but it may distort his sense of responsibility and relative values. Of course, nothing corrects these errors so quickly as the first attempt to balance a month's expenditures with a second lieutenant's pay check, but it is hoped that these changes will make the transition from cadet to officer less abrupt.

On March 1 the garrison held a farewell reception for Colonel C. C. Carter, Professor of Natural and Experimental Philosophy who will be on leave until his retirement in July. As yet no successor has been appointed.

Colonel Carter's retirement ends forty-five years of distinguished service. Upon graduation from the Military Academy in 1899, he was commissioned in the 6th Field Artillery, but soon transferred to the Coast Artillery. From 1899 to 1901 he served as acting chief of ordnance and acting signal officer in Havana, Cuba. During the next thirteen years, he attended the Artillery School and Massachusetts Institute of Technology, served as Chief of Staff of the Hawaiian Department, and acted as instructor at the Artillery School. In 1914 he returned to West Point as adjutant and secretary to the academic board. In 1917, he was appointed to his professorship. During his service the course in philosophy was constantly revised and extended to keep abreast of the most modern developments in science. This accomplishment earned him the admiration and respect of all, but his more valuable contribution is less tangible. To each succeeding class of cadets he exemplified the spirit of West Point at its finest. Colonel Carter has won himself a place in the traditions of the Academy.

Coast Artillery Board Notes

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

Bore Cleaning Brushes (Steelgript) (Project 1161). The Coast Artillery Board recently completed a series of tests to determine the suitability of experimental bore cleaning "Steelgript" brushes for 37-mm. 3-inch antiaircraft and 155-mm. guns. These brushes were furnished by the Ordnance Department in an effort to provide suitable sponges and bore brushes for field guns. The brushes tested were intended for bore cleaning only and not designed for use as chamber sponges or to apply rust preventive compound to the bore of the guns.

The brushes for 3-inch antiaircraft and 155-mm. guns are similar except as to size. The "Steelgript" brushes, manufactured by the Fuller Brush Company, are an assembly consisting of a body, brush and cap with the necessary retaining nuts and bolts. The brush itself is composed of an approximately 50-50 mixture of black chungking bristles and olympic bronze .005-inch crimped wire. The outside diameters and widths of the brush sections are as follows: 3-inch antiaircraft gun: outside diameter, 3.15 inches—width, 1.35 inches; 155-mm. gun: outside diameter, 6.35 inches—width, 1.40 inches. No staves were furnished with the 3-inch antiaircraft and 155-mm. brushes as they can be used with standard staves by providing adapters to permit assembly. The average outside diameter of the 37-mm. brush is 1.60 inches and the maximum width is 1.25 inches. The staves issued with the 37-mm. brush are made of wood, each composed of two sections with brass fittings. The over-all length of the staff with brush assembled is 7 feet 9½ inches.

a. Results of tests. Following is a summary of results derived from the battery commander's reports, and as determined from observation of the tests by the Coast Artillery Board:

(1) *155-mm. brushes.* The brush works well for scrubbing the bore. The bristles appear to reach to the bottom of the grooves and provide a scrubbing action superior to any standard device now provided for 155-mm. guns. The brush was found unsuitable for drying the bore because the bristles themselves will not dry it, and the brush is too large in diameter to take a cloth covering for drying. An oil film spread in the bore by use of the brush is very thin due to the tight fit. The brush can be used to advantage in removing heavy grease. Five to seven men are required to push or pull the brush through the bore. The eye in the front of the brush is of value in attaching or removing the brush from the staff, and for attaching a rope to assist in running the brush through the bore. The brush does not appear to be subject to rapid wear or to deformation of the bristles under normal use. The brush assembly appears to be sufficiently sturdy.

(2) *3-inch antiaircraft brush.* The "Steelgript" brush does not penetrate into the grooves as well as the standard brush (brush, cleaning, wire). Due to flexibility of the bristles and bronze wires, the "Steelgript" brush is not as effective as the standard brush for heavy scouring. The "Steelgript" brush can be used for spreading a thin film of oil in the bore. The brush is too large in diameter to take even a single thickness of burlap for oiling or drying the bore. It was found inferior to the present standard brush for removing heavy oil. The "Steelgript" brush was found suitable for polishing the bore, after cleaning with the standard brush. It is sufficiently sturdy for the purposes intended and does not appear to be subject to rapid wear in use. Five men are required to push the brush through the bore.

(3) The 37-mm. "Steelgript" bore cleaning brush assembly provided a satisfactory means for cleaning and removing heavy oil from the bore. One man was required either to push or pull the brush through the bore. The eye in the front of the brush assembly was considered unnecessary and undesirable. It was found feasible to use the brush with two thicknesses of lightweight rags or one thickness of burlap covering

the bristles. With rags or burlap threaded through the eye, the brush could be pulled but not pushed through the bore. The eye would not accommodate enough rags or burlap to wipe the bore thoroughly.

b. Suitability.

(1) *155-mm. brush.*

(*a*) The 155-mm. guns are not now provided with a standard bore brush. Such a device is often improvised by mounting hand wire brushes on a fixture which can be attached to a staff for running through the bore. This arrangement, though crude, has been used with success. In order to obtain a comparison between a steel wire brush and a "Steelgript" brush for guns of about 155-mm. caliber, the Board examined the standard steel wire brush furnished for 6-inch guns and observed its use. It is a spirally wound brush similar in construction to the 3-inch steel brush which was found to be superior to the "Steelgript" brush for that caliber. Because of the greater diameter of the 6-inch brush, the wires on its outer surface are much less densely spaced and more pliable than in the case of the smaller brush. In use it does not appear to be as effective for cleaning and scouring as the "Steelgript" brush. It can be used for oiling or wiping the bore by wrapping it with burlap.

(*b*) During tests of the 155-mm. brush at Aberdeen Proving Ground, it was found impracticable to use burlap on the brush for oiling or drying the bore. No suitable means for utilizing rags with the brush by threading them through the eye, or otherwise, were found during the tests. The standard sponge provides a reasonably suitable means for drying the bore.

(2) *3-inch antiaircraft brush.*

(*a*) The 3-inch antiaircraft guns are now provided with a bore brush which appears to be satisfactory. This brush is made up of stiff wires mounted spirally on a fixture which can be attached to a staff. The wires are of considerable length and have sufficient spring to permit use of the brush with burlap wrapped around it for oiling or drying the bore. This brush, in combination with the bore sponge also available, is thought to fulfill requirements in so far as maintenance of the bores of these guns is concerned.

(*b*) It is thought that reducing the diameter of the head and lengthening the bristles of the "Steelgript" brush to permit using burlap over it, or reducing the outside diameter of the brush for the same purpose, would adversely affect scouring properties.

(3) *Cleaning equipment for 37-mm. gun.* Prior to receipt of the "Steelgript" 37-mm. bore cleaning brush and staves, improvised cleaning equipment had been used with the 37-mm. antiaircraft gun. A single section staff, approximately eight feet long, was manufactured locally from a guidon staff. A wire cleaning brush, cut down to 1½ inches in diameter, and a standard bristle brush for the 37-mm. gun M1916 were issued for local use with the 37-mm. antiaircraft guns.

(4) *Comparison with existing equipment.* The 37-mm. "Steelgript" brush was tested in comparison with the improvised matériel described above. The "Steelgript" brush appeared to be very satisfactory for cleaning the bore and more suitable than either the standard bristle brush or the improvised wire brush. The latter brush was so stiff that it was feared continued use might damage the bore. The bristle brush, with an over-all diameter of approximately 2½ inches (64-mm.) and a solid core of 1-3/16 inches (30-mm.), gave such a tight fit in the bore that it was found unsuited for greasing the bore. However, this brush was satisfactory for applying light oil to the bore. In applying grease to the bore, the tight fit caused the greater part of the grease to be squeezed out without leaving a satisfactory film on the bore surface. Because of its tight fit, the "Steelgript" brush also was found to be unsatisfactory for both oiling and greasing the bore. Notwithstanding this tight fit, the "Steelgript" brush appeared to be in excellent condition at the conclusion of the test and to be capable of withstanding further continued severe usage over a considerable period of time. The bristles were only slightly deformed and on the whole the brush showed very little wear.

Based on these tests the Coast Artillery Board concluded that:

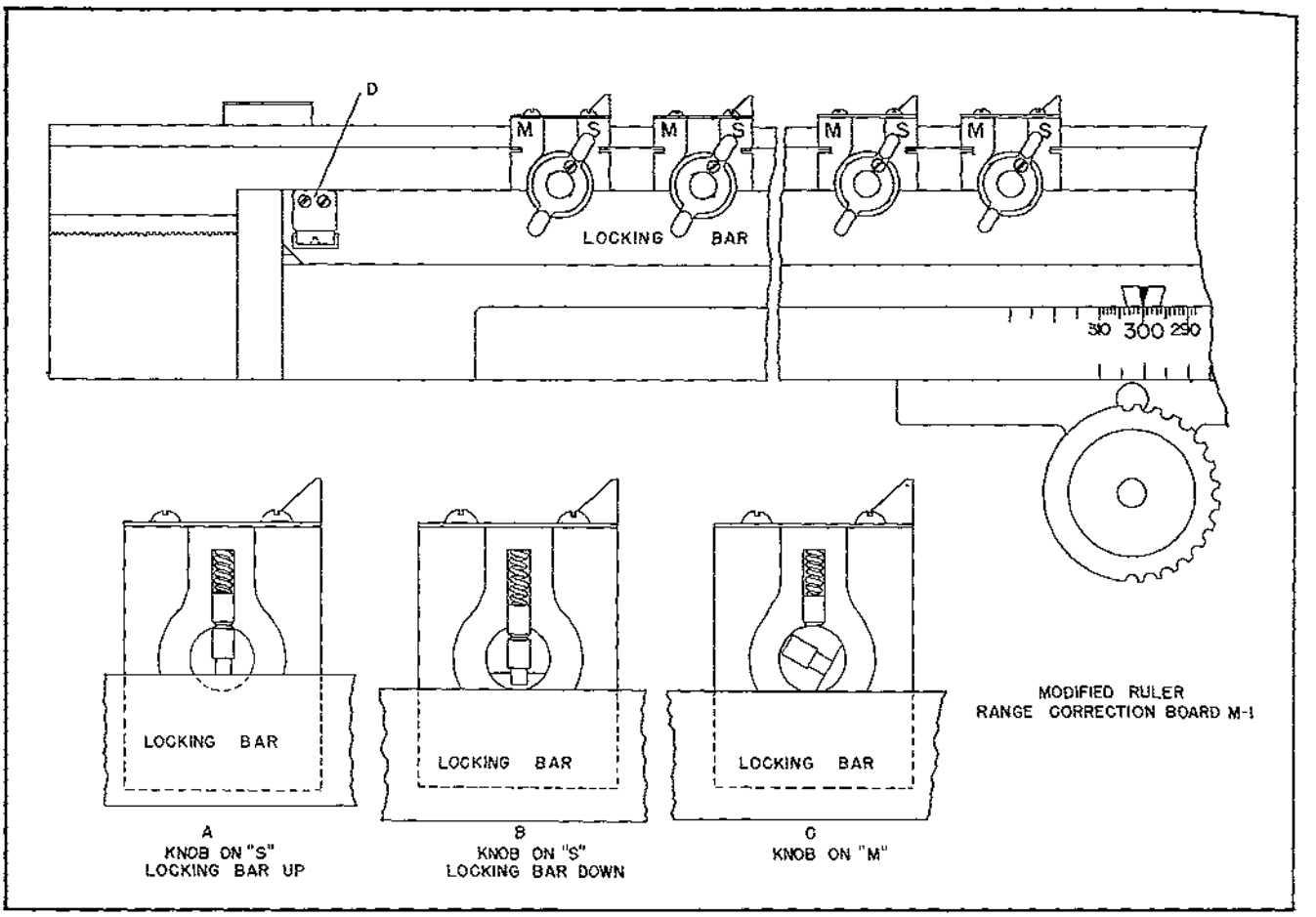
a. The "Steelgript" bore brush in its present form is suitable for use with 155-mm. guns.

b. Adoption of this brush will not remove the need for any article now provided for 155-mm. guns.

c. Either the present standard staff or the wooden staff sections issued for this test are suitable for use with the brush.

d. The "Steelgript" bore brush for 3-inch antiaircraft guns does not possess sufficient merit to warrant providing it either in place of or auxiliary to the bore-cleaning equipment now available for these guns.

e. The "Steelgript" bore brush in its present form is



suitable for cleaning the bore of the 37-mm. antiaircraft gun M1A2, and removing oil therefrom.

f. The staff, in conjunction with the brush assembly, is suitable for use with the 37-mm. antiaircraft gun. M1A2.

Two-Station Height Finder T-19 (Project 1164). As a result of the accuracy tests of height finders and position finders conducted in 1936 at Aberdeen Proving Ground, it was concluded that the development of a more accurate and more suitable two-station height finder should be undertaken. The Coast Artillery Board recently tested the Two-Station Height Finder T-19, built by the W. L. Maxson Corporation, for the purpose of satisfying the above requirements of accuracy and suitability. The instrument was designed to be used on a comparatively short baseline employing the altimetric roof principle for the determination of altitudes. (Same principle as employed in the Altimeter M1920.)

The height finder consists of two angle measuring instruments designated B′ and B″ mounted on Type A tripods. Each instrument is provided with means for leveling, an azimuth scale for orienting, and an Elbow Telescope M-2, controlled by a handwheel drive and mounted so as to have movement about two axes which are mutually perpendicular. The telescope is mounted on an arm which must be plunged when the ϕ angle (angle the roof plane makes with the horizontal) reaches 1,600 mils.

The B′ instrument weighs 110 pounds and houses all of the computing mechanism. The B″ instrument weighs sixty-seven pounds. Geared to the handwheel drive of the B″ instrument is a "make and break" electrical contact which causes a click to be superimposed on the telephone line to B′ for every mil or every ten mils change in the ϕ_2 angle. The purpose of this is to aid the operators in transmitting and setting the ϕ_2 readings.

A unique feature of the Height Finder T-19 is its operation on an "effective" baseline which makes an angle of forty-five degrees with the "actual" baseline. There are two "effective" baselines that satisfy this condition, one on each side of the "actual" baseline. In effect, this furnishes the instrument with two baselines at an angle of ninety degrees to each other, but requiring only one secondary station. The length of the "effective" baseline is less than the "actual" baseline, being equal to the latter value times the sine of forty-five degrees (.707).

The Height Finder T-19 was operated on baselines 500 yards and 1,000 yards in length.

The Board found that:

a. The Height Finder T-19 is not satisfactory as an altitude determining instrument for use with antiaircraft artillery.

b. The clicker and telephone method of data transmission is not satisfactory for transmission of rapidly changing data.

c. A height finding instrument which requires "plunging" at any time during operation interrupts the flow of altitude readings for a considerable period and is unsatisfactory for use with antiaircraft artillery.

d. A positive means of directing both observing instruments on the same target (target identification) is necessary in a height finding system employing two stations.

e. Limitations, at present, on the accuracy with which angles can be measured, transmitted, synchronized, and set into the computing mechanism, while tracking a target, restrict the application of the altimetric roof principle to baselines greater than 1,000 yards in length.

The Board recommended that the Height Finder T-19 be not adopted as a standard fire control instrument.

Modified ruler for Range Correction Board M-1. The standard range correction board has been generally satisfactory in service, but minor changes to make operation more positive have been thought desirable. Modifications to the ruler, designed by the Ordnance Department and tested recently by the Coast Artillery Board, are intended to accomplish this result. Such errors as are made in using the board usually are due to misoperation as follows:

(1) Failing to return one pointer to its "stop" position before setting to a curve with the next pointer, thereby moving two pointers at the same time.

(2) Inadvertently turning the correction knob when no pointer is set at "move."

These mistakes are sometimes not detected readily, and removal of the error usually involves complete reoperation including resetting all pointers to normal.

The modifications to the ruler include the addition of a "locking bar" which, in combination with a redesigned pointer knob mechanism, prevents turning a pointer knob to "move" while any other pointer also is in the "move" position. The new pointer knob assemblies include two-part plungers or split pins similar to those employed in a pin tumbler lock. These pins are actuated by the locking bar, so that the wing knobs cannot be turned except when the bar is in the up or unlocked position (see A, B, and C in the sketch). The locking bar is constrained to move parallel to the correction ruler by a rack and pinion drive at each end, interconnected by a shaft.

Teeth attached to the ends of the locking bar (one is shown at D in the sketch) engage a rack on the movable bar when all pointers are at "stop," thus preventing movement of the correction knob except when a pointer is at "move." The locking bar may be held down with the hand for the initial setting to 300 on the correction scale.

In tests of the modified ruler, its greater positiveness as compared to the present type was apparent. The modification will be incorporated in future manufacture of Range Correction Board M-1 and they will be applied to the standard boards now in service as funds permit.

Coast Artillery Orders

(Covering the period January 1 to February 29, 1940)

Colonel H. R. Oldfield, to Panama, sailing San Francisco, January 30.

Lieutenant Colonel J. B. Crawford, to 65th, Ft. Winfield Scott.

Lieutenant Colonel E. O. Halbert, to instructor, Florida National Guard, Jacksonville.

Lieutenant Colonel H. B. Holmes, Jr., to Virginia Military Institute, Lexington.

Lieutenant Colonel J. C. Ruddel, to U.S. M.A., West Point.

Major Napoleon Boudreau, to the Philippines, sailing New York, April 2.

Major L. D. Farnsworth, to 18th, Ft. Stevens.

Major J. H. Gilbreth, to 63d, Ft. MacArthur.

Major J. B. Hafer, to Organized Reserve, 4th Corps Area, Columbia.

Major H. P. Hennessy, to Panama, sailing New York, March 18.

Major L. W. Jefferson, to office, Chief of Coast Artillery, Washington, D. C.

Major Frederick Lofquist, to 18th, Ft. Stevens.

Major R. N. Mackin, to 2d C.A. District, New York.

Major L. C. Mitchell, to instructor, New York National Guard, New York.

Major H. W. Ulmo, to 23d Separate Battalion, Ft. Rodman. Previous orders amended.

Major J. H. Wilson, to General Staff Corps, Presidio of San Francisco.

Captain G. M. Badger, to instructor, C.&G.S. School.

Captain J. G. Bain, to Panama, sailing San Francisco, April 6.

Captain C. N. Branham, to 23d Separate Battalion C.A., Ft. Rodman.

Captain N. A. Burnell, 2d, to instructor, C.&G.S. School.

Captain W. H. Carlisle, to Panama, sailing New York, March 27.

Captain M. G. Cary, to 62d, Ft. Totten.

Captain W. H. J. Dunham, to Headquarters, 7th Corps Area, Omaha.

Captain A. G. Franklin, Jr., to 61st, Ft. Sheridan.

Captain W. E. Griffin, to Hawaii, sailing New York, April 9.

Captain F. K. Gurley, to Panama, sailing San Francisco, April 6.

Captain F. B. Kane, to office, Chief of Coast Artillery.

Captain O. H. Kyster, Jr., to 62d, Ft. Totten.

Captain W. C. McFadden, to 20th, Ft. Crockett.

Captain M. G. Pohl, to U.S.M.A., West Point.

Captain K. E. Rasmussen, to 65th, Ft. Winfield Scott.

Captain J. S. Robinson, to 69th, Ft. Crockett.

Captain D. H. Smith, to Coast Artillery Board, Ft. Monroe.

Captain R. E. Starr, to office, Chief of Coast Artillery, Washington, D. C.

Captain L. K. Tarrant, to U.S.M.A., West Point.

Captain T. B. White, to Panama, sailing San Francisco, April 6.

First Lieutenant John Alfrey, to 2d, Ft. Monroe.

First Lieutenant W. H. Baynes, to 69th, Ft. Crockett.

First Lieutenant L. K. Beazley, to Panama, sailing New York, March 2.

First Lieutenant R. C. Boys, to 2d, Ft. Monroe.

First Lieutenant H. B. Cooper, Jr., to Panama, sailing New York, May 4.

First Lieutenant C. J. Diestel, to Hawaii, sailing New York, June 8.

First Lieutenant F. H. Fairchild, to Panama C.A. Detachment, 3d, Ft. Stevens.

First Lieutenant E. E. Farnsworth, Jr., to 13th, Ft. Barrancas.

First Lieutenant R. G. Finkenaur, to U.S. M.A., West Point.

First Lieutenant S. W. Foote, to 70th, Ft. Monroe.

First Lieutenant R. E. Frith, Jr., to 2d, Ft. Monroe.

First Lieutenant H. R. Greenlee, to 68th, Ft. Williams.

First Lieutenant E. E. Hackman, to Panama C.A. Detachment, 8th, Ft. Preble.

First Lieutenant H. R. Hale, to 65th, Ft. Winfield Scott.

First Lieutenant W. A. Hampton, to 13th, Ft. Barrancas.

First Lieutenant E. W. Hiddleston, to 13th, Ft. Barrancas.

First Lieutenant C. W. Hildebrandt, to 52d, Ft. Hancock.

First Lieutenant C. W. Hill, to 70th, Ft. Monroe.

First Lieutenant R. H. Kessler, to 70th, Ft. Monroe.

First Lieutenant R. J. Lawlor, to the Philippines, sailing New York, June 8.

First Lieutenant H. D. Lind, to 70th, Ft. Monroe.

First Lieutenant W. B. Logan, to Panama, sailing New York, March 18.

First Lieutenant C. R. Longanecker, to Hawaii, sailing New York, June 8.

First Lieutenant H. W. Mansfield, to 69th, Ft. Crockett.

First Lieutenant William Massello, Jr., to the Philippines, sailing New York, June 8.

First Lieutenant J. C. Moore, to U.S. M.A., West Point.

First Lieutenant J. B. Morgan, to 68th, Ft. Williams.

First Lieutenant Robert Morris, to 61st, Ft. Sheridan.

First Lieutenant W. R. Murrin, to 11th, Ft. H. G. Wright.

First Lieutenant G. U. Porter, to 65th, Ft. Winfield Scott.

First Lieutenant H. W. Schenck, to the Philippines, sailing New York, June 8.

First Lieutenant F. H. Shepardson, to 63d, Ft. MacArthur.

First Lieutenant R. S. Spangler, to Hawaii, sailing New York, June 8.

First Lieutenant C. E. Spann, Jr., to 13th, Ft. Barrancas.

First Lieutenant H. P. VanOrmer, to 70th, Ft. Monroe.

First Lieutenant E. H. Walter, to 2d, Ft. Monroe.

First Lieutenant B. S. Waterman, to 68th, Ft. Williams.

First Lieutenant W. H. Waugh, Jr., to Panama, sailing New York, June 18.

First Lieutenant H. B. Whipple, to 70th, Ft. Monroe.

Second Lieutenant Allen Bennett, to Hawaii, sailing New York, April 9.

Second Lieutenant R. S. Chester, to Panama, sailing New York, March 27.

Second Lieutenant R. D. Curtin, to Panama, sailing New York, February 21.

Second Lieutenant M. F. Gilchrist, Jr., to Panama, sailing New York, March 27.

Second Lieutenant W. J. Henry, to Panama C.A. Detachment, 10th, Ft. Adams.

Second Lieutenant W. A. Hinternhoff, to Panama C.A. Detachment, 10th, Ft. Adams.

Second Lieutenant E. M. Lee, to Ordnance Department, May 3, and to Hawaii. Previous orders revoked.

Second Lieutenant E. M. Les, to Ordnance Department, Watertown Arsenal.

Second Lieutenant B. R. Luczak, to Panama, sailing New York, March 2.

Second Lieutenant E. W. McLain, to 70th, Ft. Monroe.

Second Lieutenant S. A. Madison, to the Philippines, sailing San Franciso, April 27.

Second Lieutenant C. L. P. Medimis, to Panama, sailing New York, March 18.

Second Lieutenant T. M. Metz, to 70th, Ft. Monroe.

Second Lieutenant D. Y. Nanney, to Panama, sailing New York, March 2.

Second Lieutenant T. D. Neier, to 2d, Ft. Monroe.

Second Lieutenant J. G. Nelson, to 21st, Ft. DuPont. Previous orders amended.

Second Lieutenant F. K. Newcomer, Jr., to Panama, sailing New York, Feb. 21.

Second Lieutenant C. S. O'Malley, Jr., to 2d, Ft. Monroe.

Second Lieutenant C. C. Pulliam, to Panama, sailing New York, March 2.

Second Lieutenant J. A. Roosa, to Hawaii, sailing Charleston, S. C., April 11.

Second Lieutenant J. R. Schrader, Jr., to Panama, sailing New York, February 21.

Second Lieutenant J. A. Scott, Jr., to 2d, Ft. Monroe.

Second Lieutenant D. R. Snoke, to the Philippines, sailing Charleston, S. C., April 4.

Second Lieutenant W. M. Vann, to Panama C.A. Detachment, 8th, Ft. Preble.

Second Lieutenant J. J. Wald, to Panama, sailing New York, March 18.

Second Lieutenant W. J. Worcester, to Panama, sailing New York, June 18.

The Contributors

MAJOR BEDFORD W. BOYES, Coast Artillery Corps, NGUS, has had a long and diversified military career that began in 1916 with service in the 12th Company, 1st California Coast Defense Command. During the World War he served overseas as a captain, Field Artillery. In 1924 he accepted a commission as captain in the 250th Coast Artillery, California National Guard, vacating an appointment as major, Cavalry Reserve to do so. He is a graduate of the Motor Transport School (1936) and the Coast Artillery School (1938). He was promoted to the grade of major in December, 1938. In civil life, Major Boyes is San Francisco office manager, California Department of Motor Vehicles.

WILBUR BURTON is a newspaperman with long experience in reporting events in the Orient. He airmailed his article on the Chinese guerillas from Hong Kong where he is engaged in gathering material for a series of articles.

MAJOR ELBRIDGE COLBY, Infantry, has contributed to service and civilian periodicals for the past two decades. He is on duty with the Historical Section, the Army War College.

MAJOR CHARLES WINSLOW ELLIOTT, USA, Retired, saw service in the Philippines, China, Mexico and France. He is the author of numerous magazine articles and several books. Major Elliott makes his home at Manlius, New York.

MAJOR D. W. HICKEY, JR., Coast Artillery Corps, has seen continuous Coast Artillery service since August, 1917. He is a graduate of the Coast Artillery School Battery Officers' Course (1928), Advanced Engineering Course (1932), Advanced Course (1933) and the Command and General Staff School (1938). He is on duty at Fort Winfield Scott, California.

FLETCHER PRATT, the New York writer, continues his interest in American soldiers. He has recently joined the staff of *Time* as a specialist in things military.

MAJOR J. E. REIERSON, Coast Artillery Corps, is a native of South Dakota. Initially commissioned in the Infantry on graduation from the Military Academy in 1920, he transferred to the Coast Artillery Corps during the same year. Captain Reierson is on duty at Fort Monroe, Virginia.

LIEUTENANT COLONEL H. W. STARK, Coast Artillery Corps, entered the Army in 1912 as a second lieutenant, C.A.C., after service as a midshipman and ensign in the Navy. He is a graduate of the U. S. Naval Academy (1911), the Coast Artillery School Advanced Course (1928), and the Command and General Staff School (1930). Colonel Stark is on duty as instructor, Delaware National Guard at Wilmington.

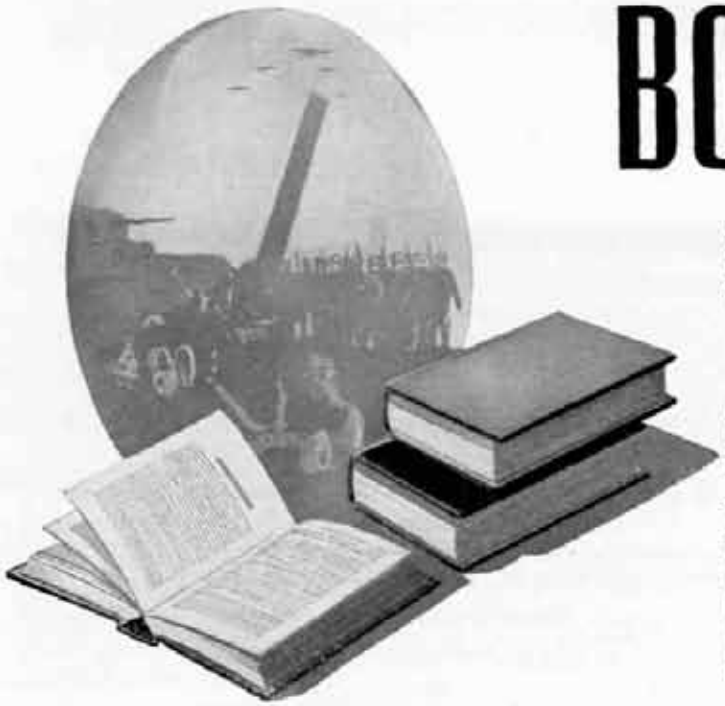
MAJOR WILLIAM H. SWEET, Coast Artillery Corps, entered the Army in 1909 by enlisting in the Engineers. Winning his commission in 1917 as a second lieutenant of Cavalry, he transferred to the Coast Artillery in 1921. He is a graduate of the Coast Artillery School Battery Officers' Course (1924). Major Sweet is on duty at Fort Barrancas, Florida.

CAPTAIN ARTHUR SYMONS, Coast Artillery Corps Reserve, is a newcomer to the ranks of JOURNAL authors. A graduate of the University of Pittsburgh (1930), he was commissioned from the ROTC. In civil life, he is business manager of radio station WFMD, Frederick, Maryland.

CAPTAIN FREDERICK P. TODD is a former member of the 107th Infantry, N.Y.N.G. (the Seventh New York), with which regiment he served in grades from second lieutenant to captain. He was placed on the inactive list in 1936 owing to change of residence from New York. He is a graduate of Princeton University (1925), the Infantry School Company Officers' Course (1933) and the Chemical Warfare School National Guard Unit Officers' Course (1935). He is a former editor of the *Journal*, American Military Institute and is now the secretary of that organization. Captain Todd is an archivist with the War Department Division, The National Archives, Washington.

MAJOR L. A. WHITTAKER, Coast Artillery Corps, was born in Rhode Island. After initial service as a private and corporal of Regular Coast Artillery he was commissioned a second lieutenant, CAC, in October, 1917. Major Whittaker is a graduate of the Coast Artillery School Battery Officers' Course (1925), Advanced Engineering Course (1926), Advanced Course (1934) and the Chemical Warfare School Field Officers' Course (1934). He is stationed at Fort Winfield Scott, California.

BOOK REVIEWS



Coast Artillery School Library Inaugurates New Plan

By Captain George Avery Chester

The Coast Artillery School Library, Fort Monroe, is inaugurating a new book-lending policy, in order to make the facilities of the Library available to all officers of the Coast Artillery Corps, National Guard, Regular Army and Reserve. The same privileges are extended to noncommissioned officers of the first three grades of the Coast Artillery Corps, Regular Army.

Here is the plan. Officers of the Coast Artillery Corps, Regular Army, and warrant officers of the Army Mine Planter Service and those on duty with the Coast Artillery Corps, Regular Army, may obtain books by mail for a two-week period by merely writing to the Library. Officers of the Coast Artillery Corps, National Guard and Reserve Corps, may obtain books through their unit instructors. (This method is necessary because no up-to-date register of National Guard and Reserve officers is available.) On receipt of the order, the books will be mailed post free to the borrower. Enclosed with the books will be a franked return-label sticker. All that is necessary to return the books is to wrap them securely and affix the sticker.

It is planned to have three types of services. First, lists of current books in the Library will be published in the COAST ARTILLERY JOURNAL. From these you may make individual selections by title. Second, lists of books on a subject of current military interest will be assembled and published in the JOURNAL. Third, a helpful service for speakers and writers will be organized. If you are to speak on the subject "What the Antiaircraft Did in the World War," merely send us the subject of your speech and we will furnish you a list of books and references on the subject from which you may make a selection.

The primary purpose of the Library is to assist the instructors and students at the Coast Artillery School. However, at the present time, the Library has grown until it now has some 50,000 volumes and it is desired to make its facilities available to members of the Coast Artillery Corps wherever they may live.

SUMMARY OF THE PLAN

Officers, warrant officers, and noncommissioned officers of the first three grades of the Coast Artillery Corps, Regular Army, write direct to Library, The Coast Artillery School, Fort Monroe, Virginia. National Guard and Reserve Coast Artillery officers apply through unit instructors. Remember to give your address; wrap book securely on return (insure at your expense if you do not want to be responsible for returned books). Return within the time limit specified and give the next man his chance at the book.

RECENT BOOKS

Here is a list of books recently acquired by the Library, from which you may make a selection.

Napoleon in Review, by G. G. Andrews. Ten studies which attempt to review the life and works of Napoleon.

Daniel Boone, by J. Bakeless. A full-length biography based on a large amount of research which brought to light a great deal of new material.

Society in Transition, by H. E. Barnes. Will an American plan of fascism succeed the New Deal unless we pursue the middle way?

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The Road to Richmond, by Maj. A. R. Small. A direct and candid document by a member of the 16th Maine Volunteers.

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Dictatorship; Its History and Theory, by A. Cobban. The present war has brought this book to the fore.

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American English, by M. Goddard. Parent English and our own.

Labor and Democracy, by W. Green.

The Civilization of India, by R. Grousset.

An Atlas of Current Affairs, by J. F. Horrabin. New maps; extensive changes in text; revised to include recent developments.

The Defense of Britain, by B. H. Liddell-Hart.

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The Great Powers in World Politics, by F. H. Simonds. Charts and maps. New edition.

The Long Arm of Lee, by J. C. Wise. History of the artillery of the Army of Northern Virginia.

♦ ♦ ♦

JANE'S FIGHTING SHIPS, 1939. Edited by Francis E. McMurtrie, A.I.N.A. London: Sampson Low, Marston & Co., Ltd. November 16, 1939. 52s. (2½ Guineas.)

An uncensored book is to be preferred to a censored one. Nevertheless, here is striking proof that war is not what it was 25 years ago. *Jane 1939* retains pictures and diagrams such as were deleted from the books issued during the last war. Within limits, British censorship permits us to be informed. Data seem to be quite complete up to September 1, on the British and French navies. On the other nations the data are apparently quite up to the date of publication.

Apparently the book is the result of an attempt to tell England of its marked superiority at sea over any and all possible enemies and a desire to eliminate any really pertinent information on new ships. However, secrets shared with thousands can scarcely continue as secrets, whether in England, Russia, Japan, or Italy. From this point of view it would seem that popular data and information, of the kind carried in *Jane*, might have been more leniently dealt with. The fact is that matters of genuine military secrecy seldom come within the scope of the popular. To the average reader they would be uninteresting and meaningless. But censors persist in a strange pride of occupation. In this book there is evidence of the usual rather inept straining for an effect—on the part of censorship—and the achieving of a bloomer.

Plainly the editors were not allowed to illustrate the British battleships of the *King George V* class with any more than a very rough drawing; no photographs of the launchings being permitted. An excellent photo illustrates the hull of the German battleship *Tirpitz* after launching. There are consolations, however, if all this be true, for one has but to turn to the advertising pages to find excellent photos of the launching of the *King George V* with that of the *Prince of Wales* thrown in for good measure. *En passant*, the censor did not remove a considerable amount of German advertising. This will provide some with food for reflection.

The meager data on the battleships of the *Lion-Temeraire* class are handled gingerly. In the text they are given at 40,000 tons displacement, in the foreword they are credited with up to 45,000 tons, this last figure more in keeping with the Admiralty announcement of September 6.

Consider the statements of the side armor of the *Belfast-Southampton* class of cruisers. Wizards of the slide rule may well scale the heavy protrusion of the belt and check the probabilities against officially approved figures.

As a measure of reassurance to the British public, *Jane*

should be sufficient. Building tables show that for a single battleship lost three will go into service from the yards shortly and that an additional five battleships are under construction.

The editors cannot be held to account for misdirected censorship. On the whole, the book is well up to standard, an interesting and pertinent comment on the war at the moment. This is a real accomplishment.

The German section is most complete, illustrations and text, and highly informative. Faced with the rebuilding of their fleet, German authorities were attempting to make their people navy-conscious. And so a sufficient amount of popular data was at hand up to the time of the war.

The beam of the battleships of the *Tirpitz* class seems entirely too great at 118 feet, though this figure is hardly open to question. The fact that the eight 15-inch guns of these ships are to be in 4 turrets on the center line might well have been included in the text because of the diversity of opinion on gun grouping in the navies of the world.

If the Franco-British claims of the destruction of 43 German submarines to date are correct, then Germany has but 28 undersea craft left in service with an equal number building. Those building include 11 "ocean-going" ships of better than 700 tons displacement and 17 "seagoing" ships of better than 500 tons. These are additional to the *U-71*.

The ideas of Captain Castex seem to have dictated the protection of the French battleships of the *Richelieu* class. According to *Jane*, there is a total of 8-inch deck armor. There is no photo of the hull of this ship after launching. If this deletion is censor-dictated, then the censor missed a bet, for the ship was launched with a considerable portion of its bow still to be attached and with a section of the stern missing. Consequently the picture was quite misinforming.

The loss of the *Tour D'Auvergne* (ex-*Pluton*), though it took place on September 18, is not included in the text, but in a note in the addenda. The *Impassible*, built from the keel up as a target ship, is most interesting. The outline shows a "light temporary structure," including a dummy funnel and considerable false bridge construction.

Apparently there are difficulties in the way of accurate information on the Italian 1939 building program. There is a possibility that both international politics and the censor have something to do with the matter. The battleships *Littorio* and *Vittorio Veneto* are by this time in service or will be in the near future. The reconstruction of the *Duilio* and *Doria* will not be completed until next spring. Two 8,000-ton cruisers, to be armed with ten 6-inch guns, are under construction as are 16 submarines in several classes. All the 12 small cruisers of the *Regolo* class are still building. They are to be armed with a new mark of 5¼-inch gun and have a speed of 41 knots. They may have some light protection. It would seem that with the completion of the destroyers of the *Aviere* class, Italy is abandoning the distinctly destroyer type in favor, possibly, of small cruisers such as the *Regolos*.

Much of the information concerning the Japanese build-

ing of a fast wing of battle cruisers of around 15,000-18,000 tons, armed with eight 12-inch guns seems to have emanated from England. However, there is no definite information on the subject in this *Jane*. The data on the battleships under construction are meager. There is a photo of the reconditioned *Mutsu*.

The *Katori* is given as a training cruiser of possibly 7,000 tons. Pictures at hand of the *Kashima* (not mentioned in *Jane*), a sister-ship of the *Katori*, might indicate that this class is considerably in excess of 7,000 tons. In relation to these ships it should be considered that these are battleship names. To the knowledge of the writer battleship names have never been given to cruisers in the Japanese Navy. The carrier *Shokaku* is considered in *Jane* to be the vessel first reported as the *Koryu*. However, there is considerable information that might indicate that the *Koryu* is quite as first reported and that the *Shokaku* and another vessel of the same class constitute an entirely new and larger class of aircraft carriers. Perhaps the British censor has some sympathy for the reticence of the Japanese on such matters.

On the Russian naval forces there is little new information. The data on the "mighty" Soviet submarine service have hardly changed from the last issue. There is, however, a note to the effect that a warship of "considerable size" is reported to have completed at Vladivostok last August. This has the ring of "information" of before the Great War to the same effect concerning the Imperial Russians. Ships were constantly reported building in the Far East.

A feature that might well have been incorporated in this book at this time is a list of warships building for foreign accounts in England, France, Germany, Italy, and Japan. The only suggestion of such a list is in the statement that the 6 Brazilian destroyers constructing in England have been taken over by the British Navy.

On the smaller nations there is much interesting data, particularly on the Netherlands.

However, this issue was obviously turned out for a purpose. It is some time ahead of its schedule and the price has been increased by 10s. Reason would point to the necessity of proving to the British public, and the world generally, that the British Navy is still overwhelmingly the world's most powerful, now and in the future. For this purpose *Jane 1939* is ample.

—From *U. S. Naval Institute Proceedings*, January, 1940.

* * *

THE GREAT POWERS IN WORLD POLITICS. By Frank H. Simonds and Brooks Emeny. New York: American Book Company, 1939. 775 Pages; Index; $4.00.

This is a revision of the 1935 edition. It is not the easiest reading in the world but few books of this nature are if they are worth the paper they are written on. The forty-five page bibliography is, in itself, an indication of the vast amount of research that has gone into this work. Both authors are scholars of distinction. Finding—a Grade-A reference work.

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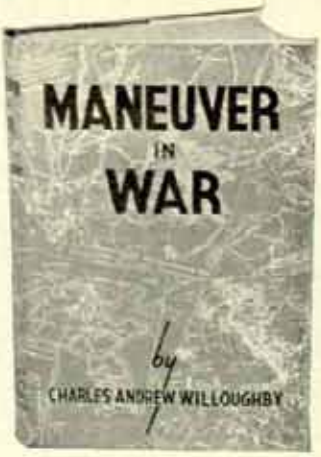

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