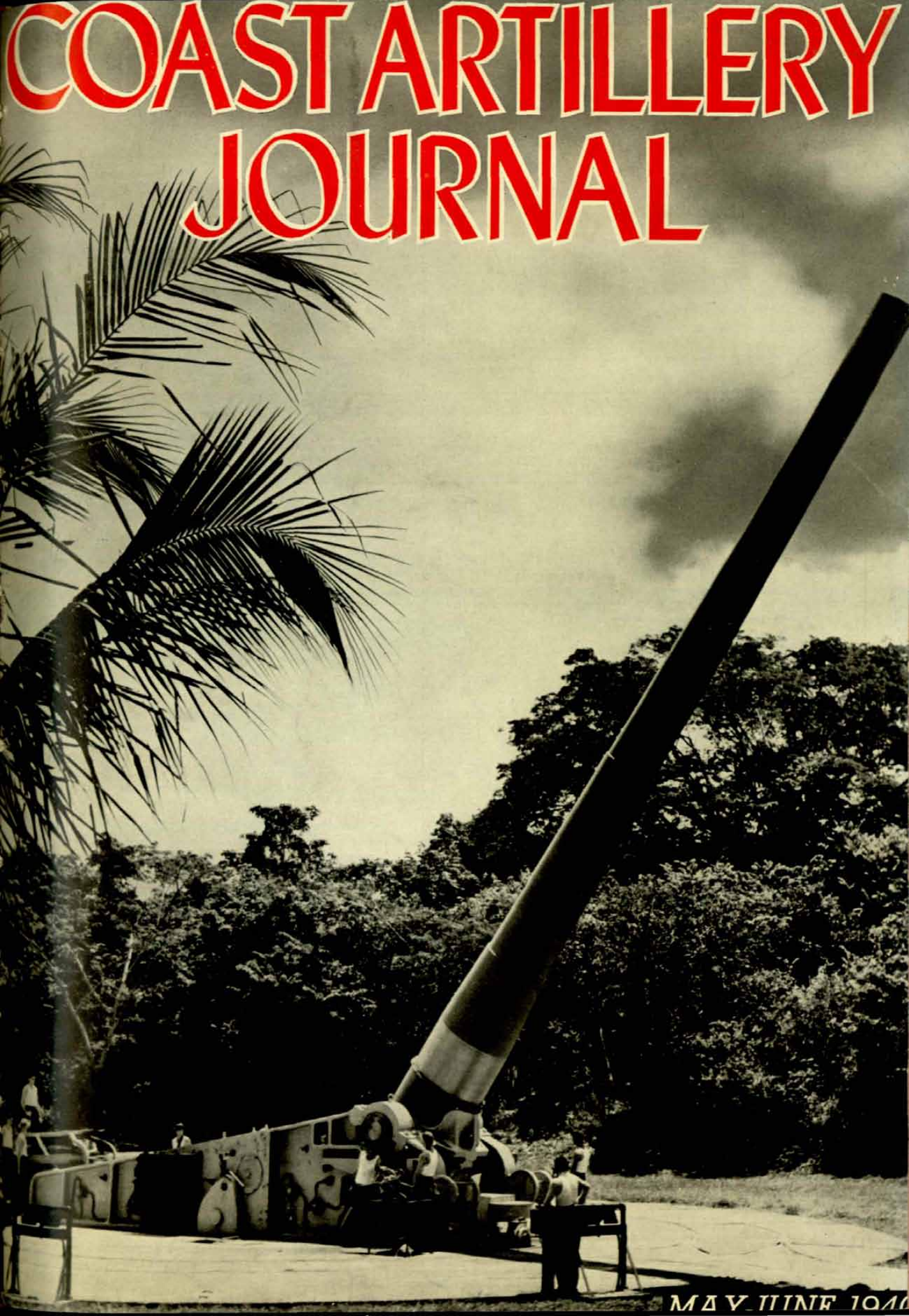
COAST ARTILLERY JOURNAL



MAY-JUNE 1940

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
JUN 1940		**00-05-1940 to 00-06-1940**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
The Coast Artillery Journal. Volume 83, Number 3, May-June 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

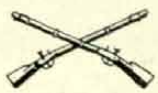
14. ABSTRACT

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)**	**100**	

...The NEW Soldier's Handbook

CONTENTS



This book has been completely revised and brought up to date. Everything in it is of 1940 vintage. Moreover, it is written in language that the soldier understands. It tells him in simple, conversational language what he wants to know.

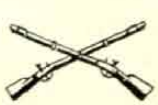
Fully illustrated and well-indexed, it gives the soldier a convenient and compact source of information that he could only procure by lugging around pounds of scattered pamphlets. It qualifies the soldier to perform his duties and helps to prepare him for the responsibilities of promotion.

In addition to the revisions and editing, new sections have been added. In every instance the text is based on instructional matter contained in various official documents of the latest date. Yes, the new drill is included.

The JOURNAL is now equipped to prepare special regimental editions of the *Handbook*. National Guard and Regular regiments should investigate the morale-building possibilities of a special regimental edition. We shall be glad to discuss prices and details.

Check over the chapter headings and see the value of this big fifty-cent *Handbook*.

Convenient pocket size
Illustrated
SINGLE COPIES: 50c postpaid
Substantial discounts on quantity orders



Coast Artillery Journal

1115 Seventeenth Street, N.W.
WASHINGTON, D. C.

COAST ARTILLERY JOURNAL

FOUNDED IN 1892 AS THE JOURNAL OF THE UNITED STATES ARTILLERY

MAJOR AARON BRADSHAW, JR., *Editor*

VOLUME LXXXIII MAY-JUNE, 1940 NUMBER 3

CONTENTS

☆

PUBLICATION DATE: JUNE 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.

Major General J. A. Green

To the Personnel of The Coast Artillery Corps:

In assuming my new duties as Chief of Coast Artillery I am impressed with the responsibilities of the position and by the honor conferred upon me.

During the past three years it has been my privilege to serve under General Sunderland as his Executive Officer. Speaking for the personnel of all components of the Corps, I congratulate him upon the many achievements accomplished during his tour of office and extend to him our best wishes for the future.

Today the state of efficiency of the three components of the Army as to morale, equipment, and training is such that it never before has been equaled in time of peace. The Coast Artillery Corps itself has been materially increased in strength, new units have been organized particularly in the National Guard, new weapons and equipment for fire control have been standardized, and large appropriations from the Congress have made possible the procurement of needed materiel.

In recent years too another very favorable change has occurred. I refer to the fact that there exists at the present time to a greater extent than ever before a more sympathetic and closer understanding between the Coast Artillery and the other branches of the service. For many years our sole mission of harbor defense necessitated the disposition of Coast Artillery personnel at small and widely separated garrisons. As a result, we were isolated from the rest of the Army. Today with our anti-aircraft, harbor defense, tractor drawn, and railway regiments this isolation no longer exists. Each of these units constitutes an element of a larger tactical command, be it Corps, Army, Coastal Frontier, or Overseas Department. This has made us more acutely conscious of the problems and objectives of the other branches, and of the Army as a whole, than was formerly the case, and it has also resulted in the other arms of the service appreciating the very essential part that Coast Artillery units fill in our combat teams.

All of this is very gratifying to one just assuming the duties of Chief of Coast Artillery. However, the greatest satisfaction is in knowing that every individual in the Coast Artillery Corps, whether of the Regular Army, National Guard, or Reserves, may be depended upon for the loyalty and effort necessary to reach and maintain the high standards of efficiency so essential if the personnel and units of the Coast Artillery Corps are to play their parts in the Army's plans for national defense.

J. A. GREEN,
Major General,
Chief of Coast Artillery.

Lessons of a *Blitz*

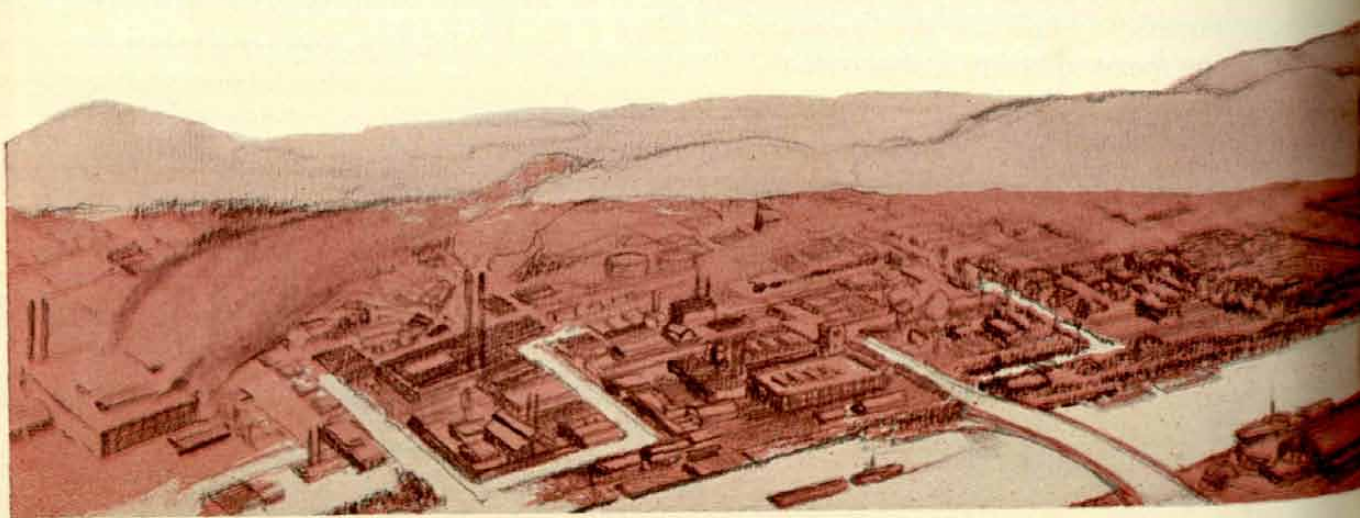
At 5:45 A.M. on the 1st of September, 1939, five German armies and some hundreds of German aircraft began the destruction of Poland. At 11:40 A.M. the German Supreme Command issued this proclamation: "The armed forces have taken over the active protection of the Reich. In fulfilment of their task to offer resistance to Polish force, German troops have crossed all the frontiers to counterattack." The armies had been fully deployed, ready to strike, and after crossing the frontiers covered on an average eighteen miles a day, marching and fighting—a feat possible only where preparations for a most elaborate offensive have been made.

The campaign that followed will probably be cited as an example unparalleled in history of the success of a blitzkrieg waged against a weaker and less-prepared opponent. Initiated without declaration of war, during the process of negotiations, it was conducted to a victorious conclusion in nineteen days, by the end of which the Polish armies had practically ceased to exist.

There is probably no other campaign on record between comparable opponents, in which the advantages have lain so decisively on the one side and the disabilities and drawbacks so decisively on the other. It may be well therefore to lead up to the strategy ultimately employed by a survey of the elemental conditions of the conflict.

Poland, if she were to wage war, was bound to do so defensively. Not only had she nothing to gain by attack, but she was too weak and ill-equipped by far to do so. Moreover, were she to undertake an invasion in a single direction, the flanks, communications, and bases of her invading army would be exposed perilously to converging attacks. Were she to strike in several directions, her operations must diverge and become more and more isolated from support in direct ratio with the progress of any penetration they might achieve. No soldier would ever dream of perpetrating either of these follies notwithstanding the various invasions which, according to the German High Command, were to be executed into the territory of the Reich.

Poland had also to fight without direct military assistance from her allies. France and Britain were too distant to intervene effectively. At one period, indeed, it seemed possible that Russia would help her; but Stalin demanded as the price of his aid, the practical restitution of the Baltic provinces—a proposition which the Allies refused to consider. With the Russo-German pact of August 23, the implication was that Poland might be attacked along her eastern as well as her western border. When a country containing thirty-four millions is invaded by better armed nations on the one side of ninety millions and on the other of 180 millions, its resistance cannot long endure



krieg

By Major General
H. ROWAN-ROBINSON
British Army, Retired

except in unusually favorable climatic and geographic conditions, here notably absent.

As regards geography, Poland's greatest length lies in the east where, from north to south, it measures 570 miles against 350 miles in the west. Her greatest width from east to west is 500 miles. She is an open country possessing, except in her Carpathian border, no barriers, either of great rivers, deserts or mountains contiguous to her frontiers. Only if operations should be prolonged into the autumnal rains and the winter snow, could she call Nature to her aid. It was in a Polish autumn that Napoleon discovered the fifth element "mud," which he found most hampering to his movements. In winter, the cold is intense, the snow deep and communications difficult to clear and maintain. It was, therefore, of the utmost importance to the Germans that the war should be brought to a quick conclusion.

Then the country, in comparison with Germany, is poor in agricultural, mineral and industrial resources; and that condition had not been improved by a century and more of unscrupulous exploitation by the Partition Powers. Hence, though Poland might be equal to feeding a large army, her factories could not furnish, nor did her exports enable her to purchase, the costly and intricate equipment required by modern forces or to fortify an extensive frontier. She had plenty of men and horses, but mere flesh and blood, protected neither by steel nor by military works of the first order, nor by natural obstacles, were unlikely long to withstand the onslaught of armored fighting vehicles launched in overwhelming numbers.

Poland has for long past been gradually transferring her main industries to the south especially to Sandomierz, Lublin and Lvov (Lemberg), partly in order to utilize her oilfields as a source of power, and partly to move them out of reach of German arms. Her hopes of immunity in this respect naturally received a severe blow from the German occupation of Slovakia, which lay for some 200 miles along her southern frontier. And, as her own territories were invaded so soon afterward, she had no time to adjust her industries to the changed conditions before war was upon her.

Poland is a multi-national state containing 1,500,000 White Russians to the north and northeast; 7,000,000 Ukrainians to the south and southeast; 2,500,000 Jews scattered through the towns; and 750,000 Germans settled mainly in the west. These alien races were in general a source of weakness, for the Ukrainians were aiming at separation and the Germans acted as first-class spies both before and during the war.

In order to avoid giving provocation to Germany, the Polish government delayed general mobilization until August 30. The invasion thus caught the army in the middle of its mobilization.

The Polish Army at peace strength numbered 280,000. The trained reserves probably numbered 2,500,000 men to which could be added, if dilution in industry were carried out, a further 3,000,000 men fit to bear arms. The figures for reserves held, however, a fictitious value; for it was impossible to equip more than two-thirds of them and the standard of training of the older men was very low. Owing to the delay in ordering general mobilization, it is unlikely that more than 500,000 reached their own units fully equipped.

In time of peace the army was grouped in ten army corps, containing one cavalry division, twelve independent cavalry brigades, and thirty infantry divisions. There were also some battalions of mechanized or motorized troops, few of which, however, had modern equipment. There was a dangerous scarcity of antiaircraft and antitank guns.

The favorite arm had always been the cavalry, for the Pole is instinctively the *beau sabreur*. Great and glorious were the traditions—memories that never faded—with the result that, in 1939, the Pole still retained a great belief in the efficacy of the mounted arm—a belief that was bound to impose a heavy handicap upon an army opposed to an enemy equipped with an effective combination of mobility, armor and fire power.

The Polish air force contained some 1,100 machines, of which a few were high-powered craft of the finest quality. Some 400 others were fit for first-line duty. The rest to a varying degree were obsolescent.

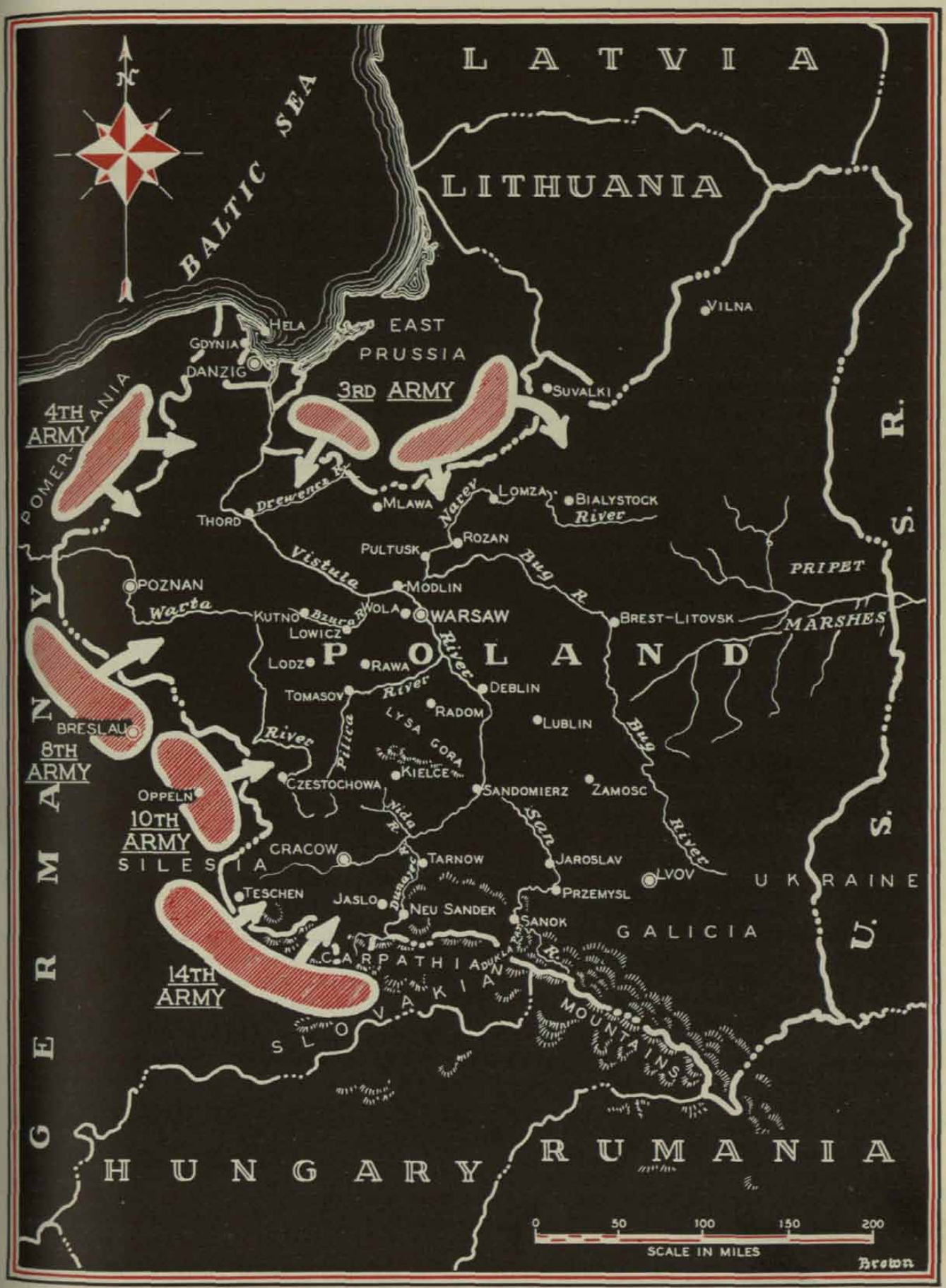
The German war machine, on the other hand, was superlatively armed both on the ground and in the air, and it could draw on fully trained and equipped reserves to any extent likely to be required.

As to the strategic element, the Pole must suffer grievously from the drawback that the initiative lay with the intending aggressor. The Germans could choose the times and places for their thrusts, whereas the Poles, who could not of course afford to keep their army permanently mobilized, must await them in complete uncertainty. Moreover, whereas the weak state normally covers its front with fortifications in order to gain time to complete its preparations after being assailed, the Poles preferred, partly of course from motives of economy, to place their trust, not in walls or trenches but in the expectation of fluid operation, in which they hoped to achieve superiority through their splendid cavalry.

The shape of the frontier was also a grave disadvantage, the implications of which will be treated later. As this point we may note that racially and geographically, politically and strategically, Poland was in evil plight for the conduct of a great war.

A salient may be a source of strength or weakness. To an aggressor possessed of superior strength and readiness, a wide salient may afford a covered approach into the heart of the country to be assailed, or may lend itself to decisive operations to either flank. Poland, indeed, presented to the enemy a salient without a hinterland and, being weaker and less prepared than their opponents, they were thus, short of being encircled, in as perilous a strategic situation as can be imagined.

The main salient was not, however, their only strategic affliction. There were three other considerable salients: towards Danzig, towards Poznan (Posen), and west of



THE POLISH CAMPAIGN

Fourteenth Army: List *Tenth Army: Von Reichenau*
Eighth Army: Blaskowitz *Fourth Army: Von Kluge*
Third Army: Von Kuchler

Cracow. All were important politically; Danzig and the Corridor formed the chief bone of contention between the warring countries. Poznan was the capital of a former Polish province retaken from Germany in 1918. Cracow —an ancient site of culture and learning—was the capital of Galicia. There would therefore be a general desire to defend all these areas.

To hold forward positions, however, for the protection either of the main salient or of the lesser salients would be a dangerous procedure. For the defending troops would almost certainly be cut off unless they should be fortunate enough to elude their strategic difficulties by a tactical victory. The idea of the Polish High Command was no doubt to battle in retreat; but such strategy was not feasible within a frontier so shaped and against an opponent overwhelmingly strong in the air, in fire power, and in collective mobility. Military considerations, namely abstention from engagement with superior converging forces, and the need of the defender, in a flat and featureless country, for a definite line such as a river on which to resist, demanded that a much more retired area should be occupied. That most favored lay along the Narev facing East Prussia and then along the Vistula from Warsaw to its junction with the San, whence it ran by the San to the fortress of Przemysl. There were advocates of a line a little further forward along the Narev, the Bzura, the Pilica, the Nida, and the Dunajec, and others of a line further back along the Narev and the Bug. The distances to be held along these positions were between 300 and 400 miles as compared to 1,100 miles along the frontier. The occupation of any of the three would have admitted not only a powerful and concentrated defense, but also of maneuver in counterattack on interior lines—a form of action quite impossible in the forward areas. Any line farther advanced was certain to be turned in the first few days of combat.

A general withdrawal or the initial occupation of a retired position would, however, have been open to the objection of surrendering without a blow territory prized both for political and economic reasons. The economy of the country was indeed wrapped up in the lower Vistula. And to abandon that river would seem to invite strangulation. Had not Frederick the Great (of accursed memory to the Pole) proclaimed that he who holds Danzig and the lower Vistula is more master of that country (Poland) than the king who rules over it?

Finally, it may be said that the temperament of the Pole—gallant, optimistic, obstinate—is such that action like abandonment of territory is intolerable to him. Thus, politically, economically and psychologically, it seemed likely that the forward position would be held.

But, if positions are to be held so that they may effectively cover treasured country, they must be garrisoned in strength. This would entail creating at least four big advanced groups, which, in the absence of fortified frontiers, would result in wide gaps and, in consequence, exposed flanks especially vulnerable in these days of mechanized forces. In the endeavor to close these gaps and to watch these flanks, there might be an attempt to cover every possible approach with a tendency on the one hand to concentration and on the other to dispersion—tendencies on which the ripest judgments might fail to find appropriate compromises.

A further objection to the forward dispositions is that the groups would be committed in advance to purely opportunist or purely negative action, to a defense based on no fortified zone, with the prospects, should they venture on counter-strokes, of committing themselves more deeply to the nets intended to ensnare them.

The choice of the Polish High Command was for the group system—a battle in retreat, with the idea of stopping and hitting, then clearing away skillfully and fast to stop and hit again, and so on. Those are tactics sound for the numerically weaker force, but only under the conditions, absent here, that it possesses better information and a higher mobility than the invader. Without those assets, it is likely to suffer overwhelming defeat before reaching positions selected for the decisive battle.

Had the forward troops been protected by demolitions on a truly extensive scale, they might have been able to maneuver successfully in retreat; for demolitions are a powerful strategic weapon particularly effective in the defense. It was commonly reported, indeed, that every bridge on every entry into Poland was mined. But, so far as the mines existed, there were two good reasons why they were not successfully exploded: the one, the rapid German advance, especially on the part of their mechanized forces; the other, that demolition strategy has a good record only in out-of-town games, the defender being always loth to destroy bridges in his native land and therefore often delaying until too late.

A scheme of thorough demolition in a semicircle west and northwest of Warsaw and centered on that town with a radius of one hundred miles might have proved most valuable. It was suggested, and it was feasible. But it was never put into effect.

There were probably soldiers who advocated holding the frontier by light, mobile detachments which would delay the enemy to the utmost and gain time for the preparation of positions in the interior. The main objection to this is that the detachments must present, for the discharge of their tasks, a combination of fire power, mobility, and protection at least as effective as any such combination brought against them. Otherwise they will be held in front, turned by the flanks, and quickly eliminated. The Polish light troops, largely cavalry, were immeasurably inferior in equipment to German mechanized forces.

What then is to be done where there is only one sound military course to pursue and, against its adoption, there are seemingly irrefutable political and economic objections? The answer is that an army destroyed involves in its fall the whole economy, administration, and government of a country and, therefore, where military and civil needs are diametrically opposed, and the first are vital, the civil needs, however weighty, must give way. There

are, however, two difficulties inherent in this solution: first, opinions may vary as to what is vital; second, it is a counsel of perfection, but seldom likely to materialize in practice, except perhaps at the behest of some dictator who happens not only to wield supreme political authority but also enjoys a military prestige of the highest order.

Looking at the problem with Polish eyes prior to the outbreak of war, it was probable, therefore, if not certain, that the forward positions would be held and that the desire to guard territory would compel a disposition of the army somewhat on the following lines:

No. 1 Group on the line Lomza—Mlawa covering the approaches to Warsaw from East Prussia, whose frontier lay only seventy miles north of the Polish capital. This group, ignorant of the direction of the impending blow, would be widely dispersed. It must eventually be outflanked by troops advancing on Warsaw from the Corridor.

No. 2 Group in the Corridor astride the Vistula facing northeast and northwest. This group would be in a peculiarly uncomfortable position threatened by forces on the one flank from East Prussia and on the other from Pomerania. And the farther it might advance in response to political pressure, the more desperate would its situation become.

No. 3 Group in the province of Poznan. The military object of this group would be the covering of the main route between the capitals of the two belligerents. The political object would be the protection of the province. If in advance of the town of Poznan it would be in almost as precarious a position as No. 2 Group. Threatened on both flanks, it could hope to extricate itself only by a rapid retreat on Warsaw. It could not lend a hand to groups on either flank without opening up the Warsaw Road.

Nos. 2 and 3—the two largest and most important groups—would, if they engaged the advancing enemy, be lucky to escape annihilation. On the other hand, if they withdrew without fighting and were not overtaken, they would have gained no time, would have achieved no object, and in a necessarily hasty retreat might have suffered in morale.

No. 4 Group, covering the front Czestochowa—Cracow—Tarnow. This group would be much less exposed to envelopment than Nos. 2 and 3, and would have lines of retreat open to Lublin and Lvov should the hostile movements farther north against Warsaw prove successful.

No. 5 Group, small in size, watching the passes over the Carpathians towards Przemysl and Lvov.

No. 6 Group on the Russian frontier, also small in size and intended only for dealing with marauders.

No. 7 Group in reserve at Warsaw.

In actual fact this was the grouping, with strength in divisions, as far as can be ascertained: No. 1, five; No. 2, six; No. 3, ten; No. 4, five; No. 5, three; No. 6, three; No. 7, doubtful. There was cavalry mainly in the gaps between the groups and covering the extreme right flank.

Against a combined assault by Russia and Germany, the distribution of the Polish forces need not be considered.

Not the most skillful dispositions, not the most heroic bravery would avail to save them from early and complete defeat.

Surely no army in history ever embarked on a campaign with more melancholy prospects.

In striking contrast to her adversary, Germany enjoyed exceptional advantages which enabled her to carry out a true blitzkrieg. In the first place, she benefited of course from all the ills recounted above from which the Poles suffered. Peculiarly to her liking were the opportunities afforded by the various salients for her favorite strategy of double envelopment. In the second place, she must have profited greatly by her recent experiences in deploying large forces for aggression first against Austria and then against Czechoslovakia. The vast scale of those operations, undertaken with the full intention of crushing resistance, must have enabled her to discover and remedy many of the faults of her military machine. Moreover, the rallies at Nuremberg partook of the nature of an annual mobilization. Every day for a week, Nazis or regular troops numbering over 100,000 were transported to and evacuated from that sacred city. In all these operations, the German staffs were perfecting themselves in the thorny logistics of mechanized movement.

Then the Germans had exploited the Spanish civil war as an inexpensive field of experiment in weapons and methods of fighting. The Condor Legion, for instance, under von Richthofen—one of the first formations to be engaged on the Silesian frontier—had battled for two years in the Peninsula and could be regarded as a corps of expert veterans. The airmen, too, who in their superior machines were to engage the Polish pilots, had for the most part been given tours of service on the Spanish front. Rarely has an army had such opportunities for attaining proficiency just before entering upon a major war.

To these and the more obvious advantages, must of course be added those of the initiative, with its choice of times and places for the initial strokes. The Pole, however, undaunted by the terrible odds against him, took up the challenge, thus to render an immense service to the western democracies. For with the first clash of arms on the Polish border, the democracies were now on guard; and, short though the campaign of conquest might be, precious months of summer and autumn must elapse—a delay which would afford the British and French forces time to fill many of the wide gaps in their preparations.

The German plan of attack, omitting aerial operations for the moment, was to apply pincers strategy with two army groups:

The Southern Army Group, consisting of three armies:

List's Army—the Fourteenth—which was to operate from the Carpathians and from the Teschen salient, to occupy Polish Silesia, take Cracow, and wheel to the right parallel to the mountains from which it would dispatch other columns as the main column moved east.

Von Reichenau's Army—the Tenth—which, starting from the area about Oppeln, was to seize Czestochowa and move on Warsaw.

Blaskowitz's Army—the Eighth—which was to start from the region east and north of Breslau, was to guard von Reichenau's left and to watch, but at the outset not seriously engage, the Poznan Group.

The Northern Army Group, consisting of two armies:

Von Kluge's Army — the Fourth — operating from Pomerania with the initial object of occupying the Corridor in conjunction with the Third Army and destroying the Polish Group in it.

Von Küchler's Army—the Third—in East Prussia, part of which was to coöperate with von Kluge while the main body, starting somewhat later, was to furnish the northern arm of the pincers.

As to the composition of the armies, von Kluge's Army seems to have contained about fifteen divisions and the other German armies eight or nine. Eight to ten of the total were mechanized or motorized. List also used some Slovakian troops, mainly on his line of communications.

Pincers strategy was to be applied not only by army groups but also by armies. Thus von Kluge and von Küchler, from west and east, were to envelop the Polish Group in the Corridor; and von Kluge and Blaskowitz, from north and south, were to deal similarly with the Poznan Group. There was one striking difference, however, between the two operations. In the first, the stroke was to be immediate, eliminating the Corridor Group at once. In the second, the stroke was to be retarded and the Poles encouraged to stand their ground until their communications with the capital had been severed.

After crossing the frontier, the German armies made rapid progress. By September 7 List was on the Dunajec at Neu Sandek and Tarnow, with his left at the south edge of the Lysa Gora. Reichenau had captured Czestochowa and Kielce, driving several Polish divisions into the Lysa Gora. Among his booty was a copy of the Polish plan of campaign, a study of which by the German High Command facilitated the solution of many of its problems and gave confidence and added speed to the further advance. Blaskowitz had forced the passage of the Warta and lay on a wide front with his right near Lodz. The Fourth Army and part of the Third had crushed the Corridor Group between them and had driven parts of it towards the Poznan Group and the rest up the Vistula towards Modlin. They were now on the Drewencz from Thord upwards. Two other columns of the Third Army, starting on the 4th, had pierced the line of the Narev at Pultusk and Rozan, and were moving on to the Bug. A few minor Polish cavalry raids into Germany had been repulsed.

The most important results of this, the first week of the campaign, were, in the south, the occupation of the rich industrial area of Polish Silesia and of Cracow; in the center, the close approach to Warsaw of the Tenth and Eighth Armies and the isolation of the Polish Poznan Group, whose communications were now dangerously threatened by the Eighth and Fourth Armies; and, in the

north, the elimination of the Corridor Group and the turning of the line of the Vistula by the Third Army.

We may now hark back to the opening operations and deal with aerial action. The primary objective of the German air force was ascendancy in the air, to be achieved in the first instance through the bombardment of enemy airdromes. Its attack was completely successful. The Polish squadrons, surprised by an invasion made without declaration of war, were for the most part on the ground. Their airdromes, accurately plotted on German maps, fell an easy prey to the hostile air fleet. Heavy casualties were inflicted on men, matériel, and ground organizations and the airdromes themselves were largely made useless by bomb craters.

On the first day, Polish headquarters reported that Warsaw and some thirty other towns had been bombed with serious loss to their inhabitants. But it would seem that the German pilots to begin with devoted their attention to military objectives and that the casualties suffered by civilians were incidental to what, hateful though it may be, is normal aerial action.

Within five days the Polish air force had practically ceased to exist. Some thirty of their machines, indeed, flew over Berlin and, on at least two occasions their airmen inflicted heavy casualties on mechanized columns. Moreover, the Polish pilots won a number of victories in single combat. These incidents were, however, few and far between. But after the fifth day Germany was in complete command of the air, to the immense advantage of her armies.

While destroying the opposing air force, the German airmen also attacked the Polish communications by road, rail, wire, and wireless, and the headquarters of the government and the army. The Polish authorities, civil and military, were driven from Warsaw on the 6th and then relentlessly pursued from locality to locality until, on September 18, they were forced into Rumania. Spies were so effective an aid in this connection that, within two hours of each change of location, the Russian wireless would announce the new address to which bombers should be dispatched.

Road and railway centers, trains, main bridges, radio stations, aqueducts, power stations, depots, assembly points for reserves, were all assailed. Bombs pursued the authorities who should issue orders; bombs exploded on the channels by which those orders should be conveyed. In the midst of a belated mobilization, the reservist was without instructions as to his destination or, if that were known to him, without means of reaching it. The commanders at the front were out of touch with Polish GHQ and were short both of the drafts which should have completed their units and of their requirements in ammunition and supplies.

The German airmen enjoyed the signal benefit which naturally grew greater with the advance of their armies, of short ranges to their objectives, a benefit which enabled each machine to make several bombing trips in a single day.

With a view to sabotage, a number of Germans were dropped by parachute. Most of them were, however, either shot in the air or killed or captured on landing. Curiously enough, some of them appear to have been dropped over big towns in broad daylight where they could not hope to escape observation.

We must now return to the doings of the armies which we left on September 7.

September 8 was an important day. List, advancing on a front of 100 miles, reached with his left Sandomierz—the Polish arsenal—and with his right, somewhat refused, the oil wells at Jaslo. On that day he extended his front by a fresh column which he sent forward through the Dukla Pass and which, on the 10th captured Sanok, thereby turning the line of the San. On the 11th he was everywhere across the San, and his left column, wheeling north marched down the Vistula.

Meanwhile, Reichemau's right wing advancing from Kielce experienced fierce resistance in the Lysa Gora where the hills rise to some two thousand feet. He was able, however, the country being open, to make great use of his aircraft and also to rush a mechanized division round the hills to take the enemy in reverse while List's column from Sandomierz threatened him from the east. The Poles, attacked in overwhelming force from front, rear, one flank, and the air, were compelled to retreat on Radom. Reichenau's center and left were now north of Rawa and, on the 8th, one of his mechanized divisions reached the Vistula thirty miles southeast of Warsaw.

On the left of the Tenth Army, Blaskowitz was engaged in a dramatic conflict. In the execution of his dual task, his various divisions were scattered over a front of two hundred miles. To the front, his armored cars reached Wola—a suburb of Warsaw. His right and center took Lodz and moved towards the line Lowicz—Kutno. His left was engaged in a fierce battle with the southern flank of the Poznan Group which, starting back on the 7th, was now in full retreat making for Warsaw through the gap between the Warta and the Vistula. Here a tremendous struggle raged for eleven days while the Poles, including many who had been driven in front of the Eighth and Tenth Armies, were gradually forced into a rectangle some fifty miles long, of which the southern and eastern sides were formed by the Bzura from Kutno through Lowicz to its junction with the Vistula, and the northern side by the Vistula itself. Parts of the Tenth and Eighth Armies, which had reached the outskirts of Warsaw, turned back from the capital to line the Bzura to the east, and thus directly block the Polish retreat. Von Kluge's whole army struck in from the west and north and completed the encirclement. The Poles were driven into an ever-narrowing compass. They made fierce efforts to break through to the east and southeast. But, held everywhere by an impenetrable fence of machine guns, they were compelled on the 19th to lay down their arms to the number of some 200,000 men. A few thousand troopers, survivors of a last desperate sortie, managed to reach Warsaw,

carrying with them a thousand German prisoners and thirteen captured guns.

Away to the southeast, the Polish group of four or five divisions, which had fallen back from the Lysa Gora to Radom, was attacked there by mechanized formations and later by the inner flanks of the Fourteenth and Tenth Armies. It endeavored to pass the Vistula at Deblin, but found the passage barred by a German column which had made a rapid parallel pursuit. On September 17 it was obliged to surrender.

In the meantime, the Third Army, part of which was taking part in the struggle for Kutno, had initiated investment of the fortress of Modlin with one column while two others passed the Bug, and succeeded in isolating Warsaw on the north and east. Away to the northeast, three fresh columns debouched from East Prussia, one of which passed the Narev at Lomza on the 11th, captured Brest-Litovsk on the 16th, and established contact on the 17th with List's left which had come up from Lublin, which it had just captured. The arms of the pincers from north and south were now closed.

We may now turn back to the southern army. When List sent most of his left towards Lublin, he dispatched one column of it from Sandomierz to join in an encircling movement against a Polish group attempting to escape northeast from Jaroslav. He sent at the same time three divisions of his left center through Jaroslav, which he captured on the 10th, towards Tomasov. These troops succeeded in heading off the Poles and driving them into the column from Sandomierz which had reached Zamosc. There again, superior equipment proved decisive, and 60,000 men with 130 guns were forced to lay down their arms. On the 16th, List's right, in spite of a reverse on the previous day, captured the fortress of Przemysl and on the 19th severed all communication with Rumania.

Thus by September 19, the German armies overrunning the country had reached a line running from the Rumanian frontier, past Lvov on the west, thence north to the Bug, along that river to Brest-Litovsk and on to Bialystock and Suvalki. There were nevertheless a number of Polish divisions still uncaptured, some of which, had it not been for the Russian invasion, would probably have united and prolonged resistance in the Pripet marshes, thereby compelling Germany to maintain a considerable garrison in Poland.

We may now revert to the operations around Warsaw.

Although, on the 19th the Polish armies had ceased to exist and Gdynia had fallen, the Capital, the Fortress of Modlin, Lvov, and the little port of Hela still offered resistance.

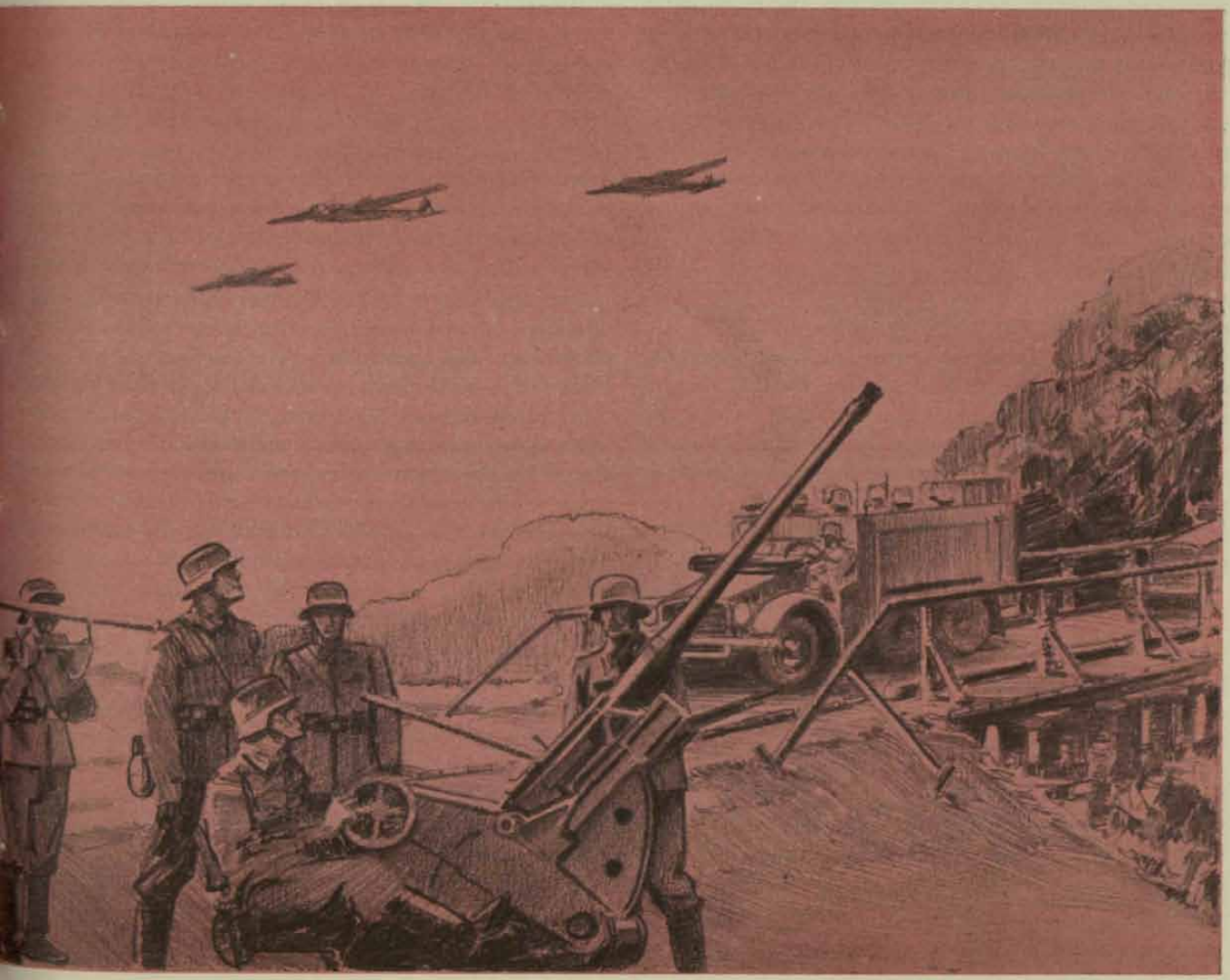
Modlin, it will be remembered, was reached by troops of the Third Army as early as September 6. Owing, however, to the strong resistance offered by the Poles along the connection with Warsaw by the Vistula, it was not completely isolated from the capital until the 21st.

On the 16th, the Germans demanded the surrender of Warsaw; but General Czuma, the commander of the garrison, refused to receive the parlementaire, or even the written message. German aircraft then dropped leaflets over the town demanding its surrender within twelve hours and stating that, should the demand not be accepted, Polish inhabitants would be allowed a further twelve hours in which to quit. Then Warsaw was to be treated as a war area; shelled by guns and bombed by aircraft. The Germans make the claim (which the Poles dispute), that, not before the 25th when their patience was exhausted by Czuma's obstinacy, was their fire turned from purely military objectives onto the town itself. On that day, they entered two of the outer suburbs and, two days later, captured part of the inner ring of forts (if Warsaw can seriously be said to possess forts).

That was the beginning of the end. On the 28th, only after the Polish field army had long ceased to exist, when the capital lay largely in ruins, when starvation was rife, and when the aqueducts and the power stations were destroyed, did the garrison surrender. The defense of the capital was worthy of the Polish tradition but from September 19 it ceased to have any considerable military value. On the other hand, a lengthy defense of Warsaw, knot as it was of many communications, would have been of immense value to an "army in being" fighting on the Bug or based on the Pripet marshes.

According to a German report, out of 17,000 buildings in Warsaw, 13,000 were demolished or burned. Simultaneously with Warsaw, Modlin, garrisoned by 30,000 men, also surrendered. Lvov had fallen on the 22d, and, last of all, on October 2, Hela, the little port north of Danzig, capitulated with 4,000 men.

The campaign on the ground being ended, we may now return to the doings of the dominant air force. The German mind works with ruthless logic. What was the most profitable employment of aircraft—bombardment of



towns to break the civil will to resist, or the attack of military objectives? There were no congregations of humans in Poland so dense that their bombing was likely to prove decisive. The Germans had, moreover, no desire to damage industrial areas, as they wished to acquire them for their own purposes. On the other hand, the attack of military objectives—the enemy's headquarters, air force, and communications—which had been located and were easily attainable, might well lead to their early defeat. Once, however, these aims had been achieved, that part of the German air force not directly assisting the army seems to have been directed to the destruction of civilians, with a view no doubt to finishing the campaign before the advent of unfavorable weather.

It is admittedly difficult to distinguish between military and non-military objectives. Bridges and railways, important features of lines of communication, are usually in large towns. Again, a city such as Warsaw, which definitely accepts siege, may legitimately be bombed and shelled after due warning. But towns and villages of no military importance were bombed, and hapless refugees attacked with machine guns from the air by pilots flying low to the ground.

The Germans seem to have employed between 2,000 and 3,000 machines of which perhaps two-thirds were bombers. Apart from the indirect support which they afforded to the army by the elimination of the opposing air force, by reconnaissance and by the destruction of enemy communications, they gave valuable direct support to the other arms in battle by raining bombs and bullets on whatever was at the moment holding up the advance of the tanks and infantry, concentrating their fire on centers of resistance and breaking up counterattacks before they were fully developed. They naturally found wonderful targets in an army containing a large proportion of cavalry and supplied mainly by horsed transport.

It cannot be said that the German air force played the decisive rôle, for alone it could not have brought the war to a conclusion. But in the execution both of its strategic and tactical tasks, both on its independent missions and when combined with the army on the field of battle, it exercised an influence difficult to overestimate, and was largely responsible for the swiftness and completeness of the victory achieved.

German Strategy

The German High Command may be awarded the palm for its strategy. It found indeed no unexpected obstacles to conquer, and it met with none of the vicissitudes of fortune ordinarily encountered in war, except that the armies were able to move more rapidly than anticipated owing to perfect weather and to the fact that the rivers—the one defense of Poland in the summer—were at levels lower than any previously recorded, and thus could often be crossed without bridging, by forces both mechanized and afoot.

As expected, the Germans applied pincers strategy in the great salient and in all three minor salients. They began with the Corridor and Teschen salients. These taken, the Third Army launched its main columns towards Warsaw with intent both to turn the line of the Vistula and, in combination with the Eighth and Tenth Armies, to bite inwards on Warsaw. A week later, again timing the operation with remarkable accuracy, it widened the scope of the pincers, launching a column through Lomza towards Brest-Litovsk in order to turn the line of the Bug, whilst List, sending a column through the Dukla Pass to turn the line of the San, wheeled north with his left to meet the troops from East Prussia.

The most artistic stroke, however, was that which gathered the whole of the Poznan group into the Kutno net. Just enough pressure appears to have been exerted on its front by the inner flanks of the Northern and Southern Army Groups to keep it interested but not anxious; and so it was persuaded to retain its forward location until the net was ready. Its commander was of course heavily handicapped by the severence of communications, by the departure of GHQ from Warsaw and by the early subjection of the Polish air force.

It is to be noted that the Germans refused to be attracted by the lure of Warsaw until they had completed the defeat of the hostile armies. They might have invested it much earlier than they did; but they preferred in the first place to deal decisively with the hostile armies at Kutno, Radom, and Zamosc.

Mobility played the usual preponderant part. The German infantry, marching and fighting, covered eighteen miles a day for the greater part of the campaign—a feat due to good leadership and staff work, to the foot soldier's endurance and to his immunity from air attack. The result was that the Pole once beaten was kept ever on the move.

The employment by the Germans of mechanized and motorized forces is interesting. They appear to have undertaken with them no far-reaching independent operations. Often for a particular purpose, such as surrounding the Poles at Radom and Czestochowa, they might be dispatched say forty miles, ahead of the marching divisions. But, having accomplished a specific task, they would then either rejoin the infantry or await its arrival, before bounding on to fresh adventure. That is to say, the army commanders kept them firmly on a leash, which though elastic was strong, and ensured that they were always present when decisive actions had to be fought.

Nevertheless, in spite of being denied long-range strokes, their supply presented grave difficulties. So much so, that in the fighting around Lodz the Poles captured 100 tanks immobilized owing to lack of gasoline. And at the close of the campaign, three armored divisions far to the east of Warsaw were brought to a complete and lengthy halt from the same cause. Had it not been for the Russian invasion, they might all have fallen a prey to roaming Polish formations.

Some of the success of the German armored forces may be attributed to the assignment of engineers to every mech-

anized unit and formation. These troops and the pioneers of the infantry received special training in the art of making smooth the path of the tank by the removal of obstacles and mines and the quick laying of bridges.

A new feature of the mechanized army was the radio propaganda truck which accompanied the columns and issued cheering news to the Germans and disheartening news to the Poles telling the latter repeatedly of their defeats and that they had been shamefully betrayed both by their own government and by the French and British governments.

Owing to the immense disparity, both in numbers and equipment between the adversaries, no real light was thrown in the campaign on the central problem of modern war: namely, how to advance without disproportionate, if not disastrous, losses against a defensive which has of late years been greatly strengthened. In 1918, the combination of tanks with fire from surveyed gun positions proved sufficient to overcome the holding power of machine guns. Since those days, however, the power of artillery does not seem to have made an advance comparable to that effected in the domain of fortification. Moreover, figures of machine guns have been trebled. And now, forming part of the normal equipment of a modern corps, antitank guns by the hundred and antitank mines by the tens of thousands have been introduced and are thought to have greatly curtailed the penetrative properties of the tank member of the successful combine of 1918. Naturally, the powers of attack, striving ever to master the defense, have also been enlarged in a variety of ways, so that a struggle between evenly matched opponents would have been interesting and instructive. Unfortunately, the many weaknesses, already described, of the Polish defense, especially in aircraft and antitank equipment, rendered the struggle a foregone conclusion.

The favorite German strategy of double envelopment, leads to concentration at the decisive point only if it is applied to an opponent suffering from indifferent leadership, lack of mobility, or poverty of communications. Had the Poles been ordered to withdraw early and had they possessed the means of rapid transport, they might have retired to the various river lines while successive pincers were biting upon thin air. It would be incorrect, however, to suggest that, for this reason, the strategy of the Germans was faulty and independent of fortune. Their high command knew that the Poles lacked mobility owing to their dependence on horsed transport, and by bombing Polish GHQ and destroying communications they made as certain as is humanly possible that the pincers would in fact bite on something substantial. Moreover, the strategy of envelopment, even if it should fail in its preliminary strokes, was almost bound, in the absence of a Polish hinterland, to be successful in eventually concentrating the German Army in a favorable position either for attack or for pinning the Poles to the Pripet marshes.

Security of the marching columns appears to have been entrusted to the protection afforded firstly by the deep and wide reconnaissances of aircraft and armored cars; secondly, by the general convergence of movement; thirdly, by the forward positions of mechanized forces; and fourthly, by the strong and tactically complete motorized reconnaissance battalions which formed part of each corps.

The Germans were clearly surprised themselves at the rapidity and completeness of their victory. On September 3, Hitler proclaimed that the "battle in the east will have reached its successful conclusion in a few months," and, on the 11th, the German communique uttered the warning that "the German people must understand that our troops cannot be expected to maintain the surprising speed of their advance."

Nevertheless, they were always ready to draw full profit from success however great and however unexpected, and that is a quality of leadership and training of inestimable value.

The German army and air force seem to have acted in closest combination under a single will. Nothing could have been more advantageous to the army than the liquidation of the Polish air force and the destruction of the Polish communications. But, those independent tasks once fulfilled, the air force had to devote most of its powers to the direct and close support of the army. It is indeed difficult to see how an army and an air force can produce full value except under a single direction; still less, how a navy, an army, and an air force can operate effectively in separate compartments. Germany has many faults, but she examines military problems with a single eye to efficiency, which she will allow no vested interests to impair.

German Tactics

In a blitzkrieg, with the rapid surge of events, the eyes of onlookers are concentrated rather on strategy than on tactics. The daily communique proclaimed the nature of the former. As to the latter, the victim has been to a great extent silenced; and it is contrary to reasonable expectation that the victor, about to be embroiled in another struggle, should divulge any of the secrets of his success that he could possibly withhold from the world.

The student is, therefore, forced to make deductions from an accumulation of hearsay, from the prevailing conditions of battle, from the organization, equipment, and current doctrines of the opposing armies and from the close connection between tactics and strategy imminent in rapid and triumphal progress.

So far as these slender sources are reliable, it appears—

(1) That the infantry attacked—much as in 1918—in great depth with unlimited objectives of which the first would be the destruction of the hostile artillery; that it was afforded full support, where necessary and available, from every kind of covering weapon—airplane, gun, tank, mortar, heavy machine gun; but that every subunit, however small, was expected to advance if necessary under its own fire, were it only that of the light machine guns and the platoon mortar. That the enemy's resist-

ance was disintegrated by infiltration when occasion demanded. That touch was kept rather with the enemy than with friendly troops on the flanks, without thought of relief until relieved. That delay was considered more blameworthy than second-best action. That command was widely decentralized to admit of the initiative of junior subordinates. That pursuit was conducted with "audacity and brutality" up to the peak of endurance.

(2) That, where the enemy appeared to be very strongly posted, direct assault was usually avoided until it was clear that pressure on the flanks exercised either by mechanized units of the attacking formations or by other formations, was becoming operative. That, at times, if the Germans did not like the look of a position, they sidestepped and attacked elsewhere — a procedure hardly feasible unless the enemy has lost the power of counterattack.

(3) That the Germans probably employed the majority of their four fast motorized divisions and six armored *(panzer)* divisions, distributed among the various armies, as the spearheads of attack; and with these aided only by combat aircraft, often broke the resistance of an enemy inadequately equipped to deal with such assailants, thus enabling the following infantry to cover great distances unimpeded by the need of fighting.

(4) That the tank advance was made by bounds, each bound being limited to the distance required to keep penetration open. Even so, it was clear that given an adequate supply system and a superiority in mechanized forces after effecting a break, penetration can be exploited much more effectively and rapidly than was the case in 1918.

(5) That, General Guderian, Chief of the German mechanized forces, having recently proclaimed "that antitank defense being now so powerful the primary rôle of tanks is not to put the enemy's infantry and machine guns out of action, but rather to silence his antitank weapons, overcome tank obstacles, and then destroy his artillery and tank reserves, and that only when these tasks are accomplished, are tanks using their rear echelons, to devote their attention to mopping up the zone occupied by the infantry," it is probable that the panzer divisions, which contain a liberal number of supporting weapons of their own, endeavored in many cases not only to breach, but to make a complete penetration of the enemy position.

This procedure differs from that commonly recommended in other modern armies. It possesses the great advantage, where it is successful, of anticipating enemy attempts to bring up reserves and fill the gaps created by the initial attack. The action in depth would naturally be followed by action to the flanks intended to widen the breach. No method is, however, free from dangers. The infantry under attack may go to earth and pop up again to deal with the opposing infantry as soon as the armored divisions have passed on. Moreover, the latter, without the gun and machine-gun support with which they started, might easily run into field and antitank guns, distributed in depth and undiscovered, and suffer heavy casualties from them.

(6) That where such action appeared unduly to endanger infantry or where panzer divisions were not available, tank units (on the lines of our battalions of I-tanks) outside the composition of mechanized formations, accompanied the infantry, the joint advance being covered by artillery and by aircraft, the latter often dropping large numbers of small bombs in enfilade of the trenches.

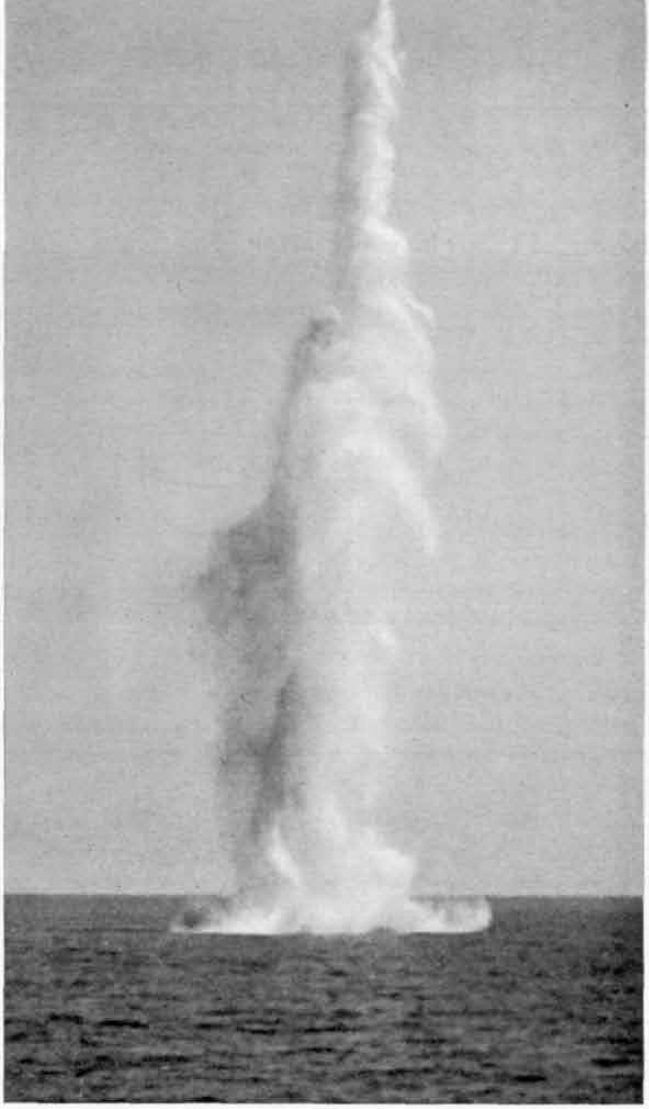
(7) That motorcyclists, shielded to the front from machine-gun fire, moving rapidly in dispersed formation and thus affording difficult targets to other forms of fire, were employed for the attack of antitank guns.

(8) That supporting artillery could but seldom have found the time to adopt survey methods but must have ordinarily been ranged by direct observation, ground or air. That quick opening of fire was considered of more importance than accuracy.

(9) That the problem of covering the last 300 yards, in which the fire of supporting machine guns has to cease and that the artillery to lift, was solved largely by the use of the platoon mortar and by the platoon of six 3-inch mortars in the machine-gun company of the battalion.

(10) That the tactics employed in the First World War by von François, for instance, at Tannenberg and by the British in the last phase of the campaign in Mesopotamia, of placing the immense strength of the defensive weapons at the service of offensive strategy, were repeated on a vast scale at Radom, Kutno, and Zamosc, thanks largely to the successful use of engined forces, and are likely to find further repetition wherever open warfare prevails.

The Germans achieved their victories under the most favorable auspices, namely, a superior preparation, surprise for their aircraft, perfect climate and terrain for their mechanized forces and a great scarcity of hostile weapons capable of countering the armaments in which their superiority chiefly lay. It is unlikely that such conditions will recur either in their entirety or in the immediate future. Rather, it seems that the rapid movement of armies will be replaced by a period of stalemate. Nevertheless, that period will have a limit. It is as certain as anything can be in war that attack will in due course conquer defense in spite of elaborate fortifications. Brains are working ceaselessly at solving the problem just as they were in 1915; and, as a result of their labors, we may see monster tanks or stupendous mines or strange gases, or perhaps some entirely new development of warfare. For years, it has been proclaimed that the defense is invincible; yet, in succession, we have seen the assailant win through in Abyssinia, in China, in Spain, in Poland, in Finland, under a great variety of circumstances. In none of these countries, indeed, were the opponents equally matched in numbers and equipment as they are at the moment in western Europe, nor were they for the most part fully provided with modern armaments. The final test of defense lies therefore still ahead. Should it be successfully pierced, open warfare may be renewed and then some of the lessons learned in Poland may find a useful application.



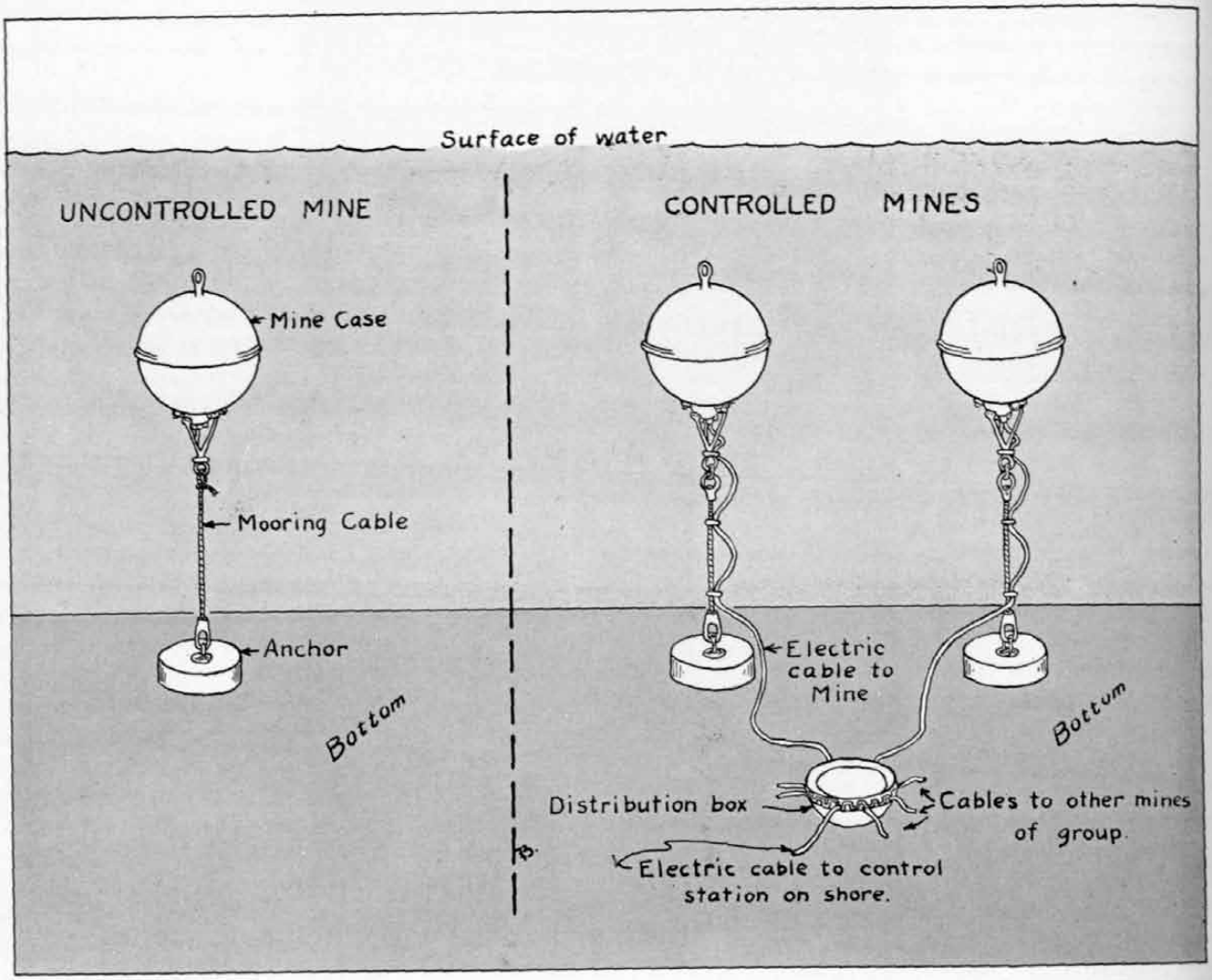
THE USE OF MINES IN NAVAL WARS

By Lieutenant Colonel E. M. Benitez, Coast Artillery Corps

Less than twenty-four hours after the announcement of the location of mine fields along the west coast of Norway by the British on April 9, war spread into peaceful Scandinavia. The German reply was the seizure of Denmark and the prompt invasion of Norway. These important events which may have tremendous importance upon the outcome of this war, serve to emphasize once more the important rôle that submarine mines have always played in naval wars.

The submarine mine is an *American* invention first used in the Revolutionary War by the Americans against the British fleet. Previous to this date surface charges had been used by the Dutch against the Spanish at the siege of Antwerp in 1585, but it was David Bushnell, a young graduate of Yale College, who demonstrated the use of submerged mines in 1777. Twenty years later, Robert Fulton, the inventor of the steamboat, followed up Bushnell's experiments. Fulton's "torpedoes" were at that time considered unchivalrous, unfair, "underhanded," and against the laws of war and the weapon was rejected by both the French and the British.

The American Civil War saw the extensive successful employment of this weapon, particularly by the Confederates. Mines consisted mostly of powder-filled beer kegs, demijohns or other similar containers and were far from being perfect. Farragut gained immortality at Mo-



THE TWO MAIN TYPES OF SUBMARINE MINES

The uncontrolled mine has no shore connection and fires upon contact. The controlled mine may be set from shore for direct contact fire, delayed contact fire, or may be fired by the observation method.

bile Bay on August 5, 1865, with his "damn the torpedoes, full steam ahead," when he led his flagship—the *Hartford*—right through the Confederate mine field; then it was a daring feat accomplished by a great admiral; today it would be a suicidal enterprise.

The Russo-Japanese War (1904) brought out forcibly the potentialities of submarine mines, both as an offensive and defensive weapon. The mines planted in the approaches of Port Arthur by the Russians defending that fortress, as well as by the Japanese in their blockade of the Russian fleet, produced considerable and unexpected losses in both fleets, as follows:

RUSSIA

Vessels sunk	*Vessels damaged*
Dreadnaught *Petropavlosk*	Dreadnaughts *Pobieda* and *Sebastopol*
Cruiser *Boyarine*	Cruisers *Bayan* and *Bromoboi*
Transport *Yenissei*	Torpedo boats *Silnyi, Hditelnyi, Bezshumny,* and *Razyastchy*
Gunboat *Gremiatschi*	
Torpedo boats *Vynoslovyi* and *Stoinhi*	

JAPAN

Vessels sunk and damaged.

Dreadnaughts *Hatsuse* and *Yashima*
Cruisers *Akashi, Chiyoda, Takasago, Myrako, Hei-Yen,* and *Sei-Yen*
Gunboat *Kaimon*
Destroyers *Hayston, Akatsuki, Harusagma,* and *Oboro*
Torpedo boats *Nos. 38, 48, 66.*

The Russians had planted a large number of mines in front of Port Arthur, leaving a channel for the safe passage of their ships. The wily Japanese discovered this and, favored by darkness and rain, proceeded to plant mines therein on the night 12-13 April. One of these mines sank the *Petropavlosk* the following morning with Admiral Makaroff and 600 men on board. This great leader had succeeded in instilling some vigor and energy in the decadent and demoralized Russian fleet and his loss at this critical time was fatal to the Russians.

The results produced by mines during the course of this war were very striking because of the small charges used. The Russian mines, for instance, had three different

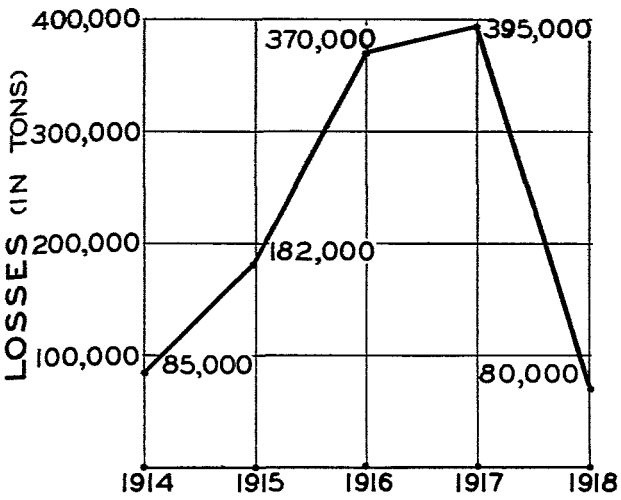


Chart 1: Tonnage sunk by German mines during the World War, 1914-1918.

charges of cotton powder as follows: thirty-two, forty-eight, or sixty-four kilograms[1], while the maximum charge of the Japanese mines did not exceed forty kilograms.

The rôle of mines in the Italo-Turkish War of 1912, as well as in the Balkan War of 1912-1913 was insignificant owing to the lack of naval power of the antagonists.

The World War 1914-1918

Germany's unrestricted mine-laying, like her unrestricted U-boat campaign, was a feature of the first World War. German submarines began to be used for mine-laying in 1915, their mines being first discovered off South Foreland on June 2, 1915. These mines were laid by small U-boats, which were equipped with twelve cylindrical mines charged with 350 pounds of TNT. The mine, dropped with its sinker to the bottom, was equipped with a device that released it from the sinker about half an hour later, thus giving the submarine time to get clear.

Later on, larger submarines of greater radius of action, carrying eighteen mines each, were constructed. Still later on the German submarines, series *U 71-80*, carried thirty-four mines each, while the series *U 117-126* carried forty-two mines each.

Altogether, the Central Powers planted about 50,000 mines which were responsible for the loss of nearly 600 ships, not including fishing vessels, representing about 1,115,000 tons, as shown on Chart No. 1.

According to the statistics furnished by Germany after the war in accordance with the provisions of the Treaty of Versailles, the total number of mines planted by German vessels alone were as follows:

Year	*Flanders Flotilla*	*High Seas Flotilla*	*Mediterranean Flotilla*	*Baltic Sea Flotilla*	*Total*
1914	36	2,293	60	992	3,381
1915	1,424	2,705	72	2,635	6,836
1916	2,260	440	628	6,075	9,403
1917	4,473	3,956	1,274	3,547	13,250
1918	1,614	7,587	933	1,125	11,259
Total	9,807	16,987	2,967	14,374	44,129

[1]One kilogram equals 2.2 pounds.

It is estimated that the Allies planted over 160,000 mines during the course of the war. One of the outstanding feats of the American Navy during the World War was the Northern Barrage. This daring undertaking played such an important part in the World War 1914-1918 that it will be described in detail.

On April 15, 1917, the United States submitted the proposition of establishing an anti-submarine barrage 250 miles long, inclosing the North Sea and extending from the east coast of Scotland to the Norwegian coast. This, together with a short barrage across the Dover Straits, would shut off access to the Atlantic, or at least make the continued operations of enemy submarine mines exceedingly hazardous and unprofitable. The project consisted of a barrage of nets, anchored mines and floating mines, to operate from a depth of from thirty-five feet to 200 feet, which while safe for surface craft, would bar a submerged submarine, while patrols could deal with those running on the surface.

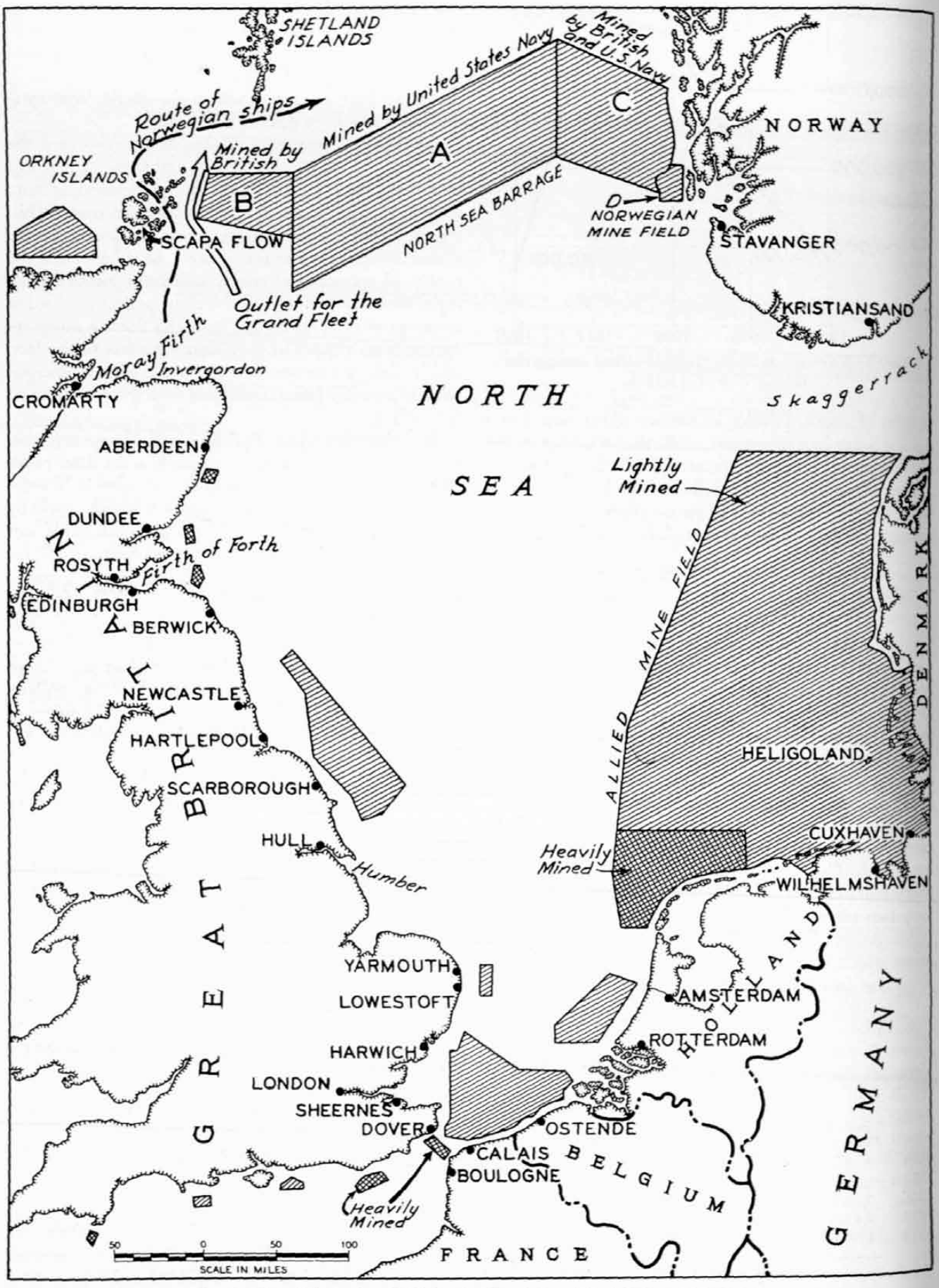
This gigantic project required a total of approximately 100,000 mines which were not available at the time. However, material was commenced to be assembled in November, 1917, and the project was begun in March, 1918, by the British, and by the Americans in April. This vast mine field was divided into three parts as shown on Map 1.

The first part was fifty miles long and extended from a point ten miles east of the Orkney Islands. The depth of water in this area was from fifty to eighty fathoms. The barrage consisted generally of nine lines of U. S. mines dangerous to surface craft and to submarines at periscope depth; three lines of U. S. mines at a depth of 160 feet, these mines having a dangerous area above the mines of seventy feet; three lines of U. S. mines, at a depth of 240 feet with a similar dangerous area.

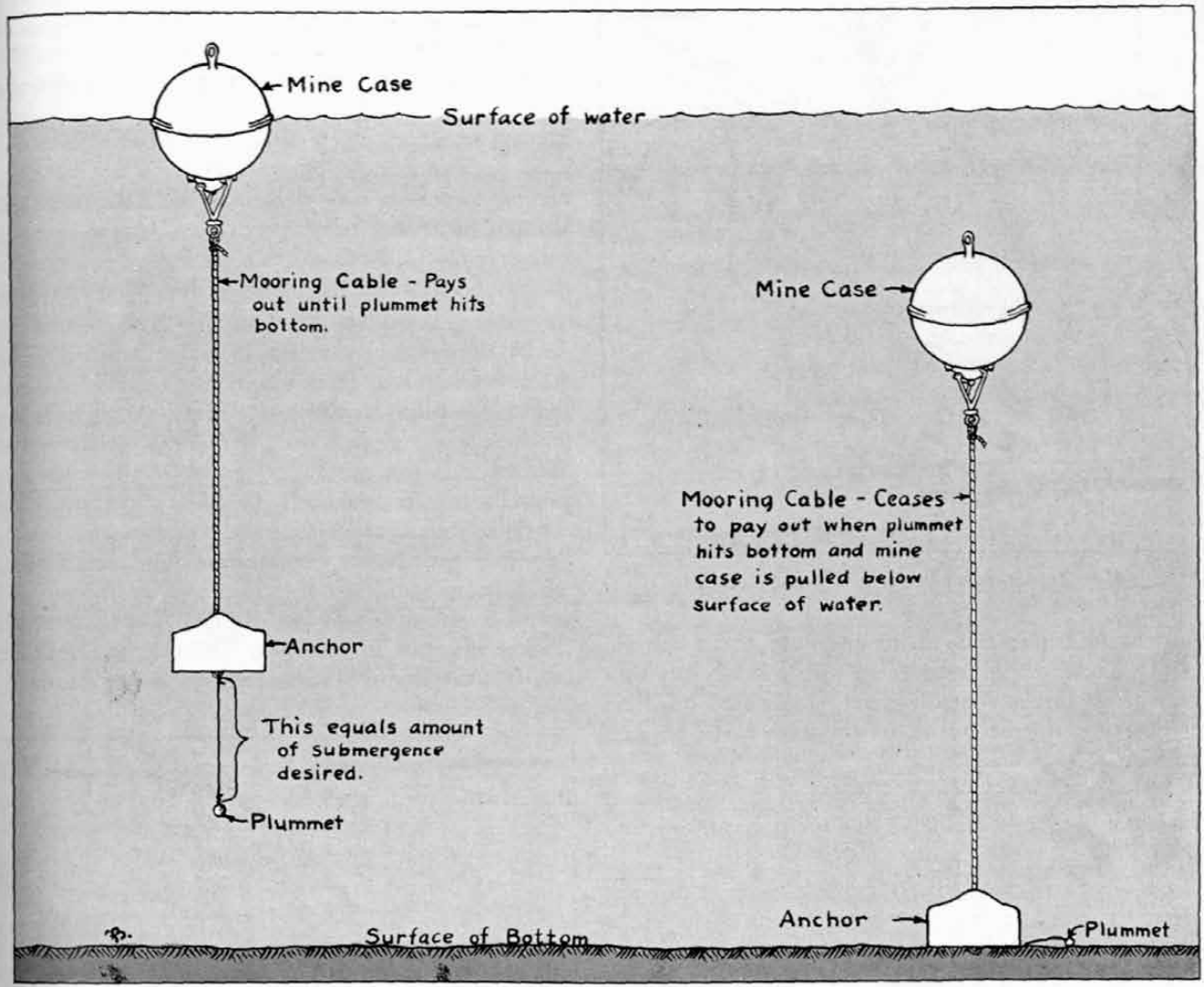
The intermediate section was 130 miles long, with the depth of water varying from forty to seventy-five fathoms. There was one line of British mines dangerous to surface craft; one line of British mines at ninety-five feet; eight lines of U. S. mines, dangerous to surface craft and to submarines at periscope depth; two lines of U. S. mines at 160 feet deep, having a dangerous area above mines of seventy feet; two lines of U. S. mines, at a depth of 240 feet, with a similar dangerous area.

The third section was sixty miles long with the depth of water from sixty-five to 160 fathoms. The following lines of mines were laid across the area: Two lines of British mines dangerous to surface craft; two lines of British mines at sixty-five feet; two lines of British mines at ninety-five feet; two lines of British mines at 125 feet; four lines of U. S. mines dangerous to surface craft and to submarines at periscope depth. Six lines of U. S. mines, dangerous to surface craft and to submarines at periscope depth were laid across the junction between areas "A" and "C."

There were no free gates in the barrage, with the exception of a passage through the ten-mile gap at its western extremity which, however, was used only in case of emergency.



Map 1: The Allied mine fields in the North Sea, World War, 1914-1918.



A METHOD OF PLANTING MINES

The diagram shows one method of planting mines when the bottom is very uneven or soundings cannot be taken. The automatic anchor pays out the cable until the plummet strikes bottom. The mine is then carried down a distance equal to the length of the plummet line.

The barrage was not patrolled.

Of all the anti-submarine measures taken by the Allies, mines were by far the most dreaded by the German submarine personnel, principally because there was nothing to indicate their presence.

The question of patrols to guard the mine field and force submarines into the deep mines, thus destroying those which had not been completely disabled was discussed from the very beginning, but no definite agreements were ever reached.

The Allied Naval Council approved on July 23, 1918, certain fundamental principles for mine operations as follow:

(1) Both ends of a mine barrage should rest in own territorial waters to avoid the necessity of special military operations. When military sources are available both ends of a mine barrage should rest in waters under military control from the shore.

(2) Both ends of a mine barrage should be secure against raiding operations, so that any possible military advance of the enemy will still leave the barrage effectively intact. If the enemy holds shore ends, he can sweep a channel safe for submarines under cover of shore patrols.

(3) Barrages should exclude submarines from operating areas. Barrages should be as short as possible on account of the scarcity of available mine material.

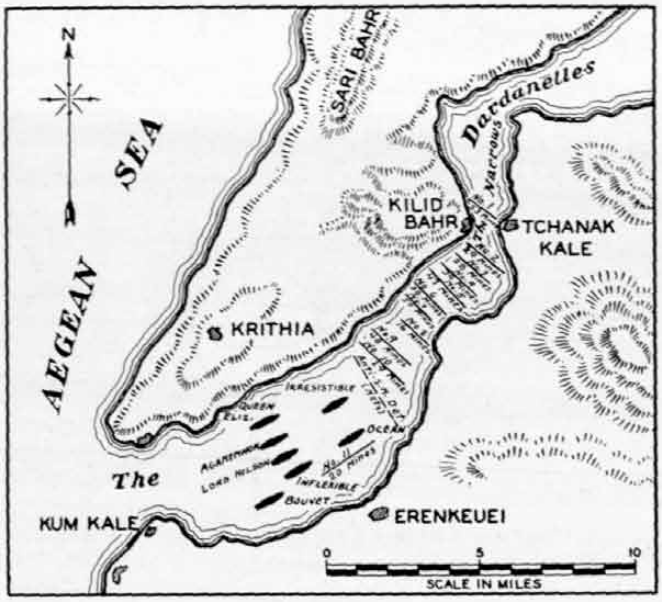
(4) No enemy submarines should be able to gain the sea, except via the hazard of a mine barrage.

(5) A mine barrage extending to the surface is much more effective than any patrol can be, since it watches day and night, in good weather and bad, with equal efficiency.

(6) No deep barrage is effective unless it is thickly patrolled.

(7) Whenever a barrage to the surface is laid, the surface part of the barrage should be densest, because submarines prefer to navigate on the surface, and will dive only when their mission requires them to do so.

(8) When a surface anti-submarine barrage is laid, it should invariably be superimposed on a deep barrage, to



Map 2: Action of mines at the Dardanelles.

prevent submarines from diving under the surface barrage.

(9) There should be a secure harbor in advance of a barrage, so that any enemy naval raiding force reaching the barrage may be cut off by the force based on such harbor.

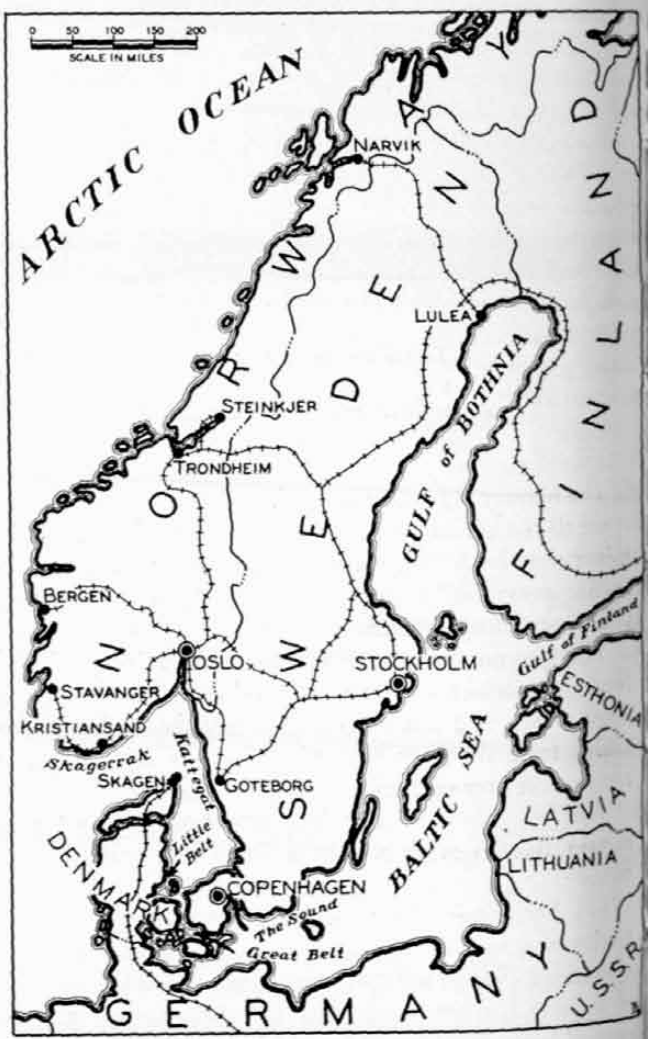
Mines have altered the whole course of a campaign, and no better historical example of this assertion can be found than the ill-fated Dardanelles campaign.

On March 18, 1915, the Allied fleet made its supreme effort to force the Strait by naval means alone, to be checked by the Turkish mines planted in Karalynk Bay. See Map 2. Let us quote from the Turkish Official Report on the naval action of March 18:

"By two o'clock in the afternoon our situation had become critical. The defenses of Tchanak Kale and Kilid Bahr were under fire, all telephone lines had been cut, communication with the forts had been completely interrupted, some of the guns had been knocked out, others were half buried; others again, were out of action with their breech mechanisms jammed. In consequence, our artillery fire had slackened considerably. At this moment, an enemy torpedo boat was sunk in front of Erenkeuei, struck by a howitzer shell, and the *Bouvet* went down struck by a mine. At this, the French cruisers fell back and six English cruisers of the second line took their places in combat formation. The *Irresistible*, that had advanced from the mouth of the Strait to the interior, struck a mine and was disabled at 4:30 P.M.; shortly afterwards, the *Ocean* which was following it shared the same fate. The *Inflexible*, after having been hit several times, was compelled to fall back at the same moment; the *Agamemnon* had been struck by our projectiles several times. It was evident that the entire fleet had suffered a reverse. It left the Strait abandoning the *Irresistible* and the *Ocean*, which could not be moved and both sunk in the darkness of the night. After this costly operation, the enemy gave up the idea of a purely naval attack and never again entered the Strait."

Immediately after the disaster of March 18, Admiral de Robeck reported to the Admirality: "Squadron is ready for immediate action, except as regards ships lost and damaged, but it is necessary to reconsider the plan of attack. A method of dealing with *floating mines* must be found." Admiral Guepratte telegraphed the Commander of the French Navy: ". . . In short, in this intense artillery duel, the advantage would have gone to the Allied fleet, if the sly action of *mines* had not destroyed the equilibrium."

Had the Allies been able to force the Dardanelles, vast quantities of wheat from South Russia could have been exported to Allied countries, while Russia could have been provided with the munitions that she so sorely needed. With Turkey defeated, there would have been no campaign in Palestine and Syria, Bulgaria might have joined the Allies instead of the Central Powers and possibly the Russian debacle of 1917 would have been averted. Summing up, to realize the importance of this operation, it would be sufficient to quote Admiral von Tirpitz, who frankly writes in his *Memoirs:* "Should the Dardanelles fall, then the World War has been decided against us."



Map 3: Baltic area, showing strategic points.

The Second World War 1939-19–

Mines have been particularly destructive in the current war. According to the April issue of the British *Army Quarterly*, the number of ships reported sunk by mines in December, 1939, were thirteen British and eighteen neutral and in January, 1940, six British and twelve neutral. How many of these losses were due to "magnetic mines" is not known.

The first authentic description of the "magnetic" mine is given by the *Illustrated London News*, March 9, 1940. One of these mines was, according to reports, dropped on land by mistake, was found and taken apart, at the risk of his life, by Commander J. G. D. Ouvry of H.M.S. *Vernon*. The mine resembles an aerial bomb, is eight feet long, two feet in diameter and weighs approximately 1,200 pounds. The case is of light non-magnetic metal of the Duralumin type, and in the forepart is packed 650 pounds of high explosive. The middle section contains the firing gear, and the rear portion, completely detachable, a parachute. The mine is designed to fit inside the torpedo chamber of the German standard torpedo carrying seaplanes.

The mine has to be dropped by parachute to break the shock of its striking the water, which might damage its delicate mechanism. When the mine is released the parachute opens and supports it as it descends to the water; the mine then sinks and rests on the sea bed. Inside it, a weight keeps the section containing the electro-magnetic apparatus in such a position that the magnetic needle is always uppermost and in its true operating position. This apparatus becomes "live" by means of a hydrostatic device, which functions when the mine is immersed. When a metal-hulled ship passes over it, weak magnetic fields from the hull attract the magnetic needle upwards. The needle closes an electric circuit which operates electric relays, and these complete a firing circuit which in turn fires a detonator and the high explosive.

Magnetic mines may be laid from the air by parachute, by U-boats or from a seaplane temporarily resting on the surface of the water. The mine can only be laid in shallow waters (not over fifty-sixty feet deep) such as abound in the North Sea. It remains inactive until a metal ship passes over or near it. Magnetic mines are more dangerous than ordinary mines because, being unmoored, ordinary mine-sweeping devices do not touch them.

Soviet-Finnish War

In the Soviet-Finnish War, the Russians are said to have dropped parachute mines from bombing planes around the channels at the entrance to the Gulf of Bothnia.

German Mine Barriers in the Baltic, Current War

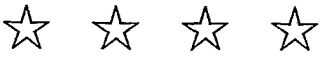
In this war, again, mines have demonstrated their power. Germany has mined the entrances to the Baltic making it extremely dangerous (Map 3), if not altogether impossible, for the British fleet to force a passage through those dangerous inlets. Any intentions of sending forces to the relief of Finland by the Baltic route had to be given up. The Baltic is today a German lake, as Admiral Pratt says, "sealed by *mines* and held by air power."

Conclusion

Prior to her entry into the World War, the mine force of the United States Navy included only two mine-layers fit for the North Sea barrage project—the *San Francisco* and the *Baltimore*—with a combined capacity of 350 mines. In less than one year, the United States was able to construct a mine-layer squadron and design and manufacture sufficient mines to keep it constantly employed, laying on each excursion, in less than four hours, more mines than the United States had ever possessed before.

It is reported that the British have perfected a mine-laying device by means of which a mine-planter can lay mines at the rate of 720 per hour. These quick mass-mining operations will furnish a powerful weapon which threatens to render harbors useless and may prove to be the Allies' answer to the Nazis' magnetic mine and submarine blockade.

In the mass of conflicting reports it is impossible to draw any definite conclusions at this time. In 1914, the mine proved to be the most efficient weapon against the enemy's submarines. As we have seen, in all past naval wars, from the eighteenth century to the present time, the submarine mine has played a predominant rôle, increasing in importance as it is being perfected and developed. Enough has occurred in the current European War to justify the belief that submarine mines have again proven to be one of the most feared and powerful weapons ever employed by man in war.



NEW ORLEANS

Grand Finale to the War of 1812

By Lieutenant Colonel A. C. M. Azoy
Coast Artillery Corps Reserve

From the painting in the Library of Congress

The so-called "War of 1812" between the young United States and old England made several unique contributions to our country's history. It produced a decisive naval engagement fought on an inland lake, it gave West Point its distinctive uniform, it saw our capital invaded and burned, and the last battle of the war was fought and won fifteen days after peace had been declared.

Unusual as was this last circumstance, it becomes somewhat less surprising when it is remembered that Andrew Jackson was mainly responsible for it. This lanky, hard-bitten product of South Carolina was never one to sidestep a fight and if there is anybody on our national honor roll who, above all others, Fate could have picked to wage a battle because she thought a battle ought to be waged and irrespective of other considerations, Jackson was that man.

When Jackson was a boy of thirteen he had witnessed the unedifying spectacle of General Horatio Gates and his staff flying from the Camden battlefield, and from that time on his patriotism was highly militant. He served eight years as a judge, he went to Congress, and at thirty-seven he was appointed a major general of the Tennessee militia. Jackson moulded his undisciplined horde of mountaineers and backwoodsmen into an organization so dependable that when war with Great Britain was declared in the summer of 1812, he could advise the War Department that his 2,500 sharpshooters were ready to take the field, and could take Quebec in ninety days. But Secretary of War Armstrong was not favorably disposed towards him, and the Tennessee commander received no active duty orders.

The lethargic General Dearborn got the job instead, and nine months went by before he was ready to start. Hull meanwhile had surrendered Detroit, and Vice-Admiral Sir Alexander Cochrane with 10,000 of Wellington's veterans had started on an expedition that would capture half of Maine, seize Nantucket, despoil Cape Cod and nose its way into Long Island Sound. New York became hysterical and New England was all for seceding.

In this crisis two of Jackson's regiments were ordered north but he was pointedly omitted from the move. Then General William Henry Harrison resigned from the army, and to fill the vacancy the federal rank of major general, U. S. Volunteers was reluctantly offered Andrew Jackson who seized it with the expectation of immediate service at the front. Vain hope. He was commanded to join Wilkinson at New Orleans, and although he shared the national distaste for that marplot he started south without delay.

At Natchez the War Office snubbed him again with orders to disband his command at once. The "thanks of the President" accompanied this fresh blow but these did not compensate for the lack of funds, transportation and supplies to take his soldiers 800 miles back to their homes. Therefore Jackson calmly ignored the portion of his directive that called for immediate demobilization and headed his columns north again, intact. He drove them

hard and fast and reached Nashville without mishap. It did not get him approbation in Washington but it did gain him something more important—an admiration among his followers that was to become immortal and won him the sobriquet of Old Hickory. Within two weeks he was able to assume the new duties ordered by the War Department—"to take charge of and defend the Seventh Military District."

It was the spring of 1814.

In September word filtered down that MacDonough on Lake Champlain and MacComb at Plattsburg had beaten off an invasion from Canada and driven the Redcoats back over the border. Cochrane left the Chesapeake in a hurry to seize Florida and the rest of the deep south, and Jackson started overland to forestall him. By a combination of appeals to reason and shows of force the American commander made a treaty with the Florida Indians that promised him unimpeded entry into that district where he was sure the British would strike first in order to get at New Orleans. But Florida was nominally under Spanish rule and Spain was theoretically neutral, though actually and actively pro-British. So when Jackson learned that the English forces were concentrating at Pensacola, he not unnaturally asked permission from his superiors to attack. No answer being forthcoming, he attacked anyhow and the Redcoats hastily evacuated to Jamaica. Back in Washington the official tide was at last beginning to turn in favor of Old Hickory. With President Madison close to physical and mental collapse, Secretary of State Monroe took over the active administration of the nation's armed forces. The inconsequential Armstrong he expelled from the cabinet, he combined the War and State Departments, he gave carte blanche to Jackson, and although the national treasury was almost bare he managed to scrape together $100,000 for the use of the southern commander.

Andrew Jackson at the age of fifty-two

Governor Claiborne of Louisiana and Edward Livingston, the social and political arbiter of the English-speaking citizenry of New Orleans begged Jackson to speed to that city and prepare it against a British attack. Enfeebled though he was by dysentery, the general took action with vigor. He sent word to Claiborne to muster the militia; he ordered the Regular troops in the city to put their forts in readiness; from Washington he requested additional arms, ammunition and supplies. General John Coffee and 1,800 cavalrymen were dispatched to Baton Rouge, and the militia of Tennessee and Kentucky were started towards New Orleans under Generals Carroll and Thomas. On November 22 Jackson and his staff left Mobile and nine days later entered the city of New Orleans.

In the city, a welcoming committee of Claiborne, Livingston, and Mayor Girod conducted Jackson to the balcony of a large house and presented him to a cheering populace gathered in the square below. Notwithstanding a sudden rain that swept across the plaza to drench the people, a crowd remained to applaud his speech of greeting. Jackson spoke briefly, pledging himself to protect the city; he would drive the enemy into the sea or die in the attempt; he bowed, and retired from the railing. Livingston then conducted the commander to the Place d'Armes to review Major Plauche's local militia — Carabiniers d'Orleans, Dragoons à Pied, Chasseurs, Francs, and Louisiana Blues. No sodden weather could dim the glory of their uniforms nor the enthusiasm with which the Napoleonic veterans in the ranks greeted the new leader. The conventionalities having been thus duly observed, Jackson and his companions repaired to the house that had been selected for his headquarters and after appointing Livingston a colonel on his staff, Old Hickory made his first estimate of the situation. He found little to encourage him. For there were in the city but 2,500 military muskets and 7,500 pistols, most of them captured from pirates. Of standard government rifles there were none at all, although in response to Jackson's plea for supplies the War Department had thoughtfully forwarded a shipment of molasses from Boston in the same kegs in which it had left New Orleans two years previously! It is understood that Old Hickory was singularly unappreciative of this.

Nor was he any better pleased with the results of his first efforts to gain some knowledge of the adjacent topography with its tangled maze of bayous, swamps and canals. "Every man can give you an exact description of it," growled Jackson after a day of fruitless questioning, "and every man will give you an erroneous one." Even the map Livingston had provided was inaccurate and it was clear that Old Hickory would be unable to formulate any plan until he had made his own reconnaissance. He determined to start this on the morrow, and then went off to attend the formal banquet given in his honor by Livingston.

Six hours later he was in the saddle to begin his investigation of the defense problem.

The most direct approach to New Orleans was of course that afforded by the Mississippi, but as the city lay a full 105 miles from the river's mouth it was hardly to be supposed that the British would select it for their advance. For the same reason, the bayous—La Fourche, Aux Chenes and Terre Aux Boeufs—that paralleled the river's course from the Gulf of Mexico to the neighborhood of New Orleans could also be disregarded as probable avenues of attack; the English would almost certainly come across country from some spot on the Louisiana coast, or through the chain of waterways above and to the east of the city.

Immediately north of New Orleans and connected to it by Bayou St. Jean was Lake Ponchartrain; further to the east was the shallow Lake Borgne that fed into open water past Cat Island and Ship Island. Ten miles due east was Barataria Bay, lair of the pirate Lafitte and terminal of various canals and streams leading deviously to the capital city.

In the next three days Old Hickory had not only planned his defensive measures but put them into execution. Such men as he had at his disposal he swung in an arc around the city from Bayou La Fourche on the west to Lake Borgne on the east; at English Turn, fourteen miles south on the Mississippi he placed a battery. John Coffee he left at Baton Rouge to cover New Orleans from the north and on Lake Borgne he stationed a guard of several small gunboats. He mobilized a battalion of freed slaves from Santo Domingo under Major Daquin and other white officers. Then he sent word to Monroe that he had the situation under control, and sat back for further word of the enemy.

Next day a report came from Lake Borgne that British ships had been sighted off Cat and Ship Islands. And four days after that a messenger was rushed to Jackson with word that the guardian gunboats on the lake had been overpowered and the Redcoats were preparing to land.

Back to the city galloped Old Hickory. Wracked again with dysentery he lay on a sofa in his headquarters, and for a day and a night and another day kept his staff on the jump carrying out his orders. John Coffee was sent for, warned not to sleep until he had reported his brigade; couriers dashed out to hurry along Carroll and Thomas and their militiamen; the Regulars between New Orleans and Lake Borgne were to hold their posts "to the last extremity." Enough provisions for six months must be obtained instantly and to Washington went the pointed plea: "We have no arms here. Will the government order a supply?"

Conscious of the mixed loyalties with which the American-Creole population of the district regarded the approaching Redcoats, Jackson completed his precautionary measures by putting New Orleans under martial law.

Meanwhile he secured reinforcements from a totally unexpected source. Late one evening just before curfew, a tall stranger presented himself at headquarters and demanded an audience. Ushered into Jackson's presence he casually introduced himself as none other than Jean Lafitte, the notorious buccaneer of Barataria Bay. Would the general care to accept the services of himself and his officers and men to fight under the American flag? They would like to show that even if they had perhaps infringed the country's laws a little now and then, they were quite ready to die in defense of it. And they could supply their own arms and ammunition. Such a proceeding had no precedent in Old Hickory's moral code but this was no time to boggle at abstract questions of ethics. Lafitte's offer was accepted and the defense line across to Barataria Bay was proportionately strengthened.

On December 20 came more cheering news with the arrival of Coffee and his advance guard, after a forced march of 135 miles in thirty-six hours. Two hours later, in came the long-missing Carroll with 3,000 Tennesseeans. He had been traveling since November 17 and his once-raw troops were now seasoned soldiers; they brought with them 50,000 cartridges and 1,100 muskets. Matters were taking a turn for the better.

Three days later the American plans suffered a crushing blow.

Before noon of December 23 a message from Colonel Pierre de La Ronde, watching the passes from Lake Borgne to the river, informed Jackson that British ships were apparently seeking a landing place whence they could directly threaten English Turn.

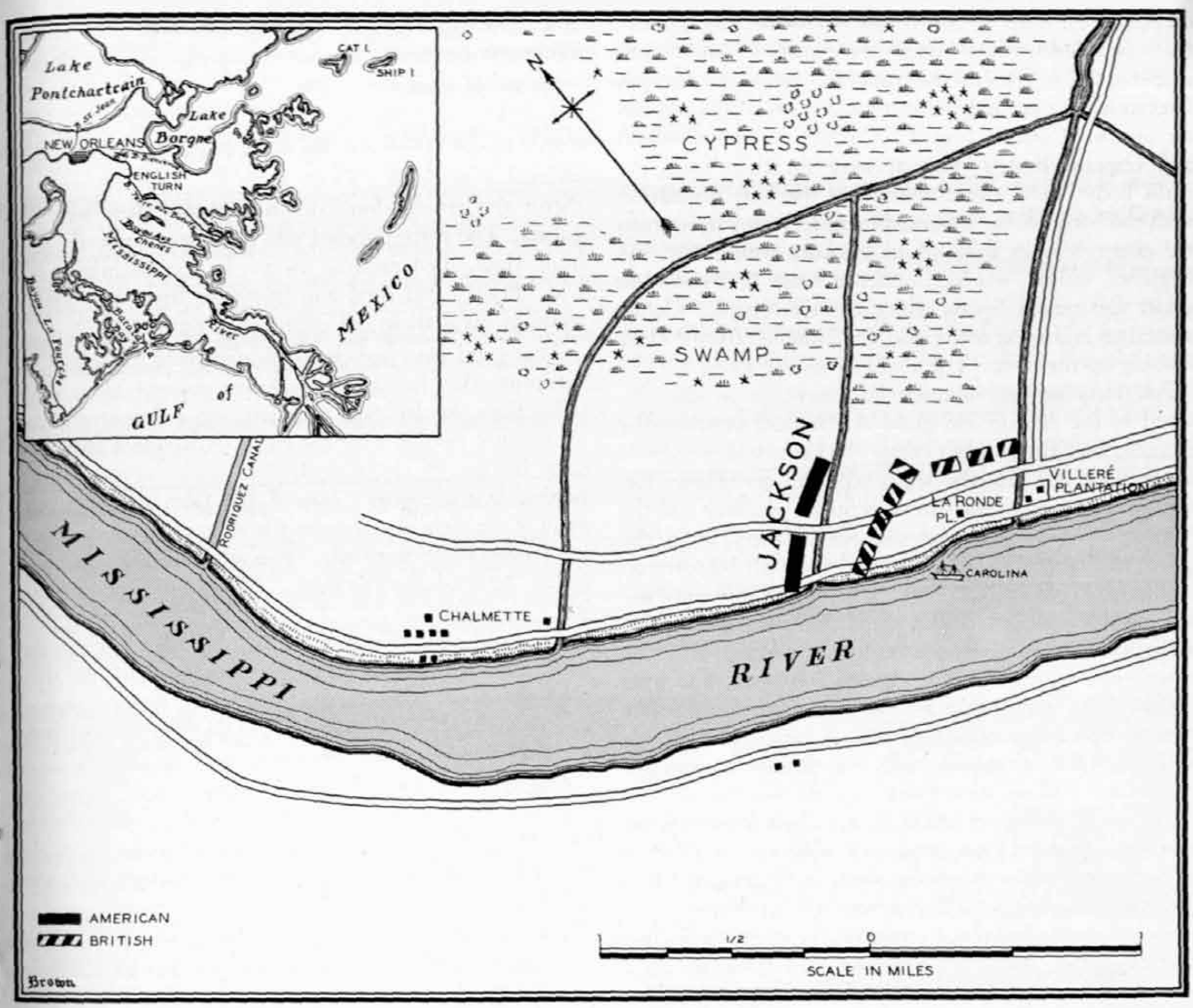
At twelve there was a frantic pounding on the knocker of headquarters. A courier rushed in, breathless with the importance of his news. "The British are only eight miles away! They are at the Villere plantation above English Turn! I saw them capture one of Colonel La Ronde's regiments!"

Jackson on his sofa stared at the man in amazement. It was incredible that his report could be true; every route from the lake to the Mississippi was too well guarded to permit of any such surprise by the King's men.

Another rapping at the door and Colonel La Ronde himself burst into the general's room, followed by Major Villere and the civilian de la Croix. All together, in a mad babble of French and English, they confirmed what Old Hickory feared to hear. Somehow Bayou Bienvenue, leading from Borgne to Villere's homestead had been left unguarded . . . the British discovered it . . . 2,000 Redcoats sneaked up on it at night . . . at ten that morning they surrounded the Villere mansion and captured everyone there . . . only by showing the greatest daring had Major Villere been able to make his escape and spread the alarm. *Mon dieu!*

Lurching to his feet Old Hickory leaned his weakened frame against a table and banged it with his fist.

"By the Eternal, they shall not sleep on our soil! We'll smash them, so help me God!" At his call aides and secretaries came running. In a voice whose calmness was belied by his flaming eyes, he gave his orders. "Gentlemen, the British are below. We fight them tonight!



The affair at La Ronde Plantation

Some boiled rice was brought him; he gulped it down and rolled back on his couch where he was instantly asleep, as the clocks were striking two.

At four he was astride his horse, leading his command down the levee road towards English Turn and the enemy. Across the ocean in far-off Ghent, United States and English commissioners were preparing the last details of the peace covenant they would sign on the morrow, but in Louisiana on that December afternoon the sword still reigned supreme over the pen. Jackson pushed his troops on for the battle that History and Fate combined could not make less inevitable.

Racing over the four miles between their bivouacs and New Orleans, the forces of Coffee and Carroll reported themselves ready two hours after the order for their presence was issued. Added to them to form Jackson's main column were the 7th and 44th Regular infantry, Plauche's city militia, Daquin's Santo Dominicans, the Louisiana Dragoons, a company of Marines, and two guns. Two companies of riflemen and Colonel Hayne were sent ahead as an advance guard. All told, the force numbered approximately 2,000 rank and file.

Some four miles below the city was the Rodriquez Canal, an abandoned watercourse that led from the Mississippi's east bank across a flat plain to a thicket of cypress woods and a swamp, and here Jackson caught up with his advance guard. Hayne had cheering reports for him. The English, only a couple of thousand strong, were going into camp less than two miles ahead, all unaware of the Americans' proximity. Jackson smiled. This was the opportunity for which he had hoped and planned.

Under the direction of Commander Patterson the armed schooner *Carolina* had dropped slowly down the river from New Orleans as Jackson marched. Now as he moved forward again, she swung out into the stream and disappeared into the mist towards the English positions. Old Hickory had ordered her to open fire on the enemy's left flank at seven-thirty; he would begin his land assault half an hour later.

A mile and a half in advance was the La Ronde plantation and 500 yards beyond the campfires of the British

outposts twinkled in the deepening dusk. So silently that not a Redcoat heard them, the Americans stole up to a double line of trees on the plantation facing the English lines near the river and Jackson made his final dispositions for attack. Coffee's brigade, Colonel Hinds' dragoons and Captain Beale's riflemen were detached from the main body; they would oblique to the left, dispensing with the horses of the mounted men, and then try to turn the enemy's right flank. Old Hickory would lead the Regulars, militia, marines, and the brace of 6-pounders under Lieutenant Spotts along the river bank. Coffee moved off and a few moments later a muffled *Boom!* came echoing up the levee. The *Carolina* was in action.

For thirty nervous minutes the Americans on shore listened to the crackle and thud of the duel between the schooner and the English camp. Jackson held his watch to the light of a lantern—eight o'clock! Everybody forward, the general in the van with Spotts' artillery and the Marines. To his left was the 7th Infantry, then the troops of Plauche and Daquin, and the 44th Infantry on the far flank. The advance was to be by columns until the last possible moment before actual contact made deployment necessary, but only the 7th kept the formation. The other units unaccountably wheeled into extended lines immediately, with the inevitable result that they became disorganized in traversing the unfamiliar terrain and the militiamen were thrown entirely out of their center position.

But it was too late to turn back, even if Jackson had any idea of doing so, and the attack pushed forward in the face of a rattling volley from the now thoroughly alarmed Redcoats. Dank fog from river and swamp shrouded the landscape and hid all objects more than a few rods distant. The Americans held their fire until they could see their targets; then they cut loose, with Spotts' guns pounding out a bass accompaniment to the staccato of the muskets. Whipped on by sergeants and lieutenants—the murk was too thick to permit company command—Old Hickory's squads and platoons slammed ahead, lifted the British first line out of its position and drove it back behind a fence-topped ditch.

Quickly reassembling their lines in the breathing spell thus provided, and further fortified by the tardy arrival of their artillery, the King's men swarmed out of their trench and came down on the Americans. This counter-attack was delivered so speedily that Jackson's men were caught off guard. They stumbled back in confusion. The Marines covering Spotts' artillery gave way. A ball crashed into a gun team. Screaming, a wounded horse reared and fell, pulling a caisson over with him. Jackson galloped to the spot, waving his sword.

"Come on boys! Save those guns!"

Colonels Piatt and Chotard saw him and followed. A detachment of the 7th came yelling after, and the cannon were yanked clear.

"Now charge 'em!" shouted the commander, and the Regulars surged forward.

Again the British fell back. Again they came on, this time a little to the right, against the militia. The militia were ready for them.

"*A la bayonette!*"

Stabbing, hacking, cutting, shooting, the city troops surged ahead. They met the shock of the enemy's charge, reversed it on itself. Twice more the Redcoats tried to regain the ground lost, and twice more they were repulsed. The firing tapered off, burst spasmodically into fresh vigor, died entirely away. It was midnight and Old Hickory had time and leisure to listen to Coffee's report of his share in the evening's adventures.

That gentleman had thoroughly enjoyed himself. Dismounting after he had left Jackson's column 1,000 yards to his right, he deployed his command and started ahead on a course parallel with the river. A hundred yards beyond his line of departure he had made contact with a portion of the enemy's force flying from the bombardment of the *Carolina*. The Englishmen put up a stiff fight but Coffee never wavered. "You've often said you could fight," he reminded his men. "Now's the time to prove it!"

They did. Stumbling across cane-stubbled fields in the dark, floundering through swamp-bottomed ditches, they opened fire only when they were at point blank range, and chased their foes all the way back to the levee. There they left them, and here they were.

Casualties were 213 for the Americans, and 277 for the Redcoats, but Jackson learned that these were being more than offset by English reinforcements so he wisely decided to withdraw and consolidate a good defensive position.

For this he chose a line some thirty yards north of the Rodriquez Canal, where the cypress swamp most closely approached the Mississippi, and started his men feverishly building earthworks. They shoveled mud from the ditch to construct a breast-high parapet stretching at right angles from the river nearly to the swamp. At its juncture with the Mississippi they built an embrasure from which Spotts' pair of precious field-pieces could rake the levee road. The levee itself they breached a hundred yards south so that the plain in front of the British positions was flooded with three feet of water; down at the fort at English Turn General Morgan did the same, and the Britons found themselves in a precariously isolated situation. Two miles behind the Rodriquez Canal the Americans built a second line of trenches. Finally, Jackson sent Major Reynolds and Lafitte to continue the front line all the way east to Barataria Bay. The general was seldom out of the saddle, he ate irregularly and for thirty-six hours did not lie down to sleep. The fever of fighting was on him and he would permit no one nor anything to interfere with the victory he was determined would be his.

Christmas morning was heralded by an outburst of cannonading from the English camp. The Americans stood to arms, but it proved a false alarm; the Redcoats were merely saluting the arrival of a new commander-in-chief—none other than Major General Sir Edward Paken-

ham, brother-in-law of the redoubtable Wellington and a soldier of high military merit in his own right.

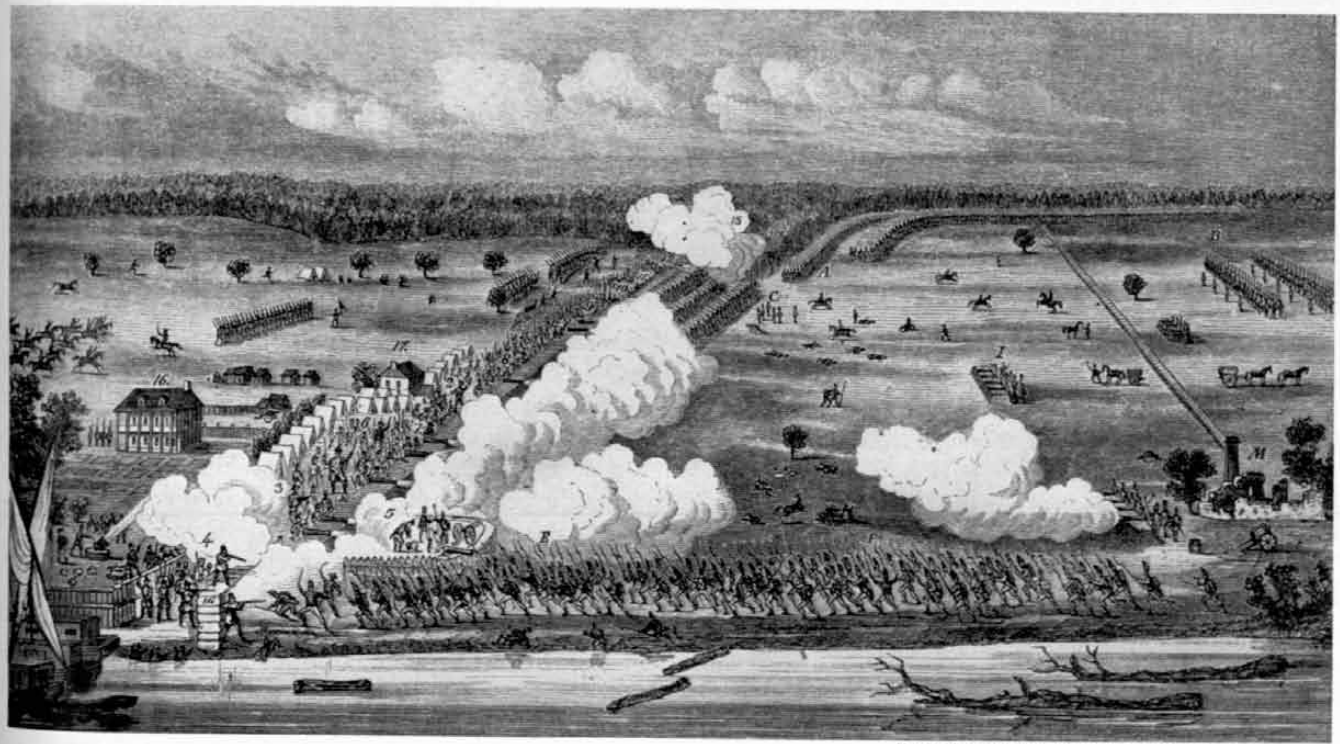
Old Hickory decided further to strengthen his position by covering his right wing from the west bank of the river. To do this he ordered Morgan to pull out of English Turn, cross the Mississippi and establish himself a little above the English position; he was to bring with him whatever cannon he could and those he was forced to leave behind should be buried. Morgan moved into his new location on December 26, and on the morning of the twenty-seventh an English battery of five guns began a preliminary action against the *Carolina,* snug alongside the west bank. While her crew worked strenuously to warp their ship upstream against the current, red hot shot set her ablaze and she was reluctantly abandoned just before her magazine blew up with a roar.

These symptoms of activity prophesied further manifestations by Pakenham's men. The prophecies were realized when a salvo of English artillery fire tumultuously greeted the next daybreak. The Redcoats had dragged their heaviest ordnance to within half a mile of the American lines and began a ceaseless rain of projectiles, interspersed with the fearsome but less dangerous Congreve rockets. Then the barrage stopped and over the waterlogged fields came a massive wave of scarlet-coated infantry. Drums rolled, bugles blared, battle flags fluttered, bayonets glittered; the military might of England was out for revenge.

But the dirt-encrusted men crouched behind the earthen ramparts refused to be awed by this spectacular display. Three naval guns had now increased Jackson's artillery to five pieces, and when these let fly down the levee road the advancing host was rocked back on its heels. Nor were the Redcoats permitted to stop and reform. Across the river the armed sloop *Louisiana* had taken the *Carolina's* place and poured a devastating broadside into the royal columns that were just deploying along the east bank.

Churning the levee into a welter of mud and blood the American guns tore the British attack to shreds. It wavered, stopped. Cursing officers tried vainly to urge it on; the men broke and flung themselves behind whatever shelter they could find.

Jackson's right wing was momentarily safe, but another British sortie was developing more successfully against his left, where Carroll and Coffee could not be assisted by the *Louisiana.* Rushing to the flank, the general arrived there



From the painting in the Library of Congress

BIRD'S-EYE VIEW OF THE BATTLE

This contemporary drawing was widely sold in the United States after the War of 1812. Latour, Jackson's chief engineer, executed the sketch from which the drawing was made. A study of the drawing in conjunction with the key, furnishes an interesting comparison with later accounts of the battle.

Key

1. Jackson and his staff
2. Major Plauche
3. Captain Humphrey
4. Beale's riflemen and a company of the 7th Infantry
5. Redoubt on bank of the river
6. Captains You and Beluche of Major LaCoste's battalion
7. Lieutenants Crawley and Ross
8. Colonel Perry
9. General Garrigue
10. Lieutenant Spotts

11-12. Divisions of Generals Carroll and Adair, and further to left General Coffee's

13. Cavalry and dragoons

14-15. Line of entrenchments

16. Macarte House—Jackson's headquarters
17. Rodriquez House

A-B. British Army attacking in two columns.
C. Right column making attack under Pakenham
E-F. Left column
I. Battery
M. Ruins of Chalmette's buildings

as the British were driving in a detachment of Tennessee sharpshooters that had ventured forward of the lines. The situation looked dangerous, but suddenly the oncoming Britons halted and ceased firing. They were just beyond rifle range, and all the Americans could do was to peer in surprise over their ramparts and wonder what had happened to cause this cessation of hostilities.

The answer was that Pakenham was loath to advance his right wing until his left, on the Mississippi, had been reorganized after the debacle caused by the *Louisiana*. But the badly shattered ranks were incapable of immediate consolidation, so the English commander ordered the trumpets to call his forces from the field, back to the camp whence they had marched with such assurance only a few hours ago.

Again Old Hickory had breathing space to augment his defensive arrangements. Every house in New Orleans was searched for arms, ammunition, and entrenching tools. Every able-bodied male under fifty years of age was asked to volunteer for service; if he showed the slightest disinclination to "volunteer," he was arrested. More naval guns were obtained and mounted behind emplacements of cotton bales on the weak left side of the American line. Messengers were dispatched up-country to locate Thomas' tardy Kentucky division and hurry it on its way. Then to celebrate the New Year, Jackson scheduled a review for the forenoon of January 1, 1815. Stretched on his cot, Jackson husbanded his energies against trooping the line. An aide reported that the review was formed.

Boom! A roar and crash shakes the general's house. *Boom!* Another—and another—and another—merging into a continuous roll of gun-thunder. Old Hickory leaps to his feet, stamps across the shuddering floor to the window. Around him glass crashes and plaster showers from walls and ceiling; outside is mad confusion. Rockets from the Redcoat lines curve down in screaming arcs on the American. British shells throw up geysers of yellow scum from the canal, smashing into trees and buildings, burying themselves in the ramparts, skittering crazily along the harder ground. The visitors have fled the parade ground and the surprised troops are running for the fire steps.

Jackson runs after them, shouting orders. The redoubt by the river, where Captain Humphrey casually chews his ever-present cigar, goes into action. Lafitte's chief artillerist Dominick You, who learned his gunnery under Napoleon, is answering the enemy shot for shot. A shell wrecks one of his 24-pounders; further along the line a 12-pounder is smashed, then one of the big 32's. Some of the cotton bale embrasures are blazing. Suddenly an ominous crash boils up a thick cloud of smoke into the sky where it mushrooms into a motionless pall; a rocket has exploded a powder caisson. Pakenham moves his entire command up against Jackson's left that was so weak four days ago. He'll break through this time, or know the reason why.

He learns the reason: Coffee and Carroll are thoroughly prepared. Volley after volley of rifle and cannon fire greet the British. Acrid smoke hugs the ground in a rolling fog; the Americans pump fusillades into it regardless of inability to see what they are shooting at. There is no getting by them. At noon the assaulting parties draw off and an hour later the field is again quiet.

Jackson goes back to his headquarters, now riddled with more than a hundred shellholes, and eats his lunch with deep satisfaction. His new overcoat has been lost in the bombardment, but he can afford to overlook this minor disaster in the light of the greater victory. He remembers his troops and issues a Special Order: "The Major General tenders to the troops he has the honor to command his good wishes for a happy New Year." And so that they may practice what he preaches, he adds a postscript: "The Contractor will issue half a gill of whiskey all around."

The next day everybody got to work again to repair the damage done the front line, adding to the second line, beginning a third line. On January 4 Livingston came to his chief with happy tidings: Thomas and the long-lost Kentuckians—2,400 strong—had arrived!

Only 700 had rifles, and the general sent a scorching letter to the War Department. Where were those guns he had expected? He'd heard rumors that the agent bringing them was engaged in personal business en route; that sort of negligence would end in defeat. After which he scurried through the city, picked up some 400 old Spanish fowling pieces, distributed them among the Kentuckians, and then brigaded Thomas with the rest of the reserve. Even if half of these sharpshooters still had nothing to shoot with, their presence was impressive and helped the American morale considerably.

On the sixth a British deserter sneaked into Jackson's camp to report that another brigade under Major General Lambert had just arrived to reinforce the Redcoats and that Pakenham planned an attack of great force for the immediate future. As if to complement the treachery of this wayward Britisher, one of the New Orleans militiamen left his lines in favor of those of the enemy. Old Hickory had no doubt that he would report the weakness inherent in the poorly armed troops of the center. He made a note of the circumstances and bided his time.

Next day the American commander, peering through his telescope at the English lines, descried unusual activity. Across the front of their camp, groups of the enemy were engaged in parade ground drill, marching back and forth aimlessly—or so it seemed until Jackson's sharp eyes discovered that all this bustle and movement in the foreground screened activities of the troops in the rear, busy fashioning facines and scaling ladders. An advance on a large scale was certainly in the offing.

A little later Commander Patterson returned from a scouting expedition down the river and reported that a formidable Redcoat detachment was preparing to cross to the west bank. Apparently Pakenham was massing to rush the main American position on the east shore with a side-thrust against Morgan overstream. Old Hickory at once sent the 2d Louisiana infantry to join Morgan, and directed that 400 of the Kentucky militia should

follow. One hundred and eighty did so, but the rest were not able to organize in time and eventually remained in the main reserve.

Word came that the British had adopted the phrase "Beauty and booty" as the watchword for their impending attack. Jackson passed it along to indicate the type of foe against whom they must expend every ounce of effort to defend the city and its helpless women. He ordered all hands to stand guard through the night in two watches, and with his staff stretched himself out on the floor of headquarters to snatch what rest might be possible.

It is only a little after midnight when a runner from Morgan stumbles into the dark room and wakes the chief. Morgan reports a large British force making a crossing below him; he urgently requests the commanding general to send him some more men. The commanding general can't do it. "My compliments to General Morgan, and tell him I have no troops to spare. He must hold his position whatever happens!" The courier withdraws and Jackson hears a sentry call "One o'clock!" He buckles his sword-belt and rouses the staff. "We have slept enough, gentlemen." Yawning, the officers follow him outdoors and make their final inspection of the ramparts.

At the bank are Beale's riflemen and the 7th. Then Plauche and his militia, the Santo Dominicans, the 44th and the division under Carroll; the end of the line is carried into the cypress swamp by the troopers of John Coffee.

Spaced along the front line are eight batteries in charge of a strange medley of commanders, selected for aptitude rather than rank. Captain Humphrey is at the levee, next to a lieutenant and gun crew from the *Carolina*. Alongside are You and his pirate gunners and following in order come another navy outfit under a lieutenant, a squad with a full colonel as gun commander, Lieutenant Spotts and his trusty duo of 6-pounders, two guns with General Flaugeac who led a Napoleonic division in Egypt, and some Tennessee artillerymen directed by a corporal of the Regular Army.

Logically reconstructing the story that the militia deserter probably carried to Pakenham, Jackson calls up the Kentucky reserve to fill in at the junction of Carroll's and Coffee's flanks. He now has over 5,000 men on the alert. He can do nothing more until the British start something.

This, for the moment, the British are unable to do. Pakenham has planned that Colonel Thornton shall open the proceedings by moving against Morgan; as soon as Morgan has been displaced, the way will be open to enfilade Jackson's right and rear. This accomplished, Pakenham will move towards Jackson's main line in two divisions. General Keane and 1,200 troops will maneuver by the river and General Gibbs will lead 2,100 Redcoats and a West India Negro regiment against the weak east section of the American rampart, near the cypress swamp. The reserve, under General Lambert, will be held for further orders in the middle of the English position. In deference to American marksmanship, all movements will be initiated before daylight.

But nothing goes right for the Englishmen. Thornton starts to ferry his detachment over the Mississippi and finds he hasn't enough boats; 700 of his troops must be left behind. Then the swift yellow current sweeps the crowded barges out of their course and the landing on the west bank is three hours behind schedule. The main body of Redcoats are no better off. Keane is delayed getting into motion and so is Gibbs; at the last moment before moving to the front Gibbs discovers that his 44th Infantry has forgotten to bring the scaling ladders and facines. Everything is held up once more, as 300 men run back to camp to get the missing items.

Pakenham rages along the line. Where is Thornton? What has happened to everybody? Can't his troops obey simple orders any more? Dawn is breaking; the early morning fog may soon lift and further concealment will be impossible. Thornton or no Thornton, Gibbs or no Gibbs, the attack must get under way at once. The commander in chief nods his head to a waiting signalman; a rocket weaves up through the waning night. A moment later another rocket rises from the Mississippi shore. Watching from his parapet half a mile away, Old Hickory turns and nods to his staff. "That's the signal for their advance."

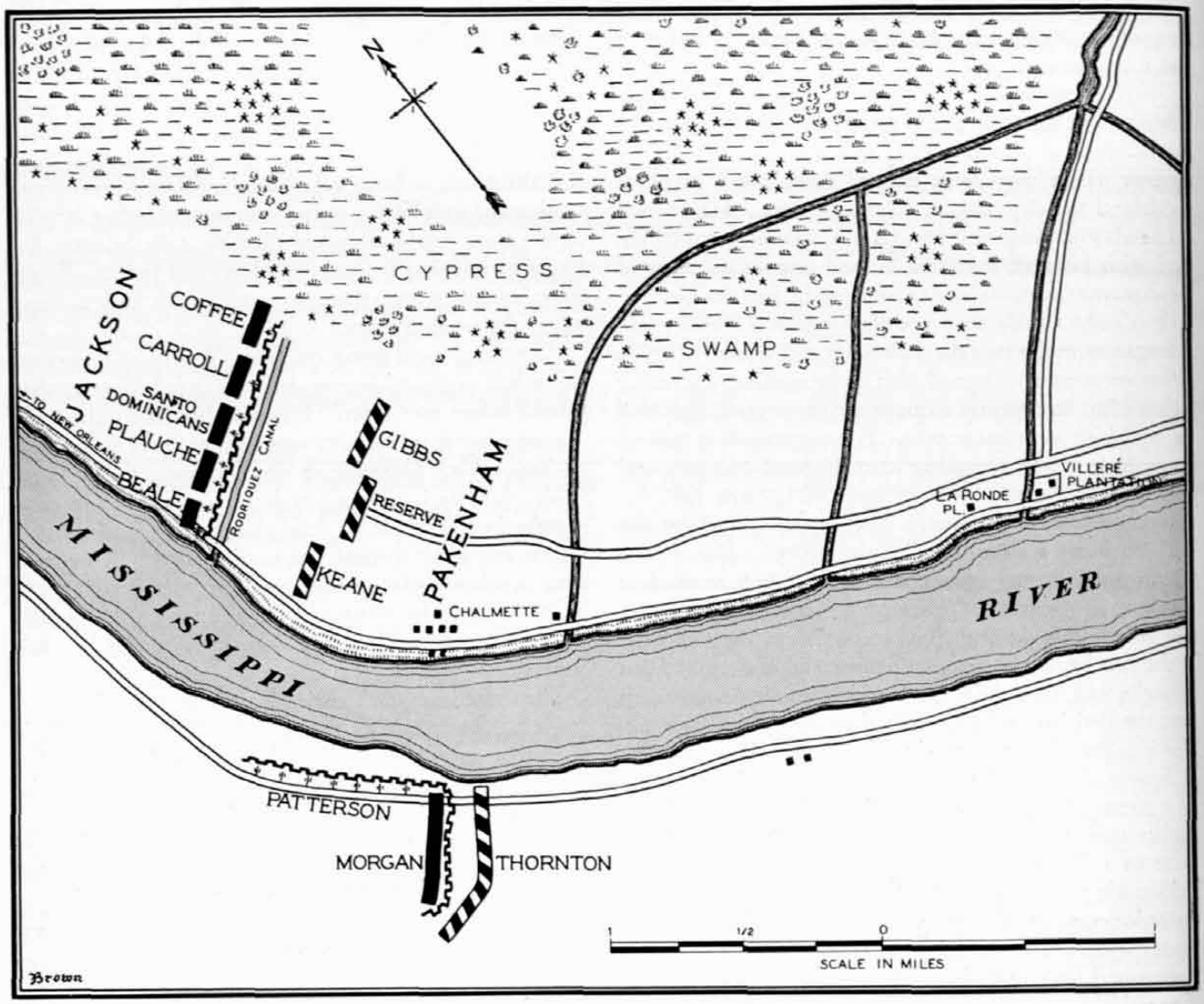
The Americans cock their pieces and strain their eyes and ears. They can see nothing; but faint noises—little more than murmurs—indicate that something is moving out in the fields. A breeze sweeps suddenly across the front. The curtain of fog eddies and parts and—there are the English, 500 yards away. They are coming forward in columns, sixty to seventy men in width. The flat, colorless landscape is ablaze with scarlet.

General Flaugeac swings a torch to the breech of a 12-pounder. Its discharge is lost in the salvo from the other guns. The smoke shuts down and spoils the aim of the riflemen who are waiting for the foe to get within range. Old Hickory orders two batteries to cease firing. The smoke clears again. Now the Redcoats are a good deal less than a quarter of a mile away, and break into a run. The Americans give three cheers and stand ready.

"Aim above the buckles of their cross-belts," cautions Jackson. "Fire!"

As the volley crackles along the rampart, the row of men on the firing steps jumps down to reload and another row takes its place. Another volley and another change of riflemen, and another volley, and then the original firing line starts the cycle all over again.

The Redcoats go down in successive ranks; it looks for all the world as if a great red carpet were being unrolled over the field. The scarlet lines dissolve under the leaden torrent that pours over them. Gibbs rides forward, yelling to his men to charge with the bayonet. He is shot out of his saddle. Pakenham gallops up to meet a swarm of humming bullets that down his horse and shatter his right arm. He struggles to the back of his aide's mount. Another slug hits him, but he remembers that he planned his attack at this portion of the American line because that deserter assured him it was the weak spot of



January 8, 1815

the defense. *Weak,* eh? He sends for the deserter and orders him hanged, then and there. A third bullet finds Pakenham and finishes him. Before he dies he has time only to tell Lambert to throw in the reserve.

Lambert finds the survivors of the first attack huddled in a ditch 400 yards in the rear. He rallies them, leads them in another charge. It does no good. The Redcoats halt as the foremost files are flung sprawling over the bodies of the men who were downed in the opening sortie. They begin to withdraw as the keen Yankee eyes and the rifled barrels of Yankee muskets keep picking them off. Their discipline snaps and they fly helter-skelter. Officers with flaying swords stand up to the rout and try to turn it back; they are carried helplessly along with it.

Keane, by the river, sees the plight of Gibbs' column and tries to succor it. He forms a rescue party of the light infantry company of the 21st Fusileers, the 43d Infantry and 100 men from the West India Regiment; to head these reinforcements he picks the 93d Highlanders. The Scots know what is in store for them, but Calvinism permits them to accept their leadership in a lost cause without comment; there's no arguing against predestination. The ranks stand silent for a moment as they commend their souls to God. Their Colonel Dale hands his watch and a packet of letters to a doctor; "For my wife," he says. Then he swings his claymore and the pipes break into the shrill cadences of the regimental quickstep.

Sporrans a-swing, the towering ranks—there are no men in the 93d under six feet in height—set the pace obliquely across the American front to reach the swamp and Gibbs' endangered corps. But cannister and grape are no respecters of tartans even though worn by brave men; the American batteries belch fire and shell and litter the ground afresh with torn bodies.

Dale goes down among the first; Keane follows him, losing his sword as he falls. The leaderless troops mill about uncertainly, deaf to the frantic orders of the officers who are left.

Major Wilkinson of the Fusileers sprints for the Rodriquez Canal. It is an heroic example and a hundred men stream after him. They scramble over the ditch and charge the smoking ramparts thirty yards away. Wilk-

inson actually gains the top; he is hit and topples inside the lines to die among the Kentuckians.

Down by the river, Colonel Rennie has been left in command of the column there. He starts an attack that sweeps into an American bastion before it is beaten back and he is killed.

General Lambert, on whom the supreme command of his Majesty's troops has devolved, sees that further attacks will only result in a criminal waste of manpower. By half-past eight the firing sputters to an end, and what are left of the Redcoats stagger off the field.

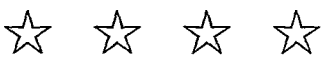
Old Hickory swings his hat. His men have behaved splendidly; he wonders how Morgan is doing and looks anxiously across the river. Morgan is not doing at all well. When he learned of the British preparations for crossing against him on the night of the seventh he had sent 200 of the Louisiana militia forward to watch the hostile developments. The militia, arriving at their objective, went comfortably to sleep after posting a single sentry. Upon the arrival the next morning of the belated Thornton, he had no trouble in surprising the Louisianians and putting them to flight. In their retreat they were met by the Kentucky detachment hastening to their aid; joining forces, the Americans took up a position behind a mill-race and held the British advance guard at bay. They might have had equal success against Thornton's main body had not an excited aide of Morgan's ordered a withdrawal.

Taking advantage of this movement, Thornton charged and broke the Kentucky line. Seeing their comrades in flight, the Louisiana militiamen also took to their heels, leaving Patterson and his battery opposite Jackson's position completely unprotected.

As Jackson watches the far bank he sees the flaming tunics of the British creep nearer and nearer to Patterson; he hears the fire of the naval officer's guns falter and stop. He can only hope that, for the safety of the entire American command, Patterson is spiking every cannon. Then the gunners tumble out of their works as the English storm over the front wall. There is a moment of anxious silence; will the captured battery now blaze against its erstwhile holders? No! Patterson has done his work well. The guns are useless and the magazines are empty. The silence continues. Thornton remains static. Late in the afternoon Old Hickory sends an armistice into the Redcoat lines for Lambert to sign.

The night passes quietly and the wounded are gathered up and returned to the city hospitals. But Jackson worries; what is Thornton up to, and why hasn't Lambert acknowledged and returned the armistice? The morning of the ninth shows that Thornton has recrossed the river and joined again with the rest of the English army. Lambert signs and forwards the armistice to the American commander; the Redcoat general apologizes for the delay and explains that the treaty became mislaid for a few hours. Old Hickory thinks it is odd that this unusual circumstance should occur during the time Thornton was getting back home but he says nothing. He can afford to be generous. With a loss of seven men killed and six wounded, he has smashed the best army England has to offer and New Orleans and the country are safe.

He cares for the severely wounded Britons. He permits the rest to withdraw quietly, taking with them the body of Pakenham in a cask of rum. He finds Keane's lost sword and returns it to him. He decrees a day of thanksgiving. And at last, on March 13, 1815, he orders the firing of the minute guns that announce that peace was declared between Great Britain and the United States on December 24, 1814.



Shall They Pass?

By LIEUTENANT EDWARD A. RAYMOND
Field Artillery Reserve

Before the Great War of 1914-1918 when people thought of France they thought of Paris. The Frenchman of popular fancy was a boulevardier who wore a waxy black mustache and a pointed black beard; he was an effeminate, vain, and to English and American eyes, a somewhat ridiculous figure. But such a picture seems fantastic to today's generation which, when it thinks of France thinks also of Verdun. Since Roman times Verdun has stood as a rampart of the Western World against German invasion. Its position as the gateway to France has been shown time and again in the countless wars of European history. And from February 21-November 3, 1916, the attention of the world was fixed on the Battle of Verdun. In the early days of the battle France was in greater danger than at any time since the Marne. Yet by August, 1916, it was apparent that the Germans would not pass and that Allied counterattacks along the other parts of the Western Front were drawing German reserves out of the battle. The President of the French Republic, M. Poincare, went to Verdun with an imposing group of ministers and generals and spoke. "Messieurs," he said, "here are the walls where the highest hopes of Imperial Germany have been broken. . . . The debris of these German hopes now lies at our feet." Two years and more passed before M. Poincare's words were proven, but now we know that they were true. No one could have foretold then, and few recognize today, that those same walls of Verdun would frustrate the highest hopes of Hitler's Third Reich. The permanent fortifications standing before Verdun stood so strongly as to reverse completely the French opinion of such structures. Today the World War forts of Verdun have lineal descendants all along the northeastern frontier of France. In the story of those forts can be read the probable outcome of a Nazi assault on France.

French military doctrine prior to 1914 had strongly favored the offensive. The army had a slogan, *"attaquez, attaquez; toujours de l'audace."* Questions of fixed fortifications seemed to the French General Staff very trifling, or actually harmful. They remembered the surrender of Marshal Bazaine in the Franco-Prussian War. The ill-starred Marshal had let himself get bottled up in the fortress of Metz and had surrendered his whole army. The General Staff did not want their commanders to sacrifice mobility for security. They could only see that forts did not win battles, they did not properly appreciate their powers to avert defeat. The Japanese, with very modern, high-powered guns, had captured the weak Russian forts at Port Arthur. And as the course of the Great War went on into 1915 it only served to throw permanent fortifications into further disrepute. The high-powered howitzers with the German Army in Belgium had smashed the forts of Liege, Namur, Maubeuge, and Antwerp in a matter of days. Such Russian strongholds as Kovno and Przemysl had been entirely unable to resist German bombardments. The ease of artillery adjustment by airplanes on forts was advanced in 1915 as an additional argument against them. Trenches and dugouts, which extended over a great deal of territory and presented a more diffuse target to the enemy artillery seemed to offer the only possible battlefield security. The fact that the Verdun defenses had been bombarded in 1915 by the same type of shell that had crumbled the Belgian forts, without suffering damage in any gun turrets or armored parts, suggested nothing to the French high command.

The anti-fort opinion in the War Ministry became so strong that an important order—the Decree of August 5, 1915—proclaimed the ineffectiveness of all permanent fortifications without exception and, moreover, broke up the special organizations of fortress troops, and authorized abandonment of all French forts, together with dispersal of all supplies which happened to be in them. This last provision was to help supply the field armies, which were consuming munitions at a rate far beyond the wildest peacetime estimates.

As a result of the decree, the Verdun forts lost all their guns except the disappearing guns of the turrets which could not be used in the field. Only the special ammu-

nition for these last-named guns was left; the flanking casemates and counterscarps were dismantled and the garrisons were withdrawn. Preparations went forward to blow up most of the forts. The order to fire the mines in Forts Douaumont and Vaux at Verdun was given on February 24, 1916. The officer carrying the order to Douaumont was killed en route, and the order therefore was not delivered. Vaux was saved from destruction by a German shell which scattered the fuzes. Actually more damage resulted from intentional demolitions than from bombardment during all eight months of the battle. With the forts of Verdun were scrapped those of Toul, keys of the French frontier, which had cost hundreds of millions of francs since 1875. Incidentally, such was the respect the Germans held for the forts of Toul that they had deflected the 1914 invasion westward, away from the shortest route to Paris.

The Germans attacked Verdun in 1916 because it was the weakest point in the French line and because a successful penetration at that point might have enabled them to cut the Paris-Nancy railway, compelling the abandonment of most of Lorraine and of the lines right down to Belfort. The trench deadlock might have been broken and the cry, *nach Paris!* might have sounded once again. Verdun was in a salient, and its lines of communication were subject to long-range artillery fire. The principal defenses of Verdun were cut off in the rear by the Meuse River; yet Verdun was a symbol of security to the French people and was sure to be defended strongly. It was hoped that French reserves would be bagged on the German side of the stream and smashed, opening the desired gap.

The Germans massed six divisions in line against Verdun, with four in reserve. Over 1,000 pieces of artillery were placed in position. These huge preparations were carried out with such secrecy that the French airmen detected nothing of an unusual nature on their daily flights over the lines, and only two French divisions stood in the path of the attack, with two in general reserve plus 270 pieces of artillery.

On February 21, 1916 the battle opened, with a terrific bombardment that virtually silenced the antiquated French artillery. The French XXX Corps (of two divisions) which stood in line performed prodigies of valor and did not retreat although it was almost annihilated. The two reserve divisions belonged to the XX Corps, Foch's own "Iron Corps" of the Marne. As these came up, first by truck and then on foot, they were crowded off the roads by ambulances and ammunition trucks. They suffered during long waits on the roadsides from the mid-winter cold. As they advanced towards the lines they were disorganized by the German bombardment. No preliminary reconnaissance by the officers was possible. Often they hunted in vain for guides to lead them into position, and the leaders of the units they were ordered to replace. Blindly they threw themselves in the path of the enemy. From February 21-23 the German offensive accelerated; by the 24th, five kilometers had been taken.

Six forts formed the principal fixed defenses of Verdun in the battle. The largest of these, Fort Douaumont, stood at a considerable distance from the city in order to take advantage of a dominant position. Incidentally it had excellent observation over Verdun to the rear. The XX Corps was pushed back on February 24th right past this fortress. The men, trained to regard fortifications as death-traps, left it strictly alone. The officers did not think of the decree of August 5th, and believed that it was occupied by special garrison troops, as it had been at the beginning of the war. So Douaumont was left to its own devices. But it had not been entirely abandoned, as will be seen.

The Germans did not share the French contempt for permanent works. As they approached Verdun from the north, the massive, brooding fortress of Douaumont, on a rise commanding the ground they would have to cross, must have been a discouraging sight enough. The officers of the Brandenburgers ordered to make the initial attack explained the gravity of the situation to their men, admitting that the stoutest resistance could be expected and that losses would be heavy. They did their best to raise the morale of the soldiers to the heights which the task seemed to demand. They quoted an Order of the Day signed by the Crown Prince: ". . . The German Army, when it advances to the attack, stops for no obstacle."

The attack progressed. A Lieutenant von Brandis, with nineteen men, advanced straight before the fortress. Heavy guns in its turrets were firing. His regiment had been ordered to advance to a line 800 meters short of the fortress that day and then stop. From that short distance, the fort seemed strangely inactive to von Brandis. He noticed empty gun ports and dismantled casemates. He gave the order to advance and started forward. His men thought that they were going to certain death, but followed automatically. The whole 800 meters was strung with barbed wire, though this had been beaten down somewhat by the artillery. Enlarging these gaps in the wire with shears, the lieutenant led the way to a moat which ran in front of the fort. Clambering up from this by means of a tree trunk he led his men through a dismantled casemate and into the courtyard of the fortress. Not one rifle or machine-gun bullet had been fired against him. Within a few minutes he was joined by Captain Haupt, with another company of the regiment, who had duplicated his own feat from the far side of the Fort.

What garrison did the Germans find in this abandoned and partially dismantled fort? One of the strangest imaginable. After the abandonment of 1915, an old civilian employee—an ex-soldier named Chenot—remained in Douaumont as watchman for several disappearing guns. He must have been quite a character, for he had the ear of Brigadier General Boichut, who had local command at the beginning of 1916. By some sort of cajolery he convinced the general that the guns remaining constituted a field battery and obtained for them fifty-seven raw territorials, who had never seen big guns before. They were commanded by a sergeant; there was no officer in the fort. In this case knowledge was power. Old Chenot, in a workman's blouse, a pre-war kepi perched

A portion of the World War fortifications of Verdun, the city in the background.

on his head and an enormous cane brandished in his hand, instructed his men in the rudiments of artillery throughout January and half-through February. And when, on that fateful 21st, the fort was suddenly subjected to a violent and almost uninterrupted bombardment, Chenot got busy and started firing his old turret guns. Using data prepared years before, he blazed away at distant objectives far behind the enemy lines. He had no machine guns and rather naturally took no measures for local security which an officer might have put in force. Word was brought to him in the turret where he stood that the courtyard was full of Germans, and that the territorial sergeant had surrendered the fort. When tough old Chenot discovered that nineteen Germans had captured the fifty-seven defenders of the fort, he spoke his mind in a French which this writer is unable to translate.

On February 25th Joffre, commander-in-chief of the French Armies, placed Petain in command at Verdun and ordered three new French corps into battle. It would be hard to decide which was the more important move. The words of the new commander, *"On ne passera pas"* and *"Courage, on les aura"* galvanized the nation. Petain was quick to seize on the importance of the forts. He had been met on his arrival from GHQ by news of the loss of Douaumont. He was deeply distressed, but determined that the line of forts remaining would constitute the framework of defense for the army. His first order was to define a main line of resistance which was to be considered final. "Not a slip is to be made; not an inch of ground is to be yielded." Of the forts Marshal Petain has written, "Even in their imperfect condition, the fortifications of Verdun rendered invaluable service. In the first place they afforded shelter in which reserves could be protected from suffering premature losses and in which munitions and food supplies could be stored within reach of the fighting troops. They gave us a means of installing command posts, observation posts and signal instruments; in a word, of organizing the battle." Within two days the Germans had been checked. On February 26th the 3d Battalion, 146th French Infantry, repulsed with the bayonet three attacks by greatly superior German units which sought to

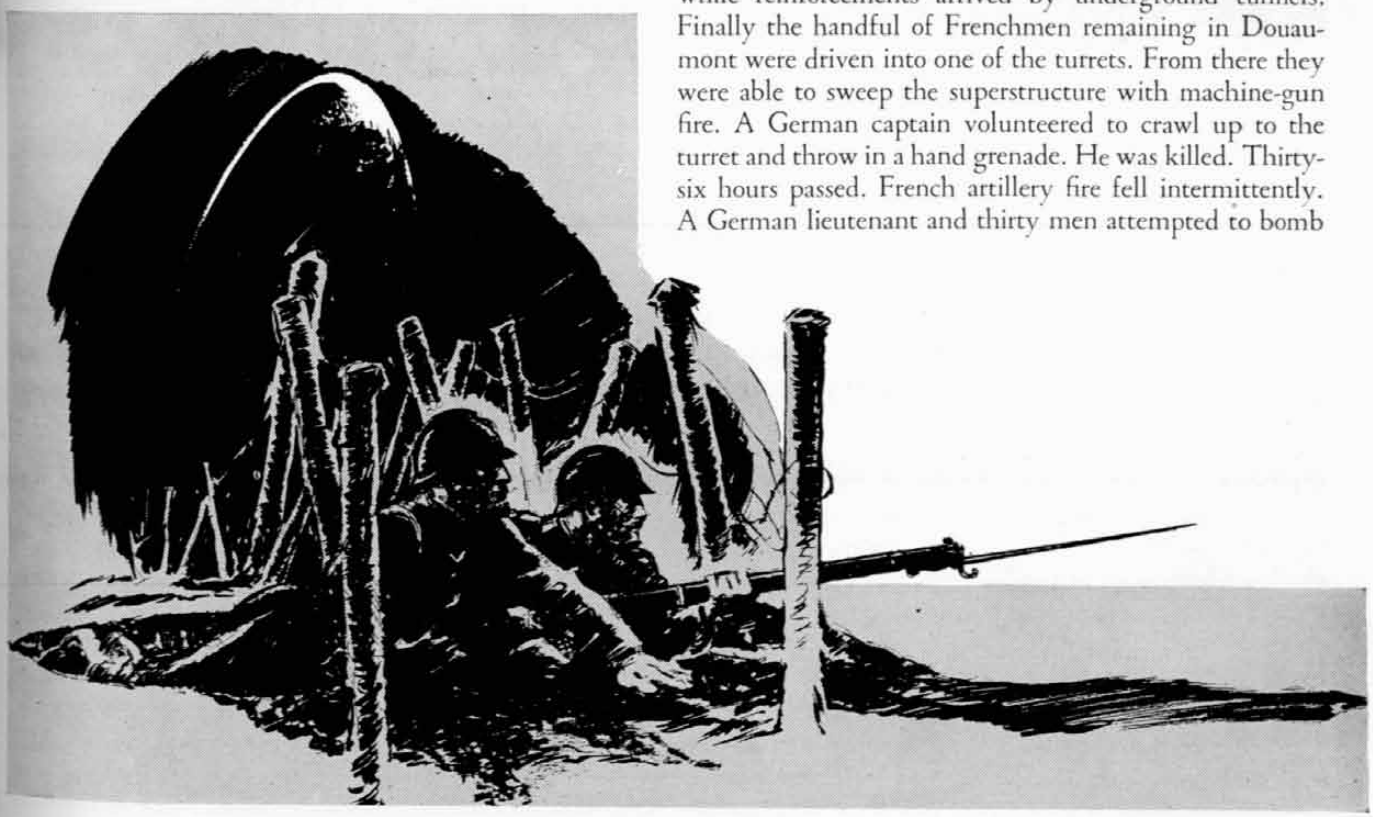
advance from Fort Douaumont. The Germans seemed unable to make any further progress on the eastern bank of the Meuse.

Fifteen days later, in early March, they dropped their attempt to smash the nose of the Verdun salient and tried to pinch it off from one side. Accordingly they attacked along the west bank of the river. Here stood the famous Mort Homme eminence and Hill 304. But this time the French were ready, and while the Germans advanced little by little from March 9th to June 7th, and captured the hills mentioned, they did so at terrific cost. The effort broke down.

In June the Germans tried the eastern bank again. The defense of Fort Vaux was the most dramatic episode of this new onslaught. Vaux commands a ravine. It was the most modern of all French fortresses, having been completed in 1911. It had been regarrisoned by Petain and placed under the command of an especially able officer, Major Raynal. On March 10th and 11th the Germans, in columns of four, charged the slope on which the fort stood. The brigade making the attack lost sixty per cent of its effectives in the two days. On March 16th five charges were made; on March 18th six charges; and on April 2d another attempt was defeated. On June 2d a final, conclusive attack started. On the first day it reached the north ditch. For a week not less than 8,000 shells a day fell on the fort. Six German divisions tried to push the lines back on either side and isolate the fortress. During lulls in the firing on the first day of the attack, Major Raynal sent 200 of his 640 men to the rear in order to conserve water and supplies. On the night of June 6-7, a French counterattack reached the south ditch, but was driven back. The Germans had won the superstructure, and made life very trying for the Frenchmen underground. They lowered baskets of time-fused grenades inside the turrets on ropes; they used gas; they used liquid fire. On June 8th, Zouaves and Moroccans again counterattacked, but were held back by heavy machine-gun fire from the superstructure and then repulsed by German reinforcements. Finally, on June 9th, after seven days of continuous fighting—two of them without water—the French survivors were taken in hand-to-hand fighting. The last message received from Major Raynal read, ". . . officers and men have done their duty. Long live France!"

The French lines based on Thiaumont and Fleury, the companion forts to Vaux, stopped the Germans, and the final phase of the battle consisted of French counter-offensives.

The first attempt to recapture Fort Douaumont was preceded by a five-day preparation. The front lines, after that artillery pounding, offered next to no resistance. The north salient and western part of the fortress were captured and the superstructure overrun, but the underground works remained in German hands. The north salient was shut off beneath the ground by heavy steel doors. Against the western part of the fort, however, there was no such protection. Three Frenchmen reached the connecting passage before the Germans could block it. A Bavarian lieutenant killed all three with his revolver, thus giving his men the few precious seconds needed to set up a machine gun in the passage. It was the margin between success and failure. The Germans kept up a withering fire from their parts of the fort, preventing reinforcements from reaching the French in the other portions. Meanwhile reinforcements arrived by underground tunnels. Finally the handful of Frenchmen remaining in Douaumont were driven into one of the turrets. From there they were able to sweep the superstructure with machine-gun fire. A German captain volunteered to crawl up to the turret and throw in a hand grenade. He was killed. Thirty-six hours passed. French artillery fire fell intermittently. A German lieutenant and thirty men attempted to bomb



The poilu of 1916 who heroically held Verdun.

out the turret. They were beaten off. Then seventy Germans were driven away. Then a small piece of artillery started to hammer the door from point-blank range, and finally three companies of Germans succeeded in capturing the dozen French survivors.

The final French attack on Fort Douaumont was well calculated to succeed. After four days of bombardment the French feinted an infantry attack. One hundred and fifty-eight German batteries opened their defensive fires thereby disclosing their positions. The French artillery started up again and succeeded in smashing sixty-eight of them.

An indication of the terrible conditions prevalent in the German lines in those days is shown by the action of the Mecklenburgers before Douaumont. It was a French custom to leave their most advanced lines unoccupied during an artillery preparation to minimize the losses from rounds falling short. When the barrage became intolerable, the Germans abandoned their battered trenches and flooded dugouts and rushed over to the French front lines for refuge.

Compared to their miserable comrades in the trenches, the 400 Germans inside Douaumont were happy. The outside of the fortress was receiving an incredible battering; the noise was stunning; yet the men were dry, warm, and had plenty of food and ammunition. A private wrote home, "it is like life in barracks in the interior." Suddenly their state of mind changed. A huge French shell penetrated the center of the underground defenses, exploding in the hospital room. Would the next shell blow up the magazine? Corps headquarters ordered the garrison to abandon the fort. The French were not to be allowed the prestige of a contested victory.

In the German Army the artillery had its own commanders and a singularly free hand as the following incident shows. After Douaumont had been abandoned, an artillery observation unit under Captain Prolius, with two lieutenants and seventeen men, entered to set up an observation post. Captain Prolius noted that the shell which had penetrated the fort was a freak shot, and that no others were coming down into the underground works. He recognized the defensive value of the place and took it upon himself to send messages direct to army headquarters pleading for reinforcements. He volunteered to hold the

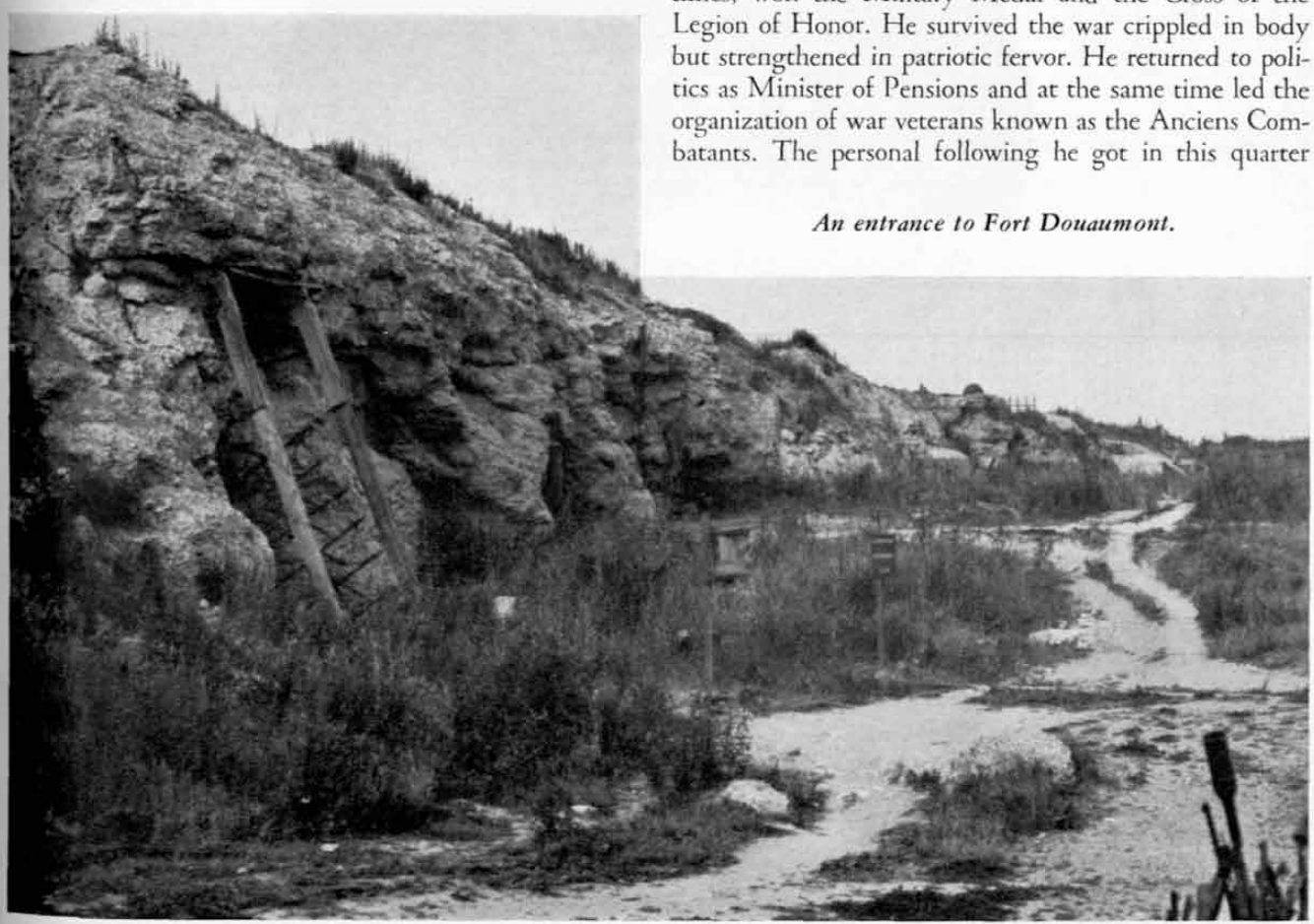
fortress, perhaps for a few hours; at least until his last man fell. His procedure was unorthodox and his urgent messages were not acknowledged. He became disgusted and turned back to his artillery work.

The French were in the habit of using Moroccan and Algerian units for extra-hazardous service. Among the French officers who lived and died with these strange legions was a certain Major Nicolai, whose valor has become legendary in the French Army. Among his minor exploits was the successful attack upon Douaumont. Superstructure, passages, chambers, all were occupied in one continuous rush; Prolius and all his men were captured.

The lines on either side of Fort Vaux were pushed so far back by November that the Germans found it necessary to relinquish the stronghold to the French without a struggle.

The difficulty with pre-war forts was mainly a matter of antiquated construction. The forts of Port Arthur were armed against 210-mm. shell only; the Japanese had guns of 280-mm. caliber. The Belgian and Russian forts of 1914 were also protected against 210-mm. shell only, although bigger and better shell had been made for twenty years. The Germans used 380-mm. and 420-mm. shells against them. Whereas the Belgian and Russian forts had walls only six and a half feet thick, the French forts had walls of eight and a half feet. Moreover, French construction used some 300 pounds more concrete per cubic yard than did other European fortifications. It has been estimated that a quarter of a million shells—French and German—fell on Fort Douaumont. Only one (a French 400-mm.) penetrated the armor belt. It is hard to estimate the quantities of shells of gross caliber which fell on Vaux. Not one penetrated the underground works. The smaller forts were all pounded by thousands of huge shells for months on end. Their concrete belts were not penetrated. The casemates and turrets showed equal powers of resistance. A 155-mm. gun in its turret in Douaumont was hit by a German shell of 280-mm. caliber while in action. The gun went on firing. Wrote General Descoutes of the French Engineers, "The war demonstrated that the portions of our forts adapted to active combat, and the most important defensive elements, defied the most powerful artillery." Marshal Petain, after the war, wrote, "A fortification alone is not enough to check the enemy, but it greatly increases the resisting strength of troops who know how to use it."

A man surprisingly similar in appearance, origin, manner and mentality to Joffre served as a sergeant during the battle. His name was André Maginot. Under-Secretary of War in 1914, he resigned when war broke out to enlist as a private. For a period of weeks in the height of the Battle of Verdun he and his company were quartered in Fort Souville; he afterwards attributed his survival to this circumstance and became a passionate partisan of deliberately prepared defensive position, massively protected by concrete. During the war he was cited five times, won the Military Medal and the Cross of the Legion of Honor. He survived the war crippled in body but strengthened in patriotic fervor. He returned to politics as Minister of Pensions and at the same time led the organization of war veterans known as the Anciens Combatants. The personal following he got in this quarter



An entrance to Fort Douaumont.

kept him popular in high political circles. He became Minister of Colonies, and revised the mobilization plans for native troops. He became Minister of War, and threw himself into construction of the defenses, which bear his name. The enterprise was of gigantic proportions. Although he was a sincere lover of peace himself, self-styled pacifists in France attacked him bitterly. The post war deflation had not left the country in a position to spend the sums needed with a light heart. Although the line had no offensive value, jealous nations in Europe were quick to voice their suspicion of any important and methodical military move on the part of France. André Maginot was equal to the conflict. His strong voice and expression of a stubborn energy always prevailed in government counsels. Like Joffre he surrounded himself with incontestible authority. His war injuries brought him a premature death. His whole life showed that there was no sacrifice too great, no continuity of duty too severe, for a soldier with his love of France.

Will the Germans break the Maginot Line? That is perhaps the most important question of the hour. Until the attempt is made, the only answer is to be found in the history of Verdun, for only there have modern fortifications been attacked by modern guns. Other words of M. Poincare's Verdun speech of August, 1916 are applicable today: "Honor to the soldiers of Verdun! They sowed, and watered with their blood the harvest which is growing today."

Another entrance to the underground fortifications of Verdun.

Hawaiian AA Firing Point

In order to facilitate antiaircraft artillery training and conserve flying time, Brigadier General F. Q. C. Gardner, commanding the Hawaiian separate Coast Artillery Brigade, has installed an antiaircraft firing point near Honouliuli, Hawaii. The firing point extends some 2,000 feet along the beach and is about 1,700 feet in depth. It includes approximately seventy-seven acres, and in addition to the area required for the firing batteries it affords suitable campsites for three antiaircraft gun battalions. For an aerial view of the firing point see page 283.

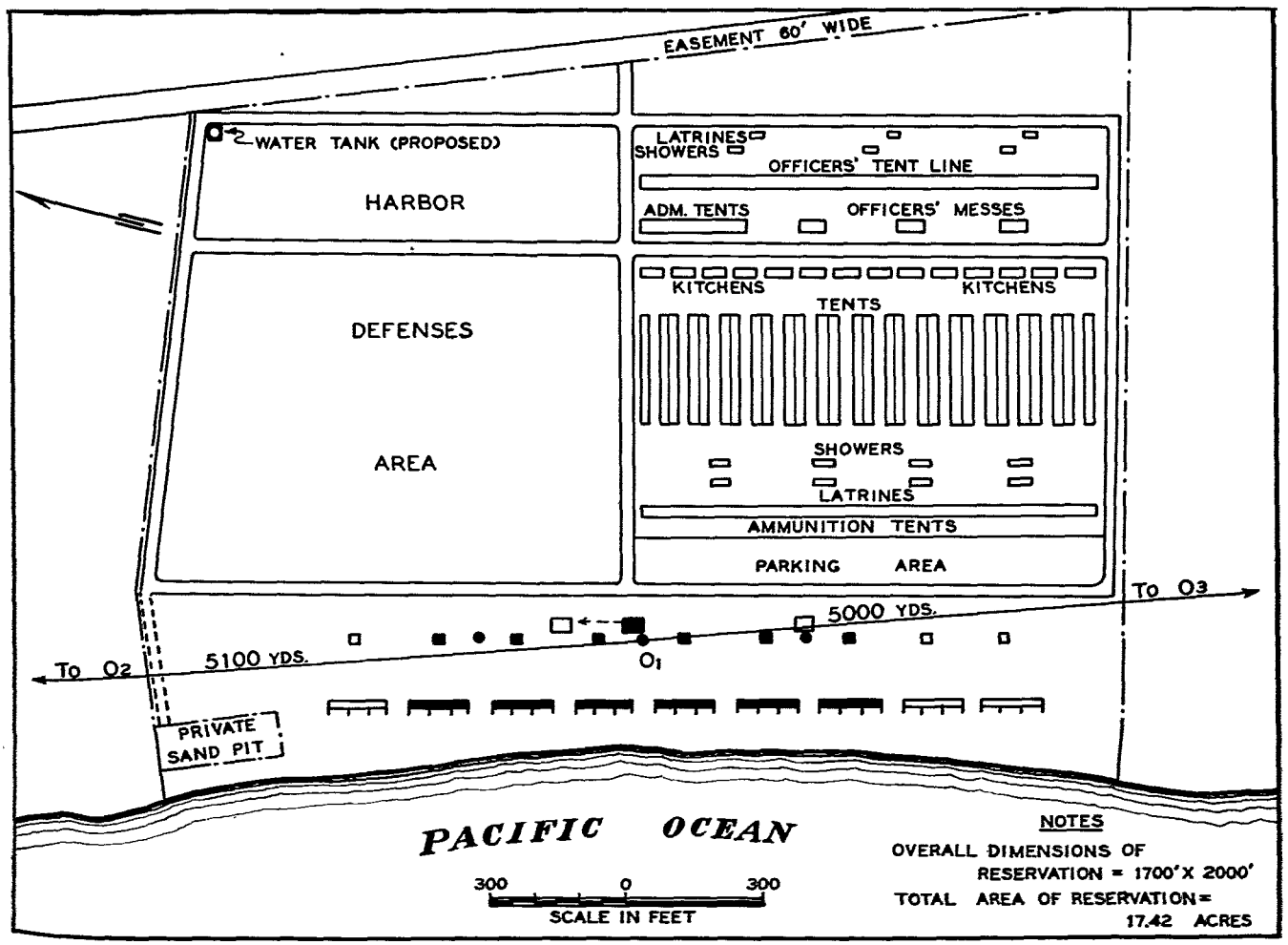
The site affords sufficient room for the firing batteries of the 64th Coast Artillery (AA) and for the mobile antiaircraft batteries assigned to the harbor defenses (additional assignments). The guns and batteries are all placed in line. This location materially facilitates training, since it permits all the batteries to track on each course that is flown, thus conserving flying time and enabling all batteries to derive the maximum benefit from each firing that is conducted. It also enables the searchlight batteries to set up their sound locators in the vicinity and to train their listeners on the same courses used by gun batteries.

This type of firing point affords an excellent means of training antiaircraft organizations firing over water. It is particularly adaptable to the training of National Guard units not only for their annual field training period, but also for their training upon mobilization, where time is all important. The increase of antiaircraft artillery in the continental United States and the attendant demands on the Air Corps for flying time makes it essential that training of units be so planned as to take full advantage of all missions flown.

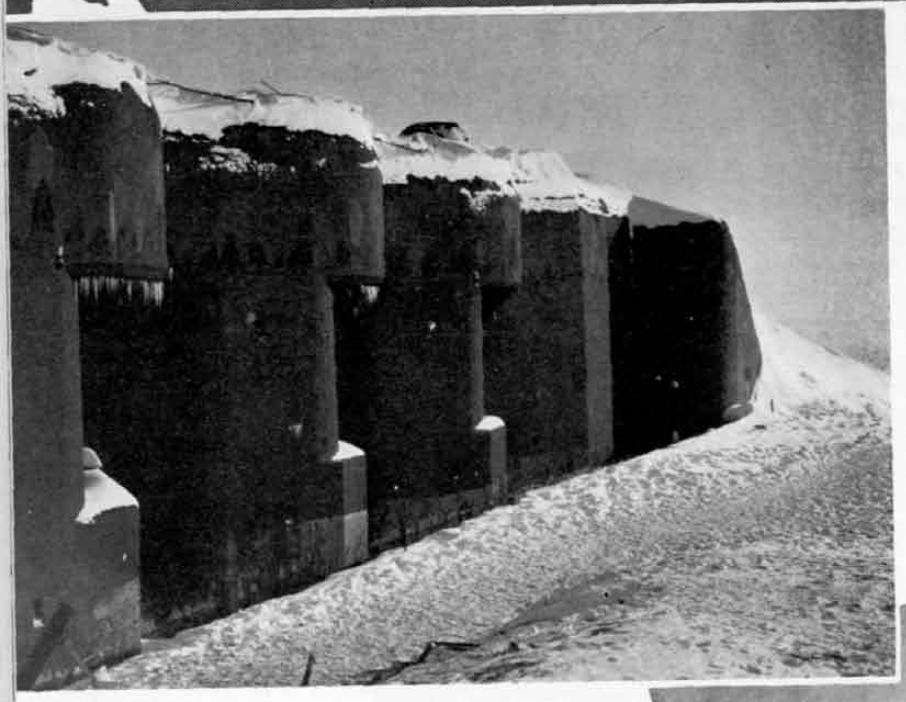
This type of firing range generally can be prepared in close proximity to a harbor defense. Where facilities and land are available, antiaircraft firing centers similar in type to that being developed at Mohave Desert will be used also. The latter type of training center possesses certain advantages over the type described herein as it permits fire through 360 degrees. However, there will be so many regiments to be trained in the event of war that full advantage must be taken of the facilities in harbor defenses and other locations which are suitable for firing over water areas, as there will not be time or facilities available for all regiments to be assembled at training centers where firing may be conducted over land areas.

The use of a similar firing range during armory training periods by National Guard units located in the vicinity of harbor defenses or other Regular Army Posts where such ranges can be made available, would be conducive to better training. Regular Army antiaircraft equipment emplaced thereat could be made available to the National Guard on drill nights, or during other periods, for conducting drills or firings.

Mobilization plans in harbor defenses where National Guard antiaircraft units are to mobilize might well include plans for a firing point, in order to expedite the intensive training of these regiments in the event of an emergency.



Within the



A front line artillery casemate.

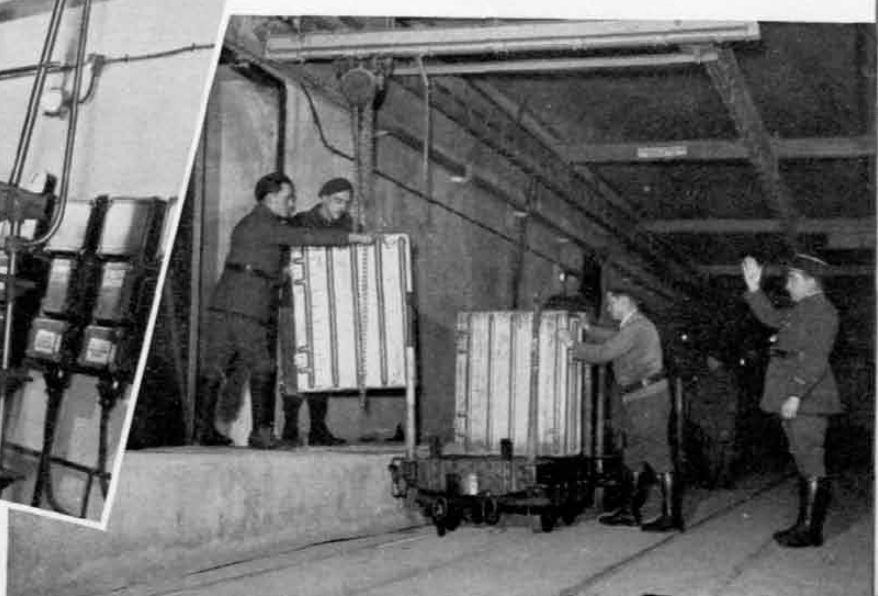
These are ammunition storage vaults.

A battery of air filters

Maginot Line

An entrance to the works.

A Diesel engine powers an electric plant.



Loading ammunition in

An underground butcher shop.

A meal in preparation.

A ration distributing detail makes the rounds.

The general tastes the daily soup.

A bridge game in an officers' mess.

All soldiers collect mascots.

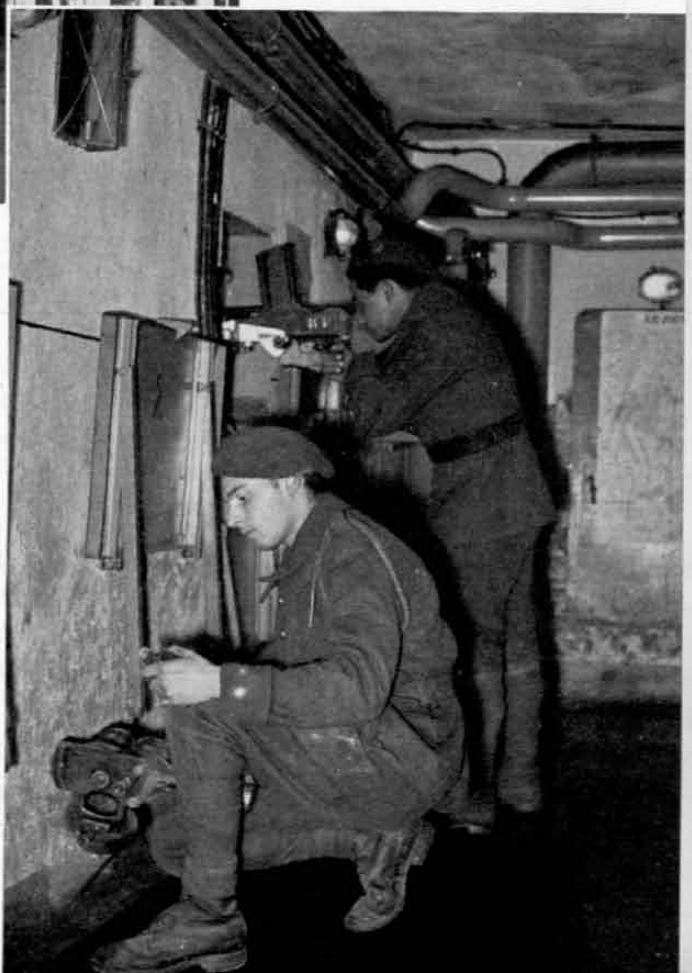
A regimental command post in operation.

A central telephone switchboard in the works. Note the picture of the World War Sergeant Maginot flanked by photographs of Generals Vuillemin and Gamelin.

A new relief takes post.

An infantry machine gun post.

The crew of a light field piece in a forward casement.



A forward position that houses a light machine gun and an automatic hand-grenade thrower.

The 63d Wins Association Trophy

By Lieutenant Lyman H. Ripley, Coast Artillery Corps

The 63d Coast Artillery now knows how Bobby Jones felt when he made his famous grand slam in golf or how a poker player feels when he picks up his hand and stares at a Royal or how the New York Yankees feel at the end of almost any season.

For the year 1939 the 63d won first and second place in the Knox Trophy competition. More recently, the regiment was awarded the Coast Artillery Association Regular Army Trophy for outstanding performance of the year among the regiments of its branch. This trophy is based on the percentage of firing batteries attaining a rating of "Excellent." The 63d had 100%.

Battery B, winner of the Knox Trophy, was commanded by Captain Jack F. Gamber. This 3-inch gun battery's record was achieved entirely without the aid of mirrors. Thorough training in every department of antiaircraft firing is the approved solution of "How to Win the Knox Trophy." Ask Captain Gamber.

This organization used the M-4 director, M-1 height finder, M-4 data transmission system, M-5 fuze setters and M-3 guns on the M2A1 mounts. Despite the unique (to the Southern California Chamber of Commerce) dearth of good weather for antiaircraft firing around San Pedro, Captain Gamber managed to train the range section and the clock setters at the guns by a combination of "canned courses" and actual tracking of a towed target. Spotters were trained by use of the special training film showing actual burst around a target. Such training for spotters both in the battery and in the record section is invaluable.

Lieutenant Norman Hemphill as battery executive and Lieutenants Ray Hales (two practices) and Dabney R. Corum (one practice) as range officers did a bang-up job. Lieutenants Hemphill and Hales were Reserve officers on duty under the Thomason Act.

One of the most unusual features of the firing of this battery was the method of applying range corrections. The battery commander is to be commended on his bold decision to apply such corrections on the M-4 director in terms of fuze spots rather than the usual altitude spots in the interest of smoother data at the guns. Experience in preliminary practices had shown that altitude spots caused erratic settings on the receivers at the guns whereas the fuze spot, being applied directly through a differential, merely moved the fuze dial slightly in one direction or the other.

Captain Gamber is now on duty with Battery E, 73d Coast Artillery in the Canal Zone.

Battery E, firing machine guns, was runner up for the elusive Knox Trophy. Commanded by Captain Robert F. Tomlin, this battery demonstrated that any low-flying plane in the vicinity of Battery E's gunners is in a tough spot.

All of the fire control equipment was improvised and was developed within the battery over a period of years, each successive year bringing new improvements. It is a form of the central tracer control system in which two observers stationed in rear of the firing line adjust the lateral and vertical leads. The system consists of two circuits of electrical current each one containing five dials, the pointers of which are positioned by varying the amount of electrical current passing through the line. This gives us two dials for each gun and one for each of the fire adjusters, who, by means of merely changing the amount of current flowing through the lines, change the setting on the lead dials at the guns. Two men at each gun then keep the proper lead set on the gun sights by keeping them set through flexible cables, at the lead called for by the electrical dial. The gunners merely keep the sights trained on the target.

Here again, the matter of training makes itself evident. The battery commander came to the conclusion that the men most likely to make good fire adjusters were those with the best stereoscopic vision. After testing a large number of men on the stereoscopic trainer, he picked those with the best depth perception for more intensive training in adjusting fire. After the adjusters were definitely selected they were trained further by adjusting the fire of one gun at a sleeve target before starting practices using four guns. Coincidentally with the training of the fire adjusters the gunners were being trained in individual tracer control by firing on the 1,000-inch range at balloons and at towed sleeve targets.

Captain Tomlin, it may be noted, commanded the third-ranking Knox Trophy battery until a matter of a few days before that organization—Battery B, 41st Coast Artillery, stationed in Hawaii—fired the practice that placed it in the number three spot.

The third of the firing batteries of the 63d that comes up for consideration is the searchlight battery commanded by Captain John R. Seward. Captain Seward deserves a lot of praise for the fine showing his battery made under difficult conditions.

About the middle of August, Battery A moved to March Field, California, for their annual target practice. About the time the battery was at a high pitch of training, ready to pick up every target within hearing, it was ordered back to Fort MacArthur. It seems that orders had come down to send about half the regiment to Panama immediately. This transfer deprived Battery A of most of its key men, listeners, light commanders, etc.

With a tremendous increase in strength by recruiting, the next couple of months found Battery A and the entire regiment in a turmoil, to put it mildly. By the first of November things had settled down sufficiently and the recruits had received enough training for the battery to try again. Once again the organization moved to March Field. Recruit drill over, listeners had been selected and

1—The presentation of the Knox Trophy. Left: *Colonel Edward A. Stockton, CO, 63d Coast Artillery;* right: *Lieutenant H. S. Tubbs, CO, Battery B, 63d Coast Artillery. 2—Colonel Edward A. Stockton inspects one of the guns of Battery B, 63d Coast Artillery. 3—The range section of Battery B, 63d Coast Artillery in action at the M-4 director. 4—Height finder of Battery B, 63d Coast Artillery in action.*

trained intensively on the binaural trainer. The value of this device is evidenced by the results of the practice, for with only some twenty-one hours of drills and practice the battery made an excellent showing. All of which demonstrates that there is no substitute for the proper kind of training.

And last but not least we come to the commanding officer, Colonel Edward A. Stockton, Jr. Colonel Stockton has had a long and varied service. He was one of the first Americans overseas during the first World War, arriving early in the fracas with the 7th Provisional Regiment, 1st Separate Coast Artillery Brigade. In 1918 he became director and commandant of the Heavy Artillery School of the AEF. He was later given command of the 48th Coast Artillery, which unit he brought back to the United States.

Since the War he has served as commanding officer of the 57th Coast Artillery, on the First Coast Artillery District staff, in the Office, Chief of Coast Artillery, with the Bureau of Insular Affairs, with the 59th at Corregidor, the Department Staff in Panama and is now as he was in 1939, commanding the 63d and the Harbor Defenses of Los Angeles at Fort MacArthur, California. He is a graduate of the Command and General Staff School and the Army War College.

It would be an understatement to say that Colonel Stockton is extremely well liked by all the officers and men under his command.

Compared to some of the Coast Artillery regiments, the 63d is a mere infant. The present unit dates back to the time it was formed from the 3d Antiaircraft Battalion in 1921. At this time it was organized as a battalion. Later it became the 63d Coast Artillery (AA), with the following batteries active: Headquarters, A, B, and E. Late in 1939 the regiment was increased to full strength.

The 63d has no battle honors. But few if any of the regiments in the Coast Artillery can match its peacetime record. It has won three Knox Trophies—Battery E in 1929, Battery A in 1936 and, of course, Battery B in 1939. No other regiment possesses more than two of these coveted plaques. We of the 63d are proud of the regiment's enviable record.

Rapid Determination of AA Tactical Requirements

By Major R. T. Sharpe, Coast Artillery Corps, NGUS

This article describes how the bomb release line and the width of the critical zone may be obtained from a graph for targets flying at speeds between 150 to 300 miles per hour and at ceilings between 2,000 and 30,000 feet. It also presents a rule of thumb for estimating the number of gun batteries and searchlights required.

"It should be thoroughly understood that the location (of the bomb release line) and width (of the critical zone) determined in this example are true only for a certain ceiling (15,000 feet) and speed (200 miles per hour) of the airplane and should be re-determined when the value of these characteristics differs from that used in the example." Thus Volume II, Part One of the *Coast Artillery Field Manual,* edition 1938, page 50.

Now the re-determination of the bomb release line and the width of the critical zone is not an arduous task. The AEC student probably learns something each time he re-computes these data for a different set of conditions. Yet under service conditions, it might be convenient to have a more rapid means for determining the data on which the disposition of gun batteries and searchlights depends.

Furthermore, once the bomb release line and the width of the critical zone have been determined for a given set of conditions, the tactical officer must estimate how many gun batteries and searchlights he will require to provide an adequate defense. On this point, the *Manual* expounds certain general principles but fails to give any method for finding a quick answer to this question.

In this article I have attempted: (1) to provide a graphical means for determining the bomb release line and the width of the critical zone and (2) to derive a rule of thumb for estimating the gun batteries and searchlights required for a normal, all-round defense of an objective.

The graph is reproduced in Figure I. In the upper half, the distance of the bomb release line from the outer boundary of the objective may be obtained for targets flying at speeds between 150 and 300 miles per hour and at altitude from 2,000 to 30,000 feet. In the lower half, the width of the critical zone may be obtained for targets flying at speeds between 150 and 300 miles per hour. The range of speeds and altitude graphed is wide enough to include any reasonable present or future situation which a gun or automatic weapon battery may expect to face.

The charts are merely graphical representations of the well-known formulas:

(1) Bomb Release Line = the number of seconds of the fall of the bomb times the travel of the airplane during those seconds

(2) Width of Critical Zone = travel of the airplane during the period of level flight required to sight the bomb (which is now taken as 45 seconds)

(3) If y = the speed of the airplane in yards per second and t = the time of fall of the bomb, derived from the formula

$$t = \sqrt{\frac{2s}{g}}$$ where s = the altitude of the airplane in feet

and g = the acceleration of the bomb due to gravity (32.16 feet per second)

(4) Then:

$$\text{Bomb Release Line in yards} = y\sqrt{\frac{2s}{g}}$$

$$\text{Width of Critical Zone in yards} = 45\,y$$

By selecting arbitrary values for s and y, these equations may be easily solved for any selected altitude and speed and the result graphed.

To use the charts, enter on the ordinate representing the anticipated speed of the target (these are scaled in units of 5 miles per hour). To obtain the bomb release line, run down the ordinate to the diagonal representing the anticipated altitude of the target. At the intersection, run along the abscissa and read the value of the abscissa which is the value of the bomb release line on the vertical scale at the left. This is scaled in units of 100 yards and desired accuracy may be obtained by reading up to the nearest hundred yards.

The critical zone is obtained in the same way, except that altitude is not a variable factor and all readings are made at the intersection of the proper ordinate and the single diagonal.

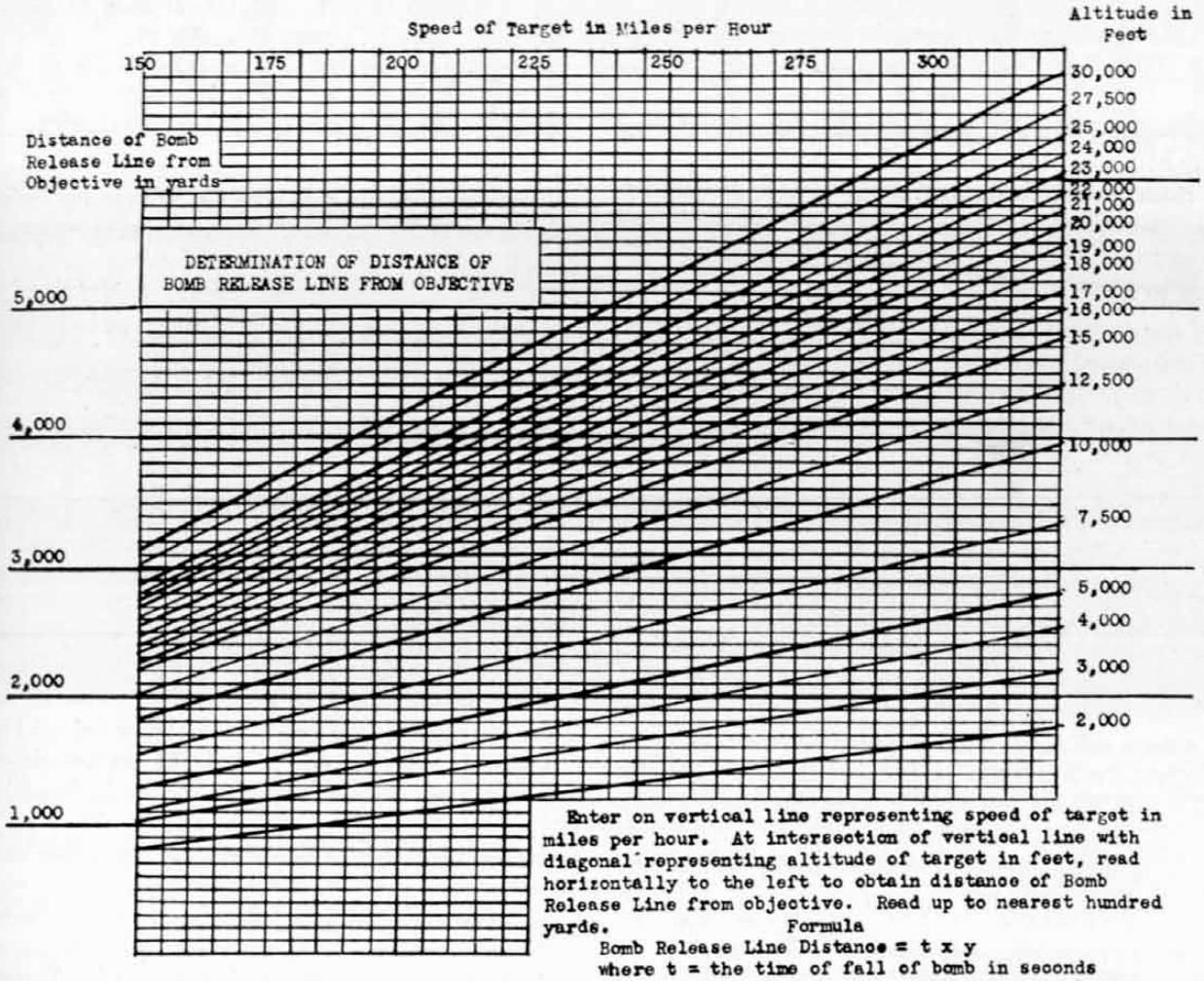
Once the bomb release line and the width of the critical zone has been determined, it is necessary to estimate how many gun batteries and searchlights will be required.

Current tactical doctrine assumes that an all-around defense is essential; that the gun batteries will be situated at or near the bomb release line; and that the batteries will be mutually supporting. If these conditions are fulfilled, a close-in defense will result which will cover the inner half of the critical zone with the fire of at least two batteries and the outer half with the fire of at least one. The gun batteries will thus be approximately the same distance from the center of the objective as the bomb release line and no more than 6,000 yards apart.

A large proportion of the areas to be defended are likely to be circular in shape. When they are, the gun batteries will be situated along the circumference of a circle whose radius is the distance, in yards, from the *center* of the objective to the bomb release line. If the batteries are 6,000 yards apart, the number of batteries required may be obtained by dividing the length of the circumference of that circle by 6,000:

(1) Number of gun batteries required $= \frac{2\pi r}{6{,}000}$

or .00105 r.



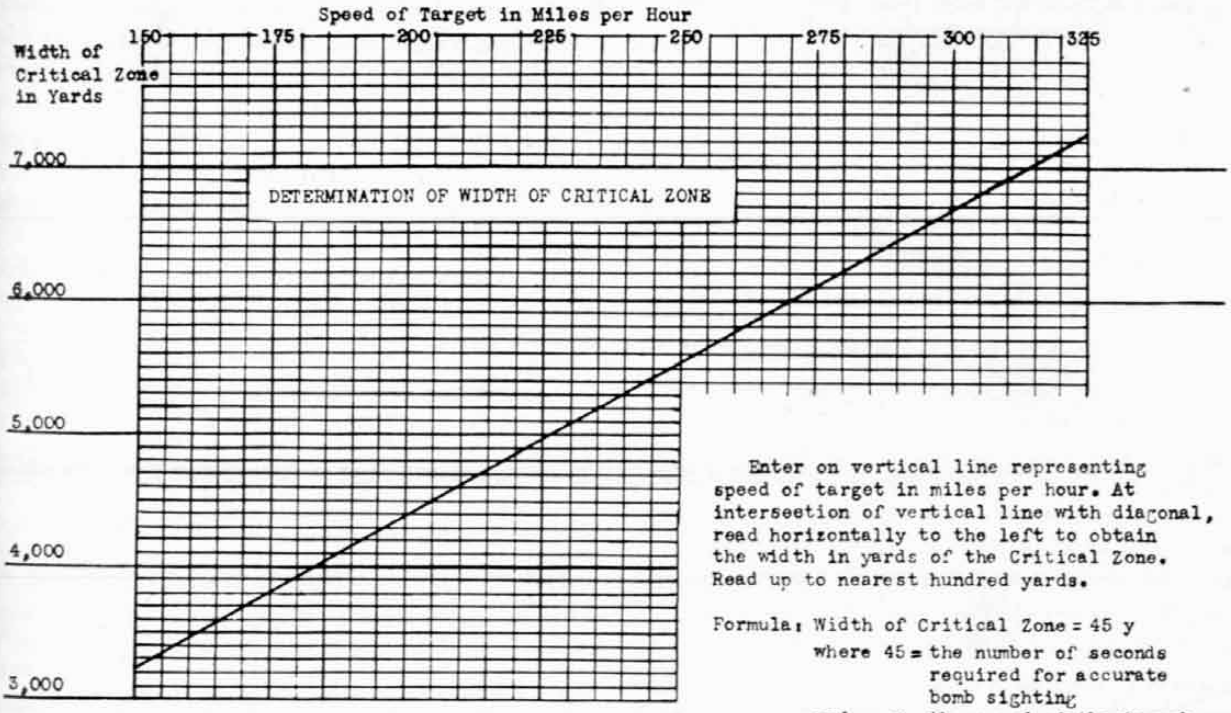
Enter on vertical line representing speed of target in miles per hour. At intersection of vertical line with diagonal representing altitude of target in feet, read horizontally to the left to obtain distance of Bomb Release Line from objective. Read up to nearest hundred yards.

Formula

Bomb Release Line Distance = t x y

where t = the time of fall of bomb in seconds

and y = the speed of target in yards per second



Enter on vertical line representing speed of target in miles per hour. At intersection of vertical line with diagonal, read horizontally to the left to obtain the width in yards of the Critical Zone. Read up to nearest hundred yards.

Formula: Width of Critical Zone = 45 y

where 45 = the number of seconds required for accurate bomb sighting

and y = the speed of the target in yards per second

where r = the distance in yards from the *center* of the objective to the bomb release line.

But we have assumed that the batteries were located on an arc of 6,000 yards rather than a chord and we have thus made a safety allowance, since such an assumption would require more batteries. We can therefore drop the last two digits and obtain:

Rule I:

For a close-in defense the number of gun batteries required equals the average distance, expressed in thousands of yards, from the center of the objective to the bomb release line, resulting fractions being raised to the next highest whole number.

This rule may be adapted to situations where the shape of the objective is not circular by averaging the distances from the center of the objective to the farthest and nearest edges of the objective boundary to obtain a value for r.

With this rule as a basis, the number of searchlights required for the inner and outer rings may be determined.

Current doctrine locates the inner ring between 4,000 and 5,000 (or an average of 4,500) yards and the outer ring 9,000 yards beyond the gun positions with the lights between 5,000 and 6,000 yards apart. If we assume that the lights are 6,000 yards apart, it is obvious that the number of lights required can be computed in the same way as we computed the number of guns by using the formula:

(1) Number of lights required $= \frac{2\pi r'}{6{,}000}$ or $.00105\, r'$

where r′ = the distance in yards of the lights from the center of the objective.

(a) But r′ for the inner ring equals r + 4500

(b) and r′ for the outer ring equals r + 9000

where r = the distance in yards of the guns from the center of the objective.

(2) Substituting the above values for r′ in the first equation, we obtain:

(a) Number of lights required for inner ring $= .001\ (r + 4500)$

(b) Number of lights required for outer ring $= .001\ (r + 9000)$

(3) Solving each of these equations we obtain:

(a) Number of lights required for inner ring $= .001\ r + 4.5$

(b) Number of lights required for outer ring $= .001\ r + 9.0$

(4) But we already know that .001 r equals the number of gun batteries required. Hence:

(a) Number of lights required for inner ring = number of gun batteries required plus 4.5

(b) Number of lights required for outer ring = number of gun batteries required plus 9.0

Because it is sometimes necessary to locate searchlights no more than 5,000 yards apart, particularly in the outer ring, and since the number of lights in the inner ring may be safely reduced from the maximum required, we may make a slight modification in the formula and derive:

Rule II:

The number of searchlights required for the inner ring equals the number of gun batteries used plus four; for the outer ring, the number of gun batteries used plus ten.

Remember that this rule does not include any estimate for additional lights inside the inner ring: these will normally be required in extensive defenses.

To illustrate the simplicity of this method for computing the tactical requirements of an antiaircraft defense, let us take a simple example.

Given an objective, roughly circular in shape and 3,000 yards in diameter. Assume that enemy bombers normally fly at 225 miles per hour and bomb at an altitude of 20,000 feet.

Turning to the graph in the upper half of Figure 1, we run down the vertical line representing 225 miles per hour, note where it intersects the diagonal representing 20,000 feet, and read the value of the horizontal line at the intersection. This value, which is the distance of the bomb release line from the outer limits of the objective, is 3,900 yards.

We next look at the graph in the lower half of Figure 1. Entering again on the vertical line representing 225 miles per hour, we read the value of the horizontal line at the intersection of the ordinate and the diagonal. This proves to be 5,000 yards, which is the width of the critical zone.

Now the total distance from the center to the outer limits of the objective is 4,500 yards and from the outer limits to the bomb release line is 3,900 yards. Therefore, the total distance from the center of the objective to the bomb release line is 5,400 yards.

(1) Applying Rule I to determine the number of gun batteries required, we take one one-thousandth of the total distance, and raise any resulting fraction to the next highest whole number:

Number of gun batteries required = .001 x 5400 = 5.4. Raise to the next highest whole number: Number of gun batteries required = 6.

(2) Applying Rule II to determine the number of searchlights required:

(a) For inner ring = 6 (number of gun batteries required) + 4 = 10

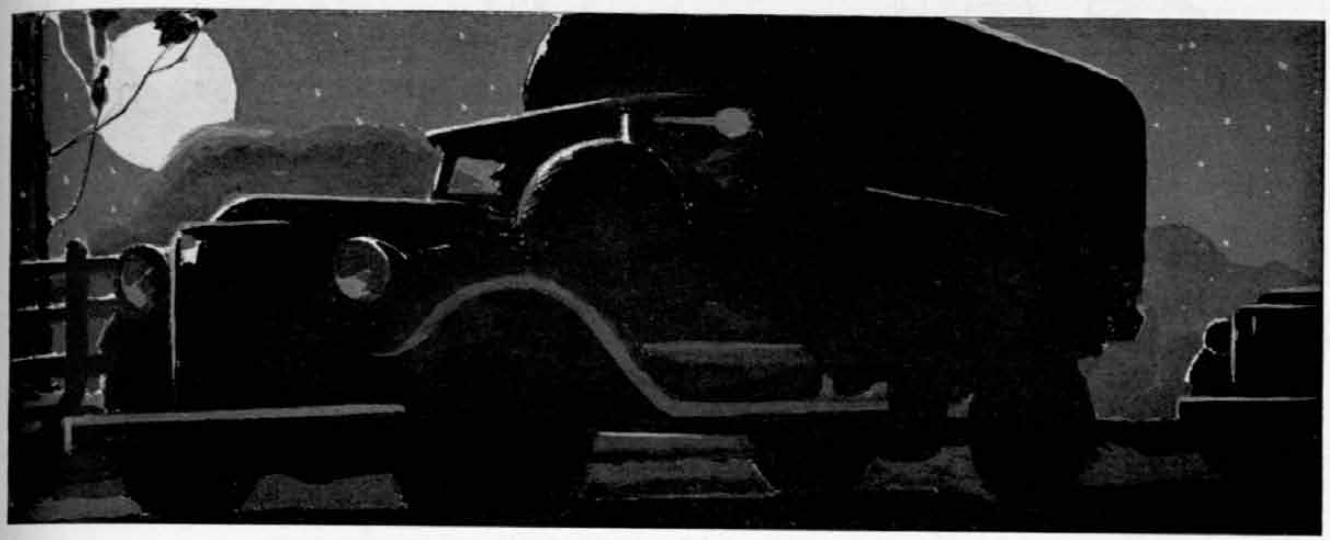
(b) For outer ring = 6 (number of gun batteries required) + 10 = 16

Total (not including any additional lights inside the gun positions) 26

Therefore in this situation, two gun battalions would provide an adequate defense.

NOTE: Each situation involving AA defense presents a special problem. Great caution must be exercised in any attempt to use a "rule of thumb" in arriving at a tactical solution. The rules developed in this article are interesting guides to the rough determination of general requirements. *The Editor.*

Without Lights



By Captains Frederick M. Thompson and Edwin K. Wright, Infantry

For years the map-problem tacticians have been moving long motor-vehicle columns at night, without lights, at varying speeds, and with arbitrary distances between vehicles—on paper. By means of graphs and charts it has been possible to move these ghostly convoys with such facility that columns cross each other at critical road intersections with a safety limit of only a few minutes. If the problem requires 300 trucks to make the movement, 300 trucks glide smoothly through the night—and rain, snow, sleet, or fog delay them not.

But how different is the reality. The motor-vehicle driver is a human being, subject to the strain of fatigue, burdened with the normal amount of fear, and possessing no better than normal eyesight. Motor vehicles are temperamental mechanisms and often stop on little provocation. Rain, snow, and sleet join hands with the demons of darkness to draw vehicles from the road and plunge them into ditches so that the road is effectively, if temporarily, blocked. Time rushes on, the column is split, and all hell breaks loose at the crossroad.

Fortunately the movement of motor vehicles at night, without lights, is a practical problem and one in which we have been able to get some training. When moving at night without lights, we know that vehicle speed and interval depends on many factors, such as the degree of darkness, the state of the weather, and the condition and type of road. Considering the human element, we know that some control method must be adopted whereby the driver can *see* the rear of the vehicle ahead. Without the ability to see the car ahead the interval between vehicles either increases to an extent where control is entirely lost, or decreases to the point where collision is almost inevitable. To consider the human element further, we know that if the method used to distinguish the vehicle ahead is so inefficient that the driver must give all his attention to maintenance of proper interval, then the chances of his leaving the road increase accordingly.

Many methods of controlling the interval between vehicles have been tried and found wanting. Spots of luminous paint have been tried on the rear of vehicles, but paint deteriorates due to weather and is dimmed or entirely erased when covered by dust or mud. Tail lights have been allowed to show during movement independently of the headlights. This method of course gives the hostile air observer a clear picture of the length of the column, the number of vehicles, the direction of movement and finally, its destination. An attempt has also been made to cover these lights with an overhead shield to render them invisible to observation from directly overhead, but the shield increases the glow of the lights on the ground, and the ground glow is even more revealing to the aviator than the use of the lights without the shield. In some instances, the use of lights colored other than red has been adopted, but again the ground glow is completely revealing.

A multitude of ingenious devices have been tested by groups and individuals, but either the original purpose—a method of maintaining contact between vehicles—has not been satisfied, or the device has permitted effectual air observation of the column.

It is apparent that an ideal device must have the following characteristics:

(1) It must enable the driver to see the vehicle ahead without using his headlights.

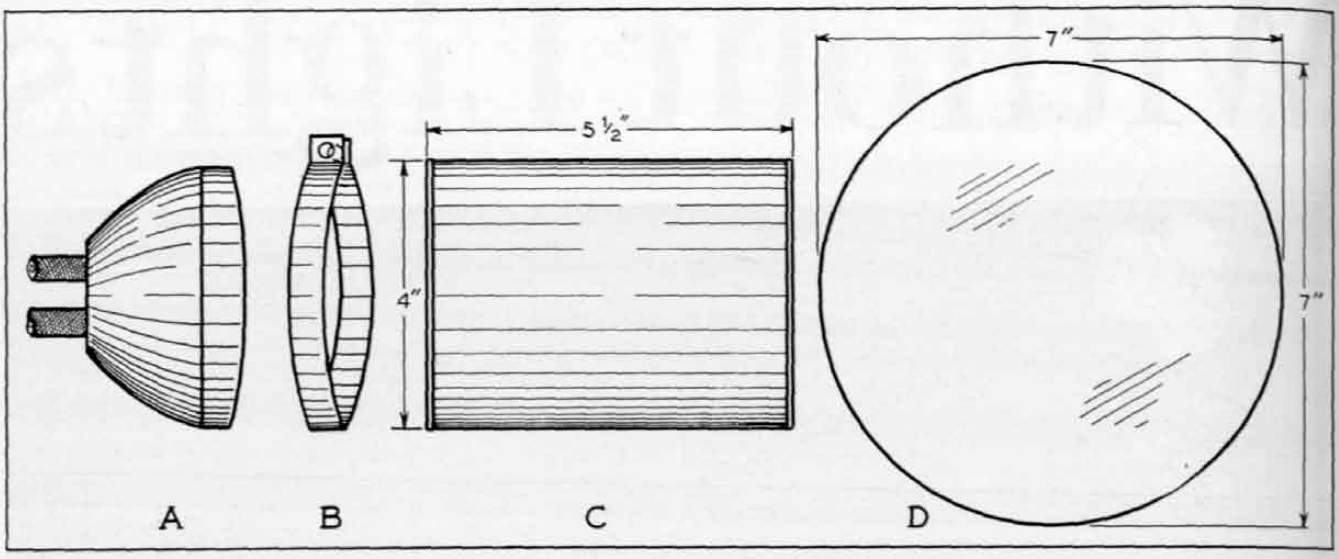


Figure 1: Basic Parts of the Hice Convoy Light

A—This part of the unit consists of the standard truck tail light used on the bulk of our service vehicles. B—A ¾-inch metal strap to hold the body of the unit to the tail light. A hole is made in each end of the strap to permit binding the ends together by means of a 2-inch stove bolt with nut. C—The body of the convoy light is made from a one-quart commercial lubricating oil can having a 4-inch diameter at the ends and a height of 5½ inches. One end of the quart can is cut completely out and a hole ⅝-inch in diameter is placed in the center of the other end. D—A circular piece of tin 7-inch in diameter is used to make the baffle for the interior of the convoy light. Two such baffles are required for each unit. See Figure 2 A for details of their construction.

(2) It must provide for maintaining a *constant* interval between vehicles to insure against unduly lengthening the column or closing up and colliding.

(3) The device must obviate hostile air observation of the column from any angle.

(4) The light from the device must be invisible to hostile ground troops operating on the front and flanks.

(5) It must be so simple to operate that only a small amount of training in its use will be necessary.

Among the many experiments along this line one approaches, if it does not actually reach, the ideal. During the spring of 1938 a tank company conducted a series of tests with particular emphasis on the movement of tanks at night without lights. Every soldier in the organization was encouraged to submit suggestions as to how control could be maintained over a tank column at night. Rather remarkably, some thirty-odd devices were recommended and all were tested. Among these devices, the one suggested by Staff Sergeant David P. Hice, Company C, 66th Infantry (Light Tanks) was constructed. The device seemed to have so much merit that considerable thought and work went into it. Various changes were made in its construction until it was finally considered practicable. It appears to have but one serious drawback to complete adoption—it costs practically nothing to make. With the assistance of Sergeant Charles S. Morgan, who aided Staff Sergeant Hice in the initial stages of the experiment, several sets of the device have been constructed. A series of tests have given satisfactory results but before going into the tests let us examine the device itself.

Construction

The device, which we will hereafter refer to as the Hice Convoy Light, consists of two identical units, each with four basic parts. These four basic parts are shown in Figure 1. The light required for each unit is supplied by the standard tail light found on the majority of our vehicles. The body of the unit is constructed from a popular commercial lubricating-oil can of one-quart capacity. One end of the oil can is cut completely out and a hole with a diameter of 5/8-inch is cut in the center of the other end. Two tin discs of a diameter of seven inches are needed in the preparation of the baffles to be placed inside the body of the completed unit. These discs can be cut from the sides of a gallon or five-quart commercial lubricating-oil can. A ¾-inch metal strap with a hole bored in each end to permit binding the ends together by the use of a two-inch stove bolt and nut is used for fastening the open end of the unit firmly to the tail-light assembly.

Figure 2 shows the method used to construct the baffles for the interior of the convoy-light body. A segment is cut from the seven-inch tin disc shown in Figure 1-D to permit bending the disc into the shape of a funnel. The outer one inch of the disc is cut as indicated to provide tips for binding the baffle to the interior of the body. Two such funnel-shaped baffles are required for each unit.

Figure 3-A indicates a completed unit with the baffles soldered in place in the interior of the convoy-light body. Two of these units, placed side by side, form the completed Hice Convoy Light, as shown in Figure 3-B.

The features that control the characteristics of the light depend upon the strength of the bulb or bulbs, the size of the apertures and the interval between the baffles. In all the experiments, the small glass in the base of the tail light which illuminates the license plate was covered or replaced by a piece of tin to eliminate any chance of ground illumination from that source.

In some models of the light the construction described

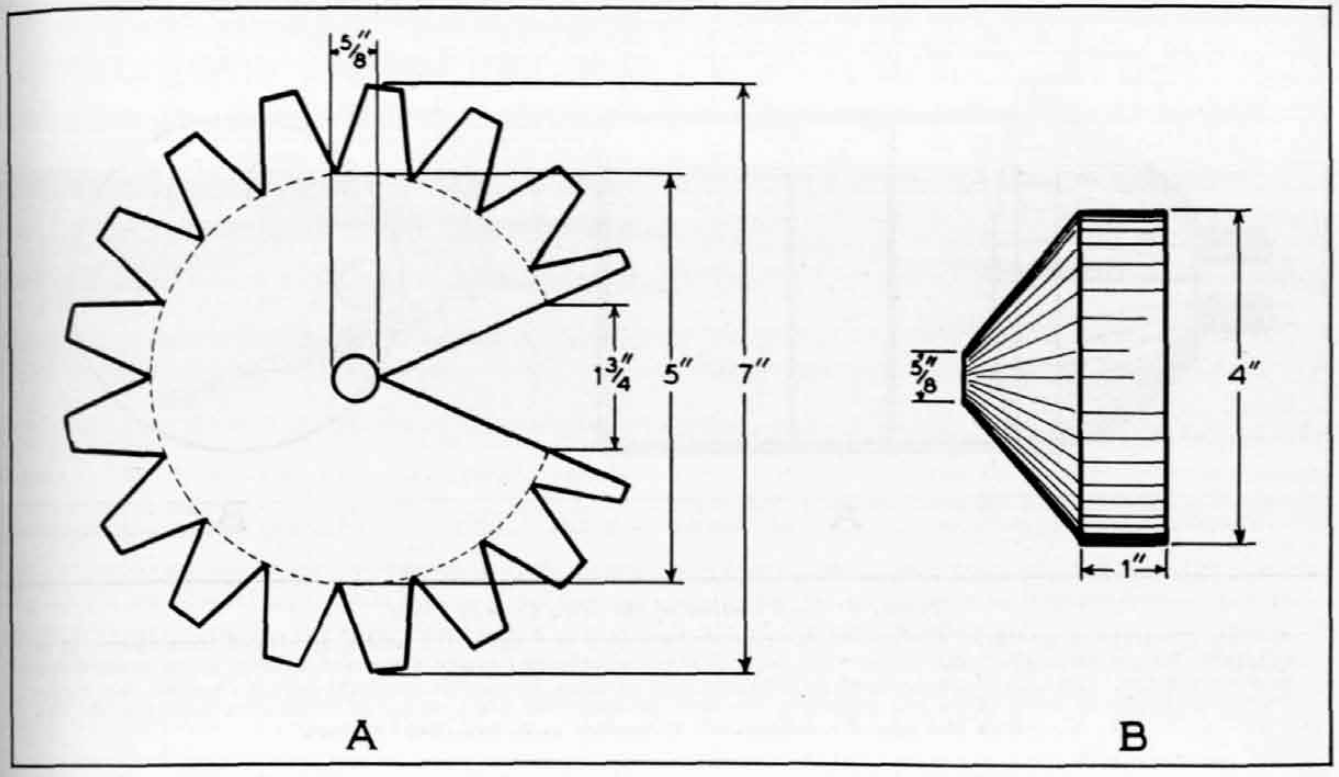


Figure 2: Construction of Baffles for the Hice Convoy Light

A—The circular piece of tin shown in Figure 1 D is cut as indicated above. A ⅝-inch hole is cut in the center of the disc and a segment cut from one side to permit bending it into the shape of a funnel. The outer 1-inch tips are bent forward about 60 degrees and the tin drawn in and soldered so that the 5-inch base becomes 4-inch. Two of these funnel shaped baffles are required for each unit. B—This is a side view of the baffle after the 7-inch flat disc is shaped as indicated in A, above.

above has been modified to meet certain conditions. It was believed that the use of flat interior baffles would simplify construction and would be desirable if the characteristics would not be materially changed by their use. Subsequent tests indicated that when the flat baffles were used the light characteristics were practically unchanged.

It was further considered that for smaller vehicles or when light conditions indicated the necessity for maintaining a shorter interval between vehicles, a light consisting of only one unit with two light apertures in the baffles and rear of the body, would be desirable. While the use of such a unit placed the two light apertures only about three inches apart, measuring from center to center (as compared to four inches in the basic design utilizing two units) all tests indicated its practicability under the conditions stated. Figure 4 illustrates this modification.

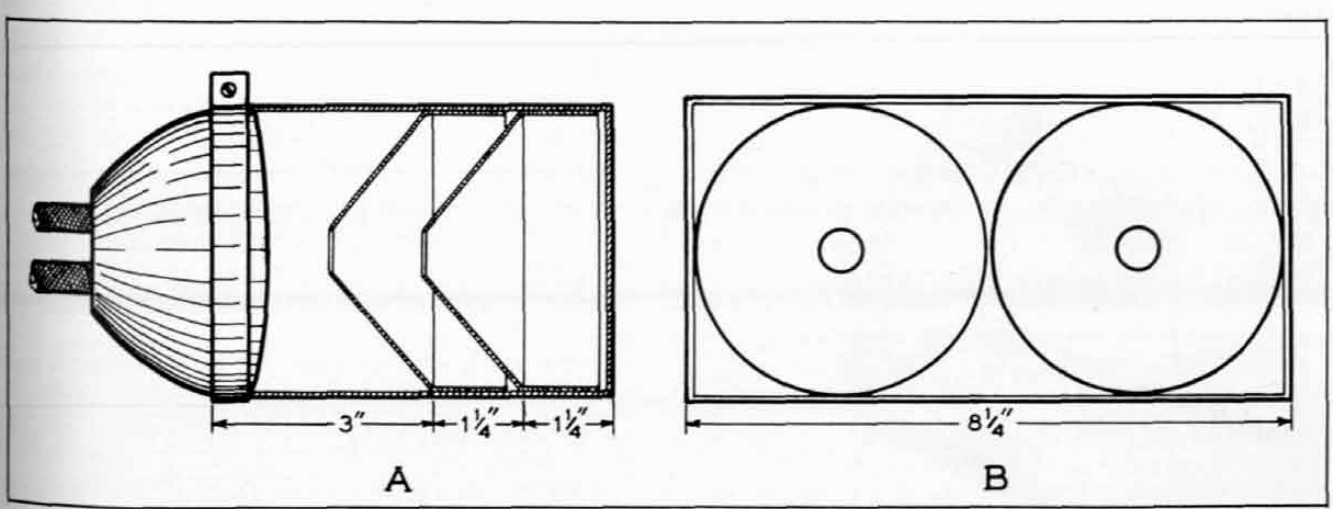


Figure 3: The Complete Unit

A—This is a cross sectional view of a completed unit of the Hice Convoy Light with the baffles soldered into place in the interior of the body. It takes two of these units placed side by side to make the completed device. B—This figure illustrates the appearance of the completed Hice Convoy Light as seen from the rear, with the two units placed side by side and the whole enclosed in a protecting cover (or the two units strapped together by means of metal straps).

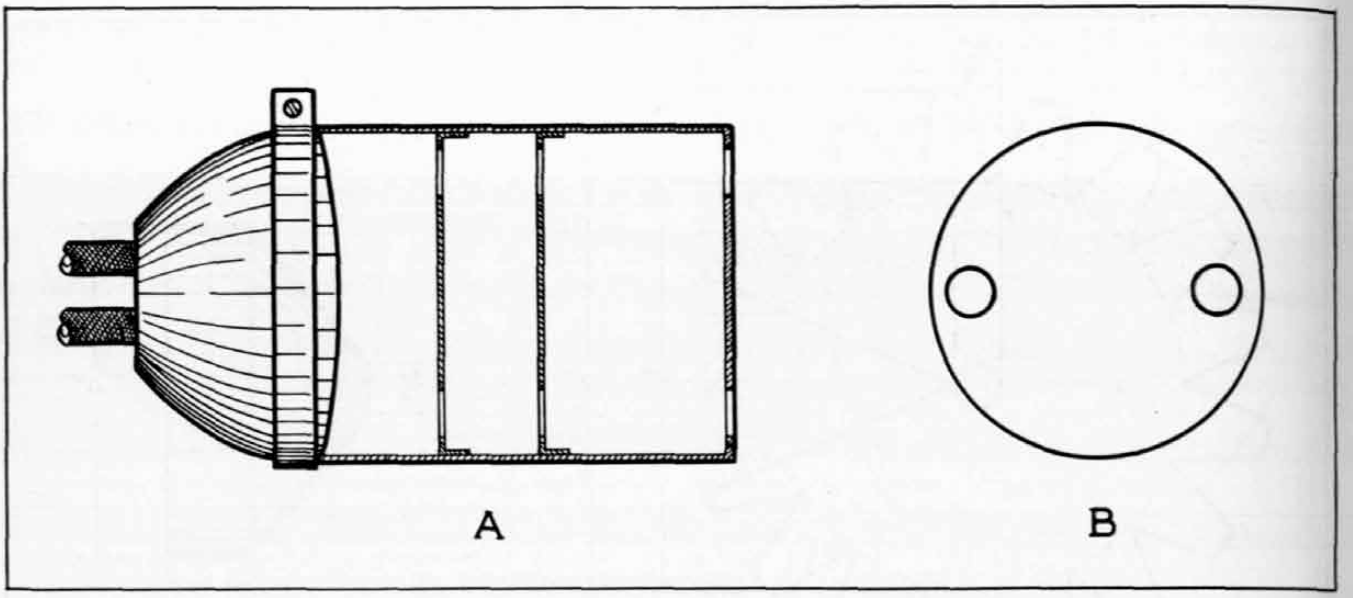


Figure 4: Modification of the Hice Convoy Light

A—This illustrates a modification of the basic principle indicated in Figures 1, 2, and 3, as viewed from above. It is adaptable for use on smaller vehicles, or when light or other conditions require a shorter interval to be maintained between vehicles. Either the funnel shaped or flat baffle may be used. Since only one light unit is required this modification is simpler of construction and operation. B—This illustrates the construction of the interior baffles of the flat type and also the appearance of the unit as viewed from the rear.

Application

In comparing the capabilities of the Hice Convoy Light with the ideal device aimed at, it was necessary to adopt two basic guiding assumptions:

(1) Depending on the degree of darkness, the safe driving distance between vehicles was assumed to be between 100-200 feet (35-70 yards).

(2) Any light emanating from the device must not be visible more than 1,600 feet (535 yards) on a straight line directly to the rear.

To see if these conditions could be satisfied, several units were constructed with varying types of light bulbs within the standard tail light, with varying intervals between the baffles, and with variously sized holes in the rear of the light body and in the baffles.

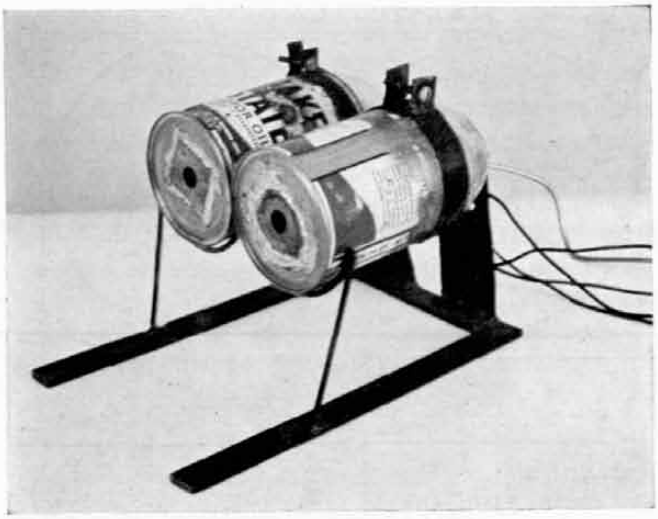


Figure 5: The Hice Convoy Light used in the tests

Figure 5 is an un-retouched photograph of the Hice Convoy Light unit used in the tests.

Figure 6 is a photograph of the single unit tested for use on smaller vehicles. This picture also shows one of the flat-type interior baffles.

Tests were conducted under various conditions of weather and light. Here is a summary of the average results obtained during these tests:

(1) On a clear, cold night, using the strong Mazda 1141 21C 12-16 V light bulb, the light was barely visible at 1,584 feet (0.3 mile), and appeared as an extremely small pinpoint of light. Under the same weather conditions, but using the regular tail light bulb (Mazda 67 3C 12-16 V), the light could not be seen at distances above 800 feet. Such lighting might be used if the weather facilitated hostile air observation.

(2) During the test with the stronger light, when viewed directly from the rear on a level road, it looked as follows:

At 600-800 feet it appeared as a single pinpoint of light.

At 600 feet it appeared as a horizontal dash of light.

At 500 feet it appeared as a wide dash of light—almost two lights.

At 400 feet it showed as two distinct lights, very close together.

At 300 feet it appeared as two distinct lights separated by an interval of one light.

At 200 feet it appeared as two distinct lights separated by an interval of two lights.

At 100 feet it appeared as two distinct lights separated by an interval of 3-4 lights.

At less than 100 feet there was a *rapid* increase of the interval between lights.

(3) The horizontal and vertical angle of visibility

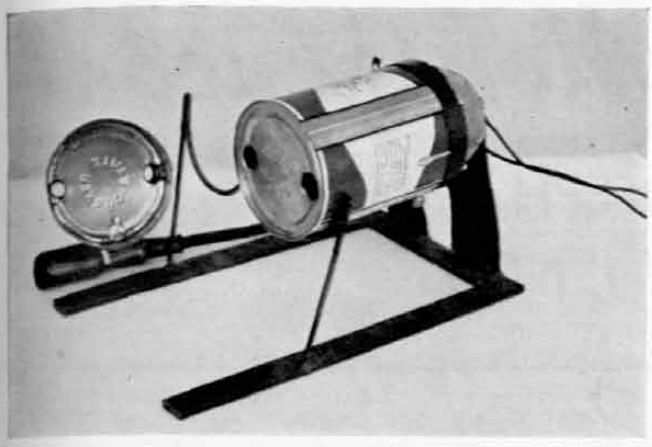


Figure 6: The single-unit device tested on smaller vehicles

varies between fifteen and twenty-five degrees. On the test just mentioned the angle was twenty-two and a half degrees. At 200 feet the light could be seen laterally only up to 76½ feet. That is, when the observer is 100 units behind the vehicle the light can be seen not over 20 units to either side. This of course makes it impossible for hostile ground observers to see the light from the flanks. It also leads to the conclusion that an airplane flying at an elevation of 320 feet would have to be 1,600 feet behind the vehicle in order to spot the light. As that distance exceeds the total visibility (1,584 feet) of the light when the strongest bulb is used, it indicates that the light *could not be seen*. Of course, this angle could be increased or decreased by a change in the location of the baffles or the size of the apertures but a sufficient angle of visibility must be maintained to provide for constant visibility between vehicles when traveling over winding and hilly roads.

(4) Hooking both the tail light and the stoplight together does not materially change the light output.

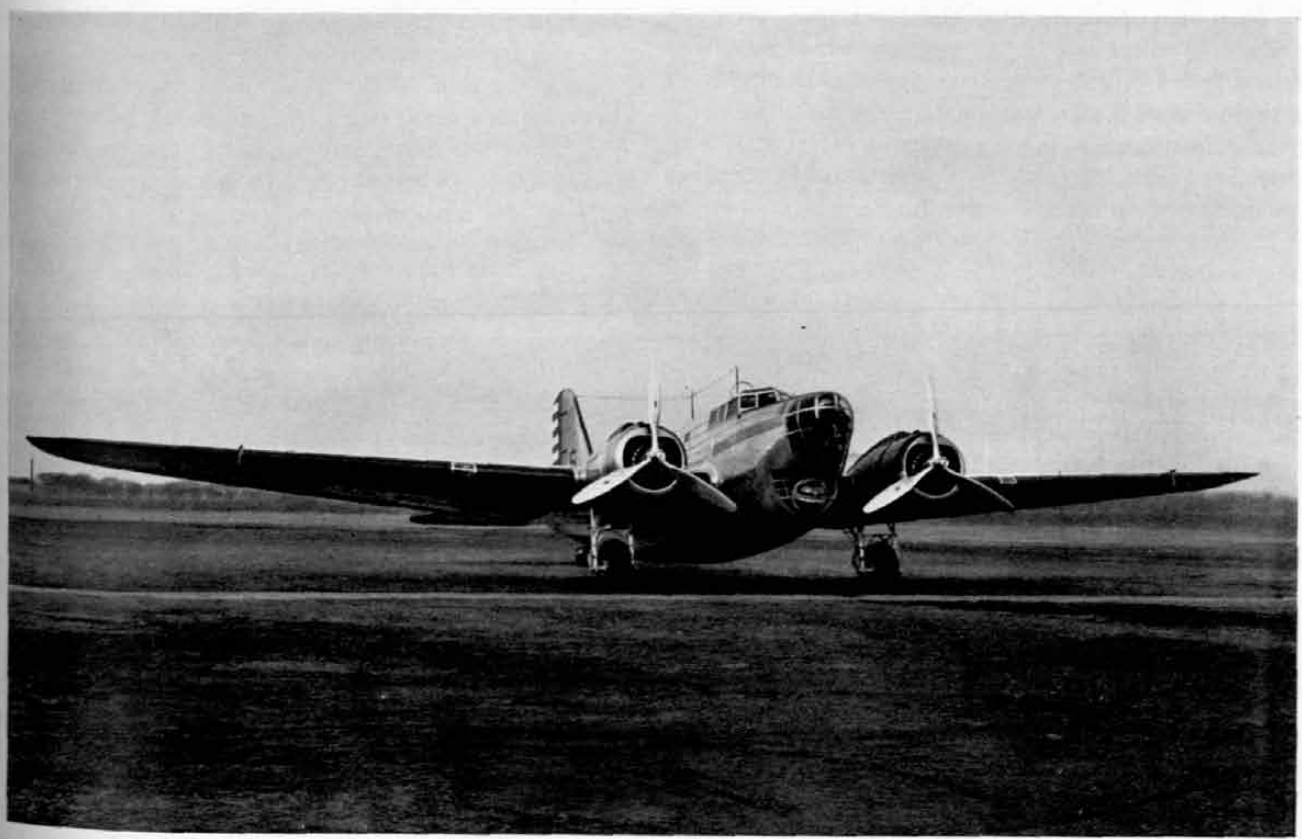
(5) In all tests ground illumination was negative.

(6) Owing to the construction of the light it can never be obscured by mud or muddy water.

Conclusions

Many additional modifications in the construction and use of the Hice Convoy Light can be visualized. Basically the idea is sound. The device is simple and cheap to construct, and all tests indicate its superiority over other types. Every soldier interested in the night movement of motor vehicles realizes the problems involved. It is hoped that this discussion and explanation of the Hice Convoy Light may be an incentive to further effort to find a solution to a critical problem.

We incline to the belief that the leading vehicle of large convoys will move with headlights burning, at least until arrival in the immediate vicinity of its final destination. One vehicle is not a remunerative target for hostile aircraft, and if the following vehicles are equipped with a device which permits drivers to maintain a constant safe distance between vehicles, without exposure to air observation, our map-problem solutions may be duplicated on the ground.



The Douglas B-18A medium bomber shown here is one of the latest bombardment ships of its class. Note the glass-sheathed nose housing the bombardier and the glass inclosed rotating gun mount directly underneath. A retractable glass turret houses a rear gun.

Support at Montfaucon

By COLONEL JOSEPH H. LEWIS
Field Artillery, NGUS

Practically every article written from one viewpoint about World War battles—or, for that matter, about the battles of any war—can be challenged from some other viewpoint. In The COAST ARTILLERY JOURNAL for March-April, Major Elbridge Colby has given a detailed account of "The Taking of Montfaucon," from *his* viewpoint—that of a student of World War history to whom the official records of the war are readily available. And from my own viewpoint—that of a battalion commander of supporting field artillery in the Battle of Montfaucon—I feel that I must make a strong objection to more than one of Major Colby's statements.

In the last section of his article, Major Colby writes that "strange and *unseasoned* divisional artillery was attached to the 79th for this major effort." And again, "Artillerymen have pointed out that guns were placed *too far back . . .*; that artillery *could not advance* across such torn and soggy ground and *was unable to support the Doughboys properly* after the first advance." Without any wish to reflect unduly on the way in which the undertrained 79th Division carried out its part of the battle, or to begin a branch argument between the members of the great infantry-artillery team, I nevertheless feel from what I know as a participant, that these statements in the previous article give an entirely wrong impression.

The attached artillery supporting the 79th Division for its operation against Montfaucon and Nantillois was the 57th Field Artillery Brigade. This brigade was composed of the 119th Field Artillery, of which my battalion was a part, and the 120th, 121st, and 147th Field Artillery regiments. The 57th Field Artillery Brigade, which not only supported the 79th Division throughout its action but stayed on in the battle to support the relieving 3d Division, was the organic divisional artillery of the 32d Division. I will simply quote The INFANTRY JOURNAL itself[1] on the World War record of the 32d Division:

> . . . the hardest worked division (in France) was not the 1st or the 2d, but a National Guard outfit, the 32d which, after it started, was not given any time out, except to move to another part of the line. It is equally interesting to note that, in a study made by a board of officers in Washington recently which had for its purpose the analysis of the major operations into separate battles, the 32d achieves the same number of battle honors as the 1st, and one more than the 2d.

In this same article, Captain Coulter lists the battles of the 32d chronologically as follows: Alsace; Ourcq; Vesle; Champagne; Merval; Juvigny; Montfaucon; Romagne; Cunel; Buzancy; Dun; and Forêt de Woevre. It should be noted that six of these, covering four months of front-line service, came before the taking of Montfaucon. In the Oise-Aisne campaign the regiment was awarded a croix-de-guerre with silver star citation. And before that, going backwards in time, the 119th Field Artillery had had three months of intensive training in France, nine months of the same in the United States, and nine months of hard training in Michigan and on the Mexican Border—about two years of field and battlefield experience, practically without a break. As for the 120th, 121st, and 147th Field Artillery, the official records of their battle honors and previous field experience show that they, too, had a long history of rigorous training and fighting behind them. So much for the "unseasoned divisional artillery."

Up to the time Montfaucon was taken, there were no particular complaints that I know of about the supporting fires. There was much counter-battery from the Germans but luckily it didn't interfere to any great extent with carrying out the firing missions assigned to us. After it fell, an early reconnaissance was made to pick new battery positions, and forward displacement began without a hitch and on time. Naturally, the best routes forward had also been reconnoitered. But when the supporting artillery received road priority and attempted to follow these routes on its first advance, it was stopped dead. The roads were completely jammed by troops in uncontrolled confusion. At least one regiment of artillery was compelled to bivouac by the side of the road for the whole night. This regiment and, I believe, some of the other artillery, finding the road still jammed at daylight, turned back and attempted a detour of several miles to reach its new positions. These battalions did, then, get into some "shell-torn and soggy" ground. But the lack of "seasoning" which brought this delay about was manifested, not by the supporting artillery, but by the absence of road discipline among the units it was trying to support.

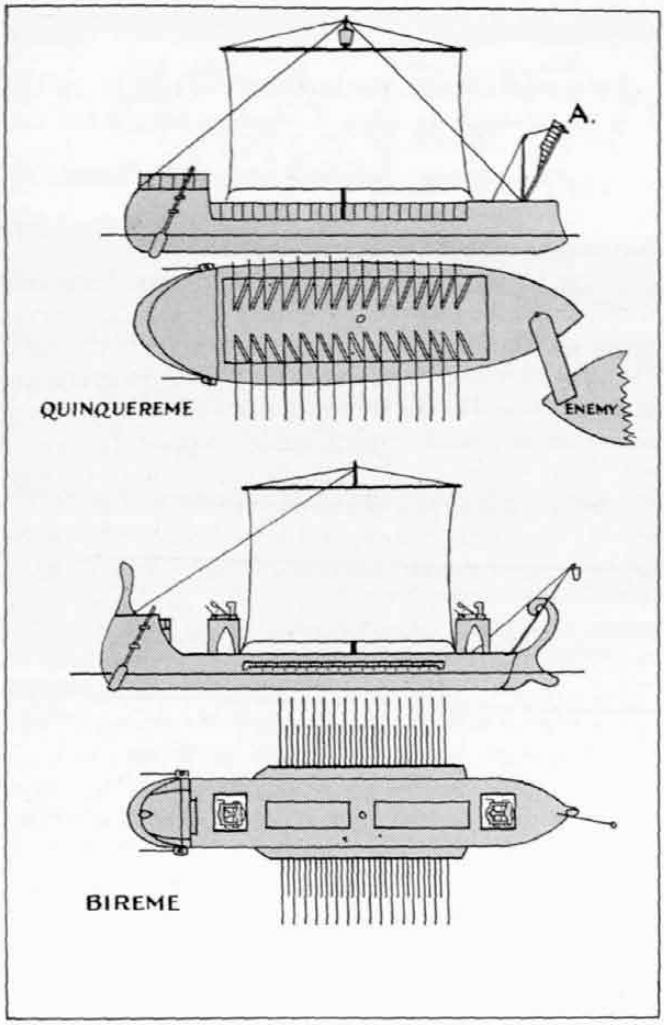
Immediately following the taking of Montfaucon, and in preparation for the capture of Nantillois, my battalion was attached to an infantry regiment. When I reported in

[1] "National Guard Service in the World War," by Captain Charles S. Coulter, Infantry; The INFANTRY JOURNAL, January, 1927.

the morning to the regimental commander, the first order I received from him was, "Bring your guns up where my men can see them." This was done before noon. But by the time the batteries were in their extreme forward positions, and liaison was attempted with the front-line infantry units, there were no such units—at least there weren't any in front of my battalion. Throughout that night the front line in that particular sector was held by three batteries of field artillery which, according to Major Colby, "were placed too far back." They couldn't have been much farther forward without bridging German trenches. And there were other neighboring batteries besides my own which were likewise exposed. In a short while, these extreme forward positions cost the greater part of one of my batteries in losses. From then on, and for the rest of the battle, the supporting artillery of that regiment and the other regiment of the same brigade stayed well forward and kept on staying well forward.

In its own advance, my battalion was able to use the very road through the town of Montfaucon shown in the excellent picture on page 137 of the March-April JOURNAL. If a personal note can be pardoned, I still think of the day I came over that hill and down that road with my battalion as the greatest day of my life.

Major Colby is quite right when he says, "Separate studies might be made of the artillery support during this attack on Montfaucon. . . ." As a member of the 57th Field Artillery Brigade at that time, or as its present commander, I would be the last to say that such a study would show that we gave the 79th a faultless support. But whatever faults might thus be brought out would in no way be mistakes due to lack of training and battle experience. What I have written above is, I hope, enough of a study to correct the erroneous impression which Major Colby's article is apt to leave in the mind of any reader who wasn't on the field when Montfaucon was taken.



Chapter 8: ANCIENT NAVAL WEAPONS
By W. A. WINDAS

fitted. This was a small bridge for boarding. It had a hand rail, and was secured to the deck by a pivot. The free end was kept aloft by a topping-lift, and was fitted with a large spike on the under side.

The tactical use of the corvus was to close with the enemy, swing out the corvus and let go the topping-lift. As the corvus fell the spike would pierce the enemy deck, forming a bridge and grappling hook in one. Soldiers would pour across and get to work with that short, heavy thrusting-sword that had won Rome so many battles ashore. Thus armed, the soldiers of Rome beat the mightiest seapower of the period.

During the civil war between Antony and Octavian, Agrippa (serving the latter) was confronted by an enemy who had Roman soldiers as good as his own. Antony's fleet numbered 140 octeremes and deceremes, plus 60 octeremes of Cleopatra, while Agrippa had to rely on much smaller vessels, the bulk of his fleet being made up of biremes.

These vessels were designed by the great Roman admiral himself, and were fitted to his own personal specifications. Although called biremes, they were somewhat larger than the Greek trireme. They displaced 81 tons, and carried 213 men, 80 of whom were soldiers. They were 105 feet long, 17 feet in beam, and as they had fewer rowers, were slower than a trireme. Their main feature

The Story of Artillery Through the Ages

When Rome first collided with Carthage, she had to build up a fleet to challenge an established sea power. The Romans soon learned that they could not match Carthaginian seamanship, and so attempted to make a naval fight as nearly like a land battle as possible. At this time Roman projectile engines were none too good, even ashore, so no serious consideration was given to them by the sea fighters. Small arrow-throwers were an exception, but these were designed to kill personnel, not break structures.

The basic Roman ship (copied from Carthage) was the quinquereme. While this word implies five superimposed banks of oars, we have no real evidence that such vessels ever existed. The arrangement is mechanically possible, but would have been most awkward and cumbersome in anything but glassy-smooth water. On the other hand, the the word may have meant a single bank of oars, five men per oar, or the oars in groups of five. Here, five men per oar has been assumed. The dimensions were: length, 100 feet, beam 18 feet, draft 4 feet, and displacement about 111 tons. Crew: 250 (75 soldiers); top speed: about 6 knots.

So that the soldier might dominate the sailor in the latter's own element the corvus (A, in the sketch) was

was the bow-and-stern battle-tower. We see by this that the modern "center-line turret" principle for battleships is not new. Noting these towers, we may infer that Agrippa intended artillery to be the main weapons of his biremes.

Knowing that he must encounter Antony's heavier vessels and larger ballistae, Agrippa designed a new projectile. This hurled a small bucket of blazing pitch, in lieu of a stone.

At the battle of Actium (31 B.C.), as Antony's ships sailed out in line abreast, Agrippa's biremes sped through the intervals, discharging their flame-buckets. As the deceremes were of higher freeboard than the biremes, the former's "gunners" could not effectively reply, as they were hampered by fear of hitting their own vessels.

"Liquid fire" had not been foreseen by Cleopatra's glamor boy, and even when the Queen's 60 huge octeremes came charging wildly through the battle, they failed to redeem the day for Antony.

Thus, Agrippa would seem to be the first real naval artillerist, for by skilled use of projectiles he defeated ships which, on paper at least, were vastly superior to his own.

HASTY CAMOUFLAGE FOR AA GUNS

By Captain Peter Rodyenko, Corps of Engineers Reserve

Camouflage installations are established with the idea of either concealing an object or confusing its identity. This paper deals with the use of hasty camouflage to confuse the identity of a 3-inch AA gun matériel against hostile aerial observers under conditions approximating war.

The experiments discussed herein were carried out by the writer while acting as an instructor in camouflage to Coast Artillery Reserves in the Second Corps Area during June and July, 1938, at Camp Upton.

It was assumed that the 3-inch AA gun in question had to be fortified against strafing by low-flying planes. This required a sandbag embrasure approximately four feet and six inches high, which was also to serve as a protection against heavy gas of the mustard type.

The terrain at Camp Upton is partly wooded. The tree growth is a second growth of deciduous and evergreen trees. The former, fairly heavy foliaged, have a maximum height of about eighteen feet, but are not usually found that high. The majority of the trees are birches, which offer very poor natural cover. The evergreens, mostly pine and fir, are slightly lower, with a maximum height of about twelve feet. The balance of the vegetation is made up of shrub oak and similar bushes, maximum height eight feet, and low-growing grasses and berry bushes. The soil is sandy, and shows in patches. Occasional gravel patches are also found. The ground is also heavily dotted by indentations and hillocks, maximum height or depth about five feet. The terrain coloring is, in general, green, brown, white and gray in various values.

Approximately 1,000 sandbags were required for the fortification. Camouflage materials available consisted of some trimmed nets, a few strips of cotton fabric and, of course, the natural materials found near the site.

The gun was emplaced in a gun site close to the road. It was realized that a plain view of the gun, surrounded by a circular fortification, would clearly show the presence of an emplaced antiaircraft gun. Therefore, in order to confuse an observer, the sandbag fortification was planned in the shape of an irregular star or trace. This required only a small additional percentage of material and labor. It was planned to conceal part of the embrasure by camouflage materials and leave about one quarter section completely exposed for further deception.

A few poles were cut (several hundred feet from the site) and the nets, tarpaulins and strips of fabrics were used to cover the gun and the platform. Especial care was taken to conceal the outriggers, whose geometrical outlines would be typical for an AA gun. The bogies were placed close to the embrasure and covered. It was intended to create a general effect of a small and unimportant dump, near an abandoned sandbag work originally intended as a machine-gun nest or the like against a ground enemy.

Control photographs had been taken before any work was started at altitudes of 1,100 feet, pinpoint, and stereo pairs from 2,500 and 5,000 feet. The purpose was to provide photos with much detail for study and correction. The 5,000 feet photos were intended to indicate the effectiveness of the camouflage. It was realized that in war an altitude of about 10,000 feet would be held by hostile bombers and the photos taken at lower altitudes would show more detail.

The pilot and the aerial photographer were given the area in which the installations were to be placed and were also requested to record their visual observations.

A resume shows the following results:

Visual

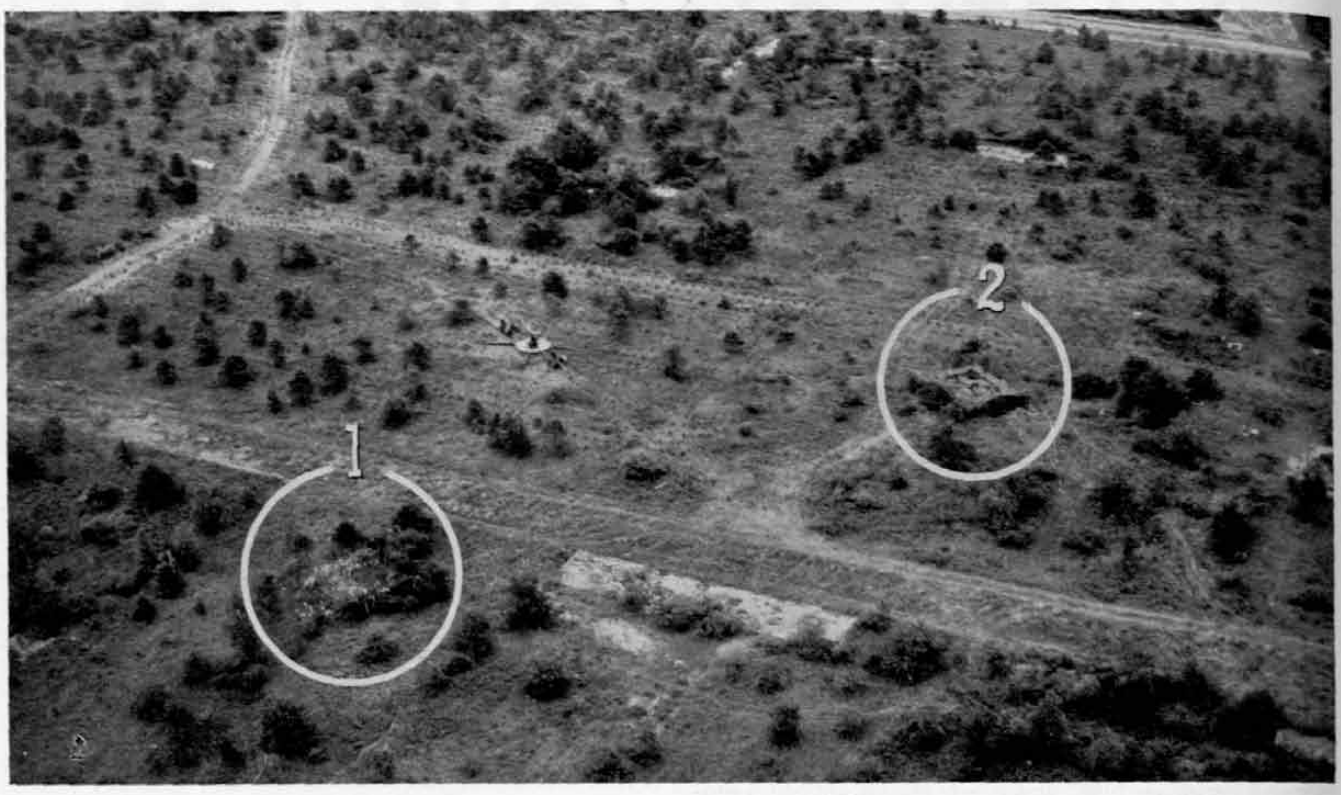
The observer stated that he noticed a nondescript structure which he took to be a dump of material intended for the camouflage of the guns. He was unable to detect the gun, except when flying at the altitude of 1,000 feet when the working detail attracted his attention and he noticed that they were busy around the gun. From an altitude of 5,000 feet, the camouflage installation gave the impression of a material dump as had been intended.

Photographic

On the aerial photographs taken at 5,000 feet, the installation looks nondescript and invites various interpretations, even when studied under a strong reading glass. Under the stereoscope it can be seen that there is a structure of a height of several feet above the ground; however, it is very difficult to classify. On an aerial photograph taken at 2,500 feet, two outriggers are visible. They had been camouflaged with natural materials but, between the time the work was finished and the taking of the photographs, a thundershower had taken place with the result that some of the natural means (branches from trees) had been blown down.

Therefore, it can be assumed that camouflage to confuse the identity of an AA gun can be made effective by using a variety of artificial and natural materials not necessarily intended for camouflage.

The accompanying photographs show various stages of the experiments.



This photograph was taken at 300 feet oblique altitude. Object No. 1 is a 3-inch AA gun camouflaged by the use of a combination of natural and artificial materials. The trace is irregular. At 10,000 feet (a normal bombing height) the gun would be indistinguishable. Object No. 2 is also a 3-inch AA gun, but is camouflaged by the use of artificial materials only. It would be readily picked up by an observer at 10,000 feet altitude. Another gun, without camouflage, is shown in the open between the two numbered circles for purposes of comparison.

These photographs show various stages of progress in the work of camouflaging the 3-inch antiaircraft guns shown in the upper photograph.

This picture was taken at a vertical altitude of 1,000 feet. Object No. 1 is a truck. Object No. 2 is a director hidden near two real shell craters. Note especially the shape of the two craters in connection with object No. 4. Object No. 3 is a camouflaged 3-inch gun. Object No. 4 is also a 3-inch gun. In this instance the camouflage was designed to give the appearance of a shell crater. The similarity to the craters in circle No. 2 will be observed. At 10,000 feet altitude an observer would not be able to distinguish the gun. Two other objects are hidden in the picture—see if you can find them.

The truck (wire trailer) shown in circle No. 1.

The director shown in circle No. 2.

Preparation of the gun in circle No. 4.

SIX KEYS TO GOOD MORALE

By MAJOR THOMAS K. FISHER
Coast Artillery Corps, NGUS

"What is the state of the morale?" is probably the most important question with regard to the welfare of any military organization. If the answer is "The morale is good," then it is likely that training and discipline are satisfactory. If the answer is "Unsatisfactory," there is real cause for worry, as little faith can be put in the organization.

For the many factors that form the basis for good morale the officers are primarily responsible. Material factors are omitted in this analysis as they are more obvious and more easily dealt with than the abstract factors. In this paper it is hoped that the good officer will find a confirmation of his beliefs, and the poor one will be helped to turn over a new leaf, unless his self-interest and complacency have become so deep rooted that there is but one respectable act left for him to perform. With a view to the betterment of National Guard morale through a healthy cleansing of officer attitude and a reburnishing of idealistic and philosophic objectives, the following six abstract factors are presented as gauges for self-appraisal.

Unselfishness

The basic cause of poor morale among officers is selfishness. There is no trait more blinding, more stultifying, to the coöperative spirit than this. It produces barren self-comparisons and morbid introspection that blinds the mental eyes to duty, to responsibility and to the broad vision of true and worthy objectives. It also makes for a lack of appreciation of the good deeds and qualities of others and the immense satisfaction of service well rendered without regard to reward other than the contentment and self-respect that comes from accomplishment. He who holds his commission solely for what he can get out of it, money for example, is an evil parasite sucking the life blood of his country's economic stability and drying up the veins of military efficiency. How can orders possibly be efficiently carried out unless the mind is set to accomplish the objectives of an order with complete effacement of self!

Tolerance

Closely allied to and born of unselfishness is tolerance. The over-critical spirit, motivated by jealousy, produces the self-seeking grouch, who is blind to the goodness of others and seeks ever to decry others. Willingness to applaud, to say "Well done," develops team play, sympathy, and coöperation. "Live and let live" is an excellent motto.

Coöperation

Every organization must have a leader. Presumably he is there because he is fitted to lead and has demonstrated his qualities of leadership. Presumably, too, he has ideals and worthy objectives and is guided in his task by the direction of higher authority. Whether a subordinate agrees with his superior's objectives and methods is of little moment. The good officer has the one primary duty of supporting the orders and aims of his commander both in letter and in spirit. Otherwise he is obviously disloyal (and probably insubordinate) worthy only of contempt. Back up your superior officer or get out. Wire-pulling and political chicanery are the poisonous fumes of degradation. But a friendly difference of opinion, expressed in a spirit of helpfulness, is a horse of another color. However, if such suggestions do not fit the plan of the commander, then the officer with good morale accepts his leader's decision willingly, pushes his own ideas into the background, and cheerfully goes to work to carry out his commander's program. The result is good morale, and good morale is more infectious than bad.

Service

The officer who coöperates has his mind set upon service. He is out to coöperate not only in letter but also in spirit, and to give his best ability and energy to the task at hand. "The service we render is the rent we pay for our place on earth." There are jobs to be done, not only in line of duty but over and above exact assignments. The good officer seeks to serve wherever he can be of help and by example helps to build the good morale of others.

Standards

Quality cannot exist without standards. There are civilian standards and military standards. Standards of military proficiency are set by higher authority. Standards of individual conduct arise as the result of character. Soldiers who observe high quality in their officers in the carrying out of both standards are filled with admiration which engenders a spirit of emulation that in turn betters morale. On the other hand, drunkenness or use of liquor when on duty stamps an officer unworthy of his commission. Likewise flouting authority, openly or secretly, not only is deserving of separation from the service but also is destructive of morale. Hold high both personal and military standards.

Discipline

Of vital importance to the success and to the morale of a military organization is its discipline. To say that good military discipline cannot be obtained in a National Guard organization is to accept a policy of defeatism. The frequent and rapid transfer from the status of a civilian to that of an army officer may have its hampering effects, but is no excuse for lack of discipline. Once a civilian has become a National Guard officer, he irrevocably assumes a new responsibility, requiring at least a partial divorce

from the closest familiarity with enlisted men in civilian capacities and the assumption of a new dignity in accord with his position. That this divorce take place is essential to respect and to good discipline.

Sloppiness in dress and bearing or sloppiness in the execution of military duty is the dry-rot of stagnation. Though we never reach perfection, it must be ever sought, and the seeking of it brings discipline and high morale surging in its wake. No man's enthusiasm was ever stirred by the example of fifty per cent effort or accomplishment. The divine spark which carries even the mediocre to victory was never engendered by half-way measures. Vital enthusiasm exists only in the atmosphere of high standards. The man who opposes high discipline is a sloven and cheats himself and his fellows.

Conclusion

Let us face the abstract necessities of high morale and give our best to their attainment. Strife and self-glory never got any man anywhere. He who opposes is out of tune and had best separate himself from the service while a vestige of his self-respect remains. Let us therefore strive wholeheartedly for personal unselfishness, toleration, cooperation, service, high standards, exacting discipline, and so achieve the goal—not only good, but inspiring morale. Hold high the torch that lights the way to victory. "Play up—play up—and play the game!"

Coast Artillery Board Notes

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

THE COAST ARTILLERY BOARD

Colonel William S. Bowen, C.A.C., *President*

Lt. Colonel Donald B. Sanger, C.A.C.
Lt. Colonel Gordon B. Welch, Ordnance Dept.
Major Franklin E. Edgecomb, C.A.C.
Major Hugh N. Herrick, C.A.C.
Captain Robert W. Crichlow, Jr., C.A.C.
Captain Robert H. Kreuter, C.A.C.
Captain Charles E. Shepherd, C.A.C.
Captain Donald H. Smith, C.A.C.

General. Since publication of the March-April, 1940, issue of the Journal the Board has been engaged in:

a. Reviewing target practice records for 1939 and compiling data for Coast Artillery Memorandum No. 20;

b. Collaborating with the Coast Artillery School in the revision of Coast Artillery Field Manuals; and,

c. Testing new matériel pertaining to seacoast and antiaircraft artillery.

As most of the equipment tested is classified as either secret, confidential or restricted, the data obtained and the conclusions and recommendations of the Board cannot be published to the service at this time.

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.

The JOURNAL does not carry paid advertising. The JOURNAL pays for original articles upon publication. Manuscripts should be addressed to the Editor. The JOURNAL is not responsible for manuscripts unaccompanied by return postage.

News and Comment

Annual Convention

The next convention of the U. S. Coast Artillery Association will be held during 1941. This action was decided upon at the March meeting of the Executive Council of the Association. At a future session of the Executive Council the date and place for the convention will be selected.

The Executive Council took this action because of the unsettled conditions that will obtain as to stations of organizations and individuals during 1940. It was felt that a 1940 meeting would be inexpedient because of an enforced lack of attendance.

It is realized that there will be a natural disappointment in not having a 1940 convention because of the success of our annual gatherings in the past. However, the 1941 meeting should be all the more successful for we will have more time to prepare for it and it is hoped that within the year some degree of stabilization will take place.

As soon as the date and place for the 1941 meeting are decided upon you will be informed in the pages of The JOURNAL. Committees will then be appointed and arrangements will go forward for a live and active convention that will be fully as memorable as those we have held in the past.

Mystery of the Magnetic Mine

Scientific American, March, 1940, by C. E. Milbury. —By this time, British naval authorities may or may not have solved the mystery of the so-called magnetic mine. Our own Navy is doubtless cognizant of its general mechanical characteristics. Whether or not its secret has been solved does not alter the fact that the nations readily concede it to be one of the most formidable and diabolic instruments thus far to make its debut in modern warfare. It is practically immune from attack. It renders the convoy system a true hazard instead of a means of safety. It attacks the vulnerable bottoms of even the heaviest of armed battle cruisers. Its presence cannot be effectively detected by any known device. The Burney or paravane method of mine sweeping is helpless against it. Several mines might strike the same target, insuring immediate sinking with heavy loss of life. It is light enough to be carried by planes.

It is easy to conceive the possibility of bottling up navies with mines of this type. Sinkings that are quick and certain are the specialty of this improved weapon; and unless effective ways and means are developed to combat its men-

ace, the greatest navies in the world are at the mercy of the unseen, undetectable, and unattackable.

The mystery mines are of two types: (1) the inert, shallow-water type; and (2) the mobile, deep-water type.

The mystery mine is comparatively light in weight since it requires no cables or anchors; this fact makes sowing by aircraft a practical possibility. Contrary to speculation, the present mine requires no parachute, but may be dropped into the sea from a height of 200 feet, without damaging its mechanism or without detonation. The detonator does not become "alive" until the mine has been submerged and surrounding water pressure actuates a single-loaded hydrostatic trigger which sets the detonation circuit by piercing the seal on a small tube of mercury. This mercury fills a cavity containing the contact points of the detonation circuit.

One plane may carry a dozen magnetic mines and drop them as it flies low over the ocean shipping lanes of an enemy country. If the cargo is composed of deep-water mines, it will drop them from a height of from 100 to 200 feet directly into the sea, and they will immediately sink to the bottom at depths up to 400 feet.

The mine has three distinct compartments within a casing of nonmagnetic metal. The upper one contains a battery, a magnetic device, or grid, of the compass-needle type, several electrical circuits, and two hydrostatic diaphragms that work on opposite principles. The middle section contains the explosive with its detonation caps. The lower section contains an air flask that gives the mine its accelerated rising power after displacing its ballast water. Vent valves near the top of this compartment are held open by light springs; pistons close these valves when compressed air reaches them through small copper pipes connected with the air flask. At the bottom of the mine there is an opening through which sea water will enter when the mine strikes the water, the air being expelled through the open vents. The extreme upper compartment is connected to the lower or air compartment by a tube, the lower extremity of which is firmly screwed into the neck of the air flask, with its spring trigger-valve and its fuse seal.

The mine's bottom is weighted for stability and the mine rights itself and sinks tail first. The mine descends rapidly toward the bottom, and, at a depth of 70 feet, a diaphragm in the side of the mine near the top, set to operate at an external pressure of 35 pounds, moves inward. As it does so, it pushes a tiny piston which forces the seal from a small metal tube of mercury. The mercury makes a connection between two electrical contacts. This same operation also operates the solenoid and releases the brake on the magnet grid. Thus the mobile and detonation circuits are set, but not completely so, for another hydrostatic valve, pushed inward by water pressure, keeps open the final detonation circuit.

The mine finally reaches bottom and sea floor ooze closes around it. A ship approaches, and, at a distance of half a mile, causes the magnet grid to waver slightly. As the ship approaches nearer, the grid slowly deflects upward, finally pointing to an angle of 65 degrees. Things begin to happen. At this angle of deflection, the magnet grid makes a light electrical contact which, in turn, operates the fuse seal that restrains a spring-loaded valve of the air flask. The fuse melts, permitting the air valve to open; the blast of air thus released rapidly displaces the water ballast from the lower compartment through the hole at the bottom of mine, the air vents having been closed by action of their pistons. The force of the water-and-air jet at the mine's bottom breaks the mud suction and the mine rises rapidly due to increased buoyancy and the jet's push.

Detonation occurs automatically when the mine reaches a level of 50 feet below the surface. This is caused by the outward bulging of the second hydrostatic switch which has been held in the open position by hydrostatic pressure. When that pressure is sufficiently released (at the 50-foot level), the switch closes the detonation circuit, and the explosion occurs.

The possible elaborations that may be made in the way of further refining this mine are without possible limit and are to be gaged only by the cost of construction. The mine as now used positively does not follow a vessel by magnetic attraction, nor does not destroy by impact, its destructive action being like that of a depth bomb.

The inert mine, which is laid in channels and harbor entrances, is similar to the mobile mine, without the compressed air system and hydrostatic detonator. Being lighter, it may be more easily handled by plane. The inert mine creates all of its havoc without leaving its mud or sand bed, but the magnet in this case is adjusted to detonate at a deflection of 90 degrees. This insures its detonation only when a vessel is about to pass directly over it.

There will arise an important problem, after peace has been signed, as to how the menace of these mines will be removed. They cannot safely be swept by wire dragging, for the dragging vessels would be destroyed. Even wooden vessels have some machinery that is magnetic and would therefore actuate the mines. Sailing vessels might be used with some effect; but perhaps the safest, most effective method would be to drop barrages of small depth bombs from airplanes. The best solution would be to construct such mines so that the grid would be disintegrated by electrolysis after a reasonable time.

* * *

Countering the Magnetic Mine

The Engineer, March 15, 1940.—By a brilliant invention the menace of the magnetic mine appears to have been countered. Whilst many people were busy on the discovery of means for destroying such mines, it is reported that officers of one of His Majesty's Naval Establishments were developing a device which would render ships immune from attack; in other words, a device which would stop a ship from actuating the magnetic system by which the mine is fired. With the help of scientists the invention was perfected and has already been fitted to

several ships, the *Queen Elizabeth* amongst them. The apparatus is entitled the "degaussing girdle." We need not remind our readers that the gauss is the c.g.s. electromagnetic unit of flux density. Bearing this in mind and remembering that the magnetic trigger of the mine is operated by the disturbance of the earth's magnetic field caused by the presence of a magnetic body like a steel ship, it is not difficult to arrive at the principle employed in the invention. The "girdle" itself is a circuit of insulated wire passing round the ship from stem to stern above the water line. We understand that many ships of all sizes have already been fitted. They appear to be immune and one of the officers responsible for the invention is reported to have said that he was prepared himself to take any properly degaussed ship over any number of magnetic mines. We may assume that the Admiralty is satisfied that such a claim is justified, for equipment has been under preparation for some time. The problem of destroying the mines still remains, but it, as Mr. Churchill said recently, is making hopeful progress. It is of interest to recall that the paravane was produced during the Four Years' War to counter the anchored mine; now British inventors have found an antidote for a more insidious weapon.

Battleship Situation

Le Yacht, February, 1940.—According to information published in neutral countries bordering Germany, the firm of Blohm and Voss of Hamburg may have launched the third huge battleship for the German Navy, which was started last July. If this news be true, the construction of this vessel was pushed much more actively than that of the two others, the *Bismarck* and the *Tirpitz,* which, begun in 1936 and 1937, were launched one in February, the other in April of last year. It is true that she may have been put in the water in a less advanced stage of completion. In any event, it seems practically impossible for her to be commissioned this year, as has been rumored; it would have to outstrip the record for large ship construction made when the *Renown* was finished in 18 months during the last war, and that would be all the more difficult since this vessel is not only larger but more complicated. It is probable that the *Bismarck* and the *Tirpitz* will be in fighting condition about the middle of 1940.

This great increase in fighting power which is to be afforded the German Fleet will be compensated for by expected commissionings in the British and French navies.

The first 35,000-ton British battleships, *King George V* and *Prince of Wales,* launched one in February and the other in May, 1939, i.e., about the same time as the *Bismarck* and the *Tirpitz,* will certainly be ready by the time the two German craft are, and probably sooner if one takes into account the state of completion at the time of launching and the indispensable training of the crews for which task Britain is quite evidently much better prepared. The *Duke of York, Jellicoe,* and *Beatty,* launched in September and December of last year, will soon follow them.

In France, the *Richelieu,* begun at the end of 1935 and launched in January, 1939, is being completed at Brest and there work is progressing actively on the *Jean Bart* as well, which is to follow her after a few months' interval. During the discussion of appropriations, at the end of December, Mr. Daladier emphasized in Parliament the importance which the government attaches to sea power and of which battleships are the backbone. "We must not let ourselves be outdistanced at sea," said he, "and we have decided to hasten in every possible manner all construction, especially that of the 35,000-ton battleships, which, I hope, will assure to France and Britain the continued mastery of the sea which they have been enjoying for the past 4 months."

Thus, the commissioning of the first 2 German battleships will occur at the same time as that of 5 or 6 of the same tonnage for Britain and France.

These ships, and those of the great neutral navies, have been built to solve the same problem, consisting of concentrating within the same limits of tonnage a powerful offensive armament, protection, and mobility, none of them being pushed to their ultimate maximum as to do so would be impossible, but being mutually compromised so as to obtain from the whole the best features from an all-round naval standpoint. Many different answers have been the result and each represents the opinion of an Admiralty.

As main battery, the French and German battleships each have eight 15-inch guns, arranged in 2 turrets in the former and 4 in the latter. The British ships will carry ten 14-inch guns. Italian battleships are to be armed with nine 15-inch guns and those of the United States nine 16-inch.

For secondary battery, the French and British ships have double-purpose guns for firing at planes or surface vessels; sixteen 5.2-inch guns in *King George V,* fifteen 6-inch in *Richelieu.* In other navies, the antiaircraft battery is a separate unit; in the Italian, twelve 6-inch for surface targets, twelve 3.5-inch for AA, in the German, twelve 6-inch and ten 4.2-inch; in the American, twenty 5-inch, of which, 12 are AA.

As to speed, provisions are for 30 knots at least in the Italian and French battleships, 28 for the English, 27 for the Americans and the Germans.

No official figures are available on the armor of these various ships, but it is evident from the foregoing that in Germany and the United States speed has been sacrificed for the most part, whereas in Italy, on the contrary, it has been augmented probably at least at the expense of reserve buoyancy. As for the French armor, the placing of the main battery in quadruple turrets afforded the additional weight saving necessary to provide proper protection.

None of the solutions adopted are perfect since all are the result of a compromise imposed by the tonnage limitation. Now, Japan, no longer wishing to conform to the terms of the Treaty of London, has commenced some battleships about which little is known, but which according to the publication *Flottes de Combat,* which is just off the press, will have a displacement of about 43,000 tons.

The United States has countered by starting 2 of 45,000, Britain 2 of 40,000 tons, and according to the latest rumor the third German vessel is of 41,000.

In constructing this new type, each power has sought to strengthen the characteristics which she had partially sacrificed in those of 35,000 tons. The *Lion* and the *Temeraire,* British, will be armed with nine 16-inch guns and their speed will be greater than 29 knots; the *Iowa* and *Montana,* American, will have twelve 16-inch and will make 33 knots. It is reported that the Japanese ships under construction will have even larger guns up to 18-inch. The tonnage race having begun, it is impossible to predict where it will end.

New Power Motor Torpedo Boat

The power motor torpedo boat is a very remarkable vessel. It is constructed by the British Power Boat Co., Ltd., of Hythe, Southampton, a firm which has already supplied a number of torpedo boats to the Admiralty. The present vessel, which is powered by three 1,000 h.p. Rolls-Royce-Power Merlin engines, and is larger than its predecessors, is the very latest development in torpedo-boat construction. It has a length of seventy feet, and is thus the largest motor torpedo boat ever build in this country. The firm claims that it has a higher speed and a bigger range than any similar type of craft in the world. It has, in fact, an all-out speed of over forty-five knots, or fifty miles per hour. It can increase from ten knots to forty in eight seconds, and, what is very remarkable, can reduce to eight knots in three seconds.

Its range is approximately 1,000 nautical miles, thus making it most suitable for work with normal convoys.

It is very severely streamlined, and so presents an extremely small target silhouette, while one of its features is the entire absence of mast, funnel and deck encumbrances. Wireless reception and transmission are effected without external aerials.

Its armament consists of two 21-inch torpedoes (or four 18-inch), two 20-mm. guns, and one 25-mm. gun, cased in power-operated turrets, which can be used either for antiaircraft work or against submarines.

A noteworthy feature of this vessel is the silence of the three 1,000 h.p. engines. During the demonstration which was given to the press on Southampton water on 11th January it approached a target ship under cover of mist to within a quarter of a mile before it was seen, and its engines could not be heard even at that distance.

Another interesting factor is the absence of any visible exhaust, and, even at the higher speeds, of any but the smallest wake.

It is very roomy below deck, and has sleeping and dining accomodation for two officers and seven men.

The officers' quarters are very attractive, and a vessel such as this would form a delightful command for a young and ambitious naval officer.

This new power motor torpedo boat is at present undergoing tests by the Admiralty.

The Fighting Forces.

The Royal Air Force in the Second Three Months of the War

By Air Commodore P. F. M. Fellowes, D.S.O. (Ret.)

In interpreting the accounts of fighter actions, reconnaissances, sea sweeps by aircraft formations or sea patrols and the so-called security patrols, it is almost impossible for those who have not taken part in such activities to appreciate the motives and feelings and probable human limitations of the participants. It is common knowledge that flying is somewhat of a nervous strain, but it is not always appreciated how much this strain is intensified by bad weather, cold, darkness, uncertainty of the enemy's defensive preparations and the prolongation of the modern aircrafts' flying endurance. It is also probably not fully realized how tense a man becomes as the crisis of a flight approaches, whether it be a sudden screaming dive down through a howling storm of antiaircraft and machine gun fire; a steady photographic or high bombing flight through echeloned groups of harshly barking shells; a grimly determined drive in tightly packed formation through a hornet's storm of attacking aircraft; a whirling fight of aircraft against aircraft, like stinging rays in the bowl of heavens, mutually emitting fierce and staccato-like sounds; the deadly swoop from the air of the great seaplane on its submarine enemy; or the watchfully forbidding "our flare path order" from the security patrol as he dives down to drop his bomb or shoot up the base with his guns. Each man as he reaches this crisis, according to his temperament or the intensity of the situation, feels elation or fear tempered by elation. Before this actual moment, unless he is one of those superhuman people, he has felt some fear, and the interesting thing to discover from experiences such as these is that fear, like pain, as an emotion can only be expressed and therefore felt to a limited extent by the human entity. As the crisis is approached the heart beats faster, the fear motive force rises, reaches its maximum and leaves the personality detached. It is like a clown diving through a paper hoop: when the airman is through he is through for the moment, and there he is out beyond with either a wildly exhilarated or a coldly calculating feeling, or some other form of governing emotion, but without fear. It is also interesting to know that each time an airman approaches the crisis of a flight he again goes through the same process, but it becomes less, less and less as he becomes inured to it. This continues to be so as long as his nervous system remains healthy and is sufficiently recuperated between each experience. If, on the contrary, it is not and he is given insufficient rests between whiles, although he undoubtedly becomes more case-hardened for a time, as we all must to the horrors of this age, a complete nervous break-down will eventually occur. The signs of this break-down are

easy to see. They are: loss of weight, haggardness, a growing tendency to untidiness, slovenliness, loss of the capacity to sleep, continuous dreams, etc. In the case of physically fit men such things need never occur with proper rest, leave and time for recuperation. Instead, they will become more and more immune to all the, at first, thoroughly frightening effects of air warfare. The wise man so trains his mind that he can turn it off like a tap from any thoughts, either unpleasant in retrospect or prospect.

The Army Quarterly.

Regular Army Batteries Classified "Excellent," C. Y. 1939

Corps Area or Department	*Regiment*	*Battery*	*Caliber*
I	9th	A	Submarine Mines
II	52d	C	12" Ry Mortars
III	2d (Formerly 52d)	F	8" Ry Guns
VI	61st	B	3" AA Guns
		E	AA Machine Guns
IX	3d	D	12" SC Mortars
	63d	A	AA Searchlights
		B*	3" AA Guns
		E	AA Machine Guns
Panama	1st	B	3" AA Guns
	4th	D	Submarine Mines and 6" SC
		G	14" Ry Guns
Hawaii	41st	B	8" Ry Guns
	55th	A	155-mm. Guns
	64th	A	AA Searchlights
		E	AA Searchlights
		G	3" AA Guns
		K	3" AA Guns
Puerto Rico	51st**	A	155-mm. Guns
		B	155-mm. Guns
Philippines	59th	A	12" BC Guns
		F	12" BC Guns
		G	14" DC Guns
	91st	C	6" DC Guns
		E	10" DC Guns
		G	Submarine Mines and 155-mm. Guns
	92d	B	155-mm. Guns
		C	155-mm. Guns
		D	155-mm. Guns
		E &F	6" DC Guns

30 Batteries rated "E," CY 1939 out of a total of 100 Batteries firing—30%.

In addition the following mine planters rated Excellent:

Graham (Panama)—Reference target practices with Battery F, 1st Coast Artillery and Battery D, 4th Coast Artillery.

Harrison (Philippines)—Reference target practices with Battery A and G, 91st Coast Artillery.

*Winner of Knox Trophy, C.Y. 1939.

**Target practices were conducted while at Fort Monroe, Va.—before transfer of regiment to Puerto Rico.

Major General John J. Byrne

The U. S. Coast Artillery Association lost a staunch supporter by the death last month of Major General John J. Byrne, New York National Guard, retired. He will be long remembered for his work in the founding of our association and the time he devoted to its betterment.

At the time of his retirement in 1935 General Byrne commanded the New York Coast Artillery Brigade. This unit formed the escort at the funeral services together with detachments from nearly a dozen other military units of which he had been a member during his half-century of service in the cause of National Defense. General Hugh A. Drum, Second Corps Area commander, headed the seventy honorary pallbearers who included seven major generals, two rear admirals, eighteen brigadier generals and twenty-five colonels.

General Byrne's career typified the citizen soldier at his best and will long remain an inspiration to those of us who follow.

Buildings Renamed at Monroe

The permanent buildings of the Coast Artillery School at Fort Monroe (exclusive of the Detachment Barracks) have recently been redesignated. The old and new names of the buildings are shown below:

Former Designation	*New Designation*	*Redesignated in honor of*
Main building	Murray Hall	Major General Arthur Murray, who was Chief of Coast Artillery when this building was constructed.
Library	Wisser Hall	Brigadier General John P. Wisser, an early and outstanding editor of The COAST ARTILLERY JOURNAL, then *The Journal of the United States Artillery.*
Old Enlisted Specialists Building	Lewis Hall	Colonel Isaac N. Lewis, director of the Department of Enlisted Specialists (1907-1911) when this building was constructed.
New Enlisted Specialists Building	Callan Hall	Major General Robert E. Callan, Commandant of the Coast Artillery School, 1924-1929.

Slide Rules and Instruction Charts

The Book Department, Coast Artillery School, can now furnish parts and assembly instructions for the Kane antiaircraft spotting slide rule at $.50 postpaid.

The Book Department can also furnish a set of nineteen ozalid charts covering antiaircraft instruction, as used at the Coast Artillery School. The price is $3.00 per set postpaid.

Orders for the above should be sent direct to the Book Department at Fort Monroe.

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. VAN R. SCHUYLER
CAPTAIN F. B. KANE

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.

☆ ☆

New 90-mm. AA Gun

The 90-mm. antiaircraft gun, shown in the accompanying photographs, has been standardized as a new antiaircraft weapon for the Coast Artillery. Its rôle will be essentially that of the present standard 3-inch antiaircraft gun M2A2, which weapon it will replace insofar as future procurement is concerned. However, all serviceable 3-inch antiaircraft guns, including those now under manufacture, are still classed as standard and are to be continued in service.

For the present, the technical details of the new weapon will remain in a restricted category. Hence only a very general description of the gun can be published at this time.

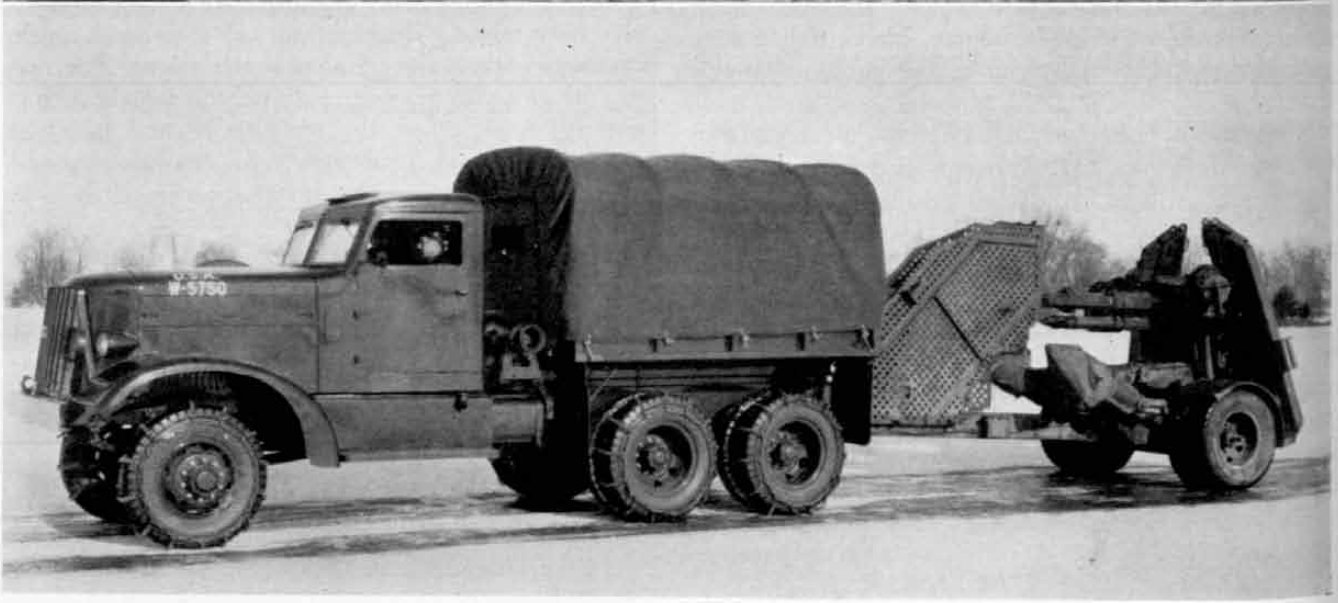
The gun will be known as the 90-mm. gun AA M1 on 90-mm. AA mount M1. Although its developed rate of fire probably will be slightly less than that of the 3-inch, its projectile is considerably heavier. Hence in over-all effectiveness (i.e. number of effectiveness fragments per unit of time) the 90-mm. represents a considerable improvement over the standard 3-inch weapon. The new gun also has a shorter time of flight than the 3-inch for corresponding ranges and consequently a greater maximum useful range. In over-all weight and in tactical mobility, the two weapons are approximately equal. The 90-mm. mount is of the single-axle, dual-wheel type. Thus the weight per wheel is no greater than in the case of the 3-inch. On-carriage fire control equipment is of the conventional type. The bogy is equipped with electric brakes.

TABLE OF BASIC ALLOWANCES

New Table of Basic Allowances for the Coast Artillery Corps, effective May 1, 1940, shortly will be ready for publication to the service. In general, these tables will involve only minor changes in current allowances, made necessary by the adoption of new equipment. The majority of such changes will apply only to mobile antiaircraft regiments, where the adoption of new tables of organization and of certain new types of equipment and transportation have necessitated corresponding changes in allowances.

A major revision of all tables of basic allowances throughout the service will be undertaken at a later date, after a thorough study has been made of the reports of various corps and army maneuvers scheduled for the current training season. Consideration will be given at that time to the adoption of such additional changes as may be recommended by organizations in the field.

(For pictures of the new 90-mm. gun please turn the page.)



Loading the new 90-mm. gun.
The new 90-mm. gun in action.
The new 90-mm. gun in the traveling position.

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* MAJOR J. C. BATES, *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

155-MM. SHRAPNEL PRACTICE

Battery A, 55th Coast Artillery, commanded by Captain William I. Brady with Lieutenant Walter C. Conway as range officer, fired a shrapnel practice with 155-mm. guns at Fort Kamehameha. The practice was divided into three phases fired on April 11, 12 and 16. The first two parts of the practice were fired at ranges of approximately 12,000 yards while the third phase was conducted with a range of about 5,000 yards.

This practice was designed to give all personnel experience in the firing of shrapnel with 155-mm. guns, under conditions quite different from those encountered during normal target practice. Among the problems covered were:

1. The determination of the proper range and direction of the course of the target without the use of horizontal base or a fixed D.P.F.
2. The proper sequence of obtaining range and height of burst adjustments.
3. The best use of a four-gun battery when many small boats are at about the same range.

In this practice, ranges were obtained by the use of a coincidence range finder. Range adjustment, initially made while all bursts were in the water, was maintained from data secured by readings on the splash of the shrapnel cases. During the third phase of the problem, a switch was made from Case III to Case II and from two- to four-gun salvos.

OTHER SEACOAST TARGET PRACTICES

The Harbor Defenses of Pearl Harbor have completed all of their seacoast target practices for this year. In addition to the shrapnel practice, three regular 155-mm. practices have been fired by Coast Artillery personnel at Forts Kamehameha and Weaver by Battery A, B and C, 55th Coast Artillery, commanded by Captain William I. Brady, Captain Logan O. Shutt and Captain Vern Walbridge, respectively. Two 8-inch railway practices were fired from Fort Kamehameha by Battery A and B, 41st Coast Artillery, under the command of Captains Darwin D. Martin and William J. McCarthy. All of these practices were closely supervised by the brigade commander who required special service conditions during each of the practices. No battery can now afford to go into a target practice without being fully prepared for immediate continuance of the practice if a key man or important communication line is declared out of action in the middle of a practice. Firing with all personnel in gas masks has also been conducted.

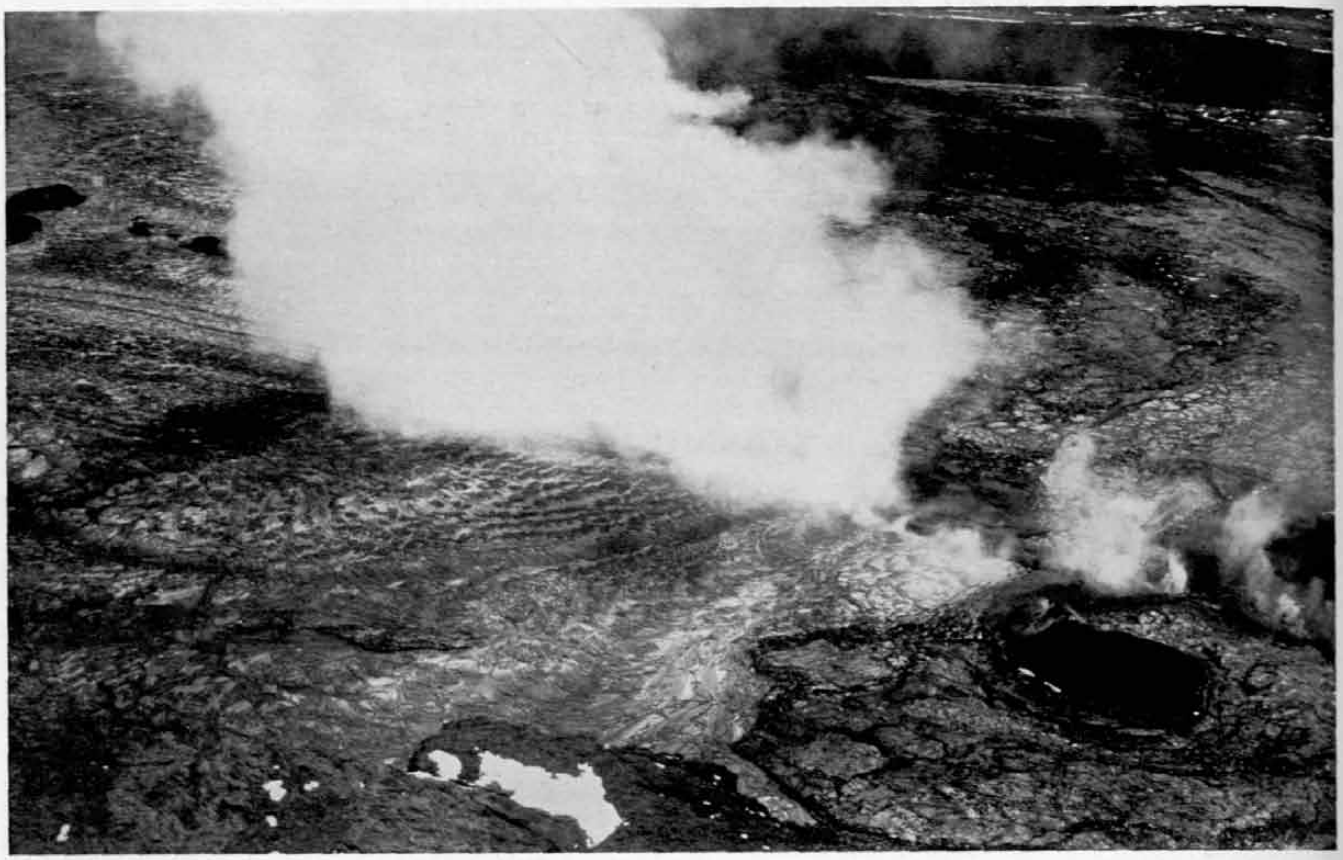
ANTIAIRCRAFT TARGET PRACTICES

The gun batteries of the 64th Coast Artillery fired half of their ammunition allowance during April in six day and three night practices. In accordance with the new regulations, high explosive practices as well as shrapnel practices are being fired. A large number of naval officers of the Hawaiian Detachment of the U. S. Fleet witnessed the night firings and were favorably impressed with the results and the mobility of the material in use. Gun battery commanders are Captain Ovid T. Forman, Harold T. Turnbull, George F. Heaney, Jr., and Frederick E. Day and Lieutenants William H. Kinard and Richard C. Boys. Lieutenant A. Deane Gough has been in charge of the records section.

Battery A and C, 16th Coast Artillery, and Battery F, 55th Coast Artillery commanded by Captain Donald B. Herron, Lieutenant James T. Darrah and Captain William S. Lawton respectively, fired additional assignment 3-inch AA shrapnel practices at Sand Island. Battery E, 55th Coast Artillery, commanded by Lieutenant Perry H. Eubank, fired a high explosive practice at the same place.

THE CHIEF OF STAFF VISITS HAWAII

General George C. Marshall visited the Hawaiian Department from March 4 to 13, arriving and departing by clipper. Immediately upon arrival, he inspected Fort Shafter and Fort Kamehameha where General Gardner presented a résumé of the seacoast and antiaircraft defense of Oahu. On March 5th, the Chief of Staff visited the antiaircraft firing center near Nanakuli. General Marshall displayed considerable interest in this firing center and took photographs of it back to the mainland for possible duplication of it in various parts of the United States. Incidentally, the deal for the acquisition of the land for this firing center is now practically completed and steps are



The recent eruption of Mauna Loa as seen from the air.

now being taken to make permanent improvements thereon.

Coast Artillery Troops Assist in Rescues

In the course of a five-day exercise of the North Shore groupment April 4 to 9, Coast Artillery troops assisted in two rescues. On the night of April 2, the engines of the tug *Clayton* failed and the boat was in danger of drifting ashore and possibly being dashed against the rocks. The searchlights of Headquarters and Combat Train, 2d Battalion, 55th Coast Artillery, illuminated the *Clayton* and surveillance was maintained throughout the night until a rescue could be made by the Coast Guard and the tug *Krauthoff*.

On Thursday night of the same week, a detachment of infantry attempting to cross the Waianae ridge was entrapped in a ravine and lost for a night. The Coast Artillery searchlights again went into action and assisted in the rescue of the nine infantrymen. Officers assisting in these two rescues were Major Walter L. McCormick, Captains Maxwell W. Tracy and Clifton C. Carter and Lieutenant Howard P. Persons, Jr.

Another rescue took place on the West Shore of Oahu when an attack plane crashed into the sea near Nanakuli. Two boy scouts rescued the pilot and passenger of the plane. Captain Robert T. Frederick was in the vicinity at the time and assisted in rendering first aid after the rescue.

Presentation of Knox Medal

The official presentation of the Knox Medal to Staff Sergeant William H. Kernander took place in connection with Organization Day Activities of the Harbor Defenses of Honolulu on March 1. Brigadier General Fulton Q. C. Gardner, in his presentation remarks, stressed the efficiency and the great value to the service of the noncommissioned staff officers of the Corps.

Field Exercises and CPX's

This brigade has been busy with tactical exercises in addition to the target practices mentioned above. The Harbor Defenses of Honolulu held a combined Field Exercise and CPX February 26 to 28 and a CPX on April 16th and 17th. In these exercises, battalions were commanded by Majors Donald L. Dutton and Walter L. McCormick.

The Harbor Defenses of Pearl Harbor conducted a field exercise with all troops in the field from April 22 to 26. Groups in this exercise were commanded by Majors Henry H. Slicer, Leon A. White and Watson L. McMorris.

In preparation for the forthcoming department maneuvers, a twenty-four hour department CPX was held on April 22. The purposes of this exercise were to test the functioning of the command posts involved and to insure that personnel concerned are familiar with the field orders.

Personnel Changes

Major James C. Bates is now sector athletic officer replacing Captain William H. Kendall who leaves for duty at Fort Stevens and the Command and General Staff School.

Major Bernard C. Dailey and Lieutenant Howard P. Persons, Jr., departed for new duty at Indianapolis and Fort Monroe respectively. Lieutenant Linscott A. Hall, left for duty at Fort Williams, Maine. Lieutenant Carle Lentz, II, has arrived and has been assigned to Fort Ruger.

Fleet Exercises

The entire United States Fleet is now conducting exercises in Pacific waters. Officially observing these exercises for the Army are Colonels Charles K. Wing and William D. Frazer who are aboard ships of the fleet for the duration of the maneuvers. Following a gigantic searchlight display and review off Kaikiki scheduled for the fleet on the night of April 25, the call will resound in Honolulu "The Fleet's in."

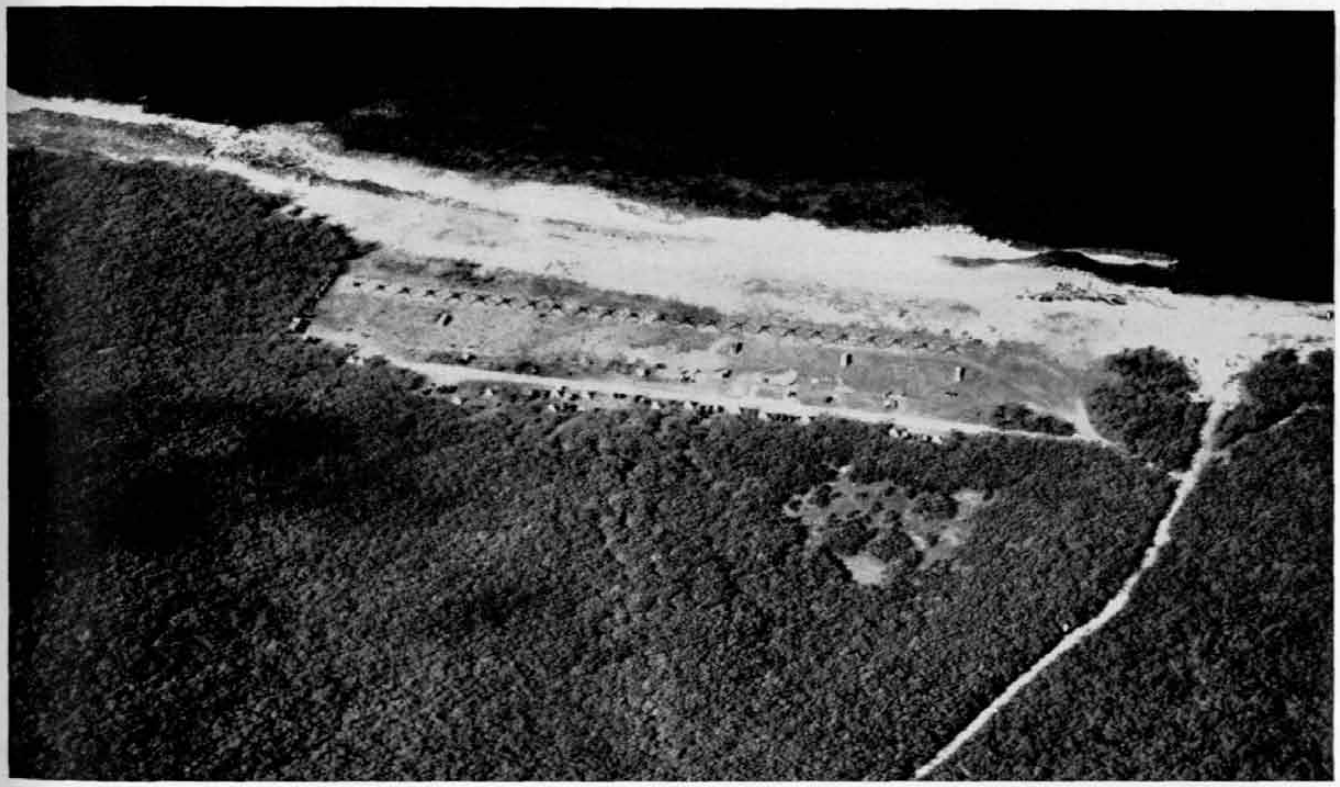
Visit of American Legion Commander

The National Commander, Major Raymond J. Kelly of the American Legion visited the Islands during the period April 3 to 12. A Coast Artillery Reserve officer, Major Kelly was received at the dock by an escort which included the 16th Coast Artillery and was tendered a review at Fort Kamehameha by all troops of that post.

Mauna Loa Erupts

Beginning at 12:30 on the morning of April 8, the Mokuaweoweo Crater of Mauna Loa on the Island of Hawaii, has been erupting steadily for the past three weeks. Péle, the Hawaiian goddess of fire, is throwing her molten lava to about 500 feet above the crater. As yet there is no danger to the populated portions of the Big Isle.

Many army officers have been afforded the opportunity of flying down in Army bombers and witnessing the spectacle of an active volcano in action. The sight of the fiery pit against a background of snow on other parts of the volcano is indeed unusual.



An aerial view of the Hawaiian Department antiaircraft firing point.
See the article on page 249.

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)

COLONEL DELMAR S. LENZNER
Commanding Submarine Mine Depot

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

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

With a reluctance that has been most galling to all residents of the post, summer has finally arrived. After several false starts in which their eager noses were sharply nipped by chill wind and weather, both plants and pedestrians have at long last made their permanent appearance for the coming summer. The change from winter to summer has taken place practically overnight and the metamorphosis is a pleasure to behold. The quickened pulse of nature has made itself felt in all post activities, and all agencies and individuals are engaged in the activities which this season brings. Training is accelerated, personnel changes are on the increase, building projects have speeded up, school activities have reached their climax in graduation, and athletic and recreational activities are attaining their seasonal prominence.

ARMY DAY

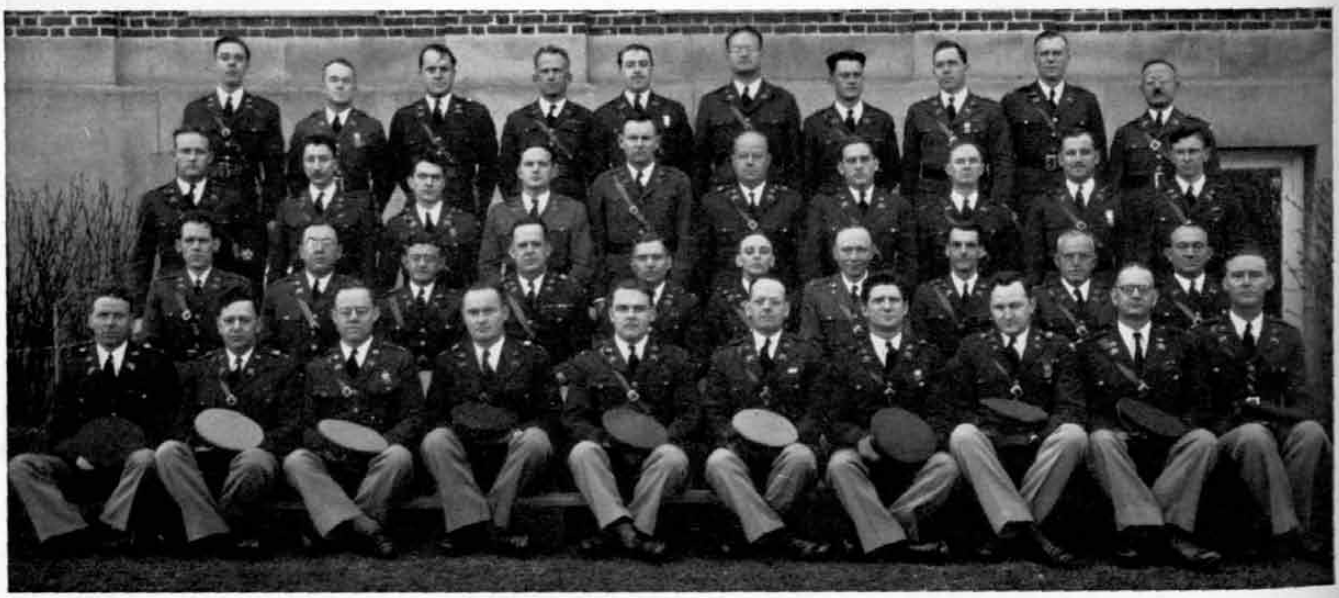
Fort Monroe was honored on April 6, by a visit from the Chief of Coast Artillery and Mrs. J. A. Green. A salute of thirteen guns was fired by the 6th Ordnance Company and an escort of honor, consisting of a provisional battalion from the 2d Coast Artillery commanded by Major C. Kerr, met General Green at 9:00 a.m. At 11:00 a.m. a brigade review for General Green was held on the main parade ground. Colonel R. F. Cox commanding officer of troops, presented the brigade which consisted of the 2d and 70th Coast Artillery regiments.

Throughout the afternoon a large number of citizens viewed exhibits of matériel at the waterfront and visited firing points of seacoast armament. The U.S.A.M.P. *Schofield* was available for inspection during the afternoon.

At 5:00 p.m. a reception in honor of General and Mrs. Green was held at the Casemate Club. All officers and their wives attended this most pleasant function during which refreshments and dancing were enjoyed by all present.

NATIONAL GUARD GRADUATION

An unusually large class of eighty National Guard officers graduated from the Coast Artillery School on April



SPECIAL CLASS NATIONAL GUARD CLASS, COAST ARTILLERY SCHOOL—1940

Back row: Lieutenants Walker, Wallace, Captain Ward, Lieutenants Webber, Wentzell, Captain Willey, Lieutenants Willey, Williams, Captains Williamson, Zollo. *Third row:* Lieutenant Rodney, Captain Santilli, Lieutenants Sinclair-Smith, Stewart, Stone, Thompson, Townsend, Captain Trousdale, Lieutenants Tuttle, Vail. *Second row:* Lieutenant Miller, Captains Moore, Moren, Morgan, Lieutenants Mudge, Mullen, Noecker, Paeper, Captains Randall, Rentz. *Front row:* Lieutenants Jones, Knapp, Captains Kunz, Lowrie, Lieutenants Lucas, MacDuff, Marcelynas, Mazol, Major McBride, Captain Miller.

30. This event was the occasion for the visit to the post of Major General John F. Williams, Chief of the National Guard Bureau, who delivered the graduation address to the class. A salute of thirteen guns and an escort of honor from the 70th Coast Artillery (AA) were accorded General Williams. Brigadier General F. H. Smith, U.S.A., commandant of the Coast Artillery School, introduced the principal speaker, and presentation of certificates to graduates was made by the Chief of Coast Artillery. The National Guard class held their graduation hop on the Friday preceding their graduation. This was a festive affair which a number of officers and ladies of the garrison enjoyed. During the stay of the National Guard class most cordial relations have obtained between its members and post personnel. Their sojourn has been the occasion for the formation of many friendships between the students and permanent members of the garrison. Although their departure caused many regrets, the best wishes of post personnel follow the class of 1940.

Training

Training detachments, for instruction of ROTC units at the University of Pittsburgh and VPI, have returned to the post. The former, under Lieutenant P. H. Wollaston, and the latter under Lieutenant H. P. Van Ormer, were from the 70th Coast Artillery. Lieutenant J. M. Banks has returned from Fort Hancock where he commanded a detachment from the 70th which participated in Coast Artillery Board projects at that station.

Battery A, 2d Coast Artillery commanded by Captain E. R. C. Ward, is still engaged in firing Battery Montgomery for the Coast Artillery Board. Battery D, 2d Coast Artillery, commanded by Lieutenant E. H. Walter, has completed its target practice, firing Battery DeRussy, 12-inch D.C. Battery F, 2d Coast Artillery, Captain A. B. Nicholson commanding, has completed its target practice with 8-inch railway guns. Battery C and E, 70th Coast Artillery, commanded by Captains H. C. Parks and J. E. Reierson returned May 15 from Fort Story where they fired 3-inch AA and machine guns for the National Guard class and their own target practices.

Preparations are under way to receive the summer trainees. Three hundred and eighty-seven ROTC trainees are expected during June and July. Two hundred and twenty-five CMTC trainees are to be here in July and August. Four hundred and forty-eight members of the ORC are expected from June through August. The post is being geared for the usual summer activity and a full schedule for all hands is envisioned.

Post Projects

Construction of the garage and maintenance buildings for the vehicles of the 70th Coast Artillery began late in April and is well under way. Renovation of the Station Hospital proceeds apace and the finished job should be a distinct addition to the appearance of the post. There are many welcome facilities in this new building which make a real utilitarian as well as esthetic addition to post life.

A new submarine mine depot is under construction and on completion will embody the latest and most modern facilities for the administration of this important junction in our National Defense scheme.

SPECIAL CLASS NATIONAL GUARD CLASS, COAST ARTILLERY SCHOOL—1940

Back row: Lieutenants Hamel A. W. Hardy, P. Hardy, Harnett, Captain Herb, Lieutenants Herig, Herr, Hixon, Jarvis, Johnson. *Third row:* Lieutenants Dittrich, Donnelly, Dunbar, Captain Edrington, Lieutenants Elliott, Evans, Ford, Fultz, Gardner, Gulko. *Second row:* Lieutenants Clary, Cohen, Coleman, Collins, Captain Cook, Lieutenants Cook, Cornish, Corrieri, Dane. *Front row:* Lieutenants Bacheller, Borman, Bowlin, Major Brewster, Lieutenants Burge, Cahoon, Calkin, Major Carroll, Lieutenant Cito, Captain Clarke. *Absent:* Captain Dance.

PERSONNEL

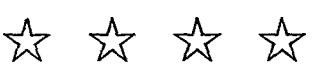
Lieutenant Colonel F. E. Emery, Jr., has left his position as executive 70th Coast Artillery and is now in the Office, Chief of Coast Artillery. Major Edgar W. King reported for duty with the 70th but soon left for duty with First Army maneuvers. General Smith has departed for duty in connection with Third Army maneuvers. The following officers have left on temporary duty in connection with IV Corps maneuvers: Colonel F. P. Hardaway and Majors S. W. Anderson, C. J. Dockler, and O. D. McNeely.

The post was deeply shocked to learn of the deaths of Lieutenant R. L. Matteson, and Privates First Class Eugene Yohey and R. F. Miller, on April 7. Lieutenant Matteson, stationed at Fort Story, was returning from a fishing trip in that vicinity accompanied by the two soldiers when their car ran off the road and overturned in Smith Lake. Unable to escape from the car the three were drowned.

The following named Reserve officers have joined the garrison for six months' active duty: Lieutenants C. E. Browning, S. J. Sukiennik, G. E. Roberts, W. I. Keary, M. E. Jones, H. T. Nagle, K. O. Reed, and H. D. Geigerman.

BEACH CLUB

The Beach Club, after undergoing extensive face-lifting, opened June 1st with increased porch space, a new interior of knotty pine and an exterior of Oregon fir log slabbing and maintains its same attractive log-cabin appearance. All the metal work and the swimming pools have been freshly painted and athletic and recreational facilities groomed for a full and enjoyable summer. As in the past, the Beach Club is sure to be the Mecca for officers and their families, providing a real oasis after the hot and strenuous days of summer training.



Harbor Defenses of Puget Sound

COLONEL JAMES H. CUNNINGHAM, *Commanding*

By Major F. Webster Cook

During March and April, Battery A and G each fired two antiaircraft machine-gun practices and Battery A and B, Panama Canal Detachment, fired one practice. The weather was unusually fine for this time of year; there was plenty of ammunition; and air missions were available. Consequently all batteries showed great improvement as the firing progressed. The scores of the last practices were excellent.

During the same period we participated in a five-day joint exercise in which two Navy submarines took part. We also had two visits from the Seattle Naval Reserve unit.

Battery D is now preparing to fire its annual 3-inch antiaircraft gun practice which, planes and weather permitting, will be over before May 1st. During May all batteries will hold their seacoast practices, culminating in a week of intensive firing witnessed by the Commanding General, Ninth Coast Artillery District and perhaps in part by the Corps Area Commander. The annual tactical inspection by higher authority is expected to be held just prior to the intensive firing week.

The post celebrated Army Day as host to the Chamber of Commerce of Port Townsend. Battery A served an excellent lunch in its mess where the commanding officer made a brief speech of welcome. Afterwards the guests were taken on a sightseeing trip over such sections of the post as are not closed to visitors. A regimental review, witnessed by a large turn-out of Jefferson County citizens, concluded the day's events.

On April 26-28 the annual week-end visit of the University of Washington ROTC takes place, during which time the unit fires sub-caliber practice. Owing to lack of Army boats, transportation to and from Fort Worden will be furnished by the Coast Guard. The *Bell* which had been assigned to these harbor defenses has been transferred to the Harbor Defenses of San Francisco.

Changes in officer personnel include the arrival of Captain and Mrs. Decker, who come from the Field Artillery at Fort Francis E. Warren, and of Lieutenant and Mrs. Peter Schmick and family from Hawaii. Lieutenant and Mrs. Berg and family leave us during May for West Point. Major Myers has been detailed to attend the next course at Leavenworth. Orders have also been received detailing Lieutenant Ashworth to the next class at the Coast Artillery School.

Fort Worden and vicinity has never looked more attractive than at present for we have had an open winter and an early spring. The entire country is alive with flowers and fruit blossoms. The rhododendrons will be out in a few weeks, and the end of May will be featured by the annual Port Townsend Rhododendron Festival, in which Fort Worden troops always take part.

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 GEORGE W. BRENT
Commanding Harbor Defenses of Narragansett Bay

CAPTAIN CHARLES N. BRANHAM
Commanding Harbor Defenses of New Bedford

Training of all Coast Artillery units in this District progresses according to schedule. Many of the detachments destined for service in Panama but now training on armament in the Harbor Defenses of Portland and Narragansett Bay, have completed their first target practices. Preparations for the regular service practices of all units permanently assigned to each harbor defense in the district are nearing completion. In addition, plans are being perfected for the usual summer training camps for the Reserve officers, the ROTC and CMTC.

Numerous personal inspections by all commanders and their staffs have insured a high state of training in all units.

HARBOR DEFENSES OF PORTLAND AND PORTSMOUTH

Battery A, 8th Coast Artillery, Fort Preble, recently won the basketball championship of Forts Preble and Williams from Battery E, 68th Coast Artillery (also of Fort Preble) in a game that ended with a score of 34 to 29. Battery A, 8th Coast Artillery also won the duck pin bowling championship of Forts Preble and Williams.

The 68th Coast Artillery completed its gunners' examinations on April 30 and then started intensive artillery training and small arms firing.

Lieutenants Chester J. Diestal and Richard S. Spangler, 68th Coast Artillery, departed on leave April 15 pending departure on foreign service.

The following named Reserve officers have recently reported for six months' training with the 68th Coast Artillery, Fort Williams: Lieutenants Howard S. Spear, Joseph Daleda, Bernard A. Gilman, David Rappaport, Marcus Mason, Harman W. Parker, Albert M. Wilcox, and Thomas B. Yeager.

Captain Charles H. Treat, Panama Coast Artillery Detachment, 8th Coast Artillery, goes to duty with the Coast Artillery Corps, Hawaiian Department, and sails from New York on or about July 24th, 1940.

HARBOR DEFENSES OF BOSTON

By Captain Ben E. Cordell

Colonel Monte J. Hickok, the Harbor Defense Commander, has been hospitalized with an eye ailment. His speedy recovery is of concern to every man of the command.

Colonel Edward B. Dennis, harbor defense executive, has been ordered to duty with the army maneuvers in Georgia and Texas.

Battery A, 9th Coast Artillery has started its annual target practice activities—probably the most ambitious ever undertaken by any battery of these defenses. The battery fires a 6-inch seacoast practice in May, a 3-inch antiaircraft practice in June and a submarine mine practice in July. In addition, the battery expects to furnish large details for the First Army maneuvers during the month of August. The morale is high. The battery received "Excellent" ratings in all practices conducted during 1939 and hopes to repeat these results for 1940.

Sergeants G. M. Souffie, M. Routhier, and J. W. Henault have recently arrived in the 9th Coast Artillery from the 62d Coast Artillery (AA).

With the breaking of the New England winter, baseball is in the athletic spotlight. There is every indication that Fort Banks will be represented by one of the best baseball teams that has ever worn the colors of this post.

HARBOR DEFENSES OF LONG ISLAND SOUND

By Captain F. T. Ostenberg

Spring has arrived at Fort H. G. Wright bringing baseball and the annual seacoast target practices. Because of the reorganization of the 11th Coast Artillery and the entry of an officers' baseball team, there will be eight teams entered in the post league and the season promises great interest. All batteries are holding daily drills and firing sub-caliber in preparation for target practices to be fired during the first week of May. The new buildings in the utilities area, in the National Guard Camp, and at Fort Michie are rapidly approaching completion and several officers from corps area headquarters have made inspections.

On March 29, Major General James A. Woodruff, commanding the First Corps Area, accompanied by members of his staff, inspected the command and the new construction. On March 28 Colonel Charles M. Steese, Ordnance Department, made an inspection of ordnance activities including the ordnance machine shop and offices now under construction. On April 8, Colonel Guy Kent Cavalry, Lieutenant Colonel Evan C. Seaman and Major Lucas E. Schoonmaker, Coast Artillery Corps were visitors at the post to examine our two Thomason Act officers for appointment in the Regular Army.

Organization Day of the 11th Coast Artillery was celebrated March 28. The regiment assembled at the post theater where several pieces were played by the regimental band. The history of the regiment was then reviewed, announcements were made of various official citations and commendatory letters and the athletic cups and medals were presented.

During March the following named Coast Artillery Reserve officers reported for six months active duty training: Lieutenants Edwin G. Orrick, Topeka Kansas; William T. Walters, Manhattan, Kansas; Wallace W. Thurston, Elmdale, Kansas; William V. Warren, Salina, Kansas; Reinhart W. Perlowski, Sauk Rapids, Kansas; James D. Ostrow, Minneapolis, Minn.; Kirby D. Goldblum, St. Paul, Minn.; Allen W. Bohlib, Minneapolis, Minn.; Harry Hunegs, Minneapolis, Minn.; Thomas H. Ohl, St. Paul, Minn.; Louis Rotar, Kansas City, Mo.; Leondis J. Redwine, Lake City, Kansas.

Harbor Defenses of Narragansett Bay

By Captain O. A. Nelson

The harbor defenses have grown considerably in personnel in the past few months. On November 1st the garrison consisted of four Coast Artillery, two Medical and two Quartermaster officers, and about 150 enlisted men; it now numbers twenty-four officers and around 700 enlisted men.

Battery A, 10th Coast Artillery, is preparing to fire two 3-inch rifle practices from Battery Crittenden at Fort Wetherill during May. The 1st and 2d Provisional Battery, Panama Detachment, 10th Coast Artillery, will fire Batteries Greene and Edgerton, 12-inch mortars (sub-caliber), at Fort Adams, during May. The 3d and 4th Provisional Battery, Panama Detachment, 10th Coast Artillery, will fire Battery Dickensen (6-inch barbette) and Battery Wheaton (12-inch DC) at Fort Wetherill during June.

The quartermaster is having a difficult time keeping the Panama Coast Artillery Detachment supplied with chevrons. Promotions have been rapid.

Fort Adams had two basketball teams in the Army and Navy YMCA League this winter and the Panama Coast Artillery Detachment team was runner-up for the championship. Four boxing smokers were held and although no future champions developed, the bouts were well attended and furnished excellent recreation and entertainment. The units took turns in sponsoring dances which were very successful. The baseball schedule has been announced and we should see some good baseball here this summer. The duck pin bowling tournament was won by Battery A, 10th Coast Artillery, and the ten pin tournament is well under way, with Headquarters Battery leading. The movie theater is well attended three nights a week with two shows each night. We hope to obtain two more showings each week.

The Officers' Club at present is very active. Twice a month all the officers and their families gather there for informal suppers.

On Army Day we were honored by the presence of Governor William H. Vanderbilt of Rhode Island, who inspected the post and attended a buffet luncheon at the Officers' Club. Battery A, 10th Coast Artillery, was the guard of honor and fired the salute. The Panama Coast Artillery Detachment gave a review with the assistance of the band from the Naval Training Station. Since that time the Panama Coast Artillery Detachment has developed a drum and bugle squad which will function at our parades in the future.

Governor Vanderbilt of Rhode Island takes the review on Army Day at Fort Adams, Rhode Island.

We are busy with an intensive training program. July and August will bring 900 CMTC trainees; September and October will see the completion of the training season with Battery A's annual mine practice.

Harbor Defenses of New Bedford

By Captain Charles N. Branham

We who are fortunate enough to be stationed at Fort Rodman quickly forget the hardships of a New England winter when all the varied pleasures of a southeastern New England summer are at hand—as they now are. Better work is done faster with the prospect of a wide choice of many avocations when work is over—sailing, swimming, fishing, or merely loafing on the beach—all these are so near to us that no time is lost in making the most of them.

The last of the scheduled monthly troop schools for Reserve officers assigned to the 23d Separate Battalion (HD) will be held on June 4. These schools, which have been conducted at Fort Rodman throughout the winter and spring months, have proved very successful; particularly since they afforded opportunity for those attending school to work with actual equipment and to put into practice the theory already absorbed from texts, lectures, and extension courses.

Military, naval, veteran, and civic organizations and clubs in Greater New Bedford coöperated to commemorate Memorial Day with fitting ceremonies, including a big parade in which all groups were appropriately represented.

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)*
COLONEL J. F. COTTRELL *Commanding 92d Coast Artillery (PS) (TD)*

By Major S. McCullough

The two-month period covered by this article has been important and busy. The outdoor period is now at its height. We have been favored with exceptionally good weather since the first of the year which has helped in carrying out a well planned and intensive schedule. All concerned are bending every effort to make this the most successful target practice season yet. At present all practices are over with the exception of the mine practices and the antiaircraft searchlight practice. In general, the results have been highly satisfactory. The average of the scores will run well into the upper brackets.

As a climax to a busy season, a war condition period was held during the last week in March. The main purpose of this period was to make a thorough test of the war plans to determine their adequacy and to find defects. This objective was satisfactorily attained. The exercises were realistic and the active participation of the Navy and the Air Corps made them most interesting and instructive.

Major General Walter S. Grant, commanding the Philippine Department, made a tactical inspection of these harbor defenses on February 15 and 16. He was tendered military honors including an escort of honor and a brigade review. Antiaircraft searchlight exercises, seaward defense surveillance and illumination exercises, air raid and blackouts and a tour of inspection of various activities demonstrated the standard of training. The department commander was favorably impressed and expressed himself satisfied with the high standard shown.

On March 7 and 8 the harbor defenses were visited by groups of officers (about seventy-five each day) from Fort Stotsenburg, Fort McKinley, Post of Manila and Nichols Field. A carefully planned tour of the defenses and utilities was carried out under the direction of Lieutenant Colonel C. M. Thiele.

A colorful Easter sunrise service was conducted by Chaplain Schulz on Easter morning in a natural amphitheatre just below the hospital with the audience facing east as the sun rose over Malinta Hill. On top of the hill a large white cross stood out against the rising sun. The Chapel Choir under the direction of Mrs. Walter K. Wilson, participated in the Easter program. The Choir, of which we are justly proud, consists of twenty-one voices with Lieutenant Colonel F. S. Matlack as pianist. During this service, "Hosanna" and the "Hallelujah Chorus" from *The Messiah* were rendered. The regular choir was augmented by a men's chorus of twenty-four enlisted men under the leadership of Major W. C. Braly and added greatly to the effectiveness of the service.

In the realm of athletics, King Baseball has reigned supreme during the last two months. In the interbattery leagues of each regiment, Battery G, 59th Coast Artillery, Battery B, 60th Coast Artillery (AA) and Battery A, 91st Coast Artillery (PS) were the winners. For the post championship (American Division) the 60th Coast Artillery (AA) after losing the first two games came through to win the last three to clinch the championship. This was a hard fought and close series. The interest taken by the post, evidenced by the large and enthusiastic crowds which turned out to root for their favorite team, made it look like a small world series. The department American and Philippine Scout leagues begin in the middle of April, with Fort Mills represented by strong teams. Two interesting boxing smokers were put on by the recreation officer during this period. One by the Bilibid prisoners was an unexpectedly good card thoroughly enjoyed by all. The other boxing card was an interpost contest with the cream of the boxers from Fort Stotsenburg, Fort McKinley, Nichols Field and Fort Mills participating. This was an excellent card and the largest crowd of the season turned out to witness it. The Fort Mills boxers put up a fine performance, winning the majority of their bouts.

Interbattery volley ball games start April 8 and the tennis season opens April 11.

Welcome news for all residents at Corregidor was the information that Brigadier General Walter K. Wilson, our commanding general, had received approval of his request for extension of foreign service until February, 1941. Colonel Price and Lieutenant Colonel Thiele have also requested extension until February, 1941. There will be the usual turnover of officer personnel on the May transport. Among the staff officers leaving are Major G. C. Pilkington, QMC, who has been ordered to Fort Riley; Major J. B. Hafer, ordered to Organized Reserve duty at Columbia, South Carolina; and Lieutenant G. R. Wilkins, ordered to Fort Scott. Officers due to arrive on the May transport are the following: Major Napoleon Boudreau, Major E. F. Barry, OD, Lieutenants Burton R. Brown, S. A. Madison, D. A. Snoke, S. C. Farris, and P. H. Lehr. Already under orders to arrive on the July transport are Lieutenant Colonel O. De Carre, Captain L. H. Brownlee, and Lieutenants R. J. Lawlor, H. W. Schenck,

W. Massello, Jr., E. C. Somerville, L. A. Bosworth, R. E. Haggerty and W. A. Perry.

This concludes the Corregidor news with the exception of one item which made an unusual but rather effective ending on the last night of the war condition period. This was an earthquake with several strong tremors which shook the island very noticeably and uncomfortably, just before midnight, March 29. Newspapers reported that the center of this disturbance was near Mindoro.

59TH COAST ARTILLERY
By Major Louis H. Thompson

The February transport brought four new officers to the 59th. Major Arthur K. Chambers was assigned to command the Headquarters Battery and 2d Battalion; Captain Donald W. Sawtelle (Cavalry) took command of Battery C; Captain Reed Graves (Infantry) has been temporarily assigned to Battery D; and Lieutenant Harry Julian assumed the duties of harbor defense military police officer and commanding officer of the Service Battery. Lieutenant J. S. Byrne has been transferred to the regiment, replacing Lieutenant Gulick who takes command of the mine planter *Harrison*. Captain Howard E. C. Breitung has been transferred to the 60th. Lieutenant Kenneth Glade was recently transferred from the 60th and duty at Fort Wint to the 59th. Captain Raleigh R. Hendrix, Lieutenants Joseph B. Yost, William H. Jordan and George F. Leist departed on the February transport for the United States.

All service target practices have been completed and good scores obtained. The regimental average was over 120. Batteries B and F had unusually good scores.

The post baseball championship (American Division) was won by the 60th in a 7th-inning rally during the final and deciding game. The 59th seems to have a habit of losing the post championship and then stepping out to win the Philippine Department trophy. There is much speculation as to whether this performance will be repeated during the coming department league series.

Upon completion of the annual war condition period and the approach of the hot season, the lure of the cooling breezes of Camp John Hay and the pines city has called for recuperative detached service for all members of the regiment who can be spared.

Officers due to leave on the May transport for the United States are Lieutenants H. D. Lind, and E. W. McLain.

60TH COAST ARTILLERY
By Major James L. Hogan

Bad weather delayed the target practices of Battery B, C and D (3-inch gun batteries), approximately two weeks. Finally the practices were completed after numerous difficulties, but before the air missions were consumed. The scores have not been computed but indications are that the practices will show improved results compared with those of the preceding year. The February transport departed during the target practice season taking with it many key men which added considerably to the many problems of the various battery commanders.

The searchlight battery entered into training somewhat late due to the delay encountered by the gun batteries. Once again the searchlights are encountering obstacles in conducting and completing their practice. After many postponements, due to the abnormal conditions, Battery A will attempt to conduct its practice during the early part of April. This battery is in a high state of training and should obtain excellent results.

The machine gun batteries, Battery E and F, start spring training in April, utilizing the towed missions available. This training should prepare these batteries for an early practice in the fall.

The war condition period is now in progress, with the usual AAAIS and searchlight exercises taking a major part in the little war. The personnel of the regiment is well distributed as the result of the annual maneuver.

During the past two months baseball has occupied the limelight. Many interesting and close games have been played among the battery teams of the regimental league. When the cloud of battle had cleared away, it was found that Battery B, commanded by Lieutenant Rothwell and Battery F, commanded by Captain McFadden, were tied for the championship. In the playoff Battery B won the championship.

The regimental baseball team was organized for the series with their friendly rivals, the 59th Coast Artillery to determine the post championship (American Division). After losing the first two games in a five-game series, the 60th came from behind to win the remaining three games and the post championship.

Baseball continues until the first of June, with volley ball and bowling easing in and eventually replacing the national pastime. Tennis and softball will also have their place, and many interesting matches are ahead.

As the result of the minor sports which are scheduled, the current close race for the regimental commander's trophy will see many upsets before the close of the athletic year.

While the 60th Coast Artillery did not receive any officers from the February transport, the regiment was fortunate in getting various officers from the regiments at Corregidor. Major James L. Hogan, who was transferred from the 91st Coast Artillery (PS), relieved Major Arnold D. Amoroso as regimental adjutant. Captain E. W. Breitung, formerly of the 59th, relieved Lieutenant Franklin G. Rothwell in command of Battery B. Lieutenant Rothwell will enjoy a month's leave prior to his departure for the States. Captain Edward F. Adams, Infantry, who was assigned to the 91st Coast Artillery (PS), is now a member of the 60th. Captain Adams will command Headquarters Battery, relieving Major Amoroso, who has been serving in a dual capacity, during the temporary absence of Major Joseph H. Gilbreth. Major Gilbreth will leave on the May transport, and prior to his departure will take advantage of a trip to the southern islands. Lieutenant Thomas McNair, who arrived on the February

transport and was assigned to the 92d Coast Artillery (PS), has recently transferred to this regiment, and is assigned to headquarters.

Major Allison W. Jones left February 26th by commercial liner en route to Fort Hancock. Lieutenant Richard H. Mattern embarked on the USAT *Grant* en route to Fort Monroe, where he will attend the Coast Artillery School. Other losses were Lieutenants William H. Ball and Kenneth Glade, who have been stationed at Fort Wint in connection with Philippine Army activities. Lieutenant Ball is assigned to harbor defense headquarters and Lieutenant Glade to the 59th Coast Artillery. Lieutenant Harry J. Harrison, who has been commanding the USAMP *Harrison*, will revert to the 60th, while Lieutenant John D. Wood joins the regiment from the 92d Coast Artillery (PS).

The regiment is destined to lose Lieutenant R. G. Ivey, who will be assigned to harbor defenses and will take over the duties of assistant artillery engineer. The May transport will take away Captain W. C. McFadden, and Lieutenants E. W. Hiddleston and H. B. Whipple.

Another member recently joined the regiment in the person of Karol Ames, daughter of Lieutenant and Mrs. G. R. Ames. Karol was born March 18. Following the established custom of the regiment Miss Ames was the recipient of a silver porringer donated by the officers of the 60th.

91ST COAST ARTILLERY (PS)

By Major V. P. Foster

The regiment has just concluded a rather strenuous though highly beneficial war condition period of training. The exercises included attacks from beaches, sea and air but we still hold the rock.

The interbattery baseball league ended March 8 with Battery A duplicating last year's performance of winning ten straight victories thus annexing the 1940 championship.

There has been no difficulty in organizing a promising team to represent the regiment in the scout division of the department baseball league. Before such outstanding hurlers as Sergeant Estorba, Privates Villarin and Javier, the opposing batters will have a variety of tricks to watch. The interbattery league developed some heavy hitters and with the majority of the regimental turnouts batting well over .500, the 91st will have a strong aggregation on the diamonds this year.

An interbattery volley ball league starts on or about April 8, and a post scout individual tennis tournament will be held beginning April 13. Gallery fans are looking forward to the customary spectacular exhibitions.

During the last two months the regiment has been busily engaged in conducting annual service target practices. All are now completed with the exception of the mine practices. Results have not been finally computed but the scores will average gratifyingly high.

The May transport will take away Lieutenant T. M. Metz, who returns for duty in the States.

92D COAST ARTILLERY (PS)

By Major E. L. Barr

The officers and the three 155-mm. batteries of this regiment who participated in the Philippine Department maneuvers on the mainland have returned to Fort Mills. The 92d closed a most successful service target practice season with the firing of Battery D on March 15. All firings of the 1st Battalion were conducted under the leadership of Colonel J. F. Cottrell, regimental commander, assisted by Lieutenant Colonel John B. Martin, battalion commander, 3d Guard Battalion. Unusually excellent results have been obtained. The average of the target practice scores of the batteries in the regiment are expected to run well over 150.

Target practice being over, the regiment is now engaged in the war condition period.

This is also the season of preparation in the department of athletics. The tennis and volley ball championships are now being scheduled. In the interbattery series of volley ball, Battery B, last year's champion, is still going strong, owing to the fact that some of its players won the 25,000 pesos prize during the February, 1940 Sweepstake.

Lieutenant Colonel and Mrs. James B. Crawford returned to the United States on the February transport. Colonel Crawford commanded the regiment since March 30, 1939 and had the wholehearted affection of every officer and enlisted man in the 92d. The best wishes of every member of the regiment go with him in his new assignment as commanding officer, 65th Coast Artillery (AA), at Fort Winfield Scott.

The regiment was pleased to welcome Colonel and Mrs. J. F. Cottrell, Major and Mrs. Elvin L. Barr, and Lieutenant and Mrs. Charles E. White, who arrived on the February transport. Major Barr is the new regimental executive, regimental plans and training officer, regimental adjutant and four other additional duties. Lieutenant White has been detailed for duty under the harbor defense commander with the Philippine Army Training Center at Fort Wint. Major William C. Braly, formerly regimental executive, was transferred to harbor defense staff and is now the harbor defense inspector. Lieutenant William H. Ball, has been assigned to the regiment from duty at Fort Wint. Lieutenant George Kappes, has been ordered to duty at Fort Wint. Lieutenant Alfred J. D'Arezzo has been assigned to the regiment from the 91st and will be assigned to duty with the 3d Guard Battalion.

Baguio season is open. Lieutenant Haynes and Lieutenant Croker have made reservations for their families for the month of April at Camp John Hay.

Officers scheduled to return on the May transport are Captain Olaf H. Kyster, Jr., transferred to Fort Totten en route to the Command and General Staff School, Fort Leavenworth, and Lieutenant Robert H. Kessler transferred to Fort Monroe. Lieutenant Michael M. Irvine has also received orders to Fort Monroe as instructor in the Coast Artillery School.

Puerto Rico

BRIGADIER GENERAL E. L. DALEY, *Commanding*

By Lieutenant Peter S. Peca

Life in Puerto Rico continues with increased activity. Concentrations, maneuvers, alerts, sketching, and reconnaissances occupy the attention of all troops.

Army Day was celebrated throughout the island under the auspices of the Military Order of the World War with the coöperation of the Puerto Rican Department. The Army troops began the program by awakening the city of San Juan with band music at reveille. Exhibits of 155-mm. guns, 3-inch antiaircraft guns, antiaircraft machine guns, and 75-mm. guns were displayed opposite the capitol building in San Juan, at Fort Miles, at Vega Baja, and at Borinquen Field. Despite the rain numerous people came to see the displays. The Governor of Puerto Rico and the Commanding Officer, 10th Naval District called on the department commander. A guard of honor of two batteries of the 66th Coast Artillery (AA), was formed for the Governor in the patio of department headquarters. An Army and Navy baseball game, an Army and Navy boxing match, and a half-hour radio broadcast period were also devoted to Army Day.

On April 8th, a radiogram was received from the War Department announcing that Battery A and B, 51st Coast Artillery were classified as "Excellent" for target practices held during the calendar year 1939.

Borinquen Field has been designated as the permanent station for the 66th Coast Artillery (AA) and temporary barracks are now being constructed. One battery will be detached and stationed temporarily at Fort Miles. All the batteries of the battalion will successively take over this duty for periods of one month.

66TH COAST ARTILLERY (AA)

LIEUTENANT COLONEL OTTO G. PITZ, *Commanding*

By Lieutenant Harrison F. Turner

The 66th moved to Borinquen Field on March 11 for preliminary service practices. After a week of training, the gun batteries—B, C, and D—each fired 200 rounds of high explosive at a towed target. Each firing organization engaged in two day practices and one night practice. Camera records were of little value since the HE bursts failed to show on the film, but visual records indicated excellent shooting on the part of each battery.

While we were encamped at Borinquen, our future home, we were much interested in watching the work on our temporary barracks. These will be completed by June 1st.

The battalion returned to Fort Miles on April 2, and

The new mobile defenses of Puerto Rico. Battery A, 51st Coast Artillery hurls a shell seaward from Punta Salinas.

once again resumed normal camp routine. Battery B, and one platoon of Battery A, remained at Borinquen to form a part of the Security Detachment stationed there.

Social activities have been limited because of the absence of the battalion. Mesdames Merkle and Mortimer took advantage of an opportunity to journey to Panama and return by transport. Several dances and tea-dances have been held at the El Morro Officers' Club. The 66th has been well represented on these occasions.

* * *

51st Coast Artillery

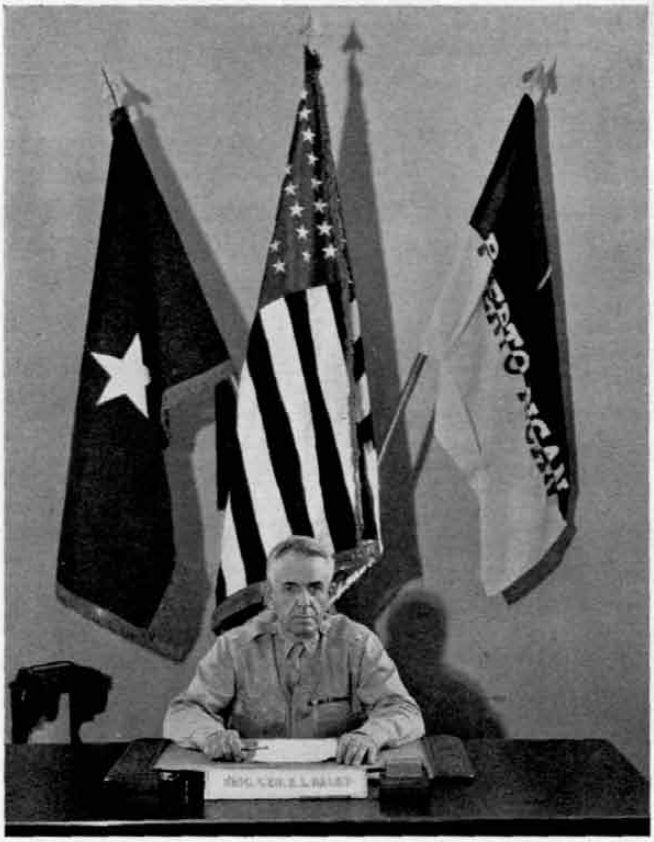
Lieutenant Colonel B. L. Flanigen, *Commanding*

By Lieutenant O. K. Marshall, Jr.

The currently popular phrase in the Puerto Rican Department is, "Let's start a good rumor." Everybody has been starting them, but the only man who has been calling his shots has been the department commander. The rest of us have been just guessing, and the result has been a state of suspended animation. This means that we are constantly on the alert, and that can be classified as a masterpiece of understatement.

Troop movements have continued as in previous months, with the firing batteries of this regiment alternating each month at Borinquen Field where they become a part of the Borinquen Field Security Force. In addition to the division of the regiments into three security forces, every two weeks has seen the concentration of the majority of troops on the island in one of these sectors for brief three-day field maneuvers. In between these exercises, the whole Department has been undergoing a series of surprise alerts in the early hours of the morning.

Headquarters Battery is carrying on its Fort Monroe



Brigadier General E. L. Daley, department commander.

championship tradition in basketball. The team of Sergeants Samples and Kachmarick, Corporals Shell and Clements and Privates Gardner, Palmer, Kachmarick and Losch, competed with teams from the Army, Navy and Marine Corps to win the service championship of the de-

The only remaining materiel of the old defenses of San Juan. This battery is located on the extreme point of El Morro overlooking the entrance to San Juan Bay.

partment. Pushed at the first of the tournament, the team soon hit its stride and had no trouble disposing of the Marine team, 32-18, in the final play-off. Our hats are off to a really fine basketball outfit.

While we're passing out bouquets, we'll pay our respects to one of the finest first sergeants who ever served the Army, Charles E. Hatton, who retired in the grade of first lieutenant on March 31. First Sergeant Hatton served with the 51st Coast Artillery since the World War. Brigadier General Edmund L. Daley was the principal speaker at the retirement banquet. Lieutenant Hatton left for the States on the *American Legion* April 13th. Lieutenant Maurice M. Simons, 51st Coast Artillery, left on the same transport for leave in the States.

The regiment was saddened by the death of Private Oleksik of Battery A, 51st Coast Artillery, who was fatally injured while playing on the beach at Borinquen Field, March 21.

The attack bomber is a new and effective aerial weapon. The Douglas XA-20 attack bomber shown here is powered with two Pratt & Whitney 900-h.p. engines and is equipped with a tricycle landing gear.

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)
LIEUTENANT COLONEL A. J. FRENCH, *Commanding*

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

LIEUTENANT W. M. SKIDMORE
Aide-de-Camp and Assistant S-3

LIEUTENANT W. L. HEROLD
Aide-de-Camp

MAJOR H. P. DETWILER
Munitions and Supply

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

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

By Lieutenant C. G. Patterson

With the close of the hottest and driest dry season on record the troops of the Panama Separate Coast Artillery Brigade end the most intensive, and certainly the largest-scale outdoor training period ever held by Coast Artillery units in the Panama Canal Zone—a five months' period which has brought about a complete reorganization of all defensive military elements responsible for the security of the United States' most important waterway.

Although many of the outdoor activities will be curtailed during the rainy season, intensive training, supply and administration, troop schools and maintenance of equipment will continue. Rehabilitation and new construction are proceeding rapidly at Forts Amador, Kobbe, Sherman, and Randolph. The constructing quartermaster has completed roads into the new posts at Fort Gulick on the Atlantic Side, and Corundu and Fort Kobbe on the Pacific Side. Contracts have been let for the construction of barracks and quarters for the new posts and the foundations are being poured. It is expected that the new Coast Artillery Corps posts will be completed within two years.

TRAINING

In all firings more emphasis has been placed on assumption of service conditions than on target practice scores. Harbor Defense batteries have completed functional firings of all armament and are now preparing for annual target practices to be fired in June and July. All practices will be fired under service conditions.

The 72d Coast Artillery (AA) will complete gun and machine-gun target practices at the gunnery camp, Rio Hato, about June 10th. The 73d Coast Artillery (AA) was at that camp from March 27th to May 1st. Four mobile gun batteries were emplaced in line, spaced far enough apart to permit two or three batteries to fire on each crossing. Five machine-gun platoons were emplaced along the beach with sufficient intervals to permit all platoons to fire on each crossing course. All scheduled practices, both day and night, were completed within the allotted time.

The return movement of the 73d Coast Artillery was coördinated with the move of the 72d Coast Artillery from Randolph to Rio Hato. By using newly arrived motor transportation and mine planters, moves to and from Rio Hato were completed without incident. The problem of maintenance and supply of antiaircraft regiments seventy miles from a base is a new one in Panama. Heavy supplies were forwarded by barge and unloaded on the beach. Perishables were transported daily by refrigerator trucks.

The health and sanitation record for the camp thus far has been outstanding. With a daily average strength of 1,500 men there has not been a single case of malaria nor a serious injury requiring hospitalization.

While the firing batteries were absent at Rio Hato, rehabilitation of posts has been carried on by rear echelon troops.

GARRISON

Major General Daniel Van Voorhis, department commander, accompanied by members of the department staff, has made a thorough administrative inspection of all Coast Artillery posts. Accompanied by the brigade commander, Brigadier General Sanderford Jarman, General Van Voorhis inspected the posts while staff officers made detailed inspections of all activities. The department commander expressed great satisfaction over the results of his inspection. The tremendous improvement in the appearance of Fort Randolph during the past six months was particularly noticeable.

COLON FIRE

At 8:30 P.M., April 13th, a fire started in Colon. Fanned by a strong wind, the fire soon was out of control, burning a wide swath through the center of the city. All available Army fire-fighting equipment and troops were turned out to assist. The fire finally was brought under control early the next morning by dynamiting buildings in its path. More than one-third of the city was destroyed, leaving 15,000 people homeless and destitute. Several hundred pyramidal tents were set up and field kitchens established in open areas. After ten days of Army aid, the Panama Government and Red Cross took over the problem of feeding the people left homeless. Letters of commendation from the President of Panama, the Mayor of Colon and civic bodies were transmitted to the 1st Coast

Artillery (HD) and the 72d Coast Artillery (AA) through the American Ambassador.

Review

On May 8th the troops on the Pacific Side participated in a night review for Major General Van Voorhis, the department commander, who had as his guest Major General Henry H. Arnold, Chief of the Air Corps. The several hundred invited guests included the Governor of Panama and his staff, high-ranking Army and Navy officials and the American Ambassador to Panama.

The parade ground at Fort Amador, where the review was held, was illuminated by twenty antiaircraft searchlights of Battery I, 73d Coast Artillery (AA), commanded by Lieutenant A. D. Robbins. Three B-18's from the 19th Wing flew through the canopy of lights and dropped colored flares. The motor transportation and mobile guns of the 4th and 73d Regiments of Coast Artillery followed the massed troops passing in review. The searchlight display, using colored shields, concluded with red, white and blue beams focused on the garrison flag. At the last note of the National Anthem, the wind billowed out the flag as if on a prearranged signal. The review received many favorable comments from service personnel, civil officials and the local newspapers. No similar display ever had been seen in Panama.

Personnel

There have been a few changes in officer personnel and the duties of officers during the last two months. Lieutenant Colonel A. J. French has assumed command of the Harbor Defenses of Cristobal and the 1st Coast Artillery (HD), succeeding Colonel R. F. Maddux, who returned to the United States because of illness. Major H. P. Detwiler replaced Lieutenant Frank A. Bogart as brigade munitions and supply officer. Lieutenant Bogart departed on May 15th for his new station and duties at the Massachusetts Institute of Technology. Lieutenant R. M. Hardy replaced Lieutenant W. L. Herold as junior Aide-de-Camp to General Jarman. The families of officers and noncommissioned officers of the brigade are arriving in the Department as fast as suitable quarters become available. However, there is every indication that officers and noncommissioned staff officers ordered to duty in Panama must continue to come without their dependents for the present.

Railway artillery defends the Panama Canal.

Coast Artillery Orders

(Covering the period March 1 to April 30, 1940)

Major General A. H. Sunderland, retired August 31, 1940, upon his own application.

Colonel G. W. Easterday, to General Staff Corps, 3d Corps Area.

Colonel Austin G. Frick, retired July 31, upon his own application.

Colonel Philip S. Gage, to Organized Reserves, 3d Corps Area.

Colonel Joseph A. Green, promoted Major General, Chief of Coast Artillery.

Colonel Robert E. Guthrie, to instructor, New Mexico N.G., Sante Fe.

Colonel Howard K. Loughry, to Finance Department, April 13, 1940.

Colonel Rufus F. Maddux, to 2d C.A. District, New York City.

Colonel Clarence T. Marsh, to Massachusetts Institute of Technology, Cambridge.

Colonel Rollin L. Tilton, to Assistant Commandant, Coast Artillery School.

Colonel George A. Wildrick, retired August 31, upon his own application.

Lieutenant Colonel Clarence E. Cotter, to instructor, Command & General Staff School.

Lieutenant Colonel Octave DeCarre, to Philippine Department, sailing New York, June 8.

Lieutenant Colonel Nelson Dingley, 3d, to Hawaiian Department, sailing New York, June 29.

Lieutenant Colonel F. E. Emery, Jr., to O.C.C.A., Washington, D. C.

Lieutenant Colonel W. C. Foote, to General Staff Corps, 6th Corps Area.

Lieutenant Colonel Ferdinand F. Gallagher, to instructor, Louisiana N.G., Shreveport.

Lieutenant Colonel Dale D. Hinman, to Hawaiian Department, sailing New York, July 24.

Lieutenant Colonel Hazen L. Hoyt, CA-Res., continued on active duty, War Department General Staff until May 19, 1941.

Lieutenant Colonel Peter K. Kelley (Inf.), to 7th, Fort Hancock.

Lieutenant Colonel Franklin Kemble, promoted Colonel.

Lieutenant Colonel James D. MacMullen, to instructor, New York N.G., New York City.

Lieutenant Colonel George R. Meyer, to Panama Canal Department, sailing New York, July 24.

Lieutenant Colonel Harold F. Nichols, promoted Colonel, March 1, 1940.

Lieutenant Colonel Harry W. Stark, to Panama Canal Department, sailing New York, August 29.

Lieutenant Colonel Charles Thomas-Stahle, to O.C.C.A., Washington, D. C., August 1.

Lieutenant Colonel Robert E. Turley, Jr., to Army War College.

Lieutenant Colonel Robert H. Van Volkenburgh, to instructor, Infantry School.

Lieutenant Colonel Berthold Vogel, to Panama Canal Department, sailing New York, September 7.

Major Albert A. Allen, to Philippine Department, sailing New York, September 14.

Major Harry C. Barnes, Jr., to University of California at Los Angeles.

Major Thomas J. Betts, to Army War College.

Major Aaron Bradshaw, Jr., to Army Industrial College.

Major William G. Brey, to Panama Canal Department, sailing San Francisco, July 27.

Major James D. Brown, to Panama Canal Department, sailing New York, August 6.

Major Herbert F. E. Bultman, to office, Chief of Staff, Washington, D. C.

Major Albert C. Chesledon, to Des Moines, Iowa.

Major F. G. Epling, to Headquarters, Air Defense Command, Mitchell Field. (Previous orders revoked.)

Major Louis D. Farnsworth, to instructor, Washington N.G., Seattle. (Previous orders revoked.)

Major Percy C. Fleming (F.A.), to 6th Coast Artillery, Fort Winfield Scott.

Major Donald C. Hawley (Cav.), to 3d Coast Artillery, Fort MacArthur.

Major H. P. Hennessy, to Panama Canal Department. (Revoked.)

Major Hugh N. Herrick, to O.C.C.A., Washington, D. C.

Major William Hesketh, to 70th, Fort Monroe.

Major Daniel H. Hoge, to University of Illinois, Champaign.

Major William G. Jeffords, to O.C.C.A., Washington, D. C

Major Allison W. Jones, to Organized Reserve, 6th Corps Area, Detroit.

Major Edgar W. King, to 70th, Fort Monroe. (Previous orders amended.)

Major LeRoy Lutes, to Headquarters, Third Army, Atlanta.

Major John McCormack (Inf.), to Panama Canal Department, sailing San Francisco, April 6.

Major Samuel L. McCroskey, to Army War College.

Major William F. Marquat, to Army War College.

Major Edward Lockwood Millis, to active duty, Fort Leavenworth.

Major John G. Murphy, to Hawaiian Department, sailing New York, July 24.

Major Charles M. Myers, to Hawaiian Department. (Revoked.)

Major Thomas R. Phillips, to Puerto Rican Department, sailing Charleston, July 25.

Major Wade W. Rhein, promoted to Lieutenant Colonel.

Major John W. Russey (F.A.), to 7th, Fort Hancock.

Major Paul W. Rutledge, to 2d, Fort Monroe.

Major J. C. Stephens, to Panama Canal Department, sailing New York, March 27.

Major James R. Townsend, to Army War College.

Major Webster H. Warren, to Hawaiian Department, sailing New York, July 24.

Captain George B. Anderson, to Assistant to the Constructing Quartermaster, New York City.

Captain Edward Barber, to General Staff, War Department.

Captain George P. Berilla, Jr. (Cav.), to 7th, Fort Hancock.

Captain Robert W. Berry, to O.C.C.A., Washington, D. C.

Captain Kenneth M. Briggs, to Coast Artillery School.

Captain Laurance H. Brownlee, to Philippine Department, sailing New York, September 14.

Captain C. C. Carter, to 10th, Fort Adams.

Captain John F. Cassidy, to instructor, Delaware N.G., Wilmington.

Captain Edwin W. Chamberlain, to Panama Canal Department. (Revoked.)

Captain Charles H. Crim, to 2d Coast Artillery District, New York City.

Captain Frank J. Cunningham, to instructor, Louisiana N.G., Shreveport.

Captain J. W. Davis, to 68th, Fort Williams.

Captain William V. Davis, to instructor, Coast Artillery School.

Captain Kenneth N. Decker (F.A.), to 14th, Ft. Worden.

Captain Lee A. Denson, Jr., to Army War College.

Captain Charles E. Dunham, to Hawaiian Department, sailing New York, August 23.

Captain Dean S. Ellerthorpe, to instructor, Georgia N.G., Marietta.

Captain Karl C. Frank, to Philippine Department, sailing New York, September 14.

Captain Gerald G. Gibbs, to University of Maine, Orono.

Captain George F. Heaney, to instructor, New Mexico N.G., Deming.

Captain W. H. Hennig, to 11th, Fort H. G. Wright.

Captain Donald B. Herron, to Michigan State College, East Lansing.

Captain George L. Holsinger (F.A.), to 10th Coast Artillery, Fort Adams.

Captain Joseph Horridge, to Ordnance Department, April 13. (Previous orders revoked.)

Captain Harold H. Hunt, to Hawaiian Department, sailing San Francisco, August 15.

Captain G. E. Keeler, Jr., to U.S.M.A.

Captain William H. Kendall, to 18th, Fort Stevens. (Amended.)

Captain Lyman L. Lemnitzer, to Hawaiian Department, sailing New York, June 29.

Captain George J. Loupret, to Panama Canal Department, sailing New York, July 23.

Captain William C. McFadden, to Virginia Polytechnic Institute, Blacksburg.

Captain Donald McLean, to Hawaiian Department, sailing San Francisco, July 1.

Captain Thomas W. Munford, to Hawaiian Department, sailing New York, June 8.

Captain Christian G. Nelson (F.A.), to 68th Coast Artillery, Fort Williams.

Captain Paul B. Nelson, to Panama Canal Department, sailing San Francisco, July 27.

Captain Arthur B. Nicholson, to Mitchell Field.

Captain Frank T. Ostenberg, to Hawaiian Department, sailing New York, May 27.

Captain Marion G. Pohl, to U.S.M.A. (Previous orders revoked.)

Captain James G. Renno, to Panama

Canal Department, sailing New York, July 23.

Captain Joseph S. Robinson, promoted Major.

Captain Joseph H. Rousseau, Jr., to University of Minnesota, Minneapolis.

Captain Grayson Schmidt, to 68th, Fort Williams.

Captain Peter W. Shunk, to Hawaiian Department, sailing New York, July 24.

Captain Perry McC. Smith, to Hawaiian Department, sailing New York, June 8.

Captain A. C. Spalding, to O.C.C.A., Washington, D. C.

Captain Horace Speed, Jr., C.A.C., to Q.M.C., April 13, 1940.

Captain Andrew P. Sullivan, to Army Industrial College.

Captain Arthur R. Thomas, to Quartermaster School.

Captain M. W. Tracy, to 70th, Fort Monroe.

Captain Charles H. Treat (Inf.), to C.A.C. Hawaiian Department, sailing New York, July 24.

Captain Donald C. Tredennick, to University of Illinois, Champaign.

Captain Louis T. Vickers, to Philippine Department, sailing San Francisco, October 8.

Captain Everett C. Wallace, to Panama Canal Department, sailing San Francisco, July 27.

Captain Edgar R. C. Ward, to Coast Artillery School. (Previous orders revoked.)

Captain Charles M. Wolff, to Philippine Department, sailing San Francisco, June 27.

Captain Francis C. Wood (F.A.), to C.A.C., Panama Canal Department, sailing San Francisco, July 3.

First Lieutenant Dana S. Alexander, to 19th, Fort Rosecrans.

First Lieutenant Edward T. Ashworth, to Coast Artillery School.

First Lieutenant Lewis K. Beazley, to 2d Coast Artillery District, New York, N. Y.

First Lieutenant Frederick T. Berg, to U.S.M.A.

First Lieutenant Gaspare F. Blunda, to Coast Artillery School.

First Lieutenant F. A. Bogart, to Massachusetts Institute of Technology, Cambridge.

First Lieutenant L. A. Bosworth, to Philippine Department, sailing New York, June 8.

First Lieutenant Harry R. Boyd, to Hawaiian Department, sailing New York, June 8.

First Lieutenant Richard C. Boys, to Coast Artillery School.

First Lieutenant Wallace H. Brucker, to Coast Artillery School.

First Lieutenant Edgar N. Chace, to Coast Artillery School.

First Lieutenant Avery J. Cooper, Jr., to Coast Artillery School.

First Lieutenant Harry B. Cooper, Jr., to Panama Canal Department, sailing New York, June 18.

First Lieutenant Ira W. Cory, to Hawaiian Department, sailing New York, July 24.

First Lieutenant James T. Darrah, to 14th, Fort Worden.

First Lieutenant John B. F. Dice, to 61st, Fort Sheridan.

First Lieutenant Charles B. Duff, to Hawaiian Department, sailing New York, August 23.

First Lieutenant Henry W. Ebel, to U.S. M.A.

First Lieutenant Edward E. Farnsworth, Jr., to Hawaiian Department, sailing New York, June 8.

First Lieutenant Carl H. Fernstrom, to Coast Artillery School.

First Lieutenant Foster LeR. Furphy, to Mitchell Field.

First Lieutenant Seymour I. Gilman, to Hawaiian Department, sailing San Francisco, August 15.

First Lieutenant A. D. Gough, to 11th, Fort H. G. Wright.

First Lieutenant R. F. Haggerty, to Philippine Department, sailing New York, June 8.

First Lieutenant William A. Hampton, to Hawaiian Department, sailing New York, June 8.

First Lieutenant Harry J. Harrison, to Coast Artillery School.

First Lieutenant Lauri J. Hilberg, to Coast Artillery School.

First Lieutenant Gordon H. Holterman, to 2d, Fort Monroe. (Previous orders revoked.)

First Lieutenant Howard W. Hunter, to 70th, Fort Monroe.

First Lieutenant M. M. Irvine, to Coast Artillery Board. (Previous orders amended.)

First Lieutenant William H. Jordan, to Coast Artillery School.

First Lieutenant Maxwell M. Kallman, to Coast Artillery School.

First Lieutenant Henry J. Katz, to Ordnance School.

First Lieutenant Franklin Kemble, Jr., to Ordnance School.

First Lieutenant Robert H. Kessler, to Coast Artillery School.

First Lieutenant Edgar H. Kibler, Jr., to Fort Bragg.

First Lieutenant Hubert duB. Lewis, to Coast Artillery School.

First Lieutenant Henry D. Lind, to Coast Artillery School.

First Lieutenant Eugene E. Lockhart, to Coast Artillery School.

First Lieutenant Herbert W. Mansfield, to Hawaiian Department, sailing New York, June 8.

First Lieutenant Richard H. Mattern, to Coast Artillery School.

First Lieutenant R. M. Miner, to U.S. M.A.

First Lieutenant Elmo C. Mitchell, to Hawaiian Department, sailing New York, June 29.

First Lieutenant Russell M. Nelson, to Coast Artillery School.

First Lieutenant Milton L. Ogden, to Massachusetts Institute of Technology, Cambridge.

First Lieutenant Byron L. Paige, to Coast Artillery School.

First Lieutenant Willis A. Perry, to Massachusetts Institute of Technology, Cambridge. (Previous orders revoked.)

First Lieutenant Howard P. Persons, Jr., to Coast Artillery School.

First Lieutenant Ray A. Pillivant, to Ordnance School.

First Lieutenant Alvin D. Robbins, to Coast Artillery School.

First Lieutenant John W. Romlein, to Coast Artillery School.

First Lieutenant Franklin G. Rothwell, to Coast Artillery School.

First Lieutenant Sam C. Russell, to Coast Artillery School.

First Lieutenant E. C. Somerville, to Philippine Department, sailing New York, June 8.

First Lieutenant Arnold Sommer, to Coast Artillery School.

First Lieutenant John J. Stark, to Coast Artillery School.

First Lieutenant John C. Steele, to Panama Canal Department, sailing New York, June 18.

First Lieutenant J. DuV. Stevens, to U.S.M.A.

First Lieutenant Philip B. Stiness, to Hawaiian Department, sailing New York, June 29.

First Lieutenant Alexander J. Stuart, Jr., to Picatinny Arsenal.

First Lieutenant Oren Swain, to Coast Artillery School.

First Lieutenant Henry P. Van Ormer, to U.S.M.A.

First Lieutenant Donald B. Webber, to Coast Artillery School.

First Lieutenant George J. Weitzel, to Coast Artillery School.

First Lieutenant Seth L. Weld, Jr., to Coast Artillery School.

First Lieutenant H. Bennett Whipple, to Coast Artillery School.

First Lieutenant Pennock H. Wollaston, to Coast Artillery School.

First Lieutenant Joseph B. Yost, to Coast Artillery School.

First Lieutenant Frank J. Zeller, to Hawaiian Department, sailing Charleston, July 25.

Second Lieutenant Paul R. Cornawall, to Philippine Department, sailing New York, June 8.

Second Lieutenant George W. Croker, to Coast Artillery School.

Second Lieutenant Thomas W. Davis, to Philippine Department, sailing New York, June 8.

Second Lieutenant W. J. Fling, to Panama Canal Department, sailing New York, April 11.

Second Lieutenant Max S. George, to Coast Artillery School.

Second Lieutenant Monte J. Hickock, Jr., to Coast Artillery School.

Second Lieutenant Frederick B. Holmes, promoted First Lieutenant.

Second Lieutenant Geoffrey Lavell, to Hawaiian Department, sailing San Francisco, May 1.

Second Lieutenant George F. Liest, to Coast Artillery School.

Second Lieutenant Edward W. McLain, to Coast Artillery School.

Second Lieutenant Thomas McG. Metz, to Coast Artillery School.

Second Lieutenant Thomas D. Neier, to Coast Artillery School.

Second Lieutenant John G. Nelson, to Coast Artillery School.

Second Lieutenant Charles S. O'Malley, Jr., to Coast Artillery School.

Second Lieutenant George R. Salyer, to active duty, Fort Benning.

Second Lieutenant James A. Scott, Jr., to Coast Artillery School.

Second Lieutenant George V. Underwood, Jr., to Coast Artillery School.

Second Lieutenant John W. Walker, to Hawaiian Department, sailing New York, May 27.

The Contributors

LIEUTENANT COLONEL A. C. M. AZOY, Coast Artillery Corps Reserve, is an advertising executive in New York. For diversion he writes military history and a number of articles from his pen have appeared in The JOURNAL. He is the author of the currently selling *They Were Not Afraid to Die*, a series of vignettes dealing with Revolutionary War battles.

LIEUTENANT COLONEL E. M. BENITEZ, Coast Artillery Corps, entered the service early in January, 1917, as a lieutenant of Infantry, subsequently transferring to the Coast Artillery Corps. A graduate of the Command and General Staff School (1931) he is now on duty at Leavenworth as editor of our contemporary *The Military Review*. Colonel Benitez will be recalled as the winner of the 1938 Prize Essay Contest.

MAJOR THOMAS K. FISHER is a former member of the 197th Coast Artillery, New Hampshire National Guard. He makes his home at Concord, N. H.

COLONEL JOSEPH H. LEWIS, NGUS, commands the 57th Field Artillery Brigade (Michigan-Wisconsin N.G.), in which, as a major, he commanded the 1st Battalion of the 119th Field Artillery (Michigan N.G.) during the extended and continuous period of active AEF service which he describes in his article. He has commanded the 119th Field Artillery since 1922. Colonel Lewis was born in Washington, D. C., and enlisted in the Michigan National Guard in 1908. He is a graduate of Fort Sill, Fort Leavenworth, and the Army War College, and is now on active duty with the National Guard Bureau as Chief of the Personnel Division. For hobbies, Colonel Lewis enjoys fishing and boating.

LIEUTENANT EDWARD A. RAYMOND, Field Artillery Reserve, is assigned to the 391st Field Artillery. He is a resident of New York City.

LIEUTENANT LYMAN H. RIPLEY, Coast Artillery Corps, hails from Virginia and is a graduate of Virginia Polytechnic Institute (1935). He won his commission in the Regular Army after a tour of active duty as a second lieutenant, CA-Res., under the provisions of the Thomason Act.

CAPTAIN PETER RODYENKO, Corps of Engineers Reserve, served with the Imperial Russian Army during the World War and later acted as an adviser to the Chinese Government. After serving in the 244th Coast Artillery, New York National Guard, he accepted appointment in the Officers' Reserve Corps. Captain Rodyenko is an architect and civil engineer engaged in interior designing and as a consultant in decoration. His home is at Manhassett, Long Island.

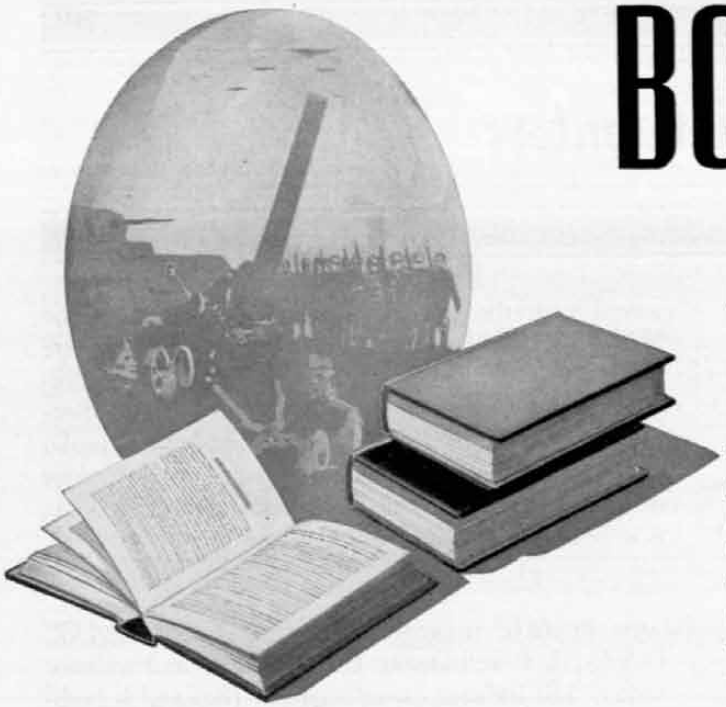
MAJOR GENERAL H. ROWAN-ROBINSON, C.B., C.M.G., D.S.O., is a well-known British soldier and military writer. His military career began in 1892 and is highlighted by service in the wars that range from the South African campaigns of 1901-1902 through the World War to Kurdistan in 1932. He was twice wounded and six times mentioned in dispatches during the World War. He has held the posts of chief artillery instructor and second in command The Royal Military Academy, Military Governor of Libau, and Inspector General of the Iraq Army. In the field of military letters he is perhaps best known for *The Infantry Experiment*, published in 1934. A year ago he published *Imperial Defence—A Problem in Four Dimensions*, a book that accurately foreshadowed the shape of the current war.

MAJOR R. T. SHARPE, NGUS, is a member of the 211th Coast Artillery (AA), Massachusetts National Guard. He has served with the 211th for the past eleven years and makes his home at Boston.

CAPTAIN FREDERICK M. THOMPSON, Infantry, a native of Michigan, entered the army as a second lieutenant of Infantry in September, 1918. He is a graduate of the Quartermaster School (1933), the Infantry School Regular Course (1936), and the Tank Course (1937). Captain Thompson is on duty at The Infantry School.

CAPTAIN EDWIN K. WRIGHT, Infantry, was born in Portland, Oregon. After attending Oregon State College and serving in the Oregon National Guard he was appointed a second lieutenant of Infantry in the Regular Army in 1923. He is a graduate of the Infantry School Company Officers' Course (1932), the Tank Course (1933) and the Command and General Staff School (1936). Captain Wright is an instructor in the First Section (tactics) at the Infantry School.

BOOK REVIEWS



THE DETECTION AND IDENTIFICATION OF WAR GASES. Notes for Gas Identification Officers. New York: Chemical Publishing Co., 1940.

This fifty-three-page booklet prepared primarily for the gas identification officers, of the air raid precaution department of Great Britain is a concise but complete summary of the war gases of the present day. It is couched in simple language, well written and systematically arranged in the following manner:

1. General consideration, classification and general properties.
2. Physical and chemical properties of war gases.
3. Principles and methods of gas detection.
4. Duties and responsibility of gas identification officers.
5. Chemical identification of war gases.

The classification and discussion of the physical and chemical properties is unusually complete. Of interest is the fact that during the World War some three or four thousand substances were examined as to suitability. Of these only about fifty-four were actually used in the field and of these only twelve were actually in use at the end of the war. A number of substances have since been suggested but the number in practical use remain reasonably small.

As to detection, smell, sight and physiological effects are the prime subjective methods. There are many objective methods that may be used but all have limitations that prevent them from being of much practical value in war time.

The chapter on the chemical identification of war gases is quite complete, revealing the extent to which England has gone to prepare herself for what she feels is inevitable.

Despite the brevity of this publication, the subject is handled with completeness and clarity and well merits attention.

F. E. C.

"Method of Protection, No. 3"

THE MAGINOT AND SIEGFRIED LINES. By James Eastwood. London: Pallas Publishing Company, Ltd., 1940. 79 Pages. 50c.

This is a topical pamphlet on the two great lines which naturally gives the edge to the Maginot works as they probably deserve. The treatment is readable and popular. It contains a few points that have not been emphasized in our own newspaper and magazine articles dealing with these fortifications. For example, Mr. Eastwood tells us that the Maginot lines are built of a "secret combination of concrete, steel, and earth, known as 'Method of Protection, No. 3'" which was successfully subjected to "short-range 500-mm. howitzer fire." It was first decided to make the forts thick enough to stand three hits from such shells at the same point. But this ante was, in the end, raised to nine shells instead of three.

That is a reassuring amount of cover in any man's war.

* * *

Leaders of the Alliance

MEN IN OUR TIME. By Audax. New York: Robert R. McBride & Company, 1940. 217 Pages. $2.50.

THESE RULE FRANCE. By Stanton B. Leeds. Indianapolis: Bobbs-Merrill Company, 1940. 367 Pages; Index. $3.00.

It is a natural consequence of our own position in the world these days that we should look for "propaganda" in every book written by authors of the warring nations. For example, *Men In Our Time,* from a British pen, which tells of the nine foremost civilian leaders of the British government at the outbreak of war, might well be expected to present them in their best bibs-and-tuckers.

Men In Our Time, however, is hands-across-the-sea of a high order. Audax, who is, in normal times, what might be called a British Walter Lippmann—a brilliant commentator upon his nation and its government, and supposedly with a pipe line of sizable radius—has written a shrewd and readable book. There is a nice, quiet word of admiration in it, every few pages, for things American—brief passages with a purpose. But these take nothing from the keenness of his comment on Britain's high politicos.

Indeed, Audax seems to have used only a corner of the whitewash brush, if he can actually be accused of wielding it at all. Chamberlain, Churchill, Hore-Belisha, Henderson, Simon, Hoare, and the rest, he criticizes freely in describing their careers. The mind, the place in British life, and the potentialities of each are shown to us in clear and unaffected phrases of nevertheless incisive analysis.

I have no hesitation in recommending *Men In Our Time* to any military reader who wants to know better what kind of men are running the British "show." I only suggest that it will add to a reader's appreciation of it, and give him occasional amusement as he reads, if he will remember the circumstances in which the book was written.

These Rule France falls into a somewhat different category. It has the appearance of being written on order for the booming war-book market. But even so, it fills a need and does it well, if in no way approaching the brilliance of Audax.

Mr. Leeds covers a broader scope than the British writer, describing the military as well as the civilian leaders of France. He also goes farther back into history in placing his characters in their present setting. Thus the reader does not need to be as familiar with the historical background as he does in reading the work of Audax. Mr. Leeds writes in a somewhat abrupt style, but clearly and forcefully.

These Rule France offers an excellent means of modernizing one's point of view of the French nation, its institutions and politics, and its most prominent men.

The Nations of the North

SCANDINAVIA: BACKGROUND FOR NEUTRALITY. By Alma Luise Olson. Philadelphia: J. B. Lippincott Company, 1940. 358 Pages; Map; Index. $2.50.

Miss Olson has lived for the best part of two decades in Scandinavia and during most of those years has been a special correspondent to the *New York Times*. Her book, a history and description of the six northern nations and their aims, is personally sympathetic in its approach. Though it contains no great amount of direct military information, it is an excellent book to turn to for the many who now are interested in knowing the relationships between the Scandinavian nations.

There is solid historical reason, as Miss Olson tells us, for their independence of each other. Yet in many ways they have been closer as a group than even neighboring nations usually are. "Through union and neutrality," she writes, "the North has tried to work toward a permanent philosophy of peace and a government by law and order." And she goes on sadly, in concluding her book, to plead for peace and disarmament.

Since *Scandinavia* was published, German troops have marched laughing and singing and unopposed through all of Denmark and much of Norway, and Norway has been a ground of battle. Surely, this could not have happened so instantaneously had there been a Scandinavian unity of strong preparedness. Nor, it is possible, would Finland have lost a foot of ground.

The ideals, the weaknesses, the finenesses, the prides, of all the northern nations are in Miss Olson's book. It helps us greatly to understand and admire those countries, the more to pity them in their present plight.

Far East Facts

AMERICA HOLDS THE BALANCE IN THE FAR EAST. By Robert W. Barnett. New York: American Council of Pacific Relations, 1940. 44 Pages. 25c.

DEADLOCK IN CHINA. By Lawrence K. Rosinger. New York: American Council of Pacific Relations, 1940. 32 Pages. 25c.

Like the previously issued pamphlets and books of the American Council of Pacific Relations, these present the facts and suggest the possibilities, largely without bias. In the second pamphlet, Mr. Rosinger concludes that the war in China is a stalemate; that China is developing her strength both in the invaded and uninvaded areas; that Japan has weakened economically but has had no home troubles otherwise; that China cannot win by herself; that the Soviet has given the greatest foreign aid to China; and that the final outcome will mainly depend on whether we ourselves continue to sell Japan essential materials of war or to finance her by buying her goods.

In the other pamphlet, Mr. Barnett outlines in more detail the courses of action which the United States may take, and concludes that ". . . whether the broad objectives of American policy in the Far East are sufficiently vital to warrant incurring some risk," is a question "for the American public to decide."

✓ ✓ ✓

Romantic Warrior

KNIGHT OF THE SEAS. By Valentine Thomson. New York: Liveright Publishing Corporation, 1939. 608 Pages; Illustrated; Index. $3.50.

Knight of the Seas is distinctly not a biography. It is a vigorous novel written around the life of John Paul Jones. If the reader expects to plow through a musty, factual account of America's great seaman, interrupted here with quotations from contemporary correspondence and there with excerpts from old memoirs, he will be disappointed. But if he is eager for a narrative of high adventure, court intrigue, thwarted ambition and—to be sure—*la grande passion*, he will get and read these red-blooded experiences of the hero of the *Bonhomme Richard*.

The author plunges into the story of John Paul Jones just before his doubly daring raid on England's coast in the little frigate *Ranger*. Then follows a buccaneer yarn from beginning to end—suspense, romance, adventure.

"It is true I must run great risks," said John Paul Jones, "but no gallant action was ever accomplished without danger; therefore, although I cannot insure success, I will endeavor to deserve it." These words embody the spirit in which he struggled against the might of Britain's seapower and the scheming politicians of Europe.

The book is grand entertainment, I assure you—a prodigious historical account of Europe during the days of the American Revolution. Its author shows us Franklin, LaFayette, and Catherine the Great, to mention a few, as well as the main hero, and makes them all seem real enough.

The style is simple, yet dramatic. A glance at the bibliography shows the author's extensive research for source material and should satisfy even the most incredulous reader of the historical accuracy of the book.

L. N. D.

☆ ☆ ☆

The Jersey Battleground

COCKPIT OF THE REVOLUTION: THE WAR FOR INDEPENDENCE IN NEW JERSEY. By Leonard Lundin. Princeton: Princeton University Press, 1940. 463 Pages; Illustrated; Maps; Index. $3.75.

Books that deal with the history of particular states or with phases of state history are often so local in viewpoint as to make dull reading for those whose interest in the period covered is only general. This book is an exception. And not merely because New Jersey was indeed the Revolutionary cockpit. Without attempting to be dramatic in his writing, Professor Lundin has given us a full, clear, and vigorous account of what in itself was a most dramatic part of American history.

In his preface, Professor Lundin apologizes, on the ground of not being competent to deal with it adequately, for not doing a better job with the military side of his story. He is much too modest. He handles Washington, Lee, Lafayette, Stirling, Howe, Cornwallis and the rest as well as they have ever been maneuvered before within the same limitations of space, if not better. And in addition to that he gives us for the first time, at adequate length and with suitable documentation, the detailed background of the state in which those generals fought the greater part of their battles.

We see most clearly, in *Cockpit of the Revolution*, how torn the people of New Jersey were in striving to determine what their loyalty should be. And this, indeed, brings closer to us than before the similar uncertainties of mind that have been agonizing the peoples of many a small European state in our own day. Half Patriot and half Tory by inclination, the population of New Jersey, when it came to enduring the actual presence on their soil of two opposing armies, split again into half Turncoat in order to save their possessions and themselves and their families. But the British were too stupid to capitalize in any full degree on Turncoat or even Tory friendship, and were practically as harsh upon their local allies, or at least upon the property rights of those allies, as they were upon those of the Rebels. And so the Turncoat and the waverer for the most part became Patriots at heart, through hate if not through principle.

In Europe, the invader has, of course, been a foreign power more often than an erstwhile fatherland. But in each invaded nation there have been, in varying ratio, the Patriot, the Tory (the Sudeten and the Quislingite), and the Turncoat; though in only one nation, Austria, has the ratio been anywhere comparable to that of New Jersey in 1776. Today's invader, however, except perhaps in

Finland, can hardly be compared to the dilatory, far from brilliant Howe. Nevertheless, he is being met (in Holland) by the armies of an ally coming from overseas much as the French came to our aid in the Revolution, although there is a tremendous difference of tempo in the warfare of then and now.

Still another comparison offers. The British armies were incensed at our unorthodox, Indian-fighting tactics. It was not a gentleman's way of fighting. Today, undoubtedly, the armies of Britain realize at last that gentlemen must become fighters in the full cutthroat sense, whenever they put on their uniforms in earnest.

Cockpit of the Revolution is one of a series—*The Princeton History of New Jersey*. If the rest of the series even approaches this volume of Professor Lundin's in interest and excellence, the story of New Jersey in American history will be a model for all other states.

* * *

Kentucky Leader

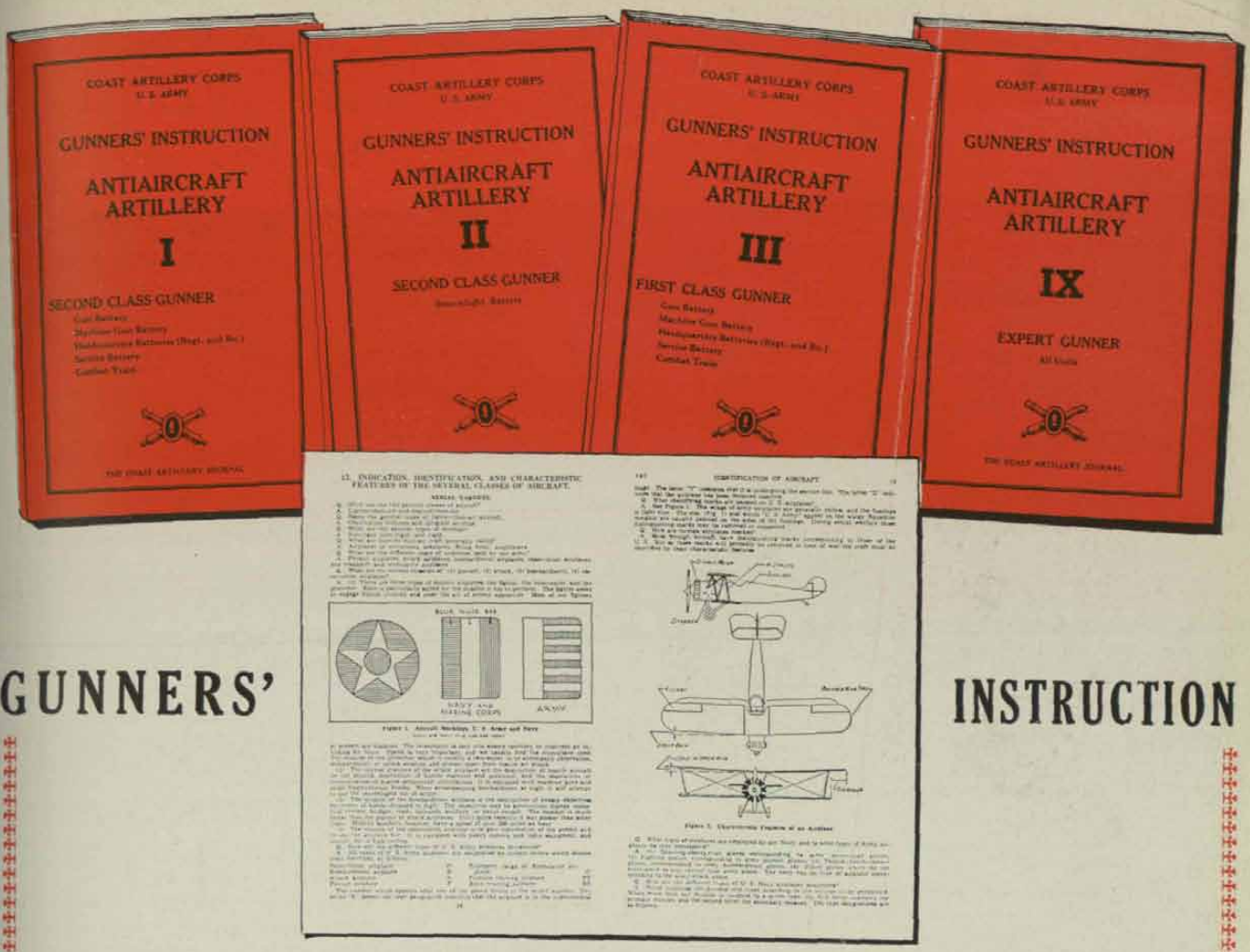
SIMON BOLIVAR BUCKNER: BORDERLAND KNIGHT. By Arndt M. Stickles. Chapel Hill: University of North Carolina Press, 1940. 446 Pages; Maps; Bibliography; Index. $3.50.

Knight of the border indeed was General Simon Bolivar Buckner. His state of Kentucky was first in his heart; and when war pressed toward it from North and South, he sought with all his energy and influence to keep Kentucky neutral, even if it were to require a state army and fighting to do it. But in the end the whirlwinds of warfare blew with too wide a sweep not to draw in the men of Kentucky like those of the states around. And General Buckner, at great personal sacrifice, threw in his lot with the South.

An upright, unswerving man of fine bearing, Buckner was at home in the thick of battle, and was a thoroughly capable organizer. But in the councils of war he was inclined to be too outright in his statements of personal opinion. In the words of Professor Stickles, "Buckner was ever tenacious of a principle and hated hedging on one." The author, who has had full access to the Buckner papers and other sources, throws new light on many matters, including the Donelson campaign and the Bragg-Buckner controversy after Chickamauga.

General Buckner, already one of the foremost citizens of his state when war began, was for many years after the war Kentucky's leading citizen. He was her governor for four years, and was the vice-presidential candidate on the Gold Democratic ticket with General John McAuley Palmer of Illinois in 1896.

Professor Stickles has covered his ground thoroughly though the readableness of his writing is only moderate. His work, however, is a biography that long has needed writing to do full credit to the character and distinction of Simon Bolivar Buckner.



GUNNERS' INSTRUCTION PAMPHLETS

New Subject Matter, New Illustrations, Complete—Official

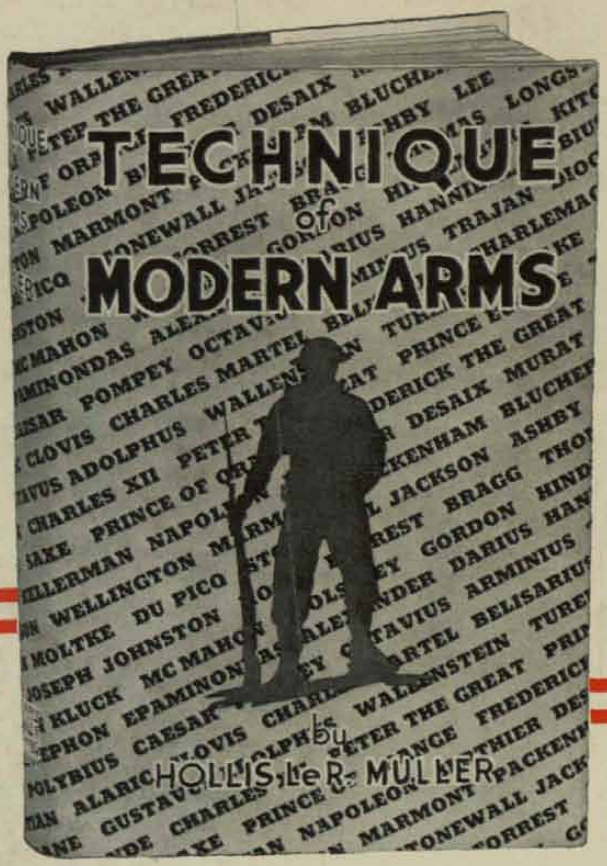
For all Coast Artillery Organizations. Fully meets the requirements of Training Regulations 435-310 (Examination for Gunners). Used for instruction in a number of R.O.T.C. units.

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

These pamphlets recently have been revised and brought up-to-date. They cover the instruction of all 2nd Class, 1st Class, and Expert Gunners of Antiaircraft, Fixed and Mobile Artillery.

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

The above prices are retail (postpaid) for single copies. To ORGANIZATIONS of the military establishment a discount of 20% will be allowed on any order regardless of number. F.O.B. Washington, D. C.



TECHNIQUE OF MODERN ARMS

BY

Colonel Hollis LeR. Muller
Coast Artillery Corps, U. S. A.

♦

A Digest of the Art of Command

THE purpose of this text is threefold. First, to outline a simple and concise plan of study for beginners in the military art; next, to provide a source book for instructors in basic schools and those responsible for the grounding of citizen officers in the fundamentals; and, finally, to assist both the junior officer who is preparing for service or extension schools and the senior officer whose purpose it is to refresh his mind on the bare essentials of the science of war.

CONTENTS

Price $2.50