

The Coast Artillery JOURNAL



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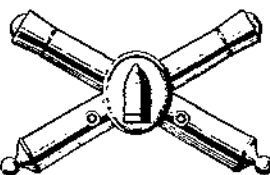
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MAJOR GENERAL A. H. SUNDERLAND
Chief of Coast Artillery

Antiaircraft Increase

By Major General A. H. SUNDERLAND

"Specifically and solely because of the piling up of additional land and sea armaments in other countries, in such manner as to involve a threat to world peace and security, I make the following recommendations to the Congress:

"(1) That there be authorized for the Army of the United States additions to anti-aircraft matériel in the sum of \$8,800,000 and that of this sum \$6,800,000 be appropriated for the fiscal year 1939."

These words are taken from the message which the President sent to the Congress on January 28, 1938. By them, the Commander-in-Chief of the United States Army, in accordance with his constitutional duty recommended to the legislative branch of the government that immediate steps be taken to inaugurate a program looking toward the elimination of the appalling shortages in antiaircraft artillery equipment. The President's message sets the highest seal of approval upon the doctrine that antiaircraft artillery organizations be equipped before a war comes.

What will the enactment of the necessary legislation mean to the United States Army in general, and to the Coast Artillery Corps in particular?

To the Army as a whole, the increase in antiaircraft artillery will be a most important step in balancing the modernization program.

To the Coast Artillery Corps, this message signifies new and grave responsibilities, which will call for added effort, added efficiency, and a determination to return to the nation the full worth of its large investment. These additional duties will be welcome as tangible evidence of the recognition of the effectiveness of antiaircraft gunnery.

The first peacetime responsibility will be the care and maintenance of the additional matériel. Antiaircraft equipment is delicate, easily put out of adjustment, some of it necessarily fragile, and all of it complicated in design. These characteristics, make it, of course, rather expensive. The sound rule to the effect that no excuses are accepted for equipment improperly cared for, will be applied with more than customary emphasis in the future, to those responsible for the armament of antiaircraft units.

Battery commanders who now think maintenance duties are exceptionally onerous, may soon find their equipment responsibility doubled or tripled. That such responsibility will be welcomed, goes without saying.

To date, the limited amount of antiaircraft equipment

in the hands of troops has not created any serious maintenance problem. As a rule, officer specialists, trained gun commanders, range section specialists, and searchlight personnel have been available to give expert care to the equipment on hand. With the delivery of equipment in quantity, this situation will no longer hold true.

When the modernization program first started, the Chief of Coast Artillery initiated a study of the problem of furnishing additional trained personnel, both for maintenance and operation. This additional personnel should be both commissioned and enlisted. Adequate preparation is being made to care for the armament when it

**. . . . The increase in AA
artillery signifies new and
grave responsibilities. . .**

is made available.

Added emphasis has been placed upon the study of antiaircraft matériel in the Regular Officers' Course at the Coast Artillery School. The instruction in the Advanced Technical Course for training officer specialists, has always been thorough. Yet, the number of officer specialists who may be trained has never reached the desired total. Another problem in the training of officer specialists is the fact that it is often difficult to keep an officer on the duty for which he is trained. The individual advances in rank, goes on foreign service, is detailed to other service schools, is ordered to civilian details, so that in many instances full advantage cannot be taken of the special abilities of a graduate of the Advanced Technical Course.

The life-saver in this situation is, as it has been in the past, the noncommissioned staff of the Coast Artillery Corps. The soldiers comprising this body of men have the well deserved distinction of doing things well, of never falling down on the job, and of never failing to meet new and increased tasks. A heavy burden in this increased antiaircraft program will rest on the noncommissioned staff.

With this in mind, the Department of Enlisted Specialists, Coast Artillery School, inaugurated a refresher course for electrical sergeants beginning with the school year 1937-1938. This course emphasizes the care and operation of antiaircraft equipment. In the Regular Electrical Course, extra hours have been made available for such training. Through the coöperation of the Chief of Ordnance, a modern antiaircraft director with data transmission system has been furnished to the Department of Enlisted Specialists. As funds become available, it is hoped to furnish a complete antiaircraft fire-control sys-

tem. A modern antiaircraft searchlight has been furnished by the Chief of Engineers.

Therefore, it can be seen that preparations have been made, insofar as the key enlisted specialist personnel is concerned. However, these specialists are inadequate in number to perform all the duties required. It will be necessary to train the bulk of the needed personnel in the troop schools in the regiments and harbor defenses. It is highly necessary that this training be prosecuted energetically. The question of additional specialists' ratings has been carefully studied with the hope that ratings may become available as a reward for the effort involved.

A second responsibility which will devolve on the Corps is that of improvement in antiaircraft gunnery. Although we assert that our gunnery is as effective or superior to that of other countries, this assertion cannot furnish any excuse for avoiding renewed efforts for improvement. Many improvements can be made in the fire-control apparatus for antiaircraft guns. Machine-gun fire control also leaves much to be desired. The problem of furnishing proper fire control for intermediate caliber weapons has scarcely been touched.

In training, a new survey is indicated. With the prospect of actually having on hand the equipment for inactive regiments, the problem of rapidly training inactive elements on mobilization comes to the fore more than ever. Since the greatest possible antiaircraft strength will

be required on M-day, no delays to secure parade-ground precision should be accepted. When it is realized that by far the greater proportion of our gunners will be hastily assembled from civil life, the problem becomes one of finding the quickest means of training these men effectively to fire antiaircraft weapons.

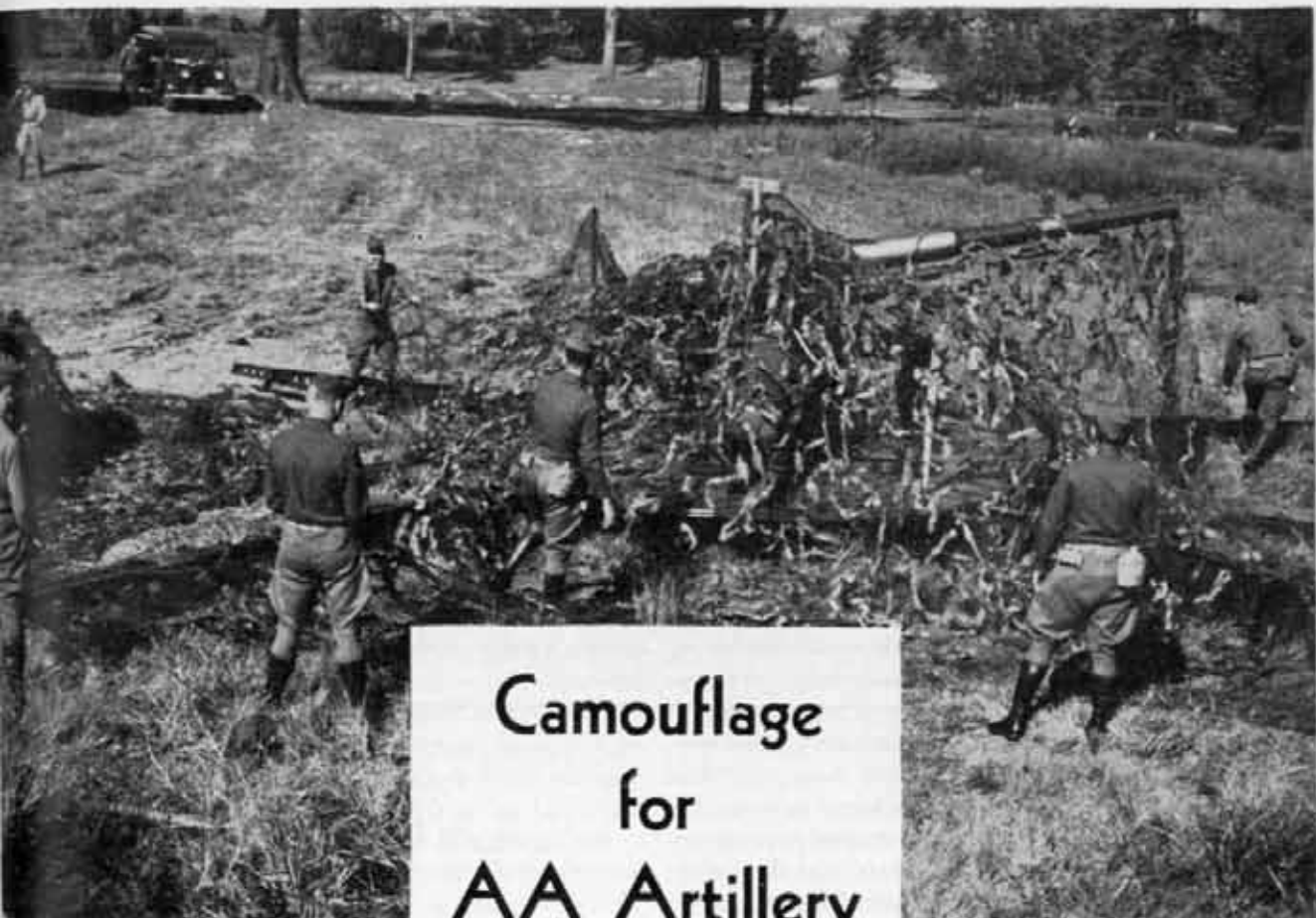
Can there be accepted the dictum "soldiers first, technicians after"? Can soldiers and experts be made at the same time? Yes, recruit training can be concurrent with gunner's instruction and the service of the piece. Peacetime training should be conducted on this principle, so that all in each grade from private to general are indoctrinated with the idea that the first purpose of training is to get a projectile on the target—that until training has reached that stage all other education is subsidiary.

The present antiaircraft organization is a compromise between many factors. The more important factors have been shortage of equipment and shortage of personnel. A start has been made to correct the lack of equipment. It is hoped necessary additional personnel will become available. The time is now propitious for a re-study of antiaircraft organization.

The President's message signifies that a vital defect in the armor of National Defense is realized, and that corrective steps are being taken. It will be a powerful incentive to the Coast Artillery Corps to renew its determination to meet the tasks and responsibilities involved.



40-mm. Bofors AA gun. Standard equipment in the British Army. Great Britain has bought \$35,000,000 worth of this materiel.



Camouflage for AA Artillery

Photo by Carl M. Mosians, "Life" staff photographer

By Captain Peter Rodenko, Corps of Engineers Reserve

THE CAMOUFLAGE requirements for Coast Artillery matériel vary with the types and missions of the weapons employed. This paper deals only with the camouflage of antiaircraft guns, machine guns and their instruments, as used in terrain similar to that of the United States. It is based upon data obtained during a tour of active duty of the 40th Engineers with the 62d C.A. (AA) at Fort Totten during the summer of 1936, and during a period of temporary duty the writer served with the Engineer Board at Fort Belvoir, in November, 1937, while certain camouflage experiments were being conducted there.

In addition to camouflage for shelters of the personnel, kitchens, command and observation posts, ammunition dumps, camouflage may be required for the following matériel of an antiaircraft unit: 3" antiaircraft guns, caliber-.50 machine guns, sound-detectors, directors and range finders, vehicles.

No camouflage is considered for searchlights as it is assumed that during daylight hours the searchlights will be left mounted on camouflaged trucks.

It would be well at the outset to note that the term "camouflage" as used to designate the technique of deceiving enemy observation is not very well chosen. This is especially true because since the World War, the term has become associated with the idea of paint. As a matter of fact, the French originally referred to camouflage as

screening by means of smoke. To my mind, the term *maskirovka* (Russian for "to mask"), which was used in the Imperial Russian Army is much more expressive, because it indicates that an object is to be "masked" and does not refer to any specific means for accomplishing this result.

In our army, special engineer troops are provided for certain functions connected with the masking of troops and war machinery.

One GHQ Camouflage Battalion (consisting of a headquarters and service company, a camouflage company and a shop company), is charged with the conversion of commercial products into masking material, and the establishment of experimental stations and camouflage schools. It also furnishes advice on camouflage matters, inspects existing installations and attends to installations in the GHQ area, using, if necessary, general engineer troops.

Each field army is provided with one Army Camouflage Battalion consisting of a headquarters and service company and four lettered camouflage companies. This battalion assists with the supply of camouflage materials manufactured or converted by the GHQ shop company. Furthermore, it acts in an advisory capacity, as well as an inspecting unit, from the army area forward to the main line of resistance. The working unit consists of a platoon of 10 men, headed by a second lieutenant, who is in charge of a zone based mainly on geographical or topo-

graphical considerations. This zone may comprise a sector held by one or two divisions.

The actual camouflage work will be done by the troops requiring such installations, with the advice and supervision of a trained camoufleur. The battalion has not enough personnel to do the actual work connected with an installation, except for an occasional demonstration of certain types of construction.

It can be safely assumed that the only assistance an artillery officer will obtain under favorable circumstances will be one or two camoufleurs for the regiment for a limited time. These camoufleurs are intended to cooperate with the regimental camouflage officer who usually holds down this job in addition to his duties as plans and training officer of the regiment. For these reasons every artillery officer should know as much as possible about the methods and technique of camouflage suitable for his arm under various conditions.

It also must be understood that the camoufleur is by no means a miracle man, capable of concealing a 155-mm. gun in the middle of a parade ground. The camoufleur is trained in an art which is limited by definitely established scientific facts. He admits at once that there are certain problems which cannot at this time be solved in a practical manner. He is essentially a specialist, trained to recognize certain features in the terrain which may lend themselves to concealment of troops and machinery of war, and he is ready to impart this information to those who require it. He is familiar with the requirements of the various arms and their tactics and technique. He has facilities to supplement natural resources with artificial means, and he may combine natural and artificial materials. He also knows how foliage and terrain photograph as compared with artificial materials. Therefore he knows what materials to avoid to prevent detection by means of stereoscopic photographs and color filters as used in aerial photography.

The camoufleur is convinced that selection of a suitable site which offers natural cover, even if limited, is more important and more effective than the most elaborate of camouflage installations based on artificial materials. In fact, the formula of the camoufleur reads: proper choice of position, 40%; camouflage discipline, 25%; proper construction of installation (where required), 20%; materials used, 15%.

The theory of painting for concealment or confusion which was quite popular during the last war has been virtually discarded, except for a few exceptions when only ocular and lateral observation is expected. Painting registers on a photograph because the media which have been treated with pigments reflect light differently from the surroundings which have not been treated. It has been found that the weird and irregular color designs which have become associated with the term "camouflage" are virtually without value as the very same results can be obtained by using a neutral, dull or flat (not glossy) paint, which while wet has been strewn with sand or similar material so as to absorb and not to reflect light. This of course,

does not refer to the "dazzle-painting" of moving objects, such as vessels, armored cars, or tanks travelling at high speed or at long range. In these cases there is an entirely different mission; that is, to deceive the observers with regard to the direction and speed of travel, or to confuse them and throw them off the target.

Another theory which was not given much attention during the last war is that of confusing enemy observers. At that time the main effort of camouflage was concealment. The position warfare which was typical of that day justified such attempts. However, during the next war it can be assumed that all belligerents will make a major effort to attain mobile warfare. Now, if targets change position frequently and thus confuse enemy observers it will frequently produce better results than absolute concealment which, to be effective, requires certain ideal conditions. Insofar as AA artillery is concerned, positions could well be temporary—say a maximum of about 48 hours duration. Relatively few permanent positions should be held.

Along these lines research has led to the development of a type of "hasty" camouflage which quite frequently requires only about 2% of the effort and man-power expended on semi-permanent or permanent camouflage.

For instance: if an AA gun can be made to look like something else that is of lesser importance, then the mission of camouflage has been fulfilled. It is assumed, of course, that a minimum of time and manpower is expended on the effort required and that the mission of the weapon is not impeded. Selection of site, availability of materials and, above all, ingenuity are important. Most effective camouflage can be obtained by the judicious use of a few strips of canvas, tarpaulins, shelter halves, some wire and poles, and stakes or branches from trees or bushes. Trees, however, should not be felled too close to the site, as the stumps will photograph white or will be seen. Tracks made by crews and vehicles must also be obliterated. It is almost unbelievable, but tracks which are invisible to the naked eye even at a short distance, will show clearly on an aerial photograph. Vegetation trod down and heavily travelled ground will photograph much lighter than the surroundings.

Man's handiwork has regular outlines, whereas nature's is regular and geometrical only in minor details—the arrangement of leaves, petals, stamina, and so on. General natural outlines are always irregular. In camouflaging anything made by man, this peculiarity must be kept in mind.

The barrel and the outriggers of the AA gun are geometrical. Camouflage of a hasty type can be achieved by merely throwing a few pieces of canvas or the like across the barrel in an irregular manner. With the help of one or two saplings, bent into curves, and a few lengths of rope or wire, most satisfactory results can be obtained. Outriggers should be covered with sod, logs, pieces of wood or shelter halves, crumpled up and over which sand, earth, or the like has been spilled. Small bushes can be effectively "planted."

Such a method has the great advantage that no aerial observer can guess from the type of camouflage what it hides. Moreover, since every individual engaged in camouflage work gives play to his personal ideas the result is that five camoufleurs will produce five types, which, while based on the same principle and perhaps equally effective, will look entirely different.

Of course in more permanent positions, the conventional flat-top type of camouflage can be used to great advantage, for the gun with the barrel in the horizontal position, is not very high above the ground. A 360-degree field of fire can be produced by a slit in the net. The erection of a flat top, large enough to camouflage a gun and its crew, can be completed by one squad within 11 minutes, after less than a half hour of instruction.

As stated before, the selection of a site is of utmost importance. A knowledge of psychology is also a help, as was demonstrated during the maneuvers at Pine Camp in 1935. Captain Leon A. White, 62d C.A. (AA) planted an AA gun at Philadelphia, New York, in the middle of a railroad yard. This gun was not spotted, even by low flying aircraft. The reason was quite matter-of-fact. The observers simply didn't look for a gun in the middle of a railroad yard.

Similar techniques can be used for the camouflage of vehicles, AA machine guns, directors and other instruments.

The sound detector, in spite of its height, is rather easy to camouflage because of its unusual shape.

On the other hand, a searchlight truck, because of its height of nearly 11 feet cannot be effectively camouflaged by artificial means. The writer experimented with a regulation searchlight truck at Fort Belvoir and found that a flat top, designed to camouflage such a vehicle, would have to be of truly gigantic proportions. It must be remembered that an object above ground throws shadows from three to six feet for every foot above ground at various times of the day. Therefore a searchlight truck will throw

a shadow of a maximum length of 66 feet. This shadow while of varying intensity is still strong enough to register on a photograph. To eliminate the shadows, camouflage should be erected in such manner as to slope up from its initial point at an angle of not more than ten degrees, returning to the ground at an equal angle. Therefore, to camouflage an object 11 feet high, a structure, measuring nearly 150 feet across would have to be constructed, which is obviously impractical. The difficulty applies to the ordinary 1½ ton Diamond Ford truck with cargo body. Therefore vehicles should be camouflaged hastily with the hope of concealing their identity but without expectation of concealing their presence. Natural cover, is of course, if feasible, the best method. The high speed of modern vehicles makes it advisable to rely on natural means of cover rather than artificial camouflage of any type. In hasty camouflage, confusion can be obtained by means of several strips of canvas, about 4 feet wide and 20 feet long, which are fastened to the vehicle by one end, while the other is anchored in a bush or a tree nearby.

Concealment of electric cables from the generator to the various instruments is a tedious but quite important job. Cables reflect light, but photograph somewhat darker than flattened foliage. The reader of an aerial photograph can easily deduce or trace the position of important instruments.

If possible, cables should be placed along hedges, ditches, in furrows and in similar places. If there is no natural concealment, then they should be covered with sod, rocks, or, spare lengths of cables leading to "nowhere," just for the purpose of confusing an observer.

To recapitulate: The camoufleur is not a miracle man. Nor will camouflage troops do the actual work of concealment. Camouflage cannot be done "by the book." Common sense, ingenuity, and imagination count.

NOTE: Page 148 (*Coast Artillery Board Notes*) carries an account of an experiment with camouflage nets lately conducted by the Coast Artillery Board.—EDITOR.

THE RESPONSIBILITY resting upon an officer in war is great. Mistakes are paid for in blood. To seek a command in war beyond his capabilities is no less criminal than for a man with no knowledge of a locomotive or railroading to attempt to run an engine of an express on a busy line.—MAJOR GENERAL JOHN F. MORRISON.



von Hindenburg

By H. A. DeWEERD

I

There is no parallel in history to the life of Field Marshal Paul Ludwig Hans Anton von Beneckendorff und von Hindenburg. His immense span of years embraced three distinct careers. The first began on a fire-swept hill at Sadowa where as a young Prussian lieutenant he suffered a scalp wound capturing an Austrian battery. This career closed in 1911 when he retired from command of the IV Army Corps in order to make way for the promotion of younger men. He was then 65 years of age, undistinguished save for his massive frame and a child-like, intense loyalty to the Empire he had seen created at Versailles in 1871.

His second career began with his appointment to the command of the Eighth Army to succeed his wife's cousin, General Baron von Prittwitz und Gaffron, *der dicke Soldat* (the fat soldier), who had lost his nerve after Gumbinnen. At 4:00 A.M. on August 23, 1914, General Erich Ludendorff strode into the "well-lit station hall at Hanover." In the well ordered German scheme of things, this should have occurred an hour earlier, but Ludendorff's special train from Coblenz was late. The younger Ludendorff, fresh from the conquest of Liège, with the order *Pour le Mérite* dangling from his collar, briskly introduced himself to the ponderous Major General. The two soldiers entered the map compartment of the train; it chuffed off through the growing dawn toward Marienburg where the headless staff of the Eighth Army awaited its new commander. There followed a brilliant rush of fortune which raised an obscure, retired Major General to the summit of military fame and political power.

His second career ended in 1918, when, after innumerable battle victories, Hindenburg and his hazard-loving Quartermaster General lost the greatest military gamble in history. In this dark hour, sustained by what he thought was the voice of duty, Hindenburg abandoned his Quartermaster General, abandoned his Supreme War Lord (nearly passing the buck to Gröner), abandoned his oft-repeated declaration "better death than a disgraceful peace" and forced Erzberger to sign the armistice terms unconditionally. Then, amid scenes desperate enough to turn the strongest mind, he led a weary and defeated army back into the homeland.

His third career began with the death of President Ebert. Again the voice of duty brought the aged Field Marshal out of retirement at Neudeck to stand for election to the presidency. This was done in spite of an alleged life-long distaste for things political. While his war-comrade Ludendorff sank into the twilight realm of crack-pots, cultists, and wild illusion, the flat-footed Field Marshal walked into the Presidential palace at Berlin. Tortured with aching feet, prostate trouble, and rapidly advancing but carefully concealed senility, the old soldier wrestled awkwardly with never-ending political tangles. In the end, bewildered and confused, he transferred political and military power into the hands of a man for whom he had the strongest personal loathing. The last sad act of his long career was to "thank" Chancellor Hitler for "saving" Germany by slaughtering a large number of his former supporters in the blood purge of 1934. He now rests amid the legends and ghosts of Tannenberg not far from the battle monument.

II

None would have been more amazed at these astonishing occurrences than his solid *Junker* parents, Major Robert von Beneckendorff und von Hindenburg and Luise Schwickert. His parentage on both sides was rich in military tradition. As a matter of course young Paul was sent to the Military School at Wahlstatt. He brought back his bullet-pierced helmet from Königgrätz and the Order of the Red Eagle, Fourth Class. He fought with the 3d Regiment at St. Privat, coolly timed the action with his watch under heavy fire, inspired his men forward despite extremely heavy losses, and won the Iron Cross.

Under the Empire he rose by slow steps through the *Kriegsakademie*, into the General Staff, through minor posts in the War Ministry, to the command of the IV Corps in 1903. Upon the road upward he made no enemies, aroused no controversies, inspired no anecdotes. He was a diligent, even-tempered, straight-forward soldier, with a firm trust in his Emperor and his God. His slow and cautious brain was repelled by the swift brilliance of a man like Schlieffen. He found Schlieffen's successor Moltke more to his liking. "History has not uncovered

Legend reaped a rich harvest on the field of Tannenberg

a single important document relating to Hindenburg in the period of nearly forty years preceding the Great War!" He spent considerable time preparing a treatise on the use of heavy artillery, but no one paid any attention to it. His retirement in 1911 was accompanied by the Order of the Black Eagle, but he was passed over in the appointments to the post of Army Inspector. Even more pointed was the cancellation of his appointment as commander of a reserve corps in event of war. In the face of these disappointments, he preserved a tranquil faith in himself and an abiding loyalty to the Emperor who had slighted him.

The outbreak of the war in 1914 found him at Hanover playing toy soldiers with his grandchildren and marking the progress of the German armies with flags on a map. At last he could resist no longer; putting modesty aside, he wrote to General Stein: "One request. Don't forget me, if, as things develop, a commanding officer is needed anywhere! I am robust both in mind and body." General von Moltke had just appointed Ludendorff, a most "capricious" and able staff officer, to the East Prussian command, and wanted him to be balanced by a commander of unshakable common sense. After some discussion Hindenburg was selected. An exchange of telegrams followed; Hindenburg donned his field uniform, packed his heavy underwear, paced up and down the Hanover station hall until Ludendorff's

train arrived. Of the annihilating battle against Samsonov which followed, little need be said. Legend never reaped so rich a harvest as on the field of Tannenberg. Hindenburg's part in the actual battle consisted primarily in supporting Ludendorff in his attempts to limit the scale of the victory. According to one English critic "the credit of the victory belongs in a large measure to General Hoffmann, but its glory must be forever associated with General von François, who though commanding only a single corps, acted with that rare alternation of prudence and audacity which is characteristic of true soldierly genius." François disregarded orders, played for bigger stakes than Ludendorff dared hope for, spread his fatal net for the Russians along the Neidenburg-Willenberg road, and brought disaster to Samsonov's hapless army. Had his maneuver failed, François could only expect the fate of General Steinmetz who was sent back from the front in 1870 for similar acts of initiative. The Germans seem to have recognized the rôle of François, for at the Tannenberg celebration in 1924, Ludendorff was not present, and



Lieutenant—1866



Major General—1897



Field Marshal—1916

Hindenburg gave the seat of honor to François. General Hoffmann used to take visitors aside at the Eastern Headquarters, point to Hindenburg's bed saying: "That is where the Field Marshal slept *before* the battle of Tannenberg; that is where he slept *after* the battle, and between us—that is where he slept *during* the battle."

Yet in 1914 the name of Hindenburg was identified with the battle. The people of Germany could not idolize a whole staff, so they singled out the massive old soldier. Hindenburg's actions at the time favored the legend-building process. After the battle he immediately went to church to give thanks, and then modestly received the order *Pour le Mérite*. Here was a great nerveless, red-blooded, essentially Prussian general, an encouraging contrast to the sickly Moltke. Overnight Hindenburg became a national hero.

Not waiting for breath, the exultant grey legions of the Eighth Army moved against Rennenkampf. Turning his flank in textbook manner, they drove him pell-mell out of East Prussia. With what had been a badly shaken

army, Hindenburg and Ludendorff had, in a very short period, freed the Fatherland from the grasp of the hated Russian. The glory of this achievement appeared all the brighter in the gloom of the Marne defeat and the Austrian disaster at Lemberg. Under the warming influence of his newly acquired fame, Hindenburg expanded visibly. He dropped the Beneckendorff out of his name and began in the Napoleonic manner to sign himself simply "Hindenburg." He enjoyed the war. "It agrees with me like a visit to a health resort." Sometimes, when Ludendorff was not present to freeze him with an icy stare, Hindenburg would break forth on the theme: "How I beat the Russians at Tannenberg"—but not often. He began to take on the oral style of Blücher and to massacre the Russians with words. "Now we shall let ourselves go and slash those fellows until they have had enough of it."

There being no heroes in the West, the German public turned its prodigious capacity for hero-worship on Hindenburg. Since no scrap of information about him could be winnowed from army or newspaper files, tales soon spread about his imperturbability, his splendid appetite, his sleeping schedule. Some ingenious person manufactured a myth which gained widest currency. It told how during his retirement Hindenburg used to spend his summers in the Masurian Lakes district planning for the destruction of an invading army.



—with Chief of Staff



President—1925



President—1934—with Chancellor

Each summer he would borrow a single cannon from the commander of the fortress of Königsberg, drag it from one non-existent swamp to another, carefully computing the depth to which it sank. At the end of the summer, he soberly returned the cannon with thanks and spent the winter in soldierly reflection on the data obtained! Such tales were repeated in all seriousness by great German "thinkers" such as Gerhardt Hauptmann and others. Legends, which grew by leaps and bounds, had whole Russian army corps drowned like rats in the Masurian Lakes.

Behind the massive front of Hindenburg worked his tireless, aggressive, and brilliant chief of staff. From the moment of their meeting in Hanover, Ludendorff took intellectual domination over Hindenburg. This domination lasted until the collapse of 1918. Their relationship has been described as "a happy marriage" in which, as General Buat said, "Ludendorff was the husband." Hindenburg himself admitted that he always gave

as much latitude as possible to the brilliancy of my chief of staff, to his almost superhuman powers of work, and to his unwearied energies.

Ludendorff speaking of his relations with the Field Marshal, said:

He agreed with my ideas and approved my proposed orders. . . . I honored him highly, served him faithfully, and esteemed his lofty sense of honor, his loyalty to the king, and his joyful sense of responsibility.

After that Ludendorff uses the personal pronoun "I," and the name of Hindenburg appears only at rare intervals in *Ludendorff's Own Story*. Theirs was not like the intellectual comradeship established between Foch and Weygand. Ludendorff put both the military problems and their solution before Hindenburg each morning. After Tannenberg Hindenburg never did more than gravely listen and approve. Foch proposed the problems to Weygand and might accept or reject his advice.

Although fatal to Germany in the crisis of 1917-1918, the Hindenburg-Ludendorff combination appeared at first to be a highly fortunate one. Hindenburg possessed the happy optimistic front required for social affairs at headquarters, as well as the stature and physiognomy for newspaper exploitation. He made up exceptionally well into wooden statues for patriotic nail-driving. He charmed visiting politicians with his quiet manner, his love of good food, his fund of "good" stories. He carried a small phoenix palm tree with him from one headquarters to another, subjecting it to the rigors of Russian winters and to incessant clouds of cigar smoke. Such homely touches appealed to the folks who had "a son with Hindenburg in the East." He only lost his temper once during the war—when Wilson hinted that the Kaiser had to go. He was willing to spend hours posing for the portrait painter Vogel. Just before the great offensive of March 21, 1918, he took time to go into great detail on just how he wanted his gaiters to look in the official Tannenberg portrait. He never appeared tense, and only once discouraged (in May,

1915, when Falkenhayn¹ was stampeding the Russians at Gorlice!). "Those who have the best nerves will win this war" was his view. His stock reply to questions as to when the war would end was always: "Soon, soon!"

Ludendorff, on the other hand, had no social qualities. He was never known to smile during the whole war. "His conversation was unpleasantly dictatorial, harsh, obstinate, and opinionated." He appeared irregularly at mess, his face drawn tight, his vacant detached manner betraying his intense inward preoccupation. Such men make good dictators but poor companions. In March, 1918, while Hindenburg concerned himself with details of the Tannenberg portrait, Ludendorff sat before a battery of telephones, picking up one instrument to give instructions to the German peace delegation at Bucharest—turning to another to supervise the transfer of reserve divisions in the St. Quentin area. He made men nervous and envious. Like Joffre, Hindenburg received thousands of miscellaneous letters and gifts from all ranks of German society. These ranged from naïve letters of school-girls to still more naïve gifts of overshoes from zealous old ladies. To send galoshes to Ludendorff was simply unthinkable. Hindenburg's front was indispensable to Ludendorff, so one English writer devised the symbol HL to cover their unique relationship.

III

Of all the legendary views of Hindenburg, the one which represents him as a simple soldier struggling with wicked politicians while standing off a world in arms, is by all odds the most deceptive and absurd. Both Hindenburg and Ludendorff repeatedly expressed a loathing for politics and pose in their memoirs as victims of intrigue rather than as intriguers. According to their own accounts they had nothing to do with undermining Falkenhayn, or driving Bethmann, Kühlmann, and Michaelis out of office, or in reducing the hapless Kaiser to the status of a puppet. Both endorse the face-saving legend devised by General von der Schulenburg at OHL on November 8, 1918, that the army was "stabbed-in-the-back" by the failure of the civil government, the Jewish war profiteers, and the shirkers. But—when they deny indulging in politics, they "protest too much." Any two men who can seize complete military and political power in the German Empire, promise that Empire a sure-fire victory in return; any two men who can underwrite the success of the U-boat war and of the offensives of 1918, and who are able after all their conditions are met, to place the blame for ensuing failure squarely on the shoulders of the brow-beaten government they superseded, are not mere politicians, they are wizards.

The star of the Hindenburg-Ludendorff combination began to rise when Moltke was quietly shelved for the suave, aristocratic Falkenhayn, a convinced "Westerner," who chilled German hearts with his sterile slaughter of the newly-raised army corps at Langemarck and Ypres. The "Easterners," Hindenburg and Ludendorff, were

¹Mackensen was in actual command of the German XIth Army.

joined by the Austrian Conrad in urging that Russia be knocked out. This required a release of troops from the West. In effect the Easterners said: "Give us the troops required and let us win the war for you!" The men around Falkenhayn replied derisively: "Win the war! You are merely collecting Russians!" When the Easterners proposed seizing the Russian armies in a gigantic pincers extending from East Prussia to the Carpathians, Falkenhayn twitted them on the folly of trying such an experiment on a 600-kilometer front with the small forces available.

The heroes in the East called for a show-down. It took place on January 1, 1915, at the Imperial War Ministry in Berlin. Falkenhayn refused to sanction the transfer of troops to the East. Hindenburg called upon the Chancellor who on the following day advised the Kaiser to dismiss Falkenhayn. The Kaiser compromised and the new corps were sent to the East. Smarting under this defeat, Falkenhayn countered by attempting to part the famous pair, sending Ludendorff to the staff of the new German Südararmee. Hindenburg again took refuge in appeal to the Kaiser and Ludendorff came back. Falkenhayn, twice chastened, resigned as War Minister. He retained the post as chief of staff of the Field Armies, but he had plainly lost the first battle with the giants of the East.

Hindenburg and Ludendorff had their way. Their reinforced armies made a bid for decisive results in a series of bitter winter battles in Masuria. After suffering untold hardships and accomplishing "all that flesh and blood could achieve under conditions of almost insurmountable difficulty," the German forces failed to gain a decision. While they were collecting freezing Russians in the North, the Austrian fortress of Przemyśl quietly surrendered to the Russians. "Thus the great operations which had occasioned the quarrel with Falkenhayn came to the sterile conclusion he had predicted." Though still idolized by the German people, Hindenburg and Ludendorff had lost considerable face as far as the central direction of the war was concerned.

The rest of the year 1915 saw Falkenhayn in the ascendancy. Ironically enough he gained this dominating position by deserting his Western Front program and by poaching in the preserves of his rivals. In May, 1915 he sent a German army on a break-through mission at Gorlice. This stroke under Mackensen brought far greater strategical results than any hitherto attained by Hindenburg and Ludendorff. The recoil of the whole Russian front followed. At the same time Falkenhayn effectively resisted the French and British attacks on the Western Front, and pruned down the army of Hindenburg in order to make ready for a decisive assault on Serbia. His masterful program was criticized by Hindenburg and Ludendorff, and they protested against the reduction of their forces. The men who had so frequently talked of knocking the Russians out, now lamely expressed fears about "holding the front." Past operations of Falkenhayn were dragged into the discussion. This gave him a chance to wire Hindenburg bluntly:

Whether your Excellency agrees with the views of OHL does not matter —. Every portion of our forces must adapt itself unconditionally to OHL—I will report to His Majesty the scruples which your Excellency raises against the withdrawal of the two divisions. I must refuse to bring the remaining points of your telegram to the knowledge of the Emperor, because they concern only past events—about which in any case I do not intend to approach the Supreme War Lord in these grave days.

With this taunt, Hindenburg had to be satisfied while Falkenhayn's thrust against Serbia sent the heroic soldiers of King Peter reeling through the mountains toward Durazzo scourged by typhus and harried by Bulgars.

Thus the year 1915, which began in such dismal circumstances, ended in a blaze of glory for Falkenhayn. He had turned back the great Allied offensives in France, stripped power and prestige from Hindenburg and Ludendorff, and brought about German domination of the Balkans. Turkey was relieved of pressure on the Dardanelles, and the Allies were forced into what then looked like a plague-infested interment camp at Salonika. Military supplies could be despatched from Berlin to Bagdad or Gaza. So great was Falkenhayn's prestige that even Bethmann-Hollweg deserted Hindenburg. He was left with his restless colleague to sulk in their winter quarters at Kovno. Watching this titanic struggle from a place of vantage, General Hoffmann wrote: "The struggle for power seems to destroy all men's character. I should like to be a gardener. There is no use intriguing for fair weather."

With these great achievements, Falkenhayn returned to the Western Front. To his logical mind the triumphs of 1915 were satisfying but somewhat annoying since they seemed to vindicate the Eastern school of thought. Maintaining that the war could only be won in the West, and disdaining the possibility of Roumanian entrance into the war, Falkenhayn boldly undertook the Verdun attack in February, 1916. This decision insured the final triumph of Hindenburg and Ludendorff.

The battle of attrition at Verdun with its endless casualties became the rallying point of Falkenhayn's enemies. To his discomfiture, the Brusilov offensive in June, 1916 swept the Austrian armies back in confusion, and the British pressure on the Somme mounted steadily. Then, as a final misfortune, Roumania joined the Allies! On August 28, 1916, the Kaiser accepted Falkenhayn's resignation. Hindenburg records with excessive naïveté that he was "surprised" at being offered the supreme command. The long standing battle with Falkenhayn was passed over by recording that the latter gripped his hand in farewell, saying "God be with you and Germany."

IV

The massive Field Marshal and his thrusting Quartermaster General achieved supreme power late in the summer of 1916. From that time on, the authority of the civil government diminished. At every crisis the threat of Hindenburg's resignation was decisive. He had become the embodiment of the German military effort.

There was hardly a single political question concerning which Ludendorff and the High Command did not merely insist upon a say, but also upon the exclusive right to decide the issue—always alleging that otherwise the war would be lost and that Hindenburg would throw up the sponge.

Whereas during the victorious war of 1870-1871, the civil régime under Bismarck was constantly at odds with General von Moltke, there was no conflict now. Hindenburg and Ludendorff simply absorbed the government.

They soon ran Bethmann out of office and sponsored Michaelis as Chancellor. He talked well and Ludendorff thought him "an expert." But, alas, Michaelis "proved to be merely a little boy running alongside the chariot of politics." Since Ludendorff could not become Chancellor himself, they decided to "strengthen" the government by approving the appointment of 74-year-old Count Hertling who was said to have been born a mummy! "The best that can be said by the historian concerning the political dictatorship of these two commanders is that they acted conscientiously according to their lights." But the lights were dim.

The opening performance of the celebrated pair on the central stage was the quick conquest of Roumania. In this they tolerantly let Falkenhayn play a solo part. After this "brilliant overture," they faced a stalemate on all fronts. Abandoning their slogan of "knocking out Russia," they made a supreme bid for success on the chessboard of international politics. "The pseudo-politician in Ludendorff blinded the vision of the general." He championed the U-boat war and dragged old Paul after him.

The tragic character of the Hindenburg-Ludendorff combination now became apparent. Ludendorff, as always, did the thinking, and Hindenburg's immense prestige carried the program through against all opposition. Ludendorff the expert could not resist accepting the conclusions of other experts at their face value. That, according to the Austrian writer Karl Tschuppik, was the kernel of the German tragedy. The naval experts insisted on the U-boat war and guaranteed its success. England would be forced out of the war. Admiral Capelle dismissed American participation in the war in the following words:

The Americans have no soldiers. They have plenty of manpower, but no officers or noncommissioned officers to train their men. Nor will American troops be able to land here, for our submarines will sink the transports. Therefore, from a military point of view America counts for nothing, and once again for nothing, and the third time for nothing!

Ludendorff and Hindenburg supported this view. When timid civilians suggested the possible intervention of other neutrals such as Switzerland, Hindenburg waved this aside saying: "From a military point of view that would not be unfavorable to us." Erzberger tried to stem the tide of folly by insisting that England could not be brought to its knees by the U-boat war. He pointed to the price of butter as advertised in the Paris and London newspapers. But the experts would have nothing to do with such a simple business as the price of butter. They decided upon the campaign of unrestricted U-boat war.

This was their first great decision after attaining supreme military power. It proved to be a profound mistake and fatal to Germany. Some writers hold that by 1917 Ludendorff must have known that a military decision was no longer obtainable. Yet by insisting to the very last on the retention of a substantial slice of Belgium, including Liège, and compensations in the East compatible with the sacrifices of the army, OHL made a peace by negotiation impossible. Such matters of international policy are usually settled by the civil government, but in this case they were unmistakably determined by the victorious generals. Some writers contend that Ludendorff deserved a better fate than to have been served by a rubber-stamp commander like Hindenburg who, prior to the war, had only once been outside his native Germany and who had the narrow provincial view of the typical Prussian *Junker*. Had he been buttressed in realism and common sense by a superior of greater grasp and insight, Ludendorff might well have rejected the hazardous course undertaken.

On February 1, 1917, the die was cast. One month later Russia was torn by revolution which soon put her *hors de combat*. General Hoffmann, in his *War of Lost Opportunities*, wistfully lingers over the possibilities opened by this unexpected break. Had the U-boat war been delayed, and a favorable peace immediately offered the new régime in Russia, Germany might have been able to stand triumphant on the Western Front in 1918. But the experts had had their way, and in April, 1917 the United States entered the war. And whether anyone in Germany knew it or not, all prospects for a military decision were lost beyond recovery.

There remained to be played out the grim but futile drama of 1918. Up to this time the string of German victories remained unbroken and impressive. After Ludendorff with the aid of Hutier and Brückmüller had revamped the German method of attack, there were additional impressive victories at Riga, Caporetto, and Cambrai. The morale of German troops was sound. One still saw those splendid braggart signs chalked on dugouts: *We Fear Only God and Our Own Artillery* or *Declarations of War Still Received*. But there were other straws in the wind. Strikes were staged in Berlin in January, 1918 against the all-victorious pair of generals who had little appreciation of the difficulties of the masses, and who had strongly resisted any extension of the franchise in Prussia.

Preparations went forward for the "Peace Offensive" in the West. These were among the first battles in history to be conducted against an adversary of far greater potential strength in which success was guaranteed in advance! Hindenburg and Ludendorff solemnly told the Reichstag that if they were allowed to have their own way and 1,250,000 casualties, victory was certain. Most critics agree that Ludendorff does not appear at his best in the strategical aims of these great offensives. "He showed neither his former clearness as to the goal nor the same grip on the changing situations. But in the organization of the attacks his powers were at their highest levels." Hindenburg was of no particular help; he did not even

attend the conferences at which the great attacks were planned.

V

The ultimate hazard began on March 21, 1918. In size and fury it was the greatest military effort in history. Its immediate successes were deceptive, for despite great territorial gains, the battle burned itself out without attaining any of the major objectives set for it. A second, still-less-successful stroke was made on the Lys in April. Then in May came the surprise blow at the French on the Chemin des Dames. Again great territorial gains; grey-clad storm troops fought their way across the Marne. That was the crest; in July the recession began. The great offensives had obviously failed. And as Churchill said: "The German army no longer crouched, it sprawled in a hopelessly extended position."

On July 18, 1918, the initiative in the West passed into the hands of Marshal Foch. Hindenburg, however, made no public recognition of the failure. American troops by this time tipped the balance of manpower heavily in favor of the Allies. Yet there was no German talk of peace, no hasty abandonment of far-flung plans, no swift retirement to shorter lines, no quick transfer of troops to bolster up the now-shaky Bulgar front. On the contrary, posters were tacked up in Berlin as late as September, 1918 bearing Hindenburg's cheerful words: "We have triumphed in the East! We shall triumph in the West!" Admiral Scheer made a public statement in the same month saying: "There can be no doubt that our submarine will compel England to sue for peace." When the presence of American troops on a large scale in France was pointed out to one of the naval "experts" in September, he declared: "That is an excellent thing."

Then, without warning, in this same month (September 29, 1918) Hindenburg and Ludendorff lost their nerve. They demanded that peace moves be instituted within twenty-four hours! When victorious in Russia and Roumania, they had forced the civil government to keep hands off the question of armistice negotiations. In defeat, they quickly transferred the task to the hapless shoulders of Prince Max of Baden. As for the home front, "they decided, within five minutes, to reconstruct the constitution of the German realm, although for two years they had strenuously resisted any change."

Sustained by talk of victory, the German people had no warning of the impending collapse. When Secretary Hintze brought the news of the 24-hour peace-negotiations ultimatum to the Reichstag committee, his listeners "were absolutely dumfounded." "Ebert turned deathly pale and could not say a word; Stresemann looked as if he had been pole-axed." Even Hindenburg's fellow *lunker* von Heydebrand stormed: "We have been lied to and cheated."

Major Schwerdtfeger, testifying before the Reichstag commission on the causes of the German collapse, said:

Hindenburg and Ludendorff told the Entente that the Central Powers had lost the war. Without transition, the High Command, which up to then, had continually declared

the Western Front to be impregnable, now informed the alarmed statesmen that the strategic position had become absolutely hopeless. The natural result was an irremediable collapse of public opinion.

The excuse offered by Hindenburg for withholding the truth was that he feared the civil government would have lost their heads. "Perfect candor," said Ludendorff, "would have led to catastrophe." Both ignored the fact that their program of deception led to the same result!

The German documents on the collapse show Hindenburg in a somewhat better light than Ludendorff. Both were inconsistent in their views of the military situation. They wavered between extreme despair and sudden spasms of optimism. Hindenburg, in general, took a more rugged view of the German chances. He was still writing to Vogel about the Tannenberg portrait as late as Nov. 7, 1918! Optimism is never so precious as when things are going badly on all fronts. In the face of disaster, pretenses were abandoned. Men spoke out what they really thought. The Kaiser, who saw his throne tottering, took his spite out on Ludendorff, showing that he did not blame the good-natured Field Marshal for his lost power and hopeless position. In language more common to the barrack-room than the glittering Imperial headquarters, the Kaiser said that he didn't want to see Ludendorff's "sergeant-major mug" again.

On account of their peculiar joint responsibility Hindenburg had promised to resign with Ludendorff. Yet, when asked in the name of the Fatherland to carry on after Ludendorff resigned, Hindenburg did so "with a heavy heart." He could never resist a call made in the name of duty. Neither the Kaiser nor Hindenburg took the trouble to thank the departing Quartermaster General for his four years of tremendous labor. Afterwards Ludendorff spitefully said his chief regret was that he did not depose the Kaiser when he and Hindenburg had supreme power. "But," he said, "I was too much of a *cadet* to play the rôle of Cromwell." One should not be deceived by all the talk of "loyalty" in Ludendorff's and Hindenburg's memoirs. Loyalty, apparently, was something to be practiced in fair weather!

Presently Wilson's note made it clear that the Kaiser had to go. When this news arrived at OHL Hindenburg made a scene for the first time during the war. He grew violently angry, stamped on the floor and shouted: "Long live his Imperial Majesty!" But the following day, when convinced his duty demanded it, he *ordered* middle-class General Gröner (who had taken up the mantle of Ludendorff) to tell the Kaiser that the German Army would not march to the homeland under the Emperor's leadership. There was some feeble talk of the Kaiser dying in battle with the troops. Had the Supreme War Lord displayed the least firmness in this matter, Hindenburg would have joined him "with a joyful heart." Both of their reputations would have been enhanced had this knightly gesture been attempted. But the Kaiser was not prepared to do for himself what millions of Germans had done for him. Hindenburg, knowing this, did not push

him. He was "surprised" to wake up on November 9th and find that his Emperor had fled to Holland.

While street fighting and panic swept through the homeland, old Hindenburg moved about the silent rooms of OHL, the only remaining symbol of German order and power. If distasteful decisions had to be made, he had it over with at once. When the armistice commission sent forward the harsh terms of the Allies, Hindenburg wired to Erzberger (the first to see the U-boat folly) that he would have to sign *regardless of the severity of the terms*. Then he set about to bring the army home. He probably saw it now for the first time with clear eyes. Unlike Blücher, Hindenburg never ate sausage on the roadside with his troops. True, he had come in contact with selected regiments, and had tasted bean soup in model field kitchens, but meeting with the haggard troops at the Cassel railway station on November 13th, gave him a bad moment or two. He did not know whether the troops would boo or cheer, or whether the "Reds" would try to strip off his shoulder straps. To Hindenburg's great delight he found ordered ranks with black brassards of mourning. The legends of Tannenberg were still strong enough to raise a sprinkling of cheers for the Field Marshal. That night he tasted the kind of "unspeakable coffee and soup" which the troops had endured for the past year. He expressed "surprise" that things were so bad with the troops. Some little children from Cassel gave an impromptu serenade for the old soldier. Tears came to his eyes. "Times are very difficult," he faltered, "but we must continue to put our trust in God and then things will get better." Then he moved the army eastward away from the havoc of war.

One melancholy act remained. The Weimar Assembly wanted a final word from the Field Marshal as to the prospects of renewed military action in case the Versailles terms were too harsh for acceptance. Concluding that military operations were out of the question, Hindenburg turned this responsibility over to General Gröner and asked him to give the fateful message over the telephone.

VI

With the perspective of the post-war years it becomes apparent that Germany suffered heavily from the defects of Hindenburg's qualities. He was "surprised" too often to be a great general. Without Old Paul's massive front and legendary reputation Ludendorff would never have become dictator of Germany. Without Hindenburg's sanction he could not have pushed the U-boat war and the 1918 offensives to their fateful conclusions. Hindenburg's failure to check Ludendorff was not due to senility as Hans Delbrück once attempted to maintain. General Wetzell insists that the mind of Hindenburg was sound and active to the end of the war. Perhaps his long association with Ludendorff dulled his critical senses.

Until late in 1915 Hindenburg pulled for modest peace terms. After attaining supreme power he supported Ludendorff's demand for large-scale territorial compensations, a change of attitude not justified by any alteration

of the fundamental military position of Germany. His failure to act as a check on Ludendorff in the March offensive of 1918 was pike-staff plain. Kühl and others agree that this stroke was intended to be decisive. It was to win or lose the war. Yet, when it succeeded only partially, Hindenburg did not apply the brake. He did not immediately demand a peace with limited compensation. Instead, he let Ludendorff stake the rest of his chips, mortgage the future of the homeland, and bet his military toga on two more offensives—equally indecisive. Hindenburg tried to explain his failure to call a halt after the failure of the March offensive in the following remarkably torturous language: "We also wanted so to shatter the enemy's structure by closely connected partial blows that it must after all sometime break down."

The old general was plainly out of touch with the troops during the last stages of the war. Possibly his deep religious nature had something to do with this. All his army orders contained a reference to God's will or help. He did not believe in military luck and said he could discern "an inexorable logical sequence" in the course of the war. When the enemy was running rough-shod over the German soldiers with tanks and superior matériel, it was futile for Hindenburg to keep on telling them to put their faith in God. These calls became meaningless when the front-line fighter saw no relation between his own paltry effort and the power of the enemy. "The general who must be defeated before he learns that his troops have lost their mettle never understood his business."

The average German never penetrated the fog of legend surrounding the name of Hindenburg, but some German critics (including his own nephew) have been unsparing. General Hoffmann's views on Hindenburg were so acid that they could not be printed while the Field Marshal lived. He is often called "The Wooden Titan." His intentions were uniformly good, but he brought immense woe to his country. His nerves were the best in Europe, but he was not cut out to be the safety-catch on a dangerous intellectual bomb like Ludendorff. He abandoned the rôle of the soldier and allowed his great qualities "to be combined for the purposes of war politics." He was a party to the suppression of the civil government, although his memoirs (written by General Merz) are studiously deceptive on this point. Had he been even a casual student of Clausewitz or Schlieffen he would have been aware of the inherent dangers of such a course.

Both Germany and Hindenburg deserved a better fate. He will probably go down as the most tragic figure in German history. Twice he was called upon to sustain a rôle for which he was singularly ill-equipped by training, habit of mind, and social background. Twice hampered by a legendary reputation and his own ineptness in false and torturous positions, he brought immense harm to the institutions he loved the most. Though some have questioned Hindenburg's wisdom, military knowledge, and sense of loyalty, none deny his complete devotion to the German state. Foch hit it off aptly saying: "*Ludendorff, c'est un général. Hindenburg, c'est un patriote!*"

MG Fire Control Developments

By Captain Grayson Schmidt, C.A.C.

Central tracer control with stereoscopic spotting offers a solution

SINCE THE MACHINE GUN was first used as a weapon for defense against hostile aircraft, it has been disturbingly evident that only a lamentably small part of the potential hitting capabilities of this weapon was being realized. A great amount of experimentation has been carried out in an effort to devise better methods of pointing, but despite this fact, the resultant over-all improvement appears discouragingly small. However, machine-gun experts will agree, I believe, that the matter isn't hopeless and that further exhaustive study and experimentation, if directed along the right lines, may be expected to produce a satisfactory solution.

In this article an attempt is being made to review and analyze briefly what has been done in the past, in the hope that such may be of value as a background for experimenters newly entering the field. It appears that much of the experimentation that has been carried on in the past has been uncoordinated. Many isolated attempts at a solution have been made by different individuals, each with "an idea," which may or may not have been tried out before. Nearly all of this experimentation has contributed to the sum total of knowledge on the subject but so far, none of it has produced a completely satisfactory answer. It is true that methods have been devised which produce relatively high percentages of hits, but analysis of these methods shows that they are largely dependent upon the usual "target practice set up" for their success. They are not designed to meet the conditions to be expected in war.

The various fire-control developments of the past may be conveniently divided into classifications as follows:

TRACERS

1. Barrage fire
2. Individual tracer control
3. Tracer, with auxiliary observation devices
4. Central tracer control

SIGHTS & COMPUTERS

1. Computing sights
2. Data computers

These developments will be discussed separately, beginning with those listed under the Tracers classification.

Barrage fire. This method, doubtless thought promising

at first, was quickly discarded. It will be passed over here with equal rapidity. No other method yet devised is so wasteful of ammunition. One amusing device experimented with will be mentioned if only as a horrible example. This device consisted of four machine guns mounted along the edges of a box-like frame. The rear ends were hinged and the front ends were controlled by a conical cam, so arranged that the guns could be simultaneously converged or diverged. The mechanism was to be rotated with a crank. The result was a magnificent lawn sprinkler effect. To try and hit an aerial target with such a device, however, was hopeless. The scheme was somewhat reminiscent of the squirrel hunter who in an effort to make sure of his squirrel, held his gun sights so as to cover the entire tree in which the squirrel was sitting.

Individual tracer control. This method is still with us and for ranges up to five or six hundred yards, it is quite satisfactory. It fails to meet requirements however, when ranges are much in excess of these values.

Tracer control was once described as being "as easy as chasing a cat across a lawn with a stream of water from a garden hose." The error in the conception back of this thumb-nail sketch may be used to illustrate the fundamental difficulties in any system involving observation of tracers. Assuming, for the sake of argument, that you could direct the stream of water so as to hit the cat, and I am not at all sure that you could, there are two factors on which you would depend to aid you in pointing. First, the cat and the point on the stream of water at the same range as the cat, are both well within the range of your stereoscopic vision. Without conscious effort, you select the point on the "trajectory" which you must align with the cat in order to hit him. Second, as an aid to your depth perception, the impact of the water on the ground is perfectly visible and it enables you to spot effectively. It is easy to see whether you are shooting over or short or ahead or behind and you can correct your pointing accordingly. (I am still doubtful that you could hit the cat.) However, when we attempt to observe tracers at long range, we have quite a different problem. Our depth perception fails; we

can no longer select with certainty, the point on the trajectory which is at the same range as the target and there is no visible "point of impact" to aid us in spotting. We may think we see the true relation between the tracers and the target but experience has shown that most of the time we are wrong. It seems self-evident that any satisfactory system of tracer control will of necessity include some means for the spotter to pick out and to know continuously, the point on the tracer trajectory which is at the same range as the target. Knowing this point accurately, it is only necessary then to shift the cone of fire until such point is aligned with the target and hits will be assured.

Training of spotting observers is important but it doesn't solve the whole problem because the requirements in the matter are beyond the capabilities of any human eyes. To illustrate the point, we know that careful training has produced athletes who can high-jump well over 6 feet. However we have no expectation that additional training can ever be expected to produce an athlete who can high-jump 15 or 20 feet.

If any one should doubt his dependence on stereoscopic vision in spotting, let him try the following experiment: Take two pieces of wire, each about three feet long. Bend one of them to approximate the apparent curve of the tracer trajectory. Put a cork on the end of the other wire. Close one eye (to eliminate depth perception) and sight with the open eye near the end of the curved wire. Have some other person, using the wire as a handle, hold the cork between two and three feet away. Now try to adjust the curved wire to a point just above the cork. Don't allow the wire to touch the cork or to be silhouetted against it. Try this experiment several times, remembering that the problem of spotting long range tracers, because of the great distances involved, is much harder and you will see that there is a good reason why so many machine-gun bullets miss the target.

Many and varied have been the experiments designed to help the spotter pick out the correct point on the trajectory. One of the earliest was to reduce the range of the tracer "burn-out point" to 800 yards. It was hoped that this might help in estimating relative distances. This was followed by the development of a two-color tracer. It was proposed to concentrate attention on the first color for short-range targets and on the second color for long-range targets. Still a third unsuccessful experiment attempted to develop a bullet which would emit successive puffs of smoke at pre-determined and fixed ranges. None of these experiments were of material assistance. The first two did tend to mark range-points on the trajectory but no one knew the range to the target exactly or quickly enough to be able to use the information successfully.

Tracer control with auxiliary observation devices. Under this heading may be included the use of a separate short-base stereoscopic observing instrument, introduced to increase the depth perception of the spotter. This was a step in the right direction, but the information obtained by the spotter had to be transmitted to the gunner before it

could be used to adjust fire, and no means were yet available for doing this expeditiously.

Experience to date had indicated when firing at long ranges that the gunner was not in a good position to get a true picture of the deviations. A flank spotter was therefore introduced. His observations were transmitted to an assistant at the gun, thence to the gunner by tapping him on various parts of his anatomy. No great improvement resulted; first, because, except in certain limited situations, the flank observers' impressions of the deviations were not greatly better than were those of the gunner and second because the methods of transmitting spotting information to the gunner were too slow and cumbersome to be of any real value.

Tangential observation, previously described in the COAST ARTILLERY JOURNAL, then came in for serious study and experimentation. The theory was that if an observer was stationed so that his line of sight was tangent to the apparent curve of the tracer trajectory, at a point directly opposite the target, his observations of the deviations would be true. The idea is theoretically sound but how can an observer be kept at the correct location when the target is an aeroplane moving at high speed? To use such a system would apparently require a combination range finder, Jess Owens and Einstein. I don't mean this disparagingly either, for the conception of tangential observation and its presentation for experimentation and study has aided greatly in gaining a better appreciation of the problem.

Another experiment which I once tried, without conclusive results, was a "plotting board in the sky." That is, assume two guns about five hundred yards apart, both firing tracers at the target. The two tracer streams would intersect in the sky at a point in the vicinity of the target. The tracers from the gun on the right would indicate to the gunner on the left, the point on his trajectory which was at the range of the target and vice versa. It was hoped that by successive adjustments the point of intersection could be brought onto the target. If the system would work for two guns it might be adapted to service use (note, it didn't work).

Central tracer control.

The development of a system of central tracer control was logically indicated by the failures and shortcomings in the methods that preceded it. It had been found that, at long ranges, the gunner is not in a good position to spot his own firing, and besides, he has his hands full with the mechanics of pointing and firing his gun. It was reasoned therefore that he should be given simple alignment sights and, except for firing the gun, be charged only with the duty of keeping these sights aligned on the target. Some one else should determine the proper leads and actually set the sights to incorporate these leads. The remote control of sights appeared to be the logical solution. This thought was not new. It had been tried before but it had failed for one reason or another. Among the various mechanisms that have been tried for effecting remote con-

rol of sights may be listed wires and pulleys, Bowdoin wire (stiff wire in a flexible casing), rigid shafting with universal joints, fluid pressure, flexible shafting and electrical drive. Different methods of operating the control mechanisms have also been tried. Some used two handwheels, one for vertical and one for lateral. A single spotter attempting to spot and operate both handwheels simultaneously was performing the equivalent of the old parlor trick of rubbing his head and patting his belly at the same time. Another method of operation provided a "joy stick" for controlling both lateral and vertical while still another utilized two separate spotters. Central control is believed by some experts to be the most promising of all schemes tried so far. Its use hasn't yet increased the percent of hits because at best it is only a partial solution. There remains yet to be provided means for the determination of usable deflections. Whether this will be done as a basic calculation by some auxiliary device or by spotting only or by a combination of calculation and spotting only time will tell.

I shall now consider the items listed earlier in this article under the heading Sights and Computers.

Computing sights.

The most elementary of these sights was the British Forward Area sight. To call it a computing sight is somewhat generous. It doesn't provide for much variation in firing conditions. The oval of the front sight was computed for a certain fixed angular height, range and speed. The only variable allowed for was angle of approach, which was incorporated by so aligning the sight with respect to the target as to make the latter appear, to the gunner, to be on the ring of the oval and to be flying toward the center of the sight.

A notable improvement over the British Forward Area sight was designed, I believe, by Major E. H. Taliaferro, C.A.C. The front sight consisted of a series of concentric circles mounted on pivots and weighted so that the plane of the concentric circles was always horizontal. In pointing the sight was aligned on the target as described above, for the forward area sight, but a different one of the concentric circles could be selected to suit the estimated speed of the target. The rear sight could be moved back and forth along the barrel of the gun in accordance with a chart to allow for variations in range and altitude (or angular height). Super-elevation was included by causing the rear sight to ride on a cam.

A contemporary of the British Forward Area sight was the French Peyrcu Sight. The front sight element was fixed. The rear sight consisted of a straight bar pivoted at one end so that it could be set parallel to the course of the target. A number of different colored beads were spaced along the sighting bar. One of these beads was selected for sighting, dependent upon the range and speed of the target.

What appears to be a great improvement on the Peyrcu Sight was devised and built by Captain Carl Holcomb. It is similar in principle except that the beads are replaced by a single sight which can be moved along a rod in ac-

cordance with readings taken from a chart strapped to the gun. For any given target speed the chart shows proper sight settings for various altitude and angular heights. Super-elevation was also included.

The so-called Boyd-Green sight somewhat similar to the British Forward Area sight was tried out by the infantry. It appeared to include no new principles of outstanding promise.

A device somewhat similar to the Boyd-Green sight was devised by the author and tried out in 1926. Constant speed, constant altitude and straight line flight were assumed. Charts were then computed for variations in lateral and vertical deflections, including super-elevation. A fixed front sight was used. The rear sight was a rectangular frame with mil scales on all edges. Deflection values were taken from a chart and rubber bands were snapped in place on the rear sight frame in such a manner as to outline a curve, which gave the proper variation in both deflections. The sight was not suited to service conditions. It was used under the then prevailing target practice conditions which consisted of the target flying consistently back and forth in a groove. After a few courses we were able to determine empirically, the correct sight settings. We got a lot of hits but had a "surprise course" been flown the results probably would have been different.

All of the computing sights mentioned above failed for one or both of the following reasons:

(1) They assumed too many of the conditions of firing to be fixed when in fact these conditions are variable and their variations may introduce large differences in deflection.

(2) No facilities were available for determining and applying, with the required precision and speed, the basic data required by the mechanism in computing deflections.

Data computers.

A data computer, nicknamed "The Plow" or "The Wheelbarrow" because it looked like a cross between one of these domestic implements and a parrot cage, was built and tested at Aberdeen in 1926 and again at Fort Story in 1934 and 1935. This mechanism attempts a graphical, three dimensional, reduced scale set-up of the problem. It requires the usual basic data on the conditions of flight of the target. The deflections obtained were to be transmitted to and set on the gun sights by telephone or remote control. The mechanism has not greatly increased the number of hits. It has failed, I believe, principally because of our inability to furnish it with sufficiently accurate basic input data.

The author attempted to make a data computer in 1926 using parts of a Brocq Corrector. Gun sights were controlled mechanically by shafts, universal joints and Bowdoin wire. The attempt was a failure. The device computed lateral deflections in the horizontal plane and applied them in the slant plane. Besides being of "hay-wire" construction it received unreliable altitudes from two altimeters. (Outside of those few unimportant defects it was a good instrument).

A year later the Ordnance Department produced the Frankford Arsenal data computer based on the same principles, using similar mechanisms, and including the same error. Data was transmitted electrically and altitudes were obtained by a coincidence height finder. The error was later eliminated but the device never succeeded in greatly increasing the number of hits.

The most expertly built computer was made by modifying a Vickers gun data computer, for machine-gun use. It transmitted Case III data, electrically. Altitudes were obtained from a coincidence height finder.

In general it may be said of data computers so far tried out, that they are too complex and that they require too long to get into action. Moreover even the most accurate one yet made didn't produce many hits. I believe that its failure was probably due to errors in range table assumptions, i.e., the developed m.v. was low, no correction for jump included, conditions of the moment not corrected for, and so on.

Summarizing briefly, it appears that despite the very considerable effort that has been expended, the improvement in fire control methods has been very small. While this may be discouraging, I am convinced that things aren't as bad as they seem. We know a lot more about what not to do and we have a better understanding of why many of the experiments have failed. Knowing the cause of the disease may make the finding of the cure less difficult.

In my opinion a fair analysis of past experiences justifies the following general conclusions.

(1) For ranges up to 500 or 600 yards, individual tracer control is satisfactory. Indeed it is unlikely that there will

be time enough to use any other system when the target is that close to the gun.

(2) So-called computing sights offer practically no hope for a satisfactory solution.

(3) The gunner should not be required to estimate leads or "spot" his own fire at long ranges.

(4) Spotters should be remote from the gun and should be provided with means for the immediate introduction of spotting corrections.

(5) Means should be devised for indicating continuously, to the spotter, that point on the trajectory which is at the same range as the target. Otherwise he can't spot, he can only guess.

(6) For long range targets, computed deflections, on which spotting corrections may be superimposed, should be furnished. Even though such deflections are not precise, they serve to reduce the rapid changes in spotting corrections that may otherwise be difficult to keep up with.

(7) Elaborate and accurate data computers will not be successful because of errors in measurement of basic data, varying ballistic conditions, short time for operations, cost and difficulty to procure and maintain. The accuracy would still be ultimately dependent upon spotting corrections.

(8) Any system of fire control to be used for long range targets must be such as not to interfere with the firing of the guns at short range targets, by individual tracer control.

(9) No more time should be wasted in devising fire control systems suited only to stereotyped target practice conditions.

(10) Central tracer control plus the simplest possible lead computer, plus improved stereoscopic spotting aids, hold the greatest promise for future development.



WHETHER ONE TRACES his *Americanism* back three centuries to the *Mayflower*, or three years to the *steerage*, is not half so important as whether his *Americanism* of today is real and genuine. No matter by what various crafts we came here, we are all now in the same boat.—COOLIDGE.

The Big Hike

By PETER B. KYNE

Death, it seems, has a habit of taking its time. In about half an hour the bellyache left me, as did the constriction in my chest, so I took a little swig of water—and it stayed down. My nerves were flaccid and I was weak with the sort of weakness that follows a major operation. But I was not afraid because I had to die; in fact, I wanted to die and have the long trek over. I was aware, too, that I had been untrue to Mr. Learnard, but I was no longer ashamed of it.

After a couple of eons I heard my bunkie speaking—persuasively. "Petie, let's have another try at it!"

I didn't want another try at it, so I pretended not to hear him and he kicked me to make me listen. Dear old Johnny! He was an old toothless man when he went up to the assault at Vimy Ridge with the 7th Canadian Battalion and took a mortal wound. He lies in Brookfield Cemetery, in Sussex, and on his tombstone is the epitaph I wrote: "He was a man." I visited him there in 1924. He was the grandest 27-day soldier I ever knew.

He kept urging me but I said I was through and if he wanted another go at it he could go it alone. He got up on his knees, donned his shirt, and slung his equipment. Then he lifted me to a sitting position and put my shirt on and tucked it into my trousers. Then he got his arms under my armpits and heaved. I came up and we both fell against the bole of the tree and leaned there to rest. I could have cried, because I knew he was going to make me go on and suffer some more, and it was all damned foolishness . . . after a while he shouldered his own Krag and mine and shoved me gently away from the tree.

The company had disappeared over a rise but there was sharp firing ahead. We had gone about thirty feet when I remembered something. I had forgotten my Krag and said so. Ryan said he had it, whereupon I flew into a rage, cursed him for insulting me and grabbed my piece off his shoulder. He slapped me, but I didn't care. We were nearly nuts.

On the crest we found a white Filipino pony shot between the eyes and the saddle still on him. "What the hell kind of cavalry is this?" the old ex-21st Lancer² complained, and removed the saddle before the animal could swell and burst a cinch. Then we sat down on the horse

and listened to the riot going on in the plain below us. It never occurred to me that the enemy had the lowering sun in back of him, that the range was about 500 yards, and that two dark spots on a white carcass on the skyline made a splendid target, until I had heard a bullet slap into the horse and a hundred whisper as they passed me. I mentioned my suspicions to Jack and suggested it might be the part of wisdom to go away from there. But he was a very contrary Irishman and wouldn't have his elbow joggled by any Filipino: "T'ell wit' 'em," he sighed. "A soger's as safe somewhere as he is anywhere."

So we sat on the horse until the little old rear-guard action broke off. After a while we got up and followed the trail through the grass. Afar we could see the sun shining on Bacoor Bay and the blue mountains of Batangas looked very beautiful in the south. We came to a slough and pushed gingerly in and the water came up to our chins in the deepest part; a half-mile farther on we caught up with the company.

Some were standing in a little group but most of the men were lying in skirmish line, their faces pillowed on their arms. Old Dad Keyes, the first sergeant, was staggering in a circle, making signs at everybody, and when Johnny and I arrived he made them at us. "You, Ryan," he croaked, "and you, Kyne, are part of a detail of six on fatigue. You're to fill the canteens at that farmhouse (he pointed) and bring in enough fuel for making coffee."

"Why do you pick on us?" I howled.

"Because you and these other four are the six strongest men left," he replied. Then I flared up at the enormous injustice of it and forgot I was a soldier and called Dad Keyes a goddamned old fool. And Dad forgot he was a very old soldier and a first sergeant and refused to take offense. He just said wearily, "Oh, Petie, Petie, don't talk to old Dad like that."

Petie, Petie! The affectionate diminutive—and on duty, too! I remembered I called him Dad one day at guardmount and got a week in the kitchen for it and a raw-hiding I never forgot. I realized, unconsciously, that Dad was so weak he could be trifled with now, so I proclaimed that I just couldn't move another foot and to hell with him—to hell with everybody.

My declamation was cut short by a good swift kick in the rear! Not from Dad: he didn't have a kick left in him. It was Ryan who booted me—Ryan who blew the charge when the 21st Lancers galloped in with the lance to meet

*War is not all barbarity:
there can be sportsman-
ship and generosity in it*

²Her Britannic Majesty's 21st Regiment of cavalry which participated in the Sudan Campaign was designated Lancers, not Hussars, as stated in Part I.—The Editor.

the long spears of the Fuzzy Wuzzies at Omdurman and Suakim and Tel-el-Kebir—the man whose pride it was to be a soldier twenty-seven days out of every month—Ryan my bunkie!

"A soger never refuses djooty," he growled, and fetched me a cuff on the jowl. "Get ahead wit' ye. Pick up half a dozen o' thim empty canteens an' fall in."

I obeyed. What else could I do?

En route to the Filipino farmhouse, the only one on that vast plain, we passed a tree with General Ovenshine spread-eagled under it. The old gentleman (he was a Civil War veteran) dragged himself erect and demanded to know what we were about to do. The corporal told him. "You leave that farmhouse alone," General Ovenshine ordered. "That's private property. Respect it."

"Yes, sir," said the corporal, and the old man slid down on his back again and closed his tired eyes. If he had opened them ten minutes later he would have seen no private property to respect. It is remarkable what six sturdy bucks can do to a *nipa* shack. Ryan and I each took an end of a small outbuilding and about twenty feet of the bamboo fence that enclosed the front yard. Also, there was a stack of dry rice-straw there, so we each tied up a huge bundle of that with rope made from torn bandanna handkerchiefs and hung it over our necks. Then, festooned with filled canteens, and dragging the *nipa* thatch and the fence, we came home, for all the world like a couple of soused ants dragging a dead fly.

When we got there Dad Keyes looked guilty. "We've got no use for the fuel," he remarked. "These goddamned soldiers, including the top sergeant, threw away all their rations out there today, in order to reduce weight and survive! There ain't a speck of coffee in the outfit!"

But Dad was wrong. When leaving the South Line I had been entrusted with the coffee for our squad, and Ryan with the sugar, salt and pepper. I had thrown away the coffee along with my reserve rations, but Ryan had made me go back, under fire, too, and retrieve both. Like the old campaigner that he was, he had held on to his—and there we were, the only two men with something to eat and coffee to drink! Also, the only two survivors of our squad. Ryan had the sugar, salt and pepper and our supply of pipe tobacco and half a dozen hardtack in a sock tied off into compartments like links of sausage. I

had some hardtack broken and mingled with the loose cartridges in my haversack, a can of salmon and a small can of defunct horse masquerading as canned beef.

Well, we spread one bundle of rice-straw as a bed for Mr. Learnard, and made a lean-to out of one of the big squares of *nipa* thatch so that he would be dry and comfortable for the night. Then we did the same for ourselves with the other bundle of straw and the other piece of thatch. Then we broke up some of the bamboo fence and proceeded to heat water in our tin cups for coffee.

And then we made a horrible discovery. The coffee was in the whole bean. It just hadn't occurred to the SOS of that day that individual field equipment didn't include a coffee mill. We tried crushing the coffee beans in our stout tin cups with the butt of a bayonet, but the cursed butt was convex and the beans escaped from under it. I was in despair until the resourceful Jack hit upon the idea of using our teeth. So we ground up the beans with our molars, spit the result into the cups, added water, and had coffee.

Of course we had to ration Mr. Learnard, so I took a handful of coffee beans over to him and told him that if he would grind them we'd make him some coffee. Also, I promised him some corned beef, salmon and a hardtack. He thanked me politely but to my great disgust insisted that the food should go to some enlisted man who needed it more than he did, and please to see if I couldn't find that man. I said, "The hell with that man. Why didn't he hang on to his rations like we did? The Lieutenant will accept what we have to give him or we will throw it away; and anyhow, I do not believe any man in the outfit is low enough to eat while the company commander starves."

*We came home like two soused
ants dragging a dead fly*





The cursed butt was convex and the beans escaped from under it

That was just some more of his notion of leadership, and it was grand of him but not practical; for rank has its privileges, and the regular soldier of that day was insistent that such privileges be accepted. So we fed Mr. Learnard, for all his grumbling; and I had the honor of twisting rice-straw into thick spills and burning them to furnish light while our regimental surgeon dressed his wound and called it superficial. At any rate, Mr. Learnard never went to hospital with it.

When I came back Dad Keyes was tying into our rations as if he held a proprietary right in them. He was still quite malleable, but I knew that once he got the coffee,hardtack, bully beef, and goldfish into him, he'd be First Sergeant Keyes again; so I apologized for my opprobrious language earlier in the evening. Dad said he'd forget it if I dug him up a chew of tobacco. His tobacco had come apart and was a soggy mess of salt water mixed with silt. He had forgotten to hold the plug in his mouth when he forded the slough.

Neither Ryan nor I chewed tobacco; we were both pipe smokers. But between paydays tobacco was legal tender in a poker game, and a few days before I had won four ro-cent plugs of *Star* and several bags of *Bull Durham* and papers. All these I had tied up in a sock which, at Ryan's direction, I had removed from my haversack and carried in my hand when crossing the slough. Ryan, having crossed many rivers in his day, had learned to think first of his tobacco. So I gave old Dad a ro-cent plug and he said I was a nice boy and if I ever got killed he'd howl like a wolf.

It was pleasant sitting there by the fire, smoking our pipes, sipping our coffee and watching Dad, ever and anon, try to put out the flames with his thick amber stream. A little cool breeze came over in the dark from the bay and the heat lightning played on the horizon. A little cognac for the coffee would have added to our enjoyment of the evening, but Mr. Learnard had forbidden hard liquor on the march and we took considerable pleasure in obeying Mr. Learnard. In fact, Dad said he'd make hell look like a summer holiday for the man who didn't.

We discussed the other regiment that had gone into action with us. It was full of recruits and there had been little opportunity to discipline and harden these new men before tossing them into The Big Hike. Although at full war strength and, consequently, possessing in each company twenty-five or thirty more men than the regiments that had been in the Islands nearly a year, we doubted if they had as many men left as we had. They had started out carrying blanket rolls and we speculated on how much a fellow might clean up by following their line of march and picking up nice big blue heavy woolen blankets.

Finally Ryan and I crawled into our bed of rice-straw under the *nipa* shelter and, without invitation, Dad Keyes crawled in with us.

In the middle of the night Dad's snoring awakened me. As I lay there listening to the breathing of the weary men around me, I heard a distant sentry challenge three times and fire. This was followed by a scream, and a ripple of fire ran around the sleeping camp. Then from the sector of the adjoining regiment rose a wild cry. "Bolo men, bolo men, bolo men!" I lay there wondering what the devil was up with them when there was the trampling of men running madly and blindly through the bivouac of the 14th. Our shack came down on us and a foot broke through the bamboo lattice and sank into my belly. As old Dad Keyes rolled out he lifted his stentorian voice in the command: "Fourteenth! Stand fast!" Every non-com and officer took up the cry. "Fourteenth! Stand fast!"

I picked up my Krag and belt and crawled free of the wreckage of our once happy home. I got on my feet only to be knocked down by the rush of panic-stricken men. Ryan called to me, "Fix bayonets, after these wild men have passed through." But I had dropped my piece when I fell and couldn't find it.

We all thought that old Pio del Pilar had pulled a fast one. Midnight attack *en masse* with bolos! Well, with bayonets against bolo in the inky blackness our chance was as good as theirs.

First sergeants were shouting to the companies to fall in, and nobody could see a hand in front of him. The operations didn't seem destined to success, even after the last of the screaming, gasping, panting recruits had streamed through us into the night and the open country beyond. But the 14th stood fast. I felt very much undressed without my Krag, and only the dull bayonet in my hand; reason told me to run but discipline held me where I was.

Suddenly a wag in Company L, one Private Hennage, made a discovery. In the dark Dad Keyes had wandered out of his own sector and was busy trying to fall in Company M. So Hennage piped like a little boy: "Oh, Dad, when you've finished falling in Company M come on over and fall in your own company. We're waiting here for you, Daddy, darling!"

Somebody let out a bleat of laughter—then everybody laughed, and the tension broke—like that. Another bird

yelled: "Where at are all these here bolo men? I don't see any an' I don't hear any. Who said 'bolo men'?"

Somebody answered out of the darkness. "There ain't no bolo men. Those rookies are seein' things at night."

An officer shouted "Tenshun!" and we were quiet as mice, listening once more for bolo men that didn't materialize. Then Mr. Learnard said, "Private Kyne, come over here, like a good lad, and fix up my house again. It's been trampled flat on me."

The first sergeants were shouting "Fall out! Dismissed!" and the great panic was over. The reasons advanced for it have been many and varied, the most widely quoted story being that a maddened carabao from the bull carts had charged a rookie sentinel. I do not believe this, because the bull carts didn't get up that night. They could not have crossed the slough where Dad Keyes spoiled his chewing tobacco, and I looked the country over before sunset and there wasn't a carabao in it. The nervous sentry that I heard challenge had fired at a coolie on the prowl for water, and the coolie had screamed, although I never heard that he was hit. The test just happened, and why it happened I leave to modern panic experts. All I know is that it was terrifying for the few minutes it lasted.

I have read of panics that started from nothing and swept through whole divisions—even armies. This one didn't spread beyond the organization that started it because it ran into an outfit that couldn't be stampeded. The 14th Infantry is that kind of a regiment.

In spite of the excitement I was soon sound asleep, but we were up again with the first gray in the east. No time was allowed even for making coffee before resuming the march. About ten o'clock we came to the mudflats that lie east of the village of Las Piñas when the tide is out. We were about half a mile from the shore of Bacoar Bay. Here we ran into another brief little two-by-four rear-guard action and when the enemy faded we started across the mudflat.

That mudflat mighty nearly broke up General Lawton's reinforced brigade. If Pio del Pilar had only had sense enough to lie quietly in the bushes on the farther shore until we got bogged in that deep blue mud, he could have wiped us out without half trying. We went to our knees and exhausted ourselves trying to pull each foot out. Finally my strength gave out and I had to stop. As I stood there screeching for help, along came old Major Matile on a stout pony that was crossing in leaps. "Grab my stirrup, soldier," the Major invited. I did, and out I came, minus my shoes. The suction had stripped them off me as neat as you please. The horse dragged me across and I sat down on the far bank for a look-see.

Here I was witness to one of those incidents that make a man realize that war is not all barbarity—that there can be sportsmanship and generosity in it as well as ruthlessness.

One of Pio del Pilar's rear guard had been left behind, and we saw him crossing the slough where it was about thirty feet wide. "There's one," I yelled, and took a snap shot at him. Everybody turned, saw him and let fly. A shower of mud and water enveloped the little enemy, with



He turned and shook his fist at us

his red breeks and white tunic and big straw hat. He wasn't hit, but he knew he hadn't a chance. And knowing he had to die he decided to die like a *pukka* soldier. Turning, he shook his fist at us. And at that, Tom Lanker, our surviving windjammer, blew "Cease firing" and we cheered the lone enemy until he reached the farther bank. Here he paused and waved his hat in appreciation. Mr. Learnard, standing knee-deep in the mud with the rest of us, smiled at Tom Lanker and said, "That was decent of you, Lanker."

Somehow we straggled across and rolled up into Las Piñas to lie in the shade of the trees that line the single long street. And there we learned that our forced march to pinch off Pio del Pilar had been a failure. With his 3,500 men he had slipped out of Las Piñas and Parnaque two hours before we entered, and was safely off to the south.

Mr. Learnard came limping down the street, saw me and called me over. "Kyne," he confided, "here is an American dollar. See if you can't induce some native to sell you a chicken to cook for me and the second lieutenant."

I took the dollar and said I'd do my best. I walked up the street and bumped into the second lieutenant, who halted me, gave me an American dollar and asked me to buy a chicken and cook it for him and Mr. Learnard. I took his dollar too. Then Ryan and I stole some old hens, fricasséed them with rice and sweet potatoes, also stolen, and filled the order.

In the late afternoon my company was ordered to establish an outpost about a mile south of Las Piñas. I was with the point of the advance guard of the company when I heard a Filipino bugle blow. Peering through a screen

of bushes across a rice field I saw a battalion of uniformed Filipino infantry marching down a road into the wood beyond. They marched well, so I knew they belonged to Pio del Pilar. There were approximately 300 of them. I raised my arm and Mr. Learnard came up. When I reported what I had seen he decided to put the outpost down right there, with a lad named Emery and myself on double post.

Just beyond the screen of bushes was a little dry water-course about four feet deep. Figuring the enemy had gone, Emery and I left our concealment and sat down on the bank of this little *arroyo*, with our legs dangling. It was a foolish thing to do, and we paid the penalty, for suddenly a volley came from out front and Emery said "I'm hit." I swept him down into the ditch and looked across the field. There at the edge of the woods about 300 yards away stood five native soldiers firing at us. I opened on them and they promptly disappeared. On the target range at that distance I once made 48 out of a possible 50, but I never knew whether I hit anybody or not.

I was down in the ditch applying first aid to a hole in Emery's thigh when Mr. Learnard came up. I reported a flesh wound with no big veins or arteries cut, but Mr. Learnard was much concerned. Running back to the main guard he offered a \$20 gold piece to anyone who could produce some cognac for the wounded Emery. But he didn't get a drop. His order had been "No hard liquor in the canteens," and every man in the company had carried out his order to the letter.

We were relieved in the morning and returned to Las Piñas, where stragglers reported in, bringing our strength up to forty-eight. We looted some rice and a few chickens, but there was little other food to be

had. But I succeeded in trading a plug of *Star* chewing and a small bag of *Bull Durham* to a sergeant of the 4th Cavalry for three slices of most awful sow-belly. Ryan and I had that with our last two hardtack and coffee.

All morning, since about nine o'clock, a fight had been going on down where we had been on outpost, and rumor had it that a company of the 9th Infantry had walked into it. We figured it just another of those rear-guard skirmishes, but as time passed new troops were fed into the

fight. Finally all of the 9th and 12th, two battalions of the 14th, and the artillery, had departed for the riot. About everything there was except the 13th got into it. For it was no rear-guard action but a general engagement.

We might have known Pio would risk it when he had the choice of ground. And it happened that he had a singularly beautiful choice—a nice line of old trenches extending along the south bank of the Zapote River, a stream our meager Intelligence had apparently never heard of. It was about fifty feet wide, with perpendicular banks and about twenty feet deep when the tide came up from Bacoot Bay. On that identical ground the Filipino

forces had annihilated a small Spanish force in 1898. There was the customary stout masonry bridge across the river, but the middle span of this had been blown out in 1896 and rebuilt with wood. And

as our troops came across the open field toward the thin line of smoke that indicated the enemy position, the wooden span was drenched with kerosene and set afire.

They fed our battalion into a battle in dribbles, building up a skirmish line in the shelter of a fringe of bamboo. A battery of light artillery (I think it was Reilly's²) came down the road at the trot, swung into the open in front of us, in perfectly spaced formation, and went into action—with shrapnel. They might just as well have thrown ripe tomatoes! After about fifteen minutes under heavy rifle fire the teams were brought in and away that battery went down the road just as the bridge burst into flames.

They went into action again on the very brink of the river. No. 1 gun was run out by hand onto the bridge so it could fire down the enemy's trench. The section chief of that gun was killed and the fire scorched his legs before they dragged his body away; the noncoms were shooting with their pistols at the crew of an old Civil War Long Tom muzzle-loading 6-inch gun just across the way. (I counted thirteen dead men under the muzzle of that old Quaker

next day, testifying to the courage of those native soldiers). The batteries were cutting their fuzes at zero and delivering muzzle bursts at about thirty-five yards, firing obliquely. It was field artillery work after the classic pattern.

We infantrymen didn't know the river was there when we launched our charge across the open. At fifty yards



He offered a \$20.00 gold piece to any man who had brandy in his canteen

²It was Kenly's platoon, Light Battery E, 1st Artillery.—*The Editor.*

from the enemy we fixed bayonets without orders (you couldn't hear an order in that tumult) and raised the long yell. We got it back—a yell of defiance and derision. Then we came out on the river bank and had to drop and take it.

There was only one thing to do, and that was to keep such a hail of bullets over the top of that trench that it meant death to any native who raised his head. On burial detail next day I noted the number of arm, chest, throat and head wounds. I didn't see a single Filipino that had been hit below the waist.

A general engagement at a range of fifty feet is hot stuff, and we needed all of the 250 rounds we took into action. The ammunition was poor and the pieces fouled badly. Moreover, after thirty or so rounds the Krag got so hot that the firer had to stop and let it cool. Lest the barrels clog many of us urinated down the breech and then wiped the barrel out with a cloth on the ramrod.

About five o'clock, after the tide had gone down, our 1st Battalion moved off at double time along the river bank to the right. Half a mile down it found a wide spot with low banks, and streamed across.

The engagement ended five minutes later. The enemy, seeing us across and coming for them from the flank, left hurriedly to attend to important business in the back country. And as they pulled out our men lying along the opposite bank in their old positions stood up and let them have it. Two-thirds of Pio del Pilar's casualties occurred beyond the trench—some as far as 300 yards beyond it; for we had expert riflemen in those days, too.

My company, forty-eight strong, took sixty-six prisoners and counted sixty-eight dead in our immediate front. In addition there were twelve wounded, seven of them died that night. These enemy casualties are proof of the close and deadly nature of the fire.

We took our prisoners back to Las Piñas and shut them up in the church there. Then we returned to the battle line to sleep among the dead and the wounded in the rain. In the morning *cascos* came up the river, towed by a launch, and we loaded some 300 wounded aboard them. The hell of it was the *cascos* didn't bring any rations.

However, the company had had its hunger stayed by the gallant action of Double-Breasted Kelly, our company baker, left behind at his baking plant in Malate. Somehow he had gleaned an idea of our operations, and after learning where we went in he figured out approximately where we would emerge. On the evening of the 9th he had come out to the South Line with his bull cart to deliver a fresh baking and had found us gone, so he had returned to the base and started baking more bread. Then, on the 12th, with two bull carts loaded with bread and canned goods he had rustled somewhere—stolen them from the regimental commissary, doubtless—he set forth down the Calle Real toward Paranaque and points south. He was well aware that he was risking his neck after passing Pasay, but that didn't stop him. A few natives shot at him but he gave them the *tams* with his Krag and pushed on. Finding the bridge across the Paranaque River out, he un-

loaded his carts, removed the heavy wheels and built up platforms on the beds with bamboo cut in four-foot lengths. Then he loaded bread on top of the bamboo and forced the carabao to slide down into the river and swim across, towing the impromptu raft. Having ferried the rations over, he made a second crossing to get the wheels. Then he and his two coolie bull punchers camped on the river bank; weary as he was, he sat up all night to guard his convoy.

On the morning of the 13th Kelly continued south until he heard the distant sound of the fight at Zapote River. Pressing on at a mile an hour he finally reached the Company L sector and came down the road just as we got up to run down the river bank. The heavy fire was too much for the coolies who dove under the bull carts howling murder and sudden death. Kelly concluded to let them lie there, while he caught up on his musketry at 300 yards, firing across the space left vacant by the 1st Battalion.

When we swam back across the river with the prisoners there was Kelly with his bread! How we cheered him! What a back-slapping and affectionate cursing we gave him! Why, he was a hero who had risked his life to get food to us, without an order from anybody. None of us had even remotely suspected him of such initiative. Mr. Learnard came up and shook his hand and said, "Kelly, you're wonderful." And when General Lawton, who rode over to investigate the riot around the bull carts, heard the story he told Kelly that it was men with his spirit that made the Army glorious. After which the general, who was as empty as the rest of us, graciously accepted a loaf of Kelly's bread.

Zapote River cost us a sergeant and a corporal and a half-dozen wounded, none fatally. We were the last troops to arrive on the ground and our losses were light.

On the morning of the 14th we buried the enemy dead. When we came back from that detail, rations had arrived and we enjoyed our first full meal in five days. After that, the battalion was lined up and General Lawton rode out in front to tell us that in recognition of our gallant work he was going to send us to various villages for a well-merited rest.

Company L was assigned to Paranaque, about six miles away, where we were quartered in a church. The church had been damaged by naval shell fire on the opening day of the Insurrection, but I noticed that no shells had passed through the organ loft. So I prowled upstairs and found a fine bamboo organ intact. I slid in on the console, pulled out all the stops, and started playing by ear, with a *basso obstinato*, "There'll Be A Hot Time in the Old Town Tonight."

There was! One Major McCammon (whose son, Walter,³ was a private in Company E) came riding down the road and heard me. Indeed, he must have heard me a mile away, for I had the loud stop out and didn't know it. Apparently the major disapproved of impious music in a sacred edifice, for the first thing I knew he had crept up on me, seized me by the collar, and jerked me violently

³Now a Colonel of Infantry.—The Editor.

backward off the console. Then, with amazing force and precision, he decorated me with three Grade A kicks on that portion of my anatomy which Mr. Thomas Ingolsby once remarked no gentleman will show to friend or foe. He called me a bad name, too. I lit running, with the Major in hot pursuit, but I got down the stairs far ahead of him. He lost me in the crowd, never having seen my face.

I meditated filing charges against him for criminal assault or something, but after talking it over with Dad Keyes I took good advice and let the matter drop. After all, I was there for a week's rest.

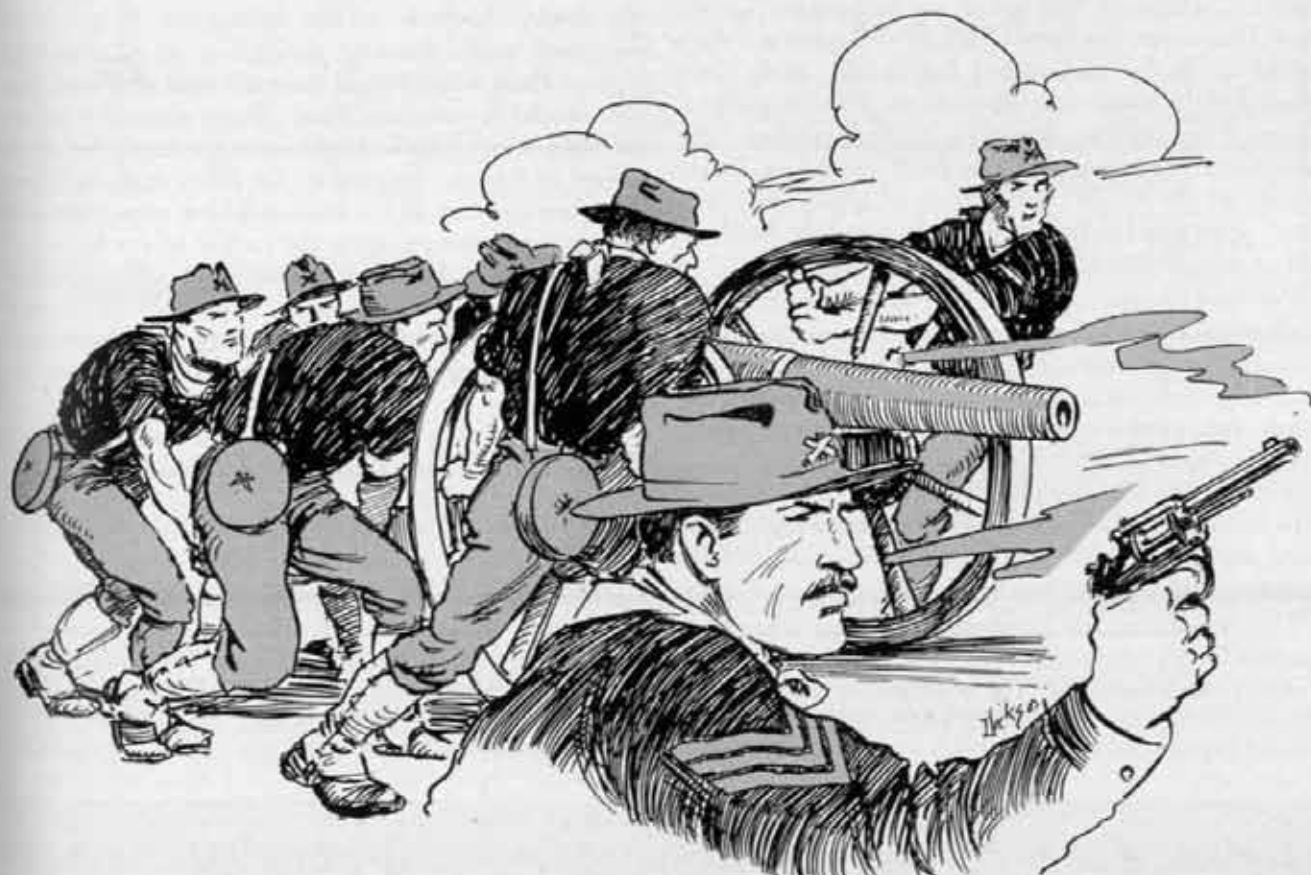
About midnight a fiend arrived from the Zapote river with orders for the outfit to boil out and get down there in a hurry. We did, but it was a false alarm. We slept in the rain in the center of the Calle Real, the old main highway that runs from Manila around to Cavite. The next day we hiked to Bacoor. Before we could mop our sweating brows they ran us on up to Imus to reinforce some outfit that was having a little trouble there. But the fight was over when we got there, so we returned to Bacoor and went into camp in the low delta between the Zapote River and a smaller stream, the San Nicolas. That night it rained pitchforks, and it was just by the Grace of God that we didn't all drown. We stood on a bridge all night in the downpour and our best coolie kitchen police got swept away and the damphool cook went into the raging river after him, and we were two hours hauling the fools out with a long line made from gunslings, canteen and haver-

sack straps. At daylight we marched two miles back to Bacoor in water up to our hips and arrived with cramps in muscles we never knew we had.

And that ended The Big Hike. We went into nipa-shack billets in Bacoor and in August they sent us to Manila. Most of us were up for discharge in that month and few were taking on again in the old outfit. We hated to leave Mr. Learnard to carry on with a company of new recruits with only three old-timers to help him, but The Big Hike had left us with no desire for more of the same. The kids were heading back for the U.S.A. while the professional soldiers toyed with thoughts of doing their next hitch in one of the mounted arms. Men like Ryan, big Sergeant Hoar, and old Dad Keyes, swore they'd never carry rations and extra ammunition again while there were horses to do it, and away they went.

Mr. Learnard offered to make me first sergeant and coach me for a commission if I'd reenlist with him. But I knew that I lacked the horsepower to knock a rookie to a parade rest for showing open disrespect for a 19-year-old top sergeant. I knew how the job should be done, but I couldn't do it.

Something over a year ago, Brigadier General Henry Grant Learnard died in Washington. Had I known, there would have been in the train that followed him in his last march, an ex-private of Company L, 14th Infantry, who will always think of him as the finest company commander who ever wore the uniform.



They went into action on the brink of the river.

"Old Pap"

By FLETCHER PRATT

Part II

Now winter came in earnest on the Army of the Cumberland and was spent in reorganizing into three corps—Thomas', the XIV; McCook's, the XX; and Crittenden's, the XXI. Throughout the spring there were nothing but raids and outpost skirmishes, while Bragg wrangled with his generals and Rosecrans with his government. The Union general wanted cavalry; by the end of June he had received it and moved out in the campaign known as that of Tullahoma, the best piece of work he did during the war, but a perfect example of the futility of pure maneuver uncrowned by battle.

Bragg's advance base at Tullahoma was captured in the early days of July, and Rosecrans took a month's pause to bring up rations and organize the train for a new thrust toward Chattanooga, the key of the mountains. Do we trace Thomas in this halt? Perhaps, for he was a man careful to see his soldiers had full bellies, being more mindful of the matter than most officers, since his personal efficiency depended so largely on physical comfort. We cannot surely say; Rosecrans, like Buell before him, leaned heavily on the Virginian in matters of organization and detail, and tended to hold aloof from such daily problems and to concentrate on more sweeping issues.

Yet Rosecrans had a grip on wide strategic matters that Buell never achieved, and came down against the mountains protecting Chattanooga on so wide a front and behind column-heads so strong that Bragg's forward elements were driven in without being able to obtain any sure information of the Union movement. "Those mountain ranges are like a wall full of rat holes," the Confederate general said despairingly to a subordinate. "Too many rats pop from too many holes. Who knows what lies behind those peaks?"

The subordinate was Longstreet, who had come from Lee with Hill's whole corps, just as 15,000 reinforcements arrived from Mississippi. The warhorse of the Army of Northern Virginia replied that whatever holes the rats popped through they must ultimately come to the pantry

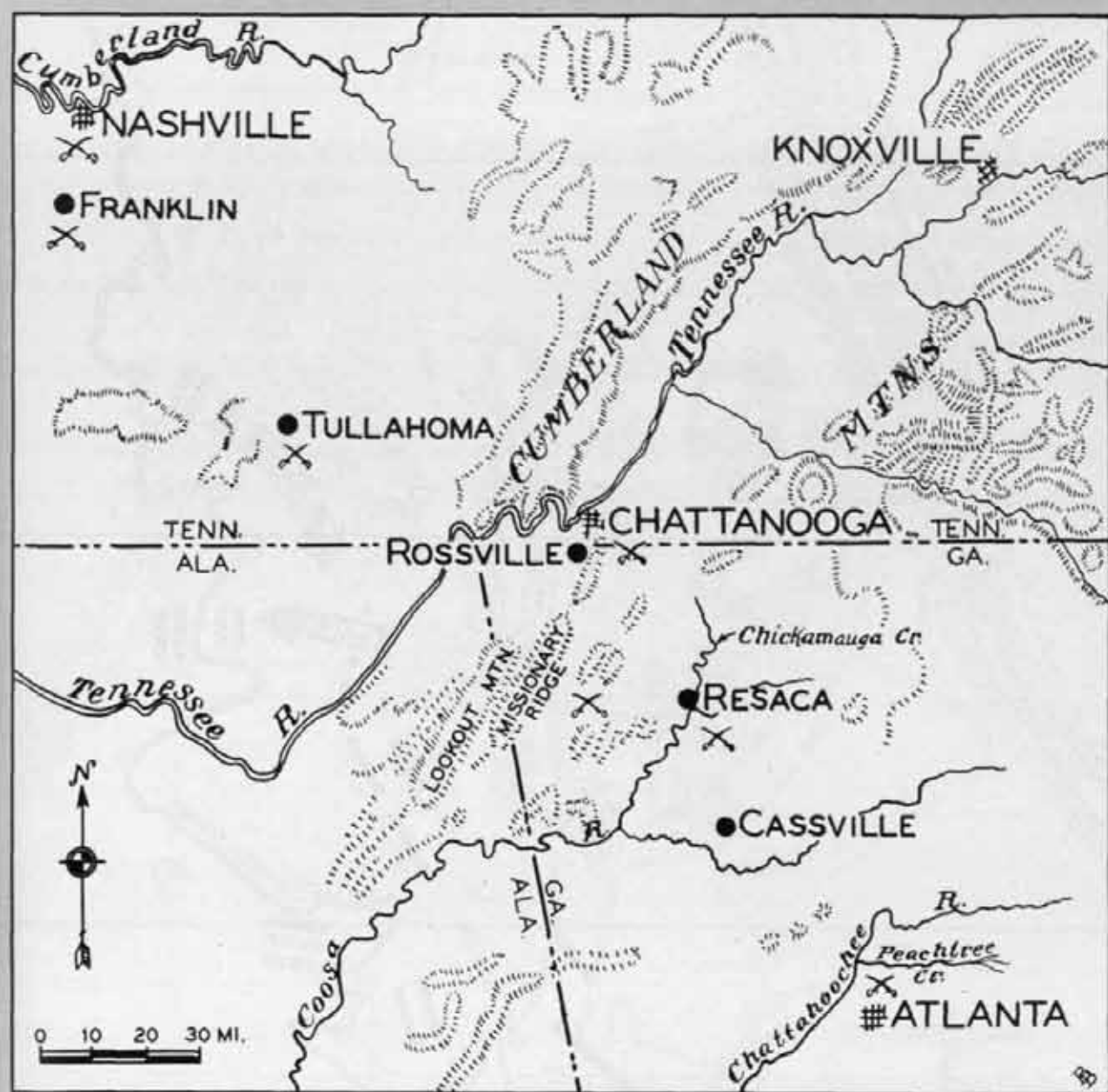
of the Chickamauga Valley. Concentrate there, he advised, and knock the rats over the head as they come out of their holes, one Union corps after another. Victory would be certain and crushing, for the reinforcements gave Bragg three to two of the whole Union army and he could take its scattered corps by thirds.

Bragg's first plan was that of throwing his full strength on Crittenden, who was out east of Chattanooga on the extreme Union left. The scheme misfired when that stout fighter but indifferent strategist, General and Bishop Leonidas Polk, took up a defensive position opposite Crittenden and asked for men to hold it. Bragg rode off to squabble with his lieutenant; while he was about it both Thomas and Rosecrans independently divined danger in the suddenly stiffened front the rebels offered, and both judged a blow at the center would be next. Thomas held that center; Rosecrans ordered both the scattered wings in on him, while "Old Pap" blocked every road and pass on his front with felled trees. He repeated the Mill Spring preparation on a huge scale, covering his whole front with cavalry to delay the enemy by dismounted fire from cover. Sure enough, Bragg struck in the center at Thomas; but obstructions and the skirmisher fire of the horsemen slackened his punch to the deliberation of a slow-motion picture. Crittenden and McCook had rallied on the Union center before the blow fell—and there was nothing left for it but a stand-up fight.

The form taken by the battle was the interaction-product of Bragg's ingenious grand tactic and Thomas' elastic defense. In Chickamauga Valley the creek of that name skirts the eastern mountain-wall; west of it, beyond a hummocky lowland, stands Missionary Ridge, with numerous passes running through it to Chattanooga Valley, down which flowed the main road of Union supply, parallel to Rosecrans' front. Bragg planned a powerful right wing, which should cross the creek far down toward its mouth, sweeping up the valley onto the Union left, each division of his own extended center and left joining in the movement as the ford or bridge by which it would cross was uncovered during the progress of the drive. As the Northerners were driven from the roots of the passes, Bragg would fling a force through them, seize the road to Chattanooga and cut his enemies from their base.

On the morning of August 19th the dismounted cavalry spotted a rebel brigade on the west side of the Chickamauga and in a loop of the stream. Thomas, now holding the left of the army since Crittenden had fallen in rightward of him, thought it a local maneuver, and reached leftward with the division of General Baird to break it up. Baird struck through the brigade opposed to him and behind it encountered the big Confederate right wing, massed to attack. He pulled back to a refused flank, began to dig in and notified Thomas of what he had found. It was the Virginian's first sure knowledge

Never once do we find him ordering a cavalry charge



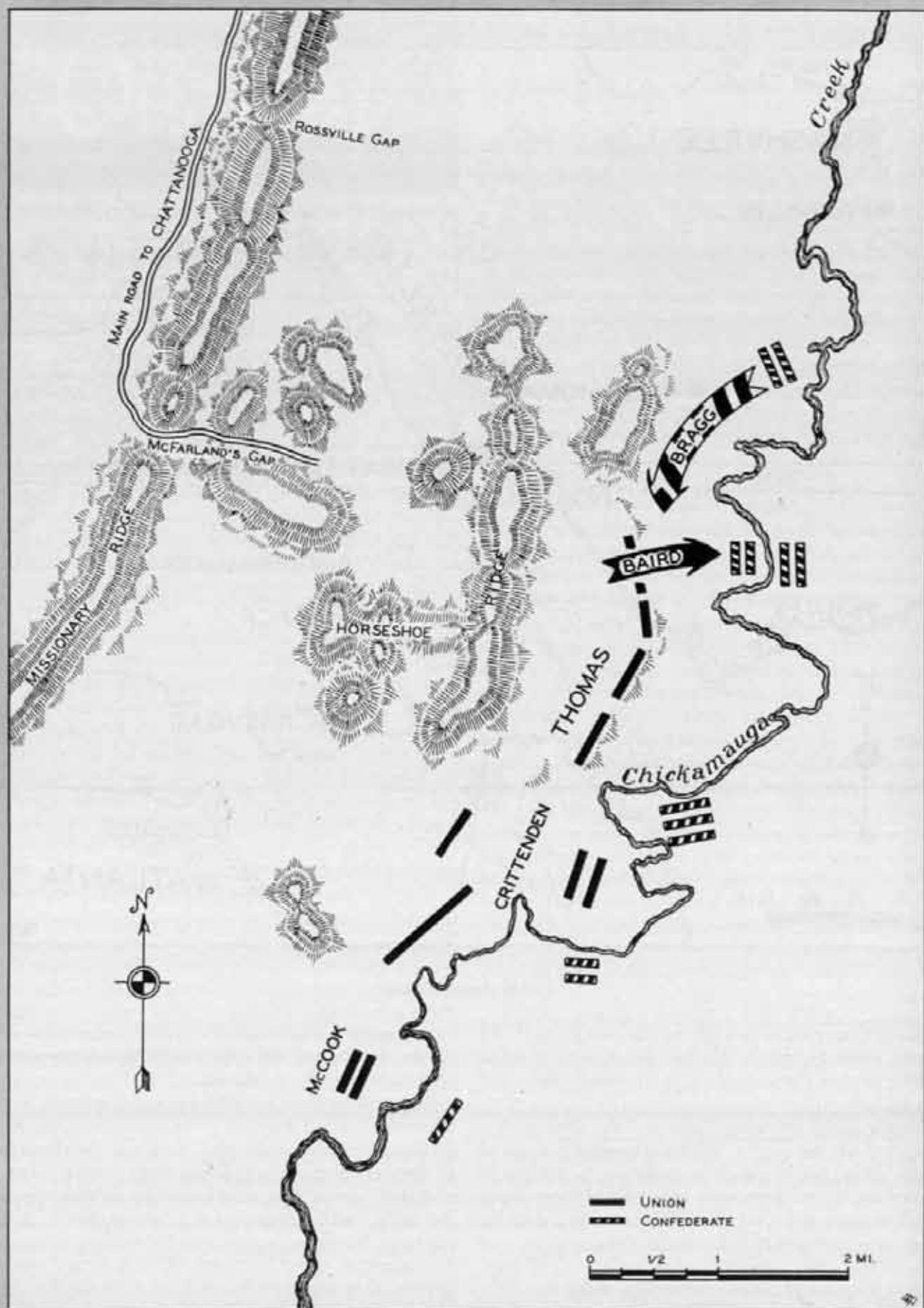
The Western Theatre

of Bragg's movements or plan, but he saw through the scheme instantly, rushed the four divisions he had into position to cover the passes through Missionary Ridge and sent for help.

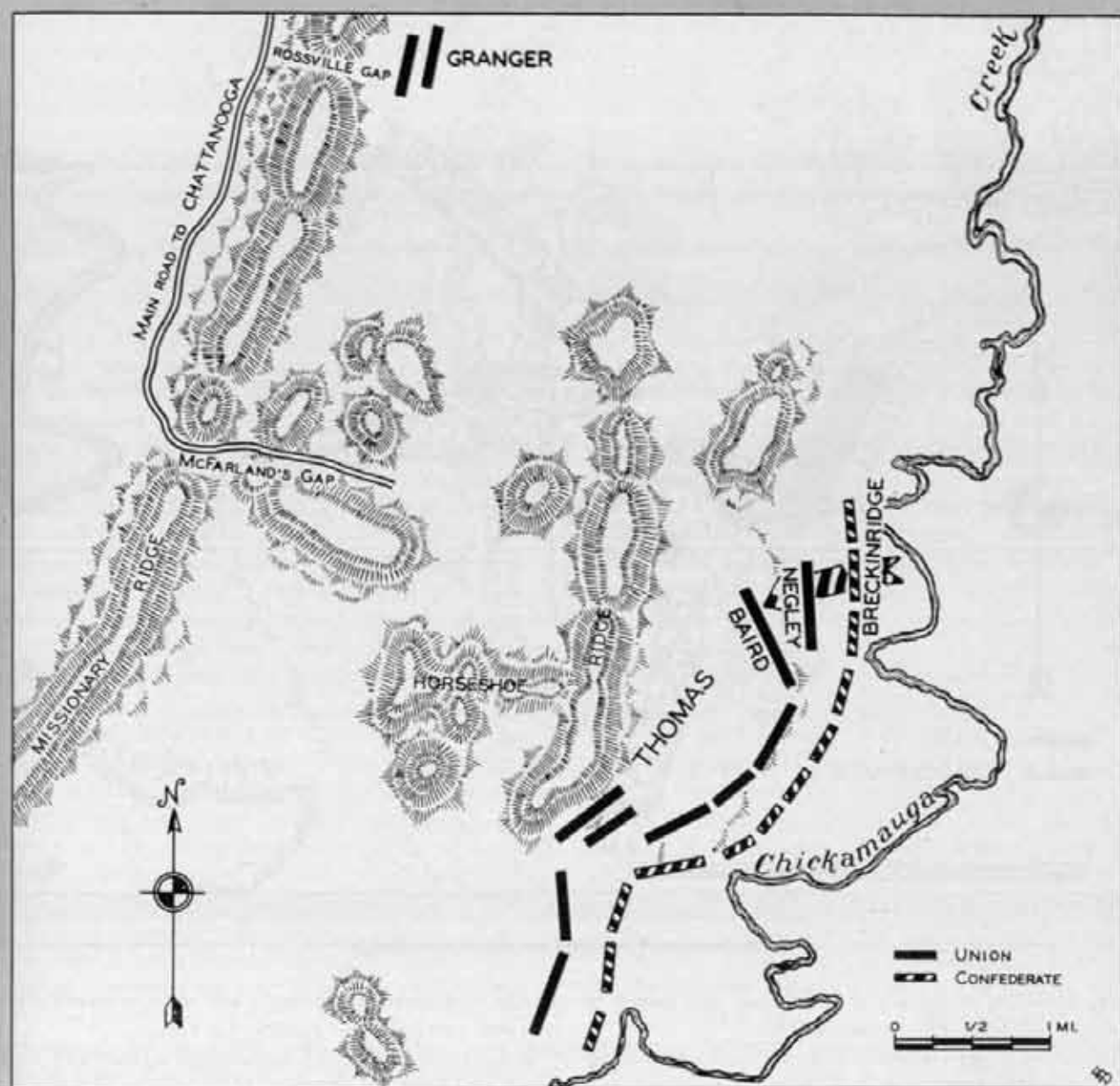
Bragg's punching wing spent a long time getting through the forest tangles, and Baird's stroke had caused further delay, but he sought to make up for the loss of momentum by an increase of mass, pulled more troops from the center and went in on Thomas. For a time the rebels carried everything before them, right up to the road through the main pass, McFarland's Gap. "Old Pap" showed up among the infantry of the firing line, sure sign he was hard pressed, and got things stabilized just as Sheridan, the hardest hitter in the armies of the Union, arrived with two fresh divisions. Thomas put him in in

an immediate counter-attack. The Confederates were caught unorganized and carried right back to the stream, with many men lost as prisoners.

Bragg tried a blow at the Union right upstream in the afternoon, but had drawn so many troops from that wing for his movements on the other flank that the thrust had no force or result; then took one more crack at Thomas after dark, also in vain. The armies lay on their rifles for the night, with prospects for a heavier battle in the morning. Rosecrans, a great man for working things out in committee, called a council of war. There was no question of retreat as there had been at Stones River and Thomas frankly went to sleep listening to the argument over points of detail. Every time they nudged him to wakefulness he repeated, "I think the left wing should be



Chickamauga: Morning of First Day



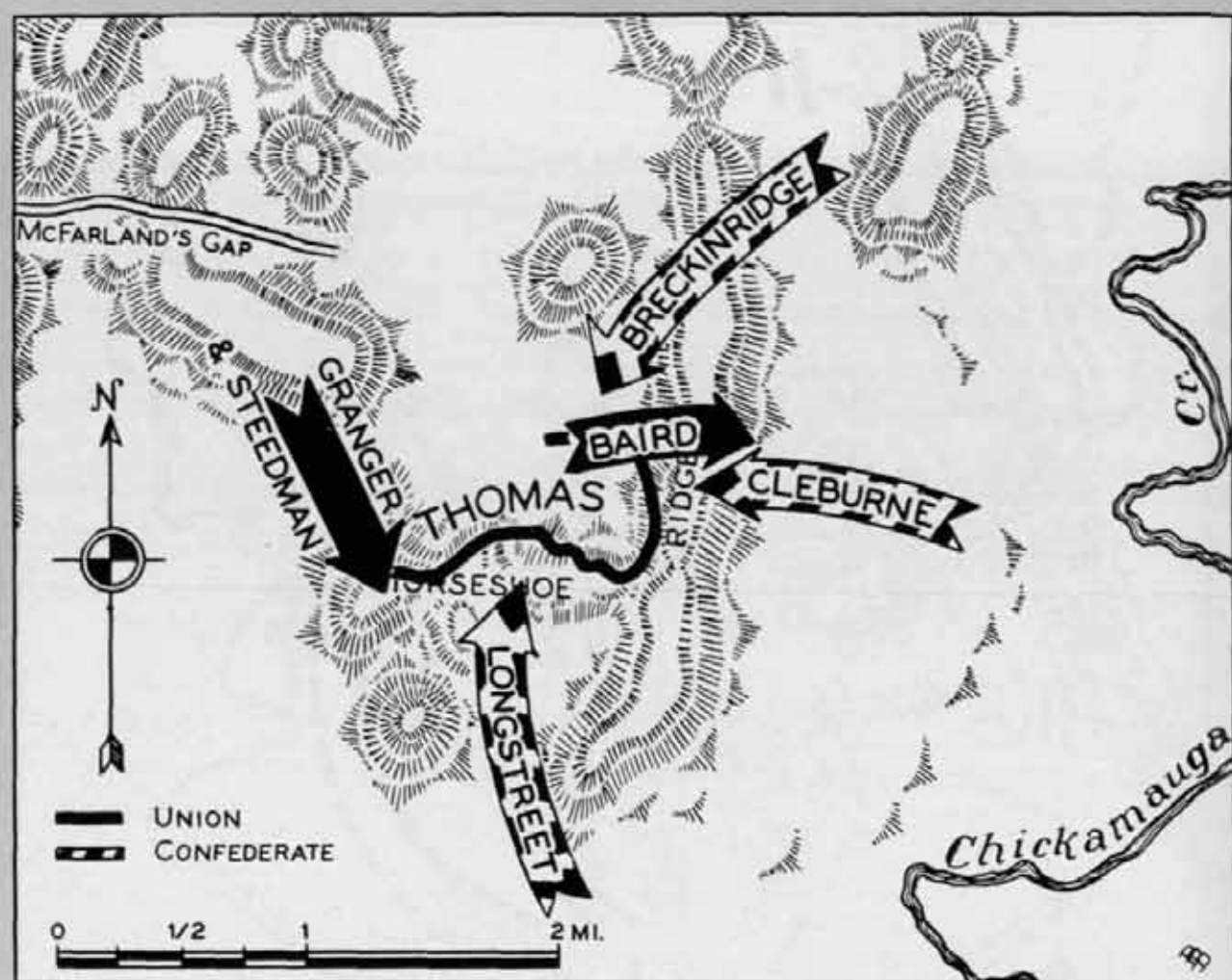
Chickamauga: Positions night of first day, and Breckinridge's attack on the second day

strengthened" with the iteration of a parrot which has only one phrase and then dozed off again.

Nobody could suggest a better idea than strengthening the left and waiting to see what the rebels would do. Rosecrans finally ordered Negley's division of McCook to report to Thomas and sent his small reserve corps under Granger to hold Rossville Gap, the pass lower down the valley beyond Thomas' left. It was fortunate the disposition was made thus; Bragg had worked a slide rightward during the night. Still intent on carrying through his original plan, he had ordered an attack to encircle and crush Thomas' left wing, each division down his line falling on as the one to the right of it became engaged.

Breckinridge on the extreme Confederate right started at dawn. He had expected to outflank Baird, but found Negley in front of the latter and parallel to his own lines.

The morning woke under fog and the rebels were able to deliver a close-range massed assault that was altogether too much for Negley, who broke before 8:00 A.M. Baird, next in line, should by the rules, have been flanked and routed, but for the foresight of Thomas. On the previous evening, before the council and before he had received Negley's division, Thomas himself had inspected this part of the line. Fearing a flank attack, he had sharply refused Baird's division, ordered trenches dug, a log breastwork set up and emplaced all the artillery he could gather to hold the point. Breckinridge, his lines disordered by the costly victory over Negley, hit this Gibraltar and got a repulse so stunning he was through till late afternoon. Bragg was present; instead of trying to press on here, he switched his right-wing reserve farther upstream and tried to thrust between Thomas' wing and the Union



Chickamauga: The stand on Horseshoe Ridge

center, attacking so fiercely that Thomas was forced to call again and again for reinforcements.

Meanwhile Bragg's divisions had gone into action along center and left; Longstreet had found the famous gap left by the muddled order of Major Bond and General Wood's cranky obtuseness; and the whole Union center and right, taken in flank, had been broken, dissolved and flung off at wild tangents out of the battle. Rosecrans' headquarters went, and with it the parked artillery; the commanding general was carried from the field in the mass of flying men, never halting till on the outskirts of Chattanooga. There is a famous story told by Garfield, the only staff officer who remained to Rosecrans as he drew rein on the road with men pouring past through the dark.

"Do you think there is any chance?" asked Garfield—it was unnecessary to say chance of what. Both dismounted and placed their ears to the ground. They caught the low distant grumble of cannon that told of a fight still in progress somewhere.

"Ride to the front," said Rosecrans, speaking like a man who had been punched in the solar plexus. "Find General Thomas, if he is still alive. Tell him to cover the

retreat with Granger's men. I will wire to have Cincinnati and Louisville put in order for a siege."

It had come to that at Chattanooga, a vision of Cincinnati under siege, all the gains of Vicksburg lost and perhaps the war with them, for to the Union a draw would be as fatal as defeat. The same vision danced before the eyes of the Confederate leaders that afternoon as they stormed into the gap in Rosecrans' line, and sent forward their right wing in one more effort to win the important pass, McFarland's Gap, from Thomas.

That general had dispatched one of his calls for reinforcements just before the rout of the center; an aide told him that men were coming from that direction, but he thought them Confederates. Thomas rode off to confirm this impossible news; did so, and ignorant of everything but that some frightful disaster must have occurred to bring the rebels onto his right rear, instantly withdrew to the horseshoe-shaped ridge behind his morning position, still covering the Gap. Here the artillery received his especial care. He posted it high on the spurs of the ridges, not too far forward; and from there it had to bear the brunt of the first disorderly rush of the rebels who had broken the Union center.

It was now afternoon. In a renewed effort to get around Thomas' flank Bragg threw Breckinridge's reorganized troops forward, far out on the slope of Missionary Ridge. Too far out, as it happened; Breckinridge lost liaison with the next Confederate command, Cleburne's, did not after all get around Thomas' line-tip (which had been withdrawn) and took a bloody repulse in what turned into a frontal assault against artillery. Thomas noted the gap, flung forward Baird in a counterstroke against Cleburne, took him in the flank and completely broke up his division. The battle was all over here by 4:00 P.M. and Bragg was beaten.

But what happened on the rebel right no longer mattered; the south face of Horseshoe Ridge, where Longstreet led the attack, was now the center of events. Here was the hardest fighting of the day, of the battle, and many think of the whole Civil War; here the 19th Regulars lost every officer down to a lieutenant; here the rebels gained a commanding ridge perpendicular to the Horseshoe, and were expelled only by a desperate bayonet charge in which General Steedman bore forward the colors of a Michigan regiment. Longstreet's assaults were beaten back; he sent to Bragg for reinforcements and received the reply that on the Confederate right were none but troops so mauled "that they would be of no service to you."

Yet it was still far from dark of that summer afternoon; Longstreet had three brigades in reserve and the best chance of destroying a Union army since the second day of Gettysburg. He need hold out nothing for a final defense, and he was the best battle captain of the Confederacy. He reorganized for a final assault, put his fresh reserve in the lead, mixed brigades following, and came on through the twilight in a rush.

Just then General Brannan rode up to Thomas with the appalling news that the ammunition train had been carried off in the rout, and that there were only about two or three rounds per man left. The rebel rifles were now flashing along the lower slope in the preliminaries of another attack. "What shall we do?"

Thomas glared down from his six feet. "Do? Fix bayonets and go for them."

There is no greater moment in our military history than that. Thomas went to the front. Longstreet's last charge was hit hard by the artillery, and then met with a cold-metal countercharge, at one point delivered with such energy that a regiment tore through the Confederate line. When charge and countercharge were over the battle was over and the Union army was saved.

II

Bragg followed the Federals up, and there had to be a siege of Chattanooga. On the besiegers' side, this operation was marked by a lack of realism which demonstrated that the essentially doctrinaire quality of Bragg's mind was the reason for his repeated failures. On the Federal side, it showed how little Grant appreciated the true quality of the man who inevitably received the command

of the Army of the Cumberland after the necessary removal of Rosecrans. The Confederate leader had won a textbook victory; he failed utterly to realize that it had been Pyrrhic. "After Chickamauga," said D. H. Hill later, "the élan of the Southern soldier was never seen again." Having closed off the bread-lines to Chattanooga Bragg sat down before the town, convinced that nothing could happen but the textbook surrender of the army within.

Almost everything else happened, beginning with the appointment of Thomas, and Grant's wire to him not to give up the town. When the soldiers heard who their new general was they broke ranks on parade and cheered wildly, crowding around the beloved leader, who rode through the press with his hat pulled down to his whiskers to hide the fact that he was blushing. "We will hold the town till we starve," Thomas wired back to Grant and characteristically, launched the maneuver that kept it from starving. This operation was the capture of the ox-bow loops of the Tennessee by silent surprise and the establishment of the "cracker-line" across them, half road, half ferry. The next happening was the arrival of two corps from the Army of the Potomac with Fighting Joe Hooker to lead them, then came a corps from the Army of the Tennessee, with Grant and Sherman—the whole avalanche fell on Braxton Bragg in the battles of Lookout Mountain and Missionary Ridge, knocking his army out of the campaign and himself out of its command.

With these events the war was over for the year; the curtain of the spring lifted to find Thomas playing the old part on a new stage. Nominally he is a star with a company of his own, commander of the Army of the Cumberland; actually that army forms but one of the three great wings of Sherman's 90,000 who are striking for Atlanta. That campaign was Sherman, all Sherman. For the first time Thomas was under a leader who thought things out for himself, yet the first contacts of the two men are of more than passing interest for out of them apparently grew that legend of Thomas' excessive slowness which was to dog him to the last.

Sherman opened his campaign by stripping his army for its work—one wagon allotted to a regiment, no tents even for officers, no baggage and no kitchenware. He would sit by the roadside, fishing in a tomato-can for lumps of meat with a pocket-knife and bandy arguments with privates who trotted past making derisive remarks. He had not seen Thomas for years, or since both men's habits had become fixed in the mould of time; he found him prematurely aged, portly, deliberate of speech, unable to function well without those creature-comforts "Uncle Billy" despised—the big tent, always scrubbed clean, the negro striker, a good cook and silver service.

"Thomas' circus" Sherman called this caravan, and may, naturally enough, have deduced military conduct from personal habit. We do know that during the Resaca maneuver, the first of the campaign, Thomas' force was held in position at the cost of some confusion,

while McPherson's army made a sweep across his front. McPherson's wing proved both too light and too slow of movement to achieve the designed result of breaking Confederate Johnston. The subsequent Cassville operation, in which Thomas saved a defeat by remorselessly driving before him the strong containing force Johnston had left behind, seems to have opened Sherman's eyes to the measure of his chief subordinate. Yet there was little opportunity to test that measure to the full until the Chattahoochee River had been passed and the Atlanta campaign was in its final stage.

That stage was announced by Sherman's crossing Peachtree Creek, which flows due west, north of Atlanta. Thomas had the right wing, with three corps; his mission was to push south and ahead, pinning the Confederates to the line of defense north of the city, while Schofield turned in from the northwest with one corps and McPherson with three made a wide sweep toward the city from the east.

Hood, who had replaced Johnston, divined Sherman's plan, though not the length and strength of McPherson's movement. He knew the ground by inspection—a series of high, finger-shaped hills reaching toward the Peachtree, scarred with difficult ravines. The stream itself flowed between quagmire banks and was crossed by few bridges. Lateral communication between the Union column heads, working along the roads that followed the backs of these fingers, was almost impossible. Hood planned to throw two-thirds of his army in a wedge between Schofield and Thomas, split the latter off, and throw him back to destruction in the stream.

The day of execution was a sweltering one in July, the 20th, and Hood's plan was aided by the fact that Thomas had been given a bad map, which showed Peachtree Creek shorter than it was, so that the Union right went too far out from its center. Thomas' XIV Corps was so far in this direction as to be out of action; Howard, with the divisions of the IV Corps was making a rearward circuit to connect with Schofield. Only the XX Corps with Hooker's and Newton's divisions of the IV Corps were across the Peachtree and on the finger-hills when the assault came.

The position thus favored the attack, the more so since Newton was echeloned well forward on Thomas' left so the assault struck his left flank and rear. To make matters worse all three divisions of the XX Corps had been forced to cross by the same bridge, and to scramble through the ravines south of that stream to their positions. This had the result that only Geary's division, the one occupying the hill at the bridge-head, had been able to bring its artillery; the others, unable to get their guns through the ravines, had left them north of the Peachtree.

Late in the afternoon while the men were bivouacking the attack came, headed by Hardee, and like all his, both fast and furious. Newton was violently thrown back, and to one experienced officer present it looked as though he were about to be broken. The Confederates stormed into the gaps between Geary and the divisions on either side

of him, but there met check. Geary had his guns; he had also crossed the creek on the previous evening, earliest of all the divisions, and his front was fortified. He easily beat off the frontal effort with rifle-fire; and then turned his artillery into the flanks of the Confederate columns surging past to work round the flanks of the neighboring formations.

Yet the determining feature of the battle was not there; it was back at the creek-side, where Thomas had ridden forward to the sound of the guns. In an instant he perceived the situation as an artillerist's dream—heavy columns in close formation coming forward along deep-rutted valley bottoms, in the face of the artillery of two and a half divisions. Thomas brought the whole mass into action at once, without any support but what the guns could give themselves. Nothing more was needed; the supports of the attack on Newton were blown out from under it. At every point the Confederates were caught in a cross fire of musketry from flank and cannon from ahead, and hurled back under losses frightful for the numbers engaged—over four thousand casualties in less than two hours. Hood would not admit he was beaten—so near to driving Newton out!—and prepared for another try later in the day, but McPherson was crowding him so rapidly on the eastern defenses of the city that he had to give up the idea. It is not likely the second attack would have come off better than the first.

In the later moves around Atlanta Thomas played only the part of a corps commander, except for the occasion when Sherman, desperately anxious to hurry a flanking movement, took the Gothic step of sending the dignified general galloping across country with a message. It was doubtless comic, but it is out of such things that quarrels grow up between old friends and it speaks volumes for the mutual respect that had grown up between the two that Thomas was not offended, nor Sherman amused. Indeed, when Sherman reached the Carolinas he paid one of the finest possible tributes to the man he had begun by doubting. "I wish I had old Tom here!" he cried one day, when some move was not performed with the efficiency he liked. "We always pulled differently, but we pulled well together."

III

Sherman was to pay "Old Pap" a higher tribute yet—the tribute of action, of selecting him to hold back Hood with scraps and patches of an army while the march through Georgia took the flower of the forces. "Thomas will take care of Hood," said Sherman with such conviction that Grant, who had smoked and doubted when the plan of the march to the sea was put to him, gave way; and even Thomas himself asked that he might have some other assignment unless he were the man essential to the task.

He *was* essential; the only man Sherman felt he could trust in such a case. Twenty-two thousand troops of the right veteran sort were all he could have—the IV and XXIII Corps under Schofield, and those of Sherman's

army found unfit for the Georgia march. There were 9,000 unorganized casualties and 5,000 horseless cavalymen in Nashville. On their way to the same place, were a large number of recruits and a corps (XVI) from Missouri under Andy Smith, but that also included many green men and nobody knew when it would arrive. Hood was rolling up through Alabama 45,000 strong, with 10,000 horsemen led by the incomparable Forrest around his flanks.

The problem before Thomas was basically that of a containing action by a covering force to gain time for the organization and equipment of his army at the concentration-point, Nashville. The detail of the movement he left to Schofield with his two corps and some cavalry under Wilson. Schofield was helped by the series of natural barriers given by the west-running rivers south of Nashville, as well as the November weather, which would inevitably drown the roads in mud. The battle of Franklin, which brought Hood up to Nashville already severely hurt (the rebel general admitted 7,500 rank-and-file casualties in that fight, not counting his walking wounded) belongs to Schofield's story, and in it Thomas has no part beyond urging his subordinate to delay the Confederates as long as possible.

Andy Smith, with the 12,000 men of his corps, pulled into Nashville on November 30, one day before Schofield's retreating corps arrived. Thomas had been there for nearly two weeks, whipping the casualties, convalescents, and recruits into an army. But the day all the forces were united there was a telegram on hand from Grant, so vigorously worded as to constitute a peremptory order to attack Hood; Washington feared the Confederates would slip away south or swing past Nashville in another invasion of Kentucky like Bragg's in '62.

Thomas flatly refused to attack under the present conditions, and to the threats that he would be relieved, replied calmly that "I feel conscious that I have done everything in my power to prepare, and that the troops cannot have been gotten ready before this, and if you order me to be relieved I will accept it without a murmur." Inwardly he was far from the imperturbability this indicated. "The Washington authorities treat me like a schoolboy," he told Wilson, "but if they'll let me alone, I'll lick those people yet."

His excuse for not moving was a lack of horses, which Grant found insufficient reason. We can agree as to the insufficiency without seeing in it, as Washington did, a causeless policy of delay. Is it not just possible that the Virginian had a deeper reason for withholding his stroke, one difficult to explain over the wires, or to justify before any army body? Civil War staff work was notoriously bad; Thomas was on the eve of a battle which he wished to render decisive, and he knew how none of his troops except those of Schofield's corps would behave. The hypothesis that before attacking he wished to learn more about the men under his orders is lent color by the fact that he ultimately shuffled his corps into an arrangement

far different from that they were in on December 2d, the day of Grant's order.

In the final plan the provisional divisions of casualties and recruits, under Steedman, were placed on his extreme left; Wood, with the IV Corps was brought into the center. Smith's XVI Corps was placed to the right of Wood, and Schofield was marched around behind the whole army to be the hammer of a wide flank sweep, with Wilson's cavalry riding out beyond Schofield.

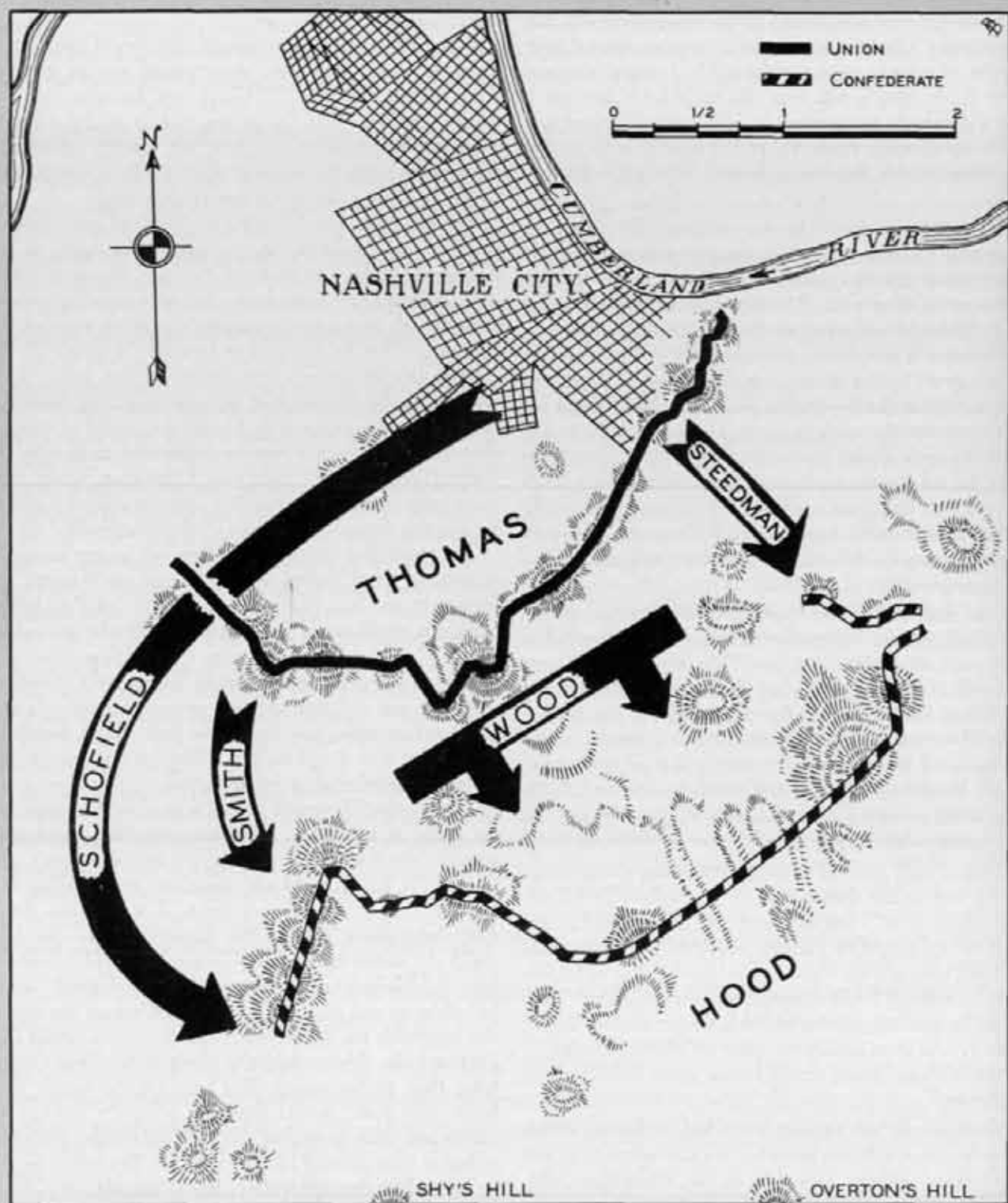
Yet this same series of moves is capable of quite another explanation. Hood lay intrenched on the spurs of the Brentwood Hills, just south of the city, his right, under the command of Cheatham, his best fighting officer, thrown well forward in a cramped angle on some of the summits. Here he expected to beat off the attack by the Federal left which was the obvious Union move, both because of the ground and because Schofield, with the bulk of the Union strength, had been reported as lying in that quarter. Thomas may have planned to destroy the Confederates through their own battle-plan, using their knowledge of where his heaviest concentration was placed by shifting that concentration to the other wing.

The reason for Thomas' plan does not matter except in relation to what history says of the general's mind; the important fact was that a storm of sleet came up before Schofield could begin his swing, frosted the ground in ice, and prevented all movement. Grant lost patience and temper, and on the 13th ordered Logan west to relieve Thomas. On the 16th the new general stepped out of a train in Louisville, just in time to find that it would be no use for him to go farther. Thomas had struck and there was no rebel army left to fight.

The weather for which he had waited so long broke on the night of the 14th. Early next morning Steedman's provisionals, with all the militia and quartermaster's men who could be gathered up, came out under a fog and made a noise on Cheatham's front. The diversion nailed that commander fast to his intrenchments—for how could the rebels know but this was Schofield, since one man in blue looks much like another in a battle? Wood fell on next and gave the Confederate center enough to do; Smith hit the angle where Hood's center turned into a refused left. Meanwhile, the whole of Schofield's corps, more than 10,000 strong, had been on the march since before 5:00 A.M.; it was afternoon before he finished his circuit and came in against the scattered cavalry posts and redoubts that covered Hood's left rear, but when he did he burst right through without loss to himself.

To check this menacing rush which promised to wipe out his flank, Hood pulled men from the nearest spot, the left-center. Smith had not ceased his pressure; now he broke through, stormed the fortified hill-crests, captured half the rebel artillery, broke down their whole wing and began to roll along the line.

It was dark by this time. The Confederates could find no better resource than a rapid retreat some two miles south to the next range of hills, where they took a position with both flanks refused. Most of the night they had to spend



The Battle of Nashville

digging trenches, and by dawn they were in bad physical shape. Hood got his right solidly posted on a high and round summit, Overton's Hill, with a good line, but the anchor of the left wing was a place called Shy's Hill. It was the only eminence high enough to afford a hold, but he had to fight for it half the night against some of Wilson's troopers. The result was that the fortifications were

neither well built nor along a good line.

With the first light of day a couple of Schofield's brigade commanders spotted the fact that the rebel trenches followed a right angle, and brought up artillery to enfilade them along both sides of the angle. Thomas had planned during the night to combine another sweep by Wilson's cavalry around the rebel left with pressure by

Wood and Steedman against Overton's Hill. Wilson was off before dawn; the general himself was with Wood watching the progress of the movement on the Union left.

By noon it was clear that though Wood was making progress, further gain would be at such cost that another spot might be better for attack. Thomas rode west along his line, arriving opposite Shy's Hill just in time to see some Confederate artillery in action with much evidence of hurried and perturbed movements. The rebels had reason for their excitement; the artillery fire that had drenched the angle since morning was hard to bear and Wilson's horsemen were now clean around their rear. Hood had been forced to draw first a brigade, then a division from his extreme left to hold off the cavalry, who were advancing persistently as dismounted skirmishers. This made extension of the rest of the line necessary; it became thin at the angle just about the time Thomas arrived.

The Union general had a battery of heavy rifled guns in reserve; he ordered them up, outranged the Confederate cannon on Shy's Hill and silenced them. Almost at the same moment Wilson came galloping up on a tired horse. Tense with hurry, he cried, "For God's sake, order an attack. My men are in Hood's rear."

With maddening deliberation Thomas lifted his glasses. He could see right across the flank of Shy's Hill, how there were smoke puffs among the thickets in the rebel rear. "You may attack, general," he said gently to Schofield. Wilson turned rein, but before he had ridden five hundred yards, half of Schofield's corps swept forward in one long cheering line. There was a single disorganized volley and the Confederate army collapsed like a kicked melon.

No one is quite sure of what happened during the remainder of that afternoon. Hood, in prolonging his lines to parallel his adversary, had put in his last reserve; there was nothing left to cover a retreat or to stop the sweep along the line into which Smith, Wood and Steedman swung in tune with Schofield. The Confederate brigades caught between Schofield and Wilson were captured entire; all the artillery went, all the equipage, and when night came down Thomas hurled Wood and Wilson into the best pursuit in American history. It kept on for a week; and when Hood finally rallied the fragments of what had been an army behind the Tennessee River, he had less than 9,000 men out of the 55,000 who had begun the campaign, no guns, no ammunition, and no train.

IV

So George H. Thomas rides out of history in the night, to meet young Wilson on the muddy dark road after the battle and to shout at him, "Dang it to hell, Wilson, didn't I tell you we'd lick them?" He went to California after the war and died of apoplexy at the Presidio in 1870, while writing a reply to some criticism of his career. The date was too early for his own fame, for he was able to take no part in the great printed military debates of the '80's, which did so much to establish for the various commanders the places they were to occupy in

the story of the war. Grant's, naturally, was the controlling voice in most of those debates; it then follows that the officers who were partisans of his view repeated and elaborated upon the theme of Thomas' slowness until it became a legend.

And at a casual glance there seems something incompetent in the strategy which flung Schofield forward to hold up thrice his numbers under Hood, while his commanding general remained behind at Nashville, totting up reports of strength. Yet the very critics who lodge this charge allow that Nashville was a victory of truly Napoleonic proportions.

There is something inconsistent here; one cannot have Thomas stupid on Monday and a genius on Tuesday. But the inconsistency fades when the Nashville campaign is examined as a whole, and vanishes when Thomas' career is taken in one piece. For the farther such an examination proceeds, the more one is impressed by the fact that the Nashville campaign is nothing but a large-scale repetition of Mill Spring, which was an essentially defensive battle, culminating in a crushing counterstroke. In the one as in the other a Union advance force was thrust forward to be driven in; caused the rebels some loss, slowed their advance, and allowed time for Thomas' striking force to swing round the rear of his whole army and destroy the Confederates by smashing their left flank and rear while a containing attack held their right in place.

It is the same in every battle in which Thomas took part. His steadiness at Stones River and Chickamauga has been much praised; but Rosecrans showed as much resolution as he, and mere staying power would not have turned the tide in either battle. An attack that has merely been brought to a halt can always rally and come on again, or at the worst, the attackers will escape without being hurt, as the Confederates demonstrated at Chancellorsville and Gettysburg. But when an attack against Thomas began losing its sting, he never once failed to deliver his punch into the disorganized mass. Chickamauga is the most brilliant instance. Thomas' stand there was magnificent; but what really saved the Union army was the fact that in the afternoon, "Old Pap" discovered the hole between Breckinridge and Cleburne, and as soon as the rebel charges let up, threw Baird into the gap. That move broke Bragg's right wing, and used up his reserves, so that Longstreet could get no reinforcements for the final and decisive movement in the evening. And even in that last movement Thomas was there with the infallible counter—"Fix bayonets and go for them." Peachtree Creek is, in fact, the only battle where Thomas made no attack; and in that struggle Sherman had already arranged for the riposte.

Mention of Peachtree Creek brings up another feature of Thomas' mind, striking in its modernism—his appreciation of fire-power in an age when nearly all generals were still thinking in terms of the Napoleonic shock, and his constant effort to render fire-power more flexible. For if it was a happy accident that gave him personal command of the corps artillery at Peachtree Creek, he seems

deliberately to have repeated that accident at Nashville, placing the biggest and best guns, the rifled battery, under his personal orders. Never once do we find him ordering a cavalry charge; repeatedly—at Mill Spring, Chickamauga, Nashville—he employs cavalry as a means of carrying rifles rapidly to a desired position. Similarly, throughout his career, he never once sends infantry against artillery, or even against a solid line of infantry. His attacks are invariably delivered at moments when the enemy's fire-power has been disorganized by advance and when they have overreached the support of their own artillery.

But if counter-attacks are the only kind worth trying in a world of mechanical weapons, is not war reduced to the paralysis of M. Bloch, with both parties waiting interminably? It is doubtful whether the question occurred to Thomas; but he answered it in advance at Nashville, which if strategically a counterstroke, was tactically an offensive. He answered it with deception, as Sherman and Jackson had answered it with mobility and Grant with surprise. Each of these methods partakes of the others, but there is a basic difference, the difference between the technique of the jiu-jitsu expert who draws his opponent off balance before the blow and that of the boxer who hits so hard and quick that the parry cannot keep pace.

The thing Grant failed to realize about Thomas was the same thing the uninitiate fail to understand in jiu-jitsu—the force of its compulsions, which are invisible, psychological, working on the mind and morale of the opponent. There was no visible military reason why Hood could not slip away south from Thomas at Nashville; and the Confederate general has left record of having just begun to

consider such a step when Thomas hit him. There was no visible military reason why Hood could not have reinforced or extended his left wing on December 15, 1864; he had Cheatham's corps, which fired hardly a gun that day. Thomas was merely certain that Hood would do neither the one nor the other; he had fought against this Texan before, knew that he always accepted retreat with reluctance and as a last resort. More than this: he encouraged the Confederate's delusion of strength by remaining almost excessively quiet in Nashville during the two weeks of preparation, just as he encouraged Hood to expect an attack on his right by posting in that quarter Schofield with the *stosstruppen* of the Union army. Information of that arrangement would be certain to reach Hood; the more essential information that it was a temporary disposition remained locked in Thomas' mind till the day of the battle.

Seen by this light, psychology becomes the master-key of the military art, for the choice of the proper moment for counter-attack is also a question in psychology. But the success of Thomas in everything he undertook cannot be explained by any formula, even a psychological one; for the deception practiced on Hood at Nashville through design was no more than a repeat of the deception practiced on Zollicoffer at Mill Spring, largely by accident; a happy improvisation on a single instrument caught up and repeated titanically through the full orchestra of war. And the genius of Thomas is, in the long run, the same as that of Frederick the Great; the genius for reproducing on the largest scale whatever has turned out well on the small.



IN ONE RESPECT, *I may claim superiority over Alexander, over Scipio, over Caesar. They won great battles, it is true. I have lost four great battles, yet I show the enemy a more formidable front than ever.*—ADMIRAL COLIGNI.

YUGOSLAV ARMY

By Roger Shaw

"The Bosnians were our best supporters in the old Austro-Hungarian army," remarked a former German staff officer to the writer. "It was those Mohammedan devils that broke the Italian front at Caporetto in '17."

We mused for a while in a Mannheim twilight not far from the Rhine. Then he continued. "The Serbs were the toughest fighters we met in the whole war. Those plucky peasants used to prefer three battles a day to three meals."

Today the Yugoslav army unites Bosnians, Serbs, Croats, Dalmatians, Slovenes, Montenegrins, and Macedonians—former opponents, but now co-citizens in the kingdom of the South Slavs—lords of the Adriatic Sea. They are by far the strongest military element in the triple alliance called the Little Entente, which consists of Yugoslavia, Roumania, and Czechoslovakia. Said another commentator: "Roumania supplies oil, Czechoslovakia, munitions; but Yugoslavia produces *men*."

In the World War the Serbian army—nucleus of the present day Yugoslav outfit—suffered 330,000 battle casualties. The Serbian population in those days amounted to perhaps 5 million or less. At the end of the war, the Serbs still actively in the field totalled 60,000; a ratio of 2 men *up* to 11 men *down*. Only Paraguay can go the Serbs one better; in the 1864-70 war her population was reduced from 1,300,000 to 200,000.

From the 60,000 survivors of 1918—six infantry divisions, a cavalry division, 289 guns—has arisen the 150,000 of 1918, plus 1,500,000 trained reservists. This is close to 12 per cent of the total population of Yugoslavia, a nation made up of peasants used to arms. Service with the colors is obligatory for all citizens between 21 and 40, and subsequently with the reserve to the ripe old age of 50. Active service is for 18 months.

There are five army areas. Each of these is subdivided into three or four divisional areas. The frontiers to be guarded are of two classes; major and minor. Italy and Hungary must be watched closely. With these Yugoslavia has long been at feud, although relations with Italy have not vastly improved. These are the major "fronts." To north and south, Austria and Greece, are harmless. Roumania is an ally. Albania is an Italian satellite state, while Bulgaria—erstwhile rival of oldtime Serbia—is ineffective, although none too friendly. Such are the minor "fronts."

Bulgaria, South Slavic and Orthodox in creed, is to Yugoslavia what Scotland once was to England. A Yugo-Bulgar territorial union is far from impossible; it is indeed logical and favored by most Yugoslavs and not a few Bulgars. Such an amalgamation would jump the Yugoslav population from 14 to 20 millions, and would stretch Yugoslavia from Italy and the Adriatic to Turkey and the Black Sea.

They used to say in Europe that Mussolini feared 14 million Yugoslav "bandits" more than 40 million "Na-

polectic" Frenchmen. Be this as it may, Italians have not forgotten the fez-headed Bosnians at Caporetto's bridge-head nor the prowess of Dalmatian seamen in the old Austro-Hungarian navy. Yugoslavia has been a thorn in Italy's side since the Versailles treaty signing, which accounts for the joy with which a 10-year peace pact between Italy and Yugoslavia was greeted by Italians.

As to the Hungarians, they used to control Croatia before the war, along with other Yugoslav territory. Good fighters themselves, they have a healthy respect for the Yugoslavs, although this respect hardly precludes trouble such as has occurred in the not too distant past. It was a Hungarian that said "Yugoslavia produces *men*."

The air force, equipped with French and German machines, consists of ten airplane squadrons, a balloon company, and a series of training schools partly under French auspices. Aviation in Yugoslavia is largely a post-war development, for the heroic little Serbian World War doughboys fought without aerial eyes unless supplied by France and England.

But men, not machines, are still the primary Serbian weapon—Yugoslav *men*, not the Czech munitions with which they are equipped by Pilsen's Skoda gun works. Titles and capitalists are scarce in Yugoslavia, and the natural democracy of the rustic swineherds and sailor is enhanced by rugged simplicity and ignorance of luxury. Croats are excellent light horsemen, as Frederick the Great learned to his cost, but it is the peasant on the nag that still counts. "Artillery support?" laughed an old Serb foot-slogger. "Here it is." He pointed to his worn leather belt, from which protruded two homemade hand grenades. It was 1915. Opposite him and at him there shelled a new battery from Krupps!

Like the French *poilu*, the Yugoslav is not a snappy dresser. Spit, polish, and pipeclay he leaves to the English, Germans, and Papal Guards or such. Olive yellow cloth, loose jacket, loose pants, soft service cap, steel helmets when necessary—his clothes are nothing to write home about, except perhaps for those of the royal guards of young Kinglet Peter, age 14, who swank it a little around the capital city of Belgrade.

Young Peter Karageorge Rex is supreme head of the Yugoslav army. His general staff contains sections dealing with operations, intelligence, education, communications, and historical data. The War Minister commands the army in peacetime—an army which fought Turkey in 1912, Bulgaria in 1913, and Austria-Hungary in 1914-18 inclusive, not to mention the brains of Hindenburg and Ludendorff.

In the World War the Serbian army, driven from its homeland, fought with the Grecian isle of Corfu as a base. Today it occupies a homeland thrice as big as in 1914—the strongest force in that hectic area known as Mitteleuropa. It ranks with the British navy and the Russian air force; all three of them are tops.



OFFICERS' QUARTERS IN CASEMATES



HOSPITAL



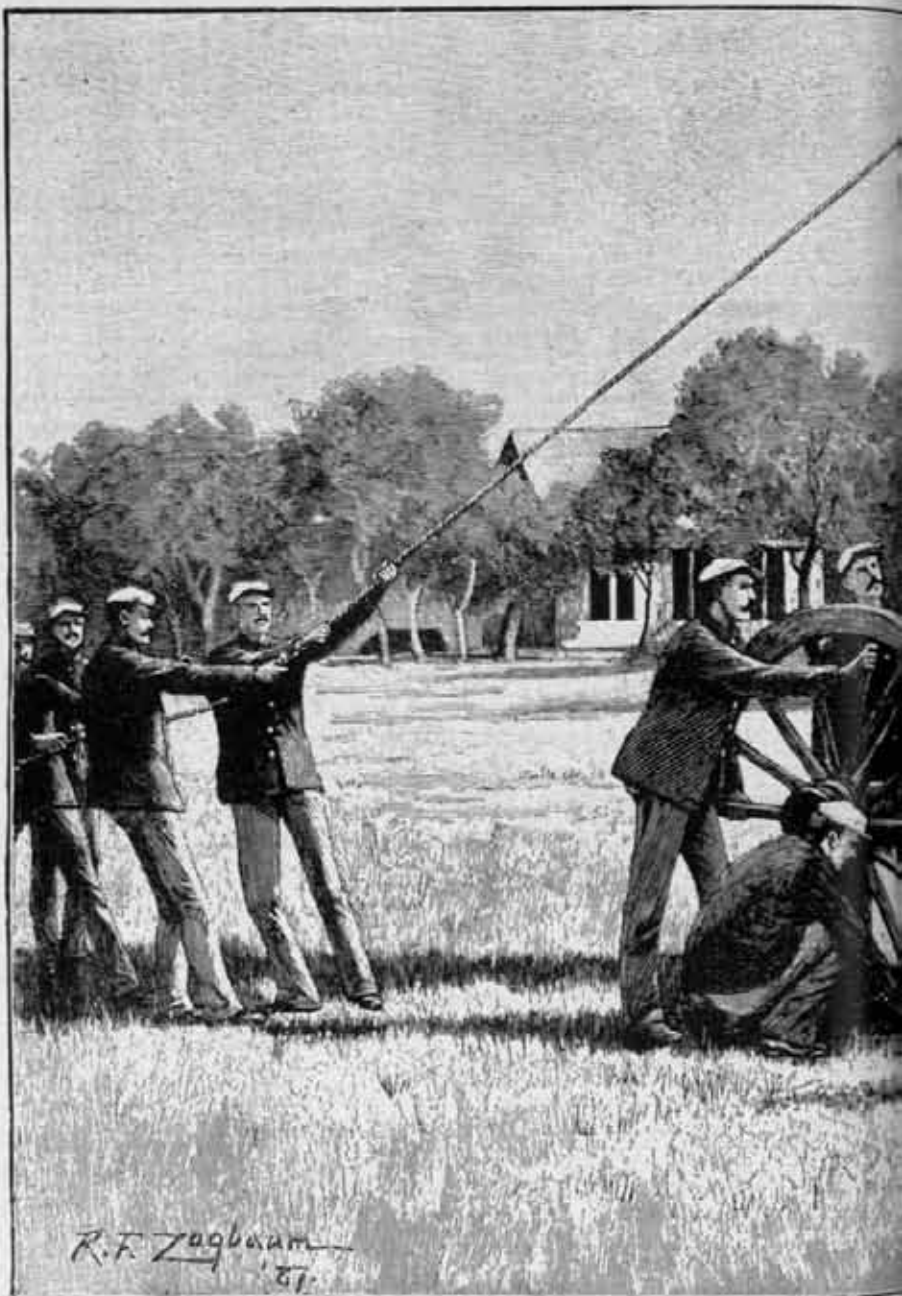
UNITED STATES ARSENAL



ST. JOHNS CHURCH



WATER BATTERY





TILERIES, OFFICERS' QUARTERS



COMMANDING OFFICERS' QUARTERS



GUARD-HOUSE MAIN GUARD



ORDNANCE OFFICERS' QUARTERS



1914-1918

GERMAN



Der Tag



Heimkehr



Below—The goose-step is still a part of the German army. These are flying cadets doing their daily stint of close-order drill.



Right—Student officers study World War battles on small-scale models like this one. The subject here is the battle of Gumbinnen.



Left—At Potsdam Station conscripts await the word to pick up their baggage and march to the barracks that will be home for the next two years.



Above—A platoon of the new German infantry on the march.





A new air force is silhouetted against a German sun.



In the German army, antiaircraft is a part of the air force; these gunners wear the airman's ceremonial dirk.



Below—Camouflage is heavily emphasized in all German training.

Above — "Blut und Eisen" — so spoke an Imperial Chancellor years ago. Today, much of German's iron has gone into tractor-drawn artillery, such as we see here. The photo shows an anti-aircraft gun towed by a combination prime mover and troop carrier.





A motorcycle plays an important part in all European armies. Here a typical unit pauses in a picturesque hamlet during one of Germany's mammoth maneuvers.



These German trucks were developed for versatility and speed. They are capable of high speed on good terrain, and can plow through mud, sand, and even small ponds and shallow streams.



German infantry stages a landing on a hostile shore with the aid of a launch and a string of inflated rubber boats.



These young artillerymen utilize a pause to swap stories with a garrulous farmer.

Inactive Duty Training



The range section at work. The azimuth instrument is B' station. Note plotting board, sensing chart and range percentage corrector.



The firing area. Note towing vessel in foreground.

By Captain D. B. WILSON, C. A. Res.

ALTHOUGH inactive duty training plays an important rôle in our scheme of national defense, there has been a tendency, in the past, to place too much emphasis on its theoretical aspects. As a natural result, practical training has in many instances been relegated to active duty training periods, which come all too infrequently. Theoretical instruction must be supplemented by practical training if our Reserve officers are to maintain a high standard.

This article will highlight some of the methods used by the 607th Coast Artillery (TD) to secure practical training during inactive duty periods. New training ideas and a system of practical artillery firing on an indoor range will be described. Firings on the indoor range, using miniature cannon, have proved to be quite as instructive as the usual outdoor subcaliber firings. An indoor range provides an opportunity to fire either day or night practices. Moreover, it is independent of weather, conflicting target-towing missions, shipping interference, and expensive ammunition requirements.

Early in January, 1936, we initiated a course of practical instruction, requiring nine 2-hour classroom sessions during a 5-month period.

During the first six sessions a series of "blackboard firings" occupied the students' time. The equipment consisted of a rolling blackboard showing a cross-section chart on one side and a sensing chart on the other, a dispersion slide rule, two dice of different colors, a time-interval bell, and stop watches. This equipment was ample for the solution of various adjustment problems in which spotting was by measured deviations and sensing. The stu-

dents' interval level was high and the suspense compared favorably with that present during real firings. Under such conditions it was found easy to drive home the principles and the technical details of the subject. The firing of various types of armament were simulated by assuming time intervals and firing intervals specified in War Department Training Memorandum No. 1. The problems were made simple or difficult by assuming various ranges with their corresponding times of flight. The classroom training in adjustment of fire included an examination, followed by a review and general discussion to clear up doubtful points. The next step in the instruction in "Adjustment of Fire" was the firing of a battery under simulated service (firing) conditions. Each officer fired and adjusted a problem.

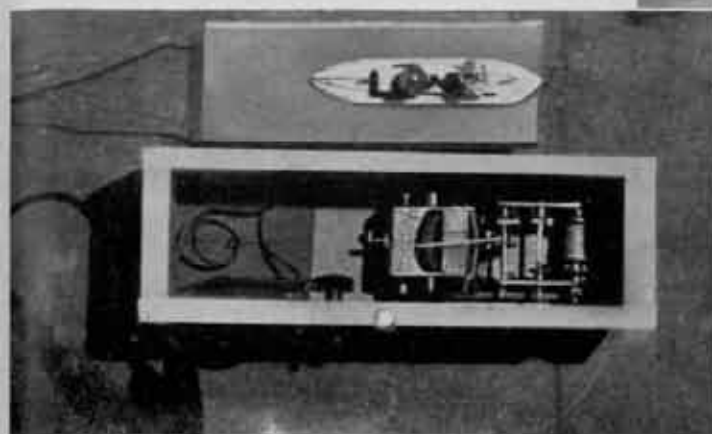
For the remaining three sessions the "artillery trainer battery" was used in firing practical problems. The trainer battery consists of four guns, each with its own traversing and elevating mechanism, mounted on a single base. There is provision for adjustment of the length of the barrel in order to provide muzzle-velocity adjustments. The shape of the trajectory can be varied by using different sizes of spacers. Elevations are set by the gunner's quadrant. Pointing is accomplished by means of Model 1917 panoramic sight. The ammunition consists of 1-inch specially-machined steel balls and .22-caliber cartridges.

Because the 1-inch steel ball when in flight develops considerable kinetic energy, it is necessary to provide the target with a heavy base so that it will not be overturned or knocked off the range. This was done by securely fastening the targets to heavy brass or steel sleds

For Reserve Regiments



The general layout of the battery.



The towing machinery and a target. The first "machinery" consisted of a fishing reel.

with hollow tubular runners that gripped the sand. A towing motor with considerable torque was required to haul the target base. A rheostat type of speed control made it possible to obtain high, low, and intermediate speeds.

The firing area used was a rectangular "sea" of sand approximately 7 yards wide and 9 yards deep. It provided a minimum range of 16 yards, a maximum of 25 yards, and an angular width of about 30 degrees. These conditions allowed fire at a simulated range of 10,000 yards.

Prior to firing it was found necessary to devote a good deal of time to secure a suitable trajectory and to calibrate the guns for range. The trajectory finally selected was as flat as could be obtained without causing ricochets. The resultant angle of fall was small and similar to that to be expected when firing a high-velocity gun. The range-elevation relation proved to be a straight-line function for the ranges involved. A combination range-elevation and range percentage corrector board was constructed.

No range finder was used; instead an initial range several probable errors over or short of the target was assumed. The firing officer, was required to bring the center of impact on the target in the shortest possible time using the fire adjustment board and the range percentage corrector. A brief critique was held after each problem.

As Case II was the firing method, gun pointers always

had the target under observation. Spotting reports came in from both flank and axial observers and the reports were given as sensings or in terms of magnitudes, according to the requirements of the particular problem.

The experience obtained in "Adjustment of Fire" training compared favorably with that usually derived from regulation target practice.

To further illustrate inactive duty training possibilities let us examine the activities of the regiment during the 1936-1937 season. As in the preceding year, instead of trying to cover too large a field, the training program was held down to two subjects: "Target Practice Analysis" and "Practical Artillery Firings." Seven sessions were allotted to target practice analysis and eight to firings.

These subjects were thoroughly covered. In target practice analysis a particular firing was selected and every member of the class worked out the detailed computations, filled out every form, completed the graphical analysis and calculated the score by both the Regular Army and National Guard formulae. An exhaustive study of every item and an actual replot was made. Camera records were gone over. The methods normally used by artillery engineers to calibrate the camera records and evaluate the results were studied and discussed.

Suitable fire-control apparatus was developed for the

When officers work out their own problems they acquire confidence in their ability to handle a battery in the field

practical artillery firings. These firings were also carried on with the artillery trainer battery. As both Case II and Case III firings were to be used, range-finding and plotting equipment were required. The first range finder used was obtained by dismounting one of the guns, setting it high above the floor level and using it as a depression position finder after the 600-mil vertical scale on the panoramic sight had been calibrated in terms of range. In the Case II firings, plotting was done by a time-range board.

In the Case III firings the solution of the parallax problem provided excellent instruction. Standard methods were employed in the construction of parallax charts. The terms "Parallax of the Aiming Point," "Parallax for Gun No. 2," and "Gun Difference" took on definite meanings. In order to illustrate the possibilities of fire with emergency equipment, Case III firings used time-range and time-azimuth boards. Azimuths were read by referring the azimuth of the target to the aiming point using 1917 panoramic sights. A conversion slide rule was used to make this feasible. Two guns were used in the firings. The use of emergency equipment of this type is of inestimable value, since it convinces the officer that he can effectively fire at moving targets with improvised equipment.

Our next firings were with standard equipment. A horizontal base system, using two Warner and Swasey azimuth instruments and a Whistler-Hearn plotting board, was set up. A time-interval bell was used and the rate of fire was made as rapid as possible. We found that a rate of fire of one salvo per minute gave adequate time for service of the piece, checking of the elevation settings and safe operation of the battery. Accuracy of fire improved. The dispersion of the guns at short ranges (20 yards) was about $\frac{1}{3}$ yard and about 1-inch in deflection. At 10,000 yards the probable error is about 150 yards.

When the practical artillery firing instruction was over, two sessions were spent on night practices. Actual night firing conditions were simulated and no more light allowed than would normally have been available at night. Small searchlights illuminated the targets. During the second of these night practices, gas was simulated and all officers and men functioned in masks. The masks did not seriously interfere with the functioning of the battery.

When battery officers work out their own problems and fire target practices under simulated service conditions they acquire confidence in their ability to handle a firing battery in the field. But there is more to the picture than that. Such training develops a well-rounded regimental team and a fine spirit of cooperation among the officers. Moreover, officers of such regiments enter upon active duty training prepared to tackle advanced problems. They have already been well grounded in fundamentals, and there is no necessity for elementary instruction.

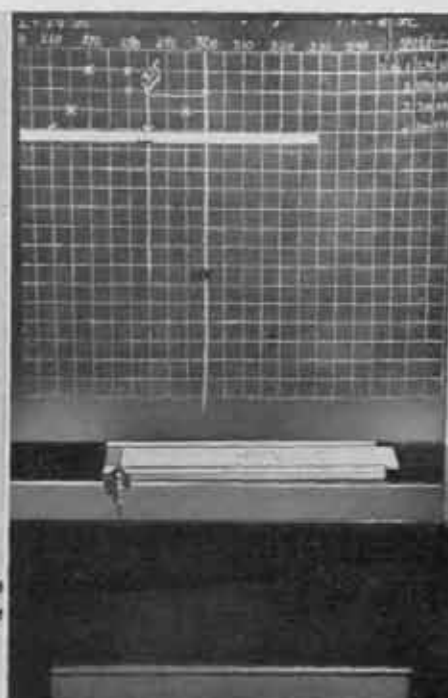
The keynote of all training should be thoroughness. This principle should be applied not only during inactive training periods but also during preparation for active duty and the active duty period itself. Intensive preparation before active duty training pays dividends during the camp period. This preparation should cover infantry instruction, orientation, and special studies in nomenclature of the piece and plotting equipment. It should eliminate any elementary instruction while on active duty.

The necessary preparatory work can be done in two months, using not over twelve classroom sessions. Every officer should be required to instruct several times in various subjects.

Such instruction produces well-informed artillery officers, capable of discharging their wartime duties.



FA Trainer, M2, with spacer, projectiles and propelling charges.



Equipment used for blackboard firing.



The 4-gun battery with 1917 panoramic sights.

SPOTLIGHT ON THE 243d

—BY LIEUTENANT PETER E. DONNELLY, 243d C.A. (HD)—

IN THE COMPETITION for the Coast Artillery Association Trophy for "outstanding performance," the 243d C.A. (HD) Rhode Island National Guard, has established a record which will undoubtedly stand for years to come. In 1932 the regiment won the coveted trophy the first year that it was offered for competition. In 1936 the 243d was again the top-ranking regiment; the first to win the trophy for the second time. The 1937 high honors therefore make this regiment the first to win the trophy three times and the first to gain the award for two successive years. We are reasonably proud of a record which shows recognition as the outstanding Coast Artillery regiment of the National Guard three times in six years.

These are mere statements of fact—part of the record. Now assumptions are sometimes made that it is possible to point out the particular methods by which such success was achieved, and that some other unit will benefit by such a delineation. On both of these scores we have doubt. A survey of the situation shows no particular item of equipment or training that is not available to other Coast Artillery units. The 243d has its proportionate share of gadgets, but the results of their efforts have been carefully scrutinized and only a very few have been used. By far the greatest dividends have been paid by the careful, intelligent use of the approved instruments and methods.

We have asked ourselves many times what part luck has played in our accomplishments. No true artilleryman utterly disregards this important element, and a direct hit, like the one pictured, certainly calls for a generous portion of the favor of Dame Fortune. However, if this fair lady has smiled upon this regiment constantly during the past six years, then surely she is not the fickle female she is reputed to be.

The 243d has had its share of the misfortunes which beset all Coast Artillery units in the course of firing target practices. Fog, haze, and bad weather have kept us "standing by"—and frequently for days at a time. During the last encampment the base of a 12-inch projectile separated from the body at the rotating band while in flight; the shifting of elements in a 16-inch gun sight seriously lowered the scores of three firing batteries; and the interference of shipping just before darkness prevented another unit from continuing its service practice after the four trial shots had been fired and the necessary adjustments made.

The personnel of the 243d is not greatly different from that of any other Coast Artillery regiment. Most of the officers are college graduates and there are a goodly number of university-trained men and high school graduates among the men. However, the regiment is not a social organization; and the officers and men alike can usually find many uses for their pay checks other than donating them to battery and regimental funds. The average age for both officers and men is relatively a little lower than most of our sister regiments, but there exists in almost every battery, that happy blending of the experience of age and the initiative of youth which results in constant efforts for achievement. There is a normal recruiting problem during the armory training season, but vacancies are few as camp draws near. The regiment invariably reports for field training at full strength.

As preparation for the field training period, the armory drill schedule calls for emphasis upon artillery training and, during the advance period, coordination of the range and gun sections. However, this does not mean the absolute exclusion of close order drill, ceremonies, guard duty, riot duty, and the numerous other items of training in which the National Guard unit must be proficient

243d C.A. Wins Trophy

The United States Coast Artillery Association annually awards a trophy to the National Guard regiment rated as highest in general proficiency during the training year. The Chief of Coast Artillery has announced as the winner for 1937 the 243d Coast Artillery, Rhode Island National Guard, with headquarters at Providence.

The following are the first seven regiments in order of standing:

Scores

- | | | |
|----------------|---|-------|
| <i>First</i> | —243d Coast Artillery Regiment (HD), Rhode Island N.G. | 91.49 |
| <i>Second</i> | —198th Coast Artillery Regiment (AA), Delaware N.G. | 89.94 |
| <i>Third</i> | —249th Coast Artillery Regiment (HD), Oregon N.G. | 87.87 |
| <i>Fourth</i> | —244th Coast Artillery Regiment (TD), New York N.G. | 87.61 |
| <i>Fifth</i> | —212th Coast Artillery Regiment (AA), New York N.G. | 78.3 |
| <i>Sixth</i> | —264th Coast Artillery Battalion (HD), Georgia N.G. | 77.96 |
| <i>Seventh</i> | —261st Coast Artillery Battalion (HD), Delaware N.G. | 77.1 |

range and gun sections. However, this does not mean the absolute exclusion of close order drill, ceremonies, guard duty, riot duty, and the numerous other items of training in which the National Guard unit must be proficient

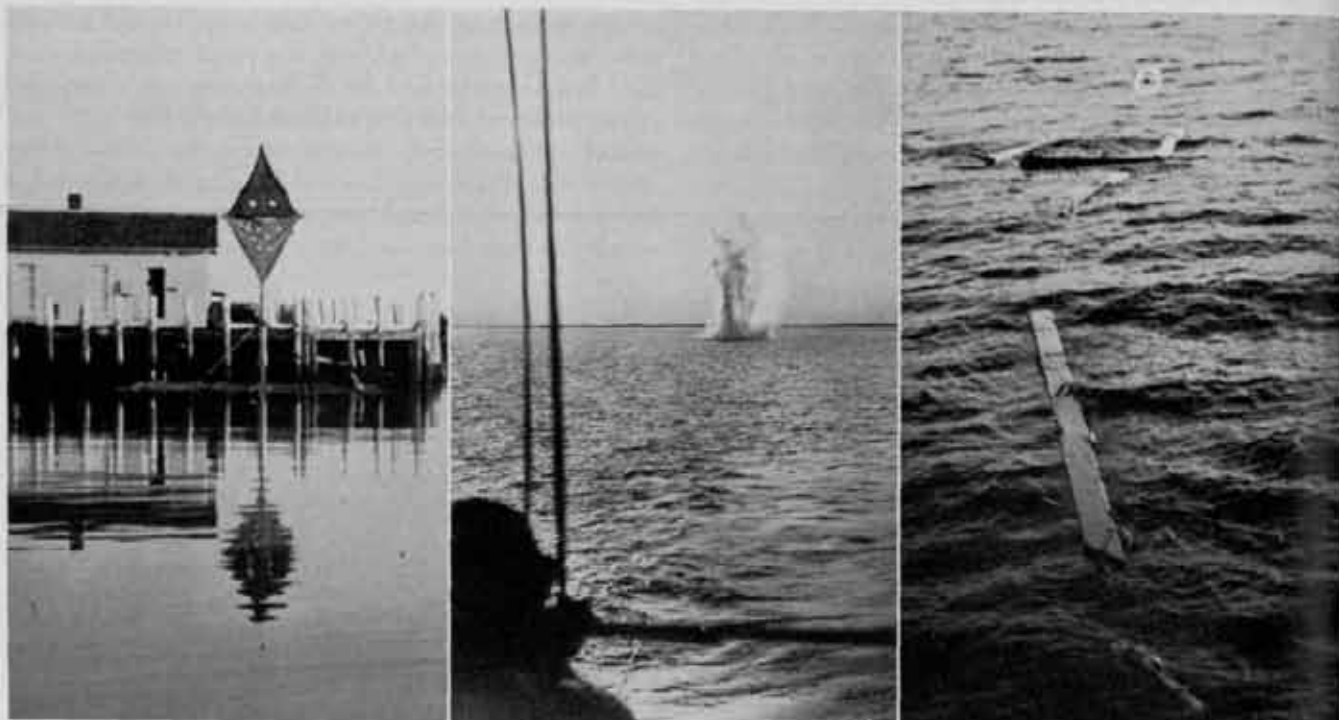
if it is to perform its duty to both state and federal governments.

The 243d has had its share of the suppression of civil disorders in recent years: at the Saylesville strike riots in 1934 and, more recently, the nationally famous "Battle of Narragansett Park." In each instance the high state of training of the regiment enabled it to carry on its functions in such a manner as to elicit praise from both parties to the controversy.

Schools are conducted, outside of the regular drill periods, for officers once a month and for noncommissioned officers twice monthly. One of these schools brings to-

tenant Colonel John F. Datson, who believes that every man should know what to do and how to do it before he gets to camp. At the encampment at Fort H. G. Wright, everything is subordinated to the artillery firing. Efficient staff work insures a minimum of delay and inconvenience to the batteries and promotes successful target practices.

The variety of types of armament fired by the units of the 243d brings problems which are unknown to most Coast Artillery regiments. The list includes 10-inch rifles (DC), 12-inch rifles (DC), 12-inch mortars, AA machine guns, 3-inch AA guns, and searchlights. The AA Battalion, whose training is directed by Major John L.



EXPERT GUNNERS: This unusual set of snapshots was taken during the 1937 encampment of the 243d Coast Artillery, by Staff Sergeant James A. Ward, Jr., of Headquarters Battery. The first photo shows a seacoast target moored to the dock at Fort H. G. Wright before being towed to the firing course. The next picture (taken from the towing tug) shows a hit at 15,300 yards from a 12-inch gun manned by Battery D, 243d Coast Artillery, Captain Raymond Fletcher, commanding. The third picture shows the remains of what was once an excellent target, now reduced to a few broken boards and loose ends of rope.

gether all the noncoms of each battalion and promotes friendly cooperation and an understanding of each other's problems. Correspondence courses are open to officers and enlisted men and all are encouraged to progress as rapidly as possible. The men who complete the 10-Series are eligible to take examinations for commissions in the National Guard of the United States. The officers who do not finish 30 hours of work before June 30th each year are confined to the camp area during the field training period or until the assignment is completed. Required courses have also been selected for supply and mess sergeants, cooks, first sergeants and battery clerks.

One of the important factors contributing to the success of the target practices is the attention to detail in the preparation for firing. This begins well back in the armory drill season under the watchful eye of the executive, Lieu-

Daneker, has become so proficient that last summer it was allowed to conduct a night practice during which a sleeve target was picked up by the searchlights and fired upon by both the machine guns and the 3-inch guns.

The results of target practices for the training year 1937 as rated by Headquarters, First Coast Artillery District are:

Battery	Armament	Battery Commander	Score	Rating
A	12-Inch Mortar	W. F. Parker	103.7	Excellent
B	10-Inch D.C.	J. F. Frappier	101.6	Very Good
C	10-Inch D.C.	A. A. Moren	78.2	Good
D	12-Inch D.C.	R. Fletcher	133.5	Excellent
E	10-Inch D.C.	E. J. Andrews	95.7	Very Good
F	12-Inch D.C.	J. A. Murphy	142.3	Excellent
G	Cal. 30 M.G. (AA)	E. L. Walker	128.0	Excellent
			154.4	Excellent
			128.2	Excellent
H	3-Inch (AA) Guns	P. A. Thibaudau	146.2	Excellent
I	AA Searchlights	R. A. Wilmarth	143.2	Excellent

In the assignment of Regular Army instructors this regiment has been particularly fortunate. All were well qualified and the officers and men of the 243d were eager to profit by their advice and instruction. Building a regiment to a peak of efficiency is not an overnight task; and a debt of gratitude is hereby acknowledged to all of those officers who assisted, but particularly to the three senior instructors who have been assigned to us since the regiment was reorganized after the World War. Each was a well-rounded soldier, but each made an individual contribution to that particular phase of training which was most needed at the time.

Major John G. Murphy did not neglect any part of the training schedule, but he made his greatest contribution in establishing an *esprit* which pointed the way to the present efficient leadership among the officers and men. They learned to work hard and to play hard from this husky warrior who served both as instructor and executive during those formative years.

When Lieutenant Colonel Arthur A. Rowland came upon the scene he immediately recognized the splendid spirit of the regiment and concentrated his efforts on artillery training. For four years he toiled among us, tireless in his efforts and patient with our mistakes. We are sincerely grateful to this teacher from whom we learned much; and we want him, at his present post in Hawaii, to know that his investment in time and effort still pays dividends.

Our present senior instructor, Lieutenant Colonel Earl H. Metzger, showed his excellent judgment and the results of his extensive military training by deciding to build upon the structure of training and morale as he found it when he took over. Like his predecessors he allows no part of our work to deteriorate, but his special contribution is in the field of the organization and management of training. His painstaking study keeps us in close touch with the newest developments in training techniques and his "Training Notes No. 4" on the preparation and conduct of target practices is a document which no officer of this regiment will ever again be without.

Yet, the efforts of the best instructors are futile if the

officers and men of a National Guard regiment are not willing and eager to accept the assistance offered. Improvement has been made throughout the years under the two previous regimental commanders, Colonel Cyril L. D. Wells and Colonel John J. Collins, and to these two fine officers this regiment is deeply indebted. However, the present high state of training and morale can be directly attributed to the present commanding officer, Colonel Earl C. Webster who was described by the columnist, Austin Lake, on the occasion of the "Battle of Narragansett Park" as "a genial gent who gets results." His leadership has inculcated a real *esprit* in this regiment; not of the provincial, bombastic type which satisfies itself in boasts of regimental prowess, but that quiet pride which causes officers and men to make sacrifices in time and energy in order that their efforts will reflect credit on the regiment.

Plans are now being made by a committee, composed primarily by enlisted men, for a banquet to be attended by more than 700 members of the regiment and invited guests. At this time Brigadier General William H. Wilson, Chief of Staff of the First Corps Area will present the 1937 trophy. Every member of the 243d is looking forward to Saturday, April 30, in anticipation of a turkey dinner, some first class entertainment and the presentation by General Wilson who is our old friend and a former commanding officer of Fort Wright, the site of our summer encampments.

What is going to be the effect upon this regiment of its success in winning this trophy three times out of six? Will there be a let-down in morale or training? Will it continue to strive for the award or will it be considered an empty honor? Do we rest on our laurels?

This regiment has nine firing units, of which in 1932 five batteries were rated "Excellent," in 1933 six were awarded the highest rating, and in 1934 five. Only four batteries fired in 1935 due to bad weather, but even then three were rated "Excellent." Eight of the nine units fired top-ranking practices in 1936 and six during the last training year. We have set ourselves a goal, irrespective of the award of the trophy, of nine out of nine—100% "Excellent" ratings.

DESPITE the lack of some of the things which we deem to be of urgent necessity I am very happy to report that our country is definitely more secure than a few years ago. The marked improvement in our defenses has materially lessened the danger of our being involved in war. Our policy is pacific. We seek no quarrel with any nation. Our whole policy is defensive. We have no thought of aggression but we are prepared and resolved to resist the aggression of others. By our efforts to improve our national security we aim only to occupy a position of readiness—readiness to defend, not to attack.—HONORABLE HARRY H. WOODRING, SECRETARY OF WAR.

News and Comment

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."

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59th C.A. (HD) Wins Association Trophy

The Coast Artillery Association trophy for Regular Army units for 1937 has been awarded to the 59th Coast Artillery (HD), Fort Mills, Philippine Islands. The award was made by the Executive Council of the Coast Artillery Association upon the recommendation of the Chief of Coast Artillery after a detailed analysis of the 1937 target practice results in Regular Army organizations.

The regiment whose outstanding performance brought it this much-coveted honor had four of its active firing batteries classified as excellent. During the period that it turned in the scores which brought it to the front the regiment was commanded by Colonel Paul D. Bunker.

Second place goes to the 55th Coast Artillery (TD), stationed in Hawaii. This regiment had three of its batteries classified as excellent.

The third place position had two regiments tied for the honor—the 15th Coast Artillery (HD), Hawaii, and the 63d Coast Artillery (AA), Fort MacArthur, California. These regiments each had two of their batteries rated excellent.

The following table lists all Regular Army batteries classified as excellent for the 1937 target practice year.

REGULAR ARMY BATTERIES CLASSIFIED "EXCELLENT," C.Y. 1937

Corps Area or Department	Regiment	Battery	Caliber
II	7th	Hq.	Mines
	62d	A	SL
III	2d	A	Mines
	52d	F	8" Ry. Guns
VIII	69th	B*	5" AA Guns
IX	3d	D	12" SC Guns
		E	6" Guns and Mines
	6th	E	12" DC Guns
	14th	D	10" DC Guns
	63d	A	SL
		B	5" AA Guns
		G	14" Ry. Guns
PANAMA	4th	I	16" BC Guns
HAWAII	15th	B	12" BC Guns
		C	155-mm. Guns
	55th	A	155-mm. Guns
		B	155-mm. Guns
		F	155-mm. Guns
	64th	B	5" AA Guns
		C	5" AA Guns
		K	5" AA Guns
		B	12" DC Guns
		C	12" DC Guns
		E	14" Turret Guns
		G	12" SC Mortars
PHILIPPINES	59th	E	Cal. 30 & 50 M.G.
		F	Cal. 30 & 50 M.G.
	60th	B	5" & 6" SC Guns
		D	14" DC Guns
	91st	B	155-mm. Guns
		D	155-mm. Guns
	92d	B	155-mm. Guns
		D	155-mm. Guns

31 Batteries rated "E," C.Y. 1937
out of a Total of 105 Batteries
30%

*Winner of Knox Trophy, C.Y. 1937.

Mine Planters rated Excellent under the provisions of paragraph 16, Training Memorandum No. 1, Instructions for Coast Artillery Target Practice, 1937, September 28, 1936, are as follows:

Graham (Panama) Reference T.P. Btry. F, 1st C.A.
and Btry. D, 4th C.A.

Ord (Hancock) Reference T.P. Hq. Btry., 7th C.A.
Schofield (Monroe) Reference T. P. Btry. A, 2d C.A.

Effects of Propaganda

Two comprehensive and enlightening articles on the subject of propaganda and war appeared in the January numbers of *The Journal of the Royal Artillery* and *The Public Opinion Quarterly*. Major General J. F. C. Fuller, author of the first article, prefaces his remarks with quotations:

"We rule people by words,"—Benjamin Disraeli.

"Gunpowder and printing belong together." Oswald Spengler.

"Propaganda is as much a weapon of war as a gun, and far more effective."—Arthur Ponsonby.

"War means the assassination of truth."—George Brandes.

General Fuller clearly points out the development of propaganda, and its relation to politics. He then deals with the science of this important subject and finally, the relationship between the soldier and the press. Not only does he agree with Disraeli that "People are ruled by words," but he feels that in wartime words become potent weapons. In fact, the mass emotional age in which we live makes words essential instruments of war.

General Fuller concludes that:

Whilst it is generally recognized that, on account of air-power, the civil nerves can be directly attacked in war, in democratic countries, such as our own, it goes unrecognized that propaganda is an even more potent means of attack on the civil will, not only during war but in peace time as well. Today, on account of wireless transmission, propaganda has passed from "spacial infinity" to the fourth dimension, for time has to all intents been transcended. Whilst physically a nation can, by modern weapons, be attacked in its length, breadth and depth; morally, propaganda dominates these three directions, and by using incorporeal forces, such as suppression, exaggeration, repetition and invention adds a fourth which rots the soul of a people.

Therefore we must accept the considered opinion of two such different men as Bryce and Spengler that the Press, free or controlled, will continue to be a generator of wars. Also that the next war will be more a psychological than a physical contest.

The article appearing in *The Public Opinion Quarterly* entitled "Allied Propaganda and the Collapse of German Morale in 1918" by George G. Bruntz, is a detailed analysis of the use of propaganda by the allies in a successful effort to bring about the collapse of German morale. The article, in admirable style, clearly traces the efforts of the allies and lays great stress upon the work and the methods employed by that master propagandist, Lord Northcliffe.

These articles give valuable viewpoints and are well worth any time spent in reading them.

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Opinions

The following are selections from representative letters that came in after the January-February issue. We like to think that they are an accurate cross section of the JOURNAL's subscription list—a sort of Coast Artillery Institute of Public Opinion. Let's hear from you too, about

what you liked—or didn't like—in this number of our magazine.

Keep up the good work. My only objection to the JOURNAL is that I have to wait two months between issues.

A. K. CHAMBERS, Major, CAC.

Thank you, Major. If we were a little better heeled, we'd give you a JOURNAL every 30 days. The bank account won't allow us to do it just now.

I find the JOURNAL most informative and entertaining. I cannot imagine any National Guard or Reserve officer, who hopes to maintain his standing, failing to subscribe.

J. J. BOGAN, 1st Lt., 241st C.A., Mass. N.G.

Our National Guard and Reserve subscribers are our strongest bulwark. We need more of them. With people like Lieutenant Bogan on the job, we'll get them.

I compliment you on the fine, modern streamlined appearance of our JOURNAL.

ELVIN L. BARR, Major, CAC.

Speaking of streamlining, take a look at Fort Monroe a half-century ago (shown in our center-spread), and compare it with today's up-to-date Coast Artillery School.

As another professional journalist (you can tell by the lousy typing) I congratulate the JOURNAL on the excellence of its makeup and appearance. The illustrations brighten up the magazine to the point that it can compete with any other on the market.

STAN LILIAN, Sergeant, CA-Res.

We appreciate the pat-on-the-back from a practising newspaperman. However, the credit for the increased number of illustrations used of late must go to those authors who went to some trouble to dig up pictures to accompany their articles. This is in the nature of a tip to those who aspire to see their names on our contents page: A good picture may sell your story.

I like your covers very much indeed. I am also quite taken with such not-too-military dissertations as the biography of Jacob Brown in the September-October, 1937 number.

DAMON E. FRANCISCO, Lieutenant, CA-Res.

We believe with Lieutenant Francisco that a heavy diet of straight professional matter is a bit hard on our mental digestion. Therefore we are serving up, by way of dessert, a number of articles which may not make you a better artilleryman, but will—we hope—give you an idea as to how things were done in another day and in other places. If you have any ideas on the subject, let's have them.

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Coast Artillery Board Notes

The Coast Artillery Board Notes in this issue are, as usual, a mine of information for progressive Coast Artillerymen. Regulars, National Guardsmen, and Reservists will find much of value in these thumbnail sketches of the projects under consideration. By checking back through prior issues of the JOURNAL one can follow a project from its genesis to final adoption or rejection. The notes furnish an interesting sidelight on the amount of hard work and research necessary before an item of equipment can be adopted as standard.

For example, Project No. 1115, dealing with camou-

flag, shows that an article must be tested under field conditions before any conclusions can be reached. This item can be profitably read in connection with Captain Rodyenko's article "Camouflage for AA Artillery" appearing elsewhere in your JOURNAL. Moreover, the reader of these two topics will have a groundwork of camouflage information that should some day prove of value.

Projects No. 1118 (Sperry Sound Locator) and No. 1121 (Westinghouse Searchlight) show that there is constant effort to improve essential devices now in use.

There should be few antiaircrafters who are not interested in the question of the relative effectiveness of various means of spotting. The notes on the Fort Bragg antiaircraft exercises are exceptional in this respect and are worthy of study.

* * *

Prize Essay Competition

Elsewhere in this number we are repeating the announcement made in the January-February issue concerning the 1938 Prize Essay Competition sponsored by the United States Coast Artillery Association.

Please note the deadline—September 30, 1938. Essays received after that date will not be considered.

In order to refresh your memory we are also repeating the list of suggested subjects. However, you are not bound by the subjects listed; you can write your own ticket. Bear in mind that the subject should be one of interest to the Coast Artillery Corps in particular and the cause of national defense in general.

SUGGESTED SUBJECTS

The rôle, organization, and training of AA artillery with a view to its employment with a field army.

AA Intelligence service.

Aircraft warning service.

A system of beach defense.

Training methods for National Guard, Organized Reserves and R.O.T.C.

Proper weapon and organization for the AA machine-gun battalion.

Coast Artillery gunnery of today and the problems of long-range and indirect fire.

The value of mines in harbor defense.

National Guard spirit and the best means of maintaining efficient Coast Artillery National Guard regiments.

The mission of the Coast Artillery Organized Reserve in the event of an emergency, including its mobilization and assignment to station.

Tactical employment of railway artillery when operating with an army in the field.

On the assumption that a harbor of major importance is to be fortified, what would constitute an ideal defense?

The antiaircraft regiment: a discussion of an ideal organization and ideal armament, including guns, ammunition and fire control equipment.

Coast Artillery target practice: its purpose and how best to accomplish it.

The ideal types of weapons for seacoast defense.

Gifts for Gunners

During the past month the editor's mailbag has furnished convincing proof that "coöperation" is not just another word in Mr. Webster's dictionary. Almost every day we come across an item from a Coast Artilleryman who wants to help us in our common aim of giving the Corps the best magazine our purse will allow. These stout friends are not only selling the COAST ARTILLERY JOURNAL they are literally giving it away. Here are two random items that will explain what we mean.

From Boston word comes from Lieutenant Roland E. Falls, CA-Res. that Coast Artillery Chapter No. 2, Reserve Officers' Association, maintains a keen interest in the progress of the ROTC unit at Massachusetts Institute of Technology. Naturally enough, the chapter concentrates its efforts on the members of the Coast Artillery unit at M.I.T.

Last year the chapter voted an award to that member of the M.I.T. Class of '38 who would be chosen as the outstanding student during the 6-week encampment at Fort Monroe. The prize was a 2-year subscription to the COAST ARTILLERY JOURNAL.

The chapter has just announced the winner of that award. He is Mr. Ira H. Lohman, Jr., of 1107 Moreau Drive, Jefferson City, Missouri. His name has been placed on our books and for the next two years he will have at his fingertips all that is new and worth while in the military world in general, and the Coast Artillery Corps in particular.

And out on the Pacific Coast Lieutenant Colonel Lyle D. Wise, CA-Res, is also using the JOURNAL as a reward for military effort in his regiment, the 627th C.A. (HD) RAI. He tells us that, among other prizes for satisfactory completion of work in the Army Extension Courses, he is offering a 1-year subscription. The 627th's competition will be over on June 30th and the winners will be announced shortly thereafter.

There is another strong JOURNAL booster out on the Pacific Coast. He is Lieutenant Colonel W. B. Mel, CA-Res, who commands the 604th C.A. (Ry). Colonel Mel says "I sincerely feel that my officers would be better off if they read every issue. The magazine is most attractively gotten up. All praise is due those who are responsible for it."

These are kind words, but Colonel Mel has gone one step farther. He has written every officer in his outfit and urged that they become subscribers in their own right. We appreciate his interest and that of his fellow "rail-roads."

* * *

Fifty Years Ago At Fort Monroe

By way of a backward glimpse we are giving today's artillerymen a view of Fort Monroe as it appeared a half-century ago. On page 120 of this number we begin a double-page spread which originally appeared in *Harper's Weekly* for April 14, 1888. Then as now, Fort Monroe was the fountainhead of Coast Artillery knowledge and

all good gunners passed through its school in pursuit of further military learning.

Moreover, the Virginia beaches were just as popular with the vacationist as they are today, and each summer saw thousands of visitors in search of rest and recreation. You will be interested to learn what the editors of *Harper's Weekly* thought about the Virginia beaches and the Fortress Monroe. Therefore we reprint an article that appeared in that magazine in the same number which carried the pictures of the Artillery School.

* * *

FORTRESS MONROE

From *Harper's Weekly*, April 14, 1888

There are hosts of our people who migrate like the birds, and spend the dead of winter in Florida or along the westward shores of the Mexican Gulf. Summer finds them up in the Adirondacks or Catskills, on the sands of Nantucket or the coves of Mount Desert; but there are two months of our changeful year when these hosts seem to assemble just half-way between, and nowhere in our wide domain can blustering March or lowering April be found so enjoyable as at Old Point Comfort, Virginia. Here the dancing waters of the Chesapeake lap the sandy shore, and send soft, salt-laden breezes over the lowlands. A wonderful soporific is that sea-breeze, and people whose nerves are elsewhere on perennial "strike" sleep like Sancho Panza at the mammoth caravansary that has grown, wing by wing, north of the threatening bastions of Fortress Monroe. Every room in this big wooden labyrinth has its drowsing occupant, and, sleeping or waking, there are more beauties in the corridors of the Hygeia or along the shaded walks within the fort than one can meet in a decade of travel.

Perhaps this is what makes Fortress Monroe the paradise of our artillerists. Here is the "School of Application," at which the officers pursue a course of study that lasts two years, and is devised to develop their efficiency as handlers of the heavier engines of war. The biggest guns that America boasts of are to be found along the ramparts, and this is the biggest fort we own. It is hardly gratifying to national pride to reflect that the most powerful weapon in those walls would be a mere pop-gun as compared with the modern cannon of Europe, and that one or two of those guns behind their iron walls could speedily knock our once boasted fortress into a dust heap; but this is not the fault of our officers. They can tell you just how the emergency should be met, and what armament we need; but Uncle Sam, like the Arkansas farmer, doesn't care to patch his roof when it isn't raining, and he will spend no money for guns until there comes a war. As it takes a year or so to build these modern guns, the question often arises, "What are we to do meantime?"

However much the artillerists may deplore the inferiority of our armament, they do not neglect constant practice with what is accorded them by the government, and day after day they may be seen faithfully laboring to

make the best of their obsolete old smooth-bores or patched-up rifles—all clumsy-muzzle-loaders; and it is touching to mark the interest displayed by the women of America in the struggles of their defenders. Perhaps the proximity of Fortress Monroe has not a little to do with the popularity of Old Point Comfort as a health resort. Day after day, in their dainty dresses, swarms of charming girls invade the fort, supervise the "mechanical manoeuvres," criticise the battery drills, demoralize the "star gaugers" (a detachment of student-officers who are almost daily at work inspecting the bores of their barbette guns, and making impressions of familiar old cracks and flaws that every class has stumbled over for years past), and only appearing conquered by circumstances when they suddenly find themselves in attendance at target practice and compelled to stand the roar and concussion of the big black boomers.

Even around the hotel the military air pervades. The Artillery Band comes in every day and plays in the *salon* adjoining the great dining room, and officers off duty dine with their friends, and point out the historic spots in the neighborhood. From the dining-hall itself, or the esplanade outside, one can see the low sand-hills of Sewell's Point, where the Southern guns were thundering a quarter-century ago, and the distant reach to Norfolk, whence issued that dread monster the *Merrimac*. Off to the right, close under the sandy shore of Newport News, is where the *Congress* and the *Cumberland* went down before her iron blows, their flags at the peak to the end. And right out there in the open roadstead, now alive with beautiful yachts or the boats of our men-o'-war's men, is where the gallant little *Monitor*, like a modern marine David, defied and defeated the Goliath of the Confederacy.

All that is buried in the past. Belles from Richmond flirt today with beaux in army blue, and capture prisoners who might be proof against battle tactics. The Blue and the Gray are never far apart these soft spring afternoons, and when sunset nears and the bugles blare the signal for parade, hundreds of gayly dressed visitors stream across the moat and through the resounding postern and out over the green carpet of the parade, where they make a picturesque group under the grove of oak-trees; and then the band strikes up, and the troops march out and form line of battle, and there is a brief quarter-hour of music and martial pomp, and then the officers march up to the front, briefly salute their commander, and are swallowed up in the throng of civilians; and then twilight comes, and an adjournment to the hotel, and an evening devoted to more music and dancing, and the artillery uniforms are evidently as much at home in the *salon* as on the ramparts.

A particularly lively time for a young civilian to visit Old Point Comfort in hopes of pressing his suit with some one of the fair guests of the Hygeia is when two or three of our ships of war have cast anchor just off the pier. Then the parlors are alive with the trim uniforms of the two services—sea and shore—and for some utterly incomprehensible reason the girls prefer to be surrounded by the wearers thereof, and though the civilian wooer may be of

the *jeunesse dorée* of his municipality, and his bank account a thing of fabulous repute, his gold is of little account for the time being against the gold-lace of the "army and navy forever." Needless to say, however, that the glamour is but temporary. The sailor is sent to China, the soldier to Cape Disappointment and Midas secures the prize.

* * *

Seacoast Fortifications

Landsmen, whether in or out of Congress, are likely to measure sea power in terms of naval ships. It is an error we hope will not have influence in the reconstruction of our naval defenses. There are several other weighty factors of sea power beside fighting ships, and the situation created by our experimentation with limitation since the Washington conference of 1922 sharply emphasizes the factor of naval bases. A naval force cannot operate without bases and its actual power is directly conditioned upon their number, quality, and position. A ship must have a place to refit. It cannot keep the sea indefinitely, but at intervals must go to a base, even though it has not been injured in action. Every fleet at sea is reduced below its actual numbers by the absence of ships withdrawn for refitting or repair to some base and the nearer the base to the field of operations the shorter the absence of the ship from the fleet need be. A fleet's strength is therefore qualified by the availability of its bases. Americans and especially the American Congress should realize, for example, that the British Navy is the greatest in the world, not merely because it has the greatest number of ships afloat or even the greatest number of powerful ships, but also because the British Empire has the greatest system of naval bases. They are situated at strategic points all around the earth, on every principal trade route and near every area of possible serious naval operations. This multiplies in fact the size and efficiency of its Navy.

When we surrendered the right to fortify and increase our bases in the Pacific we made a sacrifice of our naval power which was little appreciated by our citizens. The treaty of limitations signed at the Washington conference was a part of an international bargain which has been repudiated by Japan and we are no longer bound to the *status quo*. Our very inadequate base situation should be remedied as soon as possible. Congress should provide without delay for the development of bases and their adequate fortification. The Aleutian base should be made impregnable and we should improve and fortify both naval and aviation bases wherever there are possible locations of strategic value in our islands. —Chicago Tribune.

* * *

Balloons and Barrages

By Air Commodore L. E. O. Charlton

There is a good deal more in this barrage business than meets the eye, for a scientific technique of the highest kind has been applied to the various problems, and it is no

longer to be considered either as political "soft soap" or as a bugaboo for naughty bombers. Chiefly, the old apron idea is dead. It had too many disadvantages. For one thing, the weight of network caused a sagging, as revelers lean inward on each other when going home, and, for another, the lowering of a wire entanglement nearly to ground level, which the necessity of "topping up" would frequently occasion, is calculated to complicate existence for urban dwellers, especially in the vicinities of overhead power.

The modern barrage, therefore, is to consist solely of single cables, one to each balloon, and it is on the spacing system of these obstacles that their efficiency as a protective measure will depend. There are two methods of staking out which, of course, can be alternated or commingled according to necessity. Firstly, there is the ring-fence idea, which merely encloses any specified area in stockade fashion, just as frontiersmen used to do to keep out natives. Secondly, there is the system of area planting, like standard roses in a circular garden bed, which possesses manifold advantages. In the former case, for instance, assuming space intervals of 100 yards between balloons and an average wing span of 70 feet for the attacking aircraft, the chances would be, roughly, 1 to 4 against a cable being struck, and this might not prove sufficiently deterrent for a determined foe. There are means, apparently, necessarily kept secret, for lethalizing cables and thereby of ensuring the destruction of those aircraft which encountered them, but unless the certain death of the occupants can likewise be effected the deterrent value of even that device is, at least, open to doubt.

The main object of the barrage is to keep the enemy high up in those regions of the air where the interceptors will have the best chance to engage and bring them down. It is also designed to prevent the most dreaded of all anticipated forms of attack, that of "hedge-hopping," as it used to be called in the war, or, in other words, of low-flying. Neither guns nor searchlights can be held on such swiftly moving targets when they are whisking by just overhead, and aerial combat between the interceptor and the bomber is quite unthinkable with their relative rates of speed so near to ground. It is almost certain that an enemy will attempt to counter the effects of a balloon barrage by means of some device or other. A cable-sweeping aircraft may be produced, equipped with an outrigger device designed to snap the wire rope of mooring and insulated from electric contact. "Robot" machines may be evolved on the lines of the Queen Bee, to be sent ahead of the main attack under wireless direction to destroy the barrage. Such boldness of imagination is not to be derided.

If the barrage system succeeds in providing a really effective measure of protection for localities and, so succeeding, is taken into large and widespread use, it will, *ipso facto*, contribute towards the extinction of the heavy bomber. On that account alone, we may be sure, the best scientific brains in the world are already busily intent on countering the menace which it creates. Nations are not likely to forego the privilege of city-bombing without a

desperate struggle for survival of the practice, and the old see-saw is on again.

United Services Review.

Artillery Organization

The *New York Times*, recently contained a news item stating that the British War Secretary had revealed a change in the army set-up, whereby antiaircraft and coast defense searchlights will be transferred from the engineers to the artillery; and that the artillery will be reconstituted into separate branches—one for horses, field and medium units; and the other for antiaircraft, coast artillery and searchlights.

Under this new plan the organization of the artillery of the British Army conforms exactly to our present artillery set-up.

The British have tried the various plans that are now being offered to us. Their action strongly indicates that our organization is basically sound and will meet the test of war.

Vulnerability of Seacoast Defenses

The interesting letter from Gen. Sir Ian Hamilton which appeared in the *United Services Review* of January 13 last, replying to certain criticisms of a speech the distinguished soldier had made in the course of which he visualized the taking of Singapore by the Japanese, was not very convincing as supporting the contention that such a step is to be regarded as a practicable contingency. The combined exercises which have just been held at the base, prior to the formal opening of it, at least seemed to demonstrate the extraordinary power of the defenses that have been developed.

What happened in 1913, when Singapore was nothing more than a naval rendezvous of minor importance, can scarcely be cited as a relevant example of what might happen in 1938. Of course, the Japanese could establish, and operate from, advance bases very much nearer to the island than their home ports, approximately 3,000 miles away. But the nearer to Singapore the advance base is situated the farther it must be from home, and the longer the communications to be defended.

It is not too much to say that Singapore represents the "last word" in the possibility of making a defensive position impregnable. All attacks upon the actual base by sea, land, or air would be met by a volume of resistance which they would fail to break down. An attempt to wear down this resistance by blockade and siege would involve the employment of such immense forces that the concentration of them for such a purpose would inevitably leave the Japanese seriously weak elsewhere.

Sir Ian Hamilton in his speech drew a picture of the Japanese advancing irresistibly to the occupation of Bengal. They certainly could not leave an unbeaten Singapore upon their flank, and our criticism was to the effect that they would find the beating of it an infinitely more arduous undertaking than the rather sketchy forecast of the gallant general inferentially admitted. Probably, if the

truth were told, none is more clear upon this point than the Japanese General Staff themselves.

United Services Review.

An American Flyer In China's Air Corps

As any competent military observer in Shanghai could testify, the relatively poor showing made by Chinese bombing planes was due, in part at least, to the abundance of Japanese antiaircraft guns. No Chinese plane could come anywhere near its objective without running into a hail of bursting shrapnel. This compelled the Chinese planes to keep to a high altitude, with a consequent great inaccuracy in the hits shown. These guns were mounted on most of the men-of-war and transports in the river as well as in scores of strategic locations at the front and back of the lines.

The Japanese bombers, on the other hand, had practically no interference given them by Chinese antiaircraft fire during the entire three months of the Shanghai fighting. Thousands of Shanghai residents could watch the Japanese bombers come over in broad daylight at practically the same hour each time and drop bombs on the Shanghai North Railway station at altitudes under 1,000 feet. The poor Chinese soldiers holding this sector had no antiaircraft guns to keep them off and would valiantly pop away at the enemy with machine guns and pistols in a futile attempt to drive them away. The same condition prevailed across the Whangpoo river in the Pootung sector, where an endless procession of Japanese seaplanes could be seen each day dropping bombs and directing the heavy artillery fire of their own guns.

When the day came on which the Japanese made their supreme effort to break through the key village of Tazang, which was the spearhead of the Chinese defense line surrounding Shanghai, the lack of antiaircraft guns was perhaps the greatest single factor contributing to the Japanese victory.

The early morning hours of this gigantic drive witnessed a thunderous barrage of combined naval guns of the Japanese battleships, together with their heavy artillery on shore. Supporting this ghastly destruction was a massed air attack in which more than 160 Japanese planes are said to have participated. Due entirely to the lack of opposition from Chinese antiaircraft, this great aerial fleet, the largest to participate in any single battle in the history of modern warfare, was able to circle leisurely behind the Chinese lines and drop with impunity its devastating cargo of bombs.

During this period six of our own bombers had been ordered to proceed off Woosung and bomb two enemy warships located offshore there. Although these planes reached their objective, the Chinese pilots returned without scoring any hits. Two of the squadron were missing, having been shot down by Japanese antiaircraft fire.

J. GORDON HARRELL,
In *San Francisco Chronicle*,
January 23, 1938.

Coast Artillery Activities

OFFICE OF CHIEF OF COAST ARTILLERY

Chief of Coast Artillery
MAJOR GENERAL A. H. SUNDERLAND

Executive
COLONEL JOSEPH A. GREEN

Personnel Section
MAJOR CLARE H. ARMSTRONG

Matériel and Finance Section
MAJOR C. W. BUNDY
MAJOR H. B. HOLMES, JR.
MAJOR S. L. McCROSKEY

Organization and Training Section
COLONEL HORACE F. SPURGIN
MAJOR AARON BRADSHAW, JR.
MAJOR W. H. WARREN

Plans and Projects Section
LIEUT. COL. JOHN L. HOMER

Notes from the Chief's Office

Tradition causes us to visualize the individual soldier carrying some kind of a personal weapon, be it club, spear, bow and arrow, sword and shield, rifle, or pistol. Such visualization probably carries little weight in this mechanized age, particularly in the Coast Artillery where the soldier's combat weapons may involve such features as radio activity or dispersion of light. It matters little whether he works with a rheostat or crowbar in actual combat, but it matters much whether or not his morale is good. There are many members of the old school who maintain that you can not make a soldier in eight days. The average recruit possibly can be taught to set a scale on an instrument in eight days, but there is another question—just how much dependence can you place in him on the ninth day unless his spine has had a bit of disciplinary strengthening? In combat, soldiers are essential. And in making soldiers, experience, beginning when memory of man runneth not to the contrary, indicates the necessity for formal drills and ceremonies. Precise actions in concert such as manual of arms, close order drills, and parades go far in this direction.

The preceding paragraph points to a morale feature. The rifle is a much better parade weapon than is the pistol, and it really requires very little more care on the part of the soldier. It is a much better combat weapon. That it is a nuisance in these modern days of climbing in and out of trucks, is admitted. But these modern days have brought something else. That something else is the low-flying hostile aircraft that may attack the Coast Artilleryman manning a seacoast gun bolted to the concrete or manning the mobile antiaircraft gun in action against a hostile plane or even marching along the road; under any circumstance the Coast Artilleryman needs a rifle.

There is nothing more pathetic than a soldier armed

with a weapon he does not know how to use. Below are indicated the steps being taken by the War Department, upon the recommendation of the Chief of Coast Artillery, to give the Coast Artillery soldier instruction in the elementary use of the rifle. This training is preliminary to a hoped for advanced training to make effective his firing at a hostile low-flying airplane with a view to saving his own skin. He is not expected to hit a moving target until he can hit a stationary one. This preliminary training is thus provided for; work on a course of instruction for moving targets is being undertaken.

The rifle marksmanship courses applicable to the Coast Artillery, referred to in the change to AR 775-10 in Section II of Circular 3, War Department, January 1, 1938, are the new courses that are included in the revision of *Basic Field Manual*, Volume III, Basic Weapons, Part One, Chapter 1, Rifle Marksmanship, which it is understood will be ready for distribution about April 15, 1938. For example:

(1) Course C consists of—

(a) *Instruction practice.*

25 shots slow fire 1,000-inch range.
10 shots rapid fire 1,000-inch range.
25 shots slow fire 200-yard range.
10 shots rapid fire 200-yard range.

(b) *Record practice.*

10 shots slow fire 200-yard range.
20 shots rapid fire 200-yard range.

(2) Course D is fired entirely on the 1,000-inch range.

* * *

Information on Probable Error data for 12-inch guns

(FT 12-K-1) firing stacked charges is to be found in Ordnance Field Service Circular No. 57, May 17, 1937.

Revision of *Coast Artillery Field Manual*, Volume II, Antiaircraft Artillery, Part One, Tactics, has been approved and is in the process of being printed.

Additional information on the "Armory Airplane Target," an article which appeared in the January-February, 1938, issue of the *JOURNAL*, may be obtained by writing to the President, Coast Artillery Board, Fort Monroe, Virginia, or Captain W. H. Boughton, 105th Infantry National Guard, Troy, New York.

Two antiaircraft searchlights (Nos. 379 and 380) incorporating novel features to aid in searching, are to be sent to the C.A. Board for test about March 1, 1938. A similar light has been sent to Panama for test by Coast Artillery troops in that department.

The manufacture of a pilot model antiaircraft fuze setter of a new and simplified design is about completed. This fuze setter is so designed that by the simple substitution of the appropriate one of two elements furnished, it can be used with either the Mk III fuze (Scoville) or the M-42 fuze. For drill purposes a third element is substituted in order to avoid wear and tear on service parts during drill. This fuze setter will be tested by the C.A. Board.

Additional tests of the T-4 antiaircraft gun will be undertaken by the C.A. Board in the near future. Since the last tests of this unit by the C.A. Board a new pedestal has been designed; and also the T-9 gun, incorporating a new method of mounting as well as a new recoil and recuperator mechanism, has been installed.

Completion of the pilot model M-4 director has been delayed for many months due to the necessity for the complete redesign of one of the units. This redesign work has now been completed and it is expected that the instrument will have been delivered to the C.A. Board for test by the time this issue of the *JOURNAL* appears.

The Quartermaster General has been requested to install in all antiaircraft prime movers, separate controllers for the airbrakes on antiaircraft gun mounts. The installation will provide for independent control of the gun brakes from the cab of the prime mover thus doing away with the lag in the application of trailer brakes previously encountered. Connections for electric tail and stop lights on the trailed load will also be included.

The foreign service policy was discussed at some length in the article "Personnel Policies," which was published in the May-June, 1937 issue of the *COAST ARTILLERY JOURNAL*. However, judging from the tenor of letters received, it is apparent that some phases regarding the as-

signment of officers to foreign service are not yet clearly understood. The following is written in an effort to make clear why it is difficult to change the sailing dates of officers under orders to depart on a certain transport.

Requisitions are received from The Adjutant General each month, requesting recommendations for the assignment and replacement of officers due to return to the United States the fifth month hence. This is due to the fact that since all requests for extension of tour of foreign service must be in the hands of The Adjutant General at least six months before an officer is due to return to the United States, definite plans for replacement cannot be made earlier. Selections are then made and recommendations are submitted in accordance with the policies outlined in the article mentioned above. The sailing date which appears in the order assigning an officer to foreign service is designated by The Adjutant General to coincide as nearly as practicable with the date the returning officer is due to depart for the mainland.

Oftentimes the date designated in the order does not suit the personal convenience of the officer concerned and he requests that it be changed. It is realized that leaving a station at a specified time frequently works a hardship on an officer and his family; so, if practicable, the request is approved. Compliance with such a request ordinarily forces revocation of orders in the case of the officer originally designated and the selection of another officer to fill the vacancy, thus giving the second officer less time to prepare for the move. In many instances the officer first



ADVANCED TECHNICAL COURSE

Coast Artillery School

FRONT ROW (left to right): Capt. Wayne L. Barker, 1st Lt. Frank A. Bogart, Capt. John R. Lovell.

BACK ROW (left to right): Capt. Peter W. Shunk, Capt. Matthew K. Deichelmann, 1st Lt. Milan G. Weber.



1937-38 CLASS AT COAST ARTILLERY SCHOOL, FORT MONROE. REGULAR COURSE.

FRONT ROW (left to right): Capt. Eugene R. Guild, Capt. Willard L. Wright, Capt. Frederick E. Day, Capt. Virgil M. Kimm, 1st Lt. William H. Hennig, 1st Lt. Samuel G. Taxis, USMC; 1st Lt. Robert T. Frederick, 1st Lt. Norman A. Congdon, 1st Lt. Arthur L. Fuller, Jr., 1st Lt. Dana S. Alexander, 1st Lt. Frank T. Folk, 1st Lt. Howard W. Hunter, 1st Lt. Tom V. Stayton, 1st Lt. Wilbur M. Skidmore, 1st Lt. Harry B. Cooper, Jr., 1st Lt. Sam C. Russell.

SECOND ROW (left to right): 1st Lt. John E. Metzler, Irving D. Roth, 1st Lt. Philip V. Doyle, 1st Lt. Dwight B. Johnson, 1st Lt. Preston Steele, 1st Lt. Walter A. Rude, 1st Lt. Gilbert N. Adams, 1st Lt. William S. Coit, 2d Lt. Rafael Pargas, Philippine Army; 1st Lt. Francis A. Liwski, 1st Lt. Robert F. Moore, 1st Lt. Henry G. McFeely, 1st Lt. Thomas H. Harvey, 1st Lt. Robert A. Turner, 1st Lt. Robert C. Leslie, 1st Lt. Charles G. Dunn, 1st Lt. Thomas A. Glass.

BACK ROW (left to right): 1st Lt. Harry Julian, 1st Lt. John J. Lane, 1st Lt. Ira W. Cory, 1st Lt. Thomas K. MacNair, 1st Lt. Frank J. Zeller, 1st Lt. W. Bruce Logan, 1st Lt. Lafar Lipscomb, Jr., 1st Lt. Frederic H. Fairchild, 1st Lt. Patrick W. Guiney, Jr., 1st Lt. Charles L. Andrews, 1st Lt. Ethan A. Chapman, 1st Lt. Charles G. Patterson, 1st Lt. Seymour I. Gilman, 1st Lt. Lewis K. Beazley, 1st Lt. Franklin Kemble, Jr., 2d Lt. William S. McCormick, USMC.

selected is later ordered to a foreign service garrison at which he may not desire to serve. The following illustration shows what may happen when an officer requests a change in his orders.

Sometime ago, it was necessary to fill a vacancy in Hawaii and an officer who had expressed a preference for assignment to that department was selected. Orders were issued. For personal reasons the sailing date was not suitable and he requested a delay of about three months. His orders were revoked, but at the expiration of the three

months, officers normally changing station were available for assignment to foreign service. Later other officers became available for such assignment and the chances are that when the first officer's name again comes up there will be no vacancy open in Hawaii and he will be sent to Panama or the Philippine Islands.

The above is not written for the purpose of discouraging officers in requesting changes in their orders, but merely to point out the repercussions usually incident to the approval of such an appeal.

Fort Monroe

BRIGADIER GENERAL JOHN W. GULICK, U. S. Army, *Commanding*

COLONEL W. E. SHEDD, JR.

*Commanding, Harbor Defenses of Chesapeake Bay
and 2d Coast Artillery*

COLONEL EUGENE B. WALKER

Commanding 51st Coast Artillery

LIEUTENANT COLONEL FREDERIC A. PRICE

Commanding 52d Coast Artillery

By Lieutenant M. S. George

The Commanding General and Mrs. Gulick held a reception for all officers and their families on New Year's day. General Gulick assumed command of the Third Corps Area on February 16.

The entire post is pleased to hear that the former assistant commandant of the School, Colonel F. Q. C. Gardner, has been nominated for promotion to brigadier general.

During the past month several officers left Fort Monroe for other assignments. Captain O. H. Kyser, and Lieutenants R. H. Kessler and H. B. Whipple, went to the Philippine Department, while Lieutenants H. J. Katz, E. H. Thompson, and W. S. Blair went to Hawaii. Lieu-

tenant R. H. Fitzgerald is due to leave in March for Panama; and Lieutenant T. M. Metz goes to the Philippines. Three officers have arrived since the first of the year. They are Lieutenant M. L. Ogden, C.O. of Battery "D," 52d C.A., Lieutenant J. D. Stevens, assistant plans and training officer; and Lieutenant E. C. Lowry, Medical Corps.

TROOPS

All batteries are engaged in gunners' instruction and routine duties preparatory to the spring training periods. Lieutenant T. M. Metz, left the post for the Citadel, Charleston, S. C., on February 18th with a detail from

Battery "C," 2d C.A. The group will demonstrate the use of antiaircraft material to the cadets of the Citadel.

The U. S. Army Mine Planter, *Lt. Col. Ellery W. Niles*, arrived under the command of Captain Samuel Rubins, on January 13th and remained here, except for a short period at the Army Base, Norfolk, Virginia, until January 31st. While it was here, all post personnel was given an opportunity to inspect it. On January 31st the *Niles* sailed for Boston. From there it is scheduled to sail for the Pacific Coast, arriving sometime in April.

The Third Corps Area West Point Preparatory School has recently ended another successful year. The school this year has been under the supervision of Lieutenants Katz, Thompson, and Kessler. In addition to the seven Army candidates, there were 23 other students who had opportunities for Presidential, Senatorial, or Congressional appointments, and who took the entrance examinations.

It is expected that the class at the School will uphold and even surpass past records with regard to the number of members who enter the Academy in July.

ATHLETICS

Fort Monroe has been enjoying a successful winter sports season. The basketball team won the Monroe Circuit Championship, but lost the Corps Area District play-offs to Fort Belvoir. The bowling team won the Langley Field-Fort Monroe series and received a fine trophy.

Boxing seems to be the favorite sport at the present. Before almost capacity crowds, semi-monthly boxing cards are conducted with the best civilian boxers on the peninsula. Besides these bouts the Post Team has met and defeated teams from Langley Field and the Naval Training Station at Norfolk. The Corps Area Boxing Tournament is only a short time away, and all the boxers are priming themselves to win the Championship.

Hawaiian Separate Coast Artillery Brigade

BRIGADE COMMANDER, BRIGADIER GENERAL JAMES A. WOODRUFF

CHIEF OF STAFF, COLONEL ROBERT ARTHUR

ADJUTANT GENERAL & S-1, MAJOR F. A. MACON

S-2, CAPTAIN W. H. DUNHAM

S-3, LIEUTENANT COLONEL W. D. FRAZER

S-4, LIEUTENANT COLONEL A. E. ROWLAND

CAPTAIN L. D. FLORY
Com. and Engineer Officer

CAPTAIN W. H. KENDALL
Sec. Ath. Officer

Chemical Warfare Officer
CAPTAIN S. E. WHITESIDES, JR.

Ordnance Officer
LIEUTENANT W. A. CALL

Harbor Defenses of Pearl Harbor
COLONEL H. C. MERRIAM

Sixty-fourth Coast Artillery (AA)
COLONEL RALPH N. MITCHELL

Harbor Defenses of Honolulu
COLONEL G. A. WILDRICK

By Lieutenant John J. Stark

ALL BUSY ON WESTERN FRONT

The Hawaiian Separate Coast Artillery Brigade is active on all fronts with the first of the 1938 target practices. Captain Hayden has "I" Battery of the 64th in camp over at Bellows Field for the antiaircraft machine gun annual target practice. The 155-mm. guns of the 2d Battalion, 55th C.A., commanded by Major Johnson, are emplaced on the beach at Waikiki. The 1st Battalion, 15th, under Major Englehart; the 1st Battalion, 41st, under Major Cravens; and the 1st Battalion, 55th, under Major Ladd, have been firing their annual additional antiaircraft assignments at Fort Kamehameha. As yet none of the scores have been turned in but preliminary observation shows that all batteries are doing fine work. The brigade commander and his staff made a special trip to see the night firing of the AA machine-gun battery at Bellows Field. The action of the battery against an unilluminated target furnished an interesting sight. Although the target was almost invisible, quite a few hits were made. The 2d Bat-

talion of the 55th is using a high-speed target, towed by a destroyer from Pearl Harbor.

BRIGADE COMMANDER INSPECTS

The annual administrative inspections by the brigade commander, Brigadier General J. A. Woodruff, took up a good portion of the month of January. General Woodruff, accompanied by his staff, visited the various commands within the brigade. Three days were spent at each of the harbor defenses and the 64th AA regiment. Each inspection began with a review of all troops and was followed by a detailed inspection of the men in ranks and of the squad-rooms and barracks. The Harbor Defenses of Honolulu, which comprises the troops at Forts Ruger and DeRussy, Colonel G. A. Wildrick, commanding, was the first command to be inspected. The troops presented a fine appearance and put on a snappy review. From Fort Ruger the General's party journeyed to Fort Kamehameha for a 3-day inspection of the Harbor Defenses of Pearl Harbor, Colonel H. C. Merriam commanding. Some 1,500 men



General Moses, department commander, awards department streamers to guidons of the Harbor Defenses of Pearl Harbor for proficiency in arms for 1937.



Miss Barrette presenting the coveted Barrette Trophy to Captain Paul A. Harris, commanding Battery A, 15th Coast Artillery, Fort Kamehameha.

turned out an excellent show in both ranks and barracks. The last unit to be inspected was the 64th AA regiment, stationed at Fort Shafter. The Antiaircraftmen put up a splendid appearance on the department parade ground. The barracks were found in remarkably fine shape, although they have long been due for replacement.

1938 MANEUVERS IMMINENT

All hands are preparing for the forthcoming Hawaiian Department maneuvers scheduled for March. The United States Fleet will be in the Hawaiian area but it is not yet known whether they will join in the war games. At any rate the Hawaiian Separate Coast Artillery Brigade will furnish some 5,000 sturdy, well-trained soldiers for these annual exercises. The latest information says that the troops will take the field on March 14th and will maneuver until the 30th.

NEW OFFICER PERSONNEL

The past several transports brought many new officers for service in the brigade. Here is a list of the more recent arrivals and their assignments:

- Lieutenant Colonel W. D. Frazer—S-3, Hq. Hawaiian Separate Coast Artillery Brigade, Fort DeRussy.
- Lieutenant Colonel C. M. Skene—S-3, Hq., HD of Honolulu, Fort Ruger.
- Major D. H. Hoge—64th C.A. (AA), Fort Shafter.
- Captain J. J. Johnson—64th C.A. (AA), Fort Shafter.
- Lieutenant W. A. Call—Ordnance Officer, Hawaiian Separate Coast Artillery Brigade, Fort DeRussy.
- Lieutenant A. D. Gough—64th C.A. (AA), Fort Shafter.
- Lieutenant P. Schmick—64th C.A. (AA), Fort Shafter.
- Lieutenant W. G. Easton—55th C.A., Fort Kamehameha.

- Lieutenant L. A. Hall—55th C.A., Fort Kamehameha.
- Lieutenant C. L. Register—16th C.A., Fort DeRussy.
- Lieutenant J. M. Donohue—55th C.A., Fort Ruger.

DERUSSY PAVILION OFFICERS

The new Pavilion Club at Fort DeRussy is speedily becoming the social center of the Honolulu Sector. The club administration was recently put on a separate basis and is no longer a part of the Fort Ruger Officers' Club. At the first meeting, Colonel G. A. Wildrick of Fort Ruger was elected president, and Colonel H. S. Merriam of Fort Kam, Colonel R. M. Mitchell of Fort Shafter, and Lieutenant Colonel Sidney C. Bingham of department headquarters were elected vice-presidents. The Club is going in for an ambitious schedule of bi-monthly dinner-dances and weekly sunset-supper dances. In addition to these, there are many private parties being held at the attractive open-air dance pavilion.

WINTER SPORTS IN HAWAII

The winter sports program over here in the Honolulu Sector is just about over. Only a last few basketball games remaining to be played. A short, but nevertheless exciting, boxing season concluded with Fort Shafter nosing out Fort Ruger in the final meet. This year saw a new system used, in which the boxers of one post were matched against those of another. In the first smoker, Fort Shafter beat Fort Kam to the tune of 6 to 3. The second smoker between Kam and Ruger was 7 to 2 in favor of Ruger; and in the final championship smoker, Fort Shafter managed to come out ahead, 5 to 4. At the end of the first round of basketball, Fort Kam was leading the brigade teams, followed by Forts Shafter and Ruger in that order. It appears that Luke Field will win the Sector championship, with the Brigade teams ending up in the order listed above.

Aloha.

Panama Canal Department

Department Artillery Officer

COLONEL EDWARD A. STOCKTON, JR.

Fort Amador

COLONEL FORREST E. WILLIFORD

4th C.A. (AA)

Fort Sherman

COLONEL WILLIAM T. CARPENTER

1st C.A.

Fort Randolph

COLONEL CHARLES B. MEYER

1st C.A.

Fort Amador

COLONEL FORREST E. WILLIFORD, *Commanding*

By Captain John H. Kochevar

This is the busy season, with every one trying to attend the Central American Olympics, firing target practices, preparing for maneuvers, and getting ready for the carnival.

Notwithstanding all the activities, enough time has been found to make some changes. All the troops have been equipped with sun helmets, and it is hoped to have everyone fitted with slacks in the near future. Helmets and slacks are a welcome change and add to the comfort of tropical service. The troops at Kobbé are enjoying their own theatre and their detachment commander has a new set of quarters. Tent City, a permanent camp established because of shortage of barracks, has been enlarged and is occupied by Battery "E," recently organized under Captain M. A. Hatch. With this AA machine-gun "laboratory" we hope to make greater progress on the many unsolved problems relating to antiaircraft machine guns.

TRAINING

On December 7, 1937, Battery "I," Captain R. I. Miller, commanding, was given a problem of firing a practice with two 155-mm. guns at a target coming in as nearly straight as safety regulations would permit. The only fire-control apparatus allowed was a DPF and what other equipment the battery personnel might devise on short notice. Due to the heavy and continuous rains, it took a week to clear the field of fire. Another week was used

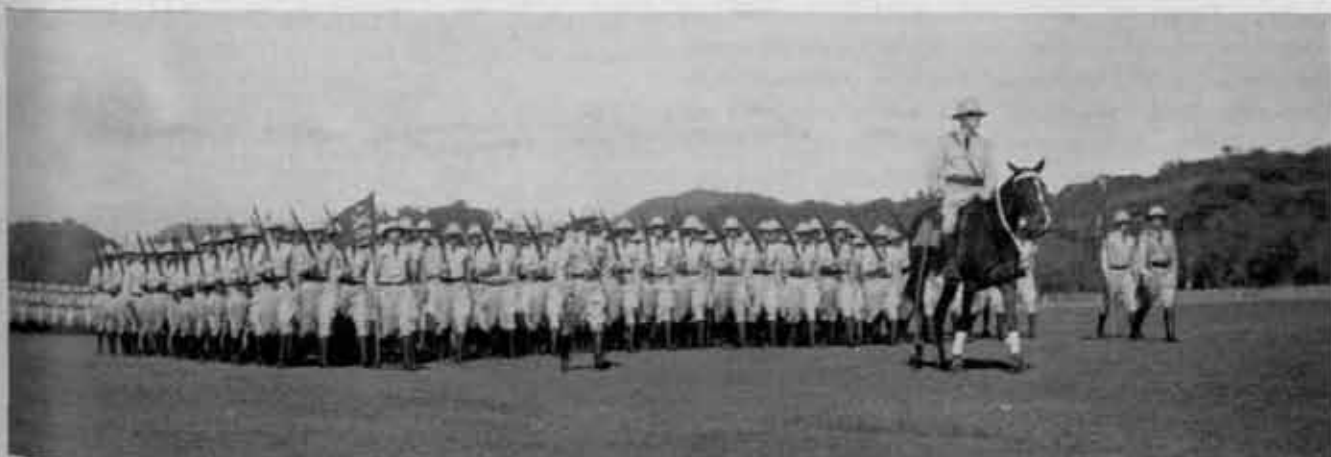
in training in which the battery got in three drills with a towed target and one sub-caliber practice. Key men were used for gun commanders, gun pointers, spotters and observers. Only one man had ever seen service with a 155-mm. battery, and 60% of the manning detail was composed of recruits with approximately three months' service. The night before the first drill, the battery personnel devised a rough range-percentage corrector and a predictor made of a tape and scales, housed in a cigar box. On December 21, 1937, the battery fired a practice of 30 rounds. It opened fire at the maximum range and when the smoke had cleared, produced a score of 272.2.

On January 7, 11, and 13th, Battery "F" fired its annual 3-inch AA gun practice and made an average score of 110 for the three firings.

On January 26, 27, and 28th, Battery "B" followed Battery "F" and made an average score of 150 for the three firings. Battery "D" is in the midst of mine practice and to date has made possibles in all phases. The tilting phase remains to be made and eight days are left of the test phase.

SPORTS

Battery "A" won the first half of the post baseball season, and Battery "G," the second half. In the three-game play-off series Captain Grindler's Battery "G" "railroaders" won the first two games and the championship. Lieutenant Jablonsky, athletic and recreation officer, has started to train the post baseball team which will represent Fort Amador in the sector league. Judging by the form our players are showing, it looks as though Fort Amador will be among the leaders.



The 4th Provisional Battalion, 4th C.A. (AA), Fort Amador, passing in review at Fort Clayton in honor of Major General George A. Lynch, Chief of Infantry.

The Fort Amador golf club came out second in the Isthmian inter-club golf matches. After a good start, Fort Amador led after the matches played at Pedro Miguel and Fort Amador, and lost their advantage to the Panama Club after a match at Gatun. Panama then took the lead and held the advantage through the Panama match. The final scores of the matches are: Panama 4,754, Amador 4,551, Gatun 4,148, and Pedro Miguel 3,827. Panama and Amador had won the Dunlop trophy twice during the last four years. Panama, winning for the third time, becomes permanent possessor of the Dunlop trophy.

For the second year in succession an Amador Coast Artilleryman has won the Department small-arms pistol competition which was held at Fort Clayton, January 10 to 14. Captain H. N. Toftoy, representing the 4th C.A., took first place with a score of 496. Last year, Major Harry R. Pierce's 494 took top honors. Captain Toftoy receives a gold medal and, since it is his third medal, he will receive the distinguished pistol shot award as well. Several civilians from the Balboa Gun Club entered the matches and second highest score, 486, was made by Mrs. J. N. Thompson, a well-known woman competitor who scored the unusually high mark of 89 at 50 yards slow-fire (3¼-inch bull's-eye) on the last day.

PERSONNEL

Recent changes in personnel have been the transfer of Lieutenant Colonel Spiller to Fort Randolph, Lieutenant Ledward to the Field Artillery with station at Francis E. Warren. Fort Amador gained Lieutenant Colonel Meyer and Lieutenant Lockhart.

* * *

Fort Sherman

COLONEL WILLIAM T. CARPENTER, *Commanding*

By Captain W. C. Rutter

New arrivals on the post are Captain and Mrs. Phillip M. Shockley, Quartermaster Corps, who came here from Presidio of San Francisco. Lieutenant and Mrs. Adam J. Buynoski arrived at the same time from Fort MacArthur. Joseph K. Wolfe, the son of Lieutenant and Mrs. Yale H. Wolfe, was born at the Colon Hospital, January 25, 1938. Lieutenant Wolfe is under orders to return to the United States. All the new arrivals are welcome additions to our post life.

Our new movie theatre is rapidly nearing completion and all are looking forward to the opening night some time in April.

The 2d Battalion, 1st Coast Artillery is busy preparing for the annual target practice. Battery "F" completed its submarine mine practice with a score of 147.1.

The 2d Battalion of the 11th Engineers, Major Leonard B. Gallagher, commanding, is busily engaged in road building on the reservation. In a short time Fort Sherman will have more miles of automobile highways than any other post in the Canal Zone.

The department maneuvers are scheduled to start during the middle of March. An interesting period of intensive training is anticipated.

The active malaria preventative measures carried out during the past year were quite effective and the malaria rate of Fort Sherman for 1937 was less than half of recent years. It is felt that with continued effort further reduction can be made.

On Saturday, February 12, 1938, the photographers of the Grantland Rice *Sportlight* came to Fort Sherman and took pictures of activities at Shimmy Beach, the only sandy beach on the Atlantic entrance to the Canal. The pictures will be incorporated in a film showing the Pan-American Olympic Games, now being held in Panama City.

Three concrete tennis courts are being constructed for the use of the men of the post. These will be completed and ready for use about the middle of April. An interesting tennis season is anticipated.

The interpost baseball season is well under way with the Fort Sherman team in fourth place. By the end of the season we confidently expect to be in first. Our enthusiastic athletic officer, Lieutenant Frederick T. Berg, has inaugurated two softball leagues at this post. The game is so popular, that in addition to the post league, a scrub league has been started with significant team names such as Mud, Hens, Mosquitoes, Sand Crabs, Cable Pullers and Bolo Boys. The winner of each league will be awarded an appropriate trophy. Lieutenant Berg is also conducting swimming classes for the children at the Hotel Washington Pool.

Our post exchange officer has made great improvements in the exchange in recent months. We now have a grocery section which stocks all household necessities from tamales to frozen fruits and vegetables. An additional building to house a modern beer garden and bowling alleys will soon be under way. This will be followed by the installation of a modern ice cream soda fountain.

The noncommissioned officers' club is now being finished and a tiled floor and bar is being installed on the ground floor.

Lieutenant Colonel John S. Smylie, IGD, a former commander of Fort Sherman, recently completed the annual inspection of this post.

The recruit detachment, under the command of Lieutenant Henry P. vanOrmer, recently disproved stories connected with the well in the courtyard of the historic Spanish stronghold of San Lorenzo. A quotation from the news letter of the 1937 March-April issue of the COAST ARTILLERY JOURNAL gives the general idea of the stories.

One of the objects that has caused great speculation is the well in the courtyard of the Fort, which is 50 feet higher than any land in its vicinity. All attempts to drain it in the past have been fruitless. It must be fed by some unknown spring. Rumor has it that a secret underground passage will be found in the side of this well if it can be emptied. Where the water comes from and why it always stands at the same height are questions as yet unanswered.

By an ingenious method devised by Lieutenant van Ormer the well was emptied with much labor. A 2-inch siphon line was run from the well over the edge of the cliff, and a pump was connected to the well end. The pump was used to fill the line and as soon as it was running full, the pump was by-passed and the siphon did the rest of the work. After the water had been drawn out, the remaining six feet of mud and debris was taken out by buckets attached to short hand ropes.

The mysterious well turned out to be a cistern or sump, 16 feet deep, with laid brick side walls and a bottom fed by rainfall. Undoubtedly there was some arrangement for collecting rain water from the roofs of buildings and the upper platform of the works. With the openings for the surface water closed, the well remained dry for several days. After everybody had a chance to see that there were no underground passages, pictures were taken for posterity; the plugs were removed and the well refilled.

Much to everybody's disappointment no gold or silver was found. However, many interesting things were uncovered—the strap iron, pins, and so on, from old gun carriages, old musket barrels, various sizes of cannon balls, and other medieval and modern objects. These indicated that this was the first time that the well has been emptied.

Interest was further intensified by the erection of a boat-swain's chair at the edge of the cliff to furnish the means to further investigate the rumor of an entrance to a secret

chamber from the side of the cliff. After an inspection trip to the bottom of the 100-foot cliff another rumor had been disproved.

The entire fort was policed, the outpost fort cleared, and several old cannon uncovered. Three cannon were found in the jungle about a mile from the Fort. Again speculation is rife as to whether or not the cannon found in the jungle belonged to Morgan or the Spaniards.

* * *

Fort Randolph

Battery "E" won the regimental baseball championship defeating Battery "H" in two games out of three. At a battalion parade Colonel William T. Carpenter, regimental commander, presented the regimental trophy to Battery "E." Lieutenant Colonel Spiller, the battalion commander, presented the post trophies for baseball and boxing to Battery "E" at battalion parades.

Battery "D" (Searchlight Battery) has completed its 1937 target practices, after a delay caused by bad weather which hampered flying. Scores were 188.9 and 179.2.

Beginning February 14, 1938 the 1st Battalion will be busy conducting target practices, both day and night.

The new movie theatre being erected at a cost of approximately \$40,000.00 will soon be ready for the initial opening.

Corregidor

BRIGADIER GENERAL WALTER K. WILSON, *Commanding*

COLONEL T. A. TERRY, *Executive*

59th Coast Artillery
COLONEL GEORGE RUHLEN

60th Coast Artillery
COLONEL J. H. CUNNINGHAM

91st Coast Artillery (PS)
LIEUTENANT COLONEL WILLIAM C. KOENIG

92d Coast Artillery (PS)
LIEUTENANT COLONEL ALBERT H. WARREN

By Major R. E. Phillips

This news letter covers the months of December and January. In December a rush schedule of additional assignment firings was inaugurated in an effort to clean up a considerable number of antiaircraft gun and machine-gun practices, which had been delayed by unseasonable weather. Again the weather man failed to cooperate and one practice had to be cancelled. Nevertheless three were fired successfully and a number of seacoast artillery units fired subcaliber practices in preparation for the January service practices. Eighteen officers and families took advantage of the Christmas holidays to visit Baguio or the Southern Islands.

The officers of the garrison and their wives assembled at the commanding general's quarters on New Year's Day to congratulate Major General Bishop on his promotion, and to present him with the insignia of his new rank. Mrs. Bishop pinned on the new stars while the onlookers applauded. After remarks by General Bishop, those present filed by to voice their congratulations and then dis-

persed to attend open house parties, held by all regimental commanders in traditional army style.

The new year came in with a wide-open throttle. Our objective is to complete all record service target practices by March 1st. We are up to schedule, six practices fired—mortars, medium and light caliber guns. The results appear to be good but we have learned to wait on the records rather than base our conclusions on shore observations. Seacoast and antiaircraft activities are assigned alternate weeks.

Social activities and athletics have tapered off under the pressure of business.

59TH COAST ARTILLERY

During the months of December and January the batteries of the 59th have trained hard. Battery Craighill, 12-inch mortars, manned by Battery "G" (Fort Hughes), fired its service practice on January 12th with satisfactory results. Battery "E" and Battery "C" fired their AA gun

practices, secondary assignments, with excellent results. The other batteries have been firing subcaliber practices and are scheduled to fire their service practices the early part of February.

The regimental track meet was held on December 8, 1937, and was fought out by Battery "B" and Battery "D." It took the final event of the meet to determine the winner, Battery "B" finally topping with 51½ points to 45 points for Battery "D." Colonel Ruhlen presented suitable gifts to the winning battery and the individual winners.

The regimental baseball league has been carrying out its schedule under the supervision of Captain Tredennick. At this date, about the half-way point in the race, Headquarters Battery is in the lead with 7 games won and 1 lost. Battery "G" is runner-up with 5 games won and 3 lost.

92D COAST ARTILLERY (PS)

December brought to a close a successful year for the 92d Coast Artillery. Lieutenant Robert M. Hardy, regimental athletic officer deserves great credit for the splendid showing of the various athletic teams. Early in December the 92d Coast Artillery (PS) boxing squad vanquished the 91st, six bouts to three. In this case Lieutenant Hardy shares the credit with Captain Douglass G. Pamplin and Sergeant Kanters who trained the fighters.

Just before the Christmas holidays the last additional assigned antiaircraft machine-gun practices were fired. This year the regiment used the Morgan sight, data for which was turned out by a range section under the direction of Lieutenant Cecil E. Spann. The results were very satisfactory.

The New Year was fittingly ushered in by Battery "A" under the command of Lieutenant Samuel McF. McReynolds, Jr., firing 3-inch S.C. guns. The following results were obtained:

Date	No. of rounds	Hits	Score
January 14	20	16	271.0
January 21	20	7	142.0

On January 4, Batteries "C" and "D," commanded by Captain Marvin J. McKinney and Lieutenant W. F. McKee respectively left Fort Mills by boat for temporary duty with the 14th Engineers on the Bataan Peninsula. On arrival at Mariveles, each organization was assigned a definite project of road building by the commanding officer of the 14th Engineers. A splendid camp site was assigned the organizations within the shadow of the famous Mariveles Mountain.

Work started on the day of arrival and continued for three weeks, eight hours per day and six days per week.

On January 22 and 23, the municipality of Mariveles had its annual fiesta. One of the highlights was a basketball tournament between the 92d Coast Artillery (PS) and the 14th Engineers, the latter being the department champions. In a hotly contested game the 92d team composed entirely of "C" Battery men won the first game by a score of 32-26. In the next game the 92d again came

to the fore by defeating the Engineers by a score of 26-25, thereby clinching the championship and the cup.

The trip as a whole proved to be very interesting as well as giving the officers and men valuable experience in the duties of another arm.

60TH COAST ARTILLERY

By Lieutenant Alfred Ashman

1937 has been a successful year for the regiment both in military and athletic lines.

The 1937 antiaircraft machine gun, searchlight, and 3-inch-gun target practices, all of which were held on Corregidor, were well ahead of those obtained the previous years. The gun batteries and the searchlight battery have their equipment in position ready for this year's service practices, which will begin in a few days. Fine practices are anticipated, as high-speed and high-altitude targets will be available. The gun battalion is commanded by Major W. F. Marquat, Battery "A" by Captain A. H. Bender, Battery "B" by Captain E. G. Martin, Battery "C" by Captain F. J. French, and Battery "D" by Lieutenant L. K. Tarrant.

Relations with the Air Corps at Nichols Field are most cordial. This regiment invited the officers and ladies of Nichols Field to visit Corregidor on December 29th. Over 50 officers and ladies came over for the day and had lunch at the Officers' Club.

The regiment continues its athletic successes against its friend and rival, the 59th Coast Artillery. Although the latter won the post basketball tournament, the 60th team turned the tables in the Philippine Department tournament, in which it secured first place. In the outdoor meet the 60th track team defeated the 59th team, 84 to 27 to win the post championship. Private Earl of Headquarters Battery won the enlisted men's golf tournament at Manila. The post baseball tournament is now in progress to be followed by the joint series with the 59th and later by the department tournament.

During the next few months this regiment will lose a number of officers. Orders have been issued to Captain W. L. Richardson and Captain A. H. Bender for the next class at Leavenworth, and to Captain F. J. French to Fort Barrancas, Florida.

91ST COAST ARTILLERY (PS)

Battery "E"—Captain Morrow, commanding, finished its antiaircraft practice (secondary assignment) during December and then fired the 1938 practice in January. Practice was well conducted despite the use of the old R.A. corrector.

Battery F (155-mm. GPF), Captain Denson, commanding, held service practice January 11; and Battery C (12-inch mortars) Captain England, commanding, held service practice January 12. In each case promising results were obtained. The rest of the batteries will complete their service practices during February.

The mine command carried on extensive operations during the month of December and first part of January. In order to make the mine planter available for tracking

and towing missions it was necessary for the mine batteries to do their work on Sundays and nights.

Battery D, Captain Krueger, commanding, left for Fort Frank on January 20th in preparation for annual target practice.

Athletic activities during December, 1937, and January, 1938, consisted mainly of an inter-battery baseball tournament, bowling during the Christmas holidays and participation in the Philippine Amateur Athletic Federation by the 91st C.A. (PS) entries.

At the end of January, 1938, Batteries "G" and "B" were tied for first place in the inter-battery baseball league, with the season less than half over at that time.

Private Fidel Binsol, Battery "E," 91st C.A. (PS), made a bit of history by winning the amateur lightweight boxing championship of the Philippine Islands after having bested all opponents in the Philippine Amateur Athletic Federation. In winning, Binsol defeated Jarring of the Far Eastern University, Manila, formerly amateur lightweight champion of the Philippines.

In successive fights, Binsol visited Iloilo, Cebu and other points defeating R. Sai of Waseda University, Japan, lightweight champion of Japan, two out of three bouts during the exhibition tour of the Philippines.

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Washington Coast Artillery Club

A large group of members of the Washington Coast Artillery Club turned out to hear Brigadier General John W. Gulick on Tuesday evening, March 8. The meeting took place in the Munitions Building and was preceded by a delightful dinner given in General Gulick's honor at the Army and Navy Club.

In addressing the Club, General Gulick traced the progress of the Coast Artillery Corps from the days of its inception by President Jefferson to the present. He summarized the principles set forth in the Endicott and Taft board reports, which constitute the basis for modern harbor defenses. General Gulick pointed out that the recommendations made by this board are still sound, and emphasized the fact that the rôle of harbor defenses is paramount and that their importance is ever increasing. To stress the important rôle played by harbor defenses in past conflicts, he cited many examples including Heliogoland and the Dardanelles. He said that the renewed activities of the Turkish Government in the Dardanelles, the Russians in the Baltic and the British at Singapore indicate that the great powers realize the importance of coast defenses.

The Coast Artillery Corps, General Gulick pointed out, is a progressive arm and deserves considerable credit for the development of railway, heavy and antiaircraft artillery. The importance of wholehearted coöperation between antiaircraft and air service was emphasized. He said that the progress in antiaircraft artillery was shown by the results obtained in target practices. These results indicate that one modern battery is equivalent in efficiency to 20 wartime batteries.

General Gulick believes that there is a need for a large caliber AA gun, and that the advantages of longer ranges and greater fragmentation and bursting effect justify this belief. The results obtained in Spain by medium caliber antiaircraft guns indicate this caliber gun to be a necessity. The need for simplification of fire control equipment for AA and seacoast artillery was strongly brought out.

He believes that the future holds the great promise for our Corps, and that the present progress and results clearly indicate what we may expect in the future. He stated that in the last ten years there has been an increase in the number of Reserve officers in the 3d C.A. District from 362 to 1,120 and future progress must keep step.

In closing, General Gulick stressed his belief that specialization is not desirable and that the progressive Coast Artillery officer must be a man of broad vision, varied experience and great capabilities. An all-around officer who can fit in where ever the emergency demands is what is needed.

After the conclusion of General Gulick's remarks, short talks were made by Congressman-at-Large James G. Scrugham of Nevada and Congressman John S. Sparkman of Alabama.

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Schenectady

By Lieutenant Lehman D. Madsen

The Schenectady Chapter, Coast Artillery Association, held its annual meeting on March 1, 1938. Officers were elected for the ensuing year as follows:

1st Lieutenant Victor Berard—President.

Captain George H. Lorimer—Vice-President.

2d Lieutenant Lehman D. Madsen—Secretary Treasurer.

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Fort Barrancas

COLONEL B. H. L. WILLIAMS, *Commanding*

By Captain J. E. Harriman

Fort Barrancas has been designated to furnish the personnel for provisional Corps Headquarters and Headquarters Company for the Third Army maneuvers, tentatively scheduled to be held in Mississippi during the period July 31-August 14th. The many specialists required are being trained, and officers and men look forward with keen interest to this important duty.

Artillery drill is being stressed for the service practices to be held during April and May. Battery "A," 13th C.A., commanded by Captain C. M. Conzelman, will fire its service practice at Battery Langdon (12-inch guns) on April 7. On May 6 it will fire its AA MG record practice. Battery "B," 13th C.A., commanded by Captain J. R. Burnett, is scheduled to fire its seacoast practice at Battery Cooper (155-mm. guns) on April 14. On May 10, it will fire its 3-inch AA record practice from Battery Air.

Plans for summer training are well under way. An unusually large number of summer camps are scheduled for this station.

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*
MAJOR GORDON B. WELCH, Ordnance Dept.
MAJOR FRANKLIN E. EDGEComb, C.A.C.
MAJOR HUGH N. HERRICK, C.A.C.

CAPTAIN HOBART HEWETT, C.A.C.
CAPTAIN CORTLANDT VAN R. SCHUYLER, C.A.C.
CAPTAIN CHARLES E. SHEPHERD, C.A.C.
CAPTAIN EDWIN W. CHAMBERLAIN, C.A.C.

TIME INTERVAL APPARATUS EE-86-T1 AND TIME INTERVAL BELL, MC-153 (PROJECT No. 1096). This equipment was described in the September-October, 1937, issue of the COAST ARTILLERY JOURNAL. The tests were completed in January and the Board found that, with certain minor modifications, the time interval transmitter and the time interval bells will be satisfactory for Coast Artillery purposes. The time source was found to be delicate and not sufficiently reliable. The Board recommended that efforts be made to develop a new and better time source.

OVERALL GUN COVERS FOR 155-MM. MATÉRIEL (PROJECT No. 1099). During 1936, the Coast Artillery Board conducted a test to determine the suitability of an overall gun cover for 155-mm. matériel. The equipment tested was described in the January-February, 1937, issue of the COAST ARTILLERY JOURNAL.

As a result of the Board's recommendation, the cover was redesigned and returned for further test. The redesigned cover consisted of forward and rear sections. The forward section covers the top carriage, cradle and the middle portion of the gun. The rear section covers the rear end of the gun and the breech block. It is adaptable for use in both the firing and traveling positions.

The test conducted by the Board demonstrated its suitability for use by the Coast Artillery Corps and it was recommended that the cover be issued in lieu of the 12-by-12-foot paulin now furnished. In view of the fact that under many conditions the present sight mount, breech and piston rod covers furnish adequate protection, it is believed desirable to continue them as standard, for use when the complete protection afforded by the overall cover is not needed.

SIGNAL LAMP EQUIPMENT EE-84-T4 (PROJECT No. 1111). This equipment was described in the COAST ARTILLERY JOURNAL for November-December, 1937. It was hoped that this equipment would prove to be suitable as a replacement for two or more of the types of signal lamp

equipment which are now standard for Coast Artillery uses. It was found that the directional characteristics of this lamp were such that it was suitable only for signaling between fixed stations on the ground. Since standard equipment, at present, is adequate for this purpose the Board recommended against standardizing Signal Lamp Equipment EE-84-T4 for Coast Artillery uses and recommended that efforts be continued to develop an all-purpose signal lamp.

CAMOUFLAGE EQUIPMENT (PROJECT No. 1115). A number of camouflage nets of experimental types, developed in accordance with recommendations of the Chief of Infantry, were furnished by the Chief of Engineers to various infantry organizations for service test. At the request of the Chief of Coast Artillery, four of these experimental nets were shipped to the Coast Artillery Board for a test to determine their possible usefulness as items of camouflage equipment for antiaircraft units.

Present Tables of Basic Allowances, Coast Artillery Corps, provide for issue, for mobilization, when prescribed by the commanding officer, of four camouflage nets per lettered battery of the antiaircraft regiment. These nets are 36 feet by 44 feet, a standard size used throughout all Coast Artillery units and also by heavy Field Artillery organizations. The experimental infantry nets were of smaller sizes. They were tested with a view to their possible use in either supplementing or replacing the standard size.

It has been thoroughly established that natural camouflage, when available, is always preferable to camouflage by artificial means. In open country, however, and even in thinly wooded localities during certain seasons of the year, facilities for natural camouflage often may be quite limited. It is under such conditions that resort must be had to artificial means, a basic element of which is the wire mesh or fish net. In permanent or semi-permanent positions wire nets, having more rigidity, are preferable but their greater weight and bulk make them less suitable

than fish nets for mobile units. Leaves, grass, branches, or strips of burlap painted to blend with the surrounding terrain, are woven into the nets, which are then stretched horizontally on a wire framework above the object to be camouflaged. The screen thus formed conceals the object from direct aerial observation and breaks up the shadow so as to make it indistinguishable on aerial photographs.

The nets tested were similar in all respects except size and shape to the standard nets now provided. They were essentially light, durable fish nets, with a two-inch mesh, strengthened along the edges by $\frac{1}{4}$ -inch rope. Two sizes were provided. The larger size was circular in shape, thirty feet in diameter. It was intended primarily for use in camouflaging tanks. The smaller size was twelve feet square, to be used in camouflaging machine guns and special infantry weapons.

For purposes of comparison, a standard light artillery camouflage net, 36 feet by 36 feet, was also used in the tests. This size is employed by the Field Artillery for camouflaging light and medium artillery. The light artillery net was used in the instant tests as a substitute for the standard Coast Artillery net (36 feet by 44 feet), there being none of the latter size available at the time.

The tests included emplacing various antiaircraft weapons and vehicles in simulated field positions, and camouflaging them by means of the nets, which had previously

been suitably prepared for the purpose by weaving strips of painted burlap into the mesh. The procedure outlined in paragraph 12 *b*, *Engineer Field Manual*, Volume II, Part 2, was closely followed in preparing and installing the nets. The 30-foot tank nets were used to camouflage a 3-inch antiaircraft gun and a prime mover. The 12-foot weapon nets were used to camouflage machine guns.

Numerous photographs were taken from the air and the ground and were carefully studied to determine the relative merits of the standard and experimental nets.

The tests revealed that the experimental tank net is too small for use with a 3-inch antiaircraft gun and that the present standard (36 feet by 44 feet) Coast Artillery net is best suited for this purpose. Although the special weapon net was found to be of a suitable size for fire control instruments and machine guns, a careful study of the aerial photographs indicated that such matériel, even when uncamouflaged, is so difficult to distinguish from the air that little necessity for camouflage nets exists.

The task of concealing trucks and prime movers by artificial means is so difficult as to be almost hopeless. The tops of these vehicles are at a considerable height from the ground, so that they cast long, easily distinguishable shadows. For efficient concealment they would require nets and framework whose size would practically prohibit their use in any but stabilized situations. It was therefore concluded that, in the general case, it is undesirable to provide artificial camouflage for such vehicles.

Accordingly, the Coast Artillery Board concluded that present types and allowances of camouflage nets for antiaircraft organizations are satisfactory and that no changes should be made.

SPERRY SOUND LOCATOR (PROJECT NO. 1118). A new sound locator, designed and constructed by the Sperry Gyroscope Company, was recently furnished the Coast Artillery Board. It had previously been extensively tested by the Ordnance in comparison with the standard sound locator M1A8 and by the Engineers in connection with other searchlight equipment.

The Sperry Sound Locator differs considerably in appearance from the standard types. It is equipped with only three small horns instead of the conventional four, one horn having a split sound track so that one of its tubes goes to the azimuth listener and the other to the elevation listener. The horns are of a combined conical and exponential type. Their outer surfaces are constructed of aluminum alloy covered with laminated wood to deaden the vibration effect. Inner surfaces are of balsa wood, specially treated on the surface to prevent the entry of moisture. All edges and corners are carefully rounded to reduce possible wind vibration effects.

The acoustic corrector, also, is radically different from the standard design. It is simple in construction and is particularly adapted for use

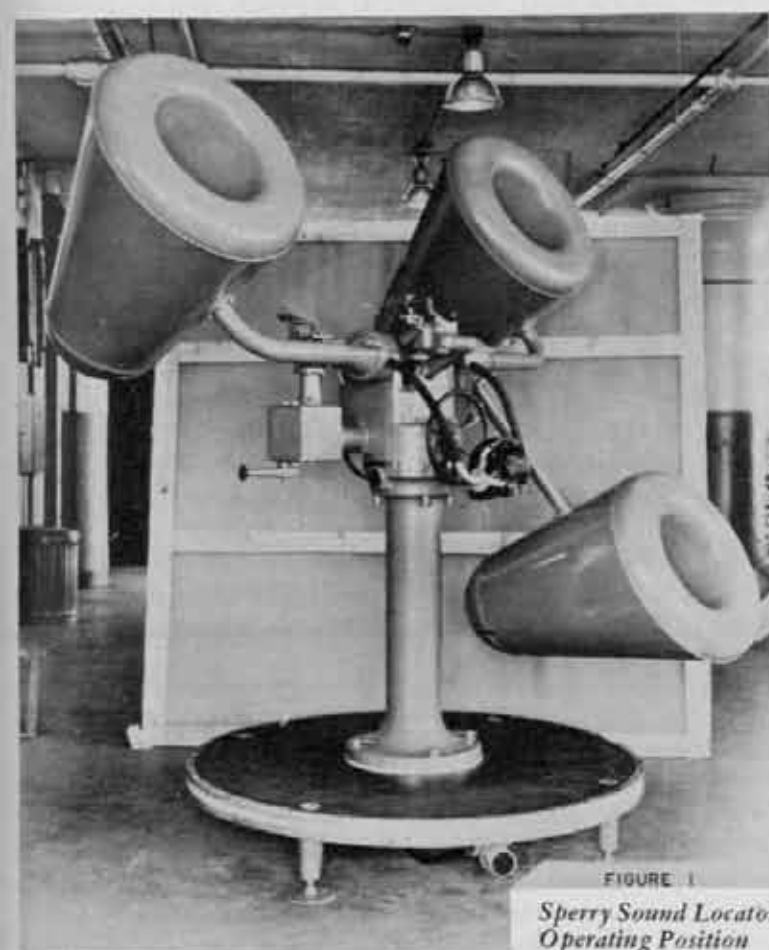


FIGURE 1

Sperry Sound Locator
Operating Position

with high-speed targets. Instead of an estimated altitude, which is the basic element in standard correctors, the Sperry Corrector uses the estimated target speed. Provision is included also for correcting for the parallax between the searchlight and sound locator.

The horn structure and the acoustic corrector are both mounted on one light pedestal which also serves as a platform on which the operators stand. No trailer is provided, as the entire instrument breaks down into five loads for transport, the loads varying in weight between 30 and 295 pounds. Three men are required for its operation, one for elevation listening, one for azimuth listening, and one for operation of the acoustic corrector.

Comparative data on the Sperry Sound Locator and the standard M1A8 sound locator are as follows:

	SPERRY LOCATOR	M1A8
Over-all weight	450 pounds	1815 pounds (excluding trailer, which weighs 4,000 pounds).
Over-all height at 0° elevation (operating position).	108 inches	180 inches
Baseline, C-C of horns	72 inches—azimuth 60 inches—elevation	111 inches
Type of horn	Combined conical and exponential	Exponential
Construction of horn	Aluminum alloy and sound and vibration proofing materials	Aluminum
Number of horns	Three	Four
Length of sound track	100 inches	204 inches
Limits of operation—azimuth	360 degrees	360 degrees
Limits of operation—elevation	0 to 90 degrees	—10 to 100 degrees
Total number of operators required	Three	Three

In view of the comparative data already available from previous investigations, the Coast Artillery Board tests were largely of an operational nature. They comprised movements of the locator into position, setting up, orienting, and tracking assigned targets and, for night tests, illumination of the target on sound locator data.

The Board concluded that the Sperry locator is definitely superior to present standard instruments in (1) accuracy, (2) method of determining and applying sound lag corrections, (3) portability and (4) general operational characteristics. Accordingly, it was recommended that the Sperry sound locator be standardized and that future procurement of sound locators be of the Sperry type.

WESTINGHOUSE ANTI-AIRCRAFT SEARCHLIGHT (PROJECT No. 1121). The Coast Artillery Board has recently completed a test of the Westinghouse anti-aircraft searchlight unit, Model 1934. This light was built in the fall of 1935 by the Westinghouse Electric and Manufacturing Company and for the past two years has been under test by the Engineer Board at Fort Belvoir, Virginia. In general appearance it closely resembles the 1934 Sperry unit, but differs from it in many details. The most important of these differences are:

(1) Distant electric control by means of an electrical-

mechanical system employing alternating current, instead of the direct current step-by-step system.

(2) Entire redesign of the lamp mechanism and arc operating mechanism.

(3) Redesign of all relays, resistors and other features of electric circuits.

(4) Hinged front door to permit easy access to the interior of the drum for cleaning and recarboning.

(5) Redesign of auxiliary loading and unloading equipment on the searchlight truck chassis.

(6) Provision for a searching motor on the control station so that searching may be either electrical, by hand, or a combination of both.

(7) Redesign of the binocular mounting on the control station.

Tests by the Coast Artillery Board included:

(1) Movements into and out of position.

(2) Operation (both day and night) of searchlight, power plant and control station.

(3) Recarboning and cleaning of light and other normal battery maintenance operations.

(4) Road marches over both first and second class roads.

For purposes of comparison, a 1934 Sperry mobile, 60-inch, anti-aircraft searchlight unit was subjected to a series of tests identical with the tests of the Westinghouse unit.

The Board found that the Westinghouse unit, although in general not so simple to operate and maintain as the 1934 Sperry light, possesses certain advantages which merit consideration when formulating plans for future searchlight development. A particularly interesting feature is the electro-mechanical distant control device which appears to eliminate one serious source of trouble in the 1934 Sperry unit; i.e., the possible loss of orientation if the light is being elevated or traversed at the instant the arc is struck. It was felt, however, that before reaching final conclusions with reference to this type of control, the entire unit should be subjected to more extended service use. Accordingly, it was recommended that the Westinghouse searchlight be retained at Fort Monroe for further observation and test.

POLARIZING DISCS FOR AZIMUTH INSTRUMENTS. During the past few years much has been written in commercial publications about the many uses and advantages offered by polarized light filters.

Since the light reflected from the surface of the ocean is partially polarized, it was believed that the use of such a filter in the optical system of an azimuth instrument might afford considerable relief to an observer tracking a target in the glare of the sun.

Accordingly, a standard M1910 azimuth instrument was fitted with a polarizing disc which could be moved in and out of position and rotated about its axis. The Board, utilizing occasions when the glare on the water was intense made observations to determine what advantage, if any, could be obtained from its use as compared with the use of the standard amber filter.

These observations showed that both the polarizing

filter and the amber filter eliminated the glare sufficiently to obviate any interference from this source. In general, the amber filter was believed superior. It was therefore recommended that no further action be taken.

FORT BRAGG ANTI-AIRCRAFT EXERCISES. The Board has completed a study of the antiaircraft firings over land areas which were conducted by the 62d Coast Artillery (AA) at Fort Bragg, North Carolina, during October-November, 1937. At present all antiaircraft gun batteries necessarily hold their target practices over water areas with a consequent introduction of many artificialities into the simulated service conditions. It was felt that certain of these artificialities could be eliminated by land firings where the front of the battery would not be limited by an adjacent shore line and that the forward installations, which normally would be available under service conditions, could be used.

An important phase of the exercise was the test of the effectiveness of spotting by observers located in front of the battery so that they would be approximately beneath the target. For the sake of safety these observers were protected by dugouts, spotting being done by means of specially designed "dug-out spotters" which worked on a periscopic principle. Fire was observed both from surveyed observing stations, the angular unit method being used for adjustment, and from unsurveyed stations, the fuze range pattern method being used for adjustment. At the same time fire was observed from a flank spotting station and from stereoscopic height finders so that a comparison of all these methods could be made.

Four practices were fired using the angular unit method of adjustment and three were fired using the fuze range pattern method. Altitudes and slant ranges were kept at the maximum practicable and the courses were varied as far as safety permitted. Two guns were fired in the practices in which the angular unit method was used for adjustment; three guns were used in the fuze range pattern practices. In using the fuze range pattern the spread was obtained by mismatching the pointers of the fuze range indicators on the two flank guns. It was found that this method could be used successfully to furnish an adjustment pattern and that, by careful training of fuze range indicator operators, the spread could be applied or removed at will.

A comparison of the effectiveness of the various spotting methods tried out indicated that the angular unit method was slightly superior to the fuze range pattern method but that both methods may be expected to furnish a reliable means of adjustment under actual service conditions. In a situation where a battery forms part of a 360-degree defense three spotters, located approximately 120 degrees apart on the circumference of a circle whose radius is roughly 3,000 yards and whose center is at the battery, should insure reasonably effective fire adjustment for all around fire using either of these adjustment methods. No distinct advantage in spotting was indicated in a situation

where the target was directly over the spotter's head as compared to one where the target was on the spotter's flank so long as the range: spotter-target did not become too great nor the angle: spotter-target-guns become too small. This situation should occur infrequently with three spotters located as indicated above.

No preparation of fire was used in these exercises as it was desired that initial bursts be well off the target, thus requiring an appreciable adjustment correction. The effectiveness of the fire suffered considerably from such lack of fire preparation and adjustment was made more difficult due to the large deviation of initial bursts. In order to obtain comparative data on the value of careful fire preparation past target practice reports were studied, in conjunction with the reports of the Fort Bragg exercises. It was interesting to note that in the gun target practices conducted by the Regular Army in 1937, 86.6 per cent of all hits scored were obtained without benefit of a range correction made during a course as a result of observation of fire. Range corrections, other than the initial correction with which fire was opened, were made on 52 of the 159 courses considered. The target practice records indicate that 19.2 per cent of such corrections improved fire, 34.6 per cent impaired fire and 46.2 per cent had no effect. It is apparent from this that corrections, determined by a careful preparation of fire, should not be too quickly discarded in favor of hastily determined corrections which are based upon spotting. In other words adjustment of fire, based upon observed deviations *during a course*, should be the final recourse of a battery whose fire is ineffective.

Two practices were conducted in which two 2-gun batteries fired on a common target at the same time. The number of rounds fired in these two practices was too small to warrant the drawing of definite conclusions regarding the feasibility of fire adjustment under such conditions. It was indicated, however, that the differentiating of bursts by battery spotters is going to be extremely difficult.

Based upon a study of the Fort Bragg firings combined with a study of normal target practice reports the Board concluded that:

- (1) Primary dependence should be placed upon careful preparation of fire but provision must be made for observation and adjustment of fire.
- (2) Reliable fire adjustment is possible using either the angular unit or the fuze range pattern method.
- (3) Adjustment, when using the angular unit method, should be reasonably accurate when spotting stations are located by map rather than by survey.
- (4) Two spotting stations, located within the boundaries of the normal zone of a battery will permit accurate spotting throughout that zone.
- (5) Three spotting stations, located approximately 120 degrees apart on the circumference of a 3,000-yard circle, will permit reasonably accurate spotting for all around fire.

The Contributors

Dr. H. A. DEWEERD, professor of history at Denison University, contributes a portrait of von Hindenburg that may give you a new slant on the hero of the Masurian Lakes.

1st Lieutenant PETER E. DONNELLY, 243d Coast Artillery (HD), Rhode Island National Guard, was born in Massachusetts. His military career began in 1922 with an enlistment in the Coast Artillery Corps of the National Guard from which he was discharged in 1925 with the grade of sergeant. He again enlisted in 1930, winning his commission in the spring of 1931. His promotion to first lieutenant came in May, 1934.

Lieutenant Donnelly was graduated from Brown University in 1929 with the degree of Ph.B. He is State Director of the National Youth Administration for Rhode Island.

The biography of PETER B. KYNE appeared in the January-February number of the JOURNAL. At last report he was still hard at work grinding out scenarios for the movies.

The biography of FLETCHER PRATT appeared in the September-October, 1937 number of the JOURNAL. His latest book, *The Lost Battalion*, was written in collaboration with another JOURNAL author—Thomas M. Johnson. *The Lost Battalion* is scheduled for publication by the end of March.

Captain PETER RODYENKO, Corps of Engineers Reserve, was born in Russia. During the World War he served in the former Imperial Russian Army and as an advisor to the Republican Chinese Government. After coming to the United States he served as private and second lieutenant in the 244th Coast Artillery, New York National Guard. Upon resignation from the National Guard he accepted appointment in the Officers' Reserve Corps. His current Reserve assignment is that of commanding officer, 40th Battalion (Camouflage, GHQ).

By profession Captain Rodyenko is an interior designer and consulting decorator. He has received training as an architect and civil engineer at various European schools and holds the degree of Doctor of Laws. Various articles on camouflage from his pen have been published in the *Chemical Warfare Service Bulletin*, *The Reserve Officer*, and the *Military Engineer*. He holds a certificate of capacity for the grade of major, Corps of Engineers Reserve. Captain GRAYSON SCHMIDT, Coast Artillery Corps, a native of California, graduated from the United States Military Academy with the Class of 1924. All his service has been with the Coast Artillery. He is a graduate of

the Battery Officers' Course (1932) and the Advanced Gunnery Course (1933), of the Coast Artillery School.

Captain Schmidt's main interest is aerial machine gunnery. The greater portion of his career has concerned itself with the problem incident to registering hits on a plane. At present he is on duty as instructor in the department of mathematics at the Military Academy.

ROGER SHAW has contributed to a number of nationally known periodicals. At present he is the foreign news editor of the *Literary Digest*.

Major General A. H. SUNDERLAND, Chief of Coast Artillery, has been, on the date of this issue of the JOURNAL, the chief of his arm for two years. Remarkable progress has been made during these two years in the development and procurement of antiaircraft equipment.

Except for short details on the General Staff, General Sunderland's service has been entirely as an artilleryman. During the World War he was in direct charge of the training of officers, officer candidates, and specialists at Fort Monroe. Regimental and harbor defense commands gave him further experience with training problems.

As President of the Coast Artillery Board, he initiated important antiaircraft developments, and gained a varied experience in Coast Artillery development problems.

As Chief of Coast Artillery, all the problems of the Coast Artillery Corps are his responsibility. From experience and from viewpoint, no one is better qualified to interpret the meaning of the antiaircraft augmentation proposed by the President.

Captain D. B. WILSON, Coast Artillery Corps Reserve, hails from New York City. After graduation from the Coast Artillery CMTC he was commissioned a second lieutenant, CA-Res in 1928. His promotion to first lieutenant came in 1931 and his captaincy in 1935. He is a graduate of the Special Battery Officers' Course, the Coast Artillery School (1935). His emergency assignment is to the Coast Artillery Board.

In civil life Captain Wilson's occupation has been mainly electrical. After graduation from the Pratt Institute in 1930 as an electrical engineer, he spent five years in vacuum tube applications with RCA. He has also had some experience with engineering work in aircraft radio navigating instruments.

For hobbies Captain Wilson devotes himself, naturally enough, to radio and electrical gadgeteering, collecting regimental insignia, and doping out ways and means for better seacoast artillery training.

Coast Artillery Orders

(Covering the Period January 1 to February 28, 1938)

Colonel O. H. Longino, from General Staff with troops, Panama, to 69th, Ft. Crockett.

Lieutenant Colonel K. T. Blood, from General Staff with troops, Hawaii, to office Chief of Coast Artillery.

Lieutenant Colonel A. G. Campbell promoted Colonel, February 1.

Lieutenant Colonel J. L. Homer, from office, Chief of Coast Artillery to student, Army War College.

Lieutenant Colonel H. F. Loomis, from Org. Res., New York, to student, Army War College.

Lieutenant Colonel C. T. Marsh promoted Colonel, January 29.

Lieutenant Colonel J. B. Maynard promoted Colonel, February 1.

Lieutenant Colonel H. F. Nichols, from 4th C.A. Dist., Ft. McPherson, to instructor, Coast Artillery School, August 1.

Lieutenant Colonel J. C. Ruddell, from Mass. Inst. of Technology, to student, Army Industrial College.

Lieutenant Colonel J. L. Sinclair, from instructor, Va. National Guard, Lynchburg, to 52d, Ft. Hancock.

Lieutenant Colonel R. H. VanVolkenburgh, from student, Naval War College, to Hawaii, sailing New York, June 10.

Major C. W. Bundy, from office, Chief of Coast Artillery, to student, Naval War College.

Major H. D. Cassard, from Hawaii, to 9th, Ft. Banks. Previous orders amended. Major Mario Cordero, from Pearl River College, to 13th, Ft. Barrancas.

Major E. R. Crowell, from Hawaii, to 6th, Ft. Winfield Scott.

Major L. C. Dennis, from student, Command and General Staff School, to instructor, Coast Artillery School.

Major G. W. Dunn, Jr., from Panama, to 13th, Ft. Moultrie.

Major L. D. Farnsworth, from 62d, Ft. Totten, to Panama, sailing New York, April 26.

Major C. G. Foltz, from the Philippines, to instructor, Coast Artillery School.

Major J. H. Gilbreth, from 9th, Ft. Banks, to the Philippines, sailing New York, March 25.

Major D. M. Griggs, from student, Command and General Staff School, to instructor, Coast Artillery School.

Major F. H. Hastings, from Adjutant General's Department, Washington, D. C., to office of the Assistant Secretary of War.

Major C. J. Herzer promoted Lieutenant Colonel, February 1.

Major W. D. Hohenthal, from instructor, Brazilian Army, Rio de Janeiro, to 62d, Ft. Totten, June 1.

Major H. R. Jackson, from instructor, Coast Artillery School, to Mass. Inst. of Technology.

Major E. W. King, from 13th, Ft. Barrancas, to Pearl River College.

Major O. D. McNelly, from student, Command and General Staff School, to instructor, Coast Artillery School.

Major R. N. Mackin, from instructor, Coast Artillery School, to 62d, Ft. Totten.

Major D. E. Morrison, from student, Command and General Staff School, to instructor, Coast Artillery School.

Major G. W. Whybark, from Panama, to Second Corps Area, Governors Island.

Captain W. I. Allen, from student, Command and General Staff School, to instructor, Coast Artillery School.

Captain B. E. Cordell, from Hawaii, to 9th, Ft. Banks.

Captain K. L. F. deGravelines, from Panama, to 62d, Ft. Totten.

Captain F. J. French, from the Philippines, to 13th, Ft. Barrancas.

Captain G. G. Gibbs, from 14th, Ft. Worden, to Panama, sailing San Francisco, May 14.

Captain J. E. Harriman, from 13th, Ft. Barrancas, to student, Army War College.

Captain M. H. Harwell, from 61st, Ft. Sheridan, to Panama, sailing New York, June 21.

Captain Hobart Hewett, from Coast Artillery Board, to student, Army War College.

Captain W. G. Holder, from Hawaii, to 51st, Ft. Monroe.

Captain J. J. Holst, from Panama, to 62d, Ft. Totten.

Captain R. C. Jones promoted Major, February 1.

Captain F. R. Keeler, from 6th, Ft. Winfield Scott, to Adjutant General's Department, Ft. Lewis, March 15.

Captain V. M. Kimm, from student, Coast Artillery School, to 10th, Ft. Adams.

Captain R. H. Kreuter, from student, Air Corps Tactical School, Maxwell Field, to Coast Artillery Board.

Captain O. H. Kyster, Jr., from Ft. Monroe, to the Philippines, sailing New York, March 25.

Captain N. A. McLamb, from Hawaii, to USAMP *General Absalom Baird*, Ft. H. G. Wright.

Captain J. D. Moss, Ft. Monroe, to Adjutant General's Dept., Ft. Hayes, March 15.

Captain D. G. Pamplin, from the Philippines, to instructor, Coast Artillery School.

Captain R. B. Pape, from student, Command and General Staff School, to assistant military attaché, Tokyo, Japan.

Captain W. H. Papenfoth, from 69th, Ft. Crockett, to instructor, C.A. New Hampshire National Guard, Concord.

Captain Frank Richards, transferred to Finance Department, February 11.

Captain W. L. Richardson, from the Philippines, to 6th, Ft. Winfield Scott.

Captain I. H. Ritchie, from West Point, to Hawaii, sailing New York, June 10.

Captain Grayson Schmidt, from West Point, to Hawaii, sailing New York, June 10.

Captain R. E. Starr, from student, Coast Artillery School, to student, Army War College.

Captain J. F. Sturman, Jr., Ft. Hayes, to student, Coast Artillery School.

Captain H. W. Ulmo, from 13th, Ft. Moultrie, to Hawaii, sailing New York, March 25.

Captain H. J. Vandersluis, from student,

Command and General Staff School, to instructor, Coast Artillery School.

Captain L. D. Vichules, retired, February 28.

Captain A. M. Wilson, Jr., from student, Command and General Staff School, to Univ. of Washington, Seattle.

First Lieutenant G. N. Adams, from student, Coast Artillery School, to 51st, Ft. Monroe.

First Lieutenant S. R. Beyma, from Hawaii, to 62d, Ft. Totten. Previous orders amended.

First Lieutenant E. A. Chapman, from student, Coast Artillery School, to 69th, Ft. Crockett.

First Lieutenant N. A. Congdon, from student, Coast Artillery School, to 9th, Ft. Banks.

First Lieutenant A. J. Cooper, Jr., from 52d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant H. B. Cooper, Jr., from student, Coast Artillery School, to 51st, Ft. Monroe.

First Lieutenant I. W. Cory, from student, Coast Artillery School, to 62d, Ft. Totten.

First Lieutenant G. H. Crawford, from 13th, Ft. Barrancas, to student, Coast Artillery School.

First Lieutenant T. J. Dayharsh, from Hawaii, to 6th, Ft. Winfield Scott.

First Lieutenant P. V. Doyle, from student, Coast Artillery School, to 62d, Ft. Totten.

First Lieutenant C. G. Dunn, from student, Coast Artillery School, to 51st.

First Lieutenant H. W. Ebel, from 2d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant F. W. Ebey, from 11th, Ft. H. G. Wright, to student, Coast Artillery School.

First Lieutenant R. G. Finkenaur, from 2d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant W. G. Fritz, from Ft. Totten, to student, Coast Artillery School.

First Lieutenant A. L. Fuller, Jr., from student, Coast Artillery School, to USAMP *General Absalom Baird*, Ft. H. G. Wright.

First Lieutenant R. E. Gallagher, from Panama, to student, Coast Artillery School.

First Lieutenant H. A. Gerhardt, from Ft. Adams, to student, Coast Artillery School.

First Lieutenant S. F. Giffin, from 2d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant T. A. Glass, from student, Coast Artillery School, to 13th, Ft. Barrancas.

First Lieutenant R. D. Glassburn, from 13th, Ft. Barrancas, to student, Coast Artillery School.

First Lieutenant C. E. Green, from 69th, Ft. Crockett, to student, Coast Artillery School.

First Lieutenant E. G. Griffith, from Univ. of Mexico, Mexico City, to U.S.M.A., West Point, July 1. Previous orders amended.

First Lieutenant R. W. Hain, from 62d,

Ft. Totten, to student, Coast Artillery School.

First Lieutenant T. F. Hoffman, from Hawaii, to student, Coast Artillery School.

First Lieutenant H. J. Jablonsky, from Panama, to U.S.M.A., West Point.

First Lieutenant D. B. Johnson, from student, Coast Artillery School, to 51st, Ft. Monroe.

First Lieutenant Harry Julian, from student, Coast Artillery School, to 52d, Ft. Hancock.

First Lieutenant Franklin Kemble, Jr., from student, Coast Artillery School, to 69th, Ft. Crockett.

First Lieutenant K. R. Kenerick, from 2d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant V. H. King, from 51st, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant G. L. Kushner, from the Philippines, to 62d, Ft. Totten. Previous orders amended.

First Lieutenant R. C. Leslie, from student, Coast Artillery School, to 2d, Ft. Monroe.

First Lieutenant Laffar Lipscomb, Jr., from student, Coast Artillery School, to 11th, Ft. H. G. Wright.

First Lieutenant W. B. Logan, from student, Coast Artillery School, to 11th, Ft. H. G. Wright.

First Lieutenant T. K. MacNair, from student, Coast Artillery School, to 2d, Ft. Monroe.

First Lieutenant S. McF. McReynolds, Jr., from 51st, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant R. L. Matteson, from 52d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant S. M. Mellnik, from 11th, Ft. H. G. Wright, to student, Coast Artillery School.

First Lieutenant E. W. Moore, from 52d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant R. W. Moore, from 2d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant R. R. Moorman, to student, Coast Artillery School. Previous orders amended.

First Lieutenant R. M. Nelson, from 51st, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant M. L. Ogden, from 51st, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant C. G. Patterson, from

student, Coast Artillery School, to 62d, Ft. Totten.

First Lieutenant P. S. Peca, to student, Coast Artillery School. Previous orders amended.

First Lieutenant A. C. Peterson, Fort Monroe, to student, advance technical course, Coast Artillery School.

First Lieutenant J. S. Pizam, from 51st, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant C. W. Powell, from Panama, to student, Coast Artillery School.

First Lieutenant L. C. Ratcliffe, from 69th, Ft. Crockett, to student, Coast Artillery School.

First Lieutenant I. D. Roth, from student, Coast Artillery School, to 61st, Ft. Sheridan.

First Lieutenant W. A. Rude, from student, Coast Artillery School, to 13th, Ft. Barrancas.

First Lieutenant S. C. Russell, from student, Coast Artillery School, to student, advanced technical course.

First Lieutenant W. M. Skidmore, from student, Coast Artillery School, to student, advanced technical course.

First Lieutenant T. V. Stayton, from student, Coast Artillery School, to student, advanced technical course.

First Lieutenant Preston Steele, from student, Coast Artillery School, to 69th, Ft. Crockett.

First Lieutenant J. DuV. Stevens, from 52d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant A. J. Stuart, Jr., from 51st, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant A. J. Sutherland, from Panama, to student, Coast Artillery School.

First Lieutenant J. F. Thorlin, from 69th, Ft. Crockett, to student, Coast Artillery School.

First Lieutenant H. S. Tubbs, from 2d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant R. A. Turner, from student, Coast Artillery School, to student, advanced technical course.

First Lieutenant W. E. H. Voehl, from 2d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant G. J. Weitzel, to student, Coast Artillery School. Previous orders amended.

First Lieutenant R. L. Williams, Jr., from 52d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant D. M. Wilson, from 2d,

Ft. Monroe, to student, Coast Artillery School.

First Lieutenant Y. H. Wolfe, from 2d, Ft. Monroe, to student, Coast Artillery School.

First Lieutenant F. J. Zeller, from student, Coast Artillery School, to 69th, Ft. Crockett.

Second Lieutenant M. H. Clark, from 62d, Ft. Totten, to Hawaii, sailing New York, March 25.

Second Lieutenant G. W. Coker, from 13th, Ft. Barrancas, to the Philippines, sailing San Francisco, June 23.

Second Lieutenant W. G. DeBill, from Air Corps Primary Flying School, Randolph Field, to Panama, sailing Charleston, April 16.

Second Lieutenant R. H. Fitzgerald, from 51st, Ft. Monroe, to Panama, sailing New York, April 26.

Second Lieutenant R. H. Kessler, from 52d, Ft. Monroe, to the Philippines, sailing New York, March 25.

Second Lieutenant E. M. Lee, from Air Corps Primary Flying School, Randolph Field, to Hawaii, sailing San Francisco, March 5.

Second Lieutenant E. W. McLain, from 13th, Ft. Barrancas, to the Philippines, sailing New York, March 25.

Second Lieutenant T. McG. Metz, from 2d, Ft. Monroe, to the Philippines, sailing New York, March 25.

Second Lieutenant T. D. Neier, from 6th, Ft. Winfield Scott, to Hawaii, sailing San Francisco, May 7.

Second Lieutenant C. S. O'Malley, Jr., from 6th, Ft. Baker, to Hawaii, sailing San Francisco, May 7.

Second Lieutenant H. P. Persons, Jr., from 6th, Ft. Winfield Scott, to Hawaii, sailing San Francisco, March 5.

Second Lieutenant W. G. Root, from Hawaii, to Air Corps Training Center, Randolph Field.

Second Lieutenant D. W. Shive, from 62d, Ft. Totten, to Hawaii, sailing New York, March 25.

Second Lieutenant G. V. Underwood, Jr., from 6th, Ft. Winfield Scott, to Hawaii, sailing San Francisco, April 20.

Second Lieutenant H. B. Whipple, from 2d, Ft. Monroe, to the Philippines, sailing New York, March 25.

Second Lieutenant W. J. Worcester, from 52d, Ft. Monroe, to Panama, sailing New York, June 21.

Second Lieutenant C. G. Young, from 52d, Ft. Hancock, to Hawaii, sailing New York, March 25.

A SELF-GOVERNING NATION must be a self-respecting nation. Nor is it enough that we have a million men who have the courage to face guns. A million men unprepared to work together no more constitute an army than eleven boys who can kick a football make a college team.—DR. LYMAN ABBOTT.

Book Reviews

WEST POINT TODAY. By Kendall Banning. New York: Funk & Wagnalls, Inc., 1937. 312 pages; illustrated, \$2.50.

Among those to whom Mr. Banning makes grateful acknowledgment for help in preparing this book are White's Studio, Mr. Mayer, and Marty Maher. Hence *West Point Today* is not the formal guidebook that it might have been, but a well-illustrated and informative account, which has captured much of the spirit of modern West Point, but which at the same time is as full of gossip as Marty himself.

Although interesting to anyone interested in the Academy, this book should appeal particularly to two classes—those who were graduated more than ten years ago, and those who hope to enter West Point in the near future. During the last decade West Point has had its face lifted, and the old grad who reads this book will see just how much. The prospective cadet, too, will find much useful information here; in fact the book should be required reading for these young gentlemen, if for no other reason than that it explains the reasons for Beast Barracks. There is a chapter on athletics, in which the reader finds that hockey certainly is not over-emphasized, a chapter on the honor system, one on June Week, and even one for femmes, who, like new cadets, the author believes should be warned.

The book is full of illuminating facts concerning such buildings as the Library, the Ordnance Museum, and, of course, Cullum Hall. Cadets themselves will find much that they did not know before, and if enough of them read it there is every reason to believe that in the future the visitors to West Point will find their personally conducted tours of the place to be entertaining instead of fatiguing.

J. L. W.

1 1 1

RADIO ENGINEERING. By F. E. Terman, Professor of Electrical Engineering, Stanford University. New York: McGraw-Hill Book Company, Inc., 1937. Second Edition, 813 pages, 475 illustrations, \$5.50.

The wide acceptance of Professor Terman's first edition of *Radio Engineering* by engineering schools, laboratories, commercial firms and individual engineers was based on its sound and new treatment of the science of radio. For any book on engineering to be useful it must be so written that its information will be easily applied in the practical solution of engineering problems. Professor Terman takes cognizance of that fact. Moreover, he uses this text for his classes—double assurance of a practical approach to the problems of Radio Engineering.

Radio has rapidly advanced since the first edition of this book was published in 1932, so that the publication of a second became necessary. In fact, this edition is almost an entirely new book. As in the first edition the striking departure from the conventional engineering treatise lies in the presentation of the mathematics. The derivation of formulæ is relegated to the bottom of the page where it is instantly available for the student who seeks the source of the analysis. Therefore vital facts stand out clearly and alone. Furthermore, there are ample footnotes which call attention to other publications giving data bearing on the subject being discussed. In this way references can be consulted without loss of time. Problems covering pertinent points have been added at the end of each chapter.

In order to furnish additional information, the number of pages has been increased by 200. Chapters dealing with well-known principles have been reduced to allow expansion of chapters containing new principles. A chapter on television has been added. The chapters on receivers, antennas, and power amplifiers have been expanded to include latest practices and designs.

Radio Engineering is factual, sound, authoritative, useful, well written and up to the minute. It is an invaluable addition to the library of anyone concerned with radio.

A. D. W., Jr.

1 1 1

GENERAL WASHINGTON'S DILEMMA. By Katherine Mayo. 1938. New York: Harcourt, Brace & Co. pp. viii, 323; index; facsimiles of letters; \$2.50.

"In 1782," so reads the Leavenworth manual *Military Aid to the Civil Power*, quoting—without quotation marks—from Winthrop's *Military Law*—"in 1782, Captain Asgill of the British army was selected by lot as a subject for retaliation for the unlawful killing of Captain Huddy of our army when a prisoner of war in the hands of the enemy." This book treats of that incident, which occurred in the little-known period between the surrender at Yorktown and the Peace of Paris. Those years are blanks in most of the histories, perhaps because the occurrence in question adds so little to Washington's reputation.

The case arose in Monmouth County, New Jersey, where Tory and Patriot carried on bitter guerrilla strife. One Philip White, a Tory, had been shot by Patriot militia; murdered, the Tories said. So, upon misrepresentations, they obtained from General Clinton an American prisoner, Captain Jack Huddy, likewise a Monmouth man, and hung him in cold blood: "Up goes Huddy for Philip White."

Reprisals beget reprisals. Washington referred the

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papers in the case—the Monmouth Manifesto—to a council of war of the general and field officers of the army, who after due deliberation decided for retaliation upon an officer of equal rank. Washington asked Clinton to deliver up the officer who commanded at Huddy's execution, but this request was refused, that officer being already on trial. It remained to find another victim.

Washington then directed that an unconditional prisoner be taken, or, if no such person was held, that a prisoner under capitulation be then selected by lot. And thus was chosen Charles Asgill, Lieutenant and Captain in the 1st Foot Guards (which is to say, he ranked as a Captain in the British Army, though he was but a mere Lieutenant in the Guards—an anomaly that lasted well into the second half of the nineteenth century).

But—and here arose Washington's dilemma—Asgill had been surrendered at Yorktown under articles which expressly prohibited retaliation. What to do? Having once passed the buck down to a board of officers, the Commander-in-Chief next passed it up to Congress. But Congress was slow to act. Meanwhile appeals on Asgill's behalf to the French, who were parties to the Yorktown capitulation, began to bear fruit, and representations were made to General Washington—representations looking to clemency, which scrupulously avoided mentioning that Asgill was also a French prisoner and therefore to be protected at all costs lest French honor be also impugned.

While Washington hesitated, news of the case got to Europe. American diplomats abroad wrote that it was causing unfavorable comment. Asgill's mother appealed to the French Court, and Vergennes advised Congress that Their Majesties were much touched thereby. Congress seized the opening and, using the formula that they were giving the prisoner to the French monarchs, directed Washington to release Asgill. So the young officer—he was only twenty—was duly released, and the Commander-in-Chief was correspondingly relieved from the embarrassing results of a precipitate obstinacy. Subsequent rationalizations on both sides did little either to clarify or justify the incident.

Miss Mayo has gone to the manuscript sources and has produced an accurate and interesting work, though opinions may well differ as to whether the somewhat overdramatized form of the tale really improves it. At any rate, the story is worth reading, both as another illustration of the essential senselessness of reprisals on prisoners of war (a practice now outlawed, on paper at least, by the 1929 Geneva Convention) as well as for its portrayal of Washington in a tight place. Incidents such as the one here described bring the godhead down to earth far more effectively than the more usual device of recounting convivial moments.

F. B. W.

700 CHINESE PROVERBS. Translated by Henry H. Hart. Stanford University Press, 1937. 74 pp; Bibliography; Index; \$2.00.

It has been said that there are more than 20,000 Chinese

proverbs—more than all of Europe's put together. During the last century several collections of these proverbs have been published, but for one reason or another, are hard to obtain. Even when obtainable they are apt to be so full of footnotes and other extraneous matter that it is hard to find what one is looking for.

So Dr. Hart has gathered together this concise collection, neatly grouping the proverbs by appropriate subject headings. Among these headings we find: Health, Manners, Vice and Virtue, Family, Woman and, naturally, Gaming. Under these and other groups we find proverbs which undeniably prove that human nature is the same in all lands and tongues.

The reader must not expect the flowery language of the mandarin, for Dr. Hart has excluded the purely "literary" proverb. These are the sayings of the man of the soil—his more polite sayings—about Life and Love and the Weather and Things in General. Although eschewed as vulgar by the classical Chinese scholar, they serve a purpose by acquainting the reader with at least a part of the background of Chinese ethics and philosophy.

Proverbs sometimes throw a very helpful light on the genius of a people. Take, for example, Proverb No. 549: "One does not use good iron to make nails, nor good men to make soldiers." Could there be any clearer statement of the contempt with which the Chinese regard the profession of arms? Or any more logical explanation of the plight in which China finds herself today?

The book is attractively designed and bound. The marginal decorations, red ink Chinese drawings of the 17th century, are an unusual and interesting feature.

P. D. B.

1 1 1

REVOLT AGAINST WAR. By H. C. Engelbrecht. New York: Dodd, Mead & Company, 1937. 336 pages; 19 illustrations; index, \$2.50.

The co-author of *Merchants of Death*, that notable contribution to what Mr. Charles A. Beard calls the Devil Theory of war, herein embellishes a deep and worthy idea with some very mediocre writing. *Revolt Against War* should have been written by an artist, perhaps using some of Engelbrecht's material (much of which is provided by the military profession or its friends-and-severest-critics), but adding to it the emotional depth and breadth which has been achieved by some of the great anti-war novels of the last two decades. The phenomenon described as the revolt against war has validity in the modern world; but essentially it is a moral validity, and bad writing which shallowly re-hashes stories that have been told before does not reinforce the point Mr. Engelbrecht would so sincerely like to make. What comes instead is a sort of journalistic stew, using the last word in both its active and passive senses.

By bad writing is meant the kind which is spotted by small errors, small exaggerations, and statements which mislead by too ardently pressing a point. Examples:



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War cannot be carried on " . . . without aid from and to the enemy" (p. 218). It would not have detracted from the point to insert "potential" before "enemy" and make it nearer the fact. Also an "entire working class" does not begin to swear off anything, even modern capitalism (p. 33), nor is the United States lacking in thirty strategic raw materials (p. 218). More fundamental, however, is the confusion of thought which worries Engelbrecht constantly: Whether to go the whole way on pacifism or whether simply to be pacifistic about wars brewed by capitalists and fascists. In his chapter, "New Wars for Old" he makes a mighty effort to confront the thing fair and square, but the chapter ends with Engelbrecht already proclaiming the war guilt for that next war against which he and the world are now in revolt.

From the author's own point of view the book is disappointing. For officers, if there be any, who haven't heard about the iniquities of the caste system, the stupidity of generals, the shame of prostitution, the encouragement of crime, the reverence for property, the racketeering in pensions, the cupidity of munitions makers and imperialists—if there be any such one at this late date then let him read Mr. Engelbrecht's rendition. W. C. G.

1 1 1

THE AMERICAN CIVIL WAR. By Carl Russell Fish, edited by William Ernest Smith, Ph.D. New York: Longmans, Green & Company, 1937. 522 Pages; Illustrated; Index. \$3.50.

Dr. Smith in editing this posthumous volume has called it an interpretation; the publishers choose to classify it as an analysis. Certainly it is not history written as a narrative, although it is clear that the author is a most intelligent historian.

The Civil War is considered not only as an armed struggle but also as a struggle in finance, in politics, in diplomacy, and in psychology. The military story of the war is covered in one brief chapter, and here we see that the strategy of both North and South was faulty. In all other fields, however, the author evidently considers that the North was superior. It handled its finances much more wisely than did the South. It was more intelligent in its dealings with the border states. In the end it was more astute in its diplomatic dealings, especially with England. And throughout as a psychologist, the patient Lincoln had the better of his sensitive and ardent opponent, Davis, harassed by everything except political opponents.

The military reader might find fault with some of the author's opinions of various leaders, especially Sherman who he considers merely an intellectual, and Thomas, whom he calls "the military man's favorite."

But by and large here is a scholarly attempt to portray in a short work the Civil War in all of its varied lights. The bibliography indicates the vast reading that was done by the author. To a serious student of the Civil War this book will be well worth the price.

J. L. W.

AUGUSTUS, by John Buchan (Lord Tweedsmuir).
Boston: Houghton Mifflin & Company, 1937. 357
Pages; Illustrated; Map; Index; \$4.50.

In this book Lord Tweedsmuir undertakes a scholarly defense of Augustus, the first emperor of Rome. He endeavors to prove that the true architect of the Roman Empire was not Julius Caesar, dead too soon to bring his brilliant ideas to full flower, but Augustus, his great-nephew and heir. The major difficulty lies, as Lord Tweedsmuir frankly admits, in the fact that the authorities for the reign of Augustus are far from satisfactory. The chief contemporary sources have been lost and the biographer is thus mainly dependent upon the works of authors who lived from fifty to two hundred years after Augustus' death. For the modern biographer who is not troubled by conscience, this lack of authentic source material is trifling; but Lord Tweedsmuir is not of that breed. The result is a painstaking, not too interesting but never too dull, book.

From a military viewpoint the book has little value. Actium is passed over briefly with the comment that while it was a decisive battle in history "its military interest is small." No attempt is made to describe soldiering in the Empire. The book is first and last conceived with Augustus as an executive and administrator.

To those who wish to renew old acquaintances with the great men of Rome, this book is recommended; to others, we say skip it.

M. G. L.



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175 BATTLES. By Roger Shaw, M.A. Edited by S. C. Vestal, Colonel, USA, Retired. Harrisburg: Military Service Publishing Company, 1937. 270 pages; index; \$2.00.

Stepping into the arena with 175 more or less important battles compressed into 268 pages, the authors vigorously bespeak attention by substituting concise, vivid phraseology for the more laboriously expressed results of former research. Bravely taking their opinions as they run and scorning the use of maps or diagrams, Mr. Shaw and Colonel Vestal challenge interest by the novelty of their methods.

While no great amount of research is apparent and no particularly fresh conclusions are voiced, the episodic treatment provides a notebook for readers who desire their battle accounts in capsule form. It is quite likely that the breeziness of the style will attract civilian readers to a more extended study of the battles involved. D. Y.

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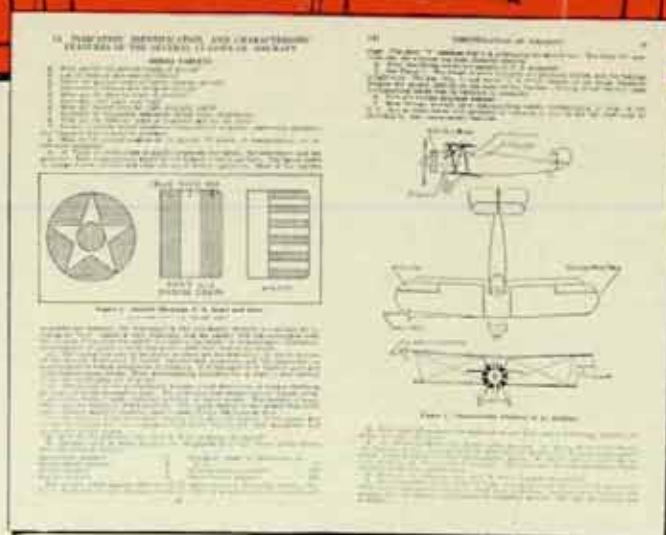
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