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MAY-JUNE, 1935

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Bolivian Trench in Pilcomayo Sector

Wide World Photo

The War in the Chaco

By LIEUTENANT E. E. FARNSWORTH,
Coast Artillery Corps

THE war between Paraguay and Bolivia, commonly referred to as the "Chaco War," is now in its third year. The recent successes of the Paraguayan Army have aroused the entire population of Bolivia and converted their war efforts into a national frenzy. Bolivia's increased activity of the past few months is well understood when one considers that the Paraguayan Army has conquered practically the entire Chaco Boreal and, at the present time, is threatening the highlands of Bolivia proper. The two belligerents are now approaching what most military observers believe will be the final and decisive campaign of the war.

Apart from the purely military operations of the conflict, two important side issues are worthy of consideration. The first is the utter failure of the world's peace agencies to prevent or terminate the war. The League of Nations has appointed peace commissions, investigated the belligerents, offered peace formulae, and even taken the unprecedented step of placing an arms embargo on one of the warring nations, all without result. The Pan-American Congress, the United States, Argentine, Brazil, and Columbia have all offered peace proposals, to no avail. On the contrary, some of the proposals have actually stimulated hostilities. Several, containing a proviso for a demilitarized zone, inspired a new attack by one side or the other in order that some preliminary advantage might be gained prior to the proposed truce. In all, seventeen peace proposals by neutral powers and the League have met with failure.

The second side issue worthy of notice is the growing tendency of modern nations to engage in armed conflict without formal declaration of war. For almost two years Paraguay and Bolivia struggled in the Chaco without declaring war. Each feared the world censure that such action might invoke. Paraguay finally declared war on May 10, 1934, when she realized that the strategic advantage of blockading Bolivia diplomatically outweighed the possible indictment of "aggressor."

CAUSES OF THE WAR

Ever since Paraguay and Bolivia became independent states the Chaco has been a bone of contention. Following almost a century of intermittent quarreling the Protocol of 1907 was signed in an effort to settle the controversy. Instead of settling old differences, this well-intended treaty seemed to furnish new grounds for dispute. When a commission of Bolivian scientists reported rich petroleum deposits in the disputed territory in 1927, the Chaco quarrel immediately assumed major proportions. Further fuel was added to the flame when Bolivia lost her only ocean port to Chile by the Tacna-Arica settlement in 1929. Bolivia's only possible outlet to the

The next move is up to Geneva. Upon it may depend the existence of the League—and of Bolivia.

sea now appeared to be the Upper Paraguay River, which bounded the Chaco on the east.

The course of events from this point on could have been predicted by even a minor prophet. The desolate and dismal Chaco at once became the scene of furious activity. The 60th Meridian bristled with the fortified outpost systems of the two disputants. For four years sporadic outbursts occurred along the line of outposts. Forts were taken and exchanged; diplomatic relations were broken and resumed; peace formulae were suggested and rejected. Finally, in March, 1932, both nations mobilized and prepared for hostilities on a national scale.

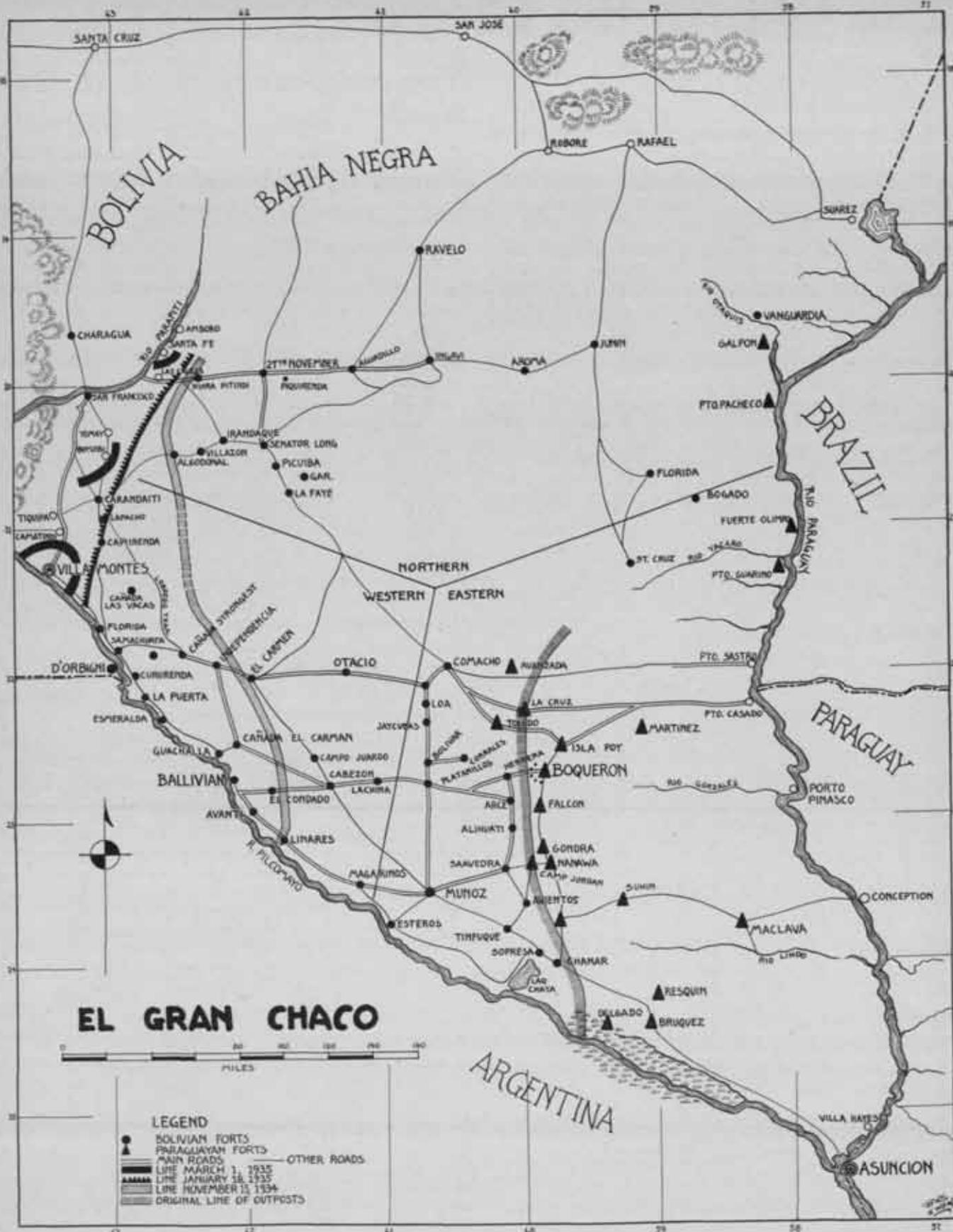
THEATER OF OPERATIONS

So far the entire action of the war has taken place in the Chaco Boreal, a triangular shaped territory lying between Paraguay and Bolivia proper. (See Maps I and II). Its base rests on the highlands of Bolivia and its two sides are bounded by the Paraguay and Pilcomayo Rivers which converge at Asuncion, capital of Paraguay. This country, an almost uninhabitable tropical jungle, is incredibly deficient in water. During the war, thousands of combatants have died of thirst.

The road net is inadequate to meet the supply demands of modern armies. Heroic improvisations and herculean labors have been the rule. Good communications are and probably always will be impossible in this wilderness. Endurance, ruggedness, courage, and the thirst-resisting qualities of a camel, are requisites for both soldier and officer. The weak in either body or mind do not last long in the Chaco.



Map 1



THE OPPOSING FORCES

Paraguay's population of 1,000,000 presents a national solidarity and patriotism equal to any in the world today. Although her peace-time army numbered but 2,000 men, her combat units have totaled as much as 60,000 during major engagements of the Chaco War.

Shortly after hostilities opened in 1932, Paraguay called 42,000 men to the colors. These were initially organized into six over-strength divisions. Subsequent organization planned a division of 3,000 and a corps of 12,000. However, the actual strength of these units has usually been somewhat lower than these figures.

Several notable advantages have accrued to this proud little state. Her army has been thoroughly trained by German, French, and Argentine commissions. Her lowland dwelling people are more familiar with the Chaco and better adapted to its rigors than are their Bolivian adversaries. Finally they have the tremendous advantage of a capable commander, who is perfectly at home in this wilderness, and who has retained supreme command throughout the war. In short, the Paraguayan Army is inferior in numbers only.

Bolivia's population is three and one-half times greater than that of Paraguay. However, this numerical advantage must be definitely discounted because the bulk of Bolivia's people are highlanders who are unable to adjust themselves to the low-lying and disease-ridden Chaco.

In peace the Bolivian Army was maintained at 7,800. At the outbreak of hostilities 60,000 men were hastily mobilized and flung into the disputed wasteland. Since that time an effort has been made to maintain the army at this strength, but high battle losses have played such havoc with Bolivia's man-power that despite all efforts her army had shrunk to 20,000 effectives by January, 1935. Just recently the La Paz government has ordered a general mobilization of every available man.

Neither Paraguay nor Bolivia has uniform equipment or matériel. Both forces are equipped with many and varied types of small arms and fieldpieces. Guns have been purchased from foreign countries by increments and with little regard for caliber or make. The serious disadvantages of this lack of uniformity, particular in training and ammunition supply, are obvious.

Financially Bolivia is better able to support a pro-

longed conflict than Paraguay. However, the recent heavy losses of combat trains and equipment at Fort Ballivian have caused some serious thinking in the Bolivian treasury.

MILITARY OPERATIONS

For clarity, the war in the Chaco has been divided into three phases. The first phase describes the tide of battle from the beginning of the conflict to the defeat of the Bolivian Army in the Eastern Chaco and their subsequent retreat on Fort Ballivian. The second phase deals with the operations leading up to and including the fall of Fort Ballivian. The final phase follows the Paraguayan advance from Ballivian to the outskirts of Villa Montes where the Paraguayans now threaten Bolivian General Headquarters and the rich oil fields of Bolivia proper.

For obvious reasons an up-to-date map of the Chaco is not available. Except for a few outposts, most of the Chaco's forts and fortified towns did not exist prior to 1932. As the war moved westward new locations and names appeared in the dispatches. These have been plotted as accurately as the information concerning them permitted. The result is



Estigarribia

Map II. (It should be borne in mind that every name in the Chaco represents a fortified position of more or less prominence.)

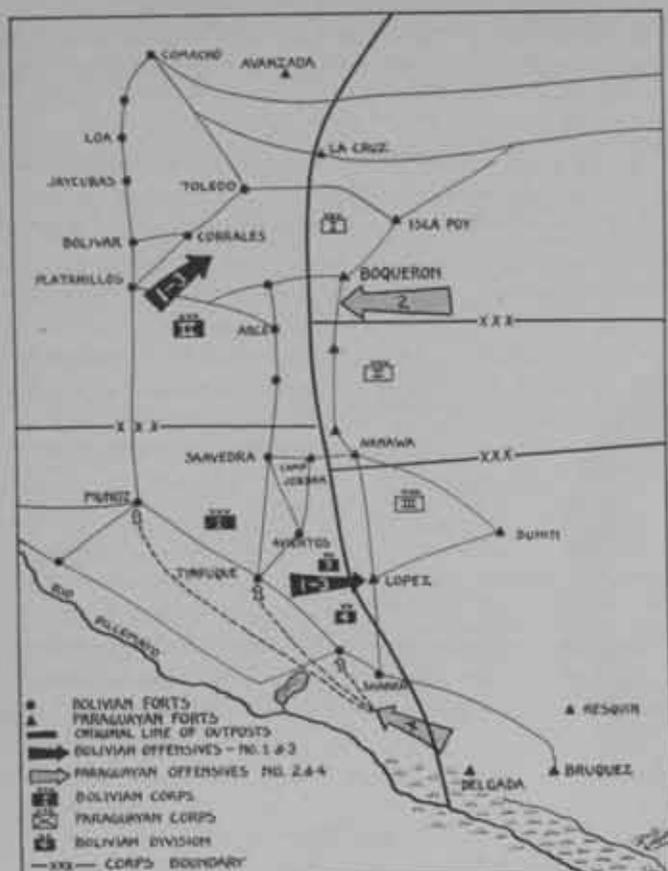
THE FIRST PHASE

July 1932 - December 1933

In the summer of 1932 Paraguay and Bolivia were parties to a Chaco Peace Conference in Washington. On July 8 the parley was brought to a sudden close by news from Asunción that Fort Lopez (Map No. III) had been attacked by a Bolivian detachment. Charges and counter-charges were flung across the Chaco, but regardless of the question of responsibility war was on.

A week later an isolated battle occurred at Fort Santa Cruz, 70 miles west of Puerto Guarino. The Paraguayans besieged this fort with 300 pieces of artillery and 2,000 men. After several unsuccessful attacks the assailants withdrew. News of this engagement reached civilization through a Paraguayan courier who had struggled through the uncharted pest hole of the Chaco for three days and three nights. (What price a radio!)

Bolivia replied by concentrating an army of 50,000 in front of Forts Corrales and Lopez (90 miles apart). This



Map III - First Phase

army, consisting of two corps, was equipped with tanks, planes and machine guns. It was modern in every sense of the word. Not content with this, Bolivia called four more classes of reserves to the colors.

Against this powerful force Paraguay concentrated three corps (totaling 42,000 men) along the fortified outpost line.

On July 29 the Bolivians launched the first offensive of the war. The underlying strategy of this first major effort sought to threaten Paraguay's vital supply ports, Casada and Concepcion (See Map II). In the north the I Corps struck at Fort Corrales (Map III), which had been occupied by the Paraguayans during the summer, while the II Corps flung itself at Lopez and Suhin.

Corrales and Lopez fell the first day. The next day the northern corps stormed Fort Toledo and moved on the strategically important Fort Boqueron. By nightfall of the 31st Bolivia's colors flew over that battered fort. Meanwhile the southern corps had been checked in its drive on Suhin by a strong Paraguayan line thrown across the Lopez-Suhin road.

And now the elements came to the aid of hard-pressed Paraguay. Torrential rains converted the Chaco into a steaming swamp which effectively halted the Bolivian offensive. There followed a month of similar weather during which little action took place. Paraguay took full advantage of this saving interlude to rush reinforcements to the threatened front and to complete her mobilization. At the same time General Ayala replaced Major Bray as

chief of staff and Colonel Estigarribia assumed command of the Paraguayan forces in the Boqueron sector. So important a rôle is this last named officer to play in the Chaco drama that we must break the thread of our narrative long enough to give the reader some idea of his military background.

Jose Felix Estigarribia graduated from the Asuncion Military College in 1910 at the age of 22. With the almost instinctive foresight that seems to characterize all great leaders, he at once began an exhaustive study of the Chaco Boreal. In 1927 he finished a three-year course at the French Ecole Supérieure de Guerre. His record also makes mention of graduation from the Military College of Chile.

As previously pointed out, Estigarribia, while still a young man, had thoroughly familiarized himself with the Chaco. His government, with a wisdom seldom evinced by its more powerful contemporaries, recognized this officer's qualifications. While the Chaco was still no more than a galling diplomatic sore, Estigarribia had been selected to construct his country's frontier defences. This he did with a sure hand and a keen eye.

When the Chaco took flame Estigarribia wore the bars of a lieutenant colonel. When Boqueron was recaptured he became a colonel and at the same time succeeded to the supreme command. Not until a year later was he made a general.

General Estigarribia, a modest soldier and a conservative commander, has demonstrated his superb qualities of leadership throughout the course of the war. His direct manner and forcefulness of purpose have welded the Paraguayan Army into a magnificent instrument of war. The army, the people, and the government are and always have been unswervingly loyal to their great general.

No one questions his military ability. He has repeatedly demonstrated his qualities of generalship on the battlefield. He has that rare degree of moral courage which does not hesitate to abandon a campaign when it appears wise to do so. He knows his men and he knows the Chaco. With such a leader it is not too surprising to see Paraguay's stout little army chalking up victory after victory.

Let us now return to the momentarily victorious Bolivian Army which we left bogged down in the tropical rains. The Bolivian high command planned to renew the offensive on September 11 with Isla Poy and Paraguayan General Headquarters, as objective. But they planned without taking into account a new adversary—Estigarribia. Learning of the Bolivian offensive for September 11, Estigarribia anticipated it. On September 9 he suddenly lashed out at Boqueron. Three desperate assaults were made on this heavily fortified stronghold in as many days. Each one failed. On the fourth day 15,000 Paraguayans again advanced to the assault but after the first waves sustained heavy losses, Estigarribia changed his tactics—to a system of penetration and eventual isolation. Within two weeks Boqueron had

fallen. As a reward for this victory Estigarribia was given supreme command of the Paraguayan Army.

With the morale of the army at a high pitch, Estigarribia now launched a general offensive. On October 1 he attacked with the I, II, and III Corps in line from the right. The III Corps, on the left flank, was ordered to make a holding attack about which the main effort would pivot. By October 10 Forts Corrales and Toledo had been retaken, but at Arce the Bolivian II Corps brought the hard hitting Paraguayans to an abrupt halt. For four days the battle raged about this stubbornly defended fort. Then Estigarribia succeeded in cutting the Platanillos road in the rear of Arce and the Bolivians, facing isolation, withdrew to Alihuata, ten miles south. But so rapid and vigorous was the pursuit that the Bolivians were unable to reorganize and Alihuata also fell to the energetic Estigarribia.

On the south the progress of the III Corps was much slower. Nanawa and Camp Jordan were taken and a powerful attack directed on Saavedra. But here Bolivian resistance again crystallized and the desperate assaults of the III Corps were beaten off. Not even the junction of the Paraguayan field forces in front of Saavedra and subsequent united attacks dislodged the stubborn defenders. The Bolivians held. The Paraguayans dug in.

Despite this momentary hold up, Estigarribia must have been well pleased with the results of his offensive. He had taken some fifteen positions, defeated the enemy's II Corps, and separated it from the I Corps.

Bolivia's position was none too happy when the rainy season put an end to operations on the grand scale. On December 13, while the rains were still at their height, she did manage to retake Platanillos, which partially alleviated her sorry situation. No further action of moment took place until March.

During this enforced lull, Bolivia did two things. She organized a third corps and engineered the return of the German General Hans Kundt, whom she placed in supreme command of her field forces. General Kundt, an officer of World War experience, had trained the Bolivian Army from 1922 to 1930, but was forced to flee the country by the revolution of 1930. He was familiar with the task before him.

In order to relieve the pressure on Saavedra, the new Bolivian generalissimo ordered a counter-offensive in the Corrales sector for March 1, 1933. This operation, delivered over the same terrain as the July offensive, forced Estigarribia to withdraw troops from the defenses of Camp Jordan to meet it. Thereupon the Bolivian I Corps attacked and captured the weakened Camp Jordan. The offensive in the north, however, was a failure and the fighting once more came to a standstill.

The first three offensives of the war (two Bolivian and one Paraguayan) had resulted in relatively insignificant gains. But now, on December 15, Estigarribia launched his second offensive which, together with Bolivia's difficulties of supply, all but ended the war. Before the

stunned Bolivians could recover from it they had been driven out of the Eastern Chaco.

Early in December, Estigarribia concentrated an Army Detachment at Fort Delgada for the purpose of attacking the right flank of the Bolivian I Corps. On the 15th this detachment, moving through the marshes south of the Bolivian Fort Chanar, struck suddenly at Fort Munoz and began to roll up the rear of the Bolivian Army. The confusion that resulted from this bold maneuver can well be imagined. The Bolivian 4th and 9th Infantry Divisions (half of the I Corps) attacking Nanawa suddenly found themselves surrounded. Both of these divisions finally surrendered with a total loss of 10,000 captured, dead and wounded. The loss of division trains, artillery, supplies and ammunition increased the severity of the defeat.

Colonel Penaranda, with a reserve force of 3,000 Bolivians, moved immediately from Fort Ballivian (shown on Map IV) to save the remnants of the I Corps. Arriving on the flank of the Paraguayan column near Munoz, he attacked, and during the ensuing battle the Bolivian II Corps and the remaining two divisions of the I Corps made good their retreat to Fort Ballivian. As a recognition for his part in the battle Colonel Penaranda received his generalcy and succeeded Kundt in command of the Bolivian Army. Thus ended the first phase of the Chaco War. That it was not another "comic opera affair" may be seen by the casualty lists. Bolivia had lost 30,000 men; Paraguay 15,000.

On December 20 Paraguay very unwisely agreed to an eighteen-day armistice for the purpose of peace negotiations. The Bolivian Army was thus afforded an opportunity to complete its retreat and to reorganize at Fort Ballivian. Work on the Ballivian defenses proceeded night and day. When Estigarribia returned to the attack the Bolivians were so strongly entrenched that it required eleven months of fierce fighting and the ablest maneuver of the war to force them out of Ballivian.



Map IV — The Ballivian Campaign



Wide World Photo
Paraguayan sniper's post cut in Kapok "bottle" tree
with machetes

THE SECOND PHASE

January, 1934 — December, 1934

During the early months of 1934 the Gran Chaco resounded to the tramp of marching armies as 80,000 men were moved westward to resume their ancient feud. For the first time Paraguay's soldiery was on undisputed Bolivian territory. Penaranda had reorganized his defeated army, secured fresh replacements and taken up a strong position about Ballivian (See Map IV). Fields of fire were cleared, machine guns carefully sited, and a vicious system of barbed wire entanglements thrown up. Communication trenches connected the front lines with the reserve and support trenches. The men lived in well constructed dugouts. On the whole, Penaranda's works followed the most approved lines. As a result of this added sense of security the morale of the Bolivian soldier took a turn for the better.

The Bolivian defenses extended from Linares northward, bending around Canada El Carmen and thence along the outskirts of El Carmen, Independencia, and Canada Strongest. Penaranda thus enjoyed the benefits of interior lines. However, with Argentina and the Pilcomayo River at his back he faced the danger of a Paraguayan break-through north of Ballivian which might cut off thousands of his troops.

Estigarribia followed the retreating Bolivians slowly. Hacking new roads in the jungle and improving old ones, the three Paraguayan corps moved steadily westward. The I and II Corps advanced on the Platanillos-Cabezon road and the III Corps moved on the river road from Munoz to Linares. Supplies were brought to the river ports on the Paraguay River (See Map I) where scheduled motor convoys picked them up and led them to the 40,000 Paraguayans closing in on Fort Ballivian. Estigarribia made certain that his supply system could sustain

a major offensive before he hurled himself on Ballivian.

The Paraguayan Corps reached their attack positions early in April. The II Corps, on the right, occupied the front from Canada Strongest to El Carmen; the I Corps stood between El Carmen and El Condado and the III Corps continued the front through Linares to the river.

Estigarribia, forgetting the lesson of Boqueron, launched a strong frontal attack on April 15 all along the line. This was repulsed with heavy losses. Following this he attempted an envelopment of the Bolivian left with the 2nd and 7th Divisions of the II Corps but while moving to their jump-off positions these two divisions were surprised by the Bolivian III Corps and routed with the loss of 5,000 prisoners and some divisional supplies.

Having failed to pierce the Ballivian defenses and being threatened with the advent of the rainy season, Estigarribia now decided on the most brilliant maneuver of the war. The Bolivians had shown no desire to leave the intrenchments around Ballivian and give battle in the open. This consideration led Estigarribia to believe that he did not need a force equal to the Bolivians in order to contain them. Therefore he decided to put Bolivia on the defensive in the north and cause the withdrawal of troops from Ballivian, by ordering a Paraguayan reserve force under Colonel Franco to threaten the rich Santa Cruz Province.*

Accordingly, one infantry division with corps artillery attached, moved north on the Comacho-Picuiba road (Map II) early in August. The advance was rapid. By the end of the month Colonel Franco had conquered the entire Picuiba sector, capturing La Faye, Picuiba, Senator Long, Irandaque, and November 27, all key forts in the area. Colonel Franco now sent his main body, numbering 12,000, down the Carandaiti road while a smaller force advanced on the November 27-San Francisco road. The mission of both columns was to menace the

* (Note: At this time the Bolivians were in control of the Northern Chaco which comprised the Picuiba and Ingavi sectors (See Map I). Most roads in this area led into the valuable Bolivian oil fields of Santa Cruz Province. These roads were protected by forts at various intervals which were manned by permanent garrisons.)



Paraguayan Field Artillery

main line of Bolivian communications running north from Villa Montes into San Francisco.

To meet this threat General Penaranda ordered one division (the 7th) from the I Corps and Colonel Rivas' cavalry division (all under the command of Colonel David Toro) to the Northern Chaco. The cavalry cut its way through the jungle and arrived just in time to stop Franco's force at Carandaiti. A fierce battle ensued for possession of the town. At this juncture Estigarribia ordered Franco to retreat slowly on Fort Senator Long. The Bolivians followed closely, satisfied that they had saved the oil fields from the enemy. By November 14 the retirement had accomplished its purpose. Twelve thousand Bolivians were 275 miles from Fort Ballivian. The strategem had succeeded even better than Estigarribia had hoped. Instead of the 10,000 Bolivians he had hoped to lure out of Fort Ballivian, 12,000 had gone, including Colonel Rivas' crack cavalry. The next day Estigarribia struck.

His order for the surprise offensive on Ballivian called for a spearhead attack by the I Corps in the Canada El Carmen sector. The II Corps on the right and the III Corps on the left were to deliver assaults on their fronts to prevent Bolivian withdrawals to oppose the I Corps. Any advance by the II or III Corps was to conform to the progress of the I Corps.

The attack jumped off on the afternoon of November 14. Fort El Carmen was the first position to fall. This part of the line was held by the 9th Reserve Division and the 10th Regular Division of the Bolivian II Corps. The front-line regiments of the 10th Division were completely surprised by the Paraguayan I Corps which pushed on to division headquarters at Independencia and captured the division staff at their desks. Before dawn of the 15th, the 9th and 10th Divisions had been virtually annihilated. Not one of the nine infantry regiments escaped intact. Here, alone, the Bolivians lost 7,000 men, 200 officers, the 10th Division staff, the division archives, and large quantities of supplies and ammunition. The Paraguayan losses were comparatively small.

The Paraguayan II and III Corps also advanced in their sectors, driving back the Bolivian I Corps (less 7th Division) on the southern front and the III Corps on the Bolivian left flank.

General Penaranda expected Estigarribia to exploit this break-through at El Carmen by turning northward and attacking the III Corps. But Estigarribia had other plans. He ordered the I Corps to push straight through to the Pilcomayo, meanwhile holding up the advance of the III Corps so as not to drive the Bolivian I Corps from the salient before the advance of the I Corps cut their line of retreat.

The Paraguayan I Corps continued the penetration. The Bolivian defense lacked depth owing largely to the withdrawals for the Northern Chaco. Once the main line had been penetrated the Paraguayans advanced at will. By night the advanced echelons of the I Corps were within a few miles of Fort Ballivian but withheld their fire to gain the advantage of a surprise on the morrow.



Map V—Villa Montes Campaign

At dawn Estigarribia's troops closed in on Guachalla and Ballivian. By noon the I Corps had reached the Pilcomayo and those two forts had fallen. The Bolivians in the southern defenses, learning that the enemy was in their rear, now started a precipitous retreat for Villa Montes. But it was too late. The salient was closed. Thousands were caught in the pocket. Some succeeded in cutting their way through the Paraguayan ring. Other fled across the Argentine border, but for most of the men in this sector the war was over.

Estigarribia had led his fiery little army to another smashing victory. Ballivian, the key to the Pilcomayo, was his. In addition 500 Bolivian officers had been taken including two division commanders, 16 regimental commanders, and 26 others of field grade. In all, 8,000 Bolivians were on the way to the interior as prisoners of war. Seven thousand others lay dead in the disputed sector. Finally, and almost happiest fact of all, into the Paraguayan store houses poured \$3,000,000 worth of captured war materials. For this tremendous success Paraguay had paid something less than 3,000 casualties.

To sum up, since the beginning of the war Paraguay had conquered 34,750 square miles of territory, had captured 130 forts, 2,500 machine guns, 30,000 rifles, 350 trucks, 15,000,000 rounds of small-arms ammunition, and 23,000 prisoners, including 115 field officers. For these first two phases of the war various estimates place Bolivia's casualties at 45,000, Paraguay's at 20,000. At the end of the second phase Bolivia's field forces scarcely numbered 15,000 while Paraguay's totalled about 35,000.

At this juncture the League of Nations once more

stepped into the bloody arena with another peace proposal. Bolivia rejected it on the grounds that it did not contain a clause submitting the *entire* territorial controversy to arbitration. Paraguay refused to consider it because it contained the old fifty-mile objection and Fort Ballivian would have to be evacuated in order to comply with its provisions. This, of course, was out of the question. Moreover, Paraguay had already suffered one severe setback as a result of the December, 1933, truce. She was not going to make the same mistake again.

THE THIRD PHASE

December, 1934 —

To all intents and purposes Paraguay was now mistress of the Chaco Boreal. Bolivia retained only a small strip on the western edge of the jungle, about 150 miles long and varying from 30 to 60 miles in width. West of this territory lay the Bolivian highlands; to the north, the oil fields; to the south, the Pilcomayo; and to the east, the Paraguayan Army. Bolivian General Headquarters was now set up in the southern tip of this strip at Villa Montes, from which the main line of Penaranda's communications ran north to San Francisco on the Parapiti River (Maps II and IV).

Sizing up this situation, Estigarribia at once decided to try to cut the Villa Montes road, thereby separating the defenders of Villa Montes, from the remainder of the Bolivian Army located in the Northern Chaco.

It will be recalled that Estigarribia now had 35,000 men in the field to Penaranda's 15,000. To exploit this numerical superiority Estigarribia decided to push forward along the entire front and thus prevent Penaranda from opposing localized Paraguayan thrusts by rapid concentrations in the threatened area. In accordance with this decision the III Corps moved on D'Orbigny (Map IV) and the I Corps on Canada Strongest, while the II Corps was dispatched to the Northern Chaco to block the Bolivian advance in that sector.

By December 13 the II Corps, operating in the Northern Chaco, had captured Forts Picuiba, Senator Long, Irandaque, and November 27. It had all but annihilated the Bolivian 7th Division by cutting off its water supply. Four thousand Bolivians had died from thirst, 2,000 had been taken prisoner. Such is war in the Chaco. The remnants of this division retreated on Carandaiti, hotly pursued by the II Corps.

Meanwhile the Army Detachment which Estigarribia had originally sent to the Picuiba sector had advanced to the Parapiti River, seized Santa Fé and established a foothold in Santa Cruz Province (Map II). At the same time the III Corps, advancing slowly up the Pilcomayo River, had captured Forts La Puerta, Curutenda, Florida (Maps IV and V) and several minor positions. By December 13 this corps was only 30 miles from Villa Montes but its advance was being stubbornly contested by the Bolivian II Corps. While the III Corps was slowly fighting its way forward the I Corps had smashed through

Canada Strongest and then wheeled to the north to strike at Capiirenda. Almost in the shadow of this fort Colonel Rivas' cavalry, crack Bolivian unit, brought the enterprising I Corps to an abrupt halt. A word or two on this distinguished Bolivian unit might not be amiss at this point.

After General Kundt's disastrous defeat in the Eastern Chaco, Colonel Rivas organized a cavalry division (five regiments) numbering about 5,000 men, and threw it into the defensive sector of Ballivian. For five long months this division beat off the most desperate assaults that surged about El Condado. It was largely through Rivas' efforts that so many of Estigarribia's drives at Ballivian failed. When Estigarribia made his diversion in the Northern Chaco Colonel Rivas' division was part of the Bolivian force ordered north to oppose the Paraguayans. Colonel Rivas rushed northward cutting his way through the jungle (the Lobrego Trail) and arrived before Carandaiti just in time to save that important fort from the enemy.

We have seen how Estigarribia enticed this force farther and farther away until 275 miles of muddy trails separated it from Fort Ballivian. Then he struck, and Ballivian fell.

Penaranda immediately recalled Colonel Rivas to cover the reorganization of the Bolivian Army. Upon reaching the scene of the Bolivian retreat Colonel Rivas threw his cavalry across the path of the Paraguayan I Corps at Canada Strongest and contested every foot of ground. Penaranda was thus afforded a chance to reorganize his army at D'Orbigny, which he did. The I Corps was definitely stopped in front of Capiirenda and held there until early in January when Estigarribia turned both of Rivas' flanks and forced him to withdraw. It was Rivas' first defeat. Even then, it was not a rout. His well-disciplined regiments fell back on Villa Montes in an orderly retreat and took up their position in the defense. The value of this highly mobile unit to Penaranda can hardly be overestimated.

But to return to our story, on December 9, 1934, the Bolivian government, alarmed at the progress of the enemy, ordered a general mobilization of the country's man power. Women took over every duty they were capable of performing. The number of replacements made available by this drastic mobilization is estimated at 125,000.

Meanwhile the La Paz government had accepted the League of Nations' Peace Pact, but Paraguay would not agree. To her list of objections she added a new one. On November 28 the Bolivians' government had suffered its thirty-fourth *coup d'état* in its 107 years of existence as a nation. The vice president, a Liberal, had succeeded to the presidency. This government, Paraguay contended, was not constitutional. Any settlement it made would not be binding on the Bolivian people. Thus ended another abortive peace effort. The war continued.

By February 15 the Paraguayan Army had closed in on the Bolivian defenses. The II Corps had turned the Bo-

livan flank at Carandaiti and driven this force northward. One division had been promptly dispatched to pursue the Bolivians toward Boyuibi, while the remainder of the corps marched on Villa Montes. Contact was established with the I Corps en route. This move cut the Villa Montes-San Francisco road, thereby separating the Bolivian forces.

Meanwhile, the III Corps, which had captured Palo Marcado, had taken its place on the left flank of the army. Both flanks of Estigarribia's army now rested on the Pilcomayo, the right being protected by the Agurague hills.

VILLA MONTES ASSAULTED

Estigarribia now delivered a general assault on the Villa Montes defenses. The attack continued for four days. By the end of the fourth day he had lost 4,500 men. Several local positions had been improved but nothing of any consequence had been accomplished. The Bolivian defenses still held firm.

Time passed. The Bolivians frantically worked on their position and waited for the attack that they thought inevitable. But no attack came.

On the morning of February 25 Bolivian patrols reported that the enemy had abandoned his lines around Villa Montes. The only traces that could be found of Estigarribia's army were unburied Paraguayan dead, empty machine-gun nests and abandoned trenches. Staff

officers hurried to the front to confirm these reports. They found them true. Estigarribia had gone. The Bolivian communication net buzzed with frantic calls for intelligence.

All eyes are once more focused on Jose Felix Estigarribia, master of the Chaco. As to where he intends to strike next, no one knows, but here are two guesses. Perhaps he is on his way to Santa Cruz Province where his troops have a foothold at Santa Fé. Paraguay has offered independence to that province if she will secede from Bolivia. A grip on the rich oil country would be a strong argument when the representatives of the two countries eventually come to the peace table.

Then, again, Estigarribia, with eleven bitter months at Ballivian still fresh in his mind, may be trying to draw the Paraguayan Army out of Villa Montes to a more favorable battlefield. Only time will tell.

One more interesting diplomatic sidelight should be recorded. When Paraguay refused to accept the League's peace proposals the League retaliated by declaring an arms embargo on her and lifting all munitions restrictions on Bolivia. This unprecedented step roused the wrath of the Paraguayan people to such an extent that they demanded that their government resign from the League. On February 22 the Paraguayan foreign minister cabled the resignation of his government from the League of Nations. The next move is up to Geneva. Upon it may depend the existence of the League—and of Bolivia.

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Radio Energy Radiation and Propagation

By MAJOR ROGER B. COLTON, SIGNAL CORPS

RADIO frequencies in actual use lie between 10,000 and 4,000,000,000 cycles per second. Ordinarily we knock a few ciphers off these figures, writing kc in the place of "000 cycles per second" or mc in place of "000,000 cycles per second." In this abbreviated terminology the radio frequencies actually used lie between 10 kc and 4,000 mc.

For reasons that we need not go into in this article, the wave length is obtained by dividing 300,000 by the frequency expressed in kc or 300 by the frequency expressed in mc. The following table gives the standard classification of frequencies and wave lengths and the frame work for the ensuing technical discussion:

	Frequency	Wave Length	
Low frequencies.....	..... 10 kc.....	30,000 meters	} Long waves
	..... 100 kc.....	3,000 meters	
Medium high frequencies	..... 1,500 kc.....	200 meters	} Medium waves
Medium frequencies.....	..... 6,000 kc.....	50 meters	
High frequencies.....	..... 30,000 kc.....	10 meters	} Short waves
Ultra high frequencies.....	..... 300 mc.....	1 meter..	
Quasi-optical frequencies	..... 4,000 mc.....	1 centimeter	} Micro-waves

The term "intermediate frequency" is customarily used in America to cover frequencies from 100 to 550 kc or even 100 to 1500 kc, but the custom is a bad one because of confusion with the official French term "Ondes intermédiaires" for the band 1500 to 6000 kc.

The frequency used has several very important aspects which we will develop later. Before proceeding it is necessary to get the straight of the term "signal strength." Signal strength is measured in volts per meter. For practical purposes it may be thought of as the voltage between the ends of an antenna one meter long, at the receiving station. The abbreviation mv is used for milli-volt (1/1000 volt) and the abbreviation uv for micro-volt, (1/1,000,000 volt).

The minimum signal strength ordinarily used in radio work varies from about 3 to 50,000 micro-volts, according to the class of service and the location of the receiving station. At a quiet spot out in the country 3 micro-volts may be adequate for radio-telegraphy, while in the business district of a large city 50,000 micro-volts, or more, may well be required for satisfactory broadcasting reception.

Radio-telephony ordinarily requires from three to twenty times the signal strength that is required for radio-telegraphy, and expressed in terms of power this means from nine to four hundred times the power.

The strength of signal required varies not only with

the class of service but also with the local noise level—the bugaboo of radio. In radio parlance by "local noise level" is meant the radio signal strength in volts per meter caused by static, sewing machine motors, automatic telephone dial contacts, automobile ignition systems, trolleys, etc., rather than audible sound. The local noise level due to static ordinarily varies from about 1 to 100 micro-volts; that due to electrical machinery often runs higher than 10,000 micro-volts. For good radio-telegraph reception the signal strength must be from one to three times the local noise level and for good radio-telephony from three to sixty times.

Thus the transmission of sound and radio have much in common. On a quiet day in the solitude of Northern Manitoba you can hear across a lake the voice of a man talking half a mile away. At 42nd and Broadway you are lucky if you can hear the horn of the automobile that is about to run you down.

With these things in mind we will step along to the waves. In order to get the wave out of the radio set and into the air it is necessary to provide it with a spring board in the form of an antenna. The term "spring board" is used advisedly because the action of the antenna in throwing the wave off into space is very much like that of a spring board in throwing the would-be graceful diver up in the air. Just as the length of the spring board must be such that the diver can time his motion to coincide with that of the board, so must the length of the antenna be such that the timing of the radio vibration is roughly in accord with the natural period of electrical vibration of the antenna.

In order to enable the radio wave to make the biggest and best jump into space, the antenna must have a height of about one-quarter (or some multiple of a quarter) of the length of the radio wave that is being used. Thus for 100 kc (3,000 m) the antenna should really be 750 meters or about one-half mile high. On the other hand the antenna for four meter (75 mc) waves need be only about one meter or three feet high. So it is easy to see that if all radio waves had the same characteristics and were just as easy to produce inside the set box, all highly mobile radio would be down around the four meter band.

Sad to relate, all waves have not the same characteristics and all are not as easy to produce.

Long waves generally die out very slowly with distance, gradually coming down to negligible amplitude and never reappearing at long distances after having trailed off to zero, while short waves die out quickly with distance and generally reappear at distances far beyond that at which they first disappear. For highly mobile work the size of the antenna structure rules out long waves. Both the short close-by range and the reappearance phenomenon

are great handicaps for short waves. Therefore the tendency is to effect a compromise and use medium or medium short waves for highly mobile purposes.

The chief obstacle in the earth to radio propagation is the lack of perfect conductivity. If the earth were a perfect conductor, it would act as a guide for the foot of the radio wave without biting off its toes. Since it is not a perfect conductor, the radio wave penetrates the ground a short distance and the foot of the wave is gradually eaten up. Earth losses are greater for short than long waves.

If the sky were a perfect conductor it also would be a perfect guide. Fortunately, and unfortunately, the electrical sky, otherwise known as the Kennelly-Heaviside layer, or simply as the ionosphere, is a very peculiar and diffused combination of ions, electrons and whatnots from 50 to 200 miles above the earth, which reflects some waves, refracts others and pays very little attention to others, all according to the wave length and the angle of incidence. It has not much effect in the propagation of long waves, which accounts for their non-reappearance once they have petered out.

As a first approximation it may be considered that a short wave dies out at 25 miles along the ground and is first reflected back to earth at a distance of from one hundred to several thousand miles, depending on the frequency and the time of day (and also the phase of the eleven-year sun spot cycle). On returning to the ground it is again reflected to the sky and the process is repeated until reflection losses have eaten up the wave. The second sky reflection is apt to be back to ground before the first has lost coverage, so generally once a wave reappears it stays with us for hundreds or thousands of miles. Since reflection losses are small, the wave is quite strong in the distant areas and for this reason it is not generally practicable to assign the same short wave to different stations without very careful study.

Medium and medium high frequency waves have characteristics in between, so to speak, the characteristics of low frequency (long) and high frequency (short) waves. Up to 3000 or 4000 kc they do not generally completely disappear, when a powerful transmitter is used, except once and finally.

The medium frequencies (100 to 1500 kc) can very correctly be said not to die out before the night sky wave returns, even when only moderate power is used. For this reason these waves always have a bad "fading zone" at night caused by interference between the direct or ground wave and the reflected wave—these waves having arrived by paths of different lengths and therefore being frequently out of phase.

The "fading zone," which is particularly objectionable in the case of medium frequencies, is the zone in which sky wave and the ground have about equal strength and from time to time add and subtract, thus producing a signal alternately nearly zero and twice the value of either component. As a first approximation, the fading zone may be considered to have a depth of from 100 miles

for the lower and about 50 miles for the upper frequencies in the medium frequency band. Short of the fading zone the ground wave, which is very steady, predominates and reception is very uniform and reliable. Beyond the fading zone the signal is practically all sky wave, and while it fluctuates with the change of conditions these fluctuations are not usually rapid.

The first part of the fading zone is often called the fading wall. The distance to the fading wall is ordinarily accepted as the "primary service" radius of a broadcasting station. The following table gives this theoretical radius for the various cleared channels in the broadcasting band:

Average night primary radius or distance to fading wall for U.S. cleared broadcasting channels.		Remarks
640 kc	111 miles	Lowest frequency cleared channel.
670 kc	107 "	
770 kc	93 "	
870 kc	81 "	
970 kc	71 "	
1070 kc	63 "	
1170 kc	56 "	Highest frequency cleared channel.
1190 kc	55 "	

In the day time fading is not usually troublesome in the medium frequency band since the energy reflected back from the sky is relatively small. However, the reflected energy is appreciable after a certain distance when compared with the then greatly attenuated ground wave. This distance is not well defined and varies with the frequency, being, over land, approximately 750 miles for 150 kc, 360 miles for 550 kc and 150 miles for 1500 kc.

In the medium high frequency band (1500-6000 kc), transmission on frequencies up to 2700 kc is not markedly different from transmission on 1500 kc. This being the case and since the quarter wave antenna on 1500 kc would be about 150 feet high and on 2700 kc only about 80 feet high, it is readily observed that 2700 kc is generally a much better frequency for highly mobile units than is 1500 kc. Above 2700 kc conditions are somewhat different. For example on a frequency of 4500 kc, according to a report of the British Government, the day signal strength for 10 watts radiation drops down to about 3 micro-volts per meter at a distance of about 60 miles compared with 15 micro-volts per meter on 2700 kc or 1500 kc at the same distance. However, at 4500 kc a quarter wave antenna is only about 50 feet high, so actually the signal strength obtainable for a given weight equipment may not be much different for frequencies between 1500 kc and 4500 kc under the conditions reported by the British administration.

Medium high frequencies are not devoid of "skip." Suppose we are radiating 10 watts from a vertical antenna and that our receiving conditions prevent reception of signals of less than 10 micro-volts per meter. Then, according to the above mentioned report of the British

Government, as we go away from the transmitting station, at night time, the signal falls below 10 micro-volts per meter at about 50 miles and remains below this value until we have reached a distance of about 200 miles, at which distance it rises above that value and then again drops off with distance. Therefore the zone 50 miles to 200 miles is a zone of silence—apparently the signal has skipped this zone. However, if 1000 watts had been radiated, the signal strength would not have fallen below 20 micro-volts per meter and there would have been no "skip" according to the above mentioned report. Likewise improvement of receiving conditions so that we could read a signal of two micro-volts per meter would in the case of the ten watt radiation eliminate the zone of silence, but since the local noise level is frequently many times greater than two micro-volts per meter, the chances are that there would always be a silence zone in the neighborhood of 100 miles in this case.

The existing quantitative data in the high frequency band (6000-30,000 kc) is not as great as that in either the medium or medium high frequency bands. The ground wave of all frequencies in this band suffers very great attenuations, but nevertheless frequencies in the vicinity of 6,000 kc remain useful at short distance, though subject to skip in the vicinity of 30 to 300 miles according to the sunspot cycle year, the time of day, time of year, radiated power and types of antenna used.

The frequencies between 5000 and 30,000 are generally speaking, useful for long distance transmission—such as trans-oceanic communication—but the proper frequency for the particular conditions and distance must be used.

While all of the frequencies in the high frequency band may be used for very short distance communication, the great attenuation of the ground wave coupled with their tendency to reappear at long distances tends to prevent their use for short distance communication.

All the waves in the ultra high band (30 - 300 mc) tend to travel in straight lines. Between 30 mc and about 100 mc they will penetrate through or around scattered obstacles but are usually stopped by large obstacles such as hills or mountains. Once they have died out with distance they do not reappear, i.e., they are not reflected by the Kennelly-Heaviside layer.

The waves of the quasi-optical band (300-4000 mc) are reflected and refracted almost exactly like light, and owing to the shortness of these waves the antenna are very small—only about one inch for a quarter wave antenna for ten centimeter (3000 mc) waves. At present one of the greatest difficulties encountered in connection with these waves is to find an efficient tube for their generation. In one of the best known installations an input of about 1,000 watts is used in order to obtain an antenna output of one watt, whereas in ordinary high frequency installations an antenna output of 200 watts would not be extraordinary for 1,000 watts input. Another difficulty with these waves lies in the fact that they are scattered, diffused, refracted, and reflected by branches

of trees, or even leaves, or other small objects.

The low efficiency of quasi-optical wave tubes is counterbalanced by the fact that owing to the shortness of the waves highly efficient reflectors or antenna systems may be used without going to large dimensions, since the dimensions of reflectors of equal concentrative factors are proportional to the wave length being used.

Taken all in all we may say that the ultra high is coming into its own while the quasi-optical has yet to prove itself.

In conclusion we give the following rules of thumb:

(1) Frequencies below 100 kc are primarily useful for short, medium, and long-distance communication but require extensive and expensive antenna systems.

(2) Frequencies between 100 and 1,500 kc are generally useful—this is the general utility band.

(3) Frequencies between 1,500 and 2,500 kc are especially good for vehicles, small boats, and airplanes and for short and medium distances, but in airplanes it is generally preferable to use frequencies from 3,000 to 3,500 kc alternatively with frequencies from 5,000 to 6,000 kc.

(4) The following table is derived from Bureau of Standards Circular No. 317 dated May 10, 1932. The data are somewhat old and not entirely applicable at the present state of the sun spot cycle. Under present conditions and with the most modern receivers somewhat greater and more continuous coverage than that shown may be expected on the different frequencies.

In this table *coverage* is shown. For example on 8,000 kc day, summer, the coverage is shown as 0 to 25 miles and 180 to 500 miles. The silence zone is therefore 25 to 180 miles and the "skip distance" is 180 miles.

The table is based on 5,000 watts power. Since the reduction of this power to 50 watts would only reduce the signal strength at the limit of either zone to one-tenth of that shown in the right-hand column, the table may be considered applicable, subject to the limitations already stated, to amateur operation with 50 watts power.

(5) Frequencies above 30,000 kc are very short distance frequencies.

(6) Frequencies above 300 mc (300,000 kc) behave very much like light and are as yet hard to produce efficiently.

(7) All antennas should preferably be at least $\frac{1}{4}$ wave length high, but those having no more than $\frac{1}{20}$ wave length height give good results and if a very large "flat top" or horizontal extension is used, tolerable results may be usually obtained with heights as little as $\frac{1}{100}$ of the wave length. In the case of simple single wire antenna about $\frac{1}{4}$ wave in length the radiation efficiency may, as a first approximation, be taken as the ratio of the vertical height to the quarter wave length. In the case of a simple vertical antenna of less than $\frac{1}{4}$ wave height, radiation efficiency may, as a first approximation also be taken as the ratio of the antenna height to the quarter wave length when this ratio is large, but it is far less than this ratio when the ratio is small, on account of excessive losses in the antenna loading coils.

Distance ranges in miles for 5 kw power for ordinarily required signal strength

Freq. kc	Summer				Winter				Ordinarily required signal strength in micro-volts
	Day		Night		Day		Night		
	1st Zone	2d Zone	1st Zone	2d Zone	1st Zone	2d Zone	1st Zone	2d Zone	
10	0-6000	None	0-6000	None	0-6000	None	0-6000	None	10
100	0-1000	None	0-2400	None	0-1000	None	0-2400	None	10
300	0-500	None	0-1500	None	0-500	None	0-1500	None	10
500	0-350	None	0-1200	None	0-350	None	0-1200	None	10
1000	0-200	None	0-1000	None	0-200	None	0-1000	None	10
1500	0-120	None	0-800	None	0-120	None	0-700	None	10
2000	0-100	None	0-900	None	0-100	None	0-900	None	10
3000	0-75	None	0-1000	None	0-75	None	0-1000	None	10
4000	0-60	70-120	0-70	100-1200	0-60	75-250	0-70	100-3000	9
6000	0-30	110-250	0-40	350-4000	0-30	180-500	0-40	700-8000	8
8000	0-25	180-500	0-30	700-7000	0-25	350-1000	0-30	1800-12000	5
12000	0-25	350-1200	0-25	1800-12000	0-25	800-2400	0-25	8500-12000	3
16000	No data	900-2400	No data	None	No data	1200-5000	No data	None	2

Modified Drill on the R. A. Corrector

By LIEUTENANT J. E. REIERSON, C.A.C.

EXPERIENCE has demonstrated that the drill prescribed in training regulations is not well adapted for use in the R.O.T.C. Many experiments were made to overcome some of the objectionable features. By the trial and error method a modified drill has been evolved that, in the opinion of the officers on duty with the R.O.T.C., Agricultural and Mechanical College of Texas, is much better adapted to the R.O.T.C. and probably is better for any component of the Army.

It was found that the duties of Numbers 3 and 4 (and to a lesser extent No. 5) as prescribed in training regulations are too numerous to be properly performed by these operators. This naturally slows up the training of the section as a whole. By the addition of three men to the R. A. Corrector detail these duties may be lessened to such an extent that they can be properly performed, with a reasonable amount of training, by the average student or soldier.

The three additional operators are:

1. Complementary Term Cylinder Operator.
2. Dead Time Cylinder Operator.
3. Corrected Time Cylinder Operator.

The modified drill makes it possible to turn out more accurate data more rapidly than formerly was possible (dead time remains unchanged).

SOME ADVANTAGES OF THE NEW DRILL

By means of a movable paper or metal scale and a fixed "complementary term" correction scale (see Figure 1) the "principal" vertical deflection (6_p) is used rather than the vertical deflection (6) as at present. This will allow a more accurate setting of "lateral" time and, therefore, the determination of a more accurate lateral deflection (L. D.). It will allow a more accurate determination or setting of the fuze prediction angle by means of the Dead Time cylinder and, therefore, will locate the future position (T_p) more accurately, i.e., it will determine the super-elevation and fuze range more accurately and will allow the gun to be set at a more nearly correct quadrant elevation and the fuze at a more nearly correct setting.

A fixed paper or metal scale (with no correction scale) is used on the lateral speedometer. It is the same as the movable scale shown on the drawing. It will allow readings of "principal" lateral deflection and thus give a more exact reading of the "complementary term."

It conforms to the theory of position finding of the R.A. Corrector, whereas the present drill does not.

DUTIES OF THE R. A. CORRECTOR DETAIL

- No. 1. (Lateral Pointer)—Traverses the instrument by means of traversing handwheel so that vertical cross-hair is on target.
- No. 2. (Complementary Term Cylinder Operator)—Reads Principle Lateral Deflection on outer (paper) scale and rotates the complementary term cylinder until that graduation is under the index. Keeps it continuously set. Reads "complementary term" so Numbers 4 and 5 can hear it.

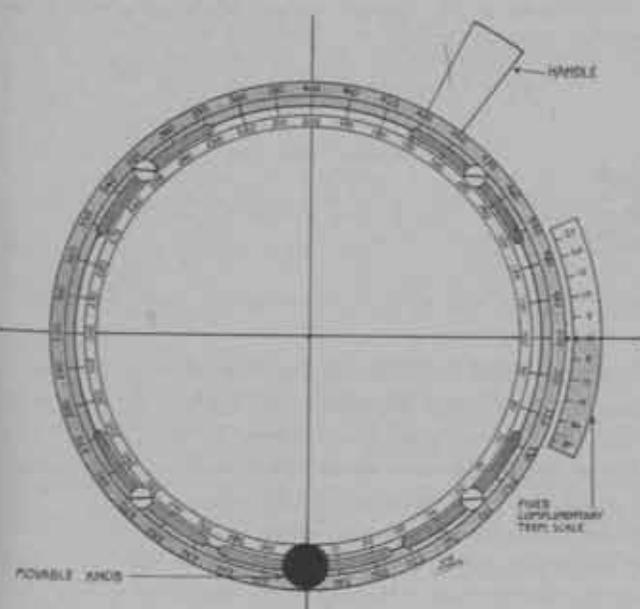


Figure 1

Movable Principal Vertical Deflection Scale supported by speedometer screws and correction knob.

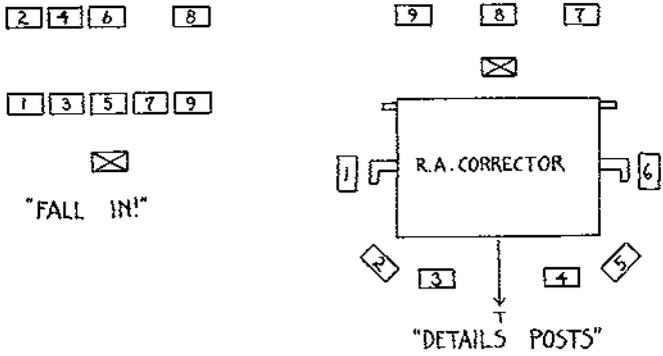


Figure 2

- No. 3. (Lateral Deflection Reader)—
 (a) Sets lateral wind correction, as received from Wind Computer, as a secondary correction to the principle lateral deflection by means of the secondary deflection correction knob.
 (b) Reads and transmits by telephone the lateral deflection setting (L. D.) continuously.
- No. 4. (Vertical Deflection Reader)—
 (a) Sets "complementary term" as a secondary correction (always) to the vertical deflection (V. D.) by means of vertical speedometer correction knob (receives it from No. 2).
 (b) Sets vertical wind correction as received from "wind computer" by means of vertical speedometer correction knob. (Added algebraically to complementary term value.)
 (c) Reads and transmits by telephone the vertical deflection setting (V.D.). Does this continuously.
- No. 5. (Dead Time Cylinder Pointer Operator)—
 (a) Sets complementary term by rotating paper scale.
 (b) Reads the value of the principle vertical deflection (on paper scale) loud enough to be heard by No. 8.
 (c) Continuously moves the Dead Time Cylinder pointer to that curve (6₁ on the cylinder).
- No. 6. (Vertical Pointer)—
 Keeps the target on the horizontal cross-hair by elevating or depressing the sight.
- No. 7. (Vertical Time of Flight Setter)—
 Assists vertical pointer in getting his sight on target. Reads time of flight under time of flight pointer on time of flight cylinder and moves the vertical time pointer on corrected time cylinder to that vertical time curve.
- No. 8. (Corrected Time Cylinder Operator)—
 Rotates the corrected time cylinder until the curve corresponding to principle vertical deflection (called by No. 5) is under the vertical deflection pointer.
- No. 9. (Lateral Time of Flight Setter)—
 Assists lateral pointer in getting his sight on the target. Reads time of flight under time of flight pointer on time of flight cylinder and moves lateral time pointer on corrected time cylinder to that "lateral time" curve.
- No. 10. (Fuze Range Reader—N.C.O., Chief of Section)—
 (a) Supervises work of section.
 (b) Insures that Nos. 1 and 6 are on the designated target.
 (c) Sets altitude correction by means of altitude correction knob.
 (d) Sets altitude as received from B' altimeter or Height Finder by means of altitude handwheel.
 (e) Reads and transmits continuously the fuze range. (Reads to the nearest corrector but omits the word "point" unless readings are over 20 units.)



A PACIFIST WROTE: "The military mind, being schooled in habits of mechanical obedience, is not free to develop normally with the advance of civilization." Of course a pacifist is pretty much of a fool or he would not be a pacifist; anyone else knows that before a man can take the first step in advancement in the military services he must disabuse his mind of any such puerile ideas of mechanical obedience. The pacifist thinks that the act of the boy who stood on the burning deck is the height of military virtue. Although a pacifist never has the least hesitancy in undertaking to pass skilled judgment on questions of war, he bases this ability on some Heaven-sent knowledge, and not on study.—GATCH.

The Intelligent 27

By BURTON RODMAN



"Les Boches. Beaucoup boom, boom!"

YOU are going away to the Intelligence School. This will be intensely interesting work, and I want to receive good reports on your progress there."

So spoke the captain of the Headquarters Troop, 5th Army Corps, to 27 representative Americans, whom we shall designate as the Intelligent 27. We had come from the replacement camp on account of specialist qualifications. There were chauffeurs, mechanics, clerks, signalmen, but not a single man knew even what the word "Intelligence" meant. But we were on our way to the Corps Intelligence School to find out.

It might be well to pause here to consider the word "Intelligence." The French have chosen the better word, "Information," i.e., information of the enemy. The methods used to secure this information include observation, scouting, night patrolling, spying, searching, and questioning prisoners, searching dead bodies, and seizing of maps, enemy orders, documents, letters, identification tags, and plans.

We were supposed to have a fair knowledge of all the other methods, but at observation we were to be experts.

In modern warfare, aiming has become a mathematical problem, and it is the duty of the observers to furnish the given figures for these problems. Supposing you were a gunner and an observer called you on the telephone and said: "There is a German battery at G96.35—01.9. Fire on it." Do you think you could make a hit? It can be done and was done. We proved it many times. Yes, sightseeing through a telescope is a pastime, but observation is a science, combining some of the skill of both the surveyor and of the astronomer.

For a month our heads were crammed with "Intelligence." It seemed that the whole allied army sent

It is hard to describe one's feelings upon first seeing the lines of the enemy. I imagine Dante, when he first looked into the depths of Hell, must have experienced a similar sensation.

experts to tell us the fine points of the subject, and our instructors ranged from a red-headed corporal who taught us how to crawl through barbed wire entanglements to a dignified British officer of high rank who droned about contours, echelons, coordinates, azimuths, orientation, and other equally brain-racking subjects.

But all things must come to an end, including courses on intelligence. Finally, after this month which seemed a year, during which most of us nearly succumbed to mental indigestion, the course ended on August 18, 1918. So let's bid farewell to the school and its many memories and follow the Intelligent 27 on their way into the front line on the St. Mihiel Salient, prior to the first all-American offensive of September 12, 1918.

Our first job was to go into the lines with the French, who occupied the sector at that time. The Assistant Chief of Staff, G-2, 5th Army Corps, gave us our final instructions. It was our purpose to learn the sector. But, above all, the enemy must not see us, as it was important that the Germans not learn of the Americans' presence in the lines. He told us to keep our eyes and ears open; mouths shut.



From the heights a pigeon was released.

Our adventures in getting into the lines, strangers in a strange country with a strange people speaking a strange language, were a story within themselves. We finally got past the French corps, divisional, brigade, and regimental headquarters and were finally on the last leg of our journey, with a talkative French liaison man guiding us and saying:

"Bon secteur, pas beaucoup boom-boom."

Presently our companion crawled away from the path, toward some sickly looking bushes, drew aside some branches and pointed toward the point of an adjacent hill. It was the most desolate sight we had ever seen. The earth had been churned by hundreds of shells, and only broken, gnarled bits of the trees remained. Against the sky they looked like the knotted fingers of gigantic old hag-witches.

"Bon Observatoire," he explained. "Les Boches. Beaucoup boom-boom!" Then with his hands extended, palms upward, he made a quick gesture skyward and added, "Finish observatoire!"

That left a bad taste in our mouths.

The hill overlooked a wide, flat valley. The Frenchman gave a wide sweep of his arm and, in a commonplace manner—just like one would point out the post office—he said, "Les Boches." Yes, he was right. There was our front line, zig-zagging across the plain and through a flat village. Facing it was the opposing line. It passed through a larger village. Beyond that were the Germans. That great flat valley was forbidden territory.

It is hard to describe one's feeling upon first seeing the lines of the enemy. It all seems supernatural, and a spell of enchantment settles over one. The occasion seems almost sacred. I imagine Dante, when he first looked into the depths of Hell, must have experienced a similar sensation.

The Frenchman offered unlimited comment. We understood enough to learn that beyond the lines was the

Etain Valley, France's great mining district. In the distance, with the aid of powerful glasses, we could see the smelters being operated at full capacity by the Germans.

Our guide then called our attention toward the east. In that direction our line came to a point. At the extremity, it encircled a huge hill. Our line at that particular spot, and the hill, were surrounded on three sides by the Germans. Not a very healthy place.

A few hundred meters from the first hill was a second one, equally as high and imposing. Our guide told us that the Germans occupied this second hill. I imagined that I could see Franks and Teutons leering at one another from the hilltops across the narrow valley.

The first hill was the Côte des Hures and our guide told us that from this height would we do our first observing. The second was the famous Crête des Eparges, one of the main German strongholds in this sector.

The night before September 12 was not unusual until about midnight; then all firing ceased and there was a sudden hush. Except for the occasional scurry of a rat, not a sound disturbed the stillness; not a stir broke the enchantment. I was in the observatory with a Frenchman. It was one o'clock. All was darkness; not a single ray of light pierced the dense blackness.

Suddenly there was a blinding flash. I knew what it was. One of the majestic naval guns. There followed a sharp but deep voiced report, then a piercing, whistling howl, as the projectile sped through space over our heads. There was a crash and a second flash, as the shell burst on the Germans' side.

The Frenchman leaned over and whispered, "L'attaque!" We had not the slightest idea as to when the offensive was to be or at what time the bombardment would begin, but that big naval gun and its howling missile spoke plainer than words.

That must have been a signal for the other guns, for another followed, then another, and another; until the separate flashes blended into an intermittent, dancing glare. Every hillside, every valley and every wood belched fire and rained it on the enemy.

In due time German barracks and buildings began to burn, casting glow and raining sparks over the landscape. Great ammunition dumps were sought out and consumed with terrific explosions and massive tongues of flames that mounted high into the heavens. From the German trenches all along the front, colored rockets of every description hung in the sky.

When daylight came, we could see, through the hazy smoke-laden air, that mortars and 75's were playing on the enemy barbed wire, mowing it down. Farther back,

great funnel-shaped spurts of dirt leaped up where shell after shell landed, blocking the lines of retreat, barring and destroying all roads, tearing up railroads, piercing shallow dug-outs, and cutting off the enemy reserves.

Later the din changed from a steady bombardment to the quick, thumping, rhythmic roar of the rolling barrage. The rattling clatter of machine guns chirped in like snare drums. The artillery fire lifted from the wire in No-man's Land; and those fan-like spurts of dirt began creeping forward toward the enemy lines. The barrage had started its relentless march, and everything was moving forward.

In a short time the procession began moving the other way, but it was composed of prisoners and wounded soldiers travelling toward the rear. In a few hours the drive was over, and the St. Mihiel Salient was no more.

The 5th Army Corps a few days later was ordered to the historic old grounds around Verdun. They took part in the entire Meuse-Argonne operation. So let's shift our scene to the jump-off, north of Verdun, the jump-off that was the beginning of the end.

Major Henry Breckinridge, former Assistant Secretary of War, then Assistant G-2, 5th Army Corps, gave us our instructions. He explained that for the first few days on the Argonne front our work would pertain particularly to the advances made by our troops. During the time of battle, the air is so hazy that little can be seen from an observatory. For that reason, our work would differ from any we had previously done. The observers were to be divided into several teams. One team would go with each division operating under the corps. Each team was to be equipped with maps, carrier pigeons, prismatic compasses, field glasses, credentials, identification cards, and orders to circulate anywhere within the corps area. Our orders placed any telephone or radio station at our service. The teams were to go over the top with the infantry and re-

port the capture of all important positions. Any other information of importance was to be promptly reported to headquarters.

At a centrally located spot was to be operated an observatory and headquarters for these liaison teams. At the headquarters was an abundant supply of carrier pigeons that could be drawn upon, a direct telephone line to the corps, and a wireless station.

There was never a No-man's Land to equal the one here. Tons and tons of barbed wire lay between the opposing trenches. It was just one solid mass of shell holes. No hell was ever a more frightful sight than this man-made inferno.

As the sun sank low on September 25, we took one last look at the lofty height of Montfaucon, nine miles away. That was the German stronghold. It was to be our objective for the first day. A liberal portion of our large Naval artillery was trained on that famous fallen city. They were only waiting for the word to speak.

That evening Major Breckinridge awaited us at the observatory. Asking me for my map, he marked a cross on it and said: "That is the 79th Division headquarters. Get your men, with all their equipment, and go there this evening. A truck will meet you. You are to report to the Division Intelligence Officer. He will tell you where to find the front line regiments."

Owing to congested traffic on the roads, it took the greater part of the night to reach our respective regiments in the front lines.

The teams went over the top with the first wave and stayed with it throughout the day. No resistance was met at the front line, but Montfaucon was carefully guarded by strong machine-gun nests. All attempts on that first day failed to dislodge them.

Night came with Montfaucon still in the hands of



Prisoners and wounded going to the rear.

*Hell broke loose.*

the enemy. On the first day, casualties were heavy. Thousands were sent back, cut up by machine-gun bullets. More than once a Doughboy crumpled up and fell in a heap with a groan beside one of us. But there seems to be a guardian angel who watches over the lives of fools, drunkards, and—observers.

At about noon the next day, troops of the 79th Division managed to push the Germans beyond the town. A strong combat patrol was sent into the ruins. Some of the observers were on the job and entered with the patrol. From the heights a pigeon was released, bearing the message that Montfaucon was no longer German territory. By evening, each team had used all its pigeons, so we left the infantry, still battling with the Germans but making little progress; we returned to our observatory and headquarters at Hermont, nine miles back. There we received orders from the Major to move everything to Montfaucon.

Early the next morning, we started for this newly acquired heap of debris and ruins. Progress was slow. We had a great deal of equipment to carry and roads were almost impassable. It must be remembered that, during four long years, some of the most violent fighting had been staged here. Imagine the condition of that shell-plowed terrain. Now add several day's drizzling rain and the traffic for three divisions on two of these narrow roads, and it ought to stimulate your imagination. Those two roads were jammed for miles with wagons, artillery, ammunition, staff cars, field kitchens, trucks, ambulances, and all the other necessities of the army, packed end against end.

In due time, we reached Montfaucon. The machine guns still clattered just beyond the town; our boys were still battling and making no headway. The men lurking about the ruins and those trudging toward the rear, with white bandages and wound tags, all looked gaunt, hollowed and hungry. And they were hungry, too.

We listened to the clatter of the machine guns. Yes,

we were right. They were mostly German guns; ours rarely spoke. A practiced ear knows the distinction between the sound of the two. Shells, too, were whistling overhead, but the majority were German. Some were landing in the outskirts of the town. Yes, we guessed why little progress was being made.

The picture of those two congested roads was the answer. We remembered how sleepy-eyed engineers were working frantically to keep that traffic moving. Wagons were being dragged through mud hub-deep by excited, hungry horses. Fatigued drivers were urging them inch by inch. Some were urging and coaxing, others were slashing whips and cursing. The engineers were working frantically. They had been at it all night and were still busy with picks and shovels. Some were carrying rocks in burlap bags from Avocourt, half a mile away. Others were packing brush and branches of trees in the sticky ruts that oozed and clung to the wheels.

Every wagon and truck held precious supplies and ammunition that those hungry doughboys were waiting for. Wounded, unable to walk, lay out on the fields destined to suffer until the congestion could be cleared enough to let the ambulances through. Those machine guns would continue to rain death upon outposts until the waiting cannons were supplied with ammunition and could silence those chattering nests of death. That enemy artillery would continue to bark until enough ammunition was brought forward for counter fire.

In the meanwhile, the doughboys continued to hold the enemy and make futile attempts to advance. Hungry, tired, wet, muddy, and discouraged they were, but still they continued to battle.

We established our observatory and headquarters in a chateau at Montfaucon that had been used as a headquarters by the Crown Prince during the long siege of Verdun. Here we found a massive telescopic periscope about fifty feet long. The observer, many times His Im-

perial Highness, was able to sit in a bomb-proof, shell-proof concrete cage in the basement, while the ever keen eye of the instrument peered from the roof above the third floor of the building. The château was unusual also, because it was the only complete building left standing in the town. This was not strange, though, as the Crown Prince's engineers had been very particular about reinforcing the structure with concrete.

But the Germans realized what they had left behind and guessed that we would turn the building into an observatory to use against them. They attempted to shell us out, but the German-made shells splashed against the German-made concrete without doing any more damage than tearing off insignificant chunks of masonry. They did, however, make life generally uncomfortable for us. The strong concrete was no protection to the man who happened to be on the roof straining his eye through a pair of scissor glasses.

We lived in the wine cellar below. Here the Crown Prince's carpenters had installed comfortable box spring beds and a serviceable cook stove. Down here life was generally comfortable.

It sounds like a paradox, but the numerous shells hurled at us were our salvation. They were the means by which it was possible for our chief promoter to bring in the bacon. At times rations grew low and we looked forward to the next meal with anxiety; but the ever keen ears of the promoter, Stahl, caught the indistinct rattle of a field kitchen, followed by the crash of bursting shells and the clatter of hardware. He departed, and after frisking the blown up field kitchen, replenished the pantry. On one occasion a hospital kitchen was blown to bits; but among the bits we managed to find abundant cube sugar, cocoa, beef cubes, canned milk, Campbell's soup, and other delicacies.



Lights were glowing through the windows for the first time in four years.

The teams worked out from the château. Those were dangerous times for the observers. Every day we left the château and traveled along the shelled roads to the different division front lines. The lines were ever changing, and it was no small undertaking to keep the headquarters posted as to their exact locations. While working those front lines, many were the times we had to think quick and act quicker to keep our names off the casualty list.

After the first few days of the drive, it was evident that the Germans were using every possible means to hold the Americans. They were aided in their effort by the traffic congestion over the difficult terrain. Could the Americans have moved more rapidly, capturing greater numbers of the troops and artillery that held the sector, this might have been a different story.

Most military critics agreed that the American First Army held the key to the situation, as the German position in the north was becoming more and more perilous, with only two main lines for retreat and supplies. One was between Luxemburg and Holland, but it was infeasible because of the difficult Ardennes. The other was south of Luxemburg, through Sedan. This passage the Americans threatened.

This was the situation in October. The Americans made assault after assault, only to gain insignificant ground. It seemed that nothing less than an organized attack would dislodge the enemy. The American staff finally came to this conclusion.

Most offensive operations ceased, and everyone settled down to organizing the coming attack. There was much work to be done by the men in the Intelligence section, as it was their duty to locate the German batteries, machine-gun nests and strongholds.

November 1 was the day set for this final drive. The G-2 map must have been startlingly accurate, because after our artillery began its fire there was not a peep from the enemy. The German strongholds were so well sought out that, when our infantry began its



To guard against some officer taking a fancy to it.

march, they met only trembling, meek and demoralized opponents, eager to be taken prisoners and anxious to do anything rather than endure another such severe bombardment.

The next day the advance was continued. Roads were in excellent shape. Artillery, ammunition, and supplies moved up with the infantry. On and on they traveled, following up the routed, disorganized enemy, meeting only occasional machine-gun nests, stationed in futile attempts to slow up the advance of the Americans.

All this time the Intelligent 27 was moving from hill-top to hilltop, trying to keep up with the advance. Pigeons were out of the question. A good observatory would be selected, but before the instruments were brought up the infantry would be out of sight and we would have to gather up our paraphernalia and pick up the pursuit.

We entered Beaumont as the civilian population was preparing to leave, and began looking for a place to live. We found it, a cozy little place which we called "The Salvaged Villa." There was a fireplace, cooking utensils, feather beds, and all the comforts of home life. To guard against some officer taking a fancy to it, and ranking us out of it, we hung out, in bold, conspicuous lettering, the following sign:

V CORPS INTELLIGENCE OFFICE
KEEP OUT!

On many occasions an observer sat in the villa, watching colonels and majors searching for a suitable building in which to establish an advance post of command. Many a high ranking officer spotted our little home and exclaimed, "Ah, this is just the place!" But the next instant, his eye caught the important looking sign, and he retreated carefully.

By this time the Germans were well organized and settled on the opposite bank of the Meuse. Their side was lined with high imposing hills. Our side was lined with hills, but not so high and less imposing. The Germans were keeping a vigilant eye from their side, and every time an American showed his steel helmet the machine-gun bullets and shells began to arrive.

Observation was a dangerous pursuit those days, and it was almost impossible to establish an observatory. One day we found a beautiful hill, nestled so close to the Meuse that we could almost drop a rock into the clear, rippled channel; but we no sooner got our maps out, became oriented, than shells and machine-gun bullets came.

One shell landed so close that the concussion knocked us down and half buried us with dirt. Before taking our hasty leave we paced the distance between us and the smoking crater. It was five paces, or about fifteen feet.

This narrow escape occurred on the afternoon of November 10. That night we sat down to a meal of scorched potatoes, canned beef and hard tack. Someone reported

that rumors were circulating that an armistice was to take effect the next day.

That night one observer determined to go to one of the hills overlooking Letanne, and there conceal himself before daylight. By camouflaging the telescope and his helmet with small twigs, perhaps he could observe undiscovered from behind a small shrub he remembered seeing. Sometimes during the night, hell broke loose. All the more reason to get out on that hill. The plan succeeded. Daybreak found him looking across the Meuse.

The cause of the disturbance the night before was soon evident. There were the remains of badly damaged foot bridges spanning the river. Occasionally he could catch a fleeting glimpse of a Yank as he worked his way along the opposite bank of the river. The ground on our side between the woods and the bridges was strewn with dead bodies. On the other side of the river, near the bridges, were more dead bodies. The terrain was pitted with hundreds of fresh shell holes. Under the cover of darkness, the Americans had constructed the narrow bridges and had forced their way across the Meuse.

Farther up in the hills could be seen the Germans moving about. Three or four times, the hill upon which the observer stationed himself was swept by machine-gun bullets. Several times shells burst near the little brush with a crash, so close that parts of the great funnel-shaped spurts of dirt settled down on it. Shells were bursting in Beaumont and on the roads in our area.

The observer did not dare to attempt to escape over the top of the bare hill. It would have been certain suicide. As he watched, making notes on all the movements seen, his mind turned back to the rumored armistice. Was it a truth; had the Germans actually submitted to the Allied terms?

Eleven o'clock came! Machine guns continued to chatter and rain bullets across the Meuse. Shells were flying overhead.

Then came a hush. Only one enemy gun spoke. It was a large one. The shell howled with rage as it cut a path through the resisting atmosphere. It landed in Beaumont, in the middle of a small stone building. Rocks leaped high into the air. The last one settled with a thud. All was quiet. The small building was no more.

There was a stir in the edge of the woods on the enemy side. Germans and Americans stepped from their shallow trenches and fox holes into view. All was quiet. The war was over! The armistice was no myth!

That night Dutch prepared a regular banquet. The biscuits were great; the potatoes were not scorched. The meal was finished without interruption. After the meal, we stepped out into the street. Lights were glowing through the windows for the first time in four years. For the first time one dared to light a cigarette in the open.

Then we went into the villa and sank into the feather beds. At last, were we to have a night's sleep, undisturbed by hostile artillery and that lurking killer of sleeping men—gas.

Naval Parity

BY COLONEL S. C. VESTAL
Coast Artillery Corps

WITH reference to the armaments which they maintain in time of peace, the Great Powers may be divided into military powers and naval powers. A military power is any nation which has a large conscript army backed by trained reserves, whatever may be its naval strength; and a naval power is any nation which has a large navy but only a small army recruited by voluntary enlistment. In accordance with this classification, the military powers in 1914 were France, Germany, Austria-Hungary, Italy, Russia, and Japan; and the naval powers were Great Britain and the United States. Today the military powers are France, Italy, Russia, and Japan, to which her near neighbors would add Germany, while the naval powers are Great Britain and the United States.

Naval powers readily accept parity between themselves in their naval armaments; but they instinctively refuse to grant it to military powers. They build their navies as a defense against the armies of the military powers. Thus England long maintained a two-power naval standard against France and Spain, when France's army was dangerous and France and Spain were close allies. When Germany finally took the place of France as the great military power and began to build a great navy, England built against Germany. It would be absurd for nations with small armies to enter into a senseless naval competition with each other.

On the other hand the whole world is interested in preventing any great military power from gaining command of the sea. It is justly suspicious of any great military power which seeks at the same time to become a great naval power, lest by surprise, treachery, superior material, or superior personnel, it might become predominant both on land and sea and be in a position to do to the modern world what Rome, the great military power of antiquity, did to the ancient world after she had wrested the command of the sea from Carthage, the great naval power of the day. The fear of such an eventuality, the fear of a Germany predominant on land and sea, drove 27 nations into an alliance against Germany.

To make these things clear, I wish to subjoin the record of a conversation which I had with an English clergyman shortly before the Washington Naval Conference met in 1921. At that time there was much talk about naval competition between Great Britain and the United States; and a "naval holiday" was widely proposed as the only possible solution of the difficulty. In 1916 the United States had begun the construction of a great fleet as a measure of precaution against the possibility that Germany might impose peace upon her enemies, leaving the United States to confront an aggrandized Germany, vic-

A navy without a striking force behind it in the form of an army is not a menace to any first-class power.

torious on land and sea. The American fleet was still under construction when the Naval Conference assembled. Japan was also constructing a large fleet. The naval program of 1916 was not directed against Great Britain, as so many persons believed, but against the possibility of British defeat at sea. It was intended to give us a first line of defense against the Kaiser's army in case the British fleet ceased to bar the roads of German aggression across the Atlantic. The German claim of victory at Jutland in that year had come as a shock to the United States.

"If the United States and Great Britain are in favor of disarmament," said the clergyman, "can anything be lost by suspending our programs of naval construction for six months?"

"There is where you make a fundamental error," said I. "Are we building against Great Britain? Are we building against any nation whose army, like that of Great Britain, is on a scale of domestic needs only? Is Great Britain building against us? Is she afraid of our army?"

"No, but she is afraid of your navy and you are afraid of her navy and that is why we have started a competition in building."

I listened to this good man's words with astonishment and was at a standstill where to begin to reply to him. He enjoyed his triumph. I finally said to him: "Wars of aggression cannot be carried on by means of navies alone. A great army is the first requisite. It is indispensable. If the land singled out for conquest lies just across a land frontier, no navy is necessary, though it might be a useful adjunct. The victim may actually have superior naval strength, as did Denmark in 1864 and France in 1870 when they were overrun by Teutonic armies which did not have to cross the sea or any large body of water to get at their enemies. If the French fleet had been ten times or a hundred times as strong as the Prussian fleet in 1870, it would have availed little to save France, except as the ships' crews might have been used as soldiers to stay the advance of the German armies. Let us suppose, however, for the sake of argument, that France and Germany had been separated from each other by an arm of the ocean. In that case it is easy to see that France would have been beyond the reach of the German armies as long as the French fleet was markedly superior to the Prussian fleet. Confining our attention to the relations of these two countries and supposing that they were separated by the sea, it is easy to see that France could safely have reduced her army to the needs of maintaining order at home, provided

only that she kept her naval preparations ahead of those of her rival. If Germany made no serious effort to increase her fleet, France need not have viewed with alarm any increase of the German army, however great it might have been. Likewise Germany could have disregarded any increase in the French fleet so long as France kept only a small army. If, to go a little further into the question, Germany had seen fit to reduce her army to the needs of maintaining order at home, so that both countries measured their military strength by the necessity of preserving domestic peace, France could safely have relaxed her naval preparations. She would, if her statesmen were wise, have ceased to take the German navy as a standard for her construction program."

"Then you mean for me to infer that two countries like Great Britain and the United States, separated by a wide expanse of sea, and maintaining small armies on a scale of domestic need only, have no reason to take into consideration the naval strength of each other?"

"Exactly so," said I.

"Well, I believe you are right. I begin to see that this talk about naval rivalry between the United States and Great Britain is ridiculous. But do you mean to tell me that naval preparedness is really directed against the other fellow's army?"

"Yes," said I, "that is an absolutely correct view to take of the naval preparations of countries like Great Britain and the United States which are separated by the sea from all possible dangerous adversaries. When such countries maintain large navies, you may rest assured that they are measuring their naval needs, not by each other's navy, but by the navy of some other country which has a large army and is building a formidable navy."

"I may infer from what you say that there is never any naval rivalry between countries which maintain small armies."

"Correct."

"And if all the Great Powers were separated from each other by the sea, they could each and all depend upon their navies for defense."

"I am not inclined to push the conclusion that far," I replied. "I think you would find that if the Great Powers were all separated from each other by the sea, some of them for special reasons such as lack of aptitude for the sea or the necessity of maintaining large armies to preserve domestic peace, would place their main reliance for defense upon their armies."

"From your remarks, to which I assent," he continued, "there would be no naval competition between the powers which relied upon their navies for their first line of defense. . . . The naval powers would endeavor to keep safely ahead of the naval strength of the countries which maintained large armies and the land powers would try to keep their armies at such strength as to be able to defeat any attempt of the naval powers to effect landings upon their coasts."

"Napoleon himself," said I, "could not have made a

better statement of the principles involved in the competition of armaments."

"But suppose one of the strong military powers began to arm steadily by sea, whilst she quickened her military preparations at the same time. What would happen?"

"You have enumerated the earmarks of the state which seeks conquest at the expense of its neighbors. The nation which seeks superiority in armaments on both land and sea brands itself as the enemy of mankind and sets the pace in armament competition. No nation bent only on self-defense incurs the expense of a double security. For purely defensive purposes every dollar or pound spent upon a second and superfluous system of security is as useless to man as the vast masses of water that are locked in eternal ice about the poles. Security against the nation which seeks superiority on both land and sea may be provided by isolated nations by maintaining naval superiority over the threatening power or by maintaining sufficient armed forces on land; for, as von der Goltz remarks, descents on the coast are, in the case of a populous state with good military organization, rather bugbears than dangers. . . . The military powers will look to their armies for defense. The general staffs of every first-class power makes a specialty of such problems."

"I think," said he, "you have given the true explanation why the United States and Great Britain have not competed in naval armaments, namely, the fact that each has kept a comparatively small army in time of peace. But Japan is differently situated. She feels that she must maintain a large army with a large well trained reserve in time of peace on account of her situation as a military power upon the mainland of Asia. What will be the natural effect of Japan's efforts to build a large fleet?"

"So long as Japan has a formidable army," I remarked, "she must expect other nations which depend upon their navies as their first line of defense to lay down two keels to every one that she lays down. (NOTE: Great Britain, the United States, and Japan agreed upon a ratio of 5, 5, 3 for their respective navies at the Washington Naval Conference). If Japan wishes naval equality with nations that are not great military powers, she must qualify for it by ceasing to be a first-class military power, that is by getting rid of her conscript army."

"But what about the dignity of Japan?" asked he. "Can she without a loss of self-respect allow any other nation to have a larger navy than herself, even though it is not a military power in time of peace while she is such a power?"

"I cannot see where the question of dignity comes in," I replied. "Neither proud France, nor haughty Spain, nor mighty Germany ever raised the question, during the centuries when England was keeping a safe naval margin over their fleets. They might have been justly offended had England not insisted upon a two-power standard for her navy, because England's willingness to grant naval equality would have been an indication of her contempt for their armies."

"I should say," said the clergyman, "that in proportion as England and the United States are content to accept anything less than a two-power standard for their navies, they would show contempt for the Japanese army or the Japanese navy or both. Japan's feeling of satisfaction would be marred by such open disregard for her prowess and dignity as a nation."

Conditions are not different today from what they were in 1921. A navy without a striking force in the form of an army behind it is not a menace to any first-class power. It is not a provocative armament. Nations that depend upon naval power for defense never enter upon a war that

can in any way be avoided. The English have had wars thrust upon them and have generally begun their wars with disasters. A supreme American navy or a supreme British navy, without a powerful army behind it, could never be a menace to world peace. However, when the United States or Great Britain or Germany or any other nation attempts to combine a large army with a large navy, world peace is then very definitely jeopardized; and any such attempt will cause the military powers with small navies and the naval powers with small armies to unite against the offending nation in the interest of self-preservation.

The New Recruit Class

By MAJOR LER. LUTES
Coast Artillery Corps

THIS should be a great year for the Army, if 46,000 recruits are added. This number is nearly equal to the present combat strength. On every hand we hear "this depression should make it easy for the Army to obtain hand-picked men—high-school graduates." It should and we hope that it does, but what are we going to do with them. Are we going to train them into alert, active upstanding young soldiers or are we going to make them into hedge clippers, lawn trimmers, garbage haulers, etc., with soldiering as a side line?

For years the Army has suffered from a heritage of maintaining the *park post system*. Our small army has spent a large part of its time in military housekeeping—fatigue. There are many plausible reasons for this and there seems to be no way to escape a large amount of this work. However, an opportunity to create a well trained, professional army of quality seems at hand.

If these 46,000 recruits are immediately distributed among our many posts and frittered away, the chances are very good that they will soon drop out of sight and into the usual routine of long hours of fatigue and short hours of training and instruction. The army will benefit by having more men to do the routine work and a few more tactical units for the training of officers, but will the 46,000 young recruits become properly indoctrinated with the best traditions of the army and develop into trustworthy, individual soldiers, or will they finish their enlistments and return to civil life with warped ideas and a very slight conception of the purposes of the army? In this day of radical propaganda this seems to me to be a question of vital importance.

Any old soldier will tell you that his recruit instruction days were his most impressive ones. He formed his opinions of the Army then. His soldierly habits and his general knowledge of the service were generally either inculcated during this formative period or not at all. It is the same with the Plebe at West Point. Everyone is familiar with (or has heard of) the painstaking efforts to

In our eagerness to improve our technical and tactical efficiency we have drifted away from teaching the matters which are the very foundation of all armies.

inform the Plebe of the traditions of his Corps and, above all, the reasons for each duty he performs.

Since abolishing the Recruit Depot training system in 1922, we have devoted less and less attention to the recruit. Four or five men arriving at a Post direct from a recruiting office are turned over to a sergeant for two or three weeks of mediocre "squads east and west." During this period the first sergeant and company (troop or battery) commander bring pressure upon the adjutant to turn the recruits to duty principally because they want them for guard and fatigue. The adjutant finally yields against his better judgment, and the recruits are "turned to duty" without having received instructions on many questions with which they should be familiar. This condition exists on all except the very large posts and in foreign garrisons.

An indication as to how vital the recruit instruction period can be may be found in a study of the desertion statistics of the regular army. Prior to the present depression, the United States Army had the highest desertion rate of any first class power. Of these desertions, 78% occurred during the *first* year of the *first* enlistment and 25% occurred during the first three months. These high percentages developed *after* the old Recruit Depot system was discontinued; in fact the first year after this system of training was abandoned the desertion rate actually doubled.

The importance of basic recruit training is not overlooked by European nations. Consider a French artillery recruit, who spends six months of his term of service in purely basic training before an attempt is made to train

him into a finished artilleryman. The British process their recruits through training depots by classes, each class remaining at the depot until ready to join its regiment—usually three months. Why do the European military authorities emphasize recruit instruction? Because they never forget that the Army in the final analysis is the bed rock upon which rests the foundation of the government, and they wish to insure that each recruit is made into a dependable, loyal, physically fit soldier who understands his duties and his relation to his government. They also realize that after the recruit joins his regiment his time will be taken up with technical matters and little of it given to fundamentals. They also realize that thorough recruit instruction will make the task of polishing into good infantrymen, cavalrymen, artillerymen, airforce men, etc., much easier. Also that men in service branches, such as the supply and medical services, will receive little disciplinary and general instruction other than that instilled during the recruit period.

The question may be asked, "what should be taught to a recruit that requires such thorough instruction?" Space does not permit a complete answer, but a few subjects can be indicated:

- (1) The history of discipline from that of ancient armies to the present time, showing its necessity.
- (2) Comparison of American discipline to that of other armies (not overlooking the rigid discipline of the Russian army and the fact that the Bolsheviks found it necessary to restore the salute-on-duty and to separate officers and men).
- (3) Significance of our ceremonies and elementary drills, also their history or background.
- (4) History of the customs of the service and the reasons they have been developed.
- (5) Elementary description of the U. S. Constitution.
- (6) Army's responsibility to the people in upholding the Constitution.
- (7) Careful explanation of the Articles of War with reasons therefor and examples.
- (8) Brief outline of the mechanics of Civil Government.

There are many other subjects that a recruit should be taught but at least he should be well grounded in the first seven listed above. All of these subjects can be so simplified that the average recruit can understand them. In addition he should receive instruction, by use of moving

pictures, in matters that would tend to increase his pride of service (military, historical and other subjects). He should receive long hours of physical training, mass marching and sports, together with the usual recruit training that we have always considered essential. To summarize, his training should have three objectives:

- 1st—inculcation of patriotism, loyalty and discipline.
- 2nd—general knowledge of the service and its customs.
- 3rd—physical fitness.

He should go to his regiment so indoctrinated that neither "fatigue" or subversive propaganda can break his morale or *esprit de corps*; so physically hard that he has pride in his strength and is grateful to the army for it, and so well informed on the service subjects that he is generally immune from downheartedness caused by a misunderstanding of the service.

Do not feel too sure that your men do not think about some of the subjects listed above. If you believe that the average man is well grounded in these matters try a few simple questions at your next Saturday morning inspection. You may receive some surprising answers. Recently the writer heard a corporal asked the question, "Why do officers and men live apart?" His answer was "class distinction." Our old soldiers would not have answered so. When asked if he thought his battery commander could entertain all his men socially the corporal replied "No." When asked if he would consider the battery commander "playing favorites" if he mingled with and entertained a few, the corporal answered "yes." When asked if this would affect the discipline badly the corporal replied "Yes," and added that he had never thought of it in that way and that no one had explained it to him.

We have known the answers to these questions and a hundred others for so many years that we have forgotten to teach them. In our eagerness to improve our technical and tactical efficiency we have taken for granted that the recruit would absorb many things that he has not absorbed, and we have drifted away from teaching the matters which are the very foundation of all armies. The recruit has become the army's "forgotten man." It is high time we remember him. One way of doing this would be to establish corps area recruiting training centers, utilizing services of carefully selected officers and non-commissioned officers as instructors, and using carefully prepared, standardized instructions to insure that each subject is fully and properly covered. The training period should be at least three months.



SINCE 1496 B.C., a period of 3,429 years, there has been 3,161 years of war, either local or international, with less than 268 years of complete peace. From 1500 B.C. to 186 A.D., 8,000 treaties, local and general, and solemnly declared to be everlasting have been concluded. These treaties on the average lasted two years.—THE COLUMBIAN.

Some Ideas on Efficiency Reports

By LIEUTENANT COLONEL ROWAN P. LEMLY
29th Infantry

WITH the advent of spring comes the annual student lists for the War College and Leavenworth with accompanying looks of gratification on the faces of a few and keen disappointment on the faces of many. For months via the grapevine route we listen to those who think they know or to those who claim they have the inside dope. Some say that a rating of "Superior" is requisite, some advance the view that age in grade is a determining factor, and others are sure that younger men are to be given preference.

The annual nightmare of anxiety for the current year is over. Many thought they would be called—but few were chosen. And now we harken to the alibis, to the valiant false-fronts put up by some whose ill-concealed regrets belie the statement that they didn't expect it anyway, and to the damnation of certain reporting officers who rubber-stamp all efficiency ratings "Satisfactory." We hear that Bill made it because he was a personal friend of so-and-so. We are told Jim made it because he was a dyed-in-the-wool boot-licker. Tom got it because he was on the staff and everyone knows what that means. It would all be very amusing despite the fact that in some cases it is extremely boring were there not a decidedly serious side to it—the shattered morale of a large number of officers for varying periods of time—days, weeks or months, depending upon how long it takes them to adjust themselves, pull in the belt a couple of notches and get down to the serious business of making Leavenworth or the War College next year.

That this annual knockout drop has to be administered to many highly ambitious and deserving officers is unfortunate. But no policy for selection of students will ever suit everyone. Any policy is bound to adversely affect some individuals. From the standpoint of the War Department it becomes a question of policies which, in the opinion of those in authority, are to the best interests of the service. The announcement of these policies some months ago resolved some of the questions which have heretofore perplexed the aspirants for higher education and has had the beneficent effect of reducing to some extent, even if it did not by any means entirely obviate, the annual spring depression that grabs at the throats of many just when they might otherwise be "ratin' to go." For after all questions of the rank and age in grade of selectives have been established, efficiency reports must inevitably be the determining factor in the final selection among eligibles. It follows naturally, then, that these reports have become the great enigma to those aspiring to high command and staff eligibility.

The subject of efficiency reports has been brought forcibly to my attention by the above mentioned spring knockout drop, by recent articles in service papers, and by the fact that I have lately had to "I concur" or otherwise

"It must not be thought that all eccentricities and faults are on the side of reporting officers."

pass upon entries made by reporting officers on a number of efficiency reports. These reports have been, and in all probability, always will be, the subject of contention. Since they appear so important a factor in selection of students to service schools they are today a main topic of "shop talk" among officers. The air reeks of fire and brimstone, acrid smoke, cigarette butts and stale beer around a table which has for an hour or so supported the elbows of two or more indignant spirits.

A few personalities I have met via the efficiency report route:

Exhibit A—The reporting officer who openly boasts that he rates no officer superior; that in his humble judgment "there ain't no such animal." I should like to invite his attention to W.D., A.G.O. Form No. 67, Efficiency Report, Heading "K" at the top of second page which I quote as follows: "Proper authority having decided on the methods and procedure to accomplish a certain end, does he render willing and generous support regardless of his personal views in the matter?" A reporting officer so wedded to his own opinions as to openly defy the policy laid down by higher authority is bigoted to say the least. Whatever his personal views he is faced by facts and not the dogmatic fantasies of his own invention. Higher authority has definitely prescribed the rating of "Superior" and expects its award in qualified cases. It must be generally conceded that a rating of "Superior" is attainable since such rating is often awarded by other reporting officers. In my opinion such an officer might well be the recipient of an unfavorable entry under "K" on his own efficiency report for stubborn adherence to his own personal views. But the devil of it is that others, and not he, generally suffer for his eccentricities.

Exhibit B—The reporting officer who religiously grades all officers "Satisfactory" under all entries year in, year out, *ad infinitum*. I admit utter inability to fathom such personalities. Their minds and bodies seem geared to a steady unvarying gait. They seem like a horse on a treadmill, slow and measured in their actions and reactions, never in the depths, never in the clouds—methodical, conservative and to their credit generally pretty level-headed. However they seem to lack personal ambition, hence their inability usually to understand or perceive ambition in others. No amount of work, no matter how well done by a subordinate, ever seems to stimulate them to the point of commendation, and by the same token they rarely ever reprimand even when it is deserved. The word "drones" seems best to fit their personalities; neither

difficult nor disagreeable men to serve under but the old efficiency rating gets nowhere fast under their supervision.

Exhibit C—The reporting officer who bases his estimate of an officer solely upon one or two personal contacts, regardless of the results attained or record made by the recipient of the report. I need only cite a rather amusing case related to me. Shortly after a student's arrival at a service school he was called upon to deliver a short talk on Independent Cavalry—a subject of which he knew nothing. For want of a better basis of presentation he drew an analogy between the duties of the advance guard as laid down in Field Service Regulations and the functions of Independent Cavalry. The director of the class, whom the student had never known before, complimented him highly on the presentation. One of the instructors, a personal friend of the student, remarked to him, "Good! Now if you've got sense enough to keep from under the old man's feet the rest of the year he will rate you superior." The student religiously followed this advice for months but unfortunately just before graduation he became involved in a friendly argument with the assistant director over a problem. Unknown to the student the director had entered the office and overheard the conversation. Next day the student was sent for and the director remarked substantially as follows: "Major ———, I appreciate your interest in your work and I don't want to curb that interest or your initiative, but don't you think you were a little too forceful yesterday in your conversation with Colonel ———?"

The student denied any intention of being discourteous or presumptuous and informed him that, perhaps in his impressions he did not appreciate the fact that the assistant director and student were personal friends and that the argument which was quite amicable was perhaps a little informal because of that association. The director then asked the assistant if he did not agree with him to which he replied, "No, Sir. My only reaction was that ——— thought he was right and would continue to think so until he was proved wrong."

A month later the school closed. Two years later the student saw his efficiency report. It was highly satisfactory to him in every detail including the ending in which the director of the class stated, "This officer is inclined to be a little too forceful." Above the signature of The Commandant appeared the following in his own handwriting, "I concur excepting the words *a little too*." Needless to say the student valued this single comment more than the entries on any efficiency report, since it was made by one of the most efficient, highly respected and outstanding general officers in the service. The student had been boosted upstairs, kicked downstairs and finally kicked *upstairs* all within the confines of one efficiency report!

Another case not so amusing to the officer reported upon but fortunate in its outcome: An officer on Reserve duty as unit instructor was reported upon from the headquarters of the Reserve division many miles distant. The reporting officer saw the officer reported upon but once in two years for the brief period of an hour. While this brief

personal contact apparently made no favorable impression on the reporting officer the results attained by the unit instructor in question had been quite outstanding. He had increased attendances of Reserve officers at conferences over 100%. He had in the C.M.T.C. campaigns oversubscribed his district's allotment well in advance of the close of each campaign. The reporting officer, with utter disregard of the results this unit instructor had obtained, gave him an "Average" efficiency report and rated him "Average" under each and every heading. Fortunately the Liaison Officer for Reserve Affairs at Corps Area Headquarters was thoroughly conversant with the record made by the officer reported on, as he had made several visits of inspection to this officer's headquarters and classes of instruction. The result was at his instigation the corps area commander raised all entries on the report to excellent and several of them to superior. All such cases are not so happy in their outcome. One of the occasional misfortunes of DOL service is its susceptibility to this character of efficiency report. Reporting officers sometimes located hundreds of miles from the officers reported upon see them but once or twice for a very brief period of personal observation.

However it must not be thought that all the eccentricities and faults are on the side of reporting officers. As a counterbalance there are many in the service who overrate their own qualifications. Human nature is the same the world over and, whether in the Army or in civil life, some individuals possess a better opinion of themselves than they rightly should.

Passing upon efficiency reports which have been sent to me for review and concurrence, I note a greater variance of views and ideas in the entries to be made under Heading "F" than under any other. The six entries enumerated thereunder, while appearing to be quite concrete and definite as you read them, seem upon analysis to have a wider divergence of interpretation than any others. Ask any number of reporting officers to interpret each of these headings by enumerating what they actually consider under each and you will get a variety of answers. Some are quite lost in attempting to define several of the headings other than in glittering generalities. Many can make no distinction between No. 2 (Performance of field duties) and No. 6 (Tactical handling of troops). Many are at loss in making distinction between No. 4 (As an instructor) and No. 5 (Training troops). Some state that they apply the character qualifications under "H" (Attention to duty, tact, initiative, intelligence, force, judgment and common sense and leadership) to each of the entries under "F" in arriving at the suitable award. In studying this feature of the efficiency report I have endeavored to set down in my own words my interpretation of the headings under "F". These views may vary greatly from other officers' views. Indeed they may appear to be entirely wrong in the minds of many individuals who have given this matter thought. Yet I will enumerate them as food for thought and criticism.

hoping to evoke interest and controversy in a topic which seems to be quite controversial at best.

1. *Handling officers and men.*

Ability to cooperate with contemporary organization commanders and staffs.

Ability to "get along" with brother officers in official and social relations.

Ability to lead rather than to drive—to secure results without continually cracking the whip.

Ability to coordinate the activities of subordinate leaders into team-work.

Ability to command by supervision of subordinate leaders rather than by command of each individual—example, the company commander who exercises his authority by supervision through his platoon commanders by placing definite responsibilities upon them.

Ability to exercise the policy of "hands off" regarding the responsibilities of subordinate leaders—an individual's stepping down to command a squad when he cannot command his own unit is a frequent violation.

Is he firm but just—a "square shooter?" Does he understand human nature? Has he a sense of humor? Does he command the respect of men? Can he be human without breeding contempt through undue familiarity? Does he set a proper example?

Ability to secure desired results with the least apparent effort—in contradistinction to the individual who can do nothing without a lot of "fuss and feathers"—the individual who can only secure results by getting everyone around him "in a sweat."

This last factor is in my opinion one of the most important qualifications of a staff officer.

The above may seem a large order—a great many details to consider in arriving at a rating under the heading "Handling officers and men." Yet this heading in my opinion partakes very much of the attributes of leadership, that rather intangible characteristic which in most cases, if it exists at all, is inherent, hence the oft quoted remark that leaders are born and not made. I invite attention to H-10 of the efficiency report blank in which it defines leadership as "Capacity to direct, control and influence others in definite lines of action or movement." Will not this definition equally apply to F-1, Handling officers and men?

2. *Performance of field duties.*

Adaptability to field service conditions. (Some men don't know how to live without a trunk and all manner of conveniences—some can't even sleep in the open or off a bed).

Capacity to withstand the rigors and hardships of campaign or maneuver conditions.

Ability to care for men, animals and equipment in the field and attention to same.

Ability to orient themselves at night and lead units

in prescribed directions and to prescribed areas without becoming lost.

3. *Administrative and executive duties.*

Capacity for operating a good mess.

Capacity for proper care and preservation of property and equipment.

Care in preparation of official communications, reports, records and rosters and prompt submission of same.

Capacity to safeguard funds and properly supervise their expenditure.

Attention to details in administrative and executive capacities.

Capacity as an executive to see that orders and directives from proper authority are carried out as called for and when called for and ability to perform these functions without friction with those concerned.

4. *As an instructor.*

Ability to speak convincingly and clearly and to secure and retain interest of those under instruction.

Ability to "put over" a subject in an orderly sequence, in prescribed scope and by approved instructional methods.

Ability to give commands in such tone and manner as to secure prompt and correct reactions—in short, is he an efficient drillmaster?

Is he constantly on the alert to see and correct errors of execution?

Does he know his subject—in other words, has he the requisite professional knowledge?

5. *Training troops.*

Ability to prepare programs and schedules that indicate forethought, good judgment and coordination with training directives from higher authority.

Imagination in the preparation of exercises, problems and tests to promote and maintain interest.

Capacity for making best use of and securing maximum results from the time allotted to training.

Resourcefulness in preparation of equipment for training and in use of available means.

Capacity to see errors in training methods of subordinates and to correct them.

Having adequately planned training does he "follow through" by intelligent and forceful execution of his plans?

6. *Tactical handling of troops.*

Knowledge of tactical principles and the combined use of weapons.

Appreciation of the relation between tactics and terrain.

Ability to read and use maps.

Capacity to apply correctly tactical principles in differing situations on varying terrain.

Appreciation of the importance of the critique and the ability to conduct same effectively.

Initiative, aggressiveness and soundness of judgment

in meeting tactical situations requiring prompt reactions—in other words “the capacity to think on his feet.”

This last qualification, “the capacity to think on his feet” is a rare and most important virtue. Many of us given ample time can by proper sequence of thought arrive at fairly logical conclusions and reasonably correct decisions. Many of us given time can prepare comprehensive written orders or issue reasonably clear verbal orders. But the man confronted with an emergency who can promptly estimate the situation, quickly arrive at a correct decision and who can unconsciously translate this decision into clear and concise orders or directives in time to meet the unexpected emergency is indeed fortunate. Many during the World War saw most comprehensive orders emanating from higher commands that required days in their preparation. In some cases these orders arrived at lower echelons but shortly before “H” hour. As this seems to be only too common an occurrence even in these piping times of peace with our World War experiences as lessons, the commander “who can think on his feet” possesses a most valuable qualification.

In addition to the divergence of views regarding interpretation of the heading under “F” of the efficiency report blank, some reporting officers fail to reasonably interpret the first sentence under “D,” to wit, “Consider carefully these definitions, keep them in mind when rating, *and compare the officer with others in same grade.*” The italics are injected for emphasis. Can you reasonably compare a second lieutenant of six months service with one of six years service? Can you reasonably compare a first lieutenant who has never had tactical handling of troops with one who has or with one who has recently graduated from the Infantry School? Can you reasonably compare a captain who has never commanded a company with one who has commanded a war strength company? In my opinion the above quotation cannot be interpreted literally if a reasonable comparison is to be made. Yet it is often done.

The most controversial heading on the Efficiency Report is Entry “O” on the reverse side which I quote as follows: “Is he qualified in *every* respect for *all* the duties of his arm or service and grade?—If not, state reasons—.” Can this be answered in the affirmative with respect to a second lieutenant of a year’s service? Can this be answered in the affirmative with respect to an infantry officer who has never served in a machine gun company or cannon company with tanks or as communications officer, personnel adjutant or supply officer? Indeed can this be answered in the affirmative regarding most officers unless they have had a more varied assortment of assignments than is possible to most of us? Yet, I ask you, how often do we ever see this entry answered in other than the affirmative? The vast majority of answers to this entry, “Yes,” is no more than a guess. It means nothing. The only correct answer to this entry in the majority of cases is “No” followed by an enumeration of a large number of exceptions with reasons therefor. How often have you

ever seen the answer to this entry in such form? As a matter of fact the answer to this question is much more completely covered and without question is much more truthfully answered under Headings E, F, and G. The first (E) affords opportunity for grading an officer upon five distinctly different kinds of duty performed during the reporting period. The second (F) affords opportunity for grading him upon six differing capacities in the kinds of duty performed. The third affords opportunity for reporting upon an officer in any other capacities in which he may have functioned with special credit, such for instance as recreation officer, athletic officer, etc. How could Heading “O” be answered more explicitly?

I have always considered entries No. 1 Physical activity (agility; ability to work rapidly) and No. 2 Physical endurance (capacity for prolonged exertion) under Heading “H” to be entirely inappropriate in an efficiency report. I am convinced these are often utilized for “eye-wash.” You rate an officer “Superior” but dislike sweeping the boards clean by rating him “Superior” in every detail for fear someone higher up may think you overrate the recipient of the report. So you tone it down by rating him “Excellent” in these two categories. Or you dislike rating an officer “Satisfactory” in every detail—sort of damning him with faint praise. So you rate him “Excellent” in these two entries. In both cases you realize these entries neither add to nor detract from the report. Considering physical activity, suppose I am so agile as to be able to turn thirty handsprings in rapid succession out in front of my command. I am certainly qualified as a candidate for tumbler in a circus but I cannot see that I add to my efficiency as an officer. If my mental activity is commensurate with such a display of physical agility that is a horse of a different color. Considering physical endurance, suppose I can lift a heavy weight off the floor or chin myself one hundred times in succession. I may be a candidate for strong man in a side-show but I fail to see that this better qualifies me for my duties as an officer, provided I possess sufficient physical endurance to perform all field and campaign service with my command and yet maintain adequate mental equipment to function with efficiency under fatigue.

The point is that officers have an annual and quite rigid physical examination based upon standards considered necessary for military service. The physically unfit are combed out of the service regularly by this process, and so long as an officer meets the requirements of this annual test I fail to see the necessity for or the appropriateness of these matters in an efficiency report.

True, the present efficiency report is excellent in many respects and is a most decided improvement over other forms we have had in service. It is, however, susceptible of improvement and of clearer interpretation along lines I have indicated. Except by erroneous interpretation under “F” or possible biased entries under “F” and “H” I do not believe any officer can be permanently injured in the service under the present form. He may not always be rated by reporting officers as high as he should. He how-

ever cannot be rated so low as to injure him without being afforded the benefit of appeal. On the other hand, speaking of weaknesses, many a reporting officer has stretched his conscience to elastic limits in entries under "J." So long as an officer is generally satisfactory one is loath to make a point of a temperamental moral or physical weakness which we all know some officers possess even to the point of its adversely affecting their efficiency.

Probably as important as any changes in efficiency report forms is the necessity for more instruction of reporting officers in the better understanding and interpretation of the existing form. A circular from the War Department on this subject issued either for study or for reference by individual officers when making out reports or a directive for use by post and organization commanders as the basis for instruction in the matter would seem to be desirable. If the present form of efficiency report needs alteration in the case of officers in the Regular Army I know from long experience that it is totally unadapted to reporting upon Reserve officers. This is a big field and I sincerely hope some officer who has had considerable experience with the Organized Reserves will give this matter the time and careful consideration it deserves.

In my opinion one of the most important matters regarding efficiency reports concerns the newly commissioned second lieutenant. Well do I remember that I never saw an efficiency report until I had been four years in the service. I knew that some record and report was made by one's immediate commander with respect to the character of one's service but I did not realize that a regular form existed for this purpose. I believe that newly commissioned officers should be thoroughly familiarized with the efficiency report and that instruction should be given them as to its importance and interpretation.

I can best describe my views in this matter by stating the action taken with recent West Point graduates assigned to my organization only one of whom had once seen the blank. The efficiency report form was shown them and each paragraph was analyzed and interpreted. It was explained that in making entries under heading "F" every consideration was given to their inexperience and short length of service—in other words they were graded superior, excellent or satisfactory, not in the literal sense of their actual capacity but in comparison with other officers of similar length of service and inexperience. The importance of the efficiency report as affecting their entire service was emphasized. And finally the importance of the entries 3 to 10 inclusive under heading "H" was brought out. They were told that naturally we did not expect them to know some of their official duties and functions upon commission and we realized they were deficient in professional knowledge, all of which could only come with experience and training; but that in those inherent character qualifications enumerated under "H" we had every reason to expect them to attain the highest degree of qualification. A young man having recently gone through four years intensive cadet training under the strict

discipline attainable only at West Point was expected to have developed to the highest peak such characteristics as military bearing and neatness, attention to duty, tact, initiative, intelligence, force, judgment and common sense and to a certain extent the foundation for leadership.

The value of military bearing and neatness was brought out not only from the standpoint of favorable appearance and example to subordinates but also because it was in most cases the outward reflection of an orderly and well balanced mind. A slovenly exterior is generally the indication of a slovenly mentality in which we may expect to find carelessness, forgetfulness, indecision and indifference as the chief characteristics.

Newly commissioned officers join their regiments somewhat in the clouds due to strange surroundings and faces and considerably perplexed as to their duties. They all arrive however with an overwhelming and commendable spirit of cooperation and desire to jump in and do whatever they are called upon to do. The result is a tendency to start impulsively any work directed without forethought—in the ardent desire to display proper initiative, to start executing without planning. In this respect their attention was directed to Entry No. 9—"Judgment and common sense (the ability to think clearly and arrive at logical conclusions)." This was referred to them as perhaps the most important of all the character qualifications. Their attention was drawn to the fact that not only are all military tactical decisions the result of making what we call Estimates of the Situation but that practically all their military duties first called for a certain degree of planning. In fact were we not throughout our lives constantly though perhaps unconsciously making Estimates of the Situation? If we start to cross a street we estimate the distance away of approaching cars, their speed, our distance from the opposite curb and balance these against the speed with which we can cross. If we think we can make it we arrive at a decision—to cross. If our conclusions have been correct we cross in safety; if not—well we probably have no further interest in plans!

The same holds true in cases which call for conscious estimating and planning. A man residing in Philadelphia has a two weeks' vacation and wants to spend it in California, Cuba or Atlantic City. He reasons as follows: first he must list the factors involved—money available, time required to make the round trips, remaining time available at destinations, cost of the trips, cost of his stay at the three destinations. He weighs these several factors in the balance and arrives at certain conclusions that he can or cannot make certain of the trips without restrictions. If finances are a pressing consideration and loss of time in transit is an influence he may arrive at the decision to go to Atlantic City, the cost of transportation and time in travel being negligible. The point of interest to us is that he has arrived at this decision by a course of reasoning that has deduced certain logical conclusions from which emanate a decision. Thus the minds of these young officers are directed to the importance of thinking before acting

—“look before you leap.” They are advised to go through this Estimate of the Situation briefly or otherwise as conditions indicate before they undertake any specific duty or detail to which assigned. This is nothing more nor less than the display of judgment and common sense—the hinges upon which hang all the other character qualifications.

For example, “A” has been assigned the duty of conducting a certain course of training. He does not jump into the job impulsively without thinking. He first does a little level-headed reasoning, surveying the proposition as to mission and figuring out time at his disposal, number of men to train, equipment available or to be procured, from which he deduces certain logical conclusions. From these he arrives at the decision. With this decision as the basis he prepares a plan to carry it out displaying Intelligence. The plan completed he starts the job displaying Initiative. The plan having been arrived at through due course of reasoning he puts it into operation and executes it with energy and resolution thus displaying Force. And if he has done all these in logical sequence the chances are he will have displayed Attention to duty and Tact since it is only ill-conceived and poorly-executed plans that will normally cause friction.

I do not want to give the impression that young officers should frame efficiency report forms over their beds and consult them daily. Nor do I believe that their every move and speech should be actuated by thought of the impressions they are making. They would soon lose all individuality and tend toward becoming that most abominable of pests—the chronic “boot-licker.” But proper un-

derstanding and interpretation of the factors involved and observed by superiors in the performance of their duties coupled with reasonable ambition to be highly efficient officers will never hurt them and will prove an incentive to better character of service. Such seeds planted early in their careers may find them not “dying on the vine” so to speak when they become eligible for detail to Leavenworth and the War College, but blessed with a prolific growth of brilliant blooms called “Superiors” which cannot fail to catch the eyes of the harvesters who select students for our service schools.

RECOMMENDATIONS

1. Clearer interpretation of Entries 1 to 6 under Heading “F” either by defining same as in entries under Heading “H” or if space does not permit by the issue of instructions covering the matter.
2. The elimination of Entries 1 and 2 under Heading “H” and of Heading “O.”
3. Steps to insure greater uniformity in grading officers by reporting officers either by a document published and distributed by the War Department for study and reference by officers or by its issue to post and organization commanders with a directive that it will be used as the medium for a course of instruction for reporting officers.
4. Steps to insure that recently commissioned officers are familiarized with the Efficiency Report form, that its component parts be interpreted for them, and that they be made to realize the importance of highly creditable reports.



THE COMPANY LEADER who really understands those under his command and preserves the happy balance between comradeship and discipline—which is leadership—and who beyond this is a student of war and weapons, will not only carry the confidence of his men, whatever may be his personal failings, but he will also lead them to success. The ignoramus is useless in the leadership of men in war; and no one knows this better than the rank and file.—ARMY, NAVY AND AIR FORCE GAZETTE.

Sperry

By LIEUTENANT E. CARL ENGELHART, C.A.C.



is a device familiar to all Coast Artillerymen since it appears on much of our matériel, but it is also a name known throughout the world in military, naval, merchant marine, and aeronautical circles. It stands for an organization which is unique in this age of mass production, for the Sperry Gyroscope Company specializes in the manufacture of amazingly complex apparatus to extremely close tolerances in comparatively small quantities.

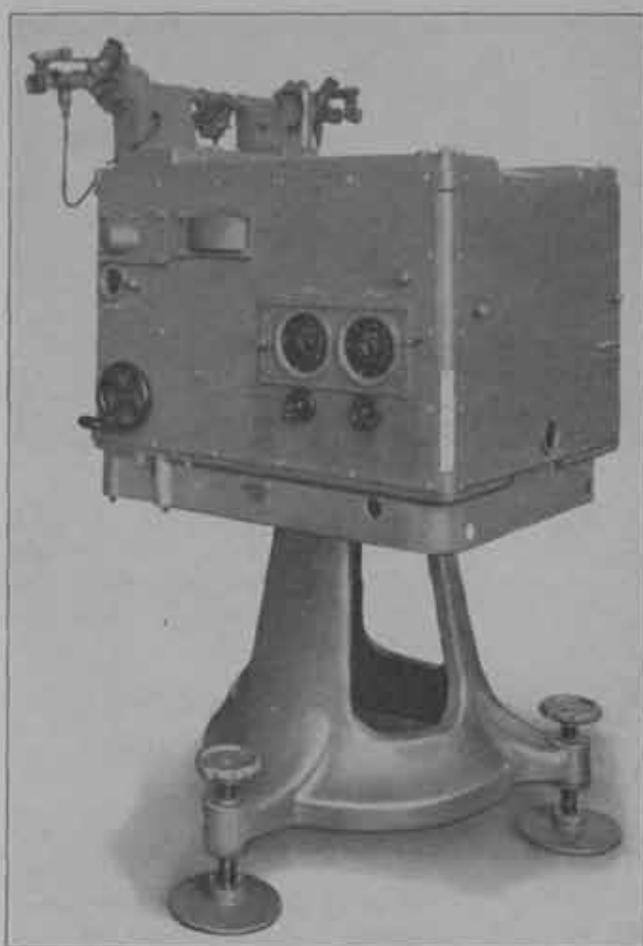
The late Dr. Elmer A. Sperry was an American scientist and inventor who not only had vision but also practical manufacturing ability. He already had a long and very successful engineering career before he became interested in the possibilities of the gyroscope, which 30 years ago was considered an entertaining scientific toy. Its phenomena were well known and had been reduced to mathematical formulæ, but the only attempts to put the gyroscope to useful work had been abortive. Dr. Sperry, however, recognized in it a solution to the problem ship-builders had long contended with—that of counteracting the roll of a vessel at sea.

Working on ship stabilization brought Dr. Sperry into association with many naval officers. From them he learned of the vagaries of the magnetic compass particularly on board war vessels with their large masses of iron and steel. It was a lesser task for Dr. Sperry to invent a new north-indicating device, and so it was that the ship stabilizer was still in the model stage when he completed his first gyro-compass. The scientific significance of this achievement cannot be minimized and is illustrated by the fact that Dr. Sperry had not only put an amusing toy to its first practical use but he had also developed a machine utilizing the earth's rotational motion as an activating force.

The Sperry Gyroscope Company was organized in 1910 to manufacture and sell Dr. Sperry's gyroscopic inventions, and to carry out this work the doctor gradually gathered around him a group of carefully trained engineers. One of his associates in building the first gyro-compass was Hannibal Ford, later founder of the Ford Instrument Company which is now united with the Sperry Gyroscope Company under the same corporation ownership.

The first gyro-compass, after being tested on a coastwise vessel was installed on the *U.S.S. Delaware* in 1911. It was a success, and the American Navy's compass problem was solved. The British, too, almost immediately recognized its value, and in 1913 the Sperry Gyroscope Company, Ltd., was organized in London to facilitate the manufacture and sale of the gyro-compass in Europe.

Early in the World War the faith of the British Navy



The M-3 Director

in the gyro-compass was dramatically justified. Von Spee, with a dangerous German fleet, was coming from the Pacific around the Horn in 1914 to prey upon Atlantic shipping. His success depended on seizing an unprotected coaling station at the Falkland Islands. Two British battle-cruisers, the *Invincible* and the *Inflexible*, were at Portsmouth—the only ships available to checkmate Von Spee. The *Invincible's* commander believed in Sperry and vetoed delaying even to compensate his magnetic compasses, and so these two vessels, depending on Sperry gyro-compasses, surged southward over the great-circle course to the Falklands, the shortest possible route. It is history that Von Spee lost the race. Today over a thousand merchant ships equipped with Sperry gyro-compasses trace great-circle courses with ease and regularity.

The first gyro-stabilizer was installed on the American destroyer *Worden* in April, 1913. Tests were so successful that ship stabilization was firmly established as a Sperry enterprise, this in spite of the fact that every unit must be especially designed for the characteristics of the vessel



Fresh from the mold, a Searchlight Drum

for which it is intended. Many war vessels, merchant ships, and yachts are now equipped with gyro-stabilizers, the new Italian line, *Conte de Savoia*, being the largest. It is also interesting to note that the Japanese have included stabilizers on two of their aircraft carriers, the *Hosho* and the *Ryujō*.

Another of Sperry's famous contributions to navigation is the gyro-pilot, familiarly known to everyone who reads English as "Metal Mike." The Sperry Gyroscope Company has now rounded out its line of marine apparatus with course recorders, rudder indicators, and other accessories of which only one may be of interest to Coast Artillerymen, the Salinity Indicator. Its name is self-explanatory. Perhaps some form of this device might be an aid to our mess sergeants in the preparation of soup.

FIRE CONTROL

Dr. Sperry's work with the gyro-compass and gyro-stabilizer was his introduction to navy circles, and as a result he was fortunate enough to witness a distressing incident at target practice. A salvo was fired at the towing ship instead of at the target far astern. Legend has it that there were some very distinguished guests on the towing vessel beside Dr. Sperry, and when, after a quick check, a second salvo perversely followed the first, Dr. Sperry became interested in the problems of fire control.

Parentetically, we must admit here that firing at the tug instead of the target is not a new feat to Coast Artillerymen, if the tales our raconteurs tell are true. Perhaps, too, the development of our sea-coast fire control would have received more impetus, had our lapses not occurred so privately.

The Sperry engineers were admirably fitted to enter the field of naval fire control. They had already solved the problem of data transmission with a system for providing bearings from the master gyro-compass to compass repeaters throughout a ship. It was an adaptation of the same general methods which shortly appeared as a

"Target Designating System" to give a positive bearing of the correct target to the gun pointer. A "repeat back" was also included to insure that a turret could no longer fire on the wrong target or at the towing vessel.

The rapidly increasing range of naval guns before the World War soon made Case III firing a necessity in the navy, and Sperry's "follow-the-pointer" indicator, practically indispensable to us now in our anti-aircraft matériel, came into being. Step followed step and by 1916 Sperry had a complete naval fire control system, including computation of data, transmission of data to the guns, and application of spotting corrections.

Although this early Sperry naval fire control equipment has been superseded by more modern developments, Sperry's original principles still survive. Through it, the Sperry Gyroscope Company became conversant with fire control methods in general.

SEARCHLIGHTS

The World War, of course, taxed the capacity of the Sperry plant. The need for gyro-compasses, ship stabilizers, and other Sperry marine equipment was almost insatiable but could hardly be compared with the sudden demand for searchlights, particularly lights for anti-aircraft use.

Dr. Sperry was one of America's pioneers in the application of electricity to indoor and outdoor lighting. At the World's Fair, Chicago, 1893, his "cloud opticon" flashed lantern slide images on the clouds, the predecessor of thousands of Sperry searchlights. An occurrence at the Sperry plant in Brooklyn in 1913, however, is of more interest to us in the history of searchlights. One of the senior engineers of the company, recalling the incident now, says that he came to work one morning 20 years ago and found a navy searchlight standing in the shop. Dr. Sperry's announcement regarding it was typical: "The navy wants us to increase the range of this light. I said we will double it." That day began the research and development work which has resulted in the present efficient high-intensity arc searchlight.

The first Sperry "modern" searchlights were installed on the *U.S.S. Pennsylvania*. In 1916, the first Sperry "fortress type" searchlight was mounted at Fort Monroe by Mr. P. R. Bassett, now vice-president in charge of engineering of the Sperry Gyroscope Company. Undoubtedly, the files of the *JOURNAL* for that period contain mention of this event and record of the comparative tests which were run.

The fortress type searchlight, however, with its weight close to five tons, was rather unsuitable for mobile use on the Western Front. Sperry engineers went on a 24-hour-day, seven-day-week schedule, while the factory continued its production of the standard light. The engineers shortly produced a light-weight cousin to the fortress light, still a 60-inch searchlight, but weighing only a little more than one ton. It went into production, and the engineers went back to reducing the weight still more. They burned up models, reducing them to rivulets of molten

metal, but soon were able to demonstrate a new shielded-arc open light weighing about 1,400 pounds. It was promptly dubbed the "dishpan" searchlight—a name which followed it into our service.

The development of Sperry searchlights did not stop here, and it is doubtful if improvements and refinements ever will cease. The drum-type light is now standard, but most of us are prone to identify our mobile searchlights by their power-plants rather than their "Mark" designations. The War-time Cadillac units, the post-war Cadillacs (about 1925), and the Sperry Duplex are familiar to the Coast Artillery. Here again, however, development will continue. Just now it is probable that a new General Motors truck will shortly appear in the Coast Artillery, equipped with everything but a lieutenant's boudoir.

Space does not permit a description of the other kinds of searchlights Sperry has manufactured in recent years; the Suez Canal light, for instance, conforms to the special requirement that it have a split beam, two five-degree illuminated sectors being separated by a dark central sector of five degrees; but, if all the Sperry 60-

inch high-intensity arc searchlights in use today were placed with their beams *end to end*, a bright-as-day path would extend across the darkened surface of the earth from sunrise in the east to sunset in the west.

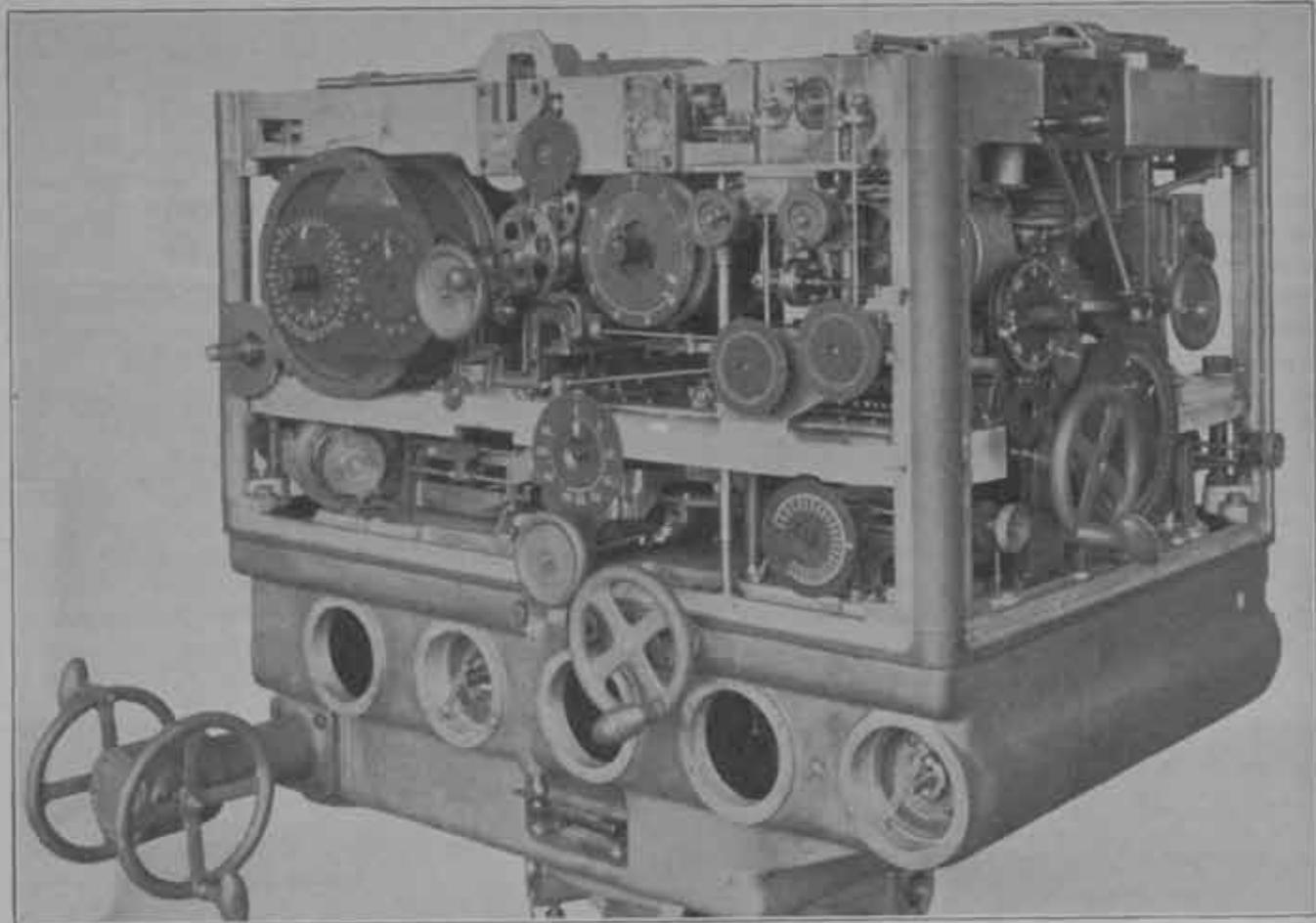
ANTI-AIRCRAFT FIRE CONTROL

The World War also demonstrated the need for something pertaining to anti-aircraft defense other than searchlights—an efficient anti-aircraft artillery control system. Without casting aspersions on the World War "archives," it is still approximately true that anti-aircraft artillery fire in those days was generally characterized by a futile string of bursts trailing many hundreds of yards in rear of the enemy plane.

The first anti-aircraft batteries utilized the simplest fire control system ever devised, the guess-point-shoot-and-pray method. It was not very successful, and less devout methods were invented. Our own Coast Artillery Board produced a slide-rule solution for the anti-aircraft problem (Captain "Stan" Michelsen still has the interesting blueprints and range section drill for it), but the two systems more commonly met by our World War anti-aircraft



Seacoast Artillery Computer



Wilson Sperry Director—the Brains of Antiaircraft Fire Control

artilleryment were the Brocq and the R. A. Corrector. Few of us today know anything about the Brocq. As for the R. A. Corrector, it is still with us, viz., C. A. Field Manual Vol. II, Part 2.

The Sperry engineers were cognizant during the War of the need for a better antiaircraft artillery fire control system. Actually, Dr. Sperry and his son, Elmer, Jr., patented the first Sperry antiaircraft fire control device in 1917, but the demands made on the Sperry plant and engineers by other war-time products were imperative. Then, too, as the war progressed, the number of artillery rounds to bring down an enemy plane were reduced by experience and practice, and the Allies gained control of the air.

Post-war activities eventually turned to the development of antiaircraft fire control. Some of the best minds of the Coast Artillery and the Ordnance set to work. One officer in particular, the late Major Wm. P. Wilson, for whom the antiaircraft firing point at Fort Monroe was named, succeeded in building a director. The Sperry Gyroscope Company, already well-known for its handling of data transmission problems, was selected to provide data transmitters for the Wilson Director. This and a Vickers Predictor were given comparative tests. Broadly speaking, the Wilson Director was found to be weak in prediction while the Vickers was weak ballistically. Further de-

velopment was recommended, development which as far as the British machine was concerned resulted in the modified Vickers, the M1, and the M1A1. The latter might well have been called the Sperry-Vickers because it was equipped with the Sperry A.C. data transmission system.

Major Wilson had already formed close personal friendships with the Sperry engineers, and when he began the re-design of his director he found the Sperry engineers glad to offer him freely the benefit of their own experiences in the mechanical solutions of fire control problems. So close was this association that, upon the untimely death of Major Wilson, it was recognized that the Sperry engineers were not only thoroughly acquainted with his accomplishments but were also cognizant of his plans. The Sperry Gyroscope Company was commissioned to carry on, and the instrument was named the Wilson-Sperry Director upon its completion.

Work with the Wilson-Sperry Director of course suggested to the Sperry engineers many other untried angles of approaching the complete solution of the antiaircraft fire control problem. Research and development began at the Sperry plant.

Other Sperry directors were built, notably the T4, T6, and M2. The T8 directors followed, with models E1, E2, and now E3.

The writer, in helping recently to set up a T8E3 director, had occasion to realize the large number of parts which compose this machine. Inquiry, however, disclosed that the Sperry engineers and craftsmen consider there are only 3,500 parts, but it was then discovered, that, to them at least, a "part" is only a "part" when it and the pieces exactly like it need a blue-print all their own. Screws, pins, cable tags, lock washers, and similar items are not "parts," while a unit such as a motor is only one "part." No one would hazard a guess as to how many separate little pieces must be handled individually by a craftsman in assembling a complete T8E3 director, but the figure must be large enough to stagger even a Ripley.

It is also an odd fact that in setting up a director one of the most useful tools is a dental mirror, the same type of mirror that a dentist uses in inspecting the reverse slopes of your teeth. In the director, it aids in the re-meshing of gear teeth and other settings in which sight must assist the sense of touch in inaccessible corners.

It has been mentioned that extremely close tolerances are required in Sperry manufacturing specifications. The T8E3, also known as the Sperry Universal Director, is an excellent example of accurate machine work. Backlash, play, distortion, strain, friction and drag must be practically non-existent. To gain this end, perfect agreement with specified dimensions is a Sperry standard instead of merely a desirable achievement. Special gauges render the thousandth part of an inch a gross deviation, while special machine equipments permit forcing significant figures even farther from the decimal point.

A completed director, as is true of any other Sperry product, is subjected to exhaustive tests after it has been completely assembled and adjusted. The director is checked and tested under conditions which demonstrate its sturdiness and also its efficiency at widely different temperatures. The "shock test," for instance, is conducted by bolting the director to the bed of a truck and then taking it for a reckless ride over the worst cobble stoned streets around the Brooklyn water-front. As soon as the inspecting officer has recovered from the trip, the director is tested by running through it problems which have been mathematically computed. The answers it turns out for these static problems must, of course, agree with the computed results within the tolerances set up by the contract specifications.

A steam room is maintained in the Sperry plant to test the director or other instruments under conditions which make tropical heat seem comfortable. Bathing suits, as may be suspected, are *de rigueur* for the inspecting and operating personnel in this test.

The winter of 1933-34 in New York City was sufficiently severe to render it unnecessary to provide special arrangements for a cold test for the last group of directors manufactured. A director left on the roof of the eleven-story Sperry plant over night was usually exposed to temperatures far below that required in the specifications, temperatures which ranged as far down as 14° F. below zero. It was often found desirable by the inspectors to wait for warmer weather before testing a director on the roof.

In general, it has been found that the T8E3 director functions as well after the shock test as before, and that temperature changes within a range of 100° F. have no appreciable effect on the accuracy. It is a tribute to Sperry engineering genius and manufacturing skill that these three tests, in particular, have become more of a test of the endurance of the inspectors than of the instrument.

Sperry antiaircraft fire control equipment also includes the sound locator, acoustic corrector, and the comparator and distant electric control, all very necessary adjuncts to the searchlight in locating aircraft at night. Then, too, on the other side of the fence, so to speak, the Sperry Gyroscope Company has contributed some of the most notable aids to aviation for night and blind flying. Landing field flood lights, airway beacons, the Sperry Horizon, the Directional Gyro, and the Automatic Pilot are among Sperry's aeronautical enterprises. Lindbergh's Turn and Bank Indicator, a Sperry instrument, made the famous flight to Paris and is now at the Sperry plant in Brooklyn with other Sperry instruments which have helped to create history.

Wiley Post's trip around the world focussed attention on his "robot" pilot, but few people realize that device is but a modern and improved edition of the Sperry automatic pilot which Lawrence Sperry sensationally demonstrated in Paris early in 1914. Levelling off his ship less than a hundred feet from the ground, Lawrence Sperry stood up in his cockpit, arms outstretched, while his mechanic walked out on a wing. Despite the unbalancing effect, the great-granddaddy of Wiley Post's robot kept the plane in level flight.

The gyro has gone into other fields as well. It appears today in the stabilized aerial camera, the tank gyro-compass, and in a utilitarian rôle in the gyro-clinograph used in surveying the oil-well drillings.

So many and so varied are the ingenious devices that the Sperry Gyroscope Company has manufactured or is manufacturing—bomb sights, bomb releases, aerial torpedos, depth bombs, long-range data transmission systems, sea-coast artillery directors, torque amplifiers such as for the "robot battery," marching compasses, incandescent searchlights, logs, sounding devices, recording theodolites, and yacht navigating equipment come to mind—that it is impossible to tell the story of their development in one article.

Dr. Elmer A. Sperry, before he passed on, received many honors and awards from nations, universities, and the most distinguished scientific and engineering societies. The organization which he founded and which still bears his name, the Sperry Gyroscope Company, is today being guided by a group of scientists and engineers of world-wide repute. To them in their turn, may there come recognition of their achievements.

We of the Coast Artillery Corps, particularly in appreciation of the contributions of the Sperry Gyroscope Company to our National Defense, salute the men of Sperry!

Service Schools—A Radical Suggestion

BY LIEUTENANT BURGO D. GILL, C.A.C.*

AFTER fighting many battles of General "A" versus the Reds, and noticing what this famous general did in stock situations, I began to wonder what it would be like if I saw actual troops do the same thing on the ground. And, after said ruminations, I wonder why officers cannot be afforded an opportunity to see some of the theories put into practice.

It is realized that our army is too small and too scattered to admit of such training, even if it were not necessary to count the cost in this period of financial stringency (or is it a period of unprecedented spending). In view of the fact that the army is about to be increased, why cannot something be done about it? We have the temerity to believe that we can make General "A" a flesh and blood personage; instead of a phantom defiladed behind map coordinates, commanding a force scattered over a much worn Gettysburg map.

Before going further, let us see what the various service schools teach, and what troops are available for demonstration purposes. Naturally, we are mainly interested in the service schools, although others will be mentioned.

INFANTRY — FORT BENNING

1 Motor Transport Company	1 Flight Observation Plane
1 Chemical Company	5 Battalions Infantry
1 Company Engineers	1 Battalion Light Tanks
1 Battalion Field Artillery	1 Company Medium Tanks

COAST ARTILLERY — FORT MONROE

2 Batteries Coast Defense	2 Batteries Tractor Drawn
2 Batteries Railroad	

FIELD ARTILLERY — FORT SILL

3 Battalions 75's	1 Motor Transport Company
1 Ammunition Train	2 Ordnance Companies
1 Balloon Squadron	1 Detachment Signal Service Company
1 Flight Observation Plane	
1 Battalion Infantry	

CAVALRY SCHOOL — FORT RILEY

3 Regiments Cavalry	1 Detachment Signal Service Company
1 Troop Engineers	

ENGINEERS — FORT HUMPHREYS

1 Engineer Regiment	1 Detachment Signal Service Company
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MEDICAL — CARLISLE BARRACKS

1 Medical Regiment

COMMAND AND STAFF — FORT LEAVENWORTH

1 Squadron Cavalry (Note: Used more as orderlies, etc., than a tactical unit.)	1 Detachment Signal Service Company
2 Companies Infantry	1 Motor Transport Company

The above was abstracted from the latest issue of the *Army List and Directory* (October 20, 1934).

From this it will be noticed that there are a sufficient number of troops located at the various service schools to demonstrate the problems arising within the branch or

arm. But (it seems to us a very large *but*), no school has a sufficient number of troops to teach the tactics of the combatant arms properly. It is realized that the service schools now have only the "regular" course. Until recently each school had two courses. The company course, which dealt more with weapons, and the advanced course which was mainly tactical. Regardless of whether we continue to have one or revert to the two-course system, our criticism remains the same.

We are woefully lacking in means to teach tactics, and woefully short of demonstration troops to afford officers an opportunity to actually command in the field. The service school graduate is nothing more than a paper tactician. This being true, the question arises, what are we going to do about it?

Nothing drastic, like abolishing the present set-up of service schools will be proposed. That would be ridiculous. But why not assemble each spring, for about two months, all the student officers at one large army post, where they could witness or participate in joint maneuvers of all arms? By this means each officer could become familiar with the problems of his own arm and gain first-hand information of the problems of others.

Fort Sam Houston would be an ideal place. It is not too far off center geographically, weather permits all year round maneuvering, and a large number of troops are stationed there. Its main lack is cavalry, but considering the number of Cavalry regiments in Texas, this lack could easily be remedied.

While each officer should know his branch and the technical side of it, in war time the Regular Army officer must be a tactician. We all expect advancement in grade during the first part of the next war, and consequently the largest percentage of regular officers will be found in the field grades. They must be prepared to be tacticians.

The only increase in expense would be the transportation of the students and faculty concerned. They do not need eight cents a mile. A special car from each school to the maneuvering center would be cheaper. Quarters? Well, the students should (and ought) to be spending most of their time in the field. A temporary barracks and mess could be made available. Families? For goodness sakes, this is a busy time, and the Government is poor. Leave them in their quarters at the home post for the short period in question. Yeah, this will raise a howl, but what of it?

And, while on the subject of schools, what better place would there be for the newly appointed officer to be sent than to a centrally located, troop concentration area where maneuvers are plentiful?

* (With thanks to First Lieutenant Marvin J. McKinney, C.A.C., for suggestions.)

Rapid Orientation for Mobile Seacoast Batteries

BY LIEUTENANT ERNEST B. THOMPSON, C.A.C.

SINCE no mobile battery of seacoast artillery is ready to open fire until all of its elements are oriented, it behooves battalion and battery reconnaissance officers to be prepared to orient their batteries in the least possible time.

Any method of orientation must (1) insure that when the axes of the bores of the guns and the lines of sight of the observing instruments are parallel the same azimuth will be indicated on all azimuth scales, and (2) give the length and azimuth of the base line and the offset of the directing point from the base line (or its azimuth and distance from the B' station), for the orientation of the plotting board. The ordinary procedure, as outlined in TM 2160-25, will require at least several hours, and possibly a day or more if long traverses must be run. By the use of the rapid method described here, this time may be very materially reduced. In this method, it is assumed that no orientation data whatever are available; the only known facts are the locations (on the ground) of the base end stations and of the battery directing point. The only requirements in selecting these positions are that one base end station and the directing point be intervisible, and that the horizontal distance from that base end station to the directing point be taped or measured by stadia.

To accomplish the first requirement, the base end azimuth instruments are set up at their stations, and a transit is set up over the directing point of the battery. All three instruments are simultaneously sighted on the same star, and the azimuth scales are read. The instruments are then turned on some prominent terrestrial point (to be

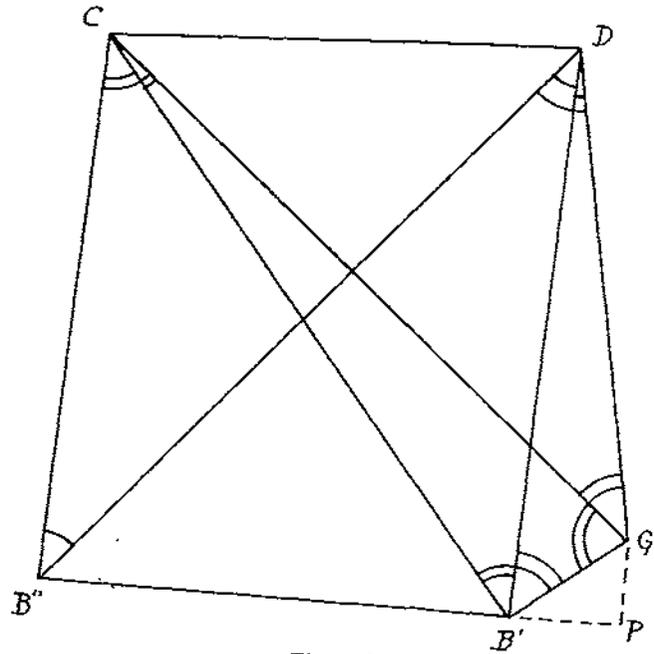


Figure 2

used later as a datum point) and the azimuth scales again read. The difference in these two readings gives the angle between the star and the datum point. Now, since all three lines of sight were parallel when they were sighted on the star, the assumed (or estimated) azimuth of the star, plus (or minus) the angle between the star and the datum point will give the azimuths of the datum points from each station, and each instrument can be oriented by a sight on its datum point.

In choosing the star to be sighted, it is preferable to select one which is approximately east or west, because when a star is in this position its azimuth is changing more slowly than at any other time. Care should also be taken to see that the altitude of the star does not exceed the maximum elevation of the instruments to be oriented. If telephone communication has not been installed, simultaneous observations of the star may be obtained by synchronizing the watches of the observers, and prescribing a time at which all observations are to be made; the observers follow the star with the tangent motions of their instruments for a few minutes before the prescribed time, stopping at the instant when "Time" is called by their readers or assistants.

Having oriented the instruments in the base end stations and at the directing point, the length and azimuth of the base line is computed as follows: Two terrestrial points, C and D (see Figure 1) are selected which are visible from all three stations, and the azimuths to these points are measured. At G (the directing point) and B' ,

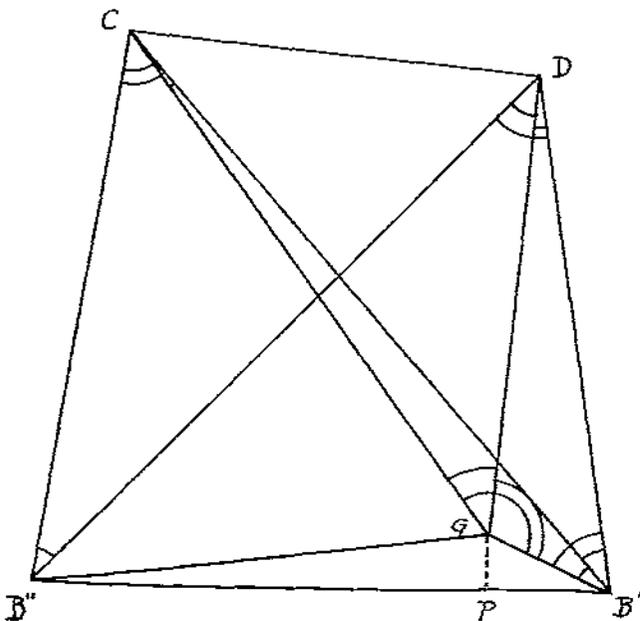


Figure 1

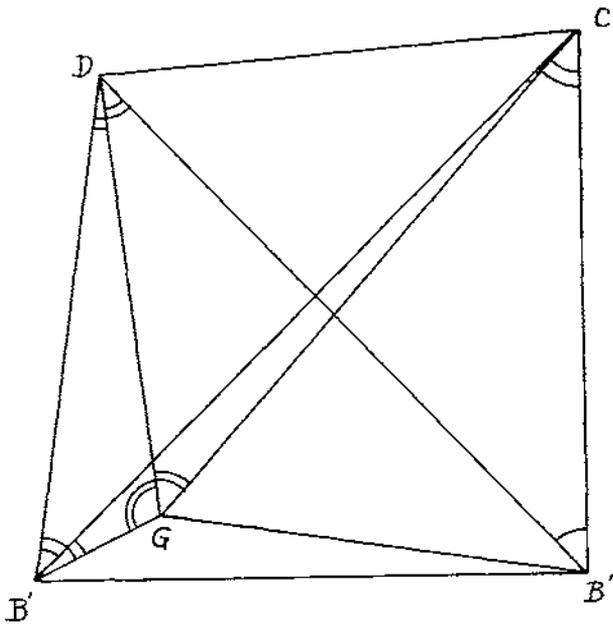


Figure 3

the azimuths $B'G$ and GB' are also measured. Knowing these azimuths (and the back azimuths CB'' , DB' , etc.) the angles marked in Figure 1 become known. Then, in $\triangle DGB'$ —

$$DG = \frac{GB' \sin GB'D}{\sin GDB'}$$

$$DB' = \frac{GB' \sin DGB'}{\sin GDB'}$$

In $\triangle CGB'$ —

$$CG = \frac{GB' \sin GB'C}{\sin GCB'}$$

In $\triangle CGD$ —

$$CD^2 = DG^2 + CG^2 - 2 DG \times CG \cos CGD$$

$$\sin CDG = \frac{CG \sin CGD}{CD}$$

In $\triangle CB''D$ —

$$\begin{aligned} \angle CDB'' &= \angle CDG - \angle B''DG \\ \angle B''CD &= 180^\circ - (\angle CB''D + \angle CDB'') \end{aligned}$$

$$B''D = \frac{CD \sin B''CD}{\sin CB''D}$$

In $B''DB'$ —

$$B'B''^2 = B''D^2 + B'D^2 - 2 B''D \times B'D \cos B''DB'$$

$$\sin DB'B'' = \frac{B''D \sin B''DB'}{B'B''}$$

from which the azimuth $B'B''$ may be obtained. If the distances GP and $B'P$ are desired, the right triangle GPB' can be solved, knowing the angle $GB'P$ (azimuth $B'G$ —azimuth $B'B''$) and the distance $B'G$.

It is obvious from inspection of Figure 1 that the above formulas will hold regardless of whether G is in the position shown, or in rear of the line $B'B''$; also, if G be to the right of B' (Figure 2), solution of the same triangles will give the above formulac. In the case where B'' is to the

right of B' and G , the formulas will still hold if C and D are interchanged as shown in Figure 3; the point C must be on the same side of the figure as B'' . As shown in Figure 4, the problem becomes incapable of solution if G lies on CB' or DB' , or on either of these lines produced.

The accuracy to which the length and azimuth of the base line can be computed depends a great deal on the proper selection of the points C and D . The main consideration in this selection is the resulting triangles CGB' and DGB' . It is obvious that the closer the point G approaches to CB' (or DB'), the less accurate is the solution of the triangle CGB' (or the triangle DGB').

One look at the above equations might be a bit discouraging to the officer whose battery must be in position and ready to open fire in a minimum of time; however, when consideration is given to the amount of field work and computations necessary when the standard methods prescribed in TM 2160-25 are employed, it is seen that this method has its good points. It is evident that firing data based on an assumed orienting azimuth will not be in error, providing the orientation of all elements of the battery is based on the same assumed azimuth. In the case of the larger caliber long range guns where rotation of the earth must be considered, the error introduced by estimating azimuth is so small as to be negligible. Inspection of the firing tables shows that for an error of 15° in target azimuth, a range error of from $1/5$ to $1/10$ of a probable error is introduced at the longer ranges.

This method is not recommended as a replacement for the standard methods prescribed in TM 2160-25; it is offered merely as a means of minimizing the time necessary for orienting the various elements of a mobile battery, and permitting that battery to open fire in the shortest possible time after emplacement. Unless the grid azimuth of the star sighted were computed for the time the observations were made, this method would not be suitable for map firing or for tying in with adjacent units.

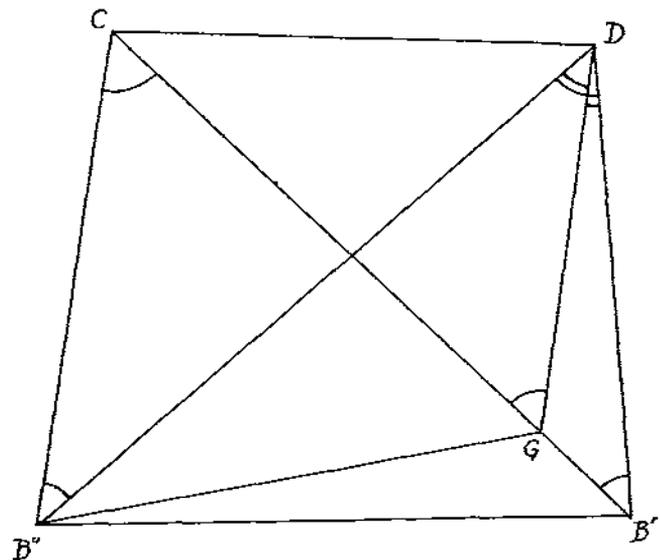


Figure 4

Notes on Antiaircraft Machine-Gun Fire Control

By COLONEL A. H. SUNDERLAND, C.A.C.

THE reader is requested to keep in mind that the following discussion is exactly what the title states: "Notes on AA Machine Gun Fire Control." The subject is so wide in scope that an article setting forth all the necessary arguments, with supporting data in order to lead to a logical conclusion, would be so long that few would read it. If these disconnected ideas succeed in arousing interest on this subject, the mission will be accomplished.

I do not believe the officers who prepared the reports on antiaircraft machine-gun firing tests at Aberdeen Proving Ground from 1926 to 1930 expected their conclusions, as stated in the reports, to be accepted with any decided degree of finality. These annual tests brought out many features that led to developments in all elements of the firing of the 3-inch antiaircraft gun and the material features of the machine gun itself. As for machine-gun fire control, the results of the tests just naturally vanished, leaving nothing but negative information. Using hindsight rather than foresight, it appears that a continuation of the Aberdeen tests would have been most advantageous, and before closing these notes I may venture to recommend some substitute therefor.

Also machine-gun target practice reports show very few hits except in cases where the sleeve target was maneuvered as no hostile plane would move. There has been a sort of a defeatist attitude. We were doing poor shooting and no one was attempting to develop corrective measures.

Captain E. T. Conway, Coast Artillery Corps, wrote a very descriptive article which appeared in the *COAST ARTILLERY JOURNAL* of March-April, 1932. He described several sights and concluded with this statement: ". . . It may be said that the sights now in use in the coast artillery are too limited in their application to be considered as sights in the sense of the requirements mentioned above."

A Board with considerable authority reported, as to the use of any sight, "it is the opinion that the sight which requires the least thought for its use will probably give the best results." These words, "least thought" somehow struck me, but of course it cannot be assumed that they were illogically distorted into the slogan "no sight, no thought." No, it seems that the gunners and the sight makers never got together. In fairness it should be stated that the Board mentioned above did recommend a "forward area sight," but for the last several target practice seasons, the poor antiaircraft machine-gun gunner has been given, in the general case, a sightless gun, a minimum of instruction, and told to hit the target. He does not succeed very well, and the sight makers should come to his assistance.

There are recorded several attempts by individual battery commanders to improvise fire-control apparatus, but these officers were usually relieved from duty with machine guns before the work could be carried to a profitable conclusion. Any officer who might have included this development in his list of duties in general had an abundance of other problems on which to work. No individual merits adverse criticism. The Coast Artillery Board found time for such initial development as appears below only by squeezing it in as a side issue.

In the preparation of the text, "Tracer Control—Antiaircraft Machine Guns" (War Department, OCCA, August 20, 1934), the Coast Artillery Board asked many battery commanders how they trained their gunners. The replies varied widely and points were taken from those reports and incorporated in the text. The fact remains that officially, at the moment of firing, the gunner goes it alone, unhonored and unsung. He has thrust upon him a task away beyond the capabilities of any man. He is given no sight, not even one requiring the "least thought." The gun is good (or at least is being improved) the tracers are good; the instructions issued in the tracer control text, just mentioned, are as good as the Board could make them, but note that early in that text appears the statement, "the use of sights is encouraged." The Board thought that it could not make this statement any stronger without the possibility of the Chief of Coast Artillery or an inquiring battery commander asking what sight to use. That would have been embarrassing. This question is still hard to answer, but an answer is needed.

I hold that a sight is a necessity. I further hold that, except in cases of emergency, the alignment sight, in distinction to the computing sight, is the proper one. The general mission of an antiaircraft machine-gun battery is not its own protection. The battery will occupy positions selected with more or less care; and one requirement of a good position is a good field of fire. There has been expressed too great fear that a so-called hedge-hopping plane is going to deliver effective machine-gun fire or bombs. If the machine-gun battery is properly located, there will be no hedges to hop. Our guns are generally to be used on planes that are passing by in attack of some more or less distant object. In most cases there will be time to set a sight, provided the setter of that sight is supplied with the proper mechanical contrivances and provided further that he does not insist on carrying his calculations to the fifth decimal place. "Proper mechanical contrivances" seem well within reach.

Firing a machine gun at an airplane has many points in common with firing a shotgun at a flying bird. Within certain ranges one bullet of the machine gun properly

placed will bring down an airplane; similarly one pellet from a shotgun properly placed will bring down a duck. The difficulty or low probability of placing the bullet or the pellet in the proper place is partially overcome by increasing the number of bullets and the number of pellets to be fired at the plane or the bird.

Machine-gun fire is an adaptation of shotgun methods. A glance at such methods might help. Slowness defeats many a hunter; complicated devices defeat the machine gunner. A bird and a plane soon get out of range. After a hunter attains enough proficiency with a shotgun to center his pattern on a stationary target, the main problem that confronts him in firing at a bird in flight is to determine the lead; that is, how far ahead he must shoot. There are other considerations, but this is the principle one, and I believe every hunter will agree that it would be a simple proposition to kill birds on the wing if there were a sight on the shotgun to take care of the lead automatically and if, in the general case, that sight were set by a better man than the shooter. A discussion of the "better man" appears further along in these notes.

A sight set to an approximation of the correct lead will assist the machine gunner. The lead required to cause a seacoast gun to hit a moving target is applied by a deflection correction on the sight. A similar correction can be put on a machine-gun sight. Furthermore, this same correction as well as a range correction can be put on each of the guns of a group of machine guns, thus causing all the guns of that group to fire together; that is, if one hits, they all hit; if one misses, they all miss. This particular feature is analogous to the use of a choke bore shotgun, but contrary to the so-called barrage principle that advocates laying down a screen of bullets through which the hostile airplane is supposed to fly.

However, when all sights are set alike, the tracers make a distinct cone of fire decidedly in contrast to the widely scattered trajectories of the same group of guns fired with no sights.

Many statements to the contrary notwithstanding, I cannot believe that a gunner can identify with any degree of certainty the tracers from his gun when other guns in the immediate vicinity are firing at the same target. Therefore, if controlled sights have no other virtue, they at least can be made to concentrate the fire. This much has been proved by recent firings of the Coast Artillery Board. This concentration of fire is one of the outstanding advantages of the multiple mount machine gun.

Concentration of fire is highly necessary. The question as to just how many machine-gun bullets are required to stop a hostile plane will never be settled any more definitely than will the question as to the number of angels that can stand on a given point. But anyone who has ever seen the hole made by the non-explosive service rifle bullet in a small arms target, and who at the same time has even a rudimentary conception of the structure of an airplane, knows that a plane may carry back to the

landing field many bullet holes, of which the pilot will be ignorant until he inspects his plane on the ground. From an antiaircraft viewpoint, when a machine gun hits a plane it should hit it a lot, thus increasing the possibility that some one bullet will hit a vital spot or element.

Here might be inserted a digressive note. There is a serious need for an intermediate caliber weapon with a projectile exploding on impact. The machine gun does not do enough material damage, the 3-inch or heavier gun can not meet the requirements of high angular velocity imposed by a close-in plane. The Coast Artillery Board made a very limited test of small caliber explosive projectile. Such test gave every indication that a hit on a plane with such a projectile would open up, in the general case, a hole so large that the wind effect would carry on the damage with a fair probability of wrecking the plane, even if no other structural or operating element were destroyed by the projectile.

Coming back to machine guns, it is obvious that if an alignment sight is to be set for the use of the machine gunner, and set in both range and deflection, two duties devolve upon the person who is to set this sight. These duties are determining the settings and applying them to the sight. The computation of the sight setting is a difficult problem. Solutions of the problem range all the way from the complicated, highly expensive directors used for three-inch guns down to the simple guess used by the gunner today. The time element defeats the complicated director. Results condemn the gunner's present-day guess. The high angular velocity of a close-in plane prevents getting any usable results from a director before a plane is out of machine-gun range. From time to time, but always in times well past, very ingenious mechanisms have been made up in this effort to compromise between extreme complication in one case and abandonment of the problem in the other. But in most cases the designer seems to have been striving for more and more accuracy, adding refinement after refinement, until he has produced an instrument wonderful in design but slow in delivery of results. At least the delivery of results is too slow for the gunner to make use thereof—a wonderfully successful operation, but the patient died.

An alignment sight implies setting. Setting implies man power. There is no way known of getting to a gunner any settings other than preliminary ones. After he commences firing he has no time to make corrections even if he could hear them. An assistant, besides increasing the gun crew by one, has difficulty in hearing or otherwise learning corrections, and he has great difficulty in setting them on a vibrating, swinging gun. It is almost impossible for an assistant to spot and at the same time set a sight. Lack of time and the difficulty of refocusing his eyes prevent this combination of duties.

When the gunner, shooting without a sight, decides that he is not on the target, he pushes his gun right or left, up or down, as the case may be (at the same time, of course, combining such motions with the motion of

following the target). Recently there has been revived the scheme of having one other than the gunner control the movement of the gun right or left, up or down; that is, the scheme is to make use of a fire-control officer. He is the individual who watches the tracers and decides where, with respect to the target, the shots are going, and moves the gun, through the agency of the gunner, by shifting the sight. This fire-control officer receives considerable assistance in making his decisions by having the fire of all the guns concentrated more or less in a group, due to the fact that the sights of all guns firing are set alike. The mechanical devices, roughly outlined below, have been made up to permit him to effect changes in sight settings almost as quickly as the gunner can change his rate of traverse with the present method of firing.

There appears above the term "better man." It is assumed that this "fire-control officer" is, in the general case, a better man than the gunner. He who controls the fire need not be an officer. He can be any man in the battery, from the last recruit to the captain, if it is found that he has the stereoscopic vision, quickness of perception, and general good judgment that will enable him to make up his mind quickly and accurately. With only average ability he can soon learn to transmit his decisions through a simple mechanical device and register such decisions on the sight of the gun.

In order that a group of guns may be fired as indicated above, the fire-control officer should put an initial sight setting on the guns that will bring the first burst of the cone of fire on or somewhere near the target. Some adaptation of the M3 Sperry Director, might be made, but there are neither men nor time to use such an instrument. The most successful instruments recently tested took into consideration such features as the approximation to direction of flight, speed, and range. Setting these guesses in the device gives initial sight settings; following a pointer with another one puts the guesses on the gun sight, by the agency of a device called the "sight controller."

Many of the older school probably could not be brought to understand the use of the word "guess" when connected with the matter of gunnery, and many a one of that older school who have passed on would probably turn in his grave could this word be communicated to him. Bear in mind, however, that the school of thought that advocates the use of precision methods has had its day and that no anti-aircraft machine-gun fire-control system has been produced. Let us try something else. The gunner today guesses which is his tracer, guesses he is shooting above, guesses he is shooting too far behind, guesses he had better lead some more; and he has no graduated scale on which his guesses are based. So guesses are not unheard of. My theory is that you can procure a better guesser than the gunner and that you can put this better guesser in a position that gives him many advantages over the gunner and also that you can give him quick-acting instruments that will assist him in making his guesses and, to some extent, record such guesses to form a basis for correction.

A word more about guessing. Successive guesses based on information more or less accurate can be expected to advance in accuracy and they may be dignified by the title of "approximations." After the fire-control officer becomes, by practice, more accurate in making his approximations, he might be expected to become so expert as to allow his decisions to be called "a fair estimate," and this is probably all he will ever have time for, in machine-gun fire. In a selected position, outlying observation posts can be of great assistance by telephoning to the fire-control officer such features, concerning a hostile approaching plane; as: kind of plane, general course, and approximate height.

This fire-control officer has a difficult assignment but, except for the added responsibility for more than one gun, his requirements are not as difficult as those now assigned to the individual gunner. If he be included in the manning table additional difficulties of training will be introduced. There is no such thing as simulating the use of tracers in anti-aircraft machine-gun fire. However, the fire-control officer can be trained during drill in some features of the use of his simplified instruments by checking such instruments on actual targets as against the readings of the more accurate fire-control instruments assigned to an anti-aircraft gun battery. He can be given training far beyond that of the individual gunner. In practice it will be found, in all probability, that the duties of this fire-control officer can be handled with no less than two persons, one for deflection and one for range. Assuming that the twelve guns of a battery are formed into three platoons, each platoon controlled by one officer and an assistant, it will only be necessary to make good guessers out of six individuals, trained with a view to progress from guesses to fair estimates; whereas, twelve experts are called for now—and who the ineffective ones are, you will never know.

I am fully aware that there is nothing particularly new in the foregoing discussion. The Coast Artillery Board has money and other facilities not available to other Coast Artillery officers on battery duty. Keeping in mind that accuracy is secondary to speed, the Board took advantage of the opportunities thus afforded, modified old devices, and constructed some new ones, and some of the latter hold out considerable promise of being an early step in a lasting system of fire control for this much neglected weapon. Any older device available, modified to fit the present idea, will retain little semblance to its former self.

No attempt will be made to go into the details of the fire-control instrument into which the approximations of correction of travel, speed, and range are set. In fact none was constructed; modifications of older devices were used in determining the original sight settings. The instrument made up and tried out involved an automatic data transmission system to transmit deflection and elevation corrections to the sights on the gun. The system afforded means whereby both original settings and spotting corrections could be set. The motions were transmitted mechanically through the agency of flexible cable similar in

design and principle to the flexible cable which actuates the speedometer of an automobile. Recently such cable has been improved greatly and is procurable commercially in many sizes and in quantities limited only by available funds. Further tests are necessary with this cable before it can be recommended for standard issue to fit any and all tactical situations. However, the system and these mechanisms functioned with a fair degree of success in a series of comparative firings. These notes are written with the idea of opening discussion and having officers throughout the service make efforts to control machine-gun fire. Just how any individual officer can procure flexible cable or make up adjustable sights, I cannot say.

There are tactical questions involved in the solution of this fire-control problem; e.g., where is the sight controller to be placed if an all round field of fire is to be provided for each gun? The multiple mount might afford an answer to this particular question. I am far from convinced that the multiple mount is not feasible. In my opinion, such mounts as have been made and tested were smothered by attention. By this I mean, that in the design thereof, refinement after refinement was hung on to each of these mounts until complexity and weight made it impracticable for field use.

The general trend of the foregoing, advocates the firing of the machine guns in groups and, as stated, this presupposes the occupation of a more or less selected position and precludes a surprise attack. Now, when it is necessary to set up a machine gun in a hurry and fire immediately, or when the fire control mechanism is not manned, it cannot be taken as a policy to consider the gun useless. It is highly necessary that the gunner be trained along the present lines of procedure and he should be instructed to consider a fire-control system as a very beneficial auxiliary but not a prime necessity. In this connection it might be stated that a new form of the forward area sight gave considerable promise in recent firings, and it is possible that information on this sight will be issued at a fairly early date.

Of course, it would appear almost as an absurdity if an organization never conducted any target practice with the equipment with which it is armed. On the other hand, something can be said for a system wherein all the ammunition allowance for any one arm, was fired at one place; that is, in a school of fire, where a great number of rounds could be fired, where all firings could be most carefully analyzed, and where, as far as local conditions are concerned, an unlimited number of persons could see the firings, and where each individual student of this school of fire would be required to make an analysis of all practices. Admitting the impracticability of adopting in its entirety anything of the kind in our service, such a system would have certain decided advantages over the present system which deals out a small dab of ammunition to each organization, and, for perfectly good and sufficient reasons, requires such ammunition to be fired under very strict limitations. A compromise between the two systems might be possible.

Should a simple form of antiaircraft machine-gun fire director be devised, and should a school of fire be established, I believe that, with no excessive expenditures of ammunition, there could be developed a group of officers and enlisted men each of whom would be really expert in the matter of controlled machine-gun fire. I believe that they would become so expert that they could fire, within the ranges short of the tracer burn-out point, with better than fair accuracy. Making use of their experience within such ranges they could, and still within the realms of reason, be expected to fire machine guns with some effectiveness at ranges well beyond the burn-out point of present tracer or of any likely to be provided. Without intensive training of spotters, a large part of the effectiveness of a good weapon will be lost. A gunner without a sight soon reaches a limit beyond which he cannot be trained.

Of course the similarity between antiaircraft gun fire and antiaircraft machine-gun fire is not very close, and the former, by the inclusion of fuze settings, is much the more complicated problem. The gun problem now has one distinct advantage over the machine-gun problem in that precision instruments are available and feasible for the control of gun fire. The effectiveness of such instruments has been proved.

The subject of this article is Antiaircraft Machine-Gun Fire Control; not Fire-Control for Cannon. But for obvious reasons they are related. Early in the next war there is going to be a great deficiency in fire-control apparatus for antiaircraft guns, and gunnery will lag behind guns unless a so-called emergency fire-control system is developed. There is every indication that any emergency system, to be practicable, will involve two features; namely:

a. Approximations to be set into simple instruments, and

b. Sights on the gun to be set by a fire-control officer. And it would appear that in emergency, fire-control with the heavier guns might develop from a fire-control system devised for machine guns. Any further discussion of this feature goes beyond the limits of the subject assigned.

However, in both machine-gun fire and gun fire there is, to my mind, a great need for a school of fire where many rounds of ammunition are fired, and many guns are worn out in affording an opportunity for students, both officers and enlisted men, to learn to spot and to make corrections as a result of such spotting. From my viewpoint, Government money expended for guns and ammunition to be used along such lines is the best means of delivering effective fire in the event of war. So much depends on the expertness of the spotter in all kinds of antiaircraft fire that the conduct of such fire approaches an art. An expert operating surgeon uses the provisions of science; but his work, to be successful involves great dexterity, arrived at by practice.

An antiaircraft spotter has difficulties and responsibilities far beyond those of any other kind of spotter, yet year in and year out he sees very few shots and never is he required to analyze a shoot just after he has "spotted" it.

Chemical Warfare Training and Morale

BY LIEUTENANT JOHN H. BERTOLET, C.A.N.G.

OF the many factors vital to the conduct and prosecution of war, morale is beyond dispute the most important. In a state of belligerency it is as necessary in the industrial civilian as in the combatant soldier, for it is the keystone of the arch of military effectiveness upon which the success or failure of campaigns depend. It is the mental expression of the attitude of the people and may be defined as a state of mind in which courage, the will to do, is uppermost. An indication of its importance is found in Napoleon's much quoted statement that: "Morale is to the physical as three is to one." While this rate may have been applicable to the incongruous masses composing Napoleon's armies, it certainly cannot be accepted as a sound theory today, since each is inversely dependent upon the other. A physical predominance of effectives and material has a natural tendency to breed confidence, this directly affecting the state of morale; physical subordination has exactly the reverse effect.

Among the civilian masses, morale is attained by belief in the integrity of the "cause" and is maintained by confidence in the ability of the military forces to prosecute the war successfully. In the military service it is effectuated by a thorough training in the basic military subjects and is further nurtured by discipline and knowledge of the employment, power and limitations of assigned weapons; protective devices, measures and a general understanding of things military. The diversified factors which directly influence the state of morale are too numerous to list or discuss, however, from the military viewpoint, the most important is the undue fear of chemical attack present today in the mind of both soldier and civilian.

During the years since the World War, very little effort has been expended in spreading authentic information and educating the masses in the facts of chemical warfare, in fact the exact opposite has taken place. Deceptive propaganda on this subject, at least in part inspired by pacifist organizations and broadcast through the press, radio, pseudo lectures, and the pulpit, has fallen upon fertile soil of ignorance and matured in the minds of men until they have become impregnated with the purely imaginative horrors of chemical attacks. This unhealthy attitude of the masses towards probable chemical attacks has become a major problem in the defensive policies of most world powers, and has caused them to educate civilians, individually and collectively, in the use of protective measures and devices.

While our Governmental and Army authorities are fully cognizant of this condition, the political influence of

those who have created the situation; the numerous "peace at any price" organizations that infest the land; and the indifference of our people to any preparation for national defense, have so hampered them that little or nothing has been achieved in correcting it; not only among the masses of civilians, but in the military service.

It is true that so far as the Army is concerned some effort has been made to alter the situation by stressing "defense against chemical warfare" in all training directives. Unfortunately, either because of improper supervision, ignorance, or indifference on the part of those charged with and responsible for such training, these directives are largely regarded as a mere gesture, since in the lower echelons of command it is frequently side-stepped as unimportant and interfering with other training activities, or as a specialty beyond unit control. Few officers outside of the Chemical Warfare Service and those specially trained at the Chemical Warfare School, seem to appreciate that training in defense against chemical warfare is necessary in fitting the soldier for combat.

Education in the facts of chemical warfare, familiarity with and confidence in protective measures and appliances, are as essential to combat efficiency as is proficiency with assigned weapons. Familiarity in this case will not breed the proverbial contempt, but a healthy chemical consciousness that is the basis of the gas discipline so essential to the efficient functioning of troops in combat.

During our participation in the World War, the acceleration of training and a deficiency in trained instructors necessitated the centralization of chemical training. Many of those detailed as instructors had little to commend them beyond a smattering of elementary chemistry and had therefore been given a short course of instruction in what was then called "gas." Most of them were unsuited to be instructors, having no ability to teach and practically no knowledge of the subject of chemical defense, but, having been assigned to the job, made up in imagination and eloquence what they lacked in facts and talent. They infused the minds of the men they instructed with stories of the "quick and the dead"; taught them to mask and unmask in a few seconds, and sent them back to their units wondering what it was all about. Nothing was provided for real instruction in the employment of protective measures and appliances or to build up a confidence in them. Army authorities at home were too interested in training troops to do precision close order drill, enabling regiments of amateur soldiers to "pass in review" before visiting governmental dignitaries, to recognize the value of "gas discipline" as a morale builder and devote sufficient training time to develop it.

In the A.E.F., where those in authority were influenced by the cold, hard realities of war instead of the "edge of the parade ground" contacts of those at home, adequate gas training and its accompanying "gas discipline" were conceded to be vital to combat efficiency. This is evidenced by the fact that the 200,000 Infantry replacements arriving in France during the spring and summer of 1918 were given a stopover for a two-hour period of training, not in how to employ their arms, but for *gas instruction*.

Let us consider a few extracts from A.E.F., Inspection Reports of certain organizations which had been exposed to chemical attacks:

Report of Inspection of — Division: In the presence of the Division Gas Officer several men were interviewed relative to instructions as to what to do in case they were gassed, and the information given was, that they never received such instruction. The majority knew when to apply the mask—few knew when to remove it. Although masks had been used on several occasions for the purpose of instruction, no notation had been made on the card. In the front-line trenches several enlisted men were found without masks or respirators. Upon questioning, the responsible officer made the following statement: "I did not know it was obligatory to wear respirators; in fact I have no box respirator and many of my men have none. I had a respirator but gave it to a member of my organization. I tried on numerous occasions to get respirators but have not succeeded. Our organization never received any instruction in gas."

* * *

Report of inspection of — Division: As result of the Inspection of this Division, it is evident that instruction work along certain lines has been sadly neglected, and, furthermore, if the organization was subjected to a bad gas attack, it is my opinion that the casualty list would be very heavy.

* * *

The result of the inspection of the Regiment, in which 19 officers and 405 enlisted men were gassed, shows the following: Many of the soldiers and officers were found without proper gas protection. None of the dugouts were properly protected against gas; few had thin cotton curtains. Few of the men seemed to know when to apply the mask, or when to take it off.

And so on through innumerable reports, plainly stating that in this or that organization the "gas discipline" was nil.

Analysis of these reports and the fact that the A.E.F., suffered 70,552 gas casualties exclusive of those who died on the field and those of the Marine Corps, indubitably substantiate the validity of General Pershing's complaints of faulty training policies and methods of instruction and to throw Secretary Baker's, theories of "overtraining" and "going stale" in two months into the discard. We, however, are not attempting to discriminate between the opinions of these distinguished personages, but to present convincing facts of the necessity for adequate chemical warfare training as a morale builder.

Fortunately at that period the pacifists were in the minority and had not yet seen the possibilities offered by chemical warfare or developed the potentialities of the "gas bugaboo" for throttling national spirit and undermining the morale of the nation. Had the same mental

attitude towards chemical warfare existed then that is present in our masses today; what would have been the morale of the poorly trained combat organizations of the A.E.F., in the face of chemical attack? How would the loss of effectives after a gas attack (27.3% of all casualties were from gas) have affected them? There can be no doubt on that point; divisions, brigades, and regiments would have disintegrated into impotent elements without morale or discipline; incapable of being effectively directed. Happily this did not happen, for our minds had not yet been poisoned by the pernicious propaganda of the pacifists.

We have discussed to some extent what has happened and what the results have been in the past! Let us now turn to the present and future and look facts in the face!

During the war, chemical warfare was directly responsible for 1,009,038 casualties, resulting in 78,390 fatalities. It is a recognized fact that the advent of chemical warfare was due to a stalemate in firepower; neither the Allies nor their opponents had sufficient industrial set-up to supply them with the munitions necessary to gain an ascendancy of firepower which would enable them to blast their way through the nearly impregnable ground defenses that had been organized. To break the deadlock Germany took advantage of the possession of the world's greatest organic chemical industry, which within a minimum of time and expenditure was converted from the peace-time manufacture of dye stuff and allied products to what we know today as chemical agents. In these the Germans had a weapon whose strategic and tactical possibilities they failed to appreciate. Had they done so, the first gas attack on April 22, 1915, would have yielded them possession of Channel ports and perhaps final victory. From this initial use of gas, the development of chemical warfare, in weapons, agents, methods of dissemination, tactics and protection went gradually forward until the end of the war. Since then the Chemical Warfare Services of the various world powers have further developed and refined this agency to a high state of efficiency, and are continuing to strive for improvements.

While this has been going on what have we been doing to improve the morale of our civilians and soldiers; to counteract the insidious propaganda of the pacifist by presenting facts on, and training in, defense against chemical warfare? The answer is, "very little."

A few months ago we conducted a C.P.X., in the State of New Jersey. Suppose that this war had been a reality instead of a conflict of paper troops. The Blacks had established themselves all along the Jersey coast from Cape May to Long Branch; had forced their way across the State and held the Atlantic Highlands from which they threatened both Philadelphia and New York. Our Air Force had been concentrated on the West Coast, but was moving east to assist in repelling the invasion. What would the outcome of such a situation be, if concerted aerial attacks were made with chemical on the industrial and financial areas, or on Washington, all of which are within 160 air-line miles of Atlantic City; and by artil-

lery firing chemical shell, on the troops resisting their main effort? With the present state of chemical training and frame of mind towards chemical attack, would the troops retain the high state of morale necessary in a defensive action? Would the civilian carry on the normal routine of living and industry? Doubtless they would not.

While such attacks on industrial areas would produce few casualties, they certainly would achieve an invaluable military significance, since their morale effect would have a tendency to disrupt the routine of manufacture and supply of military essentials, as well as complicate the combat situation by demands for the assignment of additional antiaircraft artillery or airplanes for the local defense of such areas. As for the troops, it is a waste of time to conjecture that they would survive a chemical attack with a better morale than the civilian, when one considers that the model 1917-18 instruction in masking and un-masking is the totality of the training they receive in defense against chemical warfare. Certainly under such conditions they would not add to the luster of our military achievements.

What is to be done about this situation which is so pertinently important to our national welfare and defense? Are we to place implicit faith in the agreement not to

use poisonous gases and in the sincerity of the 33 signatory nations; in the interdictions placed on chemical warfare by the League of Nations, an august body whose chief reason for existence seems to be that of furnishing jobs to deserving diplomats.

If the answer is, yes, nothing need be done about preparing our industrial and combat man power to resist chemical attacks. On the other hand if the answer is no, it behooves us to institute sound training policies immediately, put them into operation, and supply the impetus from above that is absolutely essential to effective training. Unless this is done, and the lying deceit with which the pacifists have intimidated our masses is counteracted by the proper authorities, the industrial man power of the nation cannot be depended upon to support the army. The lack of this support will in time surely break the morale and sap the army of the "will to win" so necessary to the successful prosecution of any war.

EDITOR'S NOTE: The author of this article points an accusing finger at a condition which should receive some attention, but he fails to prescribe a remedy. The "remedy" might very well be made the subject of a subsequent discussion—for example; what measures should be adopted to instruct the civilian personnel in proper defensive measures when subjected to chemical attacks? What changes should be made in the present system of instruction in the Army for defense against gas attacks? The JOURNAL invites discussion of these important questions.

The Military Mission to Brazil

FOR many years it has been the custom for the armies of South American Republics to draw their inspiration and instruction, in purely military subjects, from a European nation, usually the French or German. This custom still prevails with one notable exception. The Government of Brazil decided to renovate its system of coast defense; to build on a solid foundation and to take advantage of the latest developments in tactics and technique, the most natural and logical procedure was to bring to their assistance officers from the army whose system they desired to emulate. Accordingly they requested that several U. S. Army officers be sent to Brazil to function as a North American Military Mission. (Below the equator it is customary to make a distinction by prefixing "North," a minor detail which we are prone to overlook.) The duty of the mission was to organize and direct a center for the training and instruction of personnel in Coast Artillery subjects. It naturally followed that this school would be patterned after the Coast Artillery School at Fort Monroe, except that the training center does not function under the Chief of Coast Artillery but directly under the Chief of Staff of the Army. This procedure is followed in all the other Brazilian military schools. Lieutenant Colonel Rodney H. Smith, C.A.C., was selected for this important assignment, and has for his assistant Captain William D. Hohenthal, C.A.C.

The mission arrived in Rio de Janeiro in June, 1934,

and found that the Coast Artillery center of instruction had been allotted space at Fort de São João, one of the forts guarding the entrance to the harbor of Rio. The school opened on July 7. The initial class was composed of 15 officers and 20 sergeants. The directive furnished by the commandant provided among other things "that the class specialize in the technique and tactics for the defense of the coast line. The instruction will be accomplished through lectures, conferences and problems furnished by the North American Military Mission under the direction of its Chief." It can be readily appreciated that this was a full size order for the mission, especially so when we consider that only two officers had been assigned to the duty and furthermore that no school of this kind previously had been conducted in the Brazilian Army, therefore it was necessary to start from scratch both in the problems of working out the details of the course and in providing necessary instructional texts and instruments with which to work. Furthermore, all instruction had to be conducted in Portuguese. The linguistic difficulties alone were enough to cause consternation, but the mission went to work with a determination and perseverance that has brought forth the highest praise from the Brazilian military authorities. The work accomplished seems almost prodigious when we consider that the mission had to supervise and direct the manufacture of much of the matériel used in the practical instruction. This can

better be understood by listing some of the results accomplished:

a. Preparation of fire control maps for the harbor defenses of Rio de Janeiro.

b. Collection and collation of orientation data for the harbor defenses.

c. Preparation of nomenclature lists.

d. Collection and collation of data concerning powders, projectiles, primers and fuses used in the Brazilian Army.

e. Construction of a range percentage corrector.

f. Construction of a deflection board.

g. Construction of a wind component indicator.

h. Supervising the construction of a plotting board and a seacoast fire director (designed by Captain Hohenthal) to give a continuous flow of corrected data to the guns.

The graduation exercises of the first class of Coast Artillery officers, Brazilian Army, was held on January 31, 1935. In the presence of many distinguished personages including a personal representative of the President of the Republic, the Minister of War, the acting Chief of Staff of the Army, the Commander of the first military region, and many others. At the graduation exercises the director of the center of instruction stated:

"The state of disregard and perhaps of neglect in which we find the coast defenses is a matter of real apprehension especially since all the rest of the army was perfecting its knowledge of the lessons learned in the World War.

History records eloquent facts in testimony of decisive action in coast defenses in a country with sea frontiers such as ours. It is enough to call to mind the coast defenses of Turkey which prevented the passage of the allied ships through the Dardenelles in their attempt to take Constantinople and the consequences of this brilliant action which delayed the victory of the Allies over the Central Powers.

When, at the inauguration of this center of instruction I claimed to be absolutely certain of the benefits to be gained for our coast defenses by the auspicious fact that our studies were to be directed by a North American Military Mission, I did not exaggerate. The importance and value of the work accomplished has testified to the unquestionable competency of Lieutenant Colonel Rodney Smith and Captain William Hohenthal in their direction of our efforts during this, the first year of the school.

I foresee for our center the brightest of futures since we are wisely taking advantage of the precious instruction of the North American Military Mission and the earnest desire of our youth, ever more avid for knowledge in order to prepare themselves to defend efficiently our dear Brazil. In this way we can compensate for the sacrifice that the nation makes in order to insure her integrity."

During the graduation exercises Colonel Smith was called upon for remarks and expressed himself as being greatly pleased at the successful termination of the first year's work and gratified that all of the students completed the prescribed course with very excellent results. He expressed the hope that the results would be far reaching in that the graduates would enthusiastically apply the knowledge acquired and spread the doctrine which we believe to be the best for the employment of antiaircraft and coast defense artillery.

The other components of the Brazilian Army are under the tutelage of a French Military Mission, therefore it speaks well for the reputation and prestige of the Coast Artillery Corps that the training and instruction in this important part of the national defense system should be intrusted to officers of the U. S. Army. In addition to the presence of Colonel Smith and Captain Hohenthal, Major L. W. Miller, Engineer Corps, an instructor in the technical school, is also a member of the North American Military Mission.



Seated, left to right: Major Bina Machado, Assistant Director of Instruction Center; Colonel Aquostino, Representative of Chief of Coast Artillery; General F. Da Silva, Jr., Commanding Second Infantry Brigade, Garrison of Rio; Lieutenant Colonel Rodney Smith, Chief of North American Military Mission—Director of Instruction; General Goes Monteiro, Brazilian Minister of War; General Pantaleao Pessoa, Chief of Presidential Staff and Personal Representative of the President of the Republic; General Gomes Ribeiro, Commanding the I Corps Area; General Raymundo Barbosa, Acting Chief of Staff of the Army; Colonel Antonio Dantas, Commandant of the Center. Standing: Other visiting officers and remaining members of school faculty. Immediately to the right of the fan are Captain W. D. Hohenthal, U.S.A., and Major L. W. Miller, U.S.A., the other members of the American Military Mission.

Old Stuff

BY CAPTAIN WILLIAM F. MARQUAT, C.A.C.

IMMEDIATELY upon the mention of annual armory inspections of the National Guard, more than likely someone in the party will be heard to remark:

"Old stuff. You look over the records during the day time, have a pleasant dinner with the local officers afterwards, and then go to drill hall at night to watch the usual demonstrations of close order drill, calisthenics, first aid, riot duty, chemical warfare and a few specialties."

To this I reply—having already employed the inelegant, albeit expressive vernacular of the period—"Oh! Yeah!"

A chronicle of a few of the interesting surprises sprung on me at the 1935 series of armory inspections, 197th Coast Artillery (AA), in the little but highly efficient State of New Hampshire, will certainly be of interest to others and perhaps be the means of inducing others to emulate the worthy example. I will select only a few of the more startling innovations; these will be sufficient to prove that where there is a will to be different, the unusual can be accomplished.

The inception of the entire series of inspections surprises is found in the instructions issued by Colonel C. E. Rexford, the regimental commander. When informed that the unit commanders were to present the inspector a program of demonstrations he said, "Very well. Present your own program, *but* be sure to make it interesting. And remember we cannot retain interest by doing the same old things in the same old way."

With this directive 46 officers and 721 enlisted men started out to stage demonstrations that would fill the bill.

Let us start with Headquarters Battery, one of the units which finds it difficult to inject innovations in its inspections. After putting on a very smart series of precision drills, all modified for variety, time came for the big speciality of the organization—communications.

Stepping up to a raised platform in one corner of the armory I saw the tables labeled with neat signs designating the Message Center Chief, Code Clerk, Switchboard Operator, Delivery Clerk, Runners, Messengers, etc. On the wall, and almost completely covering it, was a schematic diagram, shown in Figure 1, containing a series of figures and dotted lines, a message register and a message file heading.

Up steps the battery commander, Captain Norman M. Andrews with something to this effect:

"Headquarters Battery will now demonstrate the complete operation of a higher echelon message center. We realize that this is more advanced than a regimental message center but it is our belief that being ready for the next higher echelon requirements will give us better information about our own job."

He then asked that I write a message. This was handed

A Commentary on a series of National Guard Army Inspections.

to the Message Center Chief and the captain requested that I follow its progress.

Lieutenant Edward G. Hamel, graduate of the Signal School at Fort Monmouth, stepped to the chart on the wall and gave a description of the system. As each step was completed he posted the message on the chart where all could see how it was being transformed and follow the progress of the demonstration.

Briefly here is what happened (the figures indicate where and how the progress of the message was indicated on the chart):

1. Message given to Message Chief.
2. Message Chief decides on routing.
3. Gives it a number and fills in the first six columns of the Message Register. (The seventh column, the time the message is cleared, cannot be obtained until later.)
4. The Message Chief sends the message to the Code Clerk.
5. The message is actually encoded, the code word having been given by the inspector. (The cylinder device was used.)
6. Coded message is sent to the radio station. In this instance the field radio was set up and the message was sent in code. It was received in another part of the building by a second operator.
7. After the code clerk encodes the message, he returns the original to the Message Chief, who then
8. Places it in the "Live Message File."
9. After the receipt of the message has been acknowledged the time of acknowledgment is given to the message center chief who—
10. Fills in the seventh column, "Time Cleared," or the message register.
11. At the same time he enters the time cleared on the message blank (original) and transfer it from the "Live" to the "Dead" section of the message file.

Lieutenant Hamel described the operation of the encoding device while it was being operated, using a special chart to assist the audience in following him.

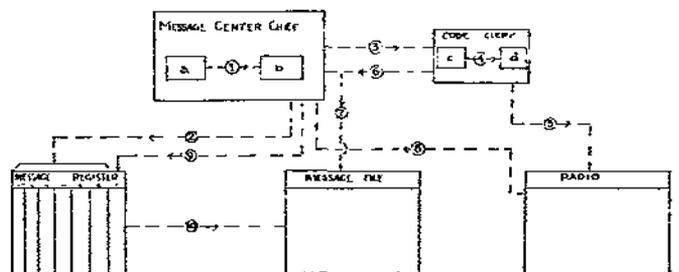


Figure 1



FIGURE 2—SPECIAL SOUND LOCATOR

ABOVE—Captain H. L. Chandler, its inventor, is operating it. BELOW—Close up, showing azimuth scales, sliding elevation mechanism, visual check sight, and general construction.

The demonstration was novel and very interesting. There were no waits or delays, and each step in handling the message was actually performed—even the radio transmission. Captain Andrews announced that the wall chart is used in instructing members of the battery in higher echelon communications and it certainly appears to be a very effective system of instruction, as well as a very fine demonstration for an inspector.

Next we will peek into the armory inspection of Battery "A." During the previous armory inspection the battery had its searchlights in operation in a striking demonstration but, due to the fact that they could not get a sound locator into the armory, that part of the searchlight battery work could not be shown.

Captain Horton L. Chandler, commanding Battery "A," was not at all satisfied with this condition and, knowing that it was impractical to remodel the armory

with an entrance large enough to admit a sound locator, he chose the alternative and built a sound locator to fit the armory.

This locator (shown in Figure 2) was turned out entirely at the 197th Motor Park garage, most of the work being done by Sergeant Joseph D. Jones. With its dull duco finish in standard OD color it looked like a finished product of the best ordnance machine shop. Captain Chandler conceived and designed the entire instrument. It is used successfully for indoor training of the listeners during the winter season and, due to the fact that Battery "A" is equipped with only one standard locator, it will be used next season for determining target location for one of the searchlights not provided with a locator, but one that is provided with a distant electrical control and a comparator.

Battery "A's" so-called "Chandler-Ears" consist of only two horns mounted on a two-way pivot which permits their traverse in horizontal and vertical angles. The horizontal pivot is of the swivel type while the vertical pivot is of the trunion type.

At the outer end the horns have a cross section of approximately 24 inches; this varies in an exponential curve down to a small aperture which is attached to the head-helmet of the binaural training device with which each searchlight organization is equipped. The horns are of light construction, approximately 4 feet long. They are cross-braced externally and all seams welded.

Both traverse and elevation are obtained through a crank-and-arm effect. Scales are provided for reading actual settings. The instrument may be oriented easily. The entire weight of the miniature sound locator, assembled, is about 45 pounds. A feature of the construction is a special flange arrangement on the tripod legs to prevent their slipping when once put in place.

Captain Chandler claims that the instrument is well adapted for training on a fixed or moving sound source indoors. He also claims the same accuracy, by test, with this locator as is possible with the binaural trainer, when both are used indoors. The horns have yet to be subjected to a practical outdoor test due to the fact that there are few target planes available in New England during the frigid winters.

Its designer claims that, though small, the horn should be effective against outdoor targets, and that it is far superior to any other available substitute for the standard sound locator. The Battery Commander plans to develop the practicability of the use of his horn as a means of obtaining accurate data from outpost listeners. A small vehicle can drop these 45-pound horns at the outposts where, with a North Star orientation, they can send actual azimuths of the target from their respective outposts, to the platoon CP. By relocation methods valuable data will be available to the pilot light sound locator listeners.

Batteries "B" and "C" specialized in gun-crew and range-finder demonstrations, while Battery "D" staged one of the very best close order drills imaginable. Head-

quarters Battery likewise was excellent in precision drill. Service Battery and the Band added musical entertainment to special supply demonstrations; and the Service Battery, being the only unit of the regiment equipped with rifles for all of its members, made an excellent showing with the manual of arms. The 1st Battalion Combat Train, under a brand new commander, showed special first-aid and mess-equipment demonstrations.

The Second Battalion Headquarters detachment and batteries "E" and "F" fell in line with "unusual" features in various demonstrations.

Battery "G" produced the "showman" instinct to the nth degree under the well-conceived plans of Captain J. Hamilton Fish. While a large number of Keene, N. H., citizens were awaiting the beginning of the formal inspection the Keene American Legion Drum Corps gave a special program of selected numbers.

About the time that the first-aid demonstration was scheduled, there was an unexpected gunshot from one corner of the drill hall. Out came the first-aid squad to stage its demonstration. This was done in a highly efficient manner. Someone asked, why the squad did not administer to the woman who fainted instead of the planted "victim" who underwent treatment.

After an excellent demonstration of machine-gun operation, during which four machine guns were field-stripped by blindfolded members of the battery, Sergeant John Cantlin was blindfolded and, under the glow of a spotlight in a darkened room, he field-stripped a gun, disassembled the various mechanisms, placed the parts in a box; an assistant shook up the contents and the sergeant, still blindfolded, located each part, placed it into position and snapped the trigger to the plaudits of an appreciative audience. It was "different" and highly efficient in every respect.

Finally let us look into the inspection of Battery "H." Captain Frank T. Ripley, commanding this unit, was holding his first armory inspection in the brand new Franklin Armory. While very proud of his new home, the captain did not rely upon that to furnish the thrill of his inspection, but he produced a machine-gun feature which promises much toward improvement of indoor instruction for machine-gun personnel.

Perhaps this should be the subject of a special article in the JOURNAL but as a climax to this story, let us introduce the "Ripley Water-operated Machine-gun Trainer." This "brain child" of Captain Ripley does more to improve machine-gun marksmanship indoors than any device I know of. It was "sprung" as the surprise of his armory inspection.

Figure 3 shows the construction of this gun. A standard Browning .30 caliber machine gun is set up and a surveyed barrel is fitted with the special tubing. Water is served into this tube through a control cock, by way of a water-tight connection. A very small opening in the outer end of the special tube, forms the nozzle for a small stream of water introduced into the gun at 110 pounds pressure. The stream remains concentrated for about 35

to 40 feet (indoors) at greater distances it begins to disintegrate into a spray. A trigger arrangement is used to start the water "firing" from the gun.

The photographs shown were taken out of doors to get better light, but the demonstration was given in the basement of the armory, on a specially prepared "range."

Captain Ripley explained that there has long been a search for a method of teaching machine gunners to take proper "leads" and to control "tracer fire." His water gun, he claims, very closely simulates actual machine-gun fire. By having a miniature target towed rather rapidly across the firing field of the indoor range, he teaches the men to take "leads" which will cause the initial water jet to strike near the target. He uses a miniature "sleeve" target to simulate target practice conditions as closely as possible.

After the "firing" begins, the speed with which the target is towed causes the water column from the gun to have the same "cut-back" as the tracer trajectory of the actual machine-gun fire. It is easy then to instruct gunners how and where to place their fire into the sleeve, and, says Captain Ripley, to know that they know where to place their fire.

By shifting the position of the gun with respect to the towed aerial "sleeve," training against the approaching or "zero" targets may be obtained. Diagonal courses likewise may be obtained by shifting the position of the gun.

After individual training on a single gun until he is satisfied with the proficiency of his gunners, Captain Ripley is going to produce a "platoon" of two or three guns to instruct them in the art of following their own tracers through the fire of other visible trajectories. Entire classes of gunners use the water gun to study the characteristics of an actual trajectory, the effects of range on

(Continued on page 237)



FIGURE 3—Ripley Water-Operated Machine-Gun Trainer

NEWS AND COMMENT

Coast Artillery Association Opposes Proposed Legislation

A BILL now pending before the Military Affairs Committee of the House of Representatives known as H.R. 4351 provides: "That the Secretary of War shall cause to be prepared an Air Corps promotion list on which shall be placed the names of all officers of the Air Corps of the Regular Army below the grade of colonel. The names on this list shall be arranged in the same relative order that they now have on the Army promotion list and shall be removed from the Army promotion list, and no officer whose name appears on the Original Air Corps promotion list shall be considered as having less commissioned service than any officer whose name is below his on this list."

* * *

"Air Corps flying officers shall be promoted to the grade of first lieutenant when credited with three years' commissioned service; to the grade of captain when credited with seven years' commissioned service; to the grade of major when credited with twelve years' commissioned service; to the grade of lieutenant colonel when credited with twenty years' commissioned service; to the grade of colonel when credited with twenty-six years' commissioned service. All flying officers of the Air Corps below the grade of colonel shall be promoted in the order of their standing on the Air Corps promotion lists."

If the proposed legislation is enacted into law thousands of officers of the other arms and services will be "jumped over" by Air Corps officers now many years junior in rank. This is in effect class legislation for the benefit of a few at the expense of many. The single promotion list has demonstrated its value over a period of many years. Its soundness and justice is beyond question. Special legislation of this nature merits the condemnation of all those more interested in the welfare of the Army and our system of National Defense than they are in preferential treatment for a few whose claim is not based on the bedrock of equity and justice.

All officers whose initial commission was of the war period or a prior date will recall the evils growing out of a separate promotion list for each arm; and the petty jealousies, and animosities engendered. Under that system there was a pronounced absence of unity of purpose and concert of action. Each arm considered its own interest paramount, and in an attempt to obtain preferential treatment totally ignored the rights and interest of others; thus bringing about discord in place of harmony, jealousy in place of friendship. The interest of the *Army*

was emasculated to make it the interest of the *Arm*. Progress was retarded. Mistrust was the father of the Ethiopian assumed to be hiding in any proposed legislation. These conditions changed with the passage of the law creating a single promotion list—and now an important arm of the service proposes a reversion to a condition admittedly bad. The worst aspect of the situation is the fact that this proposal apparently stands a good chance of becoming an accomplished fact unless the personnel of the other arms initiate positive measures to strangle the unwanted child in infancy.

By a majority vote the Executive Council of the Coast Artillery Association has adopted the following resolution:

WHEREAS, Information has come to the attention of the Executive Council, United States Coast Artillery Association, indicating that legislation now before the Military Affairs Committee contemplates the enactment of a law providing for the permanent promotion of a large number of officers of the Air Corps, U. S. Army, ahead of their turn as now prescribed by law, and

WHEREAS, The proposed legislation would adversely and detrimentally affect the other promotion list officers of the Army in that they would be permanently passed over by a large number of officers many years junior in rank, and

WHEREAS, Any system which advances a group of junior officers (below the grade of Brigadier General) over a group of seniors inflicts a serious penalty upon the latter by reducing them to a subordinate position in rank, precedence, perquisites and prerogatives, thus giving preferential consideration to a few at the expense of many, and

WHEREAS, The Executive Council of the Coast Artillery Association believing that a grave and serious injustice to all Coast Artillery officers would result, desires to enter a protest against the enactment of this legislation, and

Therefore, *Be it Resolved*, That the Executive Council of the Coast Artillery Association use all proper means to bring the injustice of the proposed legislation and the grievous possibility confronting the officers of the Regular Army to the attention of the members of the Military Affairs Committee of the Congress; and to urge that the members of the Association enter a protest against the enactment of the proposed law.

Copies of this resolution will be transmitted to the Chairman of the Military Affairs Committee of the Congress and furnished to the President of each chapter of the Association.

Done in the City of Washington, this 6th day of May, 1935.

Late reports indicate that the local chapters are cooperating magnificently in bringing the injustice of the proposed legislation to the attention of the proper authorities, and a favorable outcome is anticipated.

The United States Coast Artillery Association



Know all Men by These Presents

Whereas the following members of the U. S. Coast Artillery Association

Having duly Applied for the Grant of a Charter for a Local Chapter to be known as

U. S. Coast Artillery Association

Do It known that such Charter is this day granted as provided by its Constitution. It shall be the purpose of this Chapter to promote in every way the Objects and Purposes

Coast Artillery Association

This Chapter and its members shall observe all the duties and requirements and enjoy the rights and privileges which are now or may hereafter be demanded or accorded by the provisions of the Constitution and By Laws of the Association

This Charter Shall Be Perpetual

Issued at Washington, D.C. This Day of 19__

President

Secretary

Reduced Facsimile of Charter for Local Chapters

Charters for Local Chapters

FOR a long time it has been felt that the National Chapter of the United States Coast Artillery Association should issue a charter so that the local chapters would have credentials to show that they have been organized in accordance with the constitution and duly recognized by the parent organization. Finally a charter has been evolved; it is a work of art (15" x 18") suitable for framing.

There has been renewed activity in the organization of chapters and the list shows a healthy growth. There yet remains a number of metropolitan areas where a sufficient number of Coast Artillery officers are located to warrant the organization of a chapter. Who will be the next?

Another Plan

By Major William N. Drew, C.A.-Res.

IN the "News and Comment" for January-February, 1935, some ideas are expressed relating to the Coast Artillery Association Trophy awarded to a Reserve Regiment. As the executive of a regiment which placed in the 1934 race, these remarks are interesting, and induce me to set forth some thought regarding the basis of the contest.

It is my understanding that this is an annual contest to determine which unit produced the greatest average number of credit hours per officer. This is a perfectly fair contest, like a number of others which might be devised, and doubtless is contributing its quota to the cause. So far as I can see, there is no reason to make any changes in the rules if it is desired to continue this particular contest; but the contest itself and the idea behind it are two different things.

The various suggestions, criticisms and recommendations apparently have been made upon the assumption that the contest is attempting to "prove something" and that this "something" is in the nature of an efficiency rating for each unit.

It may be possible that such a thought was originally in the minds of those who outlined the present contest; if so, they have not achieved their objective, because it is obvious that the results give no true picture of the relative "efficiency" standing of units.

Assuming that it is desired to evolve some reasonable way of showing the relative efficiency of officers, and consequently of their units, I shall endeavor to show why the present method fails to do this and then elucidate a plan to reach the desired objective.

The outstanding defect of the present scheme is the

fresh start at the beginning of each school year. All past credits are wiped out and all start from scratch. It is obvious, for example, that a unit with all officers holding a certificate of capacity at the end of the year is still a 100% outfit at the beginning of the next school year, provided no new officers have been assigned or no promotions have been made. After all, the efficiency on M-day depends upon the cumulative work of the unit in years past and not solely upon that of the year, or month, immediately preceding.

It is my belief that sub-course hours as a measure of accomplishment is fair, easy to obtain, and properly interpreted represents perhaps 75% of the duty ability of an individual Reserve Officer, but not necessarily of a unit, because there are many factors beyond control of the unit commander, such as: number of officers available, balance among grades, facilities for unit schools or exercises, etc., all of which will be reflected on M-day. These are the imponderables which must be set aside in order to establish a mathematical relation between the various units.

My solution of the problem is:

1. Establish a monthly cumulative ratio scale for rating individual officers.
2. Average the individual ratings to obtain the unit rating.

The principle of the cumulative ratio scale is the relation between the ratio of the total hours of credit actually obtained to those required, up to and including present grade; and the ratio of months of total service to months of total service required, to and including present grade. The hours of credit include time computed as explained later.

This method may be illustrated as follows:

A first lieutenant with ten months service in grade had done 36 months as a second lieutenant, so his total service is 46 months, but as a first lieutenant it must reach a total of 84. He has done, say, 130 hours of work as a second lieutenant and 20 hours as a first lieutenant, but must do a total of, say, 270 hours while a first lieutenant in order to be promoted. His cumulative hour credit is then 130 plus 20 or 150, but since he must have 270 his hour ratio is $150/270$ or .556 and his monthly service ratio is $46/84$ or .546, consequently his ratio scale is $.556/.546$ or 101.85%.

From this relation it is obvious that additional courses must be completed with the passage of time in order to maintain a definite ratio scale while holding a given rank.

The use of this ratio as a rating scale necessitates that:

1. Officers promoted under requirements now in effect be given credit automatically for all subcourse hours required in grades lower than one now held.
2. Officers not promoted at end of required time in grade be penalized by the formula only if non-promotion is due to lack of subcourse hours, and not to lack of vacancies. Constructive credit should be given in appropriate cases so the officer will maintain his rating without completing more subcourses.

What the ratio does:

1. Gives a fair and comparable, within grade, picture of each officer's attainments.
2. Furnishes an incentive to be a consistent worker in order to maintain a given rating, since the value of completed subcourses diminishes monthly.
3. Prevents an officer, and a unit, from dropping to a zero rating after reaching a good standing.
4. By giving one-half time credit for courses in grades two ranks higher than that now held, for repeat courses and courses in other arms, the influence of "shooting stars" will be held down to a considerable extent.

The ratio does not:

1. Make it sufficiently difficult for a few hard workers to carry the others in a unit contest.
2. Provide definitely for zero value of a completed subcourse at the end of five years, although the value is greatly diminished.

It is believed that the above plan will more nearly show the efficiency of a unit than does the present one.

/ / /

Credit Hours for Trophies

THE JOURNAL "caught a tartar" when it opened up the question of changing the basis of award for the Association trophy to a Coast Artillery reserve regiment. Although many hours have been devoted to study of the proposed plans, to date the result can be succinctly expressed in the one word "nothing," but we have not given up hope. Several months ago the troublesome question was turned over to a board of officers to see if a plan satisfactory to all concerned could be devised.

The original question propounded by the unit instructor of one reserve regiment was whether or not credit hours accumulated by pursuing courses other than those prescribed for the Coast Artillery could be counted. This question had not arisen previously for the simple reason that there were plenty of Coast Artillery courses available to keep everyone busy. Closely allied to this was the question of counting credit hours in determining the individual trophy winner in each Corps Area.

These questions have been before the Executive Council of the Association for some months. This august body has decided to authorize the inclusion of credit hours earned in any extension school course or sub-course in determining the winner of the individual trophy. At the same time the Council does not consider it advisable to authorize the inclusion of credit hours earned in courses other than those prescribed by War Department regulations for the Coast Artillery Corps in determining the winner of the regimental trophy. This question will remain in the status quo for the present fiscal year. It has not been definitely closed; it may be that the board will have some constructive proposal which can be put into effect for the training year ending June 30, 1936.

The Journal Cannot Exist Without Cooperation of all Coast Artillery Officers*

RECENTLY we received a letter from a Coast Artillery officer that so poignantly expresses some of the conditions with reference to the production of the JOURNAL that we are constrained to publish extracts therefrom, that others may be more fully informed and so better understand the situation.

West Point, New York,
March 30, 1935.

Dear Sir:

Inclosed herewith is my check for three dollars for one year's subscription to the JOURNAL beginning with the next issue.

There is no adequate reason for this very long delay in making my renewal, but I believe that you are entitled to some explanation in order that you may be assured that the delay was not due to any dissatisfaction on my part. Personal inertia and a copy of the JOURNAL always available in the local library are chiefly responsible for this late renewal.

Your very excellent follow-up letter brought home the fact that *the JOURNAL cannot exist without the coöperation of all the Coast Artillery officers in the Regular Army.** We often think that the problems involved in its publication are the specific responsibility of the officer detailed as the Editor. This is partly due to the fact that we are so much concerned with our own immediate problems we fail to realize that after all it is our own publication—published for our information and benefit.

* * *

Sincerely yours,

First Lieutenant, C.A.C.

* Italics supplied.

There are two thoughts expressed in the above letter which are worthy of more than passing notice:

- a. "The JOURNAL cannot exist without the coöperation of all Coast Artillery officers." The JOURNAL is not a private enterprise of the Editor or of any other officer or of any group of officers. It belongs to the Corps. It is administered by an Executive Council duly elected by the Corps. The Editor has a dual function—to collect and arrange material to fill its pages, and (of equal importance) that of business manager. He functions under the Chief of Coast Artillery and his duty is to carry out the instructions of the Executive Council.
- b. "A copy of the JOURNAL is always available in the local library." From many different sources it has been brought to our attention that a large number of officers fail to subscribe to the JOURNAL because there is a copy in the local library or the battery day-room and therefore available to them. This is a human trait. It is easily understood and fully appreciated, but suppose that each regular Coast Artilleryman took the same attitude. Well, just suppose.

Cleveland Chapter

THE newly formed Cleveland Chapter of the United States Coast Artillery Association held its first social meeting on Monday, March 4. This dinner was in honor of Lieutenant Colonel M. A. Cross, the recently assigned executive officer of reserve affairs for the Cleveland District and the Unit Instructor of the 511th C.A. (AA). Following the dinner there was a short period of instruction on the composition of orders. Major Morris Bradley acted as the instructor. Following this Colonel T. A. Ryan introduced Colonel Cross who gave a very interesting talk on "Coast Artillery—Past and Present." After this the meeting was turned into an open forum where plans were discussed for building up greater *esprit de corps* and interest in reserve affairs. All those present were in thorough accord with the objective, and it is anticipated that enthusiasm and interest will show a marked increase.

† † †

Coast Artillery Edition of The Soldier's Handbook

THE COAST ARTILLERY JOURNAL recently has brought out its own edition of the *Soldier's Handbook*, prepared in part especially for the basic training and instruction of the Coast Artillery soldier. This book contains a wealth of information that all soldiers should know. In addition to the special training required of artillery personnel it is necessary that they be thoroughly instructed in the basic training common to all arms. The book supplies the information in concise language. It will be of great value to the old soldier and of even greater value to the recruit.

† † †

A Boost

IT is always more agreeable to receive boosts than kicks. It is a perfectly natural human trait to accept conditions as being normal when things go well without giving consideration to the fact that some one has devoted a lot of time, energy and effort to "make them go well." At intervals there comes to the editorial desk an unsolicited boost! These are always pleasing and cause a ray of sunshine to penetrate the dark clouds; they may not be entirely merited but we are vain enough to believe that the sender is sincere, therefore, they are most gratefully received. Their number is not few but occasionally one of more than passing interest emerges from the throng. Just as we were ready to go to press the following was received from an officer residing in the great State of Kansas. From this letter we take the liberty of quoting the following:

"Inclosed you will find my check for \$3.00 in payment for my subscription for another year. I greatly enjoy the JOURNAL and look forward to its arrival. How any Reserve or Regular officer would be without it is beyond my comprehension but unfortunately everyone does not share this viewpoint."

Sincerely yours,

First Lieutenant, CA-Res.

"To See Ourselves As Others See Us"

"ANONYMOUS"

AUTHOR'S NOTE: This article is based solely on personal observation, which is, of course, limited. However, the observations upon which it is based were made during a sufficiently long period at a number of different posts to cause the writer to believe that they were not unusual and represent the general practice.

DURING the past few years all officers commissioned in the line branches of the Regular Army have been graduates of the Military Academy. When a cadet is graduated and commissioned in the Army he is usually overflowing with high ideals and ambition. The exceptions are rare. The newly commissioned second lieutenant has a spirit that if properly fostered will be of great value to the service. He has an honest respect for properly constituted authority and his military superiors. He is imbued with the value of proper appearance. He is proud of his uniform, himself, and the Army. His branch, regiment, and company, battery or troop, becomes his, and he will defend them against all criticism. His work is his chief joy. He anticipates accomplishing things and reports to his first organization commander ready to work with a will. His uniform is correct and neat, his carriage good, and his attitude and manner toward his superior officers are proper and respectful. The colonel awes him.

Those of you who have read this far have probably thought or said "Baloney." It is true that you may not have noticed that any new second lieutenant displayed all these fine qualities, but that is because they usually lose them with startling rapidity. The reason they lose them? Read on.

When the new subaltern reports he will usually be greeted by his older fellow officers either with condescension that makes him feel insignificant, unwanted, and already at fault, or with a great display of hearty good fellowship that causes him to be forward and bold.

The organization commander then may give him a lecture to thoroughly convince him that he knows nothing and will do everything wrong. Or, more probably, the captain will tell him what his duties are and that he expects him to perform them without interference, calling on the organization commander for such assistance and advice as he needs. But does the captain wait to be called? Usually no. He dogs the lieutenant's steps, popping in just as he is to start something or give an order, with, "No, that is not the way I want it done. Do it this way."

The new lieutenant will find some of the older officers wearing non-regulation articles of uniform, some with unpolished and unmatched leather, and some with worn or soiled uniforms. There will be officers with rusty sabers, run-down heels, and battered caps to set him an example. These same officers will tell him, supposedly as good advice, that he should get inexpensive uniforms to wear around the post. His pride in his appearance is gone. Or he may be told that his leather is too light, or too dark, or too red, or too brown, and that he will get leather

of a certain color, which is probably a color a good leather worker never uses. His expensive leather equipment, selected with much care, is forthwith coated with a stain that permanently ruins it. (One thing the lieutenant has not yet learned is that no matter what color leather he gets, sooner or later it will prove to be the wrong color.)

The next shove on his downward slide is in the form of criticism of the Army made by his military superiors. "Griping," some call it; and they say that griping is part of a soldier's life and that it hurts no one. But it does hurt the new officer to hear those of experience criticize everything from the National Defense Act to the firing of a gun at reveille. The new lieutenant begins to feel that he—along with varying numbers of other officers, depending upon to whom he has been listening—is abused, mistreated, the subject of unfair discrimination, and that he has chosen a very discouraging profession. He hears that many of the senior officers should have been "Class B-ed" long ago—that they know very little about anything and should not try to tell a battery commander how to run a battery. While he may still feel, and will, of course, show respect to his superior officers, he has discovered that they have feet of clay and have tumbled from the pedestals on which he viewed them.

A battery commander often makes his new lieutenant a party to cut-throat competition. The lieutenant will be instructed to give inspectors certain answers to their questions, knowing that the answers are evasive, if not something worse. His sense of fair play has taken an uppercut.

If the new lieutenant is a bachelor he will find himself rarely asked to private social affairs. He must seek his diversion off the post and his dream of a pleasant social life along with his career has faded.

Does any seasoned officer take the lieutenant aside and point out the errors to be avoided, or caution him of mistakes young officers sometimes make, resulting in embarrassment? No, his fellow officers either ignore him or sit back quietly waiting for him to blunder so that he will be "corrected" as well as ridiculed. If advice is given it is usually given in such a condescending manner that the lieutenant will avoid asking for any more.

This is not the writing of one who considers himself abused or mistreated. I have seen so many promising new officers lose their spirit and ambition soon after reporting to their first stations that I hope by bringing some of the causes to the attention of those responsible so that some of the losses to the Army may be avoided.

The officers responsible are not only the battery officers with whom the lieutenant is in most intimate contact. I know of one second lieutenant who, after several years of service and devoted study, decided that some improvements to the matériel were necessary. He voluntarily used his own time and funds to work out the plans for the improvements he considered desirable and then forwarded his plans to the proper authorities. Twice he did that and neither time did he receive even acknowledgment of his letters. He will probably never again voluntarily submit

a suggestion. Even though the projects did not merit consideration, if this lieutenant had received letters saying that his suggestions had been received, and thanking him for the interest shown in his branch and its work, he would have spent many years working overtime to develop other gadgets, and very probably would have made some valuable suggestions during his career.

If the officers upon whom the new lieutenants depend for advice, example, and instruction, avoid making the mistakes pointed out above, they will find, in most cases, that the young officers are conscientious, loyal, and willing to work. Remember that the new lieutenant is your pupil, fellow officer, and social equal, and treat him accordingly. Encourage him in his regular work, study, and voluntary efforts of assistance to the service. Be a model of conduct both at work and in social intercourse. Be an example of soldierliness. Correct him when he needs correction. Let him know that he is an important part of his organization. Do not baby him. Let him know that he can go to you for advice and that you will give it sincerely and in confidence. Treat him the way you would want to be treated (not the way you were treated when you were a second lieutenant). If the older officers fail in these things they are not playing the game with the young lieutenant, the Army, or the Government for whom they are working.

EDITOR'S NOTE: It is contrary to the policy of the JOURNAL to publish anonymous communications, however, we have deviated from the policy in this instance. Undoubtedly some of the newly commissioned second lieutenants have a grievance. Whether or not it is justified is outside of the question. Perhaps the other side could stand a little publicity. It might not be amiss for some officer of experience to give his impressions of the newly commissioned officers. A little introspection may have a salutary effect. We will not publish any more anonymous communications on this subject. Use a nom de plume if you so desire.

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St. Louis Chapter Organized

THE Coast Artillery officers residing in St. Louis and vicinity are to be congratulated for their initiative and interest in organizing a St. Louis chapter of the Association. These chapters serve a most useful purpose in furthering the object and purposes of the National Association, without them the Association would soon become a colorless, lifeless, innocuous organization totally devoid of substance. By putting out new off-shoots the power and prestige of the parent organization will be enhanced and it will be in a better position to function efficiently and effectively in the consummation of its projects.

It is hoped that the Coast Artillery officers residing in metropolitan areas, where a sufficient number conveniently can be assembled, will follow the path already well marked by others and that we may soon be able to report the formation of additional chapters.

The first meeting of the chapter was held in St. Louis in March. At this meeting a constitution and by-laws was adopted. To Lieutenant Colonel Robert P. Glassburn belongs much of the credit for the preliminary work

and the formation of the plans which resulted in the birth of a new chapter. The following list shows the charter members who were present at the initial meeting:

President, Lt. Col. Robert P. Glassburn, C.A.C.

Vice President, Major A. D. Chipman, C.A.C.

Secretary-Treasurer, Captain Elmer H. Oechsle, C.A.-Res.

Major Hoyt C. Stevens, CA-Res.

Captain Julius H. Mincke, CA-Res.

Captain Victor H. Wilder, CA-Res.

Captain Gay E. Miller, CA-Res.

1st Lt. Roy Brackman, CA-Res.

1st Lt. Arthur E. Huff, CA-Res.

1st Lt. Earl E. Kriegeman, CA-Res.

1st Lt. John C. Cox, CA-Res.

1st Lt. Benjamin J. Kab, CA-Res.

1st Lt. John R. Buss, CA-Res.

1st Lt. Harry J. Summer, Dent-Res.

1st Lt. Bernard C. Luebkert, CA-Res.

1st Lt. Francis C. Allein, CA-Res.

1st Lt. Jack D. Frisby, CA-Res.

1st Lt. Clarence J. Lundblad, CA-Res.

1st Lt. John H. Hall, CA-Res.

1st Lt. Richard L. Lodge, CA-Res.

2d Lt. Charles W. Conrad, CA-Res.

2d Lt. Ray T. Adolphson, CA-Res.

2d Lt. Walter Wulkuchler, CA-Res.

2d Lt. Milton J. Wiegand, CA-Res.

2d Lt. Leon B. Scherrer, CA-Res.

2d Lt. Ashton E. Glick, CA-Res.

2d Lt. Bert L. Beal, Jr., CA-Res.

2d Lt. John F. Williams, CA-Res.

2d Lt. Paul E. Grivet, CA-Res.

2d Lt. Frank R. Singer, Jr., CA-Res.

2d Lt. Wm. C. B. Luebkert, CA-Res.

2d Lt. Irving J. Corn, CA-Res.

2d Lt. David M. Parker, Jr., CA-Res.

2d Lt. Wm. G. Raith, CA-Res.

2d Lt. Arthur Traber, CA-Res.

2d Lt. Leonard C. Jacobs, CA-Res.

2d Lt. Roger C. Smith, CA-Res.

↑ ↑ ↑

Doings of the New York Coast Artillery Brigade

BRIGADIER GENERAL JOHN J. BYRNE, *Commanding*

LIFE is full of surprises but the New York Coast Artillery Brigade was not prepared for one which came like a bolt from the blue. For some unknown reason there has been a decided change in the training directive for the coming year and the regiments have placed in temporary storage the guns and instruments so near and dear to the hearts of all Coast Artillerymen and are now devoting all of their energies to becoming proficient in the use of the rifle. This year the entire brigade will undergo their field training at Camp Smith, Peekskill, New York. This training will include all of the activities normally performed by Infantry including rifle marks-

manship. Each battery is devoting itself assiduously to this training with the object of qualifying each man as a marksman or some higher rating. This is another example of the versatility of the Coast Artillery Corps. Proficiency in any assigned task is the motto. We predict that the brigade will acquit itself magnificently in this new assignment.

On April 6th the Brigade participated in the Army Day Parade and made an excellent showing. The band was equipped with a new uniform including white cross belts, leggings, hat bands, and music pouches with brass buckles polished to the last degree. Many complimentary remarks were received on the fine appearance.

The Brigade also participated in the Memorial Day Parade on May 30th. Just another day's work for us but it helps to keep the Army before the public.

For the past four years the 245th C.A. (HD) has been fortunate in having as its instructor Lieutenant Colonel Oscar C. Warner who now leaves for service in the far off Philippines. The regiment has reached a high degree of training and efficiency under the tutelage of this popular officer. He was the guest of honor at a reception and dance held in the Officers' Club on the evening of May 11th, a well merited recognition of his valuable services. His devotion to duty and his knowledge of the problems of the Guard mark him as an outstanding officer. Colonel Warner leaves behind a host of friends who wish him bon voyage and good luck in his new assignment.

May 29th marked the retirement for age of a distinguished officer of the 245th CA (HD). On this date Lieutenant Colonel Robert P. Orr severed a life time of service in the Guard. It is rare that a man serves 45 years in any walk of life but it is little short of marvelous when he serves this length of time in one outfit. Colonel Orr entered the regiment as a private and served through all of the grades to his present rank. He is devoted to the Coast Artillery and we of the Corps can well salute the passing from active service of such a fine officer, scholar and gentleman.

On May 12th the 212th C.A. (AA) attended memorial services and a special mass in St. Patrick's Cathedral, honoring the anniversary of the departure of the regiment for the Spanish-American War, May 12, 1898. Services were conducted by the regimental chaplain, Major Sheridan.

The Headquarters and Combat Train, 2d Battalion of the 244th C.A. (The Russian Battery) held their 6th Anniversary Ball on Saturday, May 11th. Among the notables present were the Grand Duchess Marie of Russia and other distinguished guests from the New York National Guard.

San Francisco Chapter Very Active

UNDER the auspices of the 250th C.A. (TD) California National Guard, the San Francisco Chapter held a "bang-up" meeting on May 1 with a total attendance of 103 members. Dinner was served in the officers'

mess of the 250th, during which Colonel R. E. Mittelstaedt welcomed the guests and extended the hospitality and courtesies of the Guard.

Following the dinner the meeting was called to order by the President, Colonel C. J. Mund, for the transaction of business. A committee on nominations reported the following slate for the ensuing year:

For President—Colonel H. E. Cloke.

For Vice-President—Major W. W. Breite.

For Secretary-Treasurer—First Lieutenant M. G. Mauer.

For Directors—Colonel C. J. Mund, Major J. D. McMullen, and Captain O. G. Kuklinski.

A committee headed by Lieutenant Colonel Albert Loustalot was appointed to determine a suitable trophy for which all components of the Army could compete on an equal basis.

Colonel Cloke was next called upon to address the meeting. He discussed the country's needs from a preparedness standpoint and emphasized the lack of anti-aircraft artillery; also he dwelt at some length upon the importance of the Harbor Defenses of San Francisco as a part of our system of defense.

Lieutenant M. L. Harding, Air Corps, 9th Bombardment Squadron, was the guest speaker of the evening, his subject being "Coöperation of the Air Corps with the Coast Artillery." This discussion proved most interesting and greatly assisted in a better understanding of the problems of the Air Corps and the Coast Artillery. Following this the meeting was thrown open to a general discussion from the floor; this proved to be both interesting and instructive. Subsequently the guests were invited to the armory target range where a demonstration was given of the .22 caliber training device developed by the 250th for training gun pointers on an indoor range. The evening's activities terminated with a parade and review in honor of Colonel Cloke.

Concerning Manuscripts

By courtesy *Infantry Journal*

REJECTING manuscripts is one of the most distasteful features of this interesting assignment. The authors are frequently friends and practically all are subscribers and loyal supporters. Some are senior officers under whom we may some day serve. Others are young officers with ideas and evidence of literary talent who ought to be encouraged to write. Others, equally ambitious but with less facile pens, should probably be dissuaded from wasting their time in an effort to break into print. In any event the writing of a letter of rejection strains both the vocabulary and the diplomacy of the editor. Perhaps we might solve our troubles by using a rejection slip attributed by *Esquire* to a Chinese editor:

"The quality of your manuscript is so high that were we to print it in our magazine we would thereby make the rest of our contents seem utterly ridiculous. Rather than jeopardize the very existence of our magazine by thus raising our standard to an unattainably high level, we are returning your manuscript in a spirit that is not merely one of regret but rather one of wistfulness."

COAST ARTILLERY ACTIVITIES

Office of Chief of Coast Artillery

Chief of Coast Artillery
MAJOR GENERAL HARRY L. STEELE

Executive
LIEUT. COL. HENRY T. BURGIN

Personnel Section
MAJOR R. T. PENDLETON

Organization and Training Section
LIEUT. COL. E. E. BENNETT
LIEUT. COL. F. P. HARDAWAY

Matériel and Finance Section
LIEUT. COL. R. E. HAINES
MAJOR O. L. SPILLER
MAJOR C. W. BUNDY

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

Panama Canal Department News Letter

Department Artillery Officer
COLONEL LEWIS TURTLE, C.A.C.

Fort Amador
COLONEL EARLE D'A. PEARCE
4th C.A. (AA).

Fort Sherman
COLONEL WILLIAM L. COLVIN,
1st C.A.

Fort Randolph
LIEUTENANT COLONEL JAMES S. DUSENBURY
1st C.A.

It is recorded that Julius Cæsar described one of his campaigns with the brief word "veni, vidi, vici," but he never fought "red bugs" in the jungles of Panama. Had he done so his description would doubtless have been more valuable.

The latest "war" started in February, with preparation for and conduct of tactical exercises in both the Atlantic and Pacific Sectors. During these exercises we became proficient in marching, camping, policing camps, digging latrines, and kitchen pits, and all the other things which "doughboys" should know. We learned the meaning of concealed bivouacs, and discovered the difference between march outposts and defensive positions. We even functioned as Coast Artillery during one phase of the field training.

These exercises covered the period from February 11 to 16, when after a day of rest for the troops and one for reconnaissance, the 4th C.A. (AA) marched to the Bruja Trail, and established a concealed camp. The principal diversion consisted of killing snakes and taking pictures. During the progress of making camp, air photos were taken which were most gratifying in that no presence of troops could be detected, indicating perfect concealment. Camp was broken at 1:30 P.M. and troops returned to Fort Amador.

On February 26 a review of the Pacific Sector troops was held at Fort Clayton honoring Major Generals Paul

B. Malone and Hugh Drum, who were passengers on the USAT *Republic*; also Major General Harold B. Fiske, the Department Commander, Major General Lytle Brown, the Atlantic Sector Commander, and Brigadier General Edward G. Shinkle, Assistant Chief of Ordnance, and Brigadier General J. A. Woodruff. Brigadier General Gulick issued a letter of commendation quoted in part as follows:

"The Department Commander and visiting General Officers have requested the Sector Commander to extend to the officers and enlisted men who participated in the review on February 26, 1935, their congratulations and commendations for the excellent appearance and marching of the command. The Sector Commander desires to express his appreciation for the excellent showing of the command after completing a period of intensive training in the field. In addition to the excellent appearance and marching, the large attendance was most gratifying."

On March 6 the concentration of all troops at Fort Clayton and Fort Amador in preparation for Department maneuvers commenced. A Provisional Coast Artillery Brigade, consisting of the 1st and 4th Coast Artillery under command of Brigadier General Gulick, moved onto the Amador parade ground and established what General Fiske designated as the most nearly perfect model camp he had ever observed. Since it was started a day early, and some tents were moved four times, it should have approached perfection. We even observed some officers



Battery "C," 4th C.A., Winner of Panama Canal Department Competition

parting their hair in the middle to complete the scheme of symmetry and beauty. While the Brigade was forming, a similar organization, designated as the Mobile Force, consisting of the 14th Infantry, 33rd Infantry, 1st Separate Chemical Company, 11th Engineers, and the 2d Field Artillery, under command of Major General Lytle Brown, was assembling in an equally model camp at Fort Clayton.

On March 7 and 8 the Coast Artillery Brigade participated in close order drills and road marches, while the four selected batteries for the Department Commander's Trophy competition continued to do their stuff for the judges. Sunday was devoted to recreation and a brigade review.

On Monday, March 11, the "war" actually started, when Harbor Defense units of the 1st and 4th Coast Artillery, under command of Colonel Pearce, moved out to man the various elements; and the antiaircraft units, under command of Colonel Colvin, established the AA defense of the Pacific entrance of the Canal. The Mobile Force left Fort Clayton the same day to repel a multi-colored force which was attempting to land in the vicinity of Chepo.

For the next ten days we were subjected to long-range bombardments, raiding parties, mine sweeping operations, and airplane raids at stated intervals in the eerie hours of the morning. During the day periods were devoted to drills, cleaning and painting of matériel, road marches and recreation. The training obtained by all was invaluable, particularly by command post and communications details. Errors in transmission of messages were reduced to a minimum, after one message containing the word "paravanes" had been sent to read "All enemy destroyers have paraffin."

The reports of Group Commanders produced many constructive criticisms which will be made the subject of future study. To quote an extract from one report—"The installation of a light hoisting device is highly desirable. A man really needs three arms to climb the ladder and

bring up charts, water, phones, etc." We have no three-armed men in the Coast Artillery Corps at present.

The only casualty recorded in the Coast Artillery "war" was the Brigade Surgeon, who stated that he had gone through several wars, but this was the first one he had attended that required using the elevator to get to the battlefield. Rumor had it that he fell down the elevator shaft, but investigation disclosed that he was struck in the knee by a falling bedding roll; this caused his incapacitation for further field exercises.

While the Coast Artillery Brigade was protecting the Canal, the Mobile Force marched 45 miles, drove the enemy into the sea, accumulated an eight-day supply of field rations (the iron variety), gas, oil and forage, and at 4:00 P.M., March 20, became the "enemy," and was literally cut off from all contact with home. At the same zero hour, the Coast Artillery Brigade received orders to proceed at once by marching and motor transportation to the vicinity of Pecora, and establish a defense against the "enemy." All troops were to be in position by 5:00 A.M., March 21.

Through the local press we had learned of the presence of red bugs, dust, and lack of water around Pecora, and that the situation was periodically alleviated and the ground made softer by occasional visits of beer trucks; but we still had only a vague idea of the horrors of war.

While the Brigade was assembling at Amador, regimental commanders made a hasty reconnaissance of the Pecora position. The 37-mile movement was started at 11:00 P.M. by the two thousand troops involved, and they were in position by daylight as ordered. Both regiments were temporarily converted into Infantry organizations, including machine-gun companies in each battalion. In this way, the Coast Artillery Bands were enabled to demonstrate that their normal musical training fitted them admirably for mastering the intricacies of Browning Machine Guns on Infantry mounts.

The "enemy" attacked four thousand strong on the 22nd, and by clever defenses on the part of the 1st Coast

Artillery and rapid movement of the reserves, both local and Brigade, from the 4th Coast Artillery (AA), the position was held until dark. While the attack was in progress, the Department Commander, assisted by his Staff acting as umpires, covered the entire front from outposts to reserve positions. By dark on March 22, the "blue" commander was advised that his defense had enabled hypothetical friendly forces to effect a withdrawal and he was ordered to move to a position between Albrook Field and Fort Clayton to protect the commissary at Corozal.

The troop movement again was made at night, between 11:00 P.M. and 7:00 A.M., by a combined march and truck movement. The drivers from the Pacific Motor Pool had averaged four hours sleep a day for the past five days, and the question arose in the minds of many as to whether they could drive throughout the night without falling asleep. However, they made three round trips of fifty miles each over dusty roads and delivered the Coast-Infantry safely at their destination. It is worthy of note that many units of the Coast Artillery Corps fought all day, marched to within four miles of the entrucking point, some even failing to contact their kitchens, others eating along the road before entrucking, then finished the night with a six-mile stroll over rough and hilly trails to their various bivouacs.

When the sun rose on the morning of the 23rd the 1st Coast Artillery were near Albrook Field and the 4th Coast Artillery (AA) near Fort Clayton. We hesitate to say whether or not they were in bivouac for most of them were beside the road or under the most convenient tree. A breakfast and hot coffee served to revive them and bivouacs were shortly improved and made liveable if not comfortable. In the afternoon and on the following day, Sunday, the troops were permitted the luxury of showers at Fort Clayton, and the relaxation of the beer gardens and movies at the adjacent posts. The morning was devoted to reconnaissance by all officers, and the afternoon to rest and brief visits to Fort Amador.

On Monday, March 25, organization of the defensive position was begun in earnest. Further organization of the Coast-Infantry regiments was made by using pack mules for the wire sections and by reducing the size of the machine-gun squads to enable the extra men to become Field Artillery, thus demonstrating the versatility of the Coast Artilleryman. The Ordnance Department kindly allotted 24 American 75's and some blank ammunition so that each battalion was supported by light artillery. During the day, intelligence of the "enemy" was received and orders were issued to occupy the defensive position by dark. Rations and water supply for the front line units again became a most interesting subject.

On Tuesday the "enemy" began to appear all along the front and indicated his presence by capturing men in the outpost positions and in turn losing prisoners. The first prisoners captured stated that they had been subsisting for the last three meals on hardtack and cheese. We thought of waving canned fruit labels in the face of the "enemy"

in hopes of causing a wholesale surrender, but the "cheese eaters" were well disciplined, although hungry, and continued as a real foe all during the afternoon of Tuesday and far into the night.

The main attack started shortly after dawn on Wednesday, as all proper attacks should, and continued until the Brigade reserves were committed to action and local reserves were being reconstructed, when the Department Commander ordered recall and terminated the exercises at 11:30 A.M. In the afternoon, wire was recovered, field pieces were turned in, the troops hiked to Amador and Clayton respectively and re-established the model camps which they had occupied at the start of the maneuvers. The next two days were spent in policing equipment, getting out best uniforms, and in close order "dry runs" for the Department Review.

This Review was held at Albrook Field on Saturday, March 30, and will probably be remembered, by all who participated, as a red letter event. Troops were massed in line approximately half a mile long, with all available men, animals and transportation present, with the Department Commander in command of the troops. Shortly before 10:00 A.M. the president of Panama, Dr. Harmodio Arias, was received with full honors. After the command was presented to the President, the winners of the Department Commander's Trophy contest, each represented by the organization commander and one noncommissioned officer, were marched to the reviewing stand and presented with silver cups.

The troops then passed in review with battalions in mass formation, followed by animal and motor elements, and finally the air corps units of the Department. Following the review all troops returned to camp for dinner, after which all Pacific Sector troops returned to barracks. Atlantic Sector troops entrained during the afternoon and the following morning for their home stations, and the 1935 Panama Canal Department maneuvers became history.

Reference has previously been made to the Department Commander's Trophy Competition. This is worthy of more than passing notice. During the latter part of February and the early part of March the organizations that had been selected to compete in the competition were besieged with swarms of checkers (each with a score sheet) who sought to discover and rate the innermost secrets of officers and men, and search the life history of equipment.

To Battery "C" of the 4th Coast Artillery, Captain Thomas R. Bartlett, Commanding, goes the honor of winning the coveted trophy for the Coast Artillery Corps, with a score of 373.4. The others batteries in order of standing are:

Second place—Battery I, 4th C.A.	353.4
Third place—Battery E, 1st C.A.	345.8
Fourth Place—Battery H, 1st C.A.	343.7

A most ingenious system of scoring was devised to determine the winning battery. One battery from each battalion of Coast Artillery in the Department was

chosen to compete. The units participating went through what amounted to "sub-caliber maneuver," coincident with the annual department maneuver. The competition was most exacting and thorough. Officers and men were fully aware that they had been given a most searching test to determine their proficiency. The factors included in the scoring formula and the credits attained by Battery "C," 4th C. A. are as follows:

Credits Attainable	Credits Attained	
100	70	1. Close order drill (including movements in double time.) a. Performance of drill. b. Appearance of men and equipment.
100	94	2. Road march—5 miles, half road, half trail. a. Protective measures against airplane attack. b. Pitch camp and cook meal.
100	88	3. Coast Artillery technique. a. Score attained in service practices in calendar year prior to test. b. Condition and appearance of Coast Artillery equipment. c. Proficiency in conducting Coast Artillery drills, with the type of armament with which equipped, and analysis of the drill.
100	96.4	4. Administration—number of: Deserters, venereals, summary courts-martial, special courts-martial, and general courts-martial. As shown by battery records for calendar year preceding the competition.
25 Points each	25	5. Athletics. a. Credit organization for winning a post championship in baseball or basketball.

2 Points each

b. Credit organization for each member of the organization who has won an individual first place in the Department track meet, swimming meet, or boxing tournament, in the previous calendar year.

Total 373.4

Component 1 looks easy—it wasn't.

Component 2 was a man-killer. Both thermometer and humidity were aligned against the troops. Battery "C" here creditably exhibited those qualities so necessary to any unit in this Department—the ability to march and "field soldier." The march was made without losses en-route and completed within 15 seconds of perfect time. Pitching camp and having a meal well along toward completion, within 45 minutes after arrival at the designated camp-site, were mere routine—after having done it previously, on sector maneuvers.

Component 3 had a joker attached in that the inspection of equipment was made early on the morning following the proficiency test drill with the searchlights.

Components 4 and 5 present problems with which all officers are familiar, and needs no further comment.

The trophy remains in custody of Battery "C" for a period of one year, at the end of which time it will be contested for again. If the spirit of the men remains at its present high level, there will be no necessity for removing it from the trophy case in the battery day room.

Corregidor News Letter

BRIGADIER GENERAL CHARLES E. KILBOURNE, *Commanding*
COLONEL WILLIAM S. BOWEN, C.A.C., *Executive*

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

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

THE last news letter told of the departure of Brigadier General and Mrs. Embick. This one chronicles the arrival of the new Harbor Defense Commander, Brigadier General C. E. Kilbourne, and Mrs. Kilbourne, who return for their fourth tour of duty in the Islands after an absence of a little less than three years. In 1899 Lieutenant Kilbourne served with great distinction with the Army engaged in putting down the insurrection, and for conspicuous bravery beyond the call of duty at Paco Bridge won the Congressional Medal of Honor. In 1907 Captain Kilbourne came, with his company, to the almost virgin island of Corregidor, where he supervised the construction of the emplacement and the installation of the first major caliber gun of the defenses. General Kilbourne served as Commanding General of the Harbor Defenses and in 1935 he returns to again command the post he knows and loves so well. There is probably no one who has a more intimate familiarity with each station, battery, trail, and building, on the fortified islands guarding Manila Bay. To General Kilbourne it must be more like a home-coming than another tour of foreign service.

With the garrison approaching its normal strength after the personnel flurries that resulted from the two-year law, the number of officers arriving on the last transport was less than that of any previous trip for several years. Of the newcomers Captain P. F. Beihl, who left his family in San Francisco to follow him at the end of the school year, has taken command of Fort Drum. Captain M. B. Gibson is Police and Prison Officer, First Lieutenant R. H. Kreuter is Aide-de-Camp to General Kilbourne, and First Lieutenant T. B. White has assumed command of Headquarters Battery, 60th C.A. (AA).

The same transport took away many of the old datum points, almost the last remnants of the three-year tour. Lieutenant Colonel C. D. Pierce goes to Organized Reserve duty at Minneapolis, Captain J. B. Muir to Fort Worden, Captain E. B. McCarthy to Fort Scott, and Captain W. F. Putnam to Fort Hancock. Captain F. H. Hastings was ordered to Fort Monroe, but his small son became quite ill at the last minute, and at 1:00 A.M. on the day the transport was to sail he received a War Department radiogram authorizing a delay.

The past two weeks have been occupied with the 1935

War Condition Period. All firing batteries have been in their war-time camps, and the cooperation of the United States Navy and the Air Corps has made the period interesting and realistic. These exercises mark the end of a practically continuous training season that started in the rains of last September. Since that time the troops have been constantly engaged in a succession of seacoast, beach defense, antiaircraft gun, machine gun, and small arms firings. The demands on troops and officers have been heavy, but the intensive training has borne fine fruit in the quality of the target practices.

For the 1935 season the 60th started off the show with nine consistently fine antiaircraft gun practices. The three batteries, commanded by Captains Bowler and Hastings and Lieutenant Kyser, received an average score of over 92 for the practices, the highest being 112 and the lowest 69. This year an increased number of seacoast batteries fired at the high-speed target described in the JOURNAL a few issues ago. Through the courtesy of the Commander-in-Chief, Asiatic Fleet, destroyers for towing were made available for preliminary training and for the service firings, giving a target speed of 22 knots. Three 12-inch, two 6-inch, one 3-inch, and one 155-mm. batteries participated in these practices. The full computations of scores have not been completed, but it can be announced that according to figures already scrutinized by skeptics Battery "A," 92d C.A. (PS), First Lieutenant G. F. Pierce, commanding, made the astounding score of 313. Of this score 109 points constitute the bonus for the speed of the target; if the speed had been 10 knots or less the score would still have been over 200. This practice is made even more unusual in that it was fired at a 3-inch battery by troops whose normal duty is truck, tractor, and motorcycle driving.

This score somewhat obscures another really remarkable practice fired by Battery "B," 59th C.A., First Lieutenant O. T. Forman, commanding, at a 12-inch battery with a score of 217. The speed bonus amounted to 68 points, still leaving a tidy 149 if the high speed of the target is neglected. Batteries "A" and "F," 59th C.A., "B" and "G," 91st C.A. (PS), and "B," 92d C.A. (PS), all made scores of between 150 and 200, and with possibly one exception, all had scores above 100 without the speed bonus. The uniform excellence of the high-speed practices speaks convincingly for the training of the organizations; it also shows that our systems of fire control are sound and that with proper training high speeds present no great problems. (Incidentally the bonus for high target speeds now in the score probably is too great.)

The problem of adjustment of fire in direction, which has caused much trouble in previous high-speed firings, apparently has been solved. In more than one of these practices no lateral deviation of greater than one mil was observed.

Of the practices fired at the normal target, those fired from 12-inch mortars by Battery "G," 59th C.A., Lieutenant Raymond S. Stone commanding, and Battery "C,"

91st C.A. (PS), Captain Wm. R. Maris commanding, were unusually good with scores of well over 100 each. Battery "C," 92d C.A. (PS), Captain William Hesketh commanding, fired a very spectacular night practice with its 155-mm. guns. The firing of the 14-inch turret guns at Fort Drum by Battery "E," 59th C.A., Lieutenant R. E. Bates commanding, also ended in the "Excellent" column.

With the end of intensive training and the coming of the hot season (summer only in the Manila papers) the exodus to China and to Baguio has begun. Peiping is over half as far from Manila as Paris is from New York, but this journey is undertaken very lightly. Passage often can be made on Army or Navy transports and steamship fares are much lower than similar prices on the Atlantic. With the depreciated currency, living is quite cheap in Japan and China; and except for the things you buy, the expense is almost the same as staying at home. As for Baguio, not even the greatest proponents of Panama and Hawaii can point with pride to so pleasant a vacation spot, or one half so accessible. Located at an altitude of about 5,000 feet, with a climate similar to that of the Maine lake country in July, it is but a few hours from Manila by automobile or air-conditioned train. By day the thermometer rarely exceeds 70°F, while the nights demand open fires and blankets. There is an 18-hole golf course, tennis, mountains to climb, bridge, poker, and the Army and Navy Club Annex just off the post for those who take their exercise more philosophically. Camp John Hay is an army post, but at this season its principal duty is in entertaining the guests, who live in the dormitory or the many wooden cottages and eat in a large central dining room. The detached service does not count against leave.

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Harbor Defenses of Los Angeles

LT. COL. H. R. OLDFIELD, *Commanding*

By Lieutenant E. C. Smallwood, C.A.C.

RECENT months have been filled with feverish activity for the 63rd Coast Artillery. The regiment marched to San Bernardino, where it participated in the National Orange Show by giving exhibition drills and displaying a model encampment. The next day we were off for Carlsbad for annual target practice. We consider that the several practices demonstrated a high degree of proficiency. Battery "E" employed a platoon control system by means of case 1½ firing, with offset sights and an inexpensive electric-manual method of moving the sights so that they were constantly layed on the target by the gunner. A description of this device, which gave gratifying results, will be submitted for a future issue of the JOURNAL.

Approximately 150 officers of the Navy, Marine Corps, and the Officers' Reserve Corps, were on hand to witness

the firing. Many members of the Los Angeles Chamber of Commerce drove to Carlsbad to witness the night firing, only to be greeted by rain and storm clouds which prevented us from displaying our marksmanship. The Chamber of Commerce at Oceanside and the business men of Carlsbad cooperated in every possible way to make the stay of the 63rd in their vicinity a pleasure.

Upon the return of the regiment to Fort MacArthur, the breaking in and painting of our new transportation moved rapidly, to prepare it for the annual two weeks' tactical maneuvers.

On April 6, the 63rd again hit the trail, this time to the Grand Central Airport of Glendale, where guns and machine guns were set up as an Army Day exhibit. The air forces from March and Rockwell Fields, the National Guard air forces, and the 160th Infantry, California National Guard, also participated in the exercises. Dark found us back at MacArthur. Battery "A" (searchlights), commanded by Lieutenant Arthur B. Nicholson, conducted training in conjunction with the air forces at March Field over a period of one week, and joined the remainder of the regiment for the Army Day celebration.

Major General Paul B. Malone arrived for his initial

inspection of this post on April 15. A reception was held at the quarters of Lieutenant Colonel and Mrs. Oldfield. The next day General Malone made his inspection; a dismounted review was held, followed immediately by a review in which all transportation and equipment of the 63rd participated. After the inspection of barracks and activities a stag luncheon was held in the Post Service Club. The General spoke for a few minutes to the assembled officers and praised very highly the training, condition of armament and matériel, and the spirit that he found manifested by all officers and men of this command.

That same evening Brigadier General Cheney, Commanding the Ninth Coast Artillery District, arrived for his annual inspection. The Officers' Club served a tea in his honor, and on the 17th his inspection (very similar to that of General Malone) was made.

On April 18, we left at 8:00 A.M. for the annual practice march and tactical inspection which lasted for twelve days. During this time we covered nearly 1,000 miles.

The processing of 5,000 CCC enrollees was started on April 16, and the movement of 21 companies out of the District is still under way.

Fort Monroe News Letter

BRIGADIER GENERAL JOS. P. TRACY, U. S. ARMY,
Commanding.

COLONEL RUSSELL P. REEDER, 2d C.A.
Commanding Harbor Defenses of Chesapeake Bay

LIEUTENANT COLONEL JOS. F. COTTRELL,
Commanding 1st Bn., 2d C. A.

MAJOR FRANKLIN KEMBLB,
Commanding 3d Bn., 52d C. A.

CAPTAIN RALPH E. HILL
Commanding 1st Bn., 51st C. A.

By Captain H. W. Cochran, C.A.C.

IF you want to be on a post where each day brings another surprise even before the Army wives start the rumor that anything unusual was going to happen then come to Fort Monroe, the best Coast Artillery Post in the Army.

Bachelors are becoming very scarce, in fact the present supply at Fort Monroe is nearly exhausted. What to do before the arrival of the next consignment is a serious question. If any member of the genus homo wants to change his status from single blessedness to connubial bliss, we recommend he change station to Fort Monroe forthwith.

Since the previous "news letter" the first nuptial knot to set the garrison agog was the marriage of Lieutenant Don Bailey and Miss Selma Talmadge, daughter of Mrs. Barbara Talmadge of Oklahoma City. Don never told anyone except a few close friends before his wife-to-be arrived on February 28. The ceremony was performed bachelor, six of the Randolph Hall bachelors went into a

the same afternoon.

With the marriage of the Post's most "hard to get"

huddle and evolved the idea that it was a great economic waste for so many sets of quarters to be vacant and, as a trip to the altar was a requisite to occupancy, they should immediately set about saving the Government this loss. Lieutenant George Weitzel was the first of this group. He married Miss Elsie Warmorth of Barahona, D. R., on March 22.

Next there was a wedding in the Post chapel when Miss Betty Blood, daughter of Major and Mrs. Kenneth T. Blood, became the bride of Lieutenant Robert Finkenaur on April 10. Lieutenant and Mrs. Finkenaur left the post after the ceremony on a short leave before sailing for Honolulu.

Lieutenant Ebel was next on the list. He was married in the Chapel at West Point on April 17, to Miss Dorothy Shelley of New York City.

Among the passengers for the Philippines on May 14, 1935, was Lieutenant and Mrs. Franklin Kemble, Jr. Lieutenant Kemble married Miss Ella Griffin, daughter of Mrs. Lucile Griffin and the late Dr. Griffin of Greenville, S. C., on May 4.

Major and Mrs. R. V. Cramer have announced the engagement of their daughter, Frances, to Lieutenant John D. Stevens, skipper of the local mine planter *Schofield*.

The other bachelor does not deny the rumor but he has not as yet requested quarters, therefore, he may be classed as "foot-loose pro-tem."

The death of Captain Roy T. Barrett on April 3, 1935, was a great shock to the garrison. Captain Barrett was an excellent officer and a good Coast Artilleryman. His friends at Fort Monroe and throughout the Coast Artillery Corps, extend deepest sympathy to the bereaved widow and children, Alta and Roy T., Jr.

The Post basketball team won the Third Corps Area championship, by defeating the strong Fort Myer team, last year's title holders, by a score of 59 to 47. Fort Monroe had previously won the southern sector honors and Fort Myer that of the central division. It was the third straight victory for the post team in the championship series. Monroe had previously beaten Fort Myer and Fort Meade. The team was coached by Lieutenants Pat Guiney, Dick Mootman and Jabo Jablonsky, all of whom played in the championship game. The Post boxing team, under the able tutelage of Lieutenant Pete Peca, won second place in the Third Corps Area finals at Baltimore, March 21, 1935. The outstanding performance was that of Private Kadash, who was formerly heavyweight champion of the Canal Zone, where a heavyweight must be "plenty tough" around so many "swinging doors."

The CCC activities have been revived with the receipt of orders to process two companies of white veterans.

The garrison had the very great pleasure of receiving Major General Robert E. Callan, Commanding the Third Corps area, on May 13 and 14 when he made his annual administrative inspection. No one knows Fort Montoe better than General Callan, and we welcomed him with a whole-heartedness indicative of our admiration and high regard for his personal qualities and great ability as an officer and leader.

Harbor Defenses of San Francisco

COLONEL HAROLD E. CLOKE, *Commanding*

THE month of April started with a rush. Tactical and garrison inspections by the District Commander, Brigadier General S. A. Cheney, were followed by two antiaircraft gun preliminaries. Army Day was celebrated with exhibits of armament and equipment in San Francisco and by participation in a brigade review in which Major General Paul B. Malone, our new Corps Area Commander, received his first impressions of the regular army troops of this vicinity. Of course it rained.

Two days later found us encamped at Fort Funston, organized as a mobile antiaircraft group, prepared to defend we knew not what against we knew not whom. Again it rained. The wind blew sixty miles an hour the

first night, but with log and sand bag ballast, the pup tents survived. Take comfort ye weary ones in Panama, at least you are always warm.

On the 9th the General inspected our camp, issued a situation, and almost immediately the troops became involved in very active hostilities, beating off low-flying attack planes with simulated rifle fire, actually firing antiaircraft machine guns, under gas, at a surprise towed target, and reaching a climax when at ten thousand feet another sleeve was engaged by the guns. The whole problem lasted about 1½ hours. The results were seven plotted hits on four courses by the 3-inch trailer mounts, 15 holes out of two courses by the machine guns, a few well gassed eyes, and no fishing boats.

The following day Batteries "E" and "A" fired their record practices from the same 3-inch guns, obtaining 12 hits for Battery "A" and 11 for Battery "E."

Civilian Conservation Corps enrollment begins at once. Lieutenant Brownlee expects over 2,000 to be processed by his office in the next few weeks. One company will be permanently located at Fort Scott.

On April 7 a tea and reception was given by the officers at Fort Scott for General and Mrs. Malone. This offered a delightful opportunity to be presented to our new Corps Area commander, and to bring together many of the "Old Timers" of our Corps who are now residing in San Francisco.

A Reserve Camp attended by 22 Reserve officers was held at Fort Scott from April 1 to 14. These officers were attached to the firing batteries for duty and had an exceptional opportunity to witness the functioning of the various departments under the stress of inspections, demonstrations, field service and target practice. Probably no period for greater variety of duty or more high pressure activity could have been selected.

To those who have not seen Fort Scott within recent years, so many changes and improvements in the general appearance of the Post have occurred that they would hardly know the old place. An average of 500 men per day (SERA workers) has permitted the accomplishment of the following work: New roads have been built; all terraces have been reconstructed and replanted; bus waiting room, garages, and additions to the utilities have been erected; the parade ground is being terraced and leveled; several new tennis courts were constructed; new radio station has been established; an addition was made to the Post Exchange for meats, vegetables, and groceries; the post garden and children's playground has been completely remodeled; thousands of new plants and shrubs have been set out; dead trees and stumps have been cleared out of the woods; the old sunken garden near the Officers' Club was unearthed and brought back to better than its original condition; parking spaces were enlarged throughout the reservation; a new baseball field was constructed; the golf links at Fort Baker is being worked on to bring it back to its previous condition when General Bishop was here; the Tunnel Road at Fort Baker and the

Hill Road to Fort Barry have been completely remodeled and repaired; a large amount of work at Fort Miley, including grading and clearing, has been completed. Fort Funston has been revamped, with roads straightened, underbrush cleared, camp grounds graded, temporary buildings occupied by the detachment and noncommissioned officers repaired and painted; and on top of this, all guns and batteries have been brought up to a high state of preservation and Class "A" appearance.

A new bandstand is being constructed, and work will shortly begin on an enlargement of the Officers' Club. Estimates, with prospects of approval, have been submitted to construct a new utilities building, a new post movie hall, swimming pool and gymnasium, an addition to the station hospital, several sets of noncommissioned

officers' quarters, and a few new sets of officers' quarters.

As to outdoor sports, the Presidio Golf Club is practically at the back door of Fort Scott. This costs but \$4.00 per month to join and is one of the most sporty links in the world, beautiful in every detail, and beautifully kept up. Lincoln Park also affords cheap golf, open to the public. Fishing in Raccoon Straits, San Francisco Bay, has been quite remarkable during the early season. Striped bass weighing as high as 40 pounds have been caught, while two officers on the Post recently made a catch of over 20 bass. Clear Lake (100 miles north of here) affords excellent bass fishing, as well as a few trout, while in the fall there is excellent duck hunting. The best trout fishing is about 100 miles further north than Clear Lake, in little rivers running down from the Coast Range.

Hawaiian Separate Coast Artillery Brigade News Letter

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

S-1, LIEUTENANT COLONEL W. V. CARTER, A.G.D.
S-2, CAPTAIN W. F. LAFRENZ, C.A.C.

S-3, CAPTAIN W. F. LAFRENZ, C.A.C.
S-4, MAJOR B. S. DUBOIS, C.A.C.

Harbor Defenses of Honolulu
16th C.A.

COLONEL G. L. WERTENBAKER, *Commanding*

Harbor Defenses of Pearl Harbor
15th C.A.

COLONEL A. J. COOPER, *Commanding*

Sixty-Fourth Coast Artillery
COLONEL WILLIS G. PEACE, *Commanding*
By Lieutenant John R. Lovell, C.A.C.

NEW DEPARTMENT COMMANDER

MAJOR GENERAL HUGH A. DRUM, formerly Deputy Chief of Staff, arrived in Honolulu on March 20 and immediately assumed command of the Hawaiian Department. Since that date there has been a continuous whirl of military ceremonies, conferences, and social engagements. In the short period that he has been here, General Drum has acquired a great amount of knowledge of local conditions, traditions and customs. He has been in constant demand as a speaker and an honored guest at many functions.

Probably the outstanding event since the General's arrival was his review of the Hawaiian Division on April 2d at Schofield Barracks. Ten thousand officers and enlisted men under the command of Major General Halstead Dorey passed the reviewing stand over which the General's double-star flag and the blue and white colors of the Hawaiian Department were displayed. The appearance of the personnel was outstanding and the precision of the Infantry movements, the smart military manner in which the commands were given, and the condition of the equipment, must have been pleasing to the experienced eye of a soldier as distinguished as is our new Department Commander.

This review was unique in that one tradition of the "Old Army" was discarded, the horse and mule and all

animal-drawn transportation being left at the stables. The Hawaiian Division, the largest single Command in the United States Army, was entirely equipped for the occasion with modern matériel. Not a single FWD or a Liberty appeared in the formation. It was a splendid sight and made the officers aware that at last the United States Army was getting some useful and practical equipment.

The personnel of the Hawaiian Separate Coast Artillery Brigade, some 2,500 strong (approximately 25 per cent of all the Coast Artillery Corps) were reviewed by Major General Hugh A. Drum on the new parade ground at Fort DeRussy on the afternoon of April 25th. The brigade was organized into three regimental commands, with Colonel Willis G. Peace and his 64th Coast Artillery on the right, Colonel Avery J. Cooper, commanding the Harbor Defenses of Pearl Harbor, in the center, and Colonel George L. Wertenbaker, commanding the Harbor Defenses of Honolulu, on the left. It was a fine show and the Department Commander seemed to be very well pleased. The uniforms and equipment looked splendid, the marching excellent. Officers executed the saber manual and gave their commands in the best Infantry manner. It was a review to make all Coast Artillerymen proud of their Corps.

HONOLULU SECTOR ATHLETICS

Lieutenant Howard J. Vandersluis' Fort Kamehameha Boxing Team won the boxing championship of the Honolulu Sector for the 1935 season. Following is a final standing of the teams in the Sector Boxing League:

Fort Kamehameha	1,930 points
64th Coast Artillery	1,680 points
Harbor Defenses of Honolulu	1,135 points

Luke Field, for the fourth consecutive year, won the basketball championship of the Sector-Navy Basketball League, but lost the Department title in two straight games to the 3rd Engineers at Schofield Barracks.

An event of importance in Hawaii's Army athletics is the participation in the Honolulu Sector Track League of the University of Hawaii. This is the first time that the University has competed regularly in an Army league, and it is believed that these contacts will open a new field of keen and interesting competition that will serve to improve the caliber of Army athletics in Honolulu as well as to further cement the splendid relations between the services and the civilian population.

ARMY DAY

Army Day on the mainland means that the various Army organizations all over the continental United States parade in the nearby cities and display their equipment, that our citizens may become better acquainted with us and what we stand for. The Army provides the show and does all the work.

Here in Hawaii Nei the situation is reversed, and the civilian community and all its organizations turn out *en masse* and entertain the Army. The Honolulu Chamber of Commerce this year held a noon luncheon to which many of the Army officers were invited. The officers were met by individual hosts, presented with beautiful carnation leis, and introduced to other members of the Chamber. During the course of the luncheon Mr. Frank E. Thompson, a local attorney, gave a very stirring and satirical talk on the history and future of our National Defense. General Drum responded with an excellent speech, wherein he explained the many functions of the War Department.

Later in the day Major General and Mrs. Hugh A. Drum, Lieutenant Colonel James A. Ulio, Aide-de-Camp, Lieutenant and Mrs. Robert B. Hutchins, Aide-de-Camp, and Colonel Daniel Van Voorthis, Chief of Staff of the Hawaiian Department, were received by a joint session of the Hawaiian Legislature. Major General Hugh A. Drum and the United States Army in Hawaii, were honored by a special resolution, which was unanimously passed by both houses.

Enlisted men were entertained in Honolulu and Schofield Barracks by the best talent available in the Islands, many dances and informal parties being held in their honor.

During the evening the Chamber of Commerce held a formal reception at the Royal Hawaiian Hotel, Waikiki Beach, for the officers and ladies of the Hawaiian Depart-



Major Generals Hugh A. Drum and Halstead Dorey

ment. Well over a thousand people passed through the receiving line which contained Major General and Mrs. Hugh A. Drum, Miss Ann Carroll Reaume, Lieutenant Colonel James A. Ulio, Aide-de-Camp, and Mr. and Mrs. Addison E. Kirk, Acting President of the Honolulu Chamber of Commerce, the Governor of the Territory and Miss Helen Poindexter, Major General and Mrs. George E. Leach, Chief of the National Guard Bureau, and Mayor and Mrs. George F. Wright of Honolulu.

OVERS AND SHORTS

The visit of the United States Fleet to Hawaiian waters within a short time will be a great event in the "Paradise of the Pacific." The legislature has appropriated \$15,500 for the entertainment of the enlisted men. Various civic bodies are planning to conduct entertainment for all personnel.

To be able to observe the maneuvers of the United States Fleet will be a rare opportunity for all officers in this Department. It is hoped a large number will be placed on detached service aboard the battle wagons, to observe the maneuvers at close range.

The restoration of five per cent of our pay on April 1 was a most welcome addition to the family exchequer. To many of the populace it might seem that the armed services are continually asking for things without doing their share or giving in return. Few civilians realize the complex pay system of the Army. Few of them can see behind a well-polished front and appreciate the frugality that is practiced in some of the homes of our junior officers, especially those in the first pay period.

It is a pleasure to announce the assignment of Lieutenant Charles N. Branham to the staff of the Hawaiian Separate Coast Artillery Brigade as the Honolulu Sector Athletic Officer and Trial Judge Advocate. This is a man-sized job as his predecessors well know, but if anyone can make good, "Charlie" Branham can.

It made all of his friends proud to know that our old friend and recent Commanding Officer of the Harbor Defenses of Honolulu, Colonel Harry L. Steele, has been

promoted to Major General and assigned to duty as the Chief of Coast Artillery. Major General Steele has a great host of friends in Hawaii and as Commanding Officer of Forts Ruger and DeRussy, he established an enviable record of efficiency.

Brigadier General Robert S. Abernethy, our Brigade Commander, visited the Philippine Islands during the early part of this year and on his return reported a very favorable trip. The General renewed old acquaintances in Manila and visited some of the battlefields where he had been in action in '98 and '99.

Everyone in Hawaii was thrilled on the morning of April 17th. The Pan-American Airways giant clipper ship appeared out of the eastern sky and coasted over Honolulu for an hour before landing in Pearl Harbor. It was a magnificent commercial achievement, and the flight was planned and carried out on exact schedule. We believe that this is the forerunner of regular Coast-Hawaii aerial service and that it will be possible to make the two thousand mile run in eighteen hours for about double the steamer fare.

* * *

Annual Target Practice 64th Coast Artillery (Antiaircraft)

By Lieutenant E. W. Chamberlain, C.A. (AA)

PRECEDED by a police escort, approximately 100 overseas-capped drivers jammed feet against throttles on the rainy Monday morning of March 4th, and the 64th Coast Artillery again rolled out to take the field. New transportation this time—prime movers first, rolling along towing eight tons of gun; new Chevvy Trucks "Banana Wagons"; Fords; and motorcycles—lots of them. We went out in style this time.

The regiment camped in a grove of ironwood trees beside the Waimanalo Road, a pleasant change from the blistering sand of last year's camp. By Tuesday evening we were comfortably dug in—guns, kitchens, drainage pits of the latest pattern and everything. It was a comfortable camp. Wednesday brought prime movers loaded with ammunition and Thursday we started to shoot. Battery "C" had the honor of firing the first gun of the year—also the last.

Trial-shot problems, calibration firings, burst problems, and verifications occupied the balance of the week. Things went along very nicely. Three planes were furnished by the Air Corps. They were based at Bellows Field, a short distance from camp, and liaison was excellent. Battery "I" limbered up its machine gunners with a few bursts at a towed sleeve during the latter part of the week.

The week of March 8-14 saw the regiment settle down and get a good solid grip with both jaws. Several batteries fired preliminary practices, with results indicative of greater things to come. Firing began at nine "ack-

emma" and ran on far into the afternoon; with machine-gun batteries sandwiching their firings in between that of the gun batteries.

General Abernethy, the Brigade Commander, inspected the regiment, complimented the personnel on the appearance of the camp, and expressed himself satisfied that the regiment was ready to proceed with its service practices.

A word or two about the equipment we took in to the field this year. All gun batteries were equipped with two 3-inch M-3 guns, mounting continuous fuze cutters. Batteries "K" and "L," 3rd Battalion, used an M1A1 Vickers director in combination with a T-2 height finder with results that were "one nui loa" (which is as close as we can get in Hawaiian to "pretty doggone good"). The men of Batteries "F" and "G" of the 2d Battalion also used an M1A1, together with either a T-2 or T-9 height finder, or with altimeters; also with very good results. Batteries "B" and "C" of the 1st Battalion used a T-9 height finder and started out with a Sperry M-2 director. Trouble developed after Battery "B" had fired two practices and "C" had fired one, so both batteries switched to the M1A1 director—training the range sections on the new instrument with two days of work—and obtaining "excellents" with the Vicker.

Battery "G" fired the first record practice, doing some very fine shooting. "L" followed and raised them one. Other batteries carried on the good work; and many indeed were the excellent scores made—and at ranges that were not only surprising but extremely gratifying.

Major General Drum inspected the camp shortly after his arrival and expressed himself as being very much pleased. It was high praise indeed, coming from an expert in aerial warfare.

Bad weather held the regiment up for several days midway through record practice. This was due chiefly to storm centers to the northward of Oahu which made night firing especially difficult. However, on the night of March 28, the clouds broke long enough for "F" Battery to bang 'em out. A beautiful practice! The next day the Waters Warriors pulled up stakes and "lit out" for Shafter, where a multitude of duties awaited them. "G" and "L" Batteries were the next to finish, firing their final rounds between one and three o'clock in the morning, after waiting all night for a clear sky. "I" Battery, firing the last of their fifty caliber practices, finished next; and "B," "C," and "K" were the last left in camp. It was ten days later before these three organizations were able to finish.

It was a good camp, enjoyed by everyone present and there was some good shooting—though just how good we will not know until the last "F" factor has been applied. Many valuable lessons were learned, the regiment came back with an enviable record of health while in camp, and there will be (we predict) a goodly number of "E's" blossoming down the line at "Shanty Shafter."

COAST ARTILLERY BOARD NOTES

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

THE COAST ARTILLERY BOARD

COLONEL A. H. SUNDERLAND, C.A.C., *President*
MAJOR IRA A. CRUMP, O.D.
MAJOR A. F. ENGLEHART, C.A.C.
MAJOR C. E. COTTER, C.A.C.

CAPTAIN S. L. MCCROSKEY, C.A.C.
CAPTAIN E. T. CONWAY, C.A.C.
CAPTAIN L. L. DAVIS, C.A.C.
1st LIEUT. WALTER J. WOLFE, C.A.C.

SECTION I

Projects Completed Since Last Issue of the Journal

PROJECT NO. 1010—REPEATERS AND LOADING COILS FOR FIELD WIRE LINES.—About twenty miles of field wire were laid on the reservation of Fort Monroe. To attain this length, pieces of one mile each were laid together and electrical connection made between successive strands by a terminal strip at each end. This arrangement conserved distance and afforded an easy means of inserting the repeater coils and the loading coils at intervals of integral miles. The test was conducted in two parts; one part after a period of extremely wet weather, and the other part after a period of comparatively dry weather. The loading coils, (devices inserted in the line to improve telephonic communication) proved to be decidedly advantageous. They afforded relatively more improvement in the wet weather test than in the dry weather test. The repeating coils (designed to permit the use of the same wire for two or more purposes), proved to be efficacious in dry weather, but during damp weather the particular devices furnished did not work so well. However, the general value was such that the Board recommended the standardization of each of these devices, and submitted recommendations as to a basis of issue to the service.

PROJECT NO. 1012—ANTIAIRCRAFT MACHINE GUN FIRE CONTROL, METHODS AND EQUIPMENT.—The submission of this report ended a test extending over a period of almost a year. Among the features tested were:

- a. Two-color tracer ammunition,
- b. Stability of gun mounts,
- c. Comparative test of firing with:
 - (1) Tracer control with no sights,
 - (2) Tracer control with individual sights,
 - (3) Tracer control with computing sights,
 - (4) Tracer control with controlled sights.

The results of the firing were such as to make it appear worth while to proceed with the development of a controlled sight, and among other recommendations submitted was one that the Chief of Ordnance be requested

to design fire control mechanisms for machine guns. It was also requested that his attention be invited to the design of the instruments used during the tests. A design for a new forward area sight also was submitted. The report contained a recommendation against further development of two-color tracer ammunition.

In this connection it might be stated that some experimental models of fire control devices and sights involving the use of flexible cable between the sight controller and the machine gun, have been sent to one of the antiaircraft regiments for more extended test.

PROJECT NO. 1019—SCOUT CAR T7.—This is a car designed to afford transportation to reconnaissance parties of mobile organizations. It was weighted down with armor, machine-gun attachments, and so forth. These accessories did not appear necessary in a reconnaissance car for the use of Coast Artillery mobile organizations. For the use of our service the Board is of the opinion that the ability of a car to go almost any place and get back is of greater importance than armor protection or fire power. The Board recommended that consideration be given to modifying any one of several types of commercial vehicles, of a station wagon type, by putting dual tires on the rear wheels.

PROJECT NO. 1022—TRAILER T7.—As was stated in the preceding issue of the JOURNAL, this is a trailer designed, by the Chief of Ordnance, to carry certain parts of the fire control equipment of an antiaircraft gun battery. There were certain deficiencies in the trailer submitted, and the Board believes that there will be deficiencies in any special vehicle provided for this purpose. We have all seen the seacoast artillery fire control equipment outgrow the old fixed emplacement plotting room. The Board is of the opinion that antiaircraft fire control gear is further removed from standardization than is seacoast fire control matériel, and any special piece of transportation designed to take care of today's equipment will not fit tomorrow's. Furthermore, any specially designed piece of transportation is, in the general case, rendered unsuitable for every-day use. Many considerations are

involved, but the Board concluded that "stock" transportation, that would be abundantly available in time of war, generally could be made to fit the needs of the anti-aircraft batteries better than specially designed equipment.

PROJECT NO. 1024—COAST ARTILLERY MEMORANDUM No. 15.—This is the yearly publication into which every battery commander looks to see what the Chief of Coast Artillery said about his last year's target practice, and to see how he stood in comparison with others. The memorandum just completed and submitted for publication this year, covers an eighteen-month period. The Secretary of War directed, in 1934, that thereafter the target practice year should coincide with the calendar year. For this transition period there resulted a reduction of ammunition allowances and the usual confusion attendant upon any change of this nature. Furthermore, a considerable number of special practices were fired. While a number of deficiencies were found in the target practice reports, the Board recommended, only in a very few cases, that the Chief of Coast Artillery make adverse comment. The basis of comparison was not sufficiently established to justify going further into the subject. A review of all the reports submitted indicates that there was a general improvement in gunnery in nearly every class of firing.

PROJECT NO. 1026—ASBESTOS MITTENS.—The troops that actually did the firing under Project No. 1012, outlined above, had abundant opportunity to test out some improved asbestos mittens that had been submitted to the Board for test in connection with the handling of heated machine guns. The sample submitted proved very satisfactory, and if the supply sergeant does not happen to have them locked in the battery supply room at the time they are needed, the Coast Artillery Board thinks they will be very useful in the handling of machine-gun barrels, water jackets and stabilizers or flash hidens.

SECTION II

Projects Under Consideration

PROJECT NO. 953—RADIO-CONTROLLED, HIGH-SPEED TARGET.—If any one individual reads these notes from month to month he will probably wonder if the Coast Artillery Board is ever going to do anything with this project. The Board is also wondering when it will be able to get time to devote to this work. There is on hand a very fine motor boat, rigged with a high mast to fly a flag which it is hoped will be visible at reasonably long ranges. There is also on hand all material necessary to make up the radio-controlled apparatus, but this feature is only about forty per cent completed.

There is quite a diversity of opinion about this expensive remote controlled target. The gist of the arguments are: if a battery hits the target it will be most expensive; if the battery cannot hit it, it cannot hit any other target, therefore it might as well be mustered out of the service. Such a target will afford an opportunity to drill on high speed incoming courses. Also, by adopting extreme ranges for any given gun, it is believed that

the target can be used in actual firing for adjustment purposes, the firing to cease when adjustment seems to be approaching accomplishment. A cynical reply to this argument is—if it is not to be hit, why not put a man on it and save the expensive radio? It must be admitted that no member of the Coast Artillery Board has volunteered to replace the radio. However, it is the general opinion of the Board that high-speed targets can be made to more than pay for themselves by the problems that they will bring up.

PROJECT NO. 964—RUBBER-JACKETED SUBMARINE MINE CABLE.—All preliminary reports on the use of this cable are most favorable.

PROJECT NO. 990—TEST OF DULUX, NON-OXITE AND OTHER PAINTS.—Little can be added to the statements occurring under this project in the March-April publication of the JOURNAL. The year of test is just about up and none of the four guns involved in the test presents a particularly creditable appearance.

PROJECT NO. 1017—STEREOSCOPIC TRAINER T5; AND PROJECT NO. 1018—OPHTHALMIC TELEBINOCULARS (Stereoscope).—As already stated in previous issues of the JOURNAL, these are devices designed for two purposes; viz., to pick out the members of an organization who are equipped with eyesight suitable for stereoscopic instruments, and to provide a means for indoor training of observers. A rush of outdoor work has caught the troops of the Harbor Defenses of Chesapeake Bay and the test of these instruments has been somewhat delayed.

PROJECT NO. 1023—PORTABLE KITCHEN, GASOLINE-BURNING.—It is understood that one of these kitchens has been turned over to one of the anti-aircraft regiments for field test, but it is not known when one can be obtained for test by the Coast Artillery Board. An effort was made to get one of these units to send with a recent truck convoy of the Coast Artillery School but none could be obtained. It is obvious that a unit of this kind demands a field test and unless a kitchen can be procured at an early date, the Coast Artillery Board's report thereon will probably be delayed until next spring, because all the field movements of local troops, as far as known to the Coast Artillery Board, will be completed at a fairly early date this summer.

PROJECT NO. 1025—SHIRTS, FLANNEL, OLIVE DRAB.—These were mentioned in the last issue of the JOURNAL as being under a one-year test. Informal reports indicate that for a while these garments resisted shrinking, but just now the laundry seems to be gaining in the contest and several of the shirts are showing serious shrinkage.

PROJECT NO. 1027—TABLES, MESS.—These tables were described in previous issues of the JOURNAL. They are under a one-year test. It appears that the tables are proving more or less satisfactory.

PROJECT NO. 1030—ELECTRICAL TEST SETS, SC I-56 AND SUPREME SET ANALYZER.—Each of these sets con-

sists of a collection of instruments, inclosed in one case, for testing electrical equipment, including radio. Neither of these sets is now to be found in the Tables of Basic Allowances. They have been found most useful by members of the Coast Artillery Board in making tests of other equipment before the Board for examination. Nothing can be said at this time as to the comparative merits of the two sets but it is believed that the Board's report will include recommendations favorable to the standardization of one or the other.

PROJECT NO. 1031—DIAPHRAGM GAS MASK, E3R139.—The masks for this project have just been received but no arrangements have been made for the test.

PROJECT NO. 1032—SIGNAL LAMP EQUIPMENT, TYPE EE-10-B.—It would seem that the ordinary hand-flashlight has been developed to the stage where it will provide a rather good signal lamp. It does, under certain conditions, but when one tries to incorporate in one lamp such features as long range, concentration of beam, protection of batteries, portability, durability, light weight, and accuracy, there seems to be no limit to designs which may be submitted. Within the last few years the Chief Signal Officer has furnished several very fine lamps but each of them has seemed, when tested, to be open to improvement. The Board has just completed a test of several lamps but has not reported thereon.

PROJECT NO. 1033—FUZE SETTERS, M5, M2A1, AND T8.—Reports of defective operation of fuze setters for the 3-inch antiaircraft gun appear occasionally. A number of fuze setters, fuzes, and dummy fuzes have been furnished the Board for test. Little has been done as yet on this project, but the M5 and M2A1 were put in use during firings now in progress by the Coast Artillery School personnel.

SECTION III Miscellaneous

The following subjects, selected from the correspondence of the Coast Artillery Board, may be of more or less interest to certain readers of the JOURNAL:

SHORT-WAVE RADIO.—Funds were made available by the Chief of Coast Artillery to the Board for the purchase of one commercial short wave radio set, and for the purchase of parts from which two other sets were made up. It appears to the Board that such sets may be useful in the following classes of work: to supplement or replace signal lamps, to reduce the excessive amount of wire now required in the lay-out of a searchlight battery, and to be used with truck convoys. A rather elementary test was made in connection with a convoy, but nothing very conclusive was learned. Signal lamps, in peace time, will probably find their greatest use in connection with safety precautions for night target practices. The old Very pistol

was quite effective for such duty, but the use of any form of rocket, the Very pistol rocket included, has been legislated out of existence by requirements in the International Safety Code. A "sure-shot" short wave radio installation would seem to be capable of rendering almost any service that a signal light can render, and, if it is not much more cumbersome to handle, it has many advantages over the signal lamp. The installation of the units of a searchlight battery involve the laying of miles and miles of field wire. If the short wave radio telephone can be made as reliable as the field telephone, not only could much labor and time be saved for searchlight personnel, but searchlights and other elements of such a battery could be installed in places not now available to them. The Coast Artillery Board is looking forward to many preliminary tests of this radio equipment with a view of being ready to make final tests and recommendations when the Chief Signal Officer supplies Signal Corps sets with a view to the standardization thereof.

HAGGERTY SPOTTING DEVICE.—Second Lieutenant Robert F. Haggerty, 11th Coast Artillery, recently brought before the Coast Artillery Board a spotting device designed to convert the reports of airplane spotters of long range artillery fire into corrections immediately applicable to the range and azimuth settings of the gun. It is a beautifully fabricated piece of apparatus, and met what test the Coast Artillery Board could devise with so-called "canned" data. There are no guns in the immediate vicinity, of sufficiently long range, that are likely to be fired any time in the reasonably near future. The Board, therefore, recommended that the device be shipped elsewhere for an actual service test.

BATTERY RECORDS.—It was suggested to the Coast Artillery Board that forms be prepared by the Board for the keeping of the records of all manner of things concerning the behavior, the repair, alteration, and so forth, of such antiaircraft gear as searchlights, sound locators, and directors. The Board felt that the value of such records would hardly be commensurate with the work involved in their preparation, in their being kept up to date, and in preventing their becoming lost.

GOGGLES WITH SLITS.—From time to time complaints are made that the flash of the antiaircraft gun so blinds the gun crew in night firings that men setting scales and matching pointers have difficulty in performing their duties. One of the members of the Coast Artillery Board pasted black paper over the lenses of a pair of tight-fitting chauffeur's goggles and then cut in the black paper a narrow slit, parallel to the line between the wearer's eyes, and limited to a short distance on each side of a spot directly opposite the pupil of the eye. Tests so far are inconclusive but the device seemed to work so well that any battery commander might be justified in trying it.

YOU APPLY IN TIME OF WAR the lessons you have learned in peace; you may do less than you did in peace-time, you will certainly not do more.—SPEARS.

THE FOREIGN MILITARY PRESS

Reviewed by Major Alexander L. P. Johnson, Infantry

MEXICO—*Revista del Ejercito y de la Marina*—October, 1934.

THE EXAMPLE OF THE LEADER ON THE BATTLEFIELD.

By Cadet Kenjiro Mitsuka, 28th Infantry, Imperial Japanese Army.

This interesting discourse, delivered by Cadet Kenjiro Mitsuka in the presence of the Emperor of Japan upon his graduation from the Imperial Japanese Military Academy in June, 1934, affords an unusual insight into the mental and moral attitude of the Japanese Army officer towards the obligations and implications of military leadership. Citing various historic examples of Japanese valor, the youthful aspirant states that the commander on the field of battle is the fountain head of physical command as well as the soul incarnate of the Command itself. His example and conduct have an important effect upon his subordinates. In order to gain the confidence and respect of his men, the commander must remain serene and valiant even in a deluge of projectiles, and he must maintain his authority at all times.

"The battles of the future will be more and more complicated, tenacious and tragic," the author states, "hence victory will more and more depend upon the psychological force of the troops, and even more so upon the indomitable spirit and attitude exemplified by the commander in life and death."

FRANCE—*La Revue D'Infanterie*—November, 1934.

THE MISSION OF THE RESERVE OFFICER. By Marshal Pétain.

In an allocution delivered before the Convention of Reserve Officers of France, Marshal Pétain made some very interesting remarks which may as well apply to the United States, notably to our own Officers' Reserve Corps. Reserve officers, the Marshal states, have given a very good account of themselves in the last war but, he asks, will they be ready to function as leaders of men when the next war comes? And come it will with the suddenness of a peal of thunder. He points out that the manifold duties of reserve officers will be exceptionally difficult and exacting. The professional officer, the Marshal believes, has an incomparable advantage over the reserve officer in asserting his authority. He has opportunities to demonstrate his strength of character, the quality of his professional knowledge and skill. The reserve officer, on the other hand, enters upon his duties practically as an unknown. He must improvise to a considerable extent "the art of command" in order to gain the confidence of his subordinates. "You will earn this confidence," the Marshal states, "by means of a judicious and effectual solicitude in adapting your exigencies to the physical and

moral possibilities of your subordinates; by showing them a sincere affection which, however, does not exclude firmness; by the exercise of constant care and justice in the award of commendation as well as punishment; by giving evidence of personal courage; by providing your troops with the necessary comforts of rest, and, in combat, with the necessary means which will reduce to a minimum the sacrifices demanded of them."

The art of command, the Marshal observes, is acquired by means of practical experience, and he suggests that reserve officers should from time to time take advantage of opportunities afforded by regular garrisons near their homes to augment their military knowledge and experience. We should never lose sight of the fact, Marshal Pétain states, that the officer is above everything else a teacher and educator. He must train his men, give them physical health and moral strength.

The reserve officer, the Marshal continues, is a member of the elite of the Nation. He comes into this elite not by birthright or class distinction but, representative of all classes and social layers, he acquires his exceptional status by virtue of his own personal qualities, his devotion to duty, the stoutness of his heart, the discipline of his spirit, his moral valor.

"In a country of a free and untrammelled public opinion as ours," he adds, "we are not likely to renounce the advantages of individualism, one of the basic characteristics of our race. But in matters of National Defense—we have learnt from bitter experience—we shall not tolerate personal conviction publicly directed against the security of the nation."

"Suppress military virtues," Marshal Pétain concluded quoting Anatole France, "and all society will perish."

GERMANY—*Militär Wochenblatt*—February 25, 1935.

THE RED ARMY. By Captain von Zerka.

The Soviet Army consists of 23 Corps comprising 90 divisions, two-thirds of which represent territorial formations (militia) with limited training. There are, furthermore, 4 cavalry corps (12 divisions), 4 separate cavalry divisions and six additional independent cavalry brigades. Enlisted service in the Red Army is for two years.

The armament includes 800 trench mortars, 20,000 light machine guns, 10,000 heavy machine guns, 1,620 howitzers, 4,500 light and 700 heavy artillery pieces, 3,000 tanks and 4,300 airplanes.

The Red Army is more completely motorized than any other army in the world. One-third of the corps artillery, and one-half of the A.A. artillery is motorized. The G.H.Q. artillery and heavy artillery is completely motor-

ized. Three infantry divisions and seven frontier guard divisions are likewise motorized. A large number of the divisions are provided with motorized-mechanized reconnaissance detachments.

According to a recent report of Tuchatshevsky, deputy commissar of war of the Soviet Union, the present effective strength of the Red Army is 940,000 men. Military appropriations for 1934 amounted to 5 billion rubles, while the military budget for 1935 is expected to reach 6.5 billion rubles (at par three and one-quarter billion dollars) or ten per cent of the total appropriations.

GREAT BRITAIN—*Journal of the Royal United Service Institution*—August, 1934.

MODERN INFANTRY DISCIPLINE. By a "Field Officer."

Acknowledging the necessity of discipline, the author examines the disciplinary value of close order drill, which he regards as a heritage of a bygone age, preserved by pre-war psychology and the tattoo-complex. While he admits that close order drill has in the past proved an excellent method of instilling discipline, and that it still is necessary to enable the infantryman to move from place to place on the battlefield, he denies its present usefulness for any other purpose. And for that purpose, in the author's opinion, the route column would suffice. He denies the value of close order drill in teaching obedience. In the past, when troops advanced across the battlefield in shoulder-to-shoulder formations, and the preservation of unbroken lines depended upon instantaneous reaction to the leader's voice, close order drill necessarily formed an important part in the soldier's training. Today, however, the author asserts, simultaneous movements on the battlefield by more than two men is hardly ever necessary. Moreover, the effectiveness of modern weapons prohibit "bunching" under the penalty of vastly increased casualties. Hence, "bunching" on the training ground is contrary to battlefield expediency, and merely tends to confirm the naturally strong gregarious instinct in man. For this reason, he thinks, training for war founded upon the obsolete squad drill must be condemned.

Considering the general state of education today, the author condemns any system of training which aims to produce unthinking machines which will react to a word of command. Since the French revolution, he states, the laurels of victory have frequently gone to undrilled but intelligent, well-led troops. The author advocates making full use of the modern soldier's superior education and intelligence. Close order drill, he says, though intended to inculcate obedience, actually will end by destroying the soldier's self-confidence and his readiness to act on his own.

The author believes that the real opposition to any change towards modernizing army training methods comes from the N.C.O.'s. Since much of the actual drilling of highly skeletonized units is largely left to the N.C.O.'s, the old-fashioned close order drill not only

tends to enhance his authority and importance, but it affords him an opportunity to demonstrate his superior skill as a drillmaster and instructor. In conclusion, the author likens Army discipline to "a piece of excellent old-fashioned machinery in some factory, admirably designed in accordance with the ideas of the times, which has given splendid service and is in working order despite its age, but which, sentiment notwithstanding, must be replaced by something more up to date if the factory is to keep its place in an industry catering for conditions not as they were but as they are."

An opposite view in defense of close order drill by Major M. K. Wardle, D.S.O., M.C., was presented in the March-April number.

HUNGÁRY—*Magyar Katonai Szemle*—January, 1935.

PSYCHOLOGICAL FACTORS IN THE CONDUCT OF WAR.

By Lieutenant Colonel George Rakovszky.

The author discusses some of his experiences in the World War in order to acquaint the younger, post-war generation of officers with the psychological factors which play an important part in the conduct of war. Strategy, he writes, requires imagination; the ability to foresee the probable course of military operations, as well as the ability to appreciate the consequences of over-exertion. Combat, indeed war itself, the author states, is a combination of physical and spiritual action; a clash of physical and spiritual forces. The military leader cannot ignore the laws of nature which govern the spiritual forces any more than he can disregard the fundamental principles of war.

The author states that early in the war the German High Command repeatedly disregarded these spiritual factors. Among these instances he cites the subordination of General von Kluck to General von Bulow; the over-estimation of French casualties in the early battles along the frontier; the placing of an aggressive leader in command of German forces concentrated in Alsace-Lorraine with a holding mission; the failure of the Kaiser to show himself among the troops on September 6; the mission of Colonel Hentsch and many others.

There is a grave danger, the author observes, of the student of strategy becoming a dogmatic theorist without realizing it. This is particularly a risk incurred by those who did not have the experience of translating theories into actual practice. The theorist frequently commits the mistake of thinking of his battalions as units whose strength is constant and invariable, whose personnel is well trained, well equipped, well rested, enthusiastic, ready to do and die. As a matter of fact, the battalion actually may not muster more than 150-200 famished, tired, worn-out men, many of them with dependent families back home, and instead of craving more action and glory, desire nothing more ardently than early deliverance from this living hell. In 1914, the author writes, one regiment in General Krauss' Corps (Austro-Hungarian) actually left 9,000 dependent children at their homes.

Peace-time training and experience does not afford any opportunities to become familiar with the psychological factors that influence action on the field of battle. We do not experience the fear of death, nor any of the other influences which tax the mind and nervous system and make for panic in battle. On the battlefield, especially during one's early experience, there is a distinct state of nervousness, a sense of restlessness among troops, and this feeling may recur any time under great stress or moral pressure. Vacillation, contradictory orders, useless exactions, frequent alarms, unnecessary marches and counter marches, road congestions and mixing of units will soon produce a mental state that even a trifling incident will suffice to start a panic. The affected command becomes a mob animated only by the instinct of self-preservation. Such panics among troops were quite frequent during the early days of the war, and even in 1917, the author notes, the mere shout "Cossacks" was enough to cause anxiety. Attacks, the author states, seldom owe their success to the physical annihilation of the defender. It is rather due to the moral effect of the attacker's superiority of fire which destroys the defender's will to win. The same effect will obtain in the case of the attacker who ventures to launch an offensive without having attained that superiority which is essential to success.

The crucial moment of the attack, the author states, occurs at the instant when the assault wave enters the hostile line. A counter attack launched at that precise moment will stand the best chance of success for the simple reason that it will strike the attacker just as he passes the peak of nervous tension and the reaction begins to set in which renders him peculiarly susceptible to panic. The least sign of restlessness in the attacker's line at this moment calls for immediate energetic action on the part of the platoon commander or lesser leaders, otherwise troops are liable to break.

The author believes that skillful leadership will sense the mental and moral state of the command. The best preventative of mental and moral depression among troops is ample, satisfactory food, sufficient rest, and avoidance of overtaxing them physically or spiritually. In every body of troops, the author states, there are some outstanding personalities as well as some morally worthless individuals. The great mass of troops is morally indifferent, ready to bend hither or yon according as the wind blows. Conditions of modern warfare, the absence of the commander-in-chief from the battlefield, inferior equipment and training, ineffective or inefficient leaders, subversive propaganda will invariably exert an evil influence upon the troops. In the author's opinion, disregard of these psychological factors is more often the cause of defeat than the violation of some principle of war. He believes that peace-time training should pay greater attention to these factors, and that our maneuvers should endeavor to simulate battlefield conditions not only for the troops but also for the commanders and leaders. This may dampen the ardor of the peace-time strategist, but his

decisions, plans and actions may as a result more closely resemble the real thing.

SPAIN—*Revista de Estudios Militares*—July, 1934.

A CONFERENCE IN TACTICS AT THE ITALIAN WAR COLLEGE. By Captain Pardo.

The author discusses a tactical problem presented to his class at the Italian War College illustrative of an infantry division on an approach march. He observes that the method of instruction is thoroughly practical, and an effort is made from the very beginning to avoid any tendency toward schematic, stereotyped solutions, and to encourage and develop independent thinking along sound tactical lines. Before undertaking the solution of any problem the members of the class make a thorough reconnaissance of the terrain in order to familiarize themselves with such details as may not be apparent on the map. The illustrative problem follows generally along the lines of our own C. & G. S. School.

The problem contains a corps field order which affords a means for interesting comparison with our own. Although in general the order follows our standard five-paragraph field order, the Italians number their paragraphs consecutively without the use of lettered subparagraphs. An interesting departure from our own practice is shown by the heading of the order. Immediately following enumeration of maps, there is a statement of the object of the order. This has the unquestionable merit of informing all concerned at a glance what the order is all about. The distribution follows immediately after the statement of the object. The distribution list shows commanders their location and method of delivery. When administrative orders are issued at a later hour, the probable hour of issue is stated. The concluding paragraph, in this case 17, calls for an acknowledgement of receipt of the order by reference to its serial number only. This is the only apparent superfluity in an otherwise concise, well arranged field order.

The author writes that, according to Italian teaching, no individual arm may claim preëminence on the field of battle. Although normally the infantry plays the most important part, under certain conditions, especially of terrain, the leading rôle may pass to the artillery. The division consists of three regiments of infantry, one machine-gun battalion, two battalions of black-shirt militia and 12 batteries of artillery, compared to 15 in the French division, comprising 75-mm. guns, 75-mm. mortars and 100-mm. howitzers. Considering, however, the probable missions of the division, the author states that the divisional artillery is considered quite adequate. Two companies of engineers, one signal company and trains complete the divisional organization.

The Italian division commander enjoys far greater freedom of action than is the case in the French Army. In this respect there is a great similarity in doctrine and application between the Italian and American services.

COAST ARTILLERY ORDERS

(Covering the period March 1 to April 30, 1935)

Colonel M. P. Andruss, report to President. Army retiring board, Fort Sam Houston.

Colonel A. J. Cooper, from Hawaii, to instructor, Army War College, Fort Humphreys.

Colonel Franc Lecocq, from 52d. Fort Monroe, to Inspector General's Department, Panama, sailing New York, May 14.

Colonel S. G. Shartle, retired for age, April 30.

Colonel W. H. Wilson, from 11th, Fort H. G. Wright, to member General Staff Corps, Boston, July 1.

Lieutenant Colonel Robert Arthur, from Massachusetts Institute of Technology, Cambridge, to 13th, Fort Barrancas, June 30.

Lieutenant Colonel K. F. Baldwin, from office of Bureau of Insular Affairs, to student, Army War College, Fort Humphreys, August 20.

Lieutenant Colonel F. S. Clark, from member Staff Corps, War Department, to 2d, Fort Monroe, August 17.

Lieutenant Colonel T. C. Cook, from 52d, Fort Hancock, to Hawaii, sailing New York, May 14.

Lieutenant Colonel R. F. Cox, from student Naval War College, Newport, to student in advanced course, Naval War College.

Lieutenant Colonel E. J. Cullen, from University of Pittsburgh, Pittsburgh, to 3d, Fort MacArthur.

Lieutenant Colonel W. D. Frazer, from University of Washington, Seattle, to 14th, Fort Worden, June 30.

Lieutenant Colonel R. C. Garrett, from student, Army War College, Fort Humphreys, to 52d, Fort Monroe.

Lieutenant Colonel E. B. Gray, from Org. Res., 3d C.A. District, Washington D. C., to 52d, Fort Hancock, August 15.

Lieutenant Colonel F. P. Hardaway, from office Chief of Coast Artillery, to student, Army War College, Fort Humphreys, August 20.

Lieutenant Colonel O. H. Longino, from student, Army War College, Fort Humphreys, to 6th, Fort Winfield Scott.

Lieutenant Colonel H. K. Loughry, from the Philippines, to 6th, Fort Winfield Scott.

Lieutenant Colonel J. B. Maynard, from V.P.L., Blacksburg, to Hawaii, sailing New York, July 30.

Lieutenant Colonel W. E. Shedd, Jr., from Hawaii, to instructor, C.A. School, Fort Monroe.

Lieutenant Colonel H. F. Spurgin, from instructor, C.&G.S. School, Fort Leavenworth, to 51st, Fort Monroe.

Lieutenant Colonel R. L. Tilton, from student, C.&G.S. School, Fort Leavenworth, to 9th, Fort Banks.

Lieutenant Colonel O. C. Warner, from instructor, New York National Guard, New York, to the Philippines, sailing New York, May 14.

Lieutenant Colonel R. R. Welshmer, from instructor, Air Corps Tactical School, Maxwell Field, to instructor, Illinois National Guard, Chicago, June 15.

Lieutenant Colonel C. K. Wing, from

National Guard Bureau, Washington, D. C., to 9th, Presidio of San Francisco.

Lieutenant Colonel E. N. Woodbury, from instructor, C.&G.S. School, Fort Leavenworth, to University of Washington, Seattle.

Major A. A. Allen, from Hawaii, to instructor, Missouri National Guard, Carthage.

Major H. C. Allen, from the Philippines, to Office Chief of Coast Artillery.

Major C. H. Armstrong, from 6th, Fort Winfield Scott, to student, C.&G.S. School, Fort Leavenworth, August 28.

Major R. S. Atwood, from Hawaii, to Org. Res., 3d, Corps Area, Washington, D. C.

Major E. M. Benitez, from Panama, to 52d, Fort Monroe.

Major K. T. Blood, from instructor, C.A. School, Fort Monroe, to student, Army War College, Fort Humphreys, August 20.

Major B. N. Booth, from 3d, Fort MacArthur, to instructor, C.A. School, Fort Monroe, June 30.

Major G. deL. Carrington, from General Staff, 1st Corps Area, Boston, to student, Army War College, Fort Humphreys, August 20.

Major A. C. Chesledon, from the Philippines, to University of Minnesota, Minneapolis.

Major R. V. Cramer, from instructor, C.A. School, Fort Monroe, to student, Army War College, Fort Humphreys, August 20.

Major C. S. Doney, from Hawaii, to instructor, C.A. Arkansas National Guard, Little Rock.

Major F. E. Emery, Jr., from University of California, Berkeley, to Hawaii, sailing San Francisco, August 22.

Major W. D. Evans, from Georgia School of Technology, Atlanta, to student, C.&G.S. School, Fort Leavenworth, August 28.

Major W. M. Goodman, from Hawaii, to student, Army War College, Fort Humphreys, August 20.

Major R. E. Haines, promoted Lieutenant Colonel, March 30.

Major E. O. Halbert, from Org. Res., 1st C.A. District, Boston, to 69th, Fort Crockett, August 1.

Major C. E. Hocker, from student, Army War College, Fort Humphreys, to Hawaii, sailing New York, July 30.

Major H. B. Holmes, Jr., from General Staff Corps, 8th Corps Area, Fort Sam Houston, to student, Army War College, Fort Humphreys, August 20.

Major J. L. Homer, from instructor, Illinois National Guard, Chicago, to student, Army Industrial College, August 21.

Major G. W. Hovey (with Q.M.C.) from student, Quartermaster Corps School, Philadelphia, to Fort Barrancas, June 30.

Major W. W. Irvine, from instructor, C.A. School, Fort Monroe, to student, Army War College, Fort Humphreys, August 20.

Major T. H. Jones, promoted Lieutenant Colonel, April 1.

Major Franklin Kemble, from 52d, Fort Monroe, to the Philippines, sailing New York, May 14.

Major H. L. King, from Org. Res., 7th

Corps Area, Topeka, to Panama, sailing New York, July 6.

Major J. P. Kohn, from 13th, Fort Barrancas, to Mississippi State College, June 30.

Major D. S. Lenzner, from student, Army Industrial College, to instructor, District of Columbia National Guard, Washington, D. C.

Major C. B. Lindner, from C.&G.S. School, Fort Leavenworth, to Commandant Finance School for instruction and to Commanding General, 6th Corps Area for assignment.

Major P. P. Lowry, from student, C. & G.S. School, Fort Leavenworth, to 2d, Fort Monroe.

Major E. C. Mead, from Panama, to Org. Res., 7th Corps Area, Topeka.

Major E. H. Metzger, from student, Army War College, Fort Humphreys, to instructor, Rhode Island National Guard, Providence.

Major G. R. Meyer, from student, Army War College, Fort Humphreys, to student, Naval War College, Newport, June 29.

Major L. C. Mitchell, from Hawaii, to University of Cincinnati, Cincinnati.

Major J. T. H. O'Rear, promoted Lieutenant Colonel, March 24.

Major R. M. Perkins, from student, Army War College, Fort Humphreys, to office Chief of Coast Artillery.

Major W. S. Phillips, from instructor, C.A. School, Fort Monroe, to Hawaii, sailing New York, July 30.

Major J. D. Powers, from 51st, Fort Monroe, to Hawaii, sailing New York, April 26.

Major A. A. Rowland, from instructor, R. I. National Guard, Providence, to Hawaii, sailing New York, July 30.

Major R. E. Turley, Jr., from Panama, to 51st, Fort Monroe.

Major J. H. Wilson, from 62d, Fort Totten, to student, Army War College, Fort Humphreys, August 20.

Major R. W. Wilson, from instructor, Missouri National Guard, Carthage, to Panama, sailing New York, June 6.

Captain G. W. Ames, from University of California, Berkeley, to Hawaii, sailing San Francisco, August 12.

Captain C. E. Atkinson, from Massachusetts Institute of Technology, Cambridge, to Hawaii, sailing New York, July 30.

Captain Napoleon Boudreau, promoted Major, March 1.

Captain O. D. Bowman, from Hawaii, to 62d, Fort Totten.

Captain C. E. Brand, from student, Yale University, New Haven, and from Org. Res., First Corps Area, to office of The Judge Advocate General, Washington, D. C., June 15.

Captain O. B. Bucher, from Hawaii, to 51st, Fort Monroe.

Captain A. L. Bullard, from 69th, Fort McClellan, to Commanding Officer, Fort Crockett, for assignment.

Captain W. L. Claxton, from 69th, Fort McClellan, to Panama, sailing New York, May 3.

Captain H. McC. Cochran, 3d, from 13th, Fort Barrancas, to student, C.A. School, Fort Monroe, August 30.

Captain L. L. Davis, from instructor, C.A. School, Fort Monroe, to Coast Artillery Board, Fort Monroe, July 1.

Captain H. P. Detwiler, from 2d, Fort Monroe, to Panama, sailing New York, September 5.

Captain W. H. Donaldson, Jr., from student, C.&G.S. School, Fort Leavenworth, to Hawaii, sailing New York, July 30.

Captain F. E. Edgcomb, from Panama, to instructor, C.A. School, Fort Monroe.

Captain G. H. Ericson, promoted Major, March 1.

Captain J. H. Fonvielle, from U. S. Military Academy, West Point, to student, C.A. School, Fort Monroe, August 30.

Captain M. C. Handwerk, from Hawaii, to 52d, Fort Monroe.

Captain C. W. Higgins, from Hawaii, to student, C.&G.S. School, Fort Leavenworth, August 28.

Captain F. A. Hollingshead, from Panama, to 69th, Fort Crockett.

Captain L. A. Hudgins, from instructor, Delaware National Guard, Wilmington, to Panama, sailing New York, September 5.

Captain L. W. Jefferson, from student, C.A. School, Fort Monroe, to Hawaii, sailing New York, July 30.

Captain W. Q. Jeffords, Jr., from the Citadel, Charleston, to Hawaii, sailing New York, July 30.

Captain R. C. Jones, from Hawaii, to 6th, Fort Winfield Scott.

Captain J. T. Lewis, from student, C.&G.S. School, Fort Leavenworth, to Hawaii, sailing New York, July 30.

Captain Frederick Loquist, promoted Major, March 1.

Captain S. L. McCroskey, from C.A. Board, Fort Monroe, to student, C.&G.S. School, Fort Leavenworth, August 28.

Captain Samuel McCullough, from 61st, Fort Sheridan, to instructor, New Hampshire National Guard, Concord, June 1.

Captain W. F. Marquat, from instructor, New Hampshire National Guard, Concord, to General Staff with troops Hq. 1st Corps Area, Boston, June 15.

Captain S. R. Mickelsen, from the Philippines, to student C.&G.S. School, Fort Leavenworth, August 28.

Captain B. L. Milburn, from student, C.&G.S. School, Fort Leavenworth, to office Chief of Coast Artillery.

Captain J. M. Moore, from U. S. Military Academy, West Point, to Panama, sailing New York, September 5.

Captain D. E. Morrison, from 2d, Fort Monroe, to Georgia School of Technology, Atlanta, August 20.

Captain J. D. Moss, from 52d, Fort Hancock, to student, C.&G.S. School, Fort Leavenworth, August 28.

Captain T. W. Munford, from 14th, Fort Worden, to V.P.I., Blacksburg, sailing San Francisco, July 30.

Captain D. R. Norris, from Panama, to 63d, Fort MacArthur.

Captain E. F. Olsen, from student, C.&G.S. School, Fort Leavenworth, to Adjutant General's Department, Governors Island, June 30.

Captain A. L. Parmelee, from the Philippines, to 62d, Fort Totten.

Captain M. H. Parsons, from U. S. Military Academy, West Point, to the Philippines, sailing New York September 18.

Captain T. R. Phillips, promoted Major, February 1.

Captain J. F. Pichel, retired for the convenience of the Government, April 30.

Captain J. S. Robinson, from Panama, to 52d, Fort Monroe.

Captain H. W. Smith, from 69th, Fort McClellan, to Commanding Officer, Fort Crockett, for assignment.

Captain R. E. Starr, from San Francisco High School, San Francisco, to student, C.&G.S. School, Fort Leavenworth, August 28.

Captain W. H. Steward, from instructor, Arkansas National Guard, Little Rock, to the Philippines, sailing New York, May 14.

Captain E. L. Supple, from Hawaii, to 69th, Fort Crockett.

Captain E. W. Timberlake, from Hawaii, to student, C.&G.S. School, Fort Leavenworth, August 28.

Captain W. H. Warren, from the Philippines, to student, C.&G.S. School, Fort Leavenworth, August 28.

Captain W. L. Weible, from student, C.&G.S. School, Fort Leavenworth, to 2d, Fort Monroe.

First Lieutenant Granger Anderson, from student, C.A. School, Fort Monroe, to 13th, Fort Barrancas, June 30.

First Lieutenant R. L. Anderson, from 69th, Fort McClellan, assigned 2d, C.A., Fort Monroe, and student, C.A. School, Fort Monroe, August 30.

First Lieutenant J. G. Bain, from student, C.A. School, Fort Monroe, to Panama, sailing New York, July 6.

First Lieutenant Edward Barber, from student, Massachusetts Institute of Technology, Cambridge, to 2d, Fort Monroe.

First Lieutenant J. T. Barber, from 6th, Fort Winfield Scott, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant A. S. Baron, from 2d, Fort Monroe, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant A. H. Bender, from student, C.A. School, to 2d, Fort Monroe.

First Lieutenant H. E. C. Breitung, from 63d, Fort MacArthur, to Utah State Agricultural College, Logan, August 15.

First Lieutenant H. A. Brusher, from U. S. Military Academy, West Point, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant J. R. Burnett, from Panama, to V.P.I., Blacksburg, revoked.

First Lieutenant J. B. Carroll, from the Philippines, to 62d, Fort Totten.

First Lieutenant E. W. Chamberlain, from Hawaii, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant G. A. Chester, from 52d, Fort Monroe, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant C. M. Conzelman, from Panama, to 13th, Fort Barrancas.

First Lieutenant B. E. Cordell, from student, C. A. School, Fort Monroe, to 69th, Fort Crockett, June 30.

First Lieutenant J. W. Davis, from Panama, to 63d, Fort MacArthur.

First Lieutenant W. V. Davis, from Panama, to 62d, Fort Totten.

First Lieutenant T. J. Dayharsh, from student, C.A. School, Fort Monroe, to Hawaii, sailing New York, July 30.

First Lieutenant M. K. Deichelmann, from 69th, Fort McClellan, to the Philippines, sailing New York, May 14.

First Lieutenant W. G. Devens, from student, C.A. School, Fort Monroe, to University of New Hampshire, Durham.

First Lieutenant C. E. Dunham, from student, C.A. School, Fort Monroe, to Panama, sailing New York, July 6.

First Lieutenant W. H. J. Dunham, from student, C.A. School, Fort Monroe, to Hawaii, sailing New York, July 30.

First Lieutenant Paul Elias, from 62d, Fort Totten, to student C.A. School, Fort Monroe, August 30.

First Lieutenant O. T. Forman, from the Philippines, to San Francisco High School, San Francisco.

First Lieutenant W. H. Francis, from 52d, Fort Monroe, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant K. C. Frank, from 62d, Fort Totten, to Kansas State College of Agriculture and Applied Science, Manhattan.

First Lieutenant R. T. Frederick, from 6th, Fort Winfield Scott, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant H. P. Gard, from 10th, Fort Adams, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant O. H. Gilbert, from student, C.A. School, Fort Monroe, to Panama, sailing New York, July 6.

First Lieutenant J. L. Goff, from Hawaii, to 14th, Fort Worden.

First Lieutenant S. J. Goodman, from Hawaii, to University of California, Berkeley.

First Lieutenant L. McI. Guyer, from 62d, Fort Totten, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant A. R. Hartman, from student, C.A. School, to 2d, Fort Monroe.

First Lieutenant E. F. Heidland, from 61st, Fort Sheridan, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant Armand Hopkins, from U. S. Military Academy, West Point, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant O. H. Kyster, Jr., from 51st, Fort Monroe, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant W. S. Lawton, from Panama, to 14th, Fort Worden.

First Lieutenant L. L. Lemnitzer, from U. S. Military Academy, to student, C. & G. S. School, Fort Leavenworth, August 28.

First Lieutenant A. J. Lepping, from student, C.A. School, Fort Monroe, to Panama, sailing New York, July 6.

First Lieutenant O. J. Levin, from 2d, Fort Monroe, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant W. F. McKee, from 63d, Fort MacArthur, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant Donald McLean, from student, C.A. School, Fort Monroe, to 13th, Fort Barrancas, June 30.

First Lieutenant W. L. McPherson, from student, University of Michigan, Ann Arbor, to instructor, C.A. School, Fort Monroe.

First Lieutenant J. H. Madison, from Panama, to 52d, Fort Monroe.

First Lieutenant E. G. Martin, from Mississippi State College, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant C. M. Mendenhall, Jr., promoted Captain, April 1.

First Lieutenant R. L. Miller, from student, C.A. School, Fort Monroe, to student advanced and technical course, C.A. School, August 30.

First Lieutenant L. M. Morton, from instructor, C.A. School, Fort Monroe, to student, C.A. School, August 30.

First Lieutenant G. W. Palmer, from Ordnance Department, Aberdeen Proving Ground, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant H. C. Parks, from 6th, Fort Winfield Scott, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant W. H. Parr, from 13th, Fort Barrancas, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant C. L. Partin, from 14th, Fort Worden, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant E. D. Peddicord, from student, C.A. School, Fort Monroe, to Hawaii, sailing New York, July 30.

First Lieutenant P. D. Peery, report President Army retiring board, Presidio of San Francisco.

First Lieutenant M. G. Pohl, from 11th, Fort H. G. Wright, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant K. E. Rasmussen, from 2d, Fort Monroe, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant L. G. Ross, from 14th, Fort Worden, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant C. E. Rothgeb, from student, C.A. School, Fort Monroe, to 13th, Fort Barrancas, June 30.

First Lieutenant R. W. Russell, from 13th, Fort Barrancas, to University of Alabama, University, August 15.

First Lieutenant W. C. Rutter, from student, C.A. School, Fort Monroe, to 3d, Fort MacArthur, sailing New York, July 30.

First Lieutenant Andrew Samuels, Jr., from 51st, Fort Monroe, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant C. V. R. Schuyler, from 52d, Fort Monroe, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant J. R. Seward, from 11th, Fort H. G. Wright, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant L. E. Shaw, from student, C.A. School, Fort Monroe, to Hawaii, sailing New York, July 30.

First Lieutenant J. P. Shumate, from student, C.A. School, Fort Monroe, to Panama, sailing New York, July 6.

First Lieutenant P. W. Shunk, from student, C.A. School, Fort Monroe, to Panama, sailing New York, July 6.

First Lieutenant E. C. Smallwood, from 63d, Fort MacArthur, to instructor, U. S. Military Academy, West Point.

First Lieutenant J. McC. Smith, from U. S. Military Academy, West Point, to Panama, sailing New York, September 5.

First Lieutenant W. K. Stennis, from Hawaii, to Mississippi State College, State College.

First Lieutenant H. E. Strickland, from

52d, Fort Hancock, to Panama, sailing New York, July 30.

First Lieutenant L. K. Tarrant, from Fort Monroe, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant C. F. Tischbein, from U. S. Military Academy, West Point, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant H. N. Toftoy, from U. S. Military Academy, West Point, to student, C.A. School, Fort Monroe, August 30.

First Lieutenant R. F. Tomlin, from student, C.A. School, Fort Monroe, to 69th, Fort Crockett, June 30.

First Lieutenant H. T. Turnbull, from the Philippines, to 61st, Fort Sheridan.

First Lieutenant C. B. Wahle, to 61st, C.A., Fort Sheridan, June 14. Previous orders amended.

First Lieutenant E. R. C. Ward, from student, C.A. School, Fort Monroe, to Panama, sailing New York, July 30.

First Lieutenant A. M. Wilson, Jr., promoted Captain, February 11.

First Lieutenant K. J. Woodbury, from 8th, Fort Preble, to student, C.A. School, Fort Monroe, August 30.

Second Lieutenant H. S. Bishop, transferred to Air Corps, March 20.

Second Lieutenant W. A. Call, from American Battle Monuments Commission, Washington, D. C., to Ordnance Department, Watertown Arsenal, Watertown, May 31.

Second Lieutenant M. S. Carter, from Hawaii, to U. S. Military Academy, West Point.

Second Lieutenant C. C. Cloud, Jr., from the Philippines, to 13th, Fort Barrancas.

Second Lieutenant W. S. Coit, from the Philippines, to 6th, Fort Winfield Scott.

Second Lieutenant I. W. Cory, from 52d, Fort Hancock, to Panama, sailing New York, July 6. Previous orders amended.

Second Lieutenant C. J. Diestei, from the Philippines, to 11th, Fort H. G. Wright.

Second Lieutenant C. G. Dunn, from Fort Monroe, to the Philippines, sailing New York, May 14.

Second Lieutenant W. F. Ellis, from 61st, Fort Sheridan, to instructor, U. S. Military Academy, West Point, August 25.

Second Lieutenant E. E. Farnsworth, Jr., from 62d, Fort Totten, to instructor, U. S. Military Academy, West Point, June 1.

Second Lieutenant C. E. Green, from Panama, to 69th, Fort Crockett.

Second Lieutenant F. M. Humphries, from 2d, Fort Monroe, to Watertown Arsenal, Watertown, Mass., as student Ordnance School, May 25.

Second Lieutenant H. W. Hunter, from Panama, to 13th, Fort Barrancas.

Second Lieutenant Franklin Kemble, Jr., from 51st, Fort Monroe, to the Philippines sailing New York, May 14.

Second Lieutenant A. A. McCrary, from 52d, Fort Monroe, to the Philippines, sailing New York, May 14.

Second Lieutenant E. C. Mitchell, from 6th, Fort Winfield Scott, to Ordnance Department, Watertown Arsenal, sailing San Francisco, April 20.

Second Lieutenant C. L. Peterson, from 69th, Fort McClellan, to Corps of Engineers, Pittsburgh, March 18.

Second Lieutenant R. E. Schukraft, from Panama, to 52d, Fort Hancock.

Second Lieutenant F. H. Shepardson, from 14th, Fort Worden, to Hawaii, revoked.

Second Lieutenant J. J. Stark, from Air Corps, Randolph Field, to 6th, Fort Winfield Scott.

Second Lieutenant J. C. Steele, from Hawaii, to U. S. Military Academy, West Point.

Second Lieutenant R. J. Wood, from 2d, Fort Monroe, to instructor, U. S. Military Academy, West Point, August 25.

Master Sergeant Frank Huennekens, 3d, Fort Rosecrans, retired, March 31.

Master Sergeant Haynes Odom, 62d, Fort Totten, retired, March 31.

Master Sergeant Louis Razga, 52d, Fort Hancock, retired, April 30.

First Sergeant H. M. Duggan, 64th, Fort Shafter, retired, April 30.

First Sergeant W. A. Parker, 14th, Fort Worden, retired, April 30.

First Sergeant W. E. Rhea, 51st, Fort Monroe, retired, March 31.

First Sergeant C. A. Sipe, 62d, Fort Totten, retired, April 30.

Staff Sergeant Peter Kusin, 13th, Fort Barrancas, retired, April 30.

Staff Sergeant R. R. Manuel, from 63d, Fort H. G. Wright, appointed Warrant Officer, assistant engineer, Army Mine Planter Service, March 1.

Sergeant F. G. Cates, 13th, Fort Moultrie, retired, March 31.

Sergeant George Jones, 15th, Fort McDowell, retired, March 31.

Old Stuff

(Continued from page 211)

leads and the appearance of the target and the tracer course when the target is within the burnout range.

"And," concludes Captain Ripley, "this gun will give my gunners training that they cannot get even on the firing range—training in firing on a receding target. Due to the danger space of the machine-gun fire, we cannot train in firing on a target being towed away from the battery, whereas, in actual service perhaps the greater part of our fire will be delivered under these conditions. The delicacy of firing with decreasing angular heights is quite as pronounced as that of firing with increasing angular heights. My gunners find this type of training quite as interesting as any other."

Captain Ripley believes that there are no conditions found in actual service which cannot be simulated with his "water-gun." The only requirement for its successful

operation is that the armory be provided with a concrete "water-target range" which is well drained in the winter and may be heated. By use of "duck boards" he has found no difficulty in keeping his men dry when using his new improvisation.

It appears scarcely necessary to go further into the story of how the 197th Coast Artillery (AA) produced a decidedly "different" series of armory inspections this year. Each organization made a special effort to produce unbroken continuity of inspection features, also, eliminating the many waits formerly encountered while crews were changing clothes. Changes were made by gun crews while range sections were operating or while riot duty was being demonstrated. Highly efficient inspections in minimum time were the result.

And the regiment once more demonstrated its loyalty to its commander by carrying out his edict to "make your own program but make it interesting."

BOOK REVIEWS

ALL'S FAIR. By Captain Henry Landau. G. P. Putnam's Sons, New York, 1934. 321 pp. \$3.00.

By Lieutenant Colonel P. D. Bunker, C.A.C.

This, the story of a part of the secret service net which the British flung around Germany during the World War, was written by the man who was placed in charge of an agency in Holland with the principal mission of securing and reporting information relating to troop movements of the enemy. The author gives us a plain, unvarnished tale that is interestingly and convincingly written.

Born in South Africa of Dutch and English parents, educated in England, France, and Germany, and aided by long sojourns in Belgium and France, Captain Landau was perfectly fitted for his position. Operating from an office in Rotterdam and starting from scratch, he built up a spy system—or series of systems—which worked behind the German lines and relayed information to him in spite of the precautions of the enemy. This system did not rely upon the story-book spy who penetrates the most secret councils and escapes with the papers after a wild ride; instead, it was built upon the tedious and unromantic business of counting railway cars. By this means he was able to calculate the shifting of troops in the line and, in many cases to identify the troops being moved and to deduce their destinations.

Captain Landau goes into details; he tells how information was passed through the lines and past the high-voltage fence along the Holland border. He tells rather fully of the organization which became known as the *Dame Blanche*; it seems to have been the most efficient of his aids.

After the war, Captain Landau "liquidated" his spy organization—what was left of it. He was given practically unlimited authority to reward his various agents as he chose, with decorations, with pensions in amounts of his own selection, and even with the privilege of enrolling alien citizens as British soldiers. Even the most credulous of us Yanks find it hard to picture the Comptroller allowing us any such authority—the picture to our sceptical minds looks more like the gray walls of Leavenworth.

It is too bad that Captain Landau, in his short post-war stay in Berlin, did not find out how the Germans detected and ruined some of his best schemes. He merely says that communication with such-and-such an agent suddenly ceased and that he found out afterwards that the said agent was shot. It would be interesting to learn how the agent was detected.

The book contains many interesting anecdotes; it tells the story of Edith Cavell, of that great Allied spy "The Dane," of smuggling gems out of Soviet Russia. Not the least interesting part is that dealing with secret writing,

invisible inks, picture codes, and the like—and their disadvantages.

A thoroughly likable book; one that should be in every officer's library.

AMERICA'S TRAGEDY. By James Truslow Adams. Chas. Scribner's Sons, 1934. \$3.00.

By Lieutenant Colonel Earl W. Thompson, C.A.-Res.

The author of *The Epic of America* and *The March of Democracy* has again produced a leader in the non-fiction class with this popular historical study of the events leading to the Civil War, the ebb and flow of conflicts, military, political, and financial, during the tragic years of '61-'65, and a short résumé of the results of sectionalism. If we were to seek for a sub-title for this work it would be the "Intolerance of Sectionalism," for Dr. Adams points out the vast differences of "climate, politics, habits, economics, discovery, invention," and interests between the industrialism of the North with its shipping and merchandizing, and the agrarianism of the South with its large plantations, its aristocratic owners, and its need of slaves.

Any work on the Civil War is essentially controversial. Mr. Adams, though, claims to be of both the North and the South, his father's family hailing from Virginia, while his mother's ancestral home was located in New York, so that ancestors fought on both sides in the war of '61-'65. Instead of steering a stable central course, the volume, pendulum-like, swings back and forth from the viewpoint of the North to that of the South. We find the distaff influence in quotations from the *New York Tribune*, and the paternal ascendancy in the files of the *Charleston Mercury* or the *Richmond Whig*, all vitriolic. Neither the G.A.R.'ers nor the U.D.C.'ers will be satisfied with this fluctuating yawning; probably 'tis better so. We find portrayed: "South Carolina socially proud in her isolation and self-sufficiency; Massachusetts self-wrapped in the assumed mantle of God's elect."

The genesis of the Civil War is carried forward from the first slaves, the forming of the United States, the Constitution "interpreted and used, not like a proposition in Euclid, but as seemed best to serve the needs of parties, sections, and groups, North, South, and West, at different times." We find the growth of sectionalism with its hatreds and misunderstandings.

No one of our boyhood heroes, with the exception possibly of Lincoln, is left unscathed by the acid pen of this historian; "Webster was not a great constitutional lawyer; Calhoun was a hair-splitter; and Hayne on this occasion was a pawn." Sherman was lax in discipline, and varied from the sympathetic to the brutal; McClellan was vacillating and over-cautious; Grant was uncouth and unsym-

pathetic; Lee did not write good orders, and hence lost Gettysburg—all our heroes have feet of clay.

From the military standpoint the book discusses many subjects: the question of the permissible resignation of the West Point-trained officers to enter the army of the Confederacy; the effect of the volunteer and conscription systems in decreasing the standard and quality of the recruits as the war progressed; the operation of a civilian rather than a professional or hired army; the lack of preparedness as evidenced in the early battles; the history of propaganda, publicity, atrocity stories and emotional incitement in war; the interference of the political and executive branches with the military; the introduction of new methods of siege and trench warfare; the failure to follow up victories particularly of Antietam and Gettysburg; the decrease in the quantity of supplies in the South, and quality in the North; the success and failure of the blockade; Sherman's march to the sea, and then Appomattox, after which the "days of the soldier had passed, and that of the fanatic and the politician had come."

The author points out that "this was the first of the great modern wars in which the whole of the population was involved . . . it has become difficult to draw a logical line indicating where military service ends and pure civilian life begins, it has also become evident that one of the chief aims of modern warfare must be not merely to defeat armies at the front but to affect the will to war of the peoples themselves behind the lines." Thus Sherman brought the end to conflict because he saw that "the quickest way to peace was to ruin the morale of the civilian population, according to the theory of the new warfare."

There is much in this history, short though it is, for the politician and statesman, the soldier and civilian, the pacifist or jingoist; for the Civil War had lessons for all, with texts in the boldest type that even the illiterate could understand. How much better should the educated comprehend?

Neither this book, nor any book, can settle the problems of the Civil War; there is no answer to the rights and wrongs of the differences between the North and the South. As Mr. Adams says: "History is disappointing to those who naïvely believe in an absolute truth."

NAVAL CUSTOMS, TRADITIONS, AND USAGE. By Lieutenant Commander Leland P. Lovette, U.S.N. U. S. Naval Institute, Annapolis, Md., 1934. \$3.75 postpaid.

By Lieutenant Colonel Earl W. Thompson, C.A.-Res.

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must be strictly obeyed, as inviolate as the laws of the Medes and the Persians.

Lieutenant Commander Lovette, who for several years taught the subject of Customs and Traditions at the Navy Postgraduate School at Annapolis, has included in his entertaining volume all the different types of facts, definitions, regulations traditions, customs, ceremonies, service etiquette, and accepted service and social usage, that have to do with this variable subject. Also there exists a chapter on nautical words and phrases, so that we of the sister service may read about the philology of the word "admiral," the "blue peter," a "chit," the "coxswain," a "dead marine," "flogging" in the Navy, and so on to "women at sea."

Our only derogatory criticism is that the continuous reading of this book has the same effect as reading an encyclopedia; this is the fault of the variability of the subject matter, rather than of the mental instability of the author. Even Sinclair Lewis could not make a continuity out of a dictionary. Lieutenant Commander Lovette has done an excellent job in collating and editing the material at hand.

The purpose of the book is set forth in the opening chapter:

Traditions, ceremonies, and customs exert a profound influence upon human behavior throughout life. The effect is particularly marked in such professions as the military and naval, organizations that lend themselves to passing on and perpetuating the more venerated customs, heroic traditions, and dignified ceremonies. Such stimuli when understood and properly directed effect a discipline, a distinction, and a service *esprit de corps* of incalculable value.

We compliment the Naval Institute on the make-up of the book, which is beautifully illustrated, well printed, and excellently indexed. This book should be made available for study by every officer of the U. S. Army, for although it has to do primarily with the Navy, yet many of the customs and traditions common to both services are explained and their history followed in a most agreeable and readable style. Certainly every aide and adjutant should have this volume on his desk for ready reference.

SAND TABLE EXERCISES. By Captain A. W. Valentine, M.B.E. The Devonshire Regt. 68 pages. Gale and Polden, Wellington Works, Aldershot. Second Edition, 1933. Price 2s 9d.

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