

COAST ARTILLERY JOURNAL



C. M. T. C. Trainees at Fort Hancock

July-August, 1932



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The Coast Artillery Journal

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THE UNITED STATES COAST ARTILLERY ASSOCIATION



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



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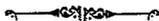
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Notes of the Coast Artillery Association



The cut shows the new Association Trophy. The center inscription, naming the winner is yet to be filled in. One of these will be awarded to a regiment of each component.



Disarmament

By Major General H. D. Todd, Jr., U. S. Army, Retired.

WHEN a military man, soldier or sailor, writes or speaks on disarmament, preparedness, national defense or similar subjects, his readers or listeners assume that because of his profession he can see but one side, that he will, regardless of expense, urge the establishment and maintenance of a large army and navy.

They consider his attitude that of a tradesman praising the goods he has to sell or that of a broker predicting a large rise in the stock he wishes to dispose of.

The average educated military man spends many years of his life carefully studying international relations and the actual and potential power of foreign nations. In addition to this, he is being continually trained to form logical conclusions from the events or facts his studies have developed. This, however, is not known by the general public and hence the military writer or speaker is relegated to the realm of the promoter.

Consequently the writer has often considered it a mistake for one of his profession to advocate large forces and particularly to ridicule the opinions of those who honestly believe in great reduction of our military strength if not total disarmament. Many of the latter people are earnest Christian men and women who are convinced that their conclusions are also logical and that by abolishing all armies and navies peace would ensue.

Most Americans while taking a patriotic interest in their country have neither the time nor the opportunity to study what might be termed the fundamental reasons for the maintenance of armed forces. However, by reason of their intelligence and education they are fully capable of forming correct opinions if they are provided with correct data.

It is proposed in this article to consider disarmament first in reference to the Constitution of the United States and, second, in reference to international relations and foreign policies.

The Constitution

In the Preamble to the Constitution it is stated.

"We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish the Constitution for the United States of America."

In Article I, Section VIII, we find:

"The Congress shall have power x x x x x

"To raise and support armies x x

"To provide and maintain a navy x x

"To make rules for the government and regulation of the land and naval forces x x

"To provide for calling forth the militia to execute the laws of the Union, suppress insurrections, and repeal invasions x x

"To provide for organizing, arming, and disciplining the militia and for governing such part of them as may be employed in the service of the United States x x."

Article II, Section I, states that "The Executive power shall be vested in a President of the United States of America," and also that before entering on the execution of his office he shall take the following oath or affirmation:

"I do solemnly swear (or affirm) that I will faithfully execute the office of President of the United States, and will to the best of my ability preserve, protect and defend the Constitution of the United States."

Section II of Article II makes the President the Commander-in-Chief of the Army and Navy of the United States, and of the militia of the several States when called into the actual service of the United States.

By Section I of Article III, the judicial power of the United States is "vested in one Supreme Court, and in such inferior courts as the Congress may from time to time ordain and establish."

Finally, we have Article IV, Section IV, as follows:

"The United States shall guarantee to every State in this Union a republican form of government, and shall protect each of them against invasion, and on application of the legislature or of the executive (when the legislature cannot be convened) against domestic violence."

Now what is the connection between the above quotation from the Constitution, including the Preamble, and the maintenance of an army and navy?

We have read in the Preamble that one of the objects of the Constitution is to establish justice and in Article III that the judicial power of the United States is vested in certain United States courts. A federal judge renders a decision, pronounces a sentence. If his court is the highest having jurisdiction in the case it is assumed by everyone that the will of the judge will be carried into execution. Why? What is there to sustain that judge? He is a very worthy man it is true. He has a few faithful court attendants, a handful of government agents of various kinds. But there is no visible force sufficient to support him. A very small number of men could defy him.

The answer is that the Constitution provides a power for sustaining the Federal judges and that power is contained in the army and navy, whose Commander-in-Chief is the President—a man who has taken a solemn oath "to preserve, protect and defend the Constitution."

The above answer is the only answer. There exists

no other power immediately available to enable the executive branch of the government to execute the will of United States judges; that is, "to establish justice."

Throughout the cities and in the country are numerous mail boxes. These while weather proof cannot resist any decided attempt to destroy them. What makes them practically inviolate? Motor trucks carrying mail sometimes of great value go through traffic with seldom more than one man in charge. Why are they secure? They in common with the mail boxes have "U. S. Mail" stamped on them; but why do those letters protect them?

A few times—very few—the letters "U. S. Mail" have temporarily failed to protect the mail. In 1894 anarchy was rampant in Chicago. The forces of law and order pertaining to the city, to Cook County, to the State of Illinois, were powerless, and probably would have continued so indefinitely, had not the lawless element obstructed the U. S. mail. When this happened, the President, as Commander-in-Chief of the Army and Navy of the United States, sent his Regulars into the city and at once the U. S. mail became inviolate.

In 1926, mail cars were being broken into by bandits, mail stolen and mail clerks injured or killed. The railroads themselves could not prevent these crimes, the local authorities were powerless. The Executive power then acted. U. S. Marines were detailed to guard the trains and the mail went through.

One night in 1906, the inhabitants of San Francisco were awakened by severe earthquakes, immediately followed by fire. The entire city seemed doomed and as always follows in the train of great disaster, evil forces began to act. Dead and dying were being robbed. No one was safe. Many lost all hope. Suddenly small groups of men appeared carrying rifles on their shoulders and bearing the letters "U. S." on their collars. U. S. Regulars had gone into action. Talk to survivors and hear their description of the great relief experienced.

What was then accomplished by the well trained, well disciplined men of the Army and Navy sounds like a story from the Arabian Nights. The fire controlled, extinguished; families reunited; homeless thousands provided with shelter, medical attendance, food and clothing. Almost before the news of the tragedy had spread throughout the country, "domestic tranquility" had been restored—a feat impossible had the Executive of the nation been deprived of his two arms of the service.

About twenty years later came the earthquake at Santa Barbara with resulting conditions, considering the size of the town, almost as disastrous as they had been in San Francisco. Here again the local authorities were unable to cope with the situation, but, fortunately, one of the arms of the Executive power was available. A few hours after the catastrophe a U. S. battleship arrived. Her landing parties went ashore and again "domestic tranquility" was restored.

In 1916 a large, well-organized and skillfully led force of Mexicans suddenly and without warning invaded the State of New Mexico and killed a number

of people in the town of Columbus. There was no state force available for the protection of the inhabitants, but fortunately there was at hand a force of United States troops and hence the Executive was able to carry out the provisions of Article IV, Section IV, of the Constitution, which, as we have read, directs the United States to protect each State against invasion. The Mexican Commander, Villa, was repulsed and then driven back into Mexico.

Many people are of the opinion that the armed forces of the United States are maintained entirely for war with foreign nations; yet, the incidents above described, should convince everyone that the President must have under his command forces sufficient to enable him to conform to his oath of office.

Deprive him of those forces; i. e., abolish the Army and Navy, and there remains no power whatever with which to establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare and secure the blessings of liberty to ourselves and our posterity. That is, the Constitution at once becomes a useless instrument.

International Relations and Foreign Policies

Representatives from the nations of the world are now assembled in Geneva at what is called a disarmament conference.

The use of the word "disarmament," however, is not accurate, for with the exception of Russia none of the representatives have been given a mission that calls for an effort to bring about total disarmament. They are in Geneva to bring about a "reduction" in armaments. That is, they are there *apparently* for a reduction.

At first glance this should not be difficult. If reducing armaments tends toward peace, which many people believe to be true, it ought to be simply a matter of arithmetic to adopt some percentage of present armaments as the proper strength and then reduce to that extent. The representatives could then go home feeling they had taken one more step toward universal peace.

But there is another viewpoint. Armies and navies are the instruments by which nations maintain or attempt to maintain their foreign policies. If the policies of the different nations do not conflict then it would be logical, in fact it would seem obligatory for these nations to reduce their armed forces to the strength required to keep the peace within their borders.

Going one step further, it should be evident that until these policies cease to conflict, the nations of the world will not disarm at all. Therefore, the first step in a disarmament conference should be a formation of policies that all the nations of the world agree to.

Here we arrive at the stone wall, which in the entire history of the world has never been scaled. In fact, as the representatives now gather together they find this stone wall as high as, if not higher than, it has ever been.

The Treaty of Versailles greatly changed the map of central and eastern Europe. Not only by this treaty were frontiers moved, but entirely new states were brought into being. As was logical, the gainers were

the peoples who fought on the successful side. The frontier of France has moved eastward to embrace the provinces of Alsace and Lorraine, while that of Italy has moved to the northeast over what was formerly Austrian territory. The Belgian frontier has also moved so as to include the former German areas of Eupen, Malmedy and Moresnet. And finally Rumania was enlarged by being given Transylvania from Hungary and Bessarabia from Russia. Among the new names on the map are Poland, Yugo-Slavia, and Czecho-Slovakia.

Every American school boy has read of the "crime" of Poland. Over a century ago Russia, Prussia and Austria agreed to destroy the Polish government and divide the land among the three conquering nations; consequently the restoration of this state appeared as an act of justice to a great people.

Yugo-Slavia or the Kingdom of the Serbs, Croats, and Slovenes was formed from Serbia, Montenegro and parts of Macedonia, Hungary and Austria. Czecho-Slovakia was formed in 1919 by the union of Bohemia, Moravia, Slovakia, Ruthenian Slovakia and Ruthenia, territories that had formed part of the Austrian-Hungarian empire.

This brief historical sketch of the change in frontiers and the formation of new states indicates in itself the difficulties facing the members of the Disarmament Conference. It is a clear case of, to the victors belong the spoils and the resulting resentment of the losers.

Not only that, but in forming the new states it was not found possible to avoid including within their borders people of alien races. Poland's population of thirty millions contains about nine million aliens; of the fourteen millions in Czecho-Slovakia at least three million are Germans and in fact throughout the newly formed states are large numbers of peoples whose racial history and characteristics make them hostile to the new governments. Owing to the danger resulting from discontented subjects within their borders and to openly expressed hostility without, the newly formed states maintain armies for self-preservation—the first law of nature.

Poland is in a particularly dangerous position. It is evident that Germany does not intend to allow the indefinite existence of the Polish Corridor which is that portion of Poland that borders on the Baltic and separates East Prussia from the rest of Germany. The German lion is unarmed, the Polish lamb is armed. To invite the lamb to disarm is to invite her to commit suicide.

The map of Europe as it now exists is due to the newly formed states being armed and to the remains of the defeated nations of the World War being disarmed. Until the defeated nations agree to the status quo, it is most illogical if not absurd to ask the newly formed states to disarm.

Since 1870 France has suffered and suffered cruelly from two invasions. Every Frenchman has lived and is living with the dread of another invasion. By her marvelous energy, skill and foresight she has built up her armed forces and her resources until she is now secure. But this has entailed hardships. If the for-

eign policies of her neighbors were formulated so as to secure her from attack or if attacked allow her communication with North Africa to remain unobstructed, she would gladly relieve herself of her military burden. She believes her future as a state depends largely on the maintenance of the status quo in Europe; but she knows that this status will be destroyed if she and her allies reduce their armaments to those of the defeated nations.

France is now the dominant power on the continent of Europe. That, however, does not necessarily mean a dangerous power. A nation that possesses a powerful army or a powerful navy cannot be considered as a menace to the peace of the world; but a nation that has both a powerful army and a powerful navy can be so considered. History shows that a nation possessing great strength ashore and afloat has a tendency to run amuck and then woe to the nations that have not "armed to keep the peace."

Italy is not satisfied with her spoils from the late war and apparently with reason. However, she has inherited from the Versailles Treaty fewer serious problems than many of the other nations. With her present land frontiers she cannot well be attacked except by sea. But her sea borne commerce is vital to her prosperity. Hence her foreign policy must not conflict with that of the greatest naval power. That is she must go step by step with Great Britain. If in addition, her foreign policy and that of France could unite in terms of friendship these two great Latin countries, the peace of Europe would be greatly assured and, consequently armaments could with reason be reduced.

Germany at the Disarmament Conference is in the position of the fox with its tail cut off. She is there to invite her former enemies to go and do likewise; failing in this request she will demand equal physical characteristics.

Underneath the surface, Germany probably has no intense desire to produce disarmament in Europe. What she wants is equality as expressed in armed forces. Once this is obtained, she will be in a position to demand a change in her frontiers and the restoration of her lost colonies. Ever since the war this virile, energetic nation of nearly seventy millions has made every effort within the strict wording of the Versailles Treaty to train its man power for such action as may be considered necessary in defense of the Fatherland.

While Germany may not be able to perform the miracle of a million springers in one night, her intense physical and disciplinary training of huge athletic organizations and the exceptionally high efficiency of her army in which every noncommissioned officer and many privates are officer material, would, once the bars are let down, enable her to produce an army in record time.

Great Britain, in order to live, must import over two billion dollars worth of food every year. But this great indebtedness has to be met by her exports. Now the value of her exports must at least equal this sum plus the cost of raw materials required for the manufacture of her exports. The excess of the value of her

exports over this latter sum measures the degree of prosperity that she may enjoy.

In other words, Great Britain requires access to the markets of the world and, consequently the safety of her oversea commerce must be guaranteed. In the past she has accomplished this by maintaining a sea power equal to that of any other two nations. Since the World War, her position as the first sea-power has not been so pronounced as she has consented "in principle" to parity with the United States. Actually she is still the dominant power, a position her statesmen feel must be retained, and, in order to guard the gateway to India, her fleet is maintained equal to the combined fleets of France and Italy.

The phrase "access to the markets of the world" needs modification. Great Britain's life also requires foreign markets suitable to her great needs. The economic collapse of Germany and the passing of Russia under Bolshevik control, crippled if not destroyed two markets of great value to the British Empire. Great Britain desires a Germany strong economically and also would gladly welcome stable trade relations with Russia, relations that would not include an effort by the Third International to destroy the British government. We now again are confronted with the stone wall erected by the foreign policies of the nations of the world.

It would seem that Christian nations sitting at the round table would not hesitate to assure any one of their number the safe import of foodstuffs necessary for its life and also the safe export of the articles required to pay for those foodstuffs. History, however, records no such action. Moreover, the construction of aircraft and submarines on the part of several Christian nations bordering the sea lanes to the Far East has not induced British statesmen to make any great reduction in their navy.

Up to date, one thing and one thing only has safeguarded Great Britain's commerce and that is "Britannia Rules the Waves."

Another problem for the gentlemen at the round table would be the economic revival of Germany. To Poland and to France, assisting Germany to become a strong commercial power would in the end be assisting her to regain her military power. Poland does not intend to be butchered any more and no Frenchman proposes to help Germany to again run roughshod over France. And that is that.

Considering Asia, a number of years ago, there was heard the slogan: "Asia for the Asiatics"; then a "Monroe Doctrine" for Asia with Japan as the dominant power.

Japan's position in the world today is due almost entirely to the efficiency of her army and navy. Overflowing from her restricted island areas and requiring supplies that are found on the mainland her nationals came in contact with both Russia and China. The former, often called the Colossus of the North, was advancing with an apparently resistless force across Siberia to the shores of the sea. In China were four hundred million people who if they ever developed a strong nationalism and established a stable government

could master all of the Far East. Both these nations severely menaced the life of Japan.

Acting with great courage and high efficiency, Japan severely defeated China in 1894 and stopped the Russian Bear in 1905. However, owing to the demands of the principal nations of Europe and to the relation then existing between their armaments and that of Japan, the latter country was forced to relinquish what she considered the just spoils of her victories.

Her people firmly believe first, that the prosperity if not the life of their country depends upon the maintenance of stable government in Manchuria and Korea with opportunities for her nationals to follow their pursuits in peace, and second, that such stability cannot be secured unless these areas are controlled by Japan.

Korea was absorbed with what the Russians would call the "liquidation" of thousands of Koreans in 1912 and now Japan is in virtual control of Manchuria. This time in relation to that of the other nations, and considering her geographical position, Japan's military and naval strength is far stronger than in 1905 and therefore she will not be inclined to accept an invitation to relinquish the fruits of her skillfully planned and energetically conducted campaign.

Unless the foreign policies of the other nations are friendly toward what Japan deems her vital interests, her position at the Disarmament Conference is extremely difficult.

Statements are appearing to the effect that it is incongruous for Russia to propose complete disarmament while maintaining a large, well disciplined and well equipped army. There is in reality nothing incongruous about her position. The Third International—another name for the Soviet government—has announced as one of its missions the overthrow by violence of the governments of what it styles capitalistic nations. Consequently if, by diplomacy, the executives of these nations can be deprived of their power to enforce the present laws, a long step is gained in the overthrow of all law and the taking of control by the disciples of communism.

The United States did not enter the World War for material gain. No additional territory was desired. We fought to assist in stopping a nation possessing both a powerful army and a powerful navy and which was running amuck. Until we declared war, we were the most powerful neutral, but our power was not sufficient to save us from the blows often received by the spectator of a fight. Many an American grits his teeth at the treatment accorded our shipping by both sides, treatment that would not have occurred had our forces been stronger.

At the time of the Disarmament Conference in Washington, we were building a navy that would not only have saved our merchant marine from annoyance for many years to come but would have caused all future belligerents to treat us with great respect.

However, its very strength worked against it. By boring from within on the part of other naval powers and by the spread of a pacifist wave at home we were induced to destroy thousands of naval tonnage. Scrap-

ping the powerful Montana class of battleships and the Lexington class of battle cruisers was a noble gesture for peace and good will. So noble that it was immediately followed by active building of cruisers and other smaller classes on the part of friendly nations.

Diplomacy is a great force. After a few weeks of speechmaking the diplomats destroyed more capital ships pertaining to the United States Navy than any foreign nation could have destroyed in battle throughout a long campaign. Fortunately, this lesson was not lost on thoughtful educated Americans. Fortunately, also, while we may be forced into wars caused by other nations, our foreign policies do not lead toward war.

Since the monarchical form of government has practically ceased to exist in Europe, the Monroe Doctrine has lost most of its danger, and as so many nations advocate the Open Door in China, that doctrine is not apt to cause any serious friction.

While it is a national characteristic to consider ourselves far holier than the other fellow it is believed our representatives at Geneva, were they at a conference for formulating pacific policies among the nations of

the world could be of great assistance. However, when it comes to advocating any real reduction in armaments under existing policies their paths are set with thorns, particularly as they represent a nation whose navy is approaching third place and whose army has been skeletonized.

Can the nations of the earth be brought to a give and take policy? Will each nation formulate its foreign policies so as to recognize as just many of the claims of the other nations? Until this is done, to preach disarmament is to advocate putting the cart before the horse.

Strange as it may appear many of the present foreign policies that so jeopardize the peace of the world are not those of a more or less despotic dynasty. They are the demands of the people who in spite of their terrific sufferings during the World War still retain intense nationalism.

There is, however, one fundamental reason for this. The Creator himself originated nationalism when he produced the confusion of tongues at the Tower of Babel.



Officers' Beach Club, Ft. Monroe, Va.

Lessons of the German Air Raids on Great Britain During the World War

By Major Joseph C. Haw, Coast Artillery Corps, (DOL)

DURING the World War, German aerial invaders bombed Great Britain one hundred and three times, depositing on the island a total of 8458 bombs of an estimated weight of 280 tons. As these attacks constituted by far the most important and extensive overseas aerial bombing operations ever undertaken, their history is well worth some attention.

BRIEF HISTORY OF THE RAIDS

Airships

As everyone knows, the German air raids on Great Britain were carried out by both airships and airplanes, but the first phase of the real offensive was made by lighter-than-air craft and the great majority of the ships employed were Zeppelins. Although dirigibles continued their raids into 1917, the last incursion intentionally directed on London by this type of craft came on October 1st, 1916. With the exception of one appearance over London, said to have been made by an airship that had lost its bearings, all airship attacks after that date occurred over other parts of the island; there were twelve such raids, in which only 25 people were killed by bombing. These meager results outside London emphasize the very obvious fact that from the point of view of the attack great cities are vastly more profitable targets than are smaller ones. The efficiency of the defense was undoubtedly the reason why the airships shunned London after October 1st, 1916. (This does not mean that the defense against airplanes was effective at that time, however.) The first airship raid on the island occurred on the night of January 19-20, 1915; the last Zeppelin raid in which bombs were dropped on Great Britain was made on the night of April 12-13, 1918. All airship attacks were made under cover of darkness. Most of the airships lost by the Germans both by gunfire and as the result of accidents became casualties because of the inflammable character of the gas used to inflate them which of course was hydrogen. The great majority of the ships shot down were set on fire by incendiary bullets.

Airplanes

The airplanes employed by the Germans to bomb Great Britain were the Gotha and Giant types. The Gothas, which did most of the work, were two-engined three-seater biplanes about 38 feet long with wing span about 72 feet. They carried three machine guns and about 868 pounds of bombs apiece, are said to have had a ceiling of 12,000 feet (loaded) and to have attained a speed of 70 miles per hour. The Giant airplanes were of 150 to 180 feet wing span, capable of carrying about three times the useful load of a Gotha.

A Giant plane shot down on the Continent had five engines and a crew of nine men. The airplanes were based on the vicinity of Ghent, about 170 miles by air from London.

The first airplane attack in which bombs were dropped on Great Britain occurred on December 24, 1914, and the last on the night of May 19-20, 1918. The first airplane raid on London came on November 28, 1916, by daylight; the last day raid on that city was on July 7, 1917, and the last day raid in which bombs were dropped on any other part of the island occurred about a month later (August 22, 1917).

Statistics

The book written by Captain Morris contains a statistical account of all the raids. From an analysis of his figures we arrive at the tabulation given below, which includes all raids in which bombs were dropped on land and excludes thirteen raids during which no missiles struck the island of Great Britain.

	Number of Bombs Dropped	Number of Killed	Number of Injured
Total all raids (103)	8458	1413	3408
Average per raid	82	14	33
51 airship raids (all during hours of darkness)	5751	556	1358
Average per airship raid	112	11	26
52 airplane raids	2707	857	2050
Average per airplane raid	52	16	39
In 24 day airplane raids	769	418	1043
Average per bomb	0.55	1.36
In 28 night airplane raids	1938	439	1007
Average per bomb	0.23	0.55
All raids (13) in which more than 30 were killed	2219	902	1823
Average per raid	170	70	140
6 airship raids	1559	308	521
Average per raid	259	51	87
7 airplane raids	660	594	1302
Average per raid	94	85	186
Average casualties per bomb in raids (65) in which there were deaths	(7266)	0.20	0.46
Average casualties per bomb in raids (13) in which more than 30 were killed	(2219)	0.40	0.82
All raids (31) on London (12 airship, 19 airplane)	?	670	1962
Average per raid on London	?	22	63

Direct Material Results

When we consider that the war cost the British Empire something like a million dead besides the wounded, it is perfectly evident that the direct material results of the German air raids were insignificant. It was otherwise, however, with the indirect results, which will be considered later.

The more we study the figures the more astounded

are we at the paucity of the damage inflicted by the German raiders, yet there is no reason to believe that the Germans were less efficient than the Allies. The only possible conclusion is that aerial bombing during the World War was vastly less destructive than the average person thinks.

The popular misconception concerning aerial bombing in the World War extends both to the efficacy of explosives and to the accuracy of bombing. Even military men have apparently always tended to an exaggerated belief in the power of explosives. In our Civil War, for example, General Butler attempted to destroy a fort by exploding near it a shipload of powder; needless to say, the fort was unharmed. There is also an almost irresistible impulse to believe that anyone in the sky can drop missiles with unerring aim.

Leaving out of account for the moment the modern improvements in aviation, in bombs and in bomb sights, consider a few instances from Great Britain's trials. On December 18, 1917, the Germans dropped a six hundred pound bomb on Lyall Street, by Eaton Square, London. This was the first time so large a bomb had been used, and even today it could not be considered entirely insignificant in size. This bomb slightly damaged twenty-two houses, but not a soul was killed or injured.

The greatest Zeppelin raid (in number of ships employed) occurred on the night of September 2-3, 1916, when fourteen airships crossed the coastline of Great Britain and dropped 261 high explosive bombs and 202 incendiary bombs on the island. The total weight of missiles was estimated at sixteen tons. In this raid, four persons were killed and twelve injured.

The airplane raid on the night of May 19-20, 1918, is referred to by Captain Morris as "the greatest aerial raid of all time." On that date approximately 40 German machines attacked Great Britain, 13 of them flying over London. 155 bombs were dropped, their total weight being estimated at eleven tons; 49 people were killed and 177 injured. In this affair the Germans lost about 25% of the attacking force; six of their airplanes were shot down over England (three by antiaircraft artillery guns and three by pursuit pilots), one was forced down, and three crashed on their home airdromes. This marked the end; never again was a German bomb dropped on the Island.

The most deadly raid of all was made by airplanes during daylight on June 13, 1917, when 20 planes dropped 126 bombs, killing 162 persons and wounding 432 others. The success of this raid was undoubtedly due to the fact that the bombers could see their targets and about sixteen planes boldly flew in formation over the heart of London. Apparently they got away unscathed, no doubt because at this time the British aviators attacked singly instead of in formation, while the antiaircraft artillery was at that period very ineffective, as will be brought out later.

On the other hand, thirty-seven of the raids (involving 1192 bombs) resulted in no deaths whatever and only 48 wounded. For the entire series of 103 raids the average casualties per raid were 14 killed and 33 wounded, the average number of bombs per

raid was 82, and the average casualties per bomb were 0.17 killed and 0.41 wounded.

It is interesting to note that in the single year 1931 automobiles in this country killed about 23 times as many people as the German air raiders succeeded in killing in their three and a half years of attacks on Great Britain. The total number of persons killed in all raids on London was less than half the number killed by traffic accidents in that city in 1928.

In this connection, we might note the casualties inflicted on Paris. The Germans continued to bomb the French capital after they had decided to leave London alone, and the last raid on Paris was delivered on September 16, 1918. Major General Ashmore says: "The total air raid casualties (in Paris) throughout the War were 266 killed and 603 wounded. The long range German gun "Big Bertha," which fired into the city on forty-four days between 23rd March and 9th August 1918, produced very much the same results, 256 killed and 620 wounded."

The following figures on property damage are taken from the Encyclopaedia Britannica:

<i>Date</i>	<i>Damage, Pounds Sterling.</i>
September 8, 1915	£500,000
October 13, 1915	£500,000
July 7, 1917	£200,000
December 18, 1917	£225,000
May 19, 1918	£130,000

These are important amounts, but the damage was undoubtedly considerably less in the great majority of the raids than in these isolated instances. Major General Ashmore states that the total damage to property in London amounted to £2,042,000. It is interesting to learn that the Government sold Air Raid Insurance at one sixth of one percent and cleared £10,898,205.

From all this it is obvious that if casualties and property damage constituted the sole measures of achievement, the raids could be considered as nothing less than wasted effort. When we consider other effects, however, the story is different.

Indirect Results

While the direct damage done by the bombing of Great Britain was relatively slight, the indirect results were both tangible and weighty. For defense against the Zeppelins alone, even before airplanes made their possibilities felt, the British kept twelve flying squadrons in England and installed about four hundred antiaircraft artillery guns. At the end of 1916 the defensive air force employed 200 officers and 2,000 men, while nearly 15,000 others were engaged in anti-aircraft activities. Though this was at a time when England still feared a German invasion and kept nearly 500,000 men at home for such an eventuality, on the other hand it is reasonable to suppose that the air raids in turn considerably stimulated the fear of invasion. The continuing magnitude of the defensive measures is further shown by the effort exerted to meet a day raid on July 1, 1917, when about 100 British airplanes took off to attack the raiders; while 84 were in the air on the occasion of the final raid.

At the close of the war, the antiaircraft artillery defenses employed 200 airplanes, 200 highly trained pilots, and 20,000 others.

The effect of the raids on the populace was considerable. On the night of September 24, 1917, the number of persons taking refuge in the London subways was estimated at 100,000; the next night there were 120,000; and on the two following nights, although there were no raids, people flocked to the tubes, carrying beds, bedding, dogs, etc. It is estimated that on another occasion no less than 300,000 people crowded into the stations of the underground railway.

The munitions factories apparently worked day and night, and after work was stopped on account of a raid warning it was impossible to induce the workers of that particular shift to resume their labors.

The following quotation from Captain Morris summarizes the general effect on industrial activities: "On receipt of raid warnings, and there were many false alarms, work was suspended, sometimes over vast industrial areas, traffic was disorganized, and an adverse moral effect was produced both on workers and on the population. As a broad result some one sixth of the total normal output of munitions was entirely lost and the quality of a less proportion was affected."

There was of course a certain amount of criticism of the Government and considerable popular clamor for protection.

When we recall that the British Empire was fighting for its life and needed for service at the front every man, airplane, gun, and shell that could be provided, it is evident that the German raids more than paid for themselves from the German viewpoint; the humanitarian aspect is another matter.

Was it not Napoleon who said that in war the moral is to the physical as three to one? In evaluating the effect of aerial attacks it would hardly be an exaggeration to say that in an air attack on trained ground troops the moral is to the physical as thirty to one; while the ratio for attacks on the civilian population is obviously several times greater. Of course, this is no new discovery; but it takes a concrete case like that under discussion to make one realize the immensity of the ratio between actual physical damage and the effect on civil populations.

Defensive Measures of the British

Starting with nothing, the British developed an anti-aircraft defense that eventually employed large numbers of guns, men, and airplanes, and some captive balloons. Flying fields were established at many points; anti-aircraft batteries were located at strategic places; an elaborate intelligence and command system was organized; and certain areas were covered by searchlights working with the fighting airplanes. London, of course, was the most heavily defended locality.

The British airplanes eventually gave a good account of themselves but were faced with serious obstacles to the end. Almost until the last few months, the British defense planes were inferior in speed and climb. Until incendiary bullets were perfected they could do little against the Zeppelins. At night they

could not find enemy airplanes or, as a rule, even the huge Zeppelins unless the targets were first picked up by searchlights; this was the greatest problem that confronted the Air Force, and was never entirely solved. Even in daylight raids few of the defense pilots could find the enemy. When a pilot opened fire at night he was apt to lose sight of his opponent because the flashes of the machine guns in his own plane blinded him while they lasted. It took valuable time for airplanes to take off and gain a proper altitude. In the early days there were many crashes in night landings. Apparently the British did not fly in formation until August, 1917. Pilots at training stations were quite properly not included in the night flying defensive forces, but this brought severe criticism from civilians in the vicinity of those airdromes devoted to training. In spite of all difficulties, however, British aviators succeeded in inflicting losses that in the aggregate were serious.

"Aprons" of captive balloons were located at various points near London on the theory that the enemy, learning of the existence of these balloons, would be forced to fly above the altitude of the balloons, which eventually reached nearly 10,000 feet. There was no authentic instance of a German plane striking a balloon or its cable, although on one occasion there were indications that this had happened. However, German reports showed that their pilots regarded these "aprons" as very serious obstacles.

The anti-aircraft guns of that period were so ill-suited to their purpose, the range finding devices were so crude, and the method of fire was such that relatively few hits were obtained. Much of the firing took the form of "barrages" fired ahead of or on the flank of approaching planes to force them to alter course; in this type of fire, as practiced, there was virtually no chance at all of hitting. Nevertheless, it is stated that these barrages did cause the Germans to alter their courses.

All anti-aircraft artillery was woefully inadequate at that time. During the earlier part of the war Zeppelin commanders found that by keeping above 10,000 feet altitude they were always above the bursting shells. Whether this limitation in range was due to the guns themselves or to the fuzes, this altitude is only one third the maximum vertical range of our own modern 3-inch anti-aircraft artillery guns, and one quarter that of our 105-mm. guns. By 1916 the British had a few 3-inch guns with a maximum vertical range of 17,000 feet. Range finding and data computing devices for anti-aircraft artillery were at that period so crude that a hit was a matter of luck rather than of skill. Searchlights and sound locators were decidedly inferior to those we have today. A large proportion of the men employed on the guns and searchlights were medically unfit for service at the front and at first were poorly trained, yet these troops had to be relied upon to operate all the elements of a most elaborate and complex system.

The concealment of lights of all kinds was undoubtedly the most effective measure of passive defense that could have been undertaken. An elaborate and exten-

sive intelligence system, extending to the coast and in touch with the continent, was indispensable. This system served the defending aviators as well as the gunners, giving the British airmen an opportunity to take off before the raiders reached their vicinity. The spreading of the alarm in London and other cities, in order to warn the citizens to conceal all lights and to take cover, was a necessary feature of the defense.

Had the British accomplished no more than to make it too costly for the Germans to raid by daylight, that alone would perhaps have been sufficient justification for all the expenditure of money and effort, for if the raiders had been free to bomb in daylight they would surely have inflicted much greater losses in the long run. Actually, however, the defense was so effective that after the night of May 19-20, 1918, the Germans never dropped another bomb on Great Britain. The defense was thus completely triumphant nearly six months before the armistice.

Lessons For the Defense

It would be a waste of time to discuss here defensive measures that are familiar to everyone. It is obvious that an efficient antiaircraft defense must combine airplanes, searchlights, guns, and machine guns, with a long range and elaborate intelligence network, all controlled by an efficient and highly organized system of centralized command. It is evident, too, that these measures must be supplemented by effective means of passive resistance such as concealment of lights, raid warnings for the inhabitants, etc.

It is worthwhile, however, to emphasize a few points that will be especially important to the defense. Assuming that defending airplanes are available, the most important thing as far as they are concerned is to enable them to find the enemy. The experience of the British clearly shows that it is impossible to over-emphasize the need for this. Time after time dozens of British pilots took off, but rarely did more than two or three of them see the German invaders. Unless observers on the ground can communicate with the defending aircraft, therefore, it is highly probable that in the great majority of cases the latter will be unable to locate the attacking planes. Radio should solve this problem.

The necessity of providing machine guns on the ground is most important; although this issue did not arise in the historical case we are discussing, it cannot be passed over. Owing to the difficulty of bringing cannon to bear quickly on low flying airplanes it is quite possible that an audacious enemy would find a path not so very far above the treetops to be the safest unless the defense should install machine guns in proper numbers. At night, very low altitudes are even less favorable to the defense than they are by day, for sound locators and searchlights of present types would probably be very nearly useless against flights at such altitudes. Antiaircraft machine guns, therefore, are absolutely indispensable, and strenuous efforts should be made to develop searchlights with wide-spreading beams for low altitude, close-up work in cooperation with the machine guns. Balloon "Aprons," too, would obviously discourage low flying.

At night, it would be extremely difficult for defending airplanes to locate raiders flying at very low heights, because the latter could not be held in the beam of any one searchlight more than a few seconds.

Closely related to this question, and of equal importance, is the necessity for antiaircraft artillery gun batteries to be able to engage, effectively, targets that are diving. At present, the battery commander must attempt to meet a diving target by throwing in arbitrary corrections, but this is guesswork. Our data computers are not designed to deliver accurate fire upon such targets. The problem is exceedingly difficult but a solution must be found.

Even after making due allowance for improvements in aerial navigation, it is impossible to overestimate the importance of concealing ground lights. The glow of iron ore slag on the cliffs of Skinningrove was constantly used as a landmark by German planes approaching from the sea. Lights proved also to be magnets for bombs; in one case a burning field of heather was bombed by several planes; flare lighted landing fields were often bombed and searchlights were attacked. Both to impede navigation and to avoid revealing the position of specific targets, therefore, it is imperative to extinguish or conceal all lights that would aid navigation or bombing.

As a corollary, it is evident that searchlights, and even guns, should be frequently moved so that the raiders would be unable to rely on them as landmarks.

Again, the use of lights to mislead the enemy offers many possibilities. Cleverly located lights, apparently insufficiently camouflaged, might often confuse the navigators; while it might be possible at times to entice raiders into bombing uninhabited localities by well designed layouts of partially concealed lights simulating villages, factories, or other objectives actually located in the same general vicinity.

We see too the desirability of flashing powder; but as flashless powder tends to be smoky, a nice balance must be struck. On a still night the writer once saw an antiaircraft artillery gun battery, firing flashless powder, blind itself with its own smoke in less than a minute; in that short period there was created an absolutely opaque pall that hung over the battery for some time. One solution would be to move the range section some distance from the guns, but certainly the powder must not be too smoky.

On at least one occasion during the German raids on England searchlight observers were "blanketed" by German flares. In the future, we may expect aviators to use both flares and smoke for concealment.

The organization of the defense, and the planning and installation of the intricate and widespread command and intelligence network of telephone and radio stations and channels, will constitute a task calling for the highest degree of skill and organizing ability. This phase of the defense caused the British an immense amount of trouble. At the time of the last raid the installation of the system in its final form was still incomplete; in fact, it did not become wholly effective until September 12, 1918. Major General Ashmore estimates from the results of maneuvers that this final

development, known as the "Lada control", increased fourfold the chance that the defending airplanes could locate the raiders. However, the important lesson here is the need for adequate planning in time of peace.

As the difficulties encountered by the defending airplanes in Great Britain have been pointed out, it is appropriate to show here the other side of the picture. Just before the end of the War British night-flying fighting planes at the front demonstrated what can be done by aviators trained for night work when properly aided by efficient searchlights skillfully operated. Between September 13th and 30th, 1918, a single British nightflying squadron in the vicinity of Arras and Amiens destroyed fourteen German bombardment planes.

The Future

Few people realize the tremendous progress that has been made in every department of the antiaircraft artillery.

Even during the war, the British antiaircraft artillery in France showed constant improvement in hitting power. Major General Ashmore says, with reference to guns in France: "In 1918 the average number of rounds fired, to one enemy machine shot down, was 4000 (only 800 in the best month, March, when there was a great deal of low flying)". Today, searchlights and sound locators are far more effective than they were in those days and in machine guns we have the .50 caliber as against the old .30 caliber. As for cannon and accessories, the height finders and data computers are vastly more efficient than the early types; instantaneous and continuous transmission of firing data to the guns has eliminated "dead time"; the mechanical fuze is more accurate than the old powder train fuze; rates of fire are much higher; ranges are longer; high muzzle velocities have increased the accuracy of the guns and made heavy cuts in the times of flight. The combination of all these improvements makes a modern antiaircraft artillery battery a vastly more dangerous unit than were its pioneer predecessors of the World War. Therefore even after making due allowance for advances in aviation it can be predicted that in the next war antiaircraft artillery searchlights, machine guns and guns will give a much better account of themselves than they did in the last war.

On the other hand, everyone is more or less familiar with the great strides that have been made in airplanes, bomb sights, aerial navigation, etc., and with the threat inherent in chemical warfare and in the use of disease germs. Of course, the effects of chemical attacks can be greatly reduced if time and materials are available for the organization and instruction of civil populations, while both chemical and bacteriological warfare are under the ban. Their use would open the way to reprisals and perhaps popular opinion would array some neutral nations against the country that should first resort to these weapons. Nevertheless, they are likely to appear in future wars. Incendiary bombs also present great possibilities, although the Germans had very little success with them.

Whether or not such methods come into play, perhaps the most serious menace lies in the great number

of airplanes that will be immediately available in future wars. While it is true that by the end of the World War the number of airplanes in use was astounding, the fact remains that in the raids on Great Britain the Germans used an average of but four ships per airship raid and eight planes per airplane raid.*

Conclusions

British writers agree that the chief effect of the raids upon the civilian population was to increase the desire for victory and the cry for vengeance. However, we have seen that the public demanded protection and we have noted the extent of the measures that were necessary to meet this demand. Had the Germans been able to deliver frequent attacks in great force against the virtually unprotected England of the earlier period of the war, the moral effect would have been incomparably greater and these raids might have materially influenced the whole course of the war.

When we consider the size of modern air fleets, it is obvious that unless met by a strong defense they could cause enormous damage to life and property. Since the ratio between the physical and the moral effect is likely to be even greater than it was in the World War, it is quite possible that an *undefended* country might be made to sue for peace as a result of aerial attacks; at the very least, bombing operations would have a decided effect on the conduct of operations by such a nation.

But the larger nations do not propose to remain defenseless. We found that under World War conditions it was possible to make the raids so costly the Germans had to give them up. Generally speaking, and in spite of the improvements in airplanes, in aerial navigation, and in bombs and bomb sights since the World War, antiaircraft defense appears to have made greater strides than the attack. From the time of the very first raids on England, bombardment airplanes were at least physically capable of transporting bombs of formidable size to objectives within flying range and of dropping these bombs with the assurance of hitting a sufficiently large target, such as a city, if they could find it. On the other hand, right up to the last raid few indeed of the defending airplanes were able to locate the raiding bombardment planes; until shortly before the end not many of the defending aircraft possessed adequate climbing power; formation flying was but little used by the defense; and finally, the ground weapons were extremely inefficient. These handicaps have been very materially reduced: the superiority of modern antiaircraft artillery over that of World War vintage is evident; formation flying (by day, at least) will be standard for the defensive aviation, and pursuit planes of suitable characteristics will be available; superior sound locators and searchlights will facilitate the illumination of enemy planes by night; perhaps most important of all, radio communication from observers on the ground to defending formations in the air will enable the latter to find the enemy; and last, but by no means least, we now have a reasonably sound idea of how to plan and organize the defense. (This latter point can only be appreciated by one who

*See *Encyclopaedia Britannica* for total number of aircraft employed.

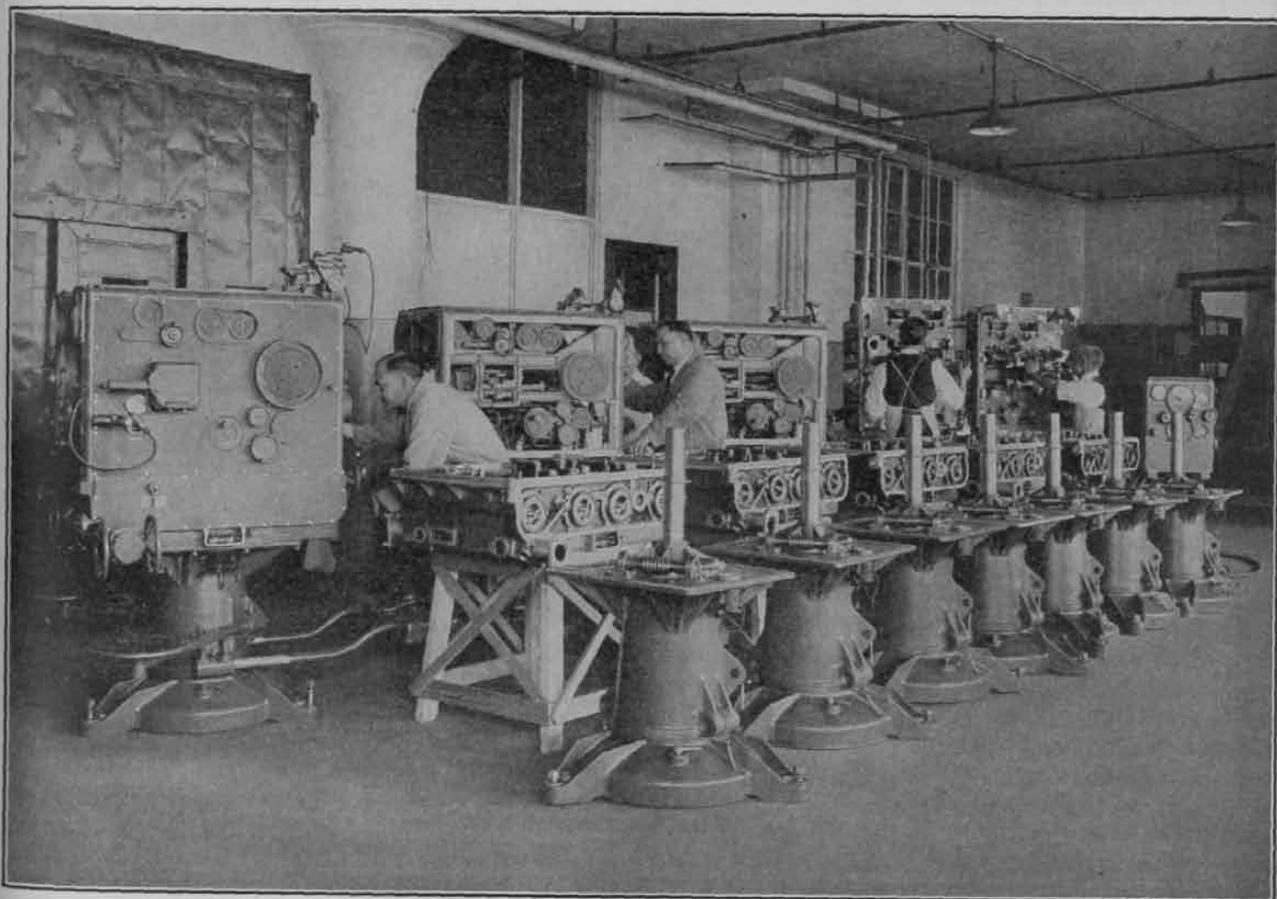
has read of the blunders committed in the earlier days, and of the inevitably slow growth of proper ideas of organization and operation.) In view of all these advances, it seems evident that while it will never be possible to erect an airtight defense, it should certainly be possible to build up an *effective* defense in the next war. Such a defense would require both airplanes and anti-aircraft artillery and would necessitate a highly organized system embracing an extensive intelligence network, centralized control, and elaborate measures of passive defense.

It took the British about three and a half years to stop the German raids. With the knowledge we now

have, a defense could be built up very quickly provided the weapons were ready. Therefore the greatest lesson to be drawn from the British experience is the necessity of providing, during time of peace, an adequate supply of anti-aircraft artillery and of aircraft.

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The Antiaircraft Director in quantity production at the Sperry Gyroscope plant, Brooklyn

An Estimate of the Antiaircraft Situation

By Major W. K. Richards, C. A. C.

AT OUR Service Schools we are taught that the solution of every problem must be based on a sound and logical estimate of the situation.

The mission of Antiaircraft Artillery is to afford protection to vital elements on the ground by neutralizing enemy aircraft that may attack them.

The first considerations are therefore the enemy aircraft, their characteristic powers and limitations and later the locations at which the different classes will form serious threats.

The classes of enemy aircraft that form the threats against ground elements are:

(1) Heavy bombers which will carry the maximum load of heavy bombs and will be restricted to non-maneuverable flight when about to execute their missions on their objective. They will usually fly high and will be capable of hitting only large area targets.

(2) Light bombers which will be capable of executing their missions in low maneuverable flight with very accurate bombing.

(3) Attack planes which will execute their missions by dropping light bombs and strafing with machine guns while in low maneuvering flight.

(4) Observation planes which will usually execute their missions between 1500 and 6000 feet.

(5) Pursuit planes form little or no threat against elements on the ground.

The next considerations are the powers and limitations of the various classes of antiaircraft artillery equipment.

(1) The 105-mm. gun has a high muzzle velocity and a large volume of burst. The firings at Aberdeen Proving Grounds in the fall of 1930 demonstrated that this weapon with the case III director control system is effective against targets in rectilinear flight at all ranges and due to the short time of flight and large volume of burst, is effective against targets in maneuvering flight up to the range of 12,000 feet. Due to the long radius of the base of its cylinder of effective fire an extensive system of Artillery Information Service should be used to give timely warning of the approach of enemy aircraft to that cylinder of effective fire. The most accurate system of fire control, elaborate and immobile though it be, should be developed for this weapon. No mobile carriages have yet been developed for this gun. Its use is therefore limited to those locations in which it can be deliberately emplaced for permanent use. The problem of ammunition supply for this weapon almost prohibits its use in forward areas without the introduction of additional ammunition trains to our already overcrowded columns. The use of the case III director system of fire control appears logical for this weapon but such a system should be supplemented by an emergency sighting system.

(2) Up to the present the problems of the firing of 3-inch antiaircraft guns on fixed and on mobile carriages have been considered as a single problem. The approved developments during the past few years have been concentrated on use of the case III director system of fire control without a reasonable consideration of the difficulties of the maintenance of this system in the field and of its vulnerability and without a fair consideration or a reasonable attempt at the development of any other system. The remarkable results obtained at Aberdeen Proving Grounds before 1929 with the firing of 3-inch guns by the case III director system against targets in rectilinear flight have lead many to believe that no other system need be developed. However, the advent of the maneuvering target in 1930 shows that some other system of fire control must be developed. The firings in the fall of 1930 demonstrated as before, the remarkable accuracy against targets in rectilinear flight at all ranges but left much to be desired in the firings of 3-inch guns against maneuvering targets. It seems paradoxical to state that the case III director system can be effectively used with the 105-mm. guns against targets in maneuvering flight but not by the 3-inch guns against the same targets. The real reason for this is that the time of flight for the 105-mm. projectiles is so much less than for the 3-inch projectiles that the maneuvering target has less chance to get away from the point at which the 105-mm. gun was pointed, during the time the projectile is "on the way," than it has under similar conditions for the 3-inch gun. At the same time the volume of burst of the 105-mm. projectile is much greater than that of the 3-inch gun so that the firing of the 3-inch gun must be much more accurate than the firing of the 105-mm. gun to get a hit. These facts explain why a higher percentage of hits on the maneuvering target was obtained by the 105-mm. gun than with the 3-inch gun. During the past year considerable progress has been made at the Coast Artillery School in the improvement of continuous adjustment of fire using the case III director system. This improvement was effected by the rapid insertion of bold, intelligent, arbitrary corrections made necessary by the maneuvering of the target. The very boldness of these corrections raises the question, "Why build expensive and delicate directors to accurately compute initial data which is to be supplanted by bold arbitrary corrections when the target begins to maneuver?" The answer is that the initial data should be as accurate as possible and the fuse range must continue to be computed even though arbitrary corrections are applied to any or all elements of the trajectory. However, it seems advisable to simplify the mechanism for computing the ballistic corrections and thereby greatly reduce the size and production difficulties of the director.

It is unseemingly to make adverse criticism without at least suggesting a remedy. In the Summer of 1926 the 64th Coast Artillery in Hawaii lead the field in firing the 3-inch mobile gun. In fact they were good. In one week of firing, using the R. A. corrector and the dual sighting system, they actually knocked down 13 targets in addition to the high percentage of theoretical hits obtained (without the use of a camera). Early in 1927 while the 64th C. A. was having indoor instruction the Chief of Coast Artillery visited Hawaii and asked for a target practice to be fired on one or two days' notice. As many of the key men of the fire control section had been discharged and the new men had received no field training, the demonstration firing was poor but the line of bursts regularly followed the target. On the left flank of the battery was placed an additional gun with a third or "test" sight on the top of the breech so that the officer testing the accuracy of the pointing could stand on the gun platform and look through the "test" sight. The three sights were bore sighted and set at normal. The gun pointers then trained the gun on a free airplane. The Chief of Coast Artillery then expressed himself as convinced that the gun pointers accurately and continuously followed the target and that with correct data, a high percentage of hits would be scored. From many similar tests and from observation of many firings with this system the writer is convinced that this system is worthy of development. The first crude modifications made with available material at the small cost of thirty-two dollars per carriage, are but the start of a development program should there be any official desire for such a program. After a brief test in its original crude form as Coast Artillery Board Project Number 605 this system was disapproved. Objections have been raised (1) that too many men were required to identify the target; (2) the telephoning of data is confusing and inaccurate; (3) the rate of fire is slowed down; (4) the system contains an inherent error in vertical deflection. The following are suggested remedies to meet these objections:

(1) In the Spring of 1927 a carriage was further modified at the Hawaiian Ordnance Depot so that a single gun pointer whose sight was mounted on the left cradle trunnion, had both elevating and traversing hand wheels and could follow the target in elevation and azimuth. The system failed because, as has been found on many other occasions in anti-aircraft firing where things move rapidly, one man can do but one thing well at a time. However, this gun pointer can get on the target initially, sufficiently accurately so that the other gun pointer can thereafter follow the target in elevation while the original gun pointer follows the azimuth.

(2) The telephoning of data should be retained as an emergency system but there is no reason why a follow the pointer system of self synchronous motors can not be used to set off lateral deflection on the lateral sight and vertical deflection plus superelevation on the vertical sight and fuze range on the fuze setter. On the other hand if the director and tele-

phones go out of action the battery commander can continue to fire by estimating vertical and lateral deflections from his experience in observation of angle of approach and getting his superelevation and fuze range from a trajectory chart with the altitude and angular height obtained from a height finder.

(3) Twenty well aimed shots per gun per minute can be fired with this system. That is fast enough.

(4) The inherent error of vertical deflection under the most unfavorable conditions amounts to about 10 mils and under average conditions amounts to less than 5 mils. It can be corrected for on the complimentary term cylinder or by observation of fire.

It is again stated for emphasis: the gun pointers can accurately follow the target, regardless of its maneuvers, keeping the pointing for present position correct and confining the errors to those incident to rate changes in lateral and vertical deflection (during the time of flight of the projectile). It is thought that the dual sight system can be developed to be simpler, more rugged, more versatile and more accurate against maneuvering targets than is the case III system. If so it is the system that should be adopted for mobile 3-inch guns. Even in its present crude form it is superior to the case 1½ system and with the modification that the lateral gun pointer should have his sight on the left cradle trunnion and the traversing handwheel made convenient for him, should be adopted for all units which are equipped with the model 1917 or model 1918 guns. No more fixed 3-inch carriages should be built as the 105-mm. gun on a fixed carriage is so far its superior and can be installed wherever the fixed 3-inch carriage can be installed

The 37-mm. semiautomatic high velocity gun is the next in caliber. By comparison with the tracer in the bullet of the caliber .50 machine gun the high visibility of the tracer in the 37-mm. projectile, makes the control of fire by tracers of the 37-mm. gun more effective for all ranges over 1500 yards. Thus the gap between the effective altitude of the caliber .50 machine gun and the minimum for the 3-inch gun can be filled. A certain percentage of the recoil energy of this gun is used to operate the automatic features of the gun. The remainder of this energy must be smoothly absorbed by a recoil and recuperator mechanism. The theoretical design of such mechanism would form a difficult problem but the practical design by the cut and try method should offer but little difficulty. The present vibration of the gun is caused by bumps that can be absorbed by proper recoil and recuperator mechanisms. After the vibration has been conquered the proper pointing system for this gun can be determined. In competition with the stereoscopic director system which is now under consideration, there should be tested simple tracer control, a low powered sight used in conjunction with tracers or by itself. The gun should be mounted as a free mount, i e., there should be no elevating or traversing mechanisms and the gun should be swung freely by means of shoulder and back rests. A pedestal mount on a

truck and a tripod mount for ground use should give satisfactory performances. This gun so mounted could be satisfactorily used against low flying bombers, hedge hopping attack planes, observation planes, tanks, armored cars or other rapidly moving vehicles. It can efficiently execute all of the secondary missions of the "all purpose" field gun. With this gun as a companion, the division field gun can be kept as a low velocity gun which it should be in order to have little dead space and to furnish safe accompanying fires for advancing Infantry.

In the caliber .50 machine gun we have a rapid firing, hard hitting gun of medium range. Due to the unsatisfactory performance of the present tracers we are unable to reap full benefit of the range of the gun for antiaircraft firings. On the lower part of the trajectory the tracer is visible but the visibility falls off so rapidly that it is practically invisible in the vicinity of the target. When firing even at comparatively short ranges, the gunner becomes fascinated by the highly visible tracer of the last shot fired and fails to watch the faintly visible tracer of the shot which is at or near the target. By some means we must increase the visibility of the tracer at the business end of the trajectory and decrease or eliminate its visibility in the first part of the trajectory. This is a problem in chemistry for our ammunition experts but a starting point might be in the use of the essential element of our Flashless Non Hygroscopic Powder, highly compressed to make it burn slowly during the first part of the trajectory with low visibility and convey the flame to the visible tracer compound at the last part of the trajectory. At the same time let us consider a reduction in the hitting power of the caliber .50 bullet by increasing the length of the bullet to give a greater tracer cavity which would necessitate a reduction in the quantity of powder in the propelling charge. Perhaps a more powerful propellant can be used so that the increase in length of the bullet and tracer cavity will not necessitate a loss in muzzle velocity. Another possibility is to have every fifth bullet an explosive bullet instead of a tracer bullet. The explosive bullet can be constructed so as to explode at a certain range say 1500 yards. Then if the target is at 2000 yards the puff of explosion should appear in front of and above the target, or if the target is at 1000 yards the puff of explosion should appear to be below and behind the target. Then, if the vibration of the mount can be eliminated by some shock absorbing device, a sight can be efficiently used in conjunction with the puff of explosion. It should be practicable to construct the explosive bullet so that it will have the same ballistic characteristics as the service bullet. Consideration should be given to a similar scheme for the control of fire of the 37-mm. gun by definitely timed explosive shell instead of tracer shell. One great consideration in favor of the explosive bullet is that the rapid erosion of gun barrels caused by tracer ammunition would be eliminated.

The problems of antiaircraft defense are dependent upon the nature of the elements to be defended and

the classes of enemy aircraft that form the threat against such elements. On this basis there are three distinct problems of antiaircraft defense, i. e., (1) Rear area defense. (2) Defense of lines of communication and establishments as far forward as and including army depots. (3) Defense of combat units which are in front of army depots including troops in contact with the enemy.

(1) Rear area defense includes the defense of industrial areas, munitions plants, depots, fortifications and cities. In these areas the problems of logistics and maintenance of material are simple and the complete communications net required for the Artillery Information Service is practicable without interference with the combat communications nets of other units. Against these areas the enemy will employ high flying, heavily loaded bombers supplemented and supported by all other classes of aircraft which includes low flying maneuverable light bombers, attack planes and observation planes.

All classes of artillery materiel should be used in the coordinated defense of these areas.

(2) In the defense of the lines of communications and establishments as far forward as the Army depots, the defenses will be somewhat more flexible than those in rear areas. Mobile artillery materiel will be used rather than fixed materiel. The maintenance of complete nets of the Artillery Information Service and the maintenance of artillery materiel will become increasingly difficult as the army depot area is approached. The materiel used in this area must be simple, rugged and flexible. Ammunition supply should be reasonably easy. The classes of enemy aircraft which form threats are light bombers, attack and observation planes flying in comparatively low maneuvering flights. The case III director system on account of lack of efficiency against maneuvering targets, difficulties of maintenance and its vulnerability is not well suited to this area. The fire control system which is to be used must be simple, rugged and flexible. The 3-inch gun on mobile carriage, the 37-mm. gun and the caliber .50 machine gun will be used both in coordinated defense and in dispersed defense of individual elements and establishments.

(3) In front of the area of army depots the enemy air threats will be in practically entirely observation planes, low flying bombers and attack planes in maneuvering flights with the element of surprise always present. Against them coordinated defense is impracticable. Each unit must have individual protection. There will be practically no targets against which the 3-inch gun is efficient. It is not reasonable to consider that a net of communications for Artillery Information Service can be superimposed over the net of command lines in this area. A short study of the problem of ammunition supply in this area for 3-inch guns indicates that, with the batteries dispersed so that the "celluloid circles" or bases of cylinders of effective fire cover the area, reliance can not be placed on the field artillery ammunition distributing points or on the field artillery ammunition trains.

Antiaircraft artillery ammunition trains must operate between artillery ammunition refilling points and the battery positions. On roads already over congested with troop movements, class I supply and Infantry and artillery ammunition supply, it is not reasonable to expect that a comparatively small number of antiaircraft ammunition trucks will be allowed to operate independently from refilling points to battery positions. They will be pooled with the trucks of the field artillery ammunition trains, and then it is "good-by" to antiaircraft ammunition. Consideration of these facts demonstrates that the use of 3-inch antiaircraft guns in front of army depots should not be contemplated. On the other hand studies which are based on the complete abandonment of antiaircraft protection in this area except by our own pursuit planes and sporadic rifle fire are unjustified. The present War Strength division can move but 9 miles on two roads on a December night. Troop movements will be made in daylight as well as darkness. Antiaircraft protection must be afforded for columns on the march, troop concentrations as large as a battalion for truck columns moving to and from railheads and refilling points

and for vital points in the attack or defense. The 37-mm. gun must be improved so that it and the caliber .50 machine gun can meet all the requirements in this area.

A logical distribution of troops for antiaircraft defense in this area is to assign to antiaircraft artillery the tasks of protecting Corps troops and establishments, division reserves, division trains and distributing points, assign to infantry the tasks of protecting brigade and regimental reserves and critical points in the attack or defense using these same weapons for antitank and anti-armored car defense and assign to the field artillery the protection of their own battery positions. While on the march these weapons will be spread throughout the columns and will afford reasonable protection against attack planes and low flying bombers.

It is therefore recommended that the improvements suggested for the 3-inch mobile guns, for the 37-mm. guns and for the caliber .50 machine guns be included at once in the development program and that tactical studies be made of the uses of these weapons in the three classes of antiaircraft defense.

Annual Machine Gun and Bombing Matches

Langley Field, Virginia, will be the scene of unusual activity in September when the Annual Machine Gun and Bombing Matches will be staged. This competition will be participated in by Army Air Corps officers from most of the pursuit, bombardment, attack and observaton squadrons stationed in the United States. The officers selected are those who made the highest expert scores in reord firing practice in their respective organizations during the past year. An invitation is to be extended to the Secretary of the Navy to send Navy and Marine Corps pilots to pit their accuracy in machine gun fire and bombing against that of the Army personnel.

Aside from the Army Air Corps organizations stationed at Langley Field which will be represented in the matches, it is expected that teams from other Army Air Corps fields in this country, aggregating some 40 officers and 31 enlisted men, will fly to this field, each team imbued with the determination to "bring home the bacon."

The matches will consist of four events: One for pursuit pilots, the second for attack and observation pilots, the third for observers and the fourth for bombers. The winners of these events receive the ratings of distinguished aerial gunner or aerial bomber and are ineligible to participate in any of the future annual matches.

Employment of Submarine Mines in Coast Defense

By *Lieut. Col. C. W. Baird, Coast Artillery Corps*

A BRIEF history of submarine mines in the United States starts with one Captain David Bushnell of Connecticut who, through experiments made in 1787, discovered and proved that water pressure alone develops an intensity of action in underwater explosions sufficient to destroy nearby vessels. He was followed by Fulton of steamboat fame. Fulton was probably the first to bring forth the thought of anchoring submarine mines in order to obstruct navigable channels. Then there was Samuel Colt, the inventor of the Colt revolver, who was responsible for the electrically fired mine. Colt, although admitting that he had received his basic ideas from Fulton, developed a system in 1842 whereby he succeeded in firing a submarine mine in New York harbor by means of a galvanic battery. Later, from a distance of five miles, he blew up in turn, on the Potomac River near Washington, a schooner and a ship of some five hundred tons. In the latter case the vessel was under way, making a speed of about five knots an hour. Following these pioneers came the extensive and successful use of the defensive submarine mines in the American Civil War—a success so pronounced that this method of defense was adopted by all maritime nations and it is only since that period that this kind of warfare has been countenanced by the world and its use been recognized by international law. Later, as science advanced and better materials became available, came our system of having seven mines in a group, utilizing, from shore to distribution boxes, an armored electric cable having seven conductors; then the nineteen mine group with its nineteen-conductor armored electric cable; and last, our present new single conductor system, developed by Master Sergeant Paul R. Nelson, Coast Artillery Corps, at the Submarine Mine Depot, whereby any or all of the mines of a nineteen mine group may be fired either by contact or by observation and by means of an armored electric cable having but a single conductor. Not only is the new system simple and efficient but, by utilizing single-conductor cable, an enormous saving in cost to the government results.

Submarine mines of a sort were used as early as 1628. In that year the English attempted to destroy the French fleet at La Rochelle by placing a number of tin cases, filled with powder, under water in such a way as to cause their explosion should a vessel strike them.*

There are at least two examples of the crude mines of the past that are worthy of mention; the first be-

cause of its very crudeness with its danger and method of arming, and the second because of the steps needed in the process of firing and because the sequence of these steps reminds one of the mechanical processes often depicted in the Sunday comics by one of our well-known cartoonists.

In the first case the mine was of Chinese invention, and consisted of a six sided water-proof box, having three compartments. The center compartment contained the ignition apparatus, was closed by means of a cover and the cover had a hole into which was inserted a plug. It was necessary to remove this plug in order that the water might enter the mine for the purpose of setting the ignition machinery in motion to explode the mine shortly thereafter. The difficulty was that the plug had to be removed by a diver. On two occasions the divers were captured—probably well pleased—and on another the diver was killed.†

In the second case the mine consisted of a glass demijohn enclosed in a heavy waterproofed wooden box for protection against breakage. Through the cork of the demijohn a glass tube ran well into the demijohn. The upper end of the glass tube was blown closed while the lower end was bent, enlarged and inserted into a rubber envelope containing powder. Into the bend of the tube was poured sufficient naphtha to cover several potassium pills and the lower end of the tube was closed by means of a blotting paper stopper large enough to project over the edges of the tube. The naphtha protected the potassium pills from the entrance of air and moisture and thus prevented an unintentional explosion. Also, it increased the flame when explosion was desired. The action was as follows: a ship strikes the mine breaking the glass tube; water enters the tube, forcing the naphtha, which is lighter than water, against the blotting paper; the potassium pills become wet and decompose the water forming an oxide; the oxide ignites the naphtha which ignites the blotting paper; the blotting paper burns and its projecting edges fall burning into the sack of powder. Strange as it may seem the action is reported as being very rapid, in fact almost instantaneous.‡

Returning to the history of the submarine mine as a weapon for the defense of the sea coast we see that it really came into its own during the American Civil War, although previously it was evident to some authorities that, properly developed, it would practically insure the absolute security of harbors against

*See Barber's lecture on movable torpedoes.

†Vide Journal of the Royal United Service Inst. for 1871.
‡The "Torpedoes" by an Engineer Officer, Berlin, 1868.

naval aggression, always subject to the provision that it be used in connection with the other necessary elements of defense.

During this civil war the explosion of submarine mines sent many Union vessels to the bottom and many a well-weighed plan of attack was either postponed, rendered difficult, or was entirely prevented by a few mines. To be exact, seven monitors and eleven wooden vessels of war were totally destroyed by mines while actively engaged against the enemy's harbors and several other vessels, both of iron and wood, were temporarily disabled.

Despite the imperfections and defects of the submarine mines of this time their successful use caused a complete revolution in the construction of war vessels; in the attack and defense of the coast; and even in the whole of naval warfare, and the heavy losses suffered by the Union fleet attracted the attention of every maritime power, induced imitation wherever and whenever suitable opportunity offered, and banished the scruples formerly held against their use.

The efficacy of the submarine mine as a defensive coastal weapon having been proved it remained only to perfect it to make it the cheapest and most effective of coastal defense weapons. Improvement after improvement has been made until we have obtained the simplest and most efficient submarine mine system of the controlled type in the world. I do not claim that it is perfect. No system is and research and development work is always being carried on at the Submarine Mine Depot with perfection as the aim.

The employment of submarine mines is two-fold in that first, vessels are destroyed or so badly injured that the enemy's operations must be abandoned, and second, their moral effect. The mere knowledge of their presence suffices to prevent sudden attacks, which undoubtedly the enemy would make upon the unprotected harbors of the coast. They form a barrier under whose protection the merchant marine can remain in safety while, on the other hand, they offer like relief to naval vessels which must seek safety due to inferiority of numbers or because of some other reason they cannot afford to try their strength against the enemy.

Successful employment of submarine mines depends on many principles, not all of which are applicable to every situation. Some of these are:

Submarine mines must have effective illumination.

They should be used in conjunction with other obstructions whenever practical.

They should be an integral part of the harbor defenses to which they pertain and should be ready for instant use at the outbreak of hostilities.

They should be protected from the sea.

They should be planted where the strength of the tide is a minimum, if possible.

They must be capable of being patrolled in thick weather.

Controlled mines and contact mines may be used together in cases where the number of the former or the amount of cable required would be too great.

In little used harbors, or where it is desired to block a harbor completely, contact mines alone should be used.

The number of mines, the types and sizes to be planted, where they are to be placed, the location of passages for friendly vessels, the kinds and positions of obstacles and many other considerations all depend on the local conditions which exist for the particular harbor in question.

There must be an adequate number of mine planters, distribution box boats and mine yawls both for the installation and the maintenance of the fields.

Furthermore, patrols must be provided not only in thick weather but as a protection against the operations of and the passage of light craft.

Gun protection must be provided.

Underwater listening posts should be provided.

Fire control stations, casemates and cable huts should be protected and concealed both from the sea and the air and casemates should be bomb-proofed.

The mine field should be so located that its discovery or removal by the enemy will be rendered difficult if not impossible.

So much of the above as applies to defensive controlled mines is a responsibility of the Coast Artillery Corps and this is logical as the controlled mine system is an integral part of the harbor defenses. On the other hand, the duties connected with the provision, maintenance and operation of all purely contact mines is properly the function of the navy because this type of mine is so closely connected with the safe navigation of the channels through which must pass the ships of war which assist in the defense of a harbor. Useful as they are in the defense of a harbor, contact mines are exceedingly dangerous and unless their positions are accurately known, so as to be avoided, a port may be as effectively closed to our own vessels as to those of the enemy. Mines of this class have the advantage of requiring no cable, observation stations, nor casemates. They are simple and inexpensive but they must be used in large numbers and with small charges; once planted they will admit of no tests, may be fired by rafts or hulks sent against them and they do not offer free passage to friendly vessels. However this type has a role which cannot be filled by other types.

On the other hand the controlled mines of the Coast Artillery Corps can be used with larger charges, the individual mines may be tested, they may be fired either by observation or by contact, and they can be made absolutely safe for the passage of friendly vessels. They do have the disadvantage of being more expensive and they require shore establishments and cable. Due to the invention of the single-conductor system the saving in cost of cable has been such as to render our fixed, controlled submarine mine system probably the cheapest as well as one of the most efficient forms of seacoast defense known to the world to-day.

References: Submarine Warfare, Barnes; History of Submarine Mining & Torpedoes, von Ehrenkrook; Defensive Submarine Mining, Scheidnagel; The Beginning of Submarine Mine Warfare, Abbot.

Forts and Fortresses

By Colonel Samuel G. Shartle, Coast Artillery Corps

"A single archer from a wall
A hundred foes forfends;
And so the military art
A fortress recommends."

THE PANCHATANTRA.

THIS is more than a mere jingle from ancient Sanskrit folk-lore. Rooted in the cradle of our thought-forms, it expresses succinctly a truth universally recognized since time "whence the memory of man runneth not to the contrary,"—an idea born of instinct, elaborated by ingenuity, and perfected by science. Thus the infantryman of old practiced "economy of forces" and added to his ultimate offensive power, just as the infantryman of to-day pauses in his trenches and field-works for the same purposes, be it through necessity or design as part of a plan to increase his mobility elsewhere. Of course only by movement can one go from where he is, but one may not wish to be compelled to go from where he is,—especially if that place be a key position and the retention of it is important in the execution of the general plan. So "A single archer from a wall," etc.,—for the temporary important tactical position field works, for the permanently important strategic position, the fortress. While fortifications pertain primarily to the art of defense, this fact does not exclude aggressiveness per se, nor should it in any manner detract from the general "principle of the offensive," essential to successful victory. On the contrary, history shows that forts have had vital influence both strategically and tactically, as well on the formulation of campaign plans as on their execution.

From the Chinese Wall to Verdun and the Vosges chain of forts, from the walls of Romulus too readily scorned by Remus to the great Fortress of Paris, from the Cliff Dwellers' abodes to Gibraltar,—in myth and history, the idea of utilizing earth and masonry grew from one of mere protection for the indwellers, as in walled towns and castles, to one of systematic strategic works that not only play a role in the passive defense but give law to active campaigns. Fortifications have become an important branch of the military art. Their influence in war is no longer limited by the range of their guns. They are no longer mere strongholds of the "archer on the wall," against whom his kind was powerless,—of local significance only. With the increase of population, the multiplication of towns, the growth of armies in the field and the necessity of destroying these to win a war, that is, with an understanding of the *true objectives*, the hostile forces rather than places, fortifications have to be fitted into a general scheme of defense and offense. "Accordingly the number of forts must be necessarily very much decreased, and this again must lead away from the idea of protecting directly people and property of towns

by fortifications to that other idea of considering forts an indirect protection of the country, which they furnish through their strategic importance, as knots that hold together the strategic net." (*Clausewitz, Book VI, 10th Chapter*). So this military philosopher, who died 100 years ago, wrote in the books first published by his widow in 1832. History has confirmed his observation. Forts then must be considered in relation to their strategic function, not as mere isolated piles of masonry. Forts that have no such relation waste men and money and may be an encumbrance in war. This is the criterion as to obsolescence, not the mere fact that they are vulnerable by reason of inadequate armament or personnel. The conclusion after the comparatively easy fall of the Belgian forts in the late war that fortifications in general had little value was found to be a hasty one, as will be shown. We shall find that in actuality the forts that played a part in the World War justified their existence, in proportion to their strategic importance and power of resistance. Strategic forts have some or all of the following characteristics:—

1. They protect the homeland by denying to the



Archery

enemy use of direct and naturally advantageous lines of approach to vital areas.

2. They protect areas of mobilization.
3. They determine the initial deployment and operations.
4. They are advantageous points of departure for maneuver or attack.
5. They impede important lines of communications, either directly or on a flank.
6. They delay an enemy advance by necessitating time-consuming attack.
7. They use up the attacker's man-power, holding a portion of his forces from the main objective.
8. They furnish strong points in a line of defense, defend bridge-heads and harbors.
9. They facilitate surprises by concealing movements.
10. They give support to retreating forces.
11. They are convenient and safe bases of supply.
12. They are secure stations for organization and reorganization of forces.

By way of illustrating these points, a brief sketch of the influence of forts in the World War follows:

Let us first inquire why the Germans chose to make that grand swing through Belgium, a neutral country at the beginning, involving as it did serious international political consequences. The answer is forts, strong forts, 1st class forts,—Belfort, Epinal, Toul, Nancy, Verdun. In the von Schlieffen Operations Project, on which the von Moltke plan was built, we find the following: "All France must be considered a great fortress. Of the outer ring, the stretch Belfort-Verdun is almost impregnable, the stretch Mezieres-Maubeuge-Lille-Dunkirch, however, vulnerable. Here we must try to drive into the fortress." Thus France's eastern forts dictated the German initial plan. They had another vital influence, for they screened the French mobilization and offered favorable points of departure for the initial French offensive. To these circumstances must be attributed von Moltke's fatal modification of the von Schlieffen plan, a violation of the Principal of Mass, in that he strengthened the German left wing to counter the French offensive at the expense of the right wing upon which the decision depended. Von Schlieffen's grand conception, based on Hannibal's double envelopment and destruction of the Roman forces at Cannae, necessitated a great mass on the right, a comparatively weak holding force on the left and included the investment of Paris. Von Moltke's fatal modification eliminated the investment of Paris, thus exposing his right wing, weakened to strengthen the left. This modification spelled failure. If the right wing had had one of the left wing armies (6th and 7th), even the delays occasioned, as will be noted, by the Belgian and North France forts would not have turned the scales on the Marne, and success here would have dissipated the menace of the French initial thrust in Alsace.

In addition to the influence of the Belfort-Verdun line on the initial German plan and its execution, this line was a bulwark for France throughout the war, notwithstanding the powerful field guns of the Ger-

mans. We need only to recall the part Verdun played in 1916. Recognizing the importance to France of this salient, Falkenhayn planned to wipe it out. The Germans made desperate and repeated attacks on Verdun from February 21, 1916, to June 23d. July 15th, the French started an offensive and maintained the initiative until the end of the war. The lines of February 21, 1916, were partially restored in October, 1916, but not finally until August, 1917.

Verdun saved France! Here French heroism stood out in a clear light and achieved undying fame. While the successful defense must be ascribed primarily to the bravery, tenacity and heroic sacrifices of the defenders, yet these without the brilliant leadership which organized the defense as well as maintained morale could not have made good the famous resolution, "On ne passe pas." The part the forts played is clearly set forth by Marshal Petain. "The forts of the Verdun stronghold were of great assistance to our troops during the battle and contributed largely to our success. This fact is little known and must be emphasized in order to correct erroneous opinions that have become widespread concerning the value of permanent fortifications." (From "Verdun" by Marshal Petain, page 219.) The Marshal then relates how in 1915, fortifications having fallen into disrepute, due to the short resistance of Maubeuge, Liege, Namur, etc.,—2nd class forts, the northeastern forts of Verdun, including Douamont, Vaux, Thiaumont were practically dismantled by the decree of August 5, 1915. "As a result of that decree, the works of Verdun were stripped of most of their means of defense. The flanking casemates and the counterscarp trenches were dismantled; the disappearing guns taken out of their turrets; the munitions and supplies put to use outside the forts; and the garrisons withdrawn." (Id., page 226) And again, "Thus the permanent fortifications played their part. They were always there ready to make themselves felt, when everything else had been swept away. That is their peculiar nature, and at Verdun they demonstrated it in startling fashion. Their outer shells lasted in spite of the incredible amount of high explosive used up in the attempt to destroy them. * * * At the lowest estimate, 120,000 shells fell on Douamont. At least 2000 of these were of 270 caliber or larger * * * The subterranean portions received no damage whatever." (Id. p. 227, 228) I saw these after the armistice and they were quite intact. "If the Fort of Douaumont had been occupied as it should have been it would not have been captured." (Id. p. 231) After the capture of Douaumont, "the only completely organized set of fortifications presenting a solid line of defense was from that time on situated farther back. * * * Froideterre, Souville, and La Laufee—three fortified hillocks never captured throughout the course of those desperate struggles, stood out on that chaotic battlefield as immovable obstacles to which the defense could cling." (Id., p. 225, 227)

Had Falkenhayn had the prescience of von Schlieffen, had he not been led to false conclusions by the comparatively easy victory of big guns over little guns, had he properly evaluated the conditions in Belgium

at the beginning of the war, Verdun would not have been attacked and masses of troops wasted in vain. Excepting the attack on Verdun, the great forts on the eastern border of France were never seriously threatened. They fulfilled their mission. They protected the French mobilization; furnished opportunity for the French initial offensive, which drew forces from the enemy's right flank; held him at bay to the end of the war, and shielded the American preparation for the final and victorious drive.

Here then we have a classic example of strategic forts in war. So convinced are the French of their value that they are spending milliards of francs in modernization, supporting redoubts, machine gun positions and the necessary installations that go to make the modern wall against an enemy. They are constructing an even more impregnable line of fixed defenses from Switzerland to north of Verdun than that which withstood a determined and powerful hostile force during the war.

Sufficient has been said to make clear the influence of these 1st class forts on the strategy and tactics, and on the final outcome of the struggle. Let us now turn to the part played by the lesser forts of France and Belgium.

In February, 1915, I inspected the emplacements of two 42 cm. mortars, which the Germans brought up during the siege of Antwerp to fire on the outer forts. It was stated by a German officer that 8 shots were fired at 5 minute intervals at Fort Waelhem, 15 kilometers distant, and that the map-ranging was so accurate that the fort was destroyed as a fighting unit by these shots in the brief time it took to fire them, about 40 minutes. The destructive effect of the fire on this and other forts at Antwerp, at Liege and at other places in Belgium, France and Poland was noted. There is no question that powerful portable siege weapons can quickly place hors de combat a fort of inferior construction when either through weaker armament or faulty conduct of the defense, or both, fire superiority is gained by a determined attacking force. This fact was demonstrated many times during the World War. The significance of it, however, does not go farther than an illustration of the Principle of Mass as applied to limited and local objectives. To the extent in time and numbers that a fort causes diversion of hostile forces from the main objective, it justifies its existence and even the ultimate sacrifice, if necessary, of its garrison. The influence of a fort's resistance on the main operations is the criterion by which to judge its value,—not, as is done so superficially very often by the fact that second class forts are vulnerable to the attacks of modern field weapons.

Cited in the argument that forts belong to the past is the fact that the Germans disposed of, in short order, Belgian defenses at *Liege*, *Namur* and *Antwerp*, and the French forts (2nd and 3rd class) on the Belgian border,—such as the works at *Montmedy* (2nd), *Les Ayvelles* (2nd), *D'Hirson* (3rd), *Flines* (3rd), *Maulde* (3rd), *Lille* (2nd and 3rd), and others that may be put in a 4th class, as *Givet* and *Longwy*, as well as those (3rd class) in a secondary line,—*La Fere*, *Laon*,



Fort Boussois bei Maubeuge

Malmaison, *Condé Sur Aisne*. But of these only those in italics contested the German advance. The rest were timely evacuated. Were these contests justified and what are the facts with respect to their influence on the grand operations? Just why the Germans planned to go through Belgium, I have already discussed. At this point let us deal with the fact that they did and remember that with an Eastern enemy pressing them, time was an important element.

NOTE. French forts by the law of 1899 were of three classes.

- 1st Class to be maintained with modern technique and sufficient material and personnel for long resistance.
- 2nd Class maintenance limited, dependent on circumstances.
- 3rd Class maintained but not included in the project for modern armament

The *Liege* and *Antwerp* fortifications were of the ring type, the design (about 1890) of the celebrated Belgian Engineer *Brailmont*. *Liege* was surrounded by 12 forts with cupola guns and concrete shelters on a radius of 7000 to 10,000 yards. The intervals were thus 3000 to 5000 yards, which were not, as originally planned for war, covered from fort to fort by infantry trenches. The Germans attacked August 4th, and August 6th, penetrated with infantry to the city, but took until August 16th to reduce all the forts,—an operation requiring the use of 12" mortars (Austrian). Thus forts built to withstand siege pieces of less than 8 inches and without infantry support,—more than a division left August 6th and joined the main Belgian Army, held up the enemy's advance at a critical point for 13 days.

Namur, also on the main line of advance, held two Army Corps reinforced with siege formations from *Liege*, from August 19th to 28th, another 10 days.

Antwerp with a double circle of *Brailmont* forts afforded protection for the retreating Belgian Army and, by reason of its situation behind the *Scheldt*, *Rupel*, *Nethe* and *Dyle*, a line of escape for this army and the English and French reinforcements. *Antwerp* was on the right flank of the German advance and line of communications. The 1st German Army had to leave behind two corps as a covering force until the organization of the *Beseler* siege group of 60,000

which included one of the corps of the 1st Army (III A. C.). The importance of eliminating Antwerp as quickly as possible was recognized and General Beseler conducted an aggressive attack from September 27th to October 10th, when the defense was abandoned, the garrison escaping to the coast. But the Germans were short more than a corps in the field at a critical time.

Les Ayvelles after the Battle of Neufchateau (Aug. 22d and 23d) was abandoned by its garrison Aug. 25th, the commandant committing suicide. The Germans buried him with special honors and took pride in pointing out to me his grave preserved by them. The little obsolete fort at Givet held up a division, not available for field duty, until August 31st, when it fell to heavy artillery brought from Namur, and Longwy contained attack forces, amounting to another division (2 brigades of infantry, 1 mortar regiment, 2 heavy howitzer battalions, pioneer regiment) from August 22d to August 28th.

Maubeuge, with a garrison of 45,000, of which 20,000 were field troops that had taken refuge in the fort after the Battle of the Sambre, was besieged from August 25th to September 9th, when it fell. Here two more Corps of the German Army with the heaviest artillery (42 cm., 30.5 cm. and 21 cm. mortars) were contained and thus were absent from the main Army at a most critical time. *Maubeuge* also served to support the English Army on its retreat.

The above outline has so far been confined to the forts in the way of the German right flank movement before and during the decisive Marne action.

Let us now evaluate the influence of these forts on the German operations. It has been stated that *Liege* and *Namur* held up the German Army about 3 weeks (or 13 days plus 10 days), which would bring the halt to August 27th. That is not correct, for parts of the German Army continued the advance around these forts, for example, the Battle of Neufchateau was fought August 22d-23d, only 6 days *after* *Liege* fell and 5 days *before* *Namur* fell; the Battle of the Sambre had been fought and the siege of *Maubeuge* begun 3 days *before* *Namur* fell; *Longwy* fell the same day as *Namur* and *Givet*, 3 days later. But what these forts did do was to make unavailable to the Germans for open warfare considerable forces, numerically greater than the garrisons eventually captured, during the period noted. Further, they crippled their lines of communications as well as held the investing forces immobile and thus delayed the advance.

The extent of the delay may be only estimated. Besides the influence of the forts themselves on the German operations, there should be considered also the aid rendered by them to the allied mobile army,—as points of departure or cover for escape. Thus one and one-half divisions left *Liege* untouched, August 6th, and joined the main Belgian Army. One division escaped in part from *Namur*, and *Maubeuge* supported the English Army in its retreat. If we envisage an unfortified Belgium and Northern France, we shall have these conditions:—

1. Additional German forces, considerably more

than the garrisons of the invested forts, made available for maneuver.

2. Free maneuvering and communication facilities for the numerically and offensively superior German Army. With a clear field, the Germans would have more nearly realized the goal of their carefully made plans; they would probably have entirely eliminated the Belgian Army from the war; and they would have undoubtedly completed their enveloping movement before the pressure on their Eastern Front became so strong that two more Corps had to be transferred from the Western Front and this on the eve of the Marne Battle.

3. It is estimated that without the Belgian and North French forts to contend with, the Germans would have had the equivalent of 5 or 6 Army Corps, or two armies, available for use in the Battle of the Marne,—a force sufficient to invest Paris according to von Schlieffen's original plan¹, thus protecting von Kluck's enveloping movement. There would have been no climb to the North Sea and 4 years of trench warfare, for the French Army would have been rolled back on their eastern strongholds.

The great central fortress of France, Paris, was not invested as originally planned; hence afforded not only shelter for the organization of, but also a favorable point of departure for Gallieni's forces against the German right wing. The influence of this fortress on the Marne operations was decisive.

I have briefly related the part these second class forts of Belgium and Northern France had in frustrating the initial and critically decisive movement of the German Army, on the success of which depended a quick victory in the West and ultimately the winning of the war. And I have pointed out how the great first class forts facing Germany on the eastern border of France dictated the German plan of operations and held them to long lines of communication. In short, the advantages gained by the country on the defense through its forts. Now let us inquire into the value of the German forts, and the service rendered by them to the attacker.

Outstanding among them is *Metz*, a larger fortress of the first class with an inner ring of old forts and an outer circle of modern fort groups with advanced foreground works. This fortress was the center, the pivot of the right wing that swept over Belgium into France, the support of the left wing facing France's impregnable forts, the base for the attack on Verdun, a secure depot throughout the war, a key position for the possessor. Had the initial French offensive developed as foreseen and designed by von Schlieffen, *Metz* and *Strassburg* would have drawn large French forces from their left wing and facilitated the enveloping maneuver of the German right. With the exception of Fort Istein on the upper Rhein which covered the retreat of the German forces before the French in the

¹NOTE—"In the more distant course of this swing, (thru Belgium with *Metz* as the left pivot point), lies Paris. We must go around Paris west and south and dispose ourselves for an investment. The forts will contain a very strong German force, for this Ersatz Corps (for Paris alone six for the investment on the west and south front), Landwehr and Landstrum formations, for the organization of which timely care is to be taken." From von Schlieffen's Operations Project.

first days of the war, the German forts on the West Front played a passive role.

On the East Front, Königsberg and the Masurian Lake forts covered the retreat of the German forces and played their part in the game that resulted in the destruction of the Russian Army of Samsonow at Tannenberg,—a modern Cannae, linked immemorially with Hindenburg's fame. "Fort Boyen (Lotsen), the surrender of which was vainly demanded, as well as the fortified Narrows of Rudezanny, Rhein and Nikolaiken remained in German hands" (von Schroeter), impeding the Russian forces.

Passing to the Russian front, we may mention the great Fortress Kowno on the Nemen line, Ossowicz on the Bobr—Narew Line, in central Poland, Warsaw and Nowogeorgiewsk, and Brest Litowsk on the Bug. These with a number of supporting forts and bridge-heads served the Russians well for assembly, deployment, retreat, reorganization, and as bases and depots. That they were eventually captured must be ascribed to superior leadership, quality of troops and equipment of the Germans.

The fortress of the greatest interest on the Eastern Front is that one with the unpronounceable name, Przemysl. It had active service. On the first advance of the Russians through Galicia in September, 1914, this fortress was besieged by them from September 9th to October 10th. Although the main Russian Army was not stopped, it must detour and leave *nine* divisions with heavy siege guns to sit-down before the fortress, which held out until relieved by an Austrian advance. Again in November, the Russians made a forward movement and Przemysl was isolated. The fortress was besieged by a whole Russian Army from November 11, 1914, to March 22, 1915, when it fell from lack of food and munitions. The Russian forces contained by Przemysl during these sieges might have rendered decisive service in the field,—for example, at Lodz and Lowitz where defeat of the Russian right wing caused the withdrawal of the whole line facing Germany. Przemysl was a stronghold in the lines of the Austrians and Russians successively, a breakwater against the Russian tide that largely expended itself against this obstacle. The fortress again came into Austro-German possession 3 months after it fell as a result of von Mackensen's brilliant Galician campaign.

If space permitted, we might study with profit the influence of the forts of the Italian front,—as points of departure and retreat; of the Rumanian forts on the campaign for its conquest,—an operation that without the forts would have been executed in less time and with less loss.

Sufficient has been said to clear away some of the misapprehensions about fortifications,—false conclusions based on the fate of 2nd class forts against 1st class guns. It should be noted that even the lesser forts, where properly placed and defended, had considerable influence on the outcome of operations, just as mere sacrifices. While the 1st class forts entirely justified their existence. General Descourtis, in command of the Engineers of the Eleventh French Army, says: "Our permanent fortifications, much discussed

in times of peace and utterly condemned at the beginning of the war, have amply demonstrated their value throughout the most violent attacks that any war has seen." (Petain's "Verdun," p. 231)

Thus far we have considered only land forts, which afford more examples of the part played by forts in war. Their essential strategic characteristics, however, apply equally to coast forts,—in fact they here stand out more clearly. To such an extent have coast forts dictated the operations of the over-sea enemy, that they largely fulfill their mission as mere deterrents. This is due to the reluctance of naval commanders to risk costly ships against comparatively inexpensive land works,—the possible mutual losses are too disparate. Further, the advantage is with the fixed defenses in a conflict of equal arms,—by reason of facilities for concealment, dispersion of sites, protection, steady platforms, etc. The navy's part in joint maneuvers is one of accommodation. Able admirals have said to me as an observer, "I wouldn't nose into this place in war." So it may be repeated, *efficient* harbor defenses accomplish their mission by deterring attack,—naval attack. They are vulnerable only from the land side.

In the war, Heligoland, Cuxhaven, Kiel, and nearly all of the other coast forts of the belligerents denied



Ft. Loncin, Siege, Effect of Bombardment, 1919

the enemy effectively without action. The attacks on the temporary fortifications below Ostend were abortive. I recall but one successful attack on coast forts,—that of the Baltic Islands by a combined German land and sea force, which may be explained by superior leadership and higher morale of the troops.

In contrast to this and of infinitely more far reaching effect was the successful defense of the Dardanelles by the Turks and this with partially obsolete forts against overwhelming odds in armament. The details of the attack on the forts and the subsequent Gallipoli campaign are familiar to students of military history. I shall merely recall the bare fact that in December, 1914, the old forts of Kum Kale and Sid ul Baehr at the mouth of the Dardanelles were taken, but had to be abandoned later. The attempt to force the Dardanelles March 18, 1915, with a fleet of 58 English and French ships of the line and cruisers, carrying 315 guns of 30.5 cm. caliber, ended with heavy losses to the fleet and complete victory for the coast fortifications.

I cannot forego the temptation to let my imagination picture the course of events, if those Turkish forts had not been in the Dardanelles. First, Constantinople would have fallen and Turkey would have been eliminated from the war,—perhaps also Bulgaria on the

side of Germany. All those 600,000 men at the siege of Gallipoli and a large portion of the English forces in Arabia and Egypt would have been available for use against Germany. Second, direct communication with Russia having been established, the problems of supply and reinforcement would have been infinitely easier of solution. Russia's immense man-power could have been more efficaciously used, and the opportunities for cooperation with Russia vastly enhanced. The war would have been shortened and we probably would not now have the menace of Bolshevism.

But in evaluating the influence of fortifications in war, we need only consider the facts. A detailed study of the part fortifications played in the World War would lead to a better balanced conception of our own defense problems. France discovered at Verdun the errors of her ill-considered decree of 1915, based on hasty conclusions as to the value of fixed defenses. We are just now slowly recovering from similar conclusions that had sway in our policies after the war. General Gulick, in a recent hearing before a subcommittee of the Appropriations Committee of the House, said: "Immediately after the war there was a certain element which believed that mobile types of artillery, including railway guns, would supersede fixed guns and we embarked upon a railway gun project. I never concurred in that theory or doctrine, and I think that developments since the war have substantiated my views on the matter. * * * I believe that nothing has occurred during the last 20 years, including the war, which has adversely affected the inherent advantages of fixed guns." In which opinion he is supported by the experiences of the war itself as outlined in this article, by the judgment of the French authorities as shown by their present activities in

elaborating their fixed defenses, and by the evidence of such an eminent soldier as Marshal Petain.

The conclusion is inevitable that our policy in respect to coast forts is correct. There are of course, here and there, forts of no great strategic value. Those however, that protect areas vital in war must be kept at the highest state of efficiency,—and it might be the part of wisdom to support them by permanent outlying works on the land side. These serve the double purpose of supporting the fleet and protecting vital areas, hence are of prime strategic importance.

We can reduce our first class strategic fortresses to a comparatively small number. Of local importance, because of the harbors and installations that are protected, are a number of other defenses, but in general the places are too far removed from areas that must be held for war purposes at all hazards to rank them with those mentioned.

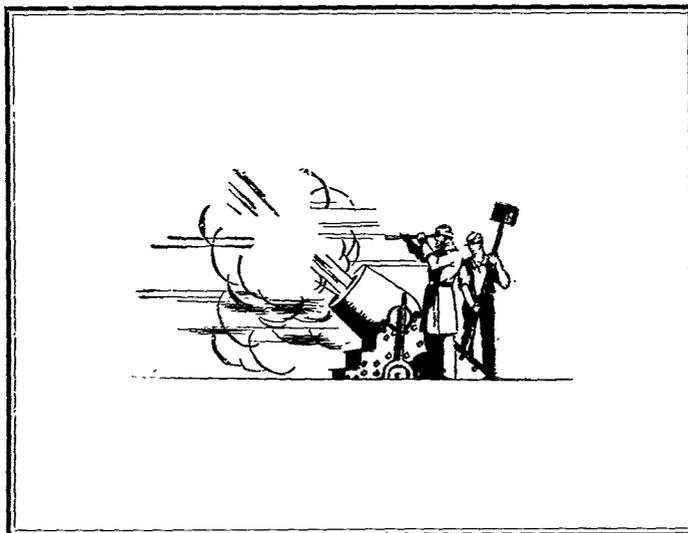
Forts have been considered as a means to an end, as implements of the military art. In addition to the functions listed, they have a desirable collateral effect. They not only add to the morale of "the archer on the wall," but to that also of the people of his nation.

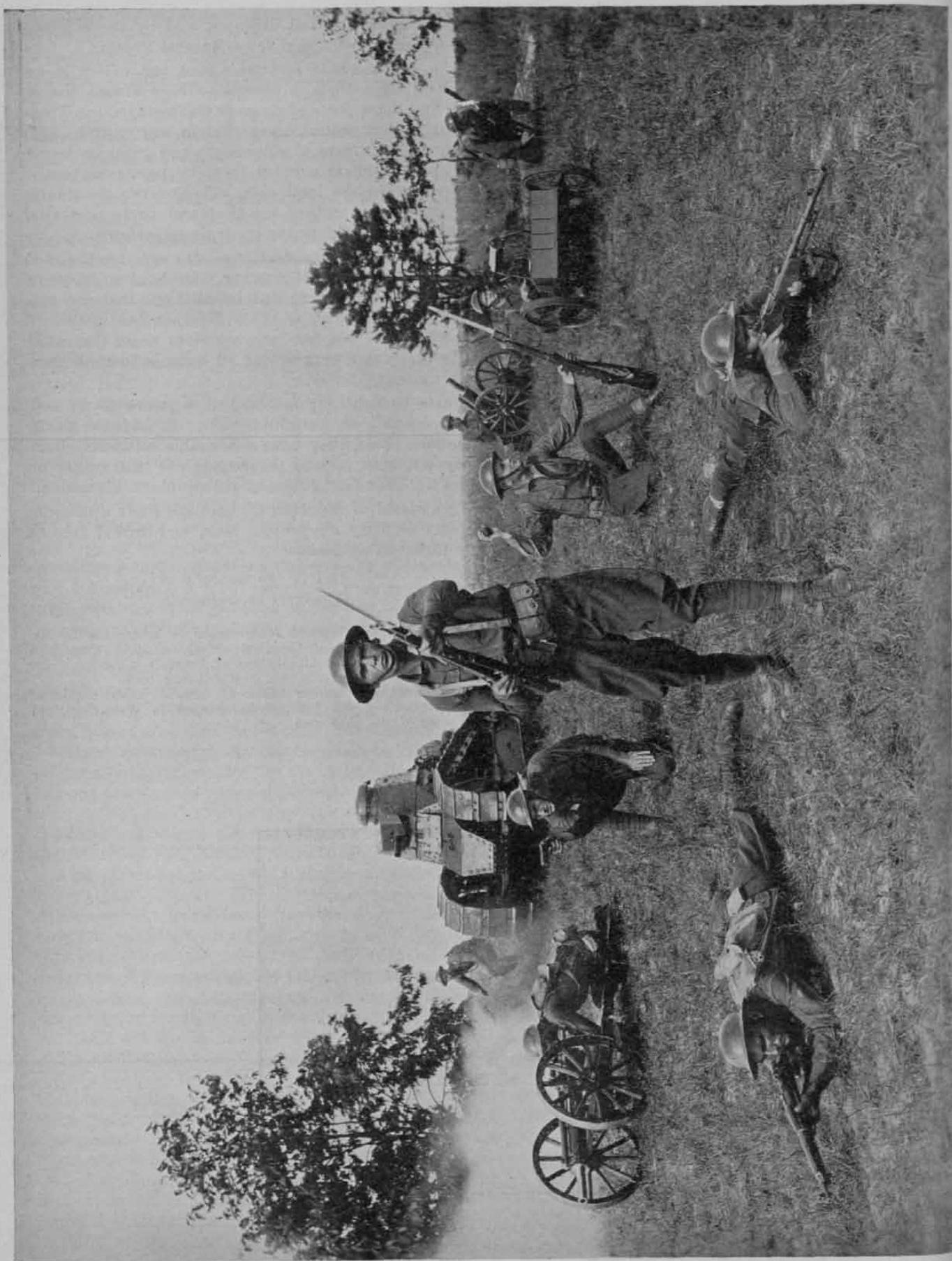
In a world of uncertainty, here one finds a measure of that security all peoples seek, and withal free of any threat of aggression.

*"And so the military art
A fortress recommends."*

NOTE.—Acknowledgement with thanks is here made to Mr. Lincoln Mac Veagh, of the Dial Press, Inc., 152 West 13th Street, New York City, Publishers of Petain's "Verdun," for permission to quote from this most enticing book.

To General J. Schroeter (Retired) German Army, author of "Die Bedeutung der Landesbefestigungen in Weltkrieg," I owe some of the data used.





The Doughboy and his Weapons

National Guard Individualized Instruction and Rating

By Major Frederick L. Pond, 112th Infantry, P. N. G.

FOR the past five years, the Militia Bureau has been urging the adoption of the training chart by all unit organizations. Since the publication of the excellent article on the use of a chart by Capt. Myron P. Lund of the Minnesota National Guard, interest in this system of rating has increased. In many organizations, its use is urged but not at present specifically ordered. The training policies favoring its adoption are growing increasingly strong and probably little time will elapse until the use of the training chart system will be required.

However, many organizations, in compliance with the training policies of higher headquarters, have tried unsuccessfully to install a training chart system. The reason for their failure is that *the plan, as at present organized, cannot be coordinated with the regimental training directive.*

The annual training survey and the directive based upon it are mandatory. In addition they have undoubted value. There is no probability that their use will be abandoned. It is repeatedly emphasized that, "strict adherence to training programs and schedules is essential in order to secure progressive and uniform training." No regimental or battalion commander wants the units under his control to proceed upon individual, decentralized programs of training. Yet the training chart system, as it is called, has points of great value which deserve intensive consideration.

Careful study of the training chart system reveals the fact that the point of major emphasis is not upon the rating and charting of the qualifications of the men but upon the system of individualized instruction. The chart is but a graphic representation of the work taken up under this system of training. Much more attention has apparently been given to the training chart than to the system of training of which the chart forms merely an incidental part.

It is of course possible, on the basis of mere guesswork, to fix up a very nice chart to show the inspecting officers without adopting any change in the training system. One may excuse ones self for this evasion on the usual grounds of psychological expediency. But such a chart, while very pretty, will still not be art. The Militia Bureau has stated that such charts, perfunctorily arranged, should be done away with and a training system adopted which "assures to each individual complete instruction in every subject," not complete rating and charting, but complete instruction. It should also permit the learner to advance in his training as fast as his ability permits.

The system which hitherto has been proposed di-

vide the material of military knowledge into progressive lessons. Small classes of from five to eight men are to be set up under efficient N. C. O. instructors. These small classes, which are irrespective of the conventional units, are to permit individualized instruction. A man is to begin on the first lessons in basic subjects and advance through to the more difficult. Near the close of each drill period, he is to be questioned briefly and required to demonstrate what he has been taught. If he can qualify in the subject, it is to be so noted on the platoon and company training charts. He is then advanced to the next subject at the next drill night. If he cannot qualify, he is to be kept at the old subject until he is able to do so. Thus several drill nights may be spent on but one lesson, such as Instruction Dismounted Without Arms.

The problem of coordinating this system with a required regimental training program for a unit is at once apparent. In fact, in organizations in which this plan has been adopted without modification, the regimental program has had to be abandoned. However, the average unit commander with his training directive calling for several subjects in thirty minute periods, cannot spend the entire time for one evening or for several evenings on but one subject and thus neglect the rest of his work. On the other hand, he has been urged to adopt the training chart system and to use it not perfunctorily but intelligently. He has been placed in a quandary. It is time for him to make an estimate of the situation.

Three alternatives present themselves:

- a. The training chart system must be abandoned.
- b. The regimental time-allotment, program must be abandoned.
- c. Some training system must be devised to coordinate the desired individualized instruction and rating with the regimental training directive.

Since the use of the training chart is deeply rooted in the training policy of the Militia Bureau and compliance with the required training directive is mandatory according to National Guard Regulations, it is clear that the decision must be in favor of the third alternative. The training chart system must be coordinated with the regimental program.

At this point the question may arise as to the value of a system of individualized instruction. What has it to commend itself other than its psychological expediency at this time?

Instruction reaches its highest efficiency when it allows each soldier to progress as rapidly as his own

experience and ability make possible. When men under stereotyped instruction in the conventional squad and platoon units are held back by slow individuals, much loss of morale and instructional efficiency result. Any plan which will group the less capable members of a unit and permit the more capable to pass on to work which they need is to be commended.

Furthermore modern instruction is dedicated to the fact that whatever is taught can be measured. For the individual this measurement takes the form of the rating which he receives. Most of the men in the organizations have recently been in schools where the matter of rating was of great importance. The ratings of individuals are part of the compensation which they receive. The satisfactions which good ratings engender have values almost equal to those aroused by monetary compensation. The ratings of groups encourage cooperative effort. The ratings of individuals, if based upon keen, accurate observation of their work, arouse individual pride and genuine desire for self-improvement.

It is important then, from the training principles actually involved, that a plan be formulated coordinating the unit individualized training system with with subject-time-allotment program of the higher headquarters. Such a plan will be presented under the following heads:

1. Organization of the Material of Instruction.
2. Organization of the Personnel.
3. Individual Instruction.
4. The Rating and Charting of Results.

1. Organization of the Material of Instruction

Any subject which is to be mastered must first be divided into units of instruction and the units further divided into the parts which compose them. The various training regulations for a rifle company have been very satisfactorily arranged into progressive subjects. These subjects have been divided into the parts which compose them, according to the Training Regulations.

If a system, coordinated with the regimental program, is to be installed whereby the complete instruction of each man in every subject is to be insured, *a record must be kept of the amount of each subject covered in each short period of instruction.* With but one-half hour on a subject, only a portion of it can be covered in one evening. *In order that this record may be kept, a lesson card for each subject must be prepared for each platoon.* Here will be shown the designation of the platoon, the name and number of the subject, the references where regulations on the subject may be found, and the number of hours allotted to the subject in the regimental or battalion directive. The names of all of the parts of the subject which make up the lesson must be listed. These are cross sectioned against the names of the members of the platoon, arranged by squad organizations. (see example of subject card)

The major emphasis must be placed upon the use of these subject cards. Here is the direct contact

between the training system and the instruction. *There is one of these subject cards for each rifle platoon for each subject taken up by the group or individualized training method.* They are filed in the keeping of the platoon commanders. At any time when a subject comes up for training according to the unit schedule, the lesson card for the subject is drawn from the file. This may occur weekly, monthly, or quarterly, according to the continuity of the subject in the schedule. Work toward the mastery of each part of the subject is then commenced, first in the non-commissioned officers' school and then on the drill floor. As progress occurs, the qualifications of the men are checked off on the subject card. A small check mark is sufficient to indicate a man's ability to execute a movement or explain a part of military information satisfactorily.

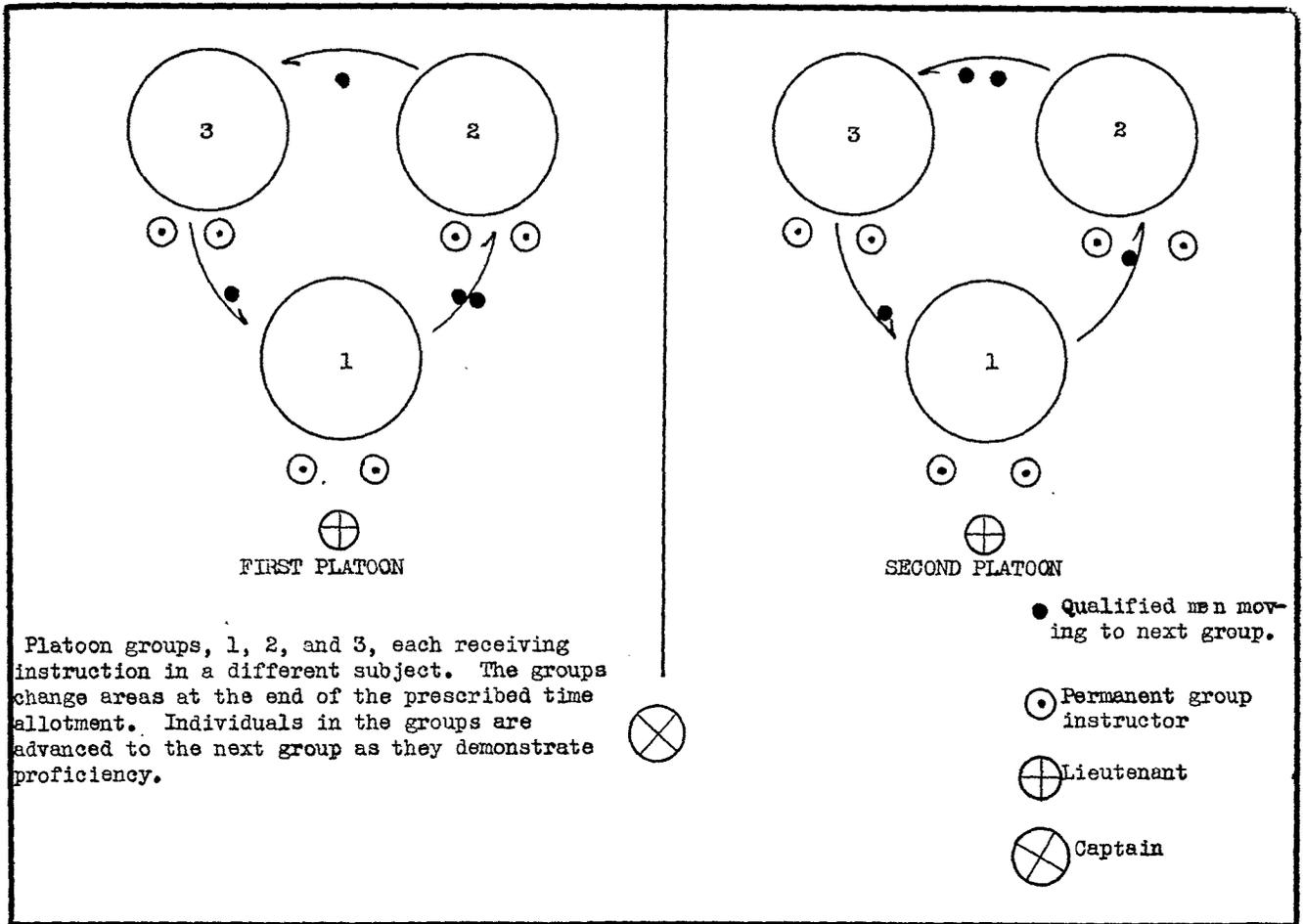
The number of parts of each subject which can be allotted to the drill period must depend upon the total time assigned to the subject in the regimental or battalion program. A short review of all work taken previously in the subject can well be made before each new assignment is considered. Researches in methods of learning have demonstrated the fact that retention is more sure when repetition occurs than when mastery is secured at one time and the subject thenceforth largely neglected. Each review must aim at a higher standard of performance.

Periods of instruction may be of various lengths. A drill of one and one-half hours may be divided into three thirty minute periods of instruction or it may be made to consist of an hour of individualized training with thirty minutes of mass training. The mass training should take the form of calisthenics at the beginning of the drill period to secure coordination and fifteen minutes of work requiring snap and precision at the close. In assigning length to periods of instruction, the reaction of the soldier to the work must be considered. The interest span of the men and the intensiveness desired in the instruction are factors of importance. The old adage is applicable, "Line upon line, precept upon precept, here a little and there a little."

Repeated emphasis must be given the fact that the use of the subject cards and the company training chart are incidental to the instruction. For some time, the instructional staff of the company may become to a superfluous degree subject-card-and-training chart conscious. This magnification of the details will soon subside and they will assume their true proportion as their use becomes customary.

2. Organization of the Personnel

A class system must be set up so that individualized instruction will be possible. Three of these classes or groups are set up in each platoon, each one working at a different subject. Two non-commissioned officers, who have previously received instruction in the subject at the N. C. O. school, are assigned as instructors to each group. This assignment is permanent as long as the subject remains on the company schedule.



Thus in each platoon there are three groups, each receiving instruction in a different subject. (See diagram) In each group, the senior N. C. O. has the card for the subject which is being taken up in that group. The platoon commander acts as an alert supervisor during the instruction. He must observe carefully the work of each non-commissioned officer and private in order that he may rate him later on the company training chart when the instruction in the subject has been completed.

This organization preserves the unity of platoon control. In assigning the men to groups, the unity of squad organization need not be maintained. It is as individuals, not squads, that the men are considered.

A non-commissioned officer who acts as an instructor in one group for several drill nights becomes very proficient in that subject. He is able to impart a better degree of instruction to the men who come to him than he could if he were instructing one group in several subjects. By this mastery of one phase of the work, the non-com himself gains confidence and an eagerness for mastery in other fields. The platoon group system also makes possible the use of fewer subject cards and regrouping after each drill period.

3. Individualized Instruction

A system of individualized instruction requires the use of non-commissioned officers as instructors almost exclusively. This necessitates the maintenance of thorough schools by the unit commander for both officers and non-commissioned officers. The unit commander, under the pressure of the routine of administration, must realize and perform his most important function, that of being the chief instructor of his unit. His officers and non-coms will do no better job of instructing than is warranted by the instruction which they receive from him. The training of his unit is one responsibility which the captain may not delegate if his training system is to be successful. The N. C. O.'s and officers must be trained by him personally at the weekly schools.

These schools should parallel the drill schedule. At the same time, they must precede it slightly in order that a non-com may have some previous notice of the subject which he is to present at the next drill. Instructors are not made in the school alone; memorizing and repeating the regulations is not sufficient. Practice must accompany the theory, practice on the drill floor under the competent supervision of the platoon commanders.

During the drill periods, one N. C. O. in each

group carries on the direct instruction; the other assists in the instruction and checks the qualifications of the men in those parts of the subject which have been assigned for the evening. Each group is instructed as a whole but the emphasis is upon individual performance. If a man is able to show satisfactory execution of the movements or explanations assigned for the evening, he is checked off on the lesson card and passed on to the next group for instruction in another subject. Any man able to show satisfactory performance in all of the evening's work before its termination should be placed as an understudy to one of the instructors.

At the end of the period assigned for the instruction in a subject, at a signal from the company commander, there is a general rotation of classes from one group to another. This occurs each half hour, if the drill is so arranged, or it may occur at the start of the instruction the next week if the whole hour periods of instruction are used. The unfinished parts of the subject are left until the subject comes up again for a period of instruction, whether it be the next week or the following month, bearing in mind that the periodic recurrence of the subject will be the cause for its retention.

4. The Rating and Charting of Results

It is again emphasized that the rating and charting are incidental to the instruction. A training chart has no value in itself. However as an accurate portrayal of a system of individualized training, it has great importance. It presents a graphic record of the status of the company training at any time. It is thus a dynamic training survey if accurately maintained.

Only one annual chart for a unit is necessary. This may be started at any time, preferably at the beginning of the armory training year. The names of the men on the company training chart are arranged according to the platoon organization. The names of the subjects are cross sectioned against the names of the men in such a way that the degree of qualification under each subject may be posted in the interstices. *As soon as one of the subjects is completed by a man, as shown opposite the man's name on the platoon card for the subject, a cumulative rating is posted by the platoon commander opposite the man's name on the company chart.* The First Sergeant takes care of the headquarters of the unit.

Some subjects will extend but a week; others will require from one to two quarters. Little work is necessary in marking the company chart since this is done only as many times each year as there are subjects taken up under individualized training. These will be limited to those subjects applicable to armory training and to those subjects for which mass training is not desirable. From twelve to sixteen subjects in which thorough individual mastery is desired will thus be taken up by this method during the armory training year.

The following three point scale of rating is used on the unit training chart:

U Unsatisfactory:

Can execute each movement and describe points of military information but without the snap and precision of the trained soldier. This rating indicates that some instruction has been received in the subject but without satisfactory performance having been secured.

S Satisfactory:

Is as good as a private or private first class should be; can execute the parts of the subject or describe points of information with the precision and snap of the trained soldier. This is the qualifying grade.

VS Very Satisfactory:

Is as good as a corporal or sergeant ought to be; can execute and explain with snap and precision; has a knowledge of common errors and ability to correct them; has ability as a leader as well as an instructor.

The three point scale has several obvious advantages over the pass or fail, Q or U, two point scale. It arouses individual initiative in rewarding effort and showing possibilities of improvement. If a finer rating scale is desired, the five point scale, as used on the officers' efficiency reports, may be adopted.

The entire program of training is motivated by the individual progress shown to each man on the company training chart. Occasionally an optional period is available for the company commander. An examination of the chart will then show, without guesswork, what groupings of men must be made within the platoon to bring the organization up to a uniform level in all subjects.

In conclusion, it must be remembered that any plan must leave to the unit commander a certain latitude of execution. However the principles of individualized instruction and progress, of conformity to the regimental and battalion training programs, and of individual rating based upon the training system must not be violated. Various other systems of grouping the personnel for instruction may be devised. If the regimental time-allotment program has been abandoned, the entire company may be divided into many groups each receiving instruction in a different subject. Each soldier works progressively through the different groups during the armory training year. All of the personnel must be regrouped following each drill period. This plan, if it can be administered, secures a maximum of individualization in the instruction but apparently at the expense of less control and more administration.

No plan ever will be devised which will permit the hard pressed unit commander to:

"Wrap the draperies of his couch about him
And lie down to pleasant dreams."

Any plan must depend upon the ability of the instructors who are carrying it out and upon the diligence and energy of its supervisors. A system of individualized training can make these forces, which already exist, more effective. While the installation of such a system may require study and initiative on

the part of the company commander, the result of his efforts should prove the statement of the Militia Bureau, that the adoption of a plan of individualized training "should transform the drill periods of any unit, accustomed to stereotyped instruction, into a snappy course of interesting winter's work."

Summary

1. Confusion has resulted from the attempts of some organizations to adopt the training chart system.
2. The use of the training chart must be incidental to the individualized training system which it represents.
3. It is impossible to coordinate a training chart system, as heretofore organized, with the required regimental training directive.
4. The use of subject cards on which is kept a record of the amount of work covered in a subject at

each drill, makes possible the coordination of the individualized training system with the regimental program.

5. An individualized system of instruction has undoubted values in stimulating individual and company growth. It requires "the complete instruction of each man in every subject" and a rating of his individual work on the company progress chart.

6. It will be found advisable to assemble the unit frequently for short intensive drills and to conduct mass training in subjects which require that method.

7. Regimental and battalion directives must be devised to allow the unit commander latitude in the preparation of his training schedule. Unit commanders in turn must understand the preparation of an adequate training survey for their units and its use in subject-time-allotment in such a way that adequate time, continuity, and repetition may be secured.



Staff 1st Bn, 251st CA, Calif. N. G.—Front row: Captain Wueste, Captain L. E. Spencer, CAC (DOL), Instr.; Major Sherman, Bn. Comd.; Captain M. A. Herbert, S-3; Captain Colby, M. C. Second row: 1st Lieutenant Fry, S-1; 1st Lieutenant Ogden, S-4; 2nd Lieutenant B. Kearney, S-2.

Frederick William von Steuben

By Colonel Samuel C. Vestal, Coast Artillery Corps

OF all the distinguished foreigners who aided us during our Revolutionary War, none performed more valuable services than Baron Frederick William von Steuben; and he left indelible marks upon our institutions. He laid the foundations of our military establishment; he drew up plans for our Military Academy, and he introduced amongst us the spirit of our military discipline which has been passed on from generation to generation and has remained practically unchanged to the present day.

Before the arrival of Baron von Steuben, the Army under Washington, in the disastrous year, 1776, had been driven from New York through New Jersey and across the Delaware. At the end of the year, it had rallied and had gained signal victories at Trenton and Princeton. In a second year of disaster, Philadelphia fell into the hands of the enemy and our main army met defeats at Brandywine and Germantown.

The cause of the reverses had been the lack of discipline and training. The American officers were not capable of imparting discipline and drill to their men. Washington was thoroughly alive as to the real cause of our humiliating defeats and he was on the lookout for competent military instructors, but he had been unable to find any either amongst his own officers or amongst the foreigners who had come to our shores.

The French Government was secretly aiding the Americans with money and military supplies, but the ministry had become convinced that without a reform in the organization of our army, the money and stores of France would be given in vain. The French Minister of War, Count St. Germain, cast about for a competent military instructor who would be capable of imparting discipline to the American army and who would be personally acceptable to the American Congress and to the American Commander-in-Chief. His choice fell upon Baron von Steuben, whom he had known by reputation for a great many years and whom he had recently met at a country estate in Alsace in the winter of 1776-7.

The military record and antecedents of the founder of discipline in our army is of deep interest to all true Americans. Von Steuben, then in his forty-seventh year, had served many years in the Prussian army. He belonged to an old, aristocratic, military family. At the von Steuben home the principal topic of conversation was the martial deeds of their ancestors and their immediate relatives. As a mere child he had accompanied his father upon a campaign in the Crimea. At the age of fourteen he had served as a volunteer with the Prussians at the siege of Prague and had been wounded.

Three years later, in 1747, he entered the service of Frederick the Great, as a cadet. He had reached the grade of first lieutenant when the Seven Years' War broke out. In 1757 he was wounded at the Battle of

Prague and took part in the Battle of Rossbach, Frederick's most striking victory. He served a year as adjutant general in the "free corps" of General von Mayr. This corps was employed in making incursions into the enemy's country; and it attracted the bravest and most ardent spirits of the army. We had a somewhat similar corps in our Revolutionary Army, Lee's Legion, commanded by Lieutenant Colonel Henry Lee, better known as Light Horse Harry Lee, the father of General Robert E. Lee of the Confederate Army. In von Mayr's corps, von Steuben learned self-reliance and promptness of decision in the face of danger and difficulty. He learned how to use and manage light infantry and he learned the art of skirmishing.

Von Mayr died early in 1759; his corps was broken up and von Steuben joined the command of General von Hulsen, one of Frederick's best lieutenants. Fighting against the French, the Russians, and the Austrians, and twice wounded, he took part in many battles in the Seven Years' War. In 1761 he was captured by the Russians and taken to St. Petersburg; but was soon released. He became a member of the personal staff of Frederick the Great in 1762 and was admitted into a small and select body of officers whom Frederick personally instructed in the art of war.

In 1763, at the close of the Seven Years' War, he left the Prussian service. The King conferred upon him a lay benefice, which gave him an income for life. There were few living men that had seen more hard fighting than Baron von Steuben. He subsequently was grand-marshal for ten years to the Prince of Hohenzollern-Hechingen; and, at the beginning of our Revolution, held a military appointment at the court of the Margrave of Baden.

He wrote and spoke German and French correctly and he was intimately acquainted with ancient and modern history. Whilst other young officers led careless and idle lives, he exerted himself not only to learn his profession but to enlarge his knowledge of literature and the practical sciences. He was a studious, hard-working officer, who was considered an authority on military affairs. While on the Staff of Frederick II he had very carefully studied the operation of the supply departments. He had become a master of the art of supplying armies in the field and of keeping them in an efficient state of health. He had learned how to handle large bodies of troops. He had become a worthy and distinguished soldier. His experience of war was large and his thought and study of war bore a large and happy proportion to his experience.

In April, 1777, von Steuben went to Paris on his way to visit friends in England. In Paris he met Count St. Germain who proposed that he should volunteer to go to America to teach Americans how to fight against the regular troops of Europe.

St. Germain began negotiations with him almost a

year before France made a formal alliance with the United States. His desire to secure von Steuben's services and his persistence when von Steuben at first declined the mission and returned homeward, showed a high appreciation of the fitness of the man. The mission was a most delicate affair. France was not in alliance with America, and the hand of the French government must be concealed. St. Germain talked with von Steuben, not in his capacity of War Minister but as a private citizen. When von Steuben was at last persuaded to come to America to aid the patriot cause, he came as an enthusiastic volunteer like Lafayette. St. Germain had chosen well. Von Steuben sailed from Marseilles on September 26, 1777, on the "Flamand," a twenty-four gun ship which carried munitions for the Americans. The "Flamand" bore the most precious cargo that France ever sent to the aid of the Americans. It bore the leaven that was to transform the American forces from a heterogeneous mass of men into a disciplined and efficient army. Von Steuben was not in the pay of the French Government, and he never received any reward from it. Having persuaded him to go to America, St. Germain washed his hands of the whole affair and never held any further communication with him.

Von Steuben arrived at Portsmouth, New Hampshire, on December 1, 1777. From Portsmouth he addressed a letter to Congress. He stated that the only motive which brought him to this hemisphere was a desire to serve a people who were making a noble fight for their rights and freedom. He did not crave titles or money.

At Boston, the wealthy John Hancock furnished sleighs and saddlehorses for the party to proceed to York the capital of the United States, more than four hundred miles away. Enroute, von Steuben's heart was gladdened at almost every inn by the familiar features of Frederick II on the signboards. To us today, the name of Frederick is merely an historical memory, but the men of the American Revolution remembered him as a valiant ally during the Seven Years' War. Congress received von Steuben with distinguished honors. After his interview, he went to Valley Forge, where he joined the American Army on February 23, 1778. He was welcomed most heartily by Washington, who rode out several miles with his staff to meet him.

The condition of the American Army when von Steuben joined it was deplorable. The number of men in companies and regiments was fixed by Congress; but the ceaseless ebb and flow of men engaged for three, six, and nine months, who went and came daily, made it impossible to have complete organizations; and the words Company, Regiment and Brigade were wellnigh meaningless. Sometimes a regiment was stronger than a brigade. Von Steuben saw a regiment of thirty men and a company which consisted of a corporal. He saw companies that were larger than regiments and regiments that were larger than brigades. Records were poorly kept; reports were unreliable; and funds were carelessly disbursed. The so-called regiments had three, five, seven, or nine platoons; and the Canadian regiment had twenty-one. The formation of regiments

was as varied as their mode of drill, which consisted only of manual exercises. Inspectors who had preceded von Steuben had never got beyond that state in military instruction before dissatisfaction caused them to be dismissed. Some colonels used the English, some the French, and others the Prussian Regulations. There were no regular formations. Military discipline was unknown.

It was almost impossible to get a correct return of any company, regiment, or corps. A man once on the roll of a company was there everlastingly as forming part of the strength of the company, except in case of death or destruction under the very eyes of the captain. Any general would have thought himself fortunate to find ready for action a third of the men whom he found on the rolls. The soldiers were scattered about in every direction. Most of the captains had no company rolls and did not know how many men they were supposed to have. When von Steuben asked colonels the strength of their regiments, the usual reply was, "Something between two and three hundred." The colonels and often the captains granted leaves of absence and discharges as they thought proper. The officers were not accustomed to stay with the troops when the army was in camp; they lived in houses, often several miles away. Officers employed one, two, and even three soldiers as servants. Several thousand were employed in this way. According to von Steuben, there were more quartermasters and commissaries than in all the armies of Europe. The most modest had one servant, but others had two or three. In winter quarters, nearly all officers went home, and there were often only four officers to a regiment. Von Steuben found a regiment commanded by a lieutenant. Officers thought that their duty consisted in mounting guard and putting themselves at the head of their commands when going into action.

If captains and colonels could give no account of their men, they could give still less account of the arms, accoutrements, clothing, ammunition, and camp equipage. No one kept an account. Not only the clothing but the arms were carried off by those who had completed their term of service. Before every campaign, from 5,000 to 8,000 muskets had to be furnished to replace those that had disappeared. The loss of bayonets was still greater. The American soldier had never used this arm and had no confidence in it. He employed it as a spit to roast his beefsteak, if he had not left it at home.

The arms at Valley Forge were in a sad condition, covered with rust, half of them without bayonets, and there were many from which a single shot could not be fired. The pouches were as bad as the arms. A great many men had tin boxes instead of pouches; others had cowhorns. Muskets, carbines, fowling pieces, and rifles were to be seen in every company. The men were literally naked, some of them in the fullest extent of the word. The officers' coats were of every color and make. Von Steuben saw officers at Valley Forge mounting guard in dressing gowns made of old blankets or woolen bed covers.

There was no internal administration of regiments and companies. The quartermaster received arms, am-

munition, clothing, provisions, and camp equipage for brigades. Captains did not know the number of their own men or the rations which they should receive. Each colonel encamped his regiment according to his fancy. Guards and pickets were in excess, and officers did not know their duty and in many instances the objects of their guard. The strength of the army was weakened by an infinity of guards for commissaries and quartermasters, who controlled their own guards, granted leaves and used the men for personal service. These guards were never relieved but remained from



Von Steuben.

one year to another. By custom, each quartermaster had a commission on all money expended. Expense was not spared, and useless articles were ordered in order to increase the commission.

Washington requested von Steuben to make plans to correct the manifold abuses in the Army and to establish a strict inspection so that uniformity might be introduced into the service. It was exceedingly difficult to form a plan which would not excite so much opposition amongst the officers and men as to frustrate it before its merits were made manifest to all. In preparing his plans, von Steuben had the aid and cooperation of three officers of the greatest merit and ability, Gen-

eral Nathaniel Greene, Colonel Henry Laurens and Lieutenant Colonel Alexander Hamilton. Von Steuben submitted his plans to these three officers and, after they had gone over them and had come to an agreement, he submitted them to Washington. He proposed that there should be appointed an inspector general at once, who should establish uniform formations, uniform maneuvers and exercises, a regular system of accounting for all money and property, and uniform records for all units. The inspector general should define and point out the duty of every officer.

Washington approved the plans and requested von Steuben to assume the duties of Inspector General and carry the reforms into effect. After two months of voluntary service without rank or pay, Congress made von Steuben Inspector General with the rank and pay of Major General. He began operations by drafting 120 men from the line, forming into a guard for the general-in-chief. He made this guard his military school. He drilled it twice a day and, to remove the English and American prejudice that to drill recruits was a sergeant's duty beneath the station of an officer, he took a musket and showed the men the manual exercises.

The Baron did not spare himself. He rose early, and while his servant dressed his hair, he smoked his pipe and drank a cup of coffee. He was on horseback at daylight and galloped to the parade.

His example was contagious, and Valley Forge became a great training camp, where the American officers, for the first time in history, became the instructors of their men. He appointed inspectors for each division, and all of his inspectors were present at each drill. In two weeks, his company knew how to bear arms, had a military air, knew how to march, to form column, deploy and execute small maneuvers and exercises.

Von Steuben had a free hand in regard to the men in his company. They were well dressed, their arms were clean and in good order, and their general appearance was quite respectable. He paraded them in the presence of all the officers of the Army and gave them an opportunity to exhibit what they knew. They formed in column, deployed, attacked with the bayonet, changed front, etc. The company formed a new and agreeable sight for the young officers and soldiers. Having demonstrated his method of drill, von Steuben dispersed his apostles, the inspectors, and his new doctrines were largely embraced. He lost no time in extending his operations upon a large scale. He applied his system to battalions, to brigades, and in a short time, he maneuvered an entire division in the presence of the commander-in-chief.

He introduced a definite plan for the organization of the Army, which Congress adopted; he devised a system of accountability for public property; he taught the troops to take care of their arms and equipment; he taught the officers and men how to drill and maneuver; and above all he instilled the spirit of military discipline into the army.

All, however, was not plain sailing. Many of the officers looked askance upon his work. The brigadiers threatened to quit the service. But in time von Steu-

ben triumphed. The dissatisfied brigadiers became his best friends; and no man was more popular in the army than von Steuben. The officers grasped the importance of his work and realized that their earlier defeats had been due to their inability to match themselves with the well trained British. A remarkable change came over the army. A generous but spirited rivalry set in between organizations to make the best appearance and exhibit the greatest efficiency. By April the general officers were writing to their friends in the other armies recounting the wonderful transformation wrought by von Steuben.

It was truly a great accomplishment. Von Steuben had arrived at Headquarters at the end of February, knowing almost no English. Acting at first largely through interpreters, and then speaking a jargon of English, German, and French, which greatly amused the officers and men, he had introduced a very strict form of discipline amongst men who had extreme ideas of freedom and personal liberty. While the soldiers almost expired over the funny incidents, they all did their best to obey orders.

All opposition died away before the perfect demonstration of his success. Officers ceased to shrink from labor with the example of industry like that of von Steuben before them or to consider any part of their duty as beneath them. "Do you see there, sir, your colonel instructing that recruit?" said he one day to one of his assistants; "I thank God for that."

It was a valiant and well drilled and highly disciplined army that issued from Valley Forge when good weather made campaigning practicable. In June, when the Americans broke up their camp and pursued the British, who had evacuated Philadelphia and were retreating across New Jersey, they for the first time had a real army. It had increased to fifteen thousand men, all drilled by von Steuben and all anxious to show their efficiency. Washington attacked the British on June 28th at Monmouth; but in the midst of the battle, General Charles Lee gave orders which confused the Americans and caused them to retreat. The story is well known. Washington rebuked Lee and sent him to the rear, and ordered von Steuben to rally the fleeing troops. This maneuver was well done; the British were driven back, and the Americans remained in possession of the field. Alexander Hamilton, an eye witness to these events, declared that for the first time he appreciated the overwhelming importance of military training and discipline.

As a result of von Steuben's drilling, reviews, reports, and inspections, the American Army was, man for man, a match for the best British troops. At Stony Point, an American column stormed the works, with unloaded muskets, and took them at the point of the bayonet. At Guilford Court House, a single regiment of Continentals smashed two enemy regiments, each larger than itself. At Eutaw Springs the Continentals swept the field with the bayonet; and at Yorktown, Alexander Hamilton's column of assault took the enemy redoubt with unloaded muskets and fixed bayonets.

the following winter von Steuben wrote his "Regulations for the Order and Discipline of the Troops of the United States," based upon his experience but

adapted to the peculiar needs of America. His mind was not closed against new knowledge and information. The Americans had developed a light open order of fighting, suited for contests with the Indians in the forest. Light infantry, thus trained, had, under Benedict Arnold and John Morgan, won the day at Saratoga which led to the surrender of Burgoyne. Von Steuben reduced the practice to scientific shape and embodied it in his regulations. These regulations, known as the Blue Book, held their place long after the death of their illustrious author.

The book was composed in good German by von Steuben; then translated into bad French; then put into good French by Captain Fleury; then translated into poor English by Captain Duponceau; and finally put into good English by Captain Walker. It covered everything necessary in connection with the troops, their weapons, exercises, marches, camps, maneuvers, signal service, inspections, and sick and wounded.

Von Steuben's Regulations were not in any sense a copy of the Prussian drill regulations. They formed an original book and contained the practical ideas of a man that had met a most difficult problem and had solved it. He established a new arm in the service, the light infantry. The regulations were the crystallization of ideas that he had gained as adjutant general of irregular troops during the Seven Years' War, and his more recent experience with American troops fighting under the special conditions of the terrain in America. Frederick the Great, who carefully studied the American war, introduced light infantry into his own service, from which the idea was adopted by the other European armies. Von Steuben's sanitary regulations are excellent in many respects for use today. Three thousand copies were printed and distributed to the Army. Most of the states reprinted the regulations in 1793 and 1794, in order to carry out the Militia Act of 1792. They were reprinted in 1809 and were used in the War of 1812. Although our drill regulations have been revised many times, the marks of Baron von Steuben are evident on every page, and the spirit remains unchanged.

When Gates was defeated at Camden in 1780, Washington asked von Steuben's advice. He replied that the only assistance that could be given to the southern states was to send two able officers to take charge of the situation. Washington selected Greene and von Steuben. Whilst the two generals journeyed southward, it was decided that von Steuben should remain in Virginia to collect men and means and send them to Greene, who was to assume command in the Carolinas.

Although von Steuben never joined Greene in his wonderful campaign in the south, the marks of his hand were there. Greene relied almost entirely on the troops that von Steuben sent him.

Von Steuben's services were especially valuable at Yorktown, in view of the fact that he had taken part in the great siege of Schweidnitz. He was given a regular command as a major general and held the right center of the American lines. His troops were the first to enter Yorktown on October 19, 1781, and unfurl the American flag.

The day before official news arrived that a treaty of peace had been signed with England, he submitted, at the request of General Benjamin Lincoln, Secretary of War, a carefully worked out plan for a military academy. It is substantially the plan upon which West Point is operated today. He proposed that one hundred and twenty volunteer cadets should be educated every three years for the purpose of supplying officers for all branches of the service. They should be instructed in natural and experimental philosophy, eloquence and literature, civil law and the law of nations, history and geography, mathematics, civil architecture, drawing, the French language, horsemanship, fencing, dancing, and music. Congress should appoint each year a board of visitors who should make a report to it.

The influence of von Steuben pervades the Army today through the Military Academy at West Point, which was founded in 1802, eight years after his death. Most of the first instructors at West Point had known von Steuben personally; his methods and ideals, as demonstrated in the training camp at Valley Forge and on the battlefield, were preserved by traditions that have become far more powerful than written regulations.

There can be no doubt that the discipline of von Steuben, which has been transmitted by tradition to the army through the Military Academy, is a very strict military discipline, perhaps the strictest and



Von Steuben at Valley Forge, 1777.

most effective in the world. Its quality lies not in the severity of the penalties which it imposes; but in the unquestioning obedience to command which it requires.

Washington called upon von Steuben to prepare a plan for disbanding the Revolutionary Army. Steuben suggested that the troops should be dismissed with the greatest dignity possible. Each officer should receive a certificate on parchment signed by the commander-in-chief and sealed with his arms, expressing the value of his services. Every enlisted man should receive his discharge in regular form, and all certificates and discharges should be made of record. Unfortunately, there was no money to carry out this wise plan.

The last act of Washington, on December 23, 1783, a few moments before he laid down his command, was to write a letter to von Steuben, acknowledging his great zeal, attention, and abilities and expressing the sense of obligation of the public for his faithful and meritorious services.

In the "Creed" of the American officers adopted at Verplanck's Point in 1782 we read:

"We believe that Baron von Steuben has made us soldiers, and that he is capable of forming the whole world into a solid column and deploying it from the center. We believe in his Blue Book. We believe in General Knox and his artillery. And we believe in our bayonets."

Von Steuben suggested the founding of the Society of the Cincinnati.

Von Steuben remained in the United States after the war. Congress granted him a life pension of two thousand five hundred dollars a year and presented him with a gold hilted sword. New York gave him 16,000 acres of land; Pennsylvania, 2000; Virginia, 15,000; and New Jersey conveyed to him in fee simple the confiscated estate of a Tory. Von Steuben, however, restored the estate to the original owner, when he learned that he had been made a pauper by the confiscation. He was President of the New York chapter of the Society of the Cincinnati, President of the German Society of New York and Regent of the state university of New York. He was a citizen of Pennsylvania, by special act of the Legislature of that state. He enjoyed the close personal friendship of the President of the United States. When war with England appeared to be imminent in 1794, New York placed him at the head of its commission appointed to fortify the city. He lived on his estate in Oneida County, New York, during the summer months from 1790 to 1794; but he returned to New York City for the winters, where his days were occupied with many functions of a social and public character.

He was a past master in the science of organization, tactics, and strategy. His position at headquarters was that of Inspector General and Chief of Staff for active field operations. Perhaps it would be more accurate to compare it to that of G3 in our staff organization today, or chief of the bureau of operations. Before each great campaign, Washington requested von Steuben to prepare a general review of the situation and to suggest plans for the future. These reviews were very ably written estimates of the situation such as a chief of staff would prepare today.

Von Steuben died one of the most honored and best beloved citizens of the Republic. His statue occupies one of the corners of Lafayette Square, opposite the White House in Washington, together with the statues of Lafayette, Rochambeau, and Kosciusko; but a more enduring monument is the living corps of cadets at West Point. He stood at the cradle of American Independence. The American army now travels along the course he established and perfected. He made the long road of military efficiency clear and definite, and he placed the permanent foundations of our military establishment. He rendered the inestimable benefit of introducing among us the great principle that the officer is the instructor of his men. This idea has passed into our regulations and has become a part of the life of our Army.

The life of von Steuben is a good reminder to us that no people, however patriotic and intelligent they may be, can be made overnight into an efficient military force by clothing them in uniforms and placing arms in their hands.

John Pershing

The Thankless Savior of the Entente

By Colonel Emil Seeliger

(EDITOR'S NOTE: Colonel Seeliger, military editor of the "Neues Wiener Journal" where this article appeared on April 17, 1932, has been for 12 years, professor at the Austrian War College. As a major, he served 6 years as chief of the news section of the Ministry of War. During the world war, Colonel Seeliger was in charge of the press department at General Headquarters.)

LA Russie est morte—vive l'Amerique!" thus vibrated exactly fifteen years ago, in April 1917, the frightened but hopeful cry through weakened France. The externally brilliant Nivelle, with his "break-through" complex, was about to sacrifice a hundred thousand Frenchmen in the Champagne, to earn the cognomen "Blood-drinker". Defeatism, like an epidemic, was about to seize the people and the army. In many regiments, also in the Russian expeditionary corps, mutinies had to be suppressed by hundreds of executions. The Germans, according to French sources, had only to attack to reach Paris without a fight. Nivelle was relieved and his successor Petain was able to stem the disaster in the eleventh hour. Just then the cry of relief went through the western republic which had been bled white: "The Americans are coming!"

In Washington, across the ocean, an historical moment had taken place during these fate-pregnant April days. Before Woodrow Wilson and the Secretary of War, Newton Diehl Baker stood, recalled from the Mexican expedition to the White House, General John Pershing. Bronzed, a man of deeds, energetic, the front soldier from head to foot!

"The Government has selected you, the youngest of all ranking generals, to command the American Expeditionary forces in Europe," said the President of the Union. "It is of utmost importance that you select your staff at once and sail for France immediately."

"But where is the American expeditionary force?" asked the surprised general.

"It will follow you as soon as possible," declared the Secretary of War, Baker.

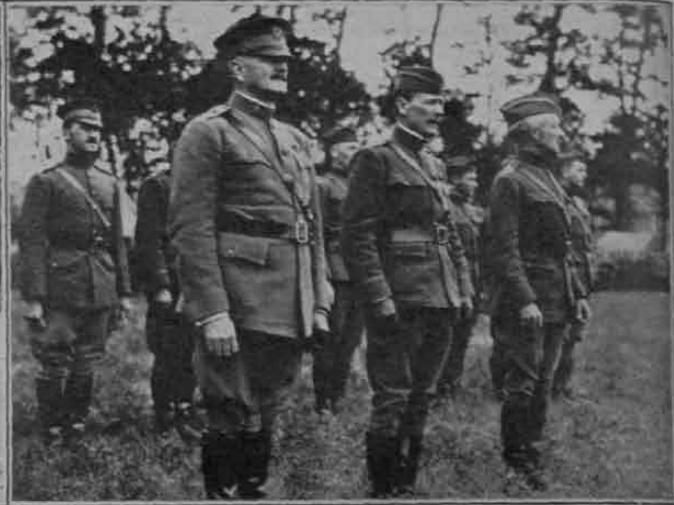
Hardly three weeks later the "field marshal without an army" triumphantly entered Paris. Had the God of War in person marched through the streets of the defeatist metropolis, his reception could not have been more enthusiastic. With a clear conception Pershing had immediately recognized the situation: England and France at the end of their resources—unless a large, trained and independently led American army was thrown into the balance, Germany would remain the victor!

The American saw a tremendous piece of work ahead of him. Knowing exactly what he wanted, the "field-marshal without an army" figured that the results of his work could not make their influence felt until a

year hence. With typical American enterprise he went to work. The influence of French and British "know-it-alls" broke against his unwavering purpose. Through the entire warfare, anchored in French tradition up to now, there breathed Yankee energy: Harbors and docks, depots, warehouses, barracks, railroads, factories, automobile parks, drillgrounds began to Americanize the war-scarred face of France and made room for the arriving millions of the American army. Hundreds and hundreds of ships flying the Star-Spangled Banner, thousands of locomotives and freight cars, includ-



Photo by Signal Corps, U. S. A.
General John Pershing



Left: General Pershing Addressing Officers of 1st Division Before They Leave to Enter the Line. Right: General Pershing, Maj. Gen. B. B. Buck and Brigadier Gen. F. W. Sladen Inspecting Guard of Honor, Seventeenth Inf.

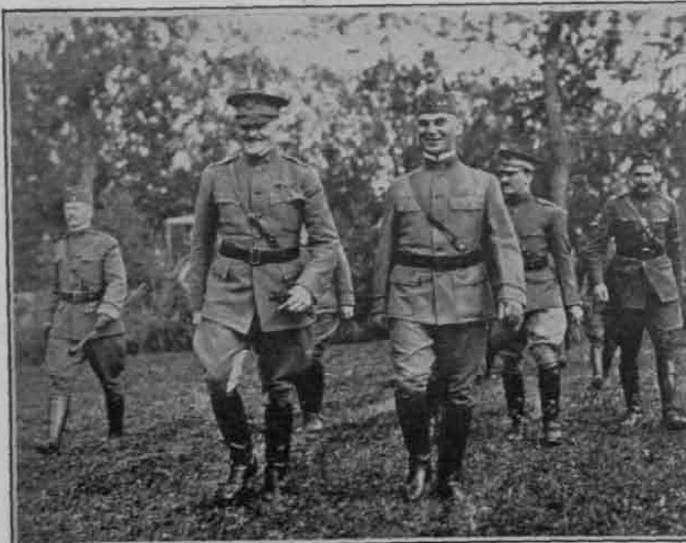
ing the railroad personnel, were being sent by the United States to save her Allies in the eleventh hour. American manufacturers and businessmen took the places of bureaucratic generals and government employes. Under Pershing's orders they swept out the traditional red tape with an iron broom. Thousands of handicaps presented themselves to the Commander in Chief of the A. E. F. The greatest handicap turned out to be the tactical training of the tremendous line of the millions who came across the Atlantic, the schooling of the subordinate commanders and their getting used to the hell of war which was now carried on with the help of metatechnical means. But Pershing solved the problem which, in its almost uncanny size and difficulty, had never before presented itself to any Commander in Chief.

* * *

Of course—Pershing was not a magician. Thus, his systematic, titantic work aroused the impatience of those sanguine men in office and positions who had ex-

pected the saving of the entente by the Americans almost over night. The statesman most dissatisfied with Pershing's accomplishments happened to be Clemenceau, Premier and Minister of War of white-bled France. Time and again he accosted Foch, either verbally or by special orders:

"Pershing wants an American Army! Can't you see that he wants to take the initiative with his hyperthrophy of a staff, without paying attention to a French Supreme Command? You ought to be much sterner with him instead of granting all his special wishes! Make Pershing feel that he is your subordinate! The general situation demands it. It is only your conciliatory standpoint which holds back his troops and increases the terrible losses of our forces. The English and especially we, the French, must still replace these losses. You won't get anywhere with Pershing by being conciliatory. Change your tune to a sharper one! If you continue to hesitate, I'm going to Wilson myself. I shall ask him to show Pershing his place and,



Left: General Pershing, Maj. Gen. Chas. P. Summerall and Officers of 1st Division. Right: General Pershing Leaving Dugout of Maj. Gen. Wm. H. Johnston After a Conference.

in case he should still remain stubborn, I shall demand that he be replaced by another general!"

Even at the time when General Pershing began to harvest tremendous successes, on October 21, 1918, Clemenceau sent to Foch a military "express" letter: "I, as Premier and Minister of War and, as such, the legal commander in chief of the French Armies may possibly have the right to say something about the insufficient employment of American troops! The stubbornness of General Pershing can be laid to your sheep-like patience. I, Clemenceau, demand that, in case your patience won't produce better results, you address President Wilson direct!" But the roaring and screeching of the "tiger", which naturally echoed in his ears, did not detract Pershing in the least. He retained his independence of action in every way: He neither permitted the use of American troops as "filers" for the weakened French and British divisions, nor did he even think of giving up the tactical and strategical independence of his armies. His forces, during the deciding phase, had grown to a strength equal to that of the Allies. Every one of this thirty-six divisions, due to their greater combat strength, equaled two French or British divisions, respectively.

Then, in mid-September of 1918, Pershing believed that the time had come to bring about the turning-point of the war. Now, in the solving of the problem, he revealed himself to be far more clear-visioned than Foch. Against the decision of the Commander in Chief, who saw in America's plan only a "retarding undertaking of minor importance", Pershing led his main forces against the German "spearhead in the side of France", against the Meuse bridgehead St.

Mihiel. For four years, German strength, now supported by Austro-Hungarian divisions, had repulsed every French offensive at that point. The superiority of the fresh troops of the Union finally forced back the tired soldiers of the Central Powers. The first major operation of the Pershing Army led to a full success against one of the strategically most important key positions of the whole front! Verdun had been relieved from the threat of a southern envelopment; the zone of the French barrier forts had been linked up again; the German fortress Metz was within range of American guns. Pershing was enabled to turn his armies northward from Verdun and within a few days he was engaged in the final offensive which was to end the giant struggle.

* * *

I've waded through almost the whole, remarkable French and British literature about the war. My search has been in vain: Nowhere have I've been able to find a full acknowledgment of the deciding accomplishments of Pershing and his expeditionary force. The tenor of all French works points to the fact that France has won the final victory, that of the British literature leaves no doubt that England had won the war.

As a professional, military critic, whose former enmity against the entente does not prevent him from writing the word "impartiality" upon his banner, I deem it my duty, perhaps just for the above reason, to dedicate to General Pershing the paper laurel leaf of a newspaper article:

After all, he deserves to be termed the real victor!

—Translated by Beda von Berchem.

Pacific Preparedness

A N R. O. T. C. unit of a certain high school on the Pacific Coast was being inspected. The subject was The National Defense Act. One youngster was rearing to go and doing most of the answering.

"When did the National Defense Act become a law?"

"June 4, 1920."

"What does the word 'Act' mean?"

"An Act of Congress."

"What was Congress trying to accomplish when it passed the National Defense Act?"

"To provide for the common defense."

"Those words sound familiar. Where did you find them?"

"The Constitution of The United States says that one of its objects is to provide for the common defense."

"It is very commendable of you to appreciate the work of our forefathers enough to learn so much of the Constitution of our great country. What is your name?"

"Show Ming Quon."

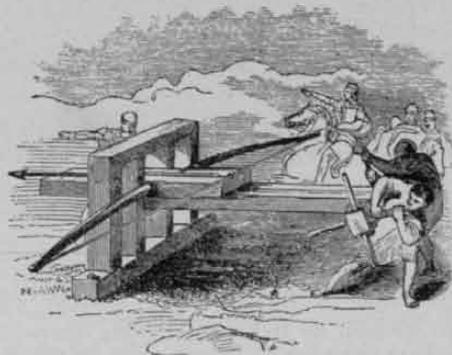
Ancient Coast Artillery

By Fletcher Pratt

COAST artillerymen of today are accustomed to regarding their arm as something essentially modern, certainly not dating back beyond the invention of gunpowder. As is usual with us moderns when we make assumptions about the newness of our age, they are wrong. Artillery of position, particularly of coast defence, dates from a higher antiquity than any other arm except the infantry and cavalry, preceded field artillery into existence by a half-century and the cannon by at least seventeen hundred years.

And this is leaving out of count the Cyclops who tried to crush audacious Ulysses' boat by hurling mountains at it. The date of the invention of coast artillery is known with some accuracy. It was 400

against them generally came up out of the sea, both because they were usually placed on islands or narrow peninsulas, and because it was difficult to build an adequate wall on the sea side of a city whose principal concern, after all was keeping that sea side clear for commercial purposes. A weapon which could keep the



CATAFULTA.

ships of invaders at a distance, if only for long enough to give the citizens time to arm and form, was sure of a warm welcome.

The catapult could do this. Accustomed as we are to thinking in terms of guns that fire over the horizon by means of airplane observation, it is difficult to picture a catapult throwing a 52-pound stone ball to an effective range of 450 yards as a formidable weapon. But the catapult was used against lightly built wooden ships whose best speed was some twelve knots (and considerably less than this when loaded down with the troops of an invading army and after the long pull to the place they were attacking), and which could be sunk by four or five well placed hits.

The classical catapult in fine, bore about the same relation to the ships it opposed as the twelve-inch sea coast gun to the modern battleship. Merely a question of scale.

Within twenty-five or thirty years after the invention of this weapon, every Greek city-state had a coast artillery corps, and the island cities, such as Rhodes, Samos and Syracuse, had already developed considerable skill in handling these weapons.

The organization of the corps, differing in detail, was everywhere similar; one description will do for the whole lot. The boys of a Greek city took military training as the most important part of their education from 7 to 17-18. In the towns with well organized artillery corps, they spent three days every month in learning all about catapults. At 18 the boy was ready to embark on his career. If it was not a military career, he thenceforth gave only two or three days a week to military training. If the ambitious youth entered the field of architecture—engineering or masonry, this two or three days a week was thenceforth



BATTERING-RAM.

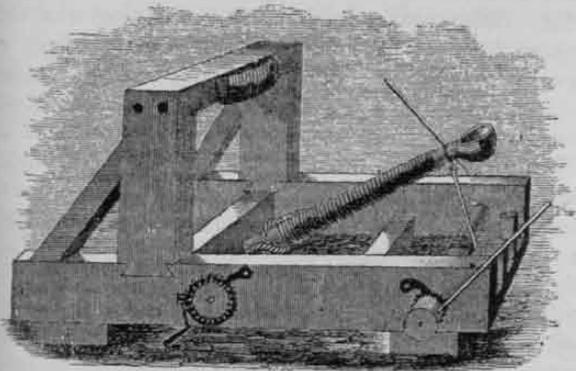
B. C., and was not a happy accident, but a deliberately planned effort by Dionysius, tyrant of Syracuse, who was engaged in a war with Carthage and wanted a weapon that would batter down stone walls without risk to the batterers. He summoned a congress of the leading engineers in the Greek world, and offered a small fortune for the invention that would fulfill his requirements. The catapult was the product of the congress. Dionysius used them to hammer the walls of the Carthaginian city of Motya, and they proved so satisfactory that they promptly spread through the whole Meriterranean principally in the form of coast defence.

Classical cities were essentially seaports, and attacks

spent in the artillery corps; and there were a number of professional specialists in artillery beside. Thus, in a Greek city such as Rhodes, there was a small corps of artillery specialists, trained soldiers, backed by a well-trained artillery militia. At the head of the corps stood the city architect, who was ex-officio a member of the city council, and had a voice in all plans for town planning and national defense.

The matériel varied rather widely. The standard weapon for coast defence was a catapult throwing a 52-pound stone ball with great accuracy up to 450 yards. It was a large and clumsy weapon, essentially a piece of position, occupying about 25 feet in the horizontal, standing 23 feet high, and weighing over two tons. Each piece was served by a "gun-pointer" who was also the captain of the crew, four men to work the winches which drew back the propelling cord, another three or four men as ammunition bearers, and a certain number of stone masons whose duty was to shape the missiles.

This catapult constituted a very real danger to ships within its range. They were oar-driven, and necessarily heavily built below the waterline to withstand the shock of ramming. As they had to be light enough to be pulled up on a beach, this meant that the upper works were extremely flimsy. The 52-pound catapult ball would go right through their sides and frequently did, as in the naval action off Embatum when some Chian vessels mounting these weapons as naval guns encountered an Athenian squadron in a heavy sea-way, and inconsiderately refused to come to close quarters as the Athenians wished, but stayed off and shot up the whole Athenian fleet with long distance gunfire.



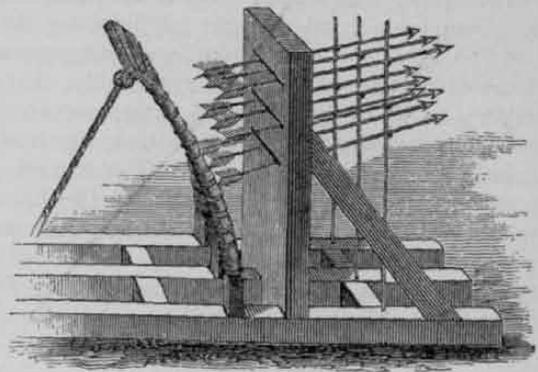
TORMENTUM.

Heavier weapons were sometimes mounted, but they were hardly worth the trouble as the weight of the piece increased rapidly in proportion with that of the projectile, and there was no corresponding increase in range, thanks to the method of propulsion. An Athenian dockyard report lists one monster that threw 150-pound balls, but the reporting official complains bitterly that he has no room to set it up, as it is forty feet broad at the base and weighs five tons. Archimedes constructed eight giants of similar size for a water battery at Syracuse, but they do not seem to have been very successful weapons. Artillery research, in general, took the direction of seeking higher velocities in small weapons.

In short, the smaller catapults could hurl their missiles as far as the large ones; and here the parallel with modern artillery fails sharply, for it was much more usual to find the heaviest catapults used to batter walls down than to defend them, the mass of the heavier balls making them more effective against masonry.

This was the case at the great siege of Rhodes, one of the most resounding events in ancient history, and one of the few on which we have anything like accurate information as to the part artillery played. (Ancient historians usually prefer to talk about some hero and how many men he stuck through with his bear-spear.) Rhodes, which was besieged by Demetrius Poliorcetes, was an island city, living off its sea trade. Its waterfront was shaped like a huge W with the city lying along the leftward stroke, of the letter and the other two representing long moles which enclosed harbors.

At the beginning of the siege, there was a big catapult, throwing 100-pound balls, at the end of each mole. The inner mole was further defended by a line of smaller weapons, throwing 10-pound balls, and along the city wall at the waterfront were a number (how



INFERNAL MACHINE.

many? don't know) of 52-pounders. Early in the siege Demetrius captured the outer mole in a night surprise, and tried to use it as an artillery base for breaching the city wall. The chief of the Rhodian artillery at once altered his 10-pounders on the other mole to dart throwers. These outranged the Demetrian siege guns and made all movement on the outer mole unsafe.

At his base down the coast Demetrius now built three enormous bombing ships, by decking together pairs of big vessels, catamaran fashion, and constructing seven story towers on the platform thus provided. These bombing ships were something really special; armored in iron over planking a foot thick, and provided with a host of weapons. On the two bottom stories of each were three huge siege engines of the 150-pound ball class (making a total of 18 siege guns) while the upper stories were occupied by a host of small ball throwers.

When these ships were ready they were towed round the mole into the outer harbor and while the siege guns battered at the waterfront wall, the small weapons did counter-battery work against the Rhodian catapults on mole and wall. Their higher rate of fire and the ex-

cellent protection with which they were provided enabled them to completely overmaster the defence—suggesting that the secret of attacking coast defences lies in protection for the attackers.

The head of the Rhodian artillery corps, after one morning of this attack, sapiently withdraw his men from the mole, and set them to building a series of small dart-throwers at the windows of all the houses opposite the spot where the wall was being breached. When the storming column mounted the breach a week later it was met by a withering blast of what must have been very like machine gun fire that completely broke it up. After the battle the bodies of many Demetrians were found transfixed by these darts, which had gone through three men in succession—eloquent testimony to the power of the catapult, since the men were in armor and carried shields. (As a matter of fact a dart-throwing catapult was safe against any attack as long as its ammunition held out.) A day or two after this grand attack the bombing ships were sunk in a naval battle, and the Rhodians reestablished their batteries on the moles.

Here they gave another extraordinary demonstration of the powers of a good coast defence, later in the siege. Demetrius tried a night surprise on the land side of the city, and succeeded in gaining possession of a part of it. Believing, quite reasonably, that every available man would be mustered to oppose this threat, he rushed some ships around to attack the harbor at the same time. It was in the middle of a dark night, with a good sea running. In spite of the handicaps and confusion, the Rhodian coast-artillerymen were at their posts and wide awake. They sank two of the approaching ships, and made things so hot for the rest that they pulled out of range.

This argues a very high state of discipline and training on the part of the Rhodian coast defense corps, but another event in the same siege shows that such efficiency was not the rule. The Rhodians ran a flying squadron, armed with catapults throwing 10-pound balls, through Demetrius' blockade and raided his base at Patara. The raiders rammed and sank a guardship in the outer roads, rushed past a couple of forts in the bottle-neck of the outer harbor without damage, and anchoring opposite Demetrius' depots, drove away the defenders by the fire of their catapults, then landed and burnt out the whole business.

Next to Rhodes, Syracuse had the most notable system of coast defence. This great mart, the New York of the ancient world, was built partly on an island, partly along the edge of a series of high cliffs. The island portion of the defence was handled by means of the monster catapults mentioned above. Along the cliffs were mounted the other type of ancient artillery, the onager, which operated by high-angle fire, and did not require the use of well-shaped missiles.

During the siege by the Romans, the onagers did tremendous execution, which again argues good training, for it is not easy to aim such a weapon. Nevertheless, it was by these onagers that all efforts at assault were beaten off.

After the extension of Roman rule to the whole Medi-

terranean, coast defence became a neglected art, except along the northern coast of Gaul, and Britain where there were enough barbarians left to be a genuine nuisance. We lack details on the organization of the Gallie coast, but the arrangements of the Roman forces in Britain are known with some accuracy, and very interesting they are.

The full strength of the Roman army in Britain was four legions of from six to ten thousand men, with numerous auxiliaries and slaves attached to each legion. One of these legions was kept in army reserve, one (minus a few cohorts) on Welsh border patrol, and the other two on coast patrol and duty along the Hadrian wall. Eleven percent of the enlisted strength of a legion were artillerymen. This meant nearly 660 gun pointers for a 6000-man legion, for the auxiliaries were employed for the winching and slaves did the ammunition bearing. Therefore, the normal establishment for the defence of the British coasts would be somewhere in the neighborhood of 1200 pieces of artillery.

Under the later empire the whole coast defence scheme was based on this artillery organization, but it was something quite different than what the Greeks worked out in the early days of coast artillery. The Roman artilleryman was a professional soldier who had enlisted at about sixteen and who was expected to stay in the service for something like thirty years.

His matériel was also different from that of the Greeks. The 52-pound flat-trajectory catapult had practically ceased to exist. Its place as a heavy weapon had been taken by the high-angle-fire onager of about the same weight, and to these were added many small dart-throwing catapults mounted on wheels, for the Roman theory of coast defence was altogether different from the Greek. Where the Greeks trusted to massive permanent works and heavy artillery, the Romans preferred the more elastic system of mobile defence, distributed in small units within supporting distance of each other.

The typical Roman coast defence post thus consisted of a small work with one or two heavy onagers (they discovered that these weapons like all high-angle fire, had a strong morale effect against attackers) and a number of light dart-throwing catapults, with infantry supports. On the appearance of a Pict or Saxon raiding force, the onagers would at once open fire and the commander of the post would hurry off messengers to his nearest neighbors. These would rush to the spot with their dart-throwers as fast as the horses could draw them. When the barbarians, who always advanced cautiously through the fire from the onagers, formed on the beach in their favorite mass formations, they furnished excellent targets for the dart throwing catapults. And it was very rare indeed for them to work through the fire of these weapons and come to grips with the supporting infantry.

In fact, the best testimony of the effectiveness of this system of elastic defence was the fact that no barbarian invasions of any import took place till after the legions were withdrawn. And then, with all other classical institutions, coast artillery disappeared into the long night of the Middle Ages.

Corregidor: An Estimate of the Situation

A Revision of Data Contained in Lt. Bunting's Circular, Published
Several Years Ago by the Chief's Office

By Lieut. G. F. Heaney, Jr., C. A. C.

Description of the Post: Corregidor is an island lying in the mouth of Manila Bay, 28 miles from Manila. The island is shaped like a tadpole; the round body, at the western end fronting the China Sea, is one and one-half miles in diameter, while the total length, including the tail which extends eastward towards Manila, is four miles. The island is mountainous and heavily wooded. The flat summit, known as "Topside," is between 500 and 600 feet above the sea. The military reservation, Fort Mills, occupies the entire island.

Outposts: Fort Hughes is two miles south of Corregidor Fort Drum (the "concrete battleship") is six miles south, and Fort Frank is eight miles south, almost against the mainland on the south side of the bay. Fort Wint is in the mouth of Subic Bay, forty miles north of Corregidor.

Harbor Transportation: The "Hyde" leaves Corregidor daily at 8.00 A.M., and leaves Manila at 4.00 P.M. The "Miley" leaves Manila daily at 10.00 A.M. and leaves Corregidor at 4.00 P.M. The trip requires two and one-half hours.

Quarters: All officers occupy government quarters. Quarters are all of concrete, and have the same floor plan. The rooms in the senior officers' quarters at Topside are larger than those in the junior officers' sets at Middleside. Some of the field officers' sets are single bungalows; the rest of the sets are double, upper and lower. The quarters have three bedrooms and two bathrooms. The Stockade Level sets and the colonels' sets have a fourth bedroom in place of the kitchen; the latter room is in a semi-detached wing, with the servants' quarters. The quarters have electric ranges and coal water-heaters.

Schools: The Post School maintains grades through the second year of high school. Tuition for officers' children is eight pesos (\$4.00) per month. Enlisted men's children pay three pesos per month. Teachers are selected from among the wives of officers and enlisted men having previous experience. Each teacher has two grades. Education for children above the second year in high school is difficult, as American children find it impossible to attend such institutions as the University of the Philippines, where the great majority of teachers and students are Filipinos. It seems to be the unanimous opinion that children of senior high-school or college age should remain in the States to finish their schooling. The school year in the Philippines runs from June 1 to March 31, the "summer vacation" being in April and May.

Climate: Corregidor is, on the average, some ten to fifteen degrees cooler than Manila. The climate is

on the whole very pleasant. There are three seasons,—the rainy season, cool season, and hot season. The rainy season starts early in June. Heavy rains occur in June, July, and August. During September, October, and November the rain is less frequent. The cool season starts about December 1; during this season, which lasts until March 15, there is no rain, and the temperature is moderate. The hot season starts about March 15 and lasts until late in May.

Recreation: Golf; a nine-hole course.

Tennis; two courts at the Club. Several other courts around the post for enlisted men.

Swimming; a large salt-water pool at the Club. A beach with shark net at Kindley Field for officers, and another at Malinta Cove for soldiers. Bus transportation to beaches.

Riding; seven or eight horses usually available. The trails are steep, so that the inexperienced riders prefer to indulge in some other sport.

Walking on the trails through the ravines is quite popular. Gen. Kilbourne, while in command here, frequently led organized hiking parties to various points of interest. He was especially fond of the moonlight hike to the top of Malinta Hill. Sometimes the Club furnishes refreshments for the hikers.

Miscellaneous: Eight bowling alleys available to ladies each morning, and officers each afternoon. Badminton court at the Club. Fishing from bancas (native dug-out boats). Hunting for deer and pig on the mainland.

Movies: Talkies, with about twenty changes of bill per month. Officers' reserved seats cost fifty centavos.

Health: Corregidor is a very healthful place. Mosquitos are scarce, so that malaria and dengue fevers cannot be contracted on the island. Since drinking water is always boiled, the danger of such diseases as dysentery is slight. Houseflies are kept down by the numerous lizards, which live in all the buildings. The only insect pests are the cockroaches and ants, against which one must wage incessant warfare with poison, spray, and soap.

Servants: There are four classes of servants; cooks, houseboys, amahs (nurses), and lavanderas (laundresses). The size of the family determines how many of these are employed. A family having one baby would probably have only two servants, a combination cook-houseboy and a combination amah-lavandera. Since the coming of the electric stoves, a large number of officers' wives do their own cooking, keeping a houseboy to wash dishes and take care of the house. Owing to the recent passage of the Economy Bill providing for loss of one month's pay, it is probable that

many more ladies will do their own cooking. The following are the present maximum rates which may be paid servants; it is expected that the Harbor Defense Commander will reduce these by approximately ten percent on account of the army pay reduction: Pay in pesos per month for servants of nine years experience,

- Chinese cook, P 50.00
- Filipino cook, P 40.00
- Combination Filipino cook-houseboy,
P 45.00
- Houseboy, P 25.00
- Amah, P 20.00
- Lavandera, P 20.00
- Combination amah-lavandera, P 30.00
- Houseboy-lavandero (for bachelors)
P 35.00

Food: The Commissary carries a complete line of meats, vegetables, etc. The beef comes from New Zealand or China; potatoes usually from China; cold storage fruits, such as apples, oranges, grapefruit, or lemons, come from the U. S. Some perishable vegetables of native growth are available; tomatoes and string beans are the principal ones. Food prices at present (July 1932) are about on the level of the pre-depression prices in the States. Although the variety of foods available does not approach that found in the larger cities of the U. S., it is probably as extensive as the variety available in the more isolated stations in the States. The menu need by no means become monotonous.

Automobiles: Not a necessity, but a great convenience, and well worth while. Although the government street car covers the principal part of the island, it does not go everywhere. A private car will save you a lot of sweat in the hot season, and a lot of wettings in the rainy season. A car is a great economy on a trip to Baguio. Cars may be brought to Manila at any time, provided they are not returned to Corregidor until after ten days. Garages are available, also facilities for minor repairs. A Philippines license fee is two pesos per year where the car is used partly on government business. Gasoline is 17c per gallon from the Quartermaster; about 40c (U. S. money) in Manila. The used car market here is about the same as in the States before the depression. An export model is worth much more than a U. S. model. Purchasers of new cars to be brought here would do well to get a model with right-hand drive and speedometer in kilometers. Traffic here keeps to the left. However, because of the effect of the climate on the finish of a car, a used car is to be recommended ahead of a new car.

Uniforms: Regulations require officers to wear Hongkong-khaki. At present many officers are wearing the new Q. M. khaki, which seems to be satisfactory. No information is available as to whether the new khaki will supplant the Hongkong khaki. Coats are rarely worn at Corregidor; shirts and breeches are worn during the day, white uniforms or mess jackets at night. Officers coming here should not get any uniforms in the States, as the prices here are much lower and the tailoring is excellent. Prices of uniforms are:

khaki shirt and breeches, \$7.50 (U. S. money) for suit; white uniform \$7.50; mess jacket \$9.00. The O. D. cap is never worn; white cap may be worn but is not necessary, and most officers do not possess one. Service hats may be bought here, either the Stetson or Q. M. variety. Leather goods, either boots, leggings, or shoes, may be made to measure here at about the same prices as the cheaper bootmakers offer in the States. The usual prices are (U. S. money) \$20.00 for boots, \$7.50 for shoes, \$7.50 for leggings.

Civilian Clothing: Worn on pass in Manila. The best plan is to buy two light linen suits in Panama while the transport is there; they are cheaper in Panama and two suits will give excellent service during the voyage and will last for the whole tour in the Philippines. The price here is very low, varying with the material; Eight or nine dollars will buy a good suit. Bring your woolen civilian clothes with you, as you will need them on leave in China and on the transport going home.

Wool Uniforms: The conditions in the Far East are unsettled; it is therefore recommended that officers bring winter field uniforms, including overcoat. The 31st Infantry was recently sent from Manila to China in the dead of winter. Several years ago Coast Artillery officers went to Japan to assist in relief of earthquake sufferers. Such expeditions may come at any time.

Women's Clothing: Bring warm clothing to wear on the transport, on trips to Baguio, and in China. Clothing of this type is hard to get here. For general wear here in the tropics, any kind of wash materials can be brought, including wash silks. Materials which require dry cleaning should not be brought. Certain kinds of silk, especially taffeta, rot quickly. At the present time very few ladies wear stockings at any time, even on formal occasions. Therefore a large supply of silk hosiery is unnecessary. Stockings brought freshly from the States are preferable to those purchased here, as they rot in storage. In view of the present style of bare legs, and the pay reduction, it is recommended that stockings be omitted from the budget.

All kinds of dresses, hats, and underthings can be purchased here, but prices are higher than in the States. Shoes can be bought ready-made in Manila, or can be made to order at the Post Exchange. Prices a little higher than the depression prices at home.

Furniture: 1. Effect of climate: No veneered furniture should be brought, except such pieces as radios or pianos, which can have an electric light placed inside to keep the piece dry. Pianos should have the strings and metal parts lacquered, and the felts moth-proofed. Heavy upholstered pieces should not be brought, for three reasons; moths eat them, the dampness rots them, and they are too hot to sit in. No books should be brought except the necessary books which will be actually used during the tour. It is not necessary to bring a large number of pictures; they are frequently badly damaged by the dampness, and moreover the walls being of concrete, it is difficult to

hang pictures. Necessary wicker or reed furniture can be bought in Manila very cheaply.

2. Preparation for shipment: Remove the chassis, speaker, power pack, etc., from your radio, and pack them separately carefully wrapped up in excelsior, in a wooden box. Do the same with the motor of your phonograph or washing machine. Otherwise, these heavy parts will break loose and cause considerable damage.

Radio: By all means bring a radio receiver. Power supply on Corregidor is 110 volt 60 cycle. (In Manila the power is 220 volt). A short wave receiver would be useful; such sets here are receiving excellent programs from California and from several points in Asia and Europe. There are two stations in Manila which can be heard with a standard long wave receiver. They put out excellent programs.

Electrical Apparatus: All the usual electrical devices, such as irons, toasters, percolators, should be brought along. But no advice can be given with regard to such machinery as dishwashers, washing machines, vacuum cleaners, etc. The natives sometimes refuse to use them; at other times they are anxious to use them. They do not take good care of such things. Other disadvantages in bringing large machines are that the dampness rusts them, and the storage space for them is limited. Probably the best disposition is to leave them in storage in the States; selling them at the present market would mean a big loss.

Refrigerator: Electric refrigerators were on the QM program for the fiscal year 1933, but were taken off because of the economy program. The few owners of electric refrigerators here are well satisfied with them. On the other hand, ice is cheap, the monthly bill for the ordinary family being about \$1.50. Officers already owning electric refrigerators should bring them out; they can be sold quite readily in Manila

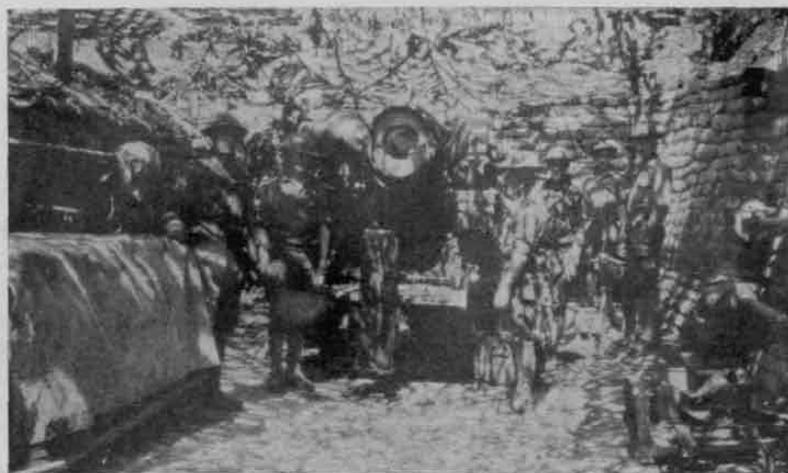
at the end of the tour, in case of orders to a station where the QM has installed electric machines. Those who do not already have electric refrigerators should not buy them to bring here.

Arrival at Manila: Officers are usually permitted to wear civilian clothes upon arrival, and are usually granted a 24-hour delay before reporting to Fort Mills. New officers are always taken care of, either in their own quarters or at some friend's quarters, upon arrival. For the past few years there have been sufficient empty quarters so that almost all newly arrived families can be assigned immediately. This was possible because so many officers spent the last two or three months of their tours, on leave in China. Now that leave of absence has been taken from us, this condition will undoubtedly cease to exist so that quarters will not be available until a week or so after arrival. That will be no hardship, as most people stay that long with their hosts anyway, even when their own quarters are empty.

Buy in the States: The following articles are quite expensive here, and should be brought from the U. S.: Golf clubs, bathing suits, radios and tubes, automobile tires and batteries, children's toys, table glassware.

Money: The Philippine peso is worth fifty cents of U. S. currency. At present there is a small premium on gold dollars, less than one percent.

Service at Corregidor: The "Rock" offers a great many things to make life enjoyable. There are many petty annoyances, but no place in the world is perfect. Afternoon work is cut to a minimum; the usual afternoon program includes a siesta, followed by golf, bowling, or a swim. Plenty of action all the time, professionally, recreationally, socially. The cost of living is higher in some ways than in the U. S., and lower in other ways. All in all, life here is thoroughly enjoyable.



The Foreign Military Press

Reviewed by Major Alexander L. P. Johnson, Infantry

CHILE—*Memorial del Ejército de Chile*—February, 1932.

“Replacement of Officers in War,” by Major Ernesto Salbach.

World War experience shows that the heaviest casualties among officers of the active list were suffered during the early weeks of the war largely as a result of the desire of the trained professional officers to set an example of self-sacrificing heroism. Hostile snipers seeking out the conspicuous officer-targets likewise contributed heavily to the casualty list. As a consequence, all belligerent powers were soon confronted with the necessity of replacing these losses with less efficient, because less trained, personnel. The author advocates that a proportion of the officers of the active list in all grades be held in reserve in the zone of the interior as instructors for replacements and in turn to serve themselves as replacements.

The second serious problem of officer-replacement arose in connection with the general staff. At the outbreak of the world war not a single power had sufficient trained officers for general staff duty to fill all the requirements of the emergency. Moreover, it became necessary to grant the wish of many general staff officers to serve with troops at the front. Heavy casualties among them were inevitable. Training of competent general staff officers takes years. They cannot be improvised. Make-shift arrangements resorted to by all armies produced on the whole but mediocre results. The author believes that trained general staff officers should be employed in that capacity only, and that departure from this practice should be a rare exception rather than the rule.

ECUADOR—*El Ejército Nacional*—No. 58, 1931.

“Europe in Arms,” by Colonel A. Grasset, French Army.

Replying to certain figures on this subject which had been published in the *Berliner Illustrierte Zeitung* and reproduced by *The Illustrated London News*, the author undertakes to disprove allegations concerning the military strength of France. According to Colonel Grasset's figures, Soviet Russia, with a total peace strength of 1,812,000 men, is the foremost military power of the world today. It is followed, in order of relative strength, by Great Britain, Italy, France and the United States. Colonel Grasset credits the United States with a military force of 565,000 officers and men. This total comprises the regular army with 157,000 officers and men (100,000 within the territorial limits of the United States, 29,000 overseas, and 18,000 in the Marine Corps); the National

Guard with a total of 157,000 officers and men; the Organized Reserve with 114,000 officers and 5,000 enlisted men; and the R.O.T.C. with a total enrollment of 112,000 and graduating annually 6,000 new reserve officers. The fortuitous circumstance, that the totals do not agree, is possibly due to a typographical error. It is strange that Colonel Grasset overlooked the C.M.T.C., the U. S. Customs Guards, Forest Rangers, the various state constabularies, and the police departments at least of New York City and other large metropolitan areas. He counted similar forces in the case of Great Britain, Italy and Germany. Thus, he credits Germany with a total military strength of 285,000 by including the Security Police (Schutzpolizei or Schuppo) of 150,000 men, and the Harbor and River Police (Wasserschutz) of 35,000 men.

MEXICO—*Revista del Ejército y de la Marina*—March, 1932.

The General Plan of Instruction in the new “Escuela Superior de Guerra.”

Appreciating the importance of professional training and educating of army officers, the Mexican Government has recently established an institution of military learning bearing the designation “Escuela Superior de Guerra” (Superior School of War). The faculty consists of four sections: 1. Tactics and Strategy; 2. Technique; 3. Languages; 4. Physical Training.

The first section teaches the principles governing the conduct of war, tactical principles and decisions and psychology of leadership. The subjects covered by this section include also command and staff functions; geography and military history; fortifications; topography; principles of naval strategy and tactics; foreign armies; chemical warfare and meteorology.

The study of strategy and military art comprises: (a) principles of the conduct of war; (b) theories of modern strategy; (c) technique of war. The tactical studies include (a) general tactics and general staff functions; (b) tactics and technique of the several arms and services.

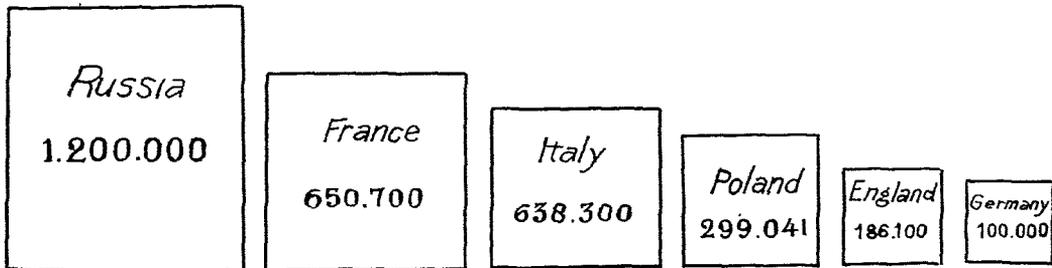
The second section covers: 1. Sociology, political science and economics; 2. Law of war, public and private international law, constitutional law; 3. General technique and industrial mobilization; 4. General mobilization of national resources.

In the department of languages the study of English and French is obligatory. Facilities are afforded for the study of other foreign languages, such as German, Japanese, etc., etc.

The physical training course includes equitation, fencing, gymnastics and organized sports.

The course of instruction covers two years.

EUROPE IN ARMS



According to Berlin "Illustrierte Zeitung"



USSR. 1.812.000 men

In Europe		Colonies	
Army	Militia		Militia
119.000	213.000	384.000	64.000

→ Great Britain 780.000 men

In Europe		Colonies
Army	Fascist Militia	
368.000	353.000	52.000

→ Italy 773.000 men

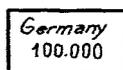
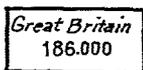
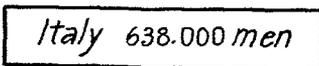
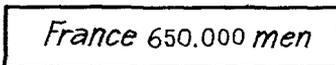
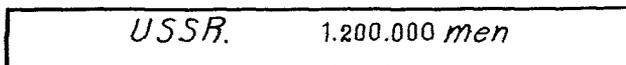
In Europe	Colonies
Army	Army
378.000	205.000

→ France 583.000 men

Reichwehr Shupo Wasserschutz	Europe
	285.000

→ Germany 285.000 men

According to "L' Illustration" - Paris
(Colonel A. Grasset)



According to "Illustrated London News"

AUSTRIA—*Oesterreichische Wehrzeitung*—January 15, 1932.

“The Chino-Japanese Conflict in Manchuria,” by Major General Theodore von Lerch, Retired.

The author states that he bases his summary upon authentic sources of information and official reports. The Japanese believe that the differences with China are wholly due to China's failure to perform her treaty obligations. China, on the other hand, declares that the Treaty of 1905—the 21 points—was never ratified by the national government; moreover, it was superseded by the Treaty of Washington in 1922, which recognizes China's absolute sovereignty and guarantees her territorial integrity.

Japan considers her substantial rights injured in three different directions:

1. Violation of the rights accruing to Japanese subjects in Manchuria under leaseholds granted them for a period of 30 years for commercial, industrial and agricultural purposes. These rights were confirmed by the treaty of Washington. Official pressure exerted upon Japanese and Koreans in Manchuria by the Chinese authorities, the growing disorders with consequent loss of security of person and property, and the apparent inability of the Chinese Government to cope with the situation, are also causes of Japanese complaint.

2. The extensive boycott organized against Japanese goods coupled with a strong pressure exerted upon Chinese to compel them to leave Japanese employment and a general prohibition of the sale of any merchandise by Chinese merchants to Japanese subjects. To these complaints the Chinese Government replies that the constitution of the Republic leaves it to the choice of each citizen to do business as he desires, and that the boycott was instituted by the people and not by the Government. The boycott, first used against the British in 1926, actually is China's newest and most effective weapon. In 1926, it paralyzed Honkong completely and forced the British to agree to substantial concessions to China.

3. The Manchurian railway situation. By the terms of the China-Japanese treaty, which confirmed the transfer of Russian rights in Liaotung peninsula to the Japanese, China agreed not to construct parallel railways in the proximity of the South Manchurian railways, or to construct such spurs or branches which might impair Japanese interests. Notwithstanding this, China began, in 1925, the construction of the Mukden-Pekin railroad, now completed as far as Tunglia, paralleling the Japanese-owned South Manchurian railroad. The new Chinese railroad is a direct connection between China and Siberia and may conceivably exclude the South-Manchurian railways from the China-Europe traffic.

Between 1927-1929 China completed the Kirin-Hailung branch railroad connecting with the Hailung-Mukden line. It likewise parallels the Japanese railroad and is to be extended as far as Harbin. The Japanese complain that the low Chinese rates seriously damage the business of the Japanese railways.

In 1930, China began the development of the Hulotao port area at the head of the Gulf of Liaotung. It will compete with the Japanese port of Dairen, formerly the Russian port of Dalny. The Chinese assert that Japanese rights in the premises are not impaired by existing treaty obligations.

Again, China agreed to construct certain railway lines with the aid of Japanese capital. Now Japan complains that China actually prevents the completion of the railroad connecting Tunhua with the Korean frontier and the Japanese railroad terminus at that point. Similarly, the Chinese obstruct the construction of the Changehun-Tailai-Taonan railroad. This transverse railroad is of prime strategic importance to Japan since it would connect the Japanese base in Korea with North Manchuria.

The conflict between Chinese and Japanese railroad interests in Manchuria is thus quite obvious. Moreover, the Japanese capital investment in Manchuria represents a total of 1,588,870,000 yen.

In September, 1931, according to Japanese reports, Chinese soldiers destroyed the Liao railroad bridge on the Mukden-Dairen line. The Chinese retort that this sabotage was engineered by the Japanese to provide them with a pretext for intervention. Even before that incident Japanese public opinion had been strongly aroused by the murder of a captain of the Japanese Imperial General Staff by Chinese troops in Manchuria. The Chinese authorities disclaimed all knowledge of this incident. The Japanese, impelled by these incidents and the increasing activity of Chinese marauders in Manchuria, opened fire on Mukden, on September 19, 1931, and after a short bombardment occupied the Chinese quarters of that city, the barracks, arsenal and flying field. The Chinese garrison surrendered. After several minor clashes, the Japanese received reinforcements and continued their advance as far as Tsitsihar, capital of northern Manchuria.

The area of Chinchou, along the Mukden-Tientsin railroad, is strategically the most important in case of a clash between China and Japan. Chinese forces advancing along this railroad in an easterly direction would strike the Japanese at the most sensitive spot and menace their communications. Chinese regular troops actually assembled in that area. The Japanese promptly moved against them in several columns, along the Yinkow-Koupangtze, the Mukden-Chinchou lines and other routes farther north. This concentric advance compelled the Chinese early in January, this year, to withdraw. As a result of this move, China is now effectively cut off from her Manchurian province, and the Chinese naturally regard this situation as a violation of their sovereignty and of their territorial integrity.

The author believes that Japan will reach an agreement with Soviet Russia, for both countries need peace. The United States, he thinks, notwithstanding the concentration of the fleet in the Pacific, will think a lot before attempting to do more than to exert diplomatic pressure. He concludes that Japan is free to settle

the Far Eastern question according to her own best interests.

GERMANY—*Deutsche Wehr*—January 29, 1932.

“What Uses for the Cavalry?” by Lieut. Gen. von Brandt, Retired.

Cavalry armed with carbine and lance is a thing of the past. It gave way to machine-gun units equipped with all arms carried by infantry. The fire fight has become the principal method of cavalry action. Combat is the ultimate object of every troop movement. The most brilliant march becomes futile if the cavalry reaches its objective lacking in the necessary striking power. The fire-power of a pre-war cavalry regiment equalled about two infantry companies. The present cavalry regiment is at least equal to a battalion. The fire power combined with mobility actually makes it superior.

Armored cars have become new and formidable opponents of cavalry and will continue to be increasingly so until we learn to turn motors to our own benefit. Modern cavalry without armored cars is inconceivable. Aviation and armored cars relieve cavalry from missions of distant reconnaissance. For a close examination and a thorough combing of terrain the horse still is indispensable. All authorities agree that cavalry must be maintained in independent mobile units, and that the organic cavalry of infantry divisions must be pared down to absolute necessity. Its strength generally varies between one and three troops, reinforced by cyclists, heavy machine guns and armored cars. The principal mission of this cavalry is reconnaissance and security within the zone of action of the infantry division. So far not a single state has decided in favor of dispensing with the organic cavalry of the infantry division. The author obviously did not take into consideration the U. S. Perfection of the armored car will hardly alter the situation. The armored car is destined to remain a weapon of opportunity. It will be useless under certain terrain conditions and at night. The noise of its motor will betray its presence.

Independent cavalry commands—army cavalry—represent a mobile reserve of great striking power which may be employed by the high command on missions requiring greater mobility than is possessed by infantry. These missions may be offensive or defensive. Cavalry assumes particular importance in actions at a distance from the main body of an army. In such situations cavalry must bear the brunt of the action while motorized elements can at best only reinforce its fire-power. Whether the armored car may eventually take the place of cavalry, is an open question. So far at least, not a single state has decided in favor of a purely motorized arm in lieu of its cavalry.

If army cavalry is indispensable for the execution of distant missions—such as actions against hostile flanks or rear—then it is necessary that the cavalry be appropriately organized for such service. It implies the necessity of organizing cavalry divisions and cavalry corps. For example, where the French 5th

Cavalry division failed in its attack against von Kluck's rear in 1914, a cavalry corps of three divisions might have written a different story.

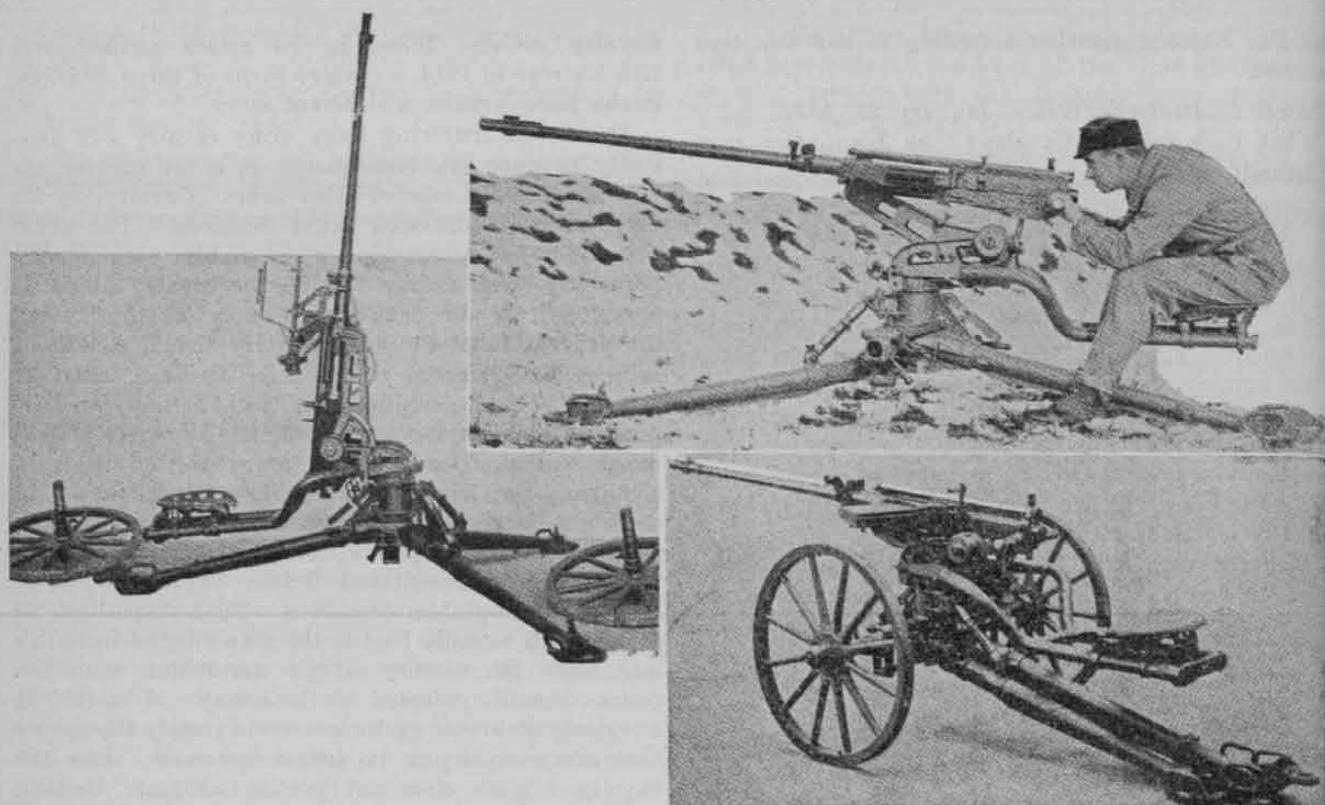
The sin of frittering away army cavalry will generally produce evil consequence to a far greater extent than in the case of other arms. Cavalry, by its very nature, must seek rapid decisions. The great preponderance of machine guns enables even a comparatively weak enemy to stop the cavalry unless it operates from the outset in force. For this reason the proposal, that the army cavalry should consist of independent brigades rather than divisions, must be rejected. Such arrangement will actually induce piece-meal employment of cavalry. Moreover it will deprive cavalry leaders and troops of the means of acquiring the habit of marching and operating in large bodies. The notion that cavalry brigades placed at decisive points behind the line of battle will permit its prompt and decisive employment is, in the author's opinion, erroneous. Such disposition of cavalry will actually lead to the surrender of initiative and make the cavalry wholly dependent upon the course of action adopted by the enemy. If carried to a logical conclusion, such plan would justify the theory that army cavalry is no longer necessary, since the cavalry brigade does not possess adequate striking power for independent action, hence motorized infantry or cyclist troops would actually be more effective in situations which require rapid shifting of reserves to a critical point.

The author believes that as a rule it is better to break up temporarily a cavalry division where a mission merely calls for a brigade, than to improvise major units by the combination of separate brigades. Just as long as man's inventiveness fails to produce a motor which, like the horse, can go anywhere irrespective of terrain conditions, the cavalry will remain indispensable. And as long as there is any need for cavalry, it must be employed in large bodies.

Deutsche Wehr—January 22, 1932.

“The 2 cm Machine Cannon S 5-100,” by Major Dr. Gustave Daniker, Zurich.

The desire to provide a single weapon for antitank and antiaircraft use at least within the combat zone of infantry, led to the construction of the 2 cm. machine cannon. The S 5-100 is a product of the Solothurn Arms Corporation, Switzerland. In contrast to the Oerlikon type machine cannon, this weapon is a rigidly locked recoil-loader with moving barrel. At the moment of discharge, the barrel, housing and breechblock form a single locked unit. The recoil drives this mechanism rearward, compresses the twin-recoil spring which is housed at the bottom of the gun. In the rearward motion, the entire mechanism travels as a unit a distance of 18 mm., then the lock-handle rotates about its pivot and opens the breechblock while the motion to the rear continues for an additional 12 mm. A booster-lever supplies the additional force necessary to throw open the breechblock. At the same time the extractor-ejector removes the empty shell from the chamber and ejects it through an opening on



the right. The counter-recoil spring moves the mechanism forward to its normal position, reloads the gun and locks the breechblock. In automatic fire, the firing pin is cocked in the rearward motion and the striker released at the end of the forward motion, immediately the breechblock is locked. When used as a single-loader, the mechanism is held fast by a catch at the end of the rearward motion with breechblock wide open.

The gun is provided with a number of safety devices. The construction is simple, sturdy and easily operated. Stripping and assembling of the gun are simple. The gun carriage is well adapted to the uses of the weapon as an antitank and antiaircraft gun. The wheels are removable. The trail opens as a tripod with legs forming angles of 120° each. The legs of the tripod end in rings which permit the pinning of the piece to the ground by means of spikes. The gun may be fired from tripod or carriage. It is equipped with a duplex pointing gear which permits rapid swinging of the gun from target to target, as well as accurate adjustment for elevation and deflection. The gun can be transported on wheels coupled to a limber, using one draft-animal, or it may be carried by pack animals in four loads ranging from 110 to 120 kg. each, except load No. 2 which weighs 138 kg.

The gun is capable of great accuracy, but owing to the small calibre of the projectile it loses its effectiveness at long ranges. At less than 500 meters the projectile will pierce the armor of medium tanks and will cripple heavy tanks struck at sensitive points. The following data may be noted:

Calibre	2 cm
Length of barrel	1300 mm

Weight of barrel	17 kg
Weight of gun complete	59 kg
Weight of projectile:	
Armor piercing bullet	135 gr.
Explosive bullet	125 gr.
Tracer bullet	132 gr.
Muzzle velocity	850-880 m/sec.
Maximum range	ca 5600 m
Maximum vertical range	ca 3800 m
Rate of fire	300 rounds/min.
Weight in battery (trail without wheels)	204.5 kg.
Weight in battery (trail with wheels)	240.5 kg.
Weight of cartridge and projectile	302-312 gr.
Weight of empty magazine	3 kg.
Weight of magazine, 20 rounds	9.5 kg.

Militar-Wochenblatt—April 11, 1932.

“Reorganization of the French Ministries for National Defense,” by “308.”

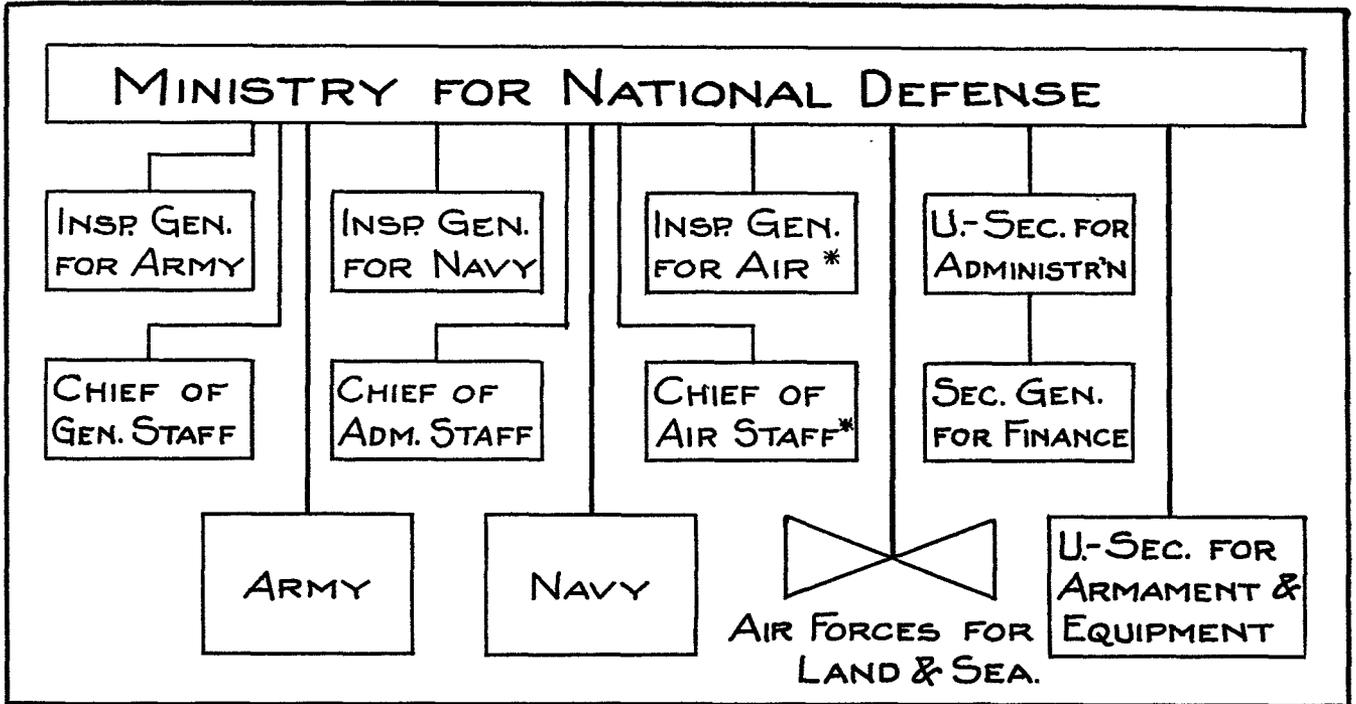
The consolidation in time of peace of all elements of national defense under a single head is the surest preparation for unity of command in time of war. Had it been possible to place the German land and sea forces under a single command at the outbreak of the World War, it would have had a beneficent influence upon the entire conduct of the war. In Great Britain, Lord Kitchener insisted upon placing all elements of national defense under a single head. Sir William Robertson proposed that the Premier assume the office of Minister of Defense.

In France, Clemenceau and Foch repeatedly emphasized the necessity of consolidation of the army, navy and air forces. Among the champions of this idea in the French senate and chamber of deputies were Painlevé, Maginot, Renaudel and Fabry. At the

bottom of their plan for consolidation was the desire to remove once and for all the continual friction and rivalry between the ministries of war, navy and air. The majority in both houses of the French Parliament were, however, opposed to the proposition on the ground that it would concentrate too much power within the hands of a single person. For this reason, consolidation of the three ministries was not included in the general army reform bill in 1928. Tardieu, however, accomplished the feat without consulting Parliament, and will seek approval of the *fait accompli* when the newly elected Parliament convenes.

preme War Council, is to become the Commander-in-Chief of the consolidated arms of national defense. The chiefs of staff of the army, navy and air forces will become the deputies. As a result of this consolidation, the Ministry of Air, organized in 1929, ceased to exist. Its section for commercial and civil aviation, and some phases of its technical work, have been transferred to the Ministry of Public Works. The remainder was merged with the army and navy in the newly organized Ministry of National Defense.

Diagrammatically the organization of the Ministry of Defense is as follows:



***The offices of Insp. Gen. for Air and Chief of Air Staff are combined in one person.**

Besides military reasons for his action, Tardieu pleaded political reasons as well. In this era of disarmament conferences he hoped that this "simplification" and the placing at the head of the consolidated Ministry of Defense the well-known budget-expert Pietry would produce a reaction favorable to France. It would also permit the distribution of defense appropriations in accordance with military and budgetary interests and needs. Tardieu's declaration is significant. "The decisive problems of national defense in the political and true sense of the word is nothing but the problem of employing all military resources along the various fronts and in the different theatres of operation. To attain the desired objective, it is essential that all forces be under a single command."

The reform permits the establishment of unity of command in time of peace. According to the French press, General Weygand, Vice-Chairman of the Su-

GREAT BRITAIN—*The Army, Navy and Air Force Gazette*—May 19, 1932.

"China Armed and Foreign Led," by Brig. Gen. C. D. Bruce, C. B. E.

An interesting analysis of the fighting qualities of the Chinese. For centuries the Chinese as a race have been famed for peaceful habits and their dislike for war. The Chinese idea of life excluded any form of violent exercise, and from their point of view, war is a violent exercise which no one but a fool takes part in if he can avoid it. Games, sports of any kind were anathema. Of course, this does not apply to the coolie class. Intellectuals, bankers, merchants and the like, when they played, played decorously with no more exertion than it takes to watch two small birds indulge in a fight. If there is anything in the old adage about "sound mind in sound bodies," the Chinese should be a poor race. Yet all in all, the Chinese is perhaps the

most virile race in the world. There is quite a good deal of misapprehension concerning the military value of the Chinese soldier. Yet the military history of China is a long procession of conquests. Only military ambition combined with military spirit of the most intensive kind could create vast empires such as have been created at times by the Chinese. But for reasons hard to trace, Chinese military leadership has failed to manifest itself during the last few centuries. There is evidence, however, that the fighting spirit still exists if only adequate leadership can be found. Whenever such leadership appeared, the Chinese fought as bravely as any oriental race. That was proven by the experience of Major Charles "Chinese" Gordon, R. E., and again by "The Chinese Regiment" led by British officers and N. C. O.'s during the Boxer uprising.

The author observes "that a fighting spirit exists in China today those who have seen it put to the test have no doubt. The question in which some day the world may be interested is, can this spirit be evoked and made use of by Chinese leaders?"

HUNGARY—*Magyar Katonai Szemle*—May, 1932.

"Alfred Krauss, General of Infantry, By Major Joseph Nemeth.

A eulogy of the distinguished Austrian soldier on the occasion of his seventieth birthday. General Krauss achieved distinction before the World War as a prolific writer and student of military art. He was one of the successful instructors and, at the outbreak of the World War, Commandant of the Austro-Hungarian War College. He has the unique distinction of having come through the ordeal of the great war as Austria-Hungary's undefeated general. A fearless, candidly outspoken man, as an instructor of fledgling general staff officers he championed absolute freedom of speech and right of criticism for student-officers at the War College. He preached the doctrine that "Character" comes before "knowledge" and "substance" before "form." The success of the Austro-Hungarian break-through of the Italian front at Tolmino and the destruction of two Italian armies attaches to the name of General Krauss. His claim to lasting fame, however rests upon his writings. His clear, convincing style, ruthless objectivity and biting criticism is particularly effective. "Napoleon, Moltke and Benedek," "Ulm, 1805," and "The Russian Balkan Campaign, 1877" are classics of military literature. "The Causes of Our Defeat" is one of the outstanding contributions to the literature of World War history.

Some of his pungent remarks in "Ulm, 1805" deserve quotation. In the forward to that work General Krauss observes:

"When an army suffers defeat, there are always those creatures who will flay and sling mud at that unfortunate command which had bled in vain. To it attaches the opprobrium of defeat. The army, however, is but a factor of the state, so that we are justified in saying: as is the state, thus is its army.

"Nations have ever paid with blood when they were governed by incompetent executives, when their administration fell into the hands of a bad or incompe-

tent bureaucracy. The history of Ulm clearly proves that.

"Blame for defeat of an army belongs to those who are entrusted with its management: the government, the administration. In countries with popular representation, representatives with narrow vision are no less blameworthy. The army—and since the army of today is the nation in arms—the nation covers with its blood the errors and sins of its rulers. When an army suffers defeat because of the errors of the government, the catastrophe is so great that no one bothers about determining the true and basic causes of the disaster. On the contrary, everyone gladly joins with those who calumniate the hapless victim—the army—and drag it into the mud."

General Krauss concludes that scholarly dissertation by deducing the following valuable lessons:

"The first lesson is political. The politician must keep before his eyes clear, definite and great objectives."

"Policy and the army must be in absolute harmony. It would be crass folly to pursue an active foreign policy without an adequately prepared army. But it would be just as bad to maintain a large army and remain politically dormant. This harmony demands that the government, which seeks to achieve anything in its foreign policy, must endeavor with might and main that the means of realizing its policy, the army, be not neglected."

"The second lesson pertains to the power of decision of the military commander in the field."

"In war the enemy situation and intentions are unknown.

"Our own will, mission and situation are the factors upon which the decision of the military commander must rest."

"The third lesson is of importance to the ruler, the chief executive.

"The most important quality of a ruler is the ability to know human character. It enables him to choose from the mass of men who surround him those who are best fitted, most qualified to act as his counsellors.

"Knowledge of men enables the ruler to reward at the proper time and place, and to mete out punishment which will deter others whenever such action should become necessary.

"If the unfit be permitted to attain the summit of power and, standing at the helm, bring misfortune upon the state without incurring just and deserved punishment, but instead are permitted to stand aside rich in rewards and honors only to climb aboard again at the first opportunity, then it is inevitable that the unfit should always be in power, and those who possess ability be thrust aside."

ITALY—*Rivista Militare Italiana*—May, 1932.

"Hungary," Captain Gianni Baj Macario.

The crucial point of Europe's economic dislocation must be sought in the middle-Danube basin. The dismemberment of Hungary by the Treaty of Trianon was a most unfortunate decision which cannot be justified either on geographic, economic or historical

grounds. The author points out that the sweeping arc of the Carpathians enclosing the fertile valley of the middle-Danube forms a natural geographic and economic unit which for a thousand years formed the Kingdom of Hungary. The dynastic policy of the House of Hapsburg and the devastations of Turkish rule are responsible for the changes which took place in the ethnic complex of that country. In the XV century, the Magyar element represented 75 to 80 per cent of the population, while the census of 1720 showed it to be only 45%, thereafter gradually increasing to 54% in 1910. In 1918, Hungary had an area of 325,411 sq. km. with a population of 21 million. The treaty of Trianon tore away 71.5% of the territory and 63% of the population. Among the 13,300,000 inhabitants transferred to the Succession States were 3,800,000 of Magyar race. The population of dismembered Hungary according to the 1929 Census is 8,600,000 of which 83% is Magyar.

Hungary's frontiers from a military point of view are significant. They are completely open, touching along five-sixth of their total length upon countries of the Little Entente, hostile to Hungary. The national capital is within range of heavy artillery emplaced upon Czechoslovakia soil. Airplanes may reach Budapest from beyond the frontiers within nine minutes. Against this potential menace from the air, the Treaty of Trianon prohibits Hungary from maintaining an air force, while her miniature army had but two anti-aircraft batteries. The loss of the capital would be disastrous. It is the industrial center of the realm as well as the center of its communications. Hungary's central location might favor operations on interior lines were it not for the fact that only 200 km. separate the northern and southern frontiers. Moreover, the country is bisected by the Danube which seriously impedes lateral movement. With one exception, all bridges across the Danube are at Budapest, the lone exception near the Yugoslav border. A Hungarian defensive line, for example, along the Czechoslovak frontier would be easily rolled up by a Roumanian army advancing from Transylvania, while the Jugoslavs would menace the rear. The unfortunate strategic situation coupled with the vast military superiority of the states of the Latin Entente makes the problem of the defense of Hungary insoluble.

Hungarian troops had a conspicuous part in the World War. Regiments of the Honvéd ("home defenders") fought with incredible devotion and loyalty for the Hapsburg cause. Their conspicuous valor earned the respect and admiration of friend and foe alike. The traditions of the old army are preserved by the small army of 35,000 men which the Treaty of Trianon permits Hungary to maintain. This force comprises seven mixed brigades and two cavalry bri-

gades. The brigade consists of two infantry regiments, one cyclist battalion, one troop of cavalry, one field artillery battalion, one signal company, one train and one motor detachment. The infantry regiment has three battalions, one technical company, one communications company, one machine gun company and a trench mortar company. The battalion consists of three rifle and one machine gun company. The cyclist battalion has one cyclist company, one rifle and one machine gun company. The artillery battalion contains one mountain, one field gun, one howitzer, one trench mortar-battery and one technical company. The cavalry regiment consists of two sabre troops and two machine gun troops. Independent formations comprise an artillery battalion consisting of one gun battery, one howitzer battery, two A. A. batteries and one trench howitzer battery.

SPAIN—*Revista de Estudios Militares*—January, 1932. "With the 48th Class of the Ecole de Guerre Supérieure—1926-1928," by Lieut. Col. Antonio Aguet, General Staff.

This issue marks the appearance of an old Spanish military magazine, "La Guerra y su Preparación," under a new title. Its distinguishing feature is the supplement which, from month to month will contain the account of Colonel Uguet's experiences and observations while a student at the famous *Ecole de Guerre Supérieure* of France. Much of what the author has to say in this first installment should be of interest to American officers who entertain the hope or ambition to secure a similar privilege, for Colonel Uguet's experiences were unquestionably those of any foreign officer who suddenly finds himself in a strange, unaccustomed *milieu*. According to the author, French officers at the *Ecole de Guerre* have the following advantages over foreign officers: knowledge of language; familiarity with method; knowledge of regulations; thorough preliminary preparation as a prerequisite to admission; practical experience with troops of all arms prior to entrance; and advantages of the tremendous moral force that springs from camaraderie and extensive acquaintance among fellow-students. In marked contrast, the average foreign officer, who passed through a corresponding course in his own country perhaps years before, is lacking at least at the outset the intellectual readiness and mental flexibility for the work which he is about to undertake. On the other hand, he has the advantage perhaps of general staff experience, advanced years and experience, longer military service, all of which serve him well when it comes to decisions.

Subsequent instalments will discuss in detail the scope of the course, methods of instruction, and some of the author's personal impressions as to a variety of matters of general interest.

NATIONAL GUARD NOTES

Coast Artillery Association Trophy

THE Executive Council of the United States Coast Artillery Association has provided a trophy to be awarded annually to the most efficient Coast Artillery regiment in the National Guard. The award is to be based primarily in the results the regiment attains at target practice.

The proposition has been communicated by Major General John W. Gulick, Chief of Coast Artillery, to Major General George E. Leach, Chief of the Militia Bureau, who has accepted it on behalf of the National Guard, and extended his sincere appreciation of the courtesy.

The Chief of the Militia Bureau has prepared the regulations under which the fortunate organization of the National Guard is to be selected for the award which is to be made at the end of the training year which terminates at the conclusion of the field training camp.

The five following elements are to be considered in the selection of the regiment:

1. The results attained at target practice with the principal weapon. This is given a weight of 70 points which meets the requirement of the Association in this respect. All the firing batteries of a regiment are rated by the Chief of Coast Artillery based on the results attained at target practice. These ratings are Excellent, Very Good, Good, Fair and Unclassified. The percent of the units in a regiment under each of these ratings is multiplied by the weighing factors 5, 4, 3, 2 and 1, respectively, and the sum of these products divided by five gives a percentage factor, which multiplied by 70 gives the score under the heading relating to efficiency at target practice.

2. The percent of units of the regiment rated Satisfactory at the annual armory inspection. The percentage of units of the regiment rated satisfactory at the annual armory inspection multiplied by 10 will give the score under this heading.

3. Attendance at drills during the 12 months prior to the annual armory inspection. The score under this heading will be determined by multiplying the percent of average enrolled strength that attended drills during the 12 months period by five.

4. The percent of personnel qualified as gunners. The percent of enrolled personnel as reported on the field inspection report that are qualified as gunners, multiplied by five will give the score under this heading.

5. The percent of units of the regiment rated Satisfactory on the field inspection report. The score under this heading will be determined by multiplying the percent of units of the regiment that are rated satisfactory on the field inspection report by ten.

To attain the maximum score of 100 a regiment must

have all of its firing units classified as Excellent at target practice; all of the units must be rated satisfactory at both the armory and the field inspection; it must have had an average attendance at drill during the 12 months preceding the annual armory inspection equal to its average strength during that period; and all members of the regiment must be qualified as gunners at the end of the training year.

The winning organization will be determined upon by the Chief of the Militia Bureau as early as practicable after the close of the field training of the National Guard, and certified to the Coast Artillery Association so that the award may be made.

Recruits at Field Training

A DETERMINED effort is being made by the Chief of the Militia Bureau this year to exclude recruits from National Guard field training camps. Sometime ago a letter to the Adjutants General of the States was sent out by General Leach suggesting that no men be permitted to go to camp unless they had been in the service at least sixty days. It met a hearty response from State National Guard authorities, many of whom concurred in the idea and vouched their whole-hearted support.

Such procedure eliminates the recruit training at the field camps and insures that all of those in attendance are qualified to go ahead with the program and schedules of training. It also releases officers and noncommissioned officers for duty with their own units, who would otherwise be engaged with the training of recruits.

The question has been eliminated in several regiments of the National Guard by arranging their enlistments to the end that there will be none during the two months preceding the field training camps. This insures that all men who go to camp will have had at least eight armory drills behind them and they are ready to go ahead with the field training.

It is confidently expected that those organizations which conform to the elimination idea this year will be so impressed with it that there will be no enlistments made in order that men may attend the camps and their training as National Guardsmen begin there.

Waivers on Examination

FROM the numerous applications received in the Militia Bureau for time waivers for one year on examinations for qualification for Federal recognition in the National Guard, it is apparent that the provisions of paragraph 45a (2), National Guard Regulations 20, are not clearly understood in the service in the States.

The regulations cited provide for a waiver for one

year in the professional examination in subjects listed under military knowledge and ability qualifications. There are certain limitations imposed in the matter which must be understood in order to apply the provisions correctly.

In the first place, the application is limited to candidates on initial appointment in the grades of captain, first lieutenant and second lieutenant. It does not extend to field officers except as noted below. The idea is that in the reorganization of a National Guard unit which has been disbanded it may be necessary to secure officers who have had only limited military experience and it is only fair to them to give them an opportunity to prepare for the professional examination for their grade. Occasionally a request for this year's waiver comes to the Militia Bureau for a non-commissioned officer of a unit who comes up for promotion to the grade of second lieutenant. They are uniformly denied, because it is contemplated that any noncommissioned officer who seeks such a promotion and who has had several years' service ought to be able to pass his professional examination prior to his appointment by state authorities. This is especially the case in view of the fact that he may take the Regular Army Extension Courses and secure his certificate of qualification which constitute an authorized basis of waiver. This matter should be thoroughly understood by those enlisted men who are seeking appointment to the commissioned grades. They must pass the required examinations or present certificates of completed subcourses to the examining boards. They cannot be given a year's waiver to prepare.

When an officer is transferred from one arm or service to another as the result of the disbandment of a unit and its reorganization the Chief of the Militia Bureau will grant a year's waiver in those technical subjects not common to both arms or services, and this applies irrespective of the grades of the officers involved.

Company Survey

A COMPANY commander in the Wisconsin National Guard made a survey of his unit with a view to getting the individual soldier's idea of just why he belongs to the National Guard. Here are some of the reasons.

"It has taught me to stand erect and walk correctly.

The first aid principles taught me has helped in emergencies.

My drill pay carries my life insurance for me.

It gives me an opportunity to take part in athletics, a place to keep my athletic equipment and also use of shower baths.

My drill pay runs my car.

I get two weeks' vacation each year with pay.

It makes me feel that I have paid in a small way the great debt I owe my country, by being trained and ready to serve in an emergency.

I have learned the value of cooperation and discipline.

I have been taught obedience and have been taught to command.

I get a kick out of rifle shooting.

I am going to get a lot of fun out of the feeds and parties this winter.

Like any red blooded American chap I get pleasure and pride from serving my country."

It is suggested that you make a similar survey of your outfit. You will find it an interesting experience. We would be glad to have you send in the results where they contain a variety of reasons for being in the National Guard. It will help the editor of this department to prepare an article setting forth the advantages of serving in the National Guard.



COL. ROYCE S. McCLELLAND,
Comd'g 252d C. A. (N. C. N. G.).

Novel Test for Enlistment

ONE of the units in the National Guard has adopted a novel method for evaluating their prospective recruits. At the pre-enlistment interview the company commander, among other things, informs the prospect that he is expected to learn the contents of Training Regulations 50-15 (Instruction of the Soldier, dismounted, without arms), and be proficient in the things included in it.

The company commander then offers to sell the prospect a copy for five cents. If the deal is completed, the prospect is given further consideration. If he declines the interview is terminated and the man is not taken into the unit.

It is the idea of this company commander that if a man does not show a nickel's worth of interest in learning the first fundamentals of his soldier job, he is not worth five cents to his unit, and the sooner that fact is developed the better for all concerned.

COAST ARTILLERY BOARD NOTES

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

THE COAST ARTILLERY BOARD

Col. J. C. Ohnstad, C. A. C., President,

Maj. J. D. McCain, C. A. C.

Capt. H. C. Mabbott, C. A. C.

Capt. J. T. Lewis, C. A. C.

Capt. S. L. McCroskey, C. A. C.

**Col. A. H. Sunderland, C. A. C.*

Maj. Ira A. Crump, O. D.

* Not yet joined.

Projects Completed During May-June 1932

No. 882. Service Test of Anti-Submarine Device.—The Anti-Submarine device is so-called because it was designed to fire a mine by contact of a vessel with a submerged mine, a deep planted mine or a surface mine. It was recommended that the name of this device be changed to the "Circuit Closer, Model 1930." The Board recommended that this device be adopted as standard for use with the Single Conductor System for installation in those mine projects where its use will afford a saving in the number of mines required for protection against both surface and underwater vessels.

No. 895. Test of Water Proofed Fire Control Communication Cord.—Thirty communication cords were furnished for test at Fort Monroe, Virginia. These cords were of a type superior to those heretofore supplied. The Coast Artillery Board, after an extensive test, recommended that the cords be left in service at Fort Monroe for a long period to determine the effect of prolonged service on the tinsel conductors. It was recommended that in the interim cords for fire control service be furnished with stranded conductors of No. 18 B & S gauge and not less than No. 22 B & S gauge, and that the insulation construction should be of the "rubber overall" type and not the "braid" construction.

No. 896. Service Test of Sectional Wire Pike.—The pikes supplied for test were similar to those in use, the difference being that the test pikes were in two sections and therefore more convenient for transportation. It was recommended that provision be made for securing the locking pin to the pike pole and as thus modified the Sectional Wire Pike, MC-123, be issued to the service.

No. 898. Test of 220-Ampere Carbon in 60-Inch Searchlight with Metal Mirror.—A special carbon was supplied for use in the searchlight metal mirror to take

220 amperes and a comparative test was run against the standard 150-ampere metal mirror. In addition, a special front door was supplied which gave a five-degree spread to the searchlight beam. This beam was tested to determine its value as an aid in making a quick pick-up. The Coast Artillery Board recommended that further improvement be made in the 220-ampere light before it can be considered as a substitute for the present standard 150-ampere light. In particular, further experiments should be made with size and composition of 220-ampere carbons and with feeding mechanism, and that further experiments are also needed with the five-degree spread beam.

No. 904. Portable Single Conductor Mine System (Harrison).—This device consists of a portable mine casemate, but did not work with the standard single conductor mine system without some modification in the latter. It was therefore recommended that this system be adopted as standard equipment for emergency installations, the portable system not replaced but augmenting the present Standard Single Conductor System, and that units be purchased in time of war only as needed for such localities as may require temporary mine defense and where it is not desired to install the Standard System.

No. 906. Aliquot Part Charges for Cannon.—The Coast Artillery Board recommended that firings be held to determine what discrepancy in muzzle velocity between separate lots of powder is to be expected in the three-quarter and seven-eighths charges for 16-inch guns and howitzers; and also that additional firings be held with the 1046-lb. projectile.

No. 908. Test of Panel Set, Type AP-33.—This panel set is of the size used and improvised by certain Antiaircraft regiments for communication with airplanes at long ranges and high altitudes. As supplied the set consisted of eight strips, each of which was thirty feet long by six feet wide. It was possible to make a basic square 30x30 feet and retain three signalling strips. Numerous tests have been made with this size panel over a period of about three years. The

Coast Artillery Board recommended that tangerine and white be adopted as the standard colors for panels for Railway and Antiaircraft Artillery; and that one set of panels be supplied, white on one side and tangerine on the other, with some minor modifications; and that this type of panel set be adopted as standard for issue to Railway and Antiaircraft Artillery.

No. 909. Test of Universal Facepieces for Gas Masks.—A Universal Facepiece designed to supplant all sizes of facepieces, numbers one to five inclusive, was supplied for test. One hundred and twenty-five masks were supplied and tested on 250 soldiers. It was found that a few people could not be comfortably fitted with this mask. The persons who could be fitted amounted to about ninety-five percent of those who underwent the test. It was recommended that the universal facepiece be adopted as standard but that it be supplemented by a few numbers one and five masks.

No. 911. Test of Ramps for Antiaircraft Prime Mover M1.—A loading ramp for use by the caterpillar "30" was supplied with the prime mover M1. This is a straight ramp about eleven feet in length. The Coast Artillery Board found this ramp suitable for issue. It was recommended that seven-inch supports be manufactured and issued with each ramp to facilitate loading.

No. 917. Comparative Test of Goerz and Bausch & Lomb Night Glasses.—A comparative test of the Goerz and Bausch and Lomb Night Glasses showed that both were suitable for the purpose and that neither possessed much advantage over the other. In further correspondence it was learned that the Goerz night glass was nonprocurable and the Coast Artillery Board therefore recommended that the Bausch & Lomb night glass should be issued to units throughout the service.

No. 918. Proposed Instantaneous and Continuous Height Finder.—Recommended that no further action be taken on this project.

No. 919. Program for Protection of Railway Artillery Against Attack Aviation.—Program prepared and submitted.

Projects Under Consideration

No. 608-A. "Duco" Surfacing for Guns.—Painting of Battery Eustis now completed. Report will be made in about one year.

No. 661. Illumination of Mortar Pits and Gun Emplacements for night firing.—Reopened for further tests.

No. 800. Test of Radio Direction Finders.—Under study.

No. 814. Illuminating Device for 12-inch Barquette Carriage Model 1917.—Project held open for retest in connection with the modified shot truck guides.

No. 817. Time Interval Apparatus for Mobile Artillery (Wallace & Tiernon).—Awaiting receipt of redesigned instrument.

No. 829-B. Instruments for Training of Stereoscopic Observers.—Awaiting receipt of instrument.

No. 871. Azimuth Pointer for 12-inch BC M1917.—Awaiting further tests at Fort Hancock.

No. 873. Service Test of Long Distance Seacoast Data Transmission System T-6.—Awaiting receipt of material.

No. 874. Service Test of Seacoast Data Computer T-3.—Awaiting receipt of material.

No. 881. Time Interval Apparatus (Rothenberg) (CAB).—Under study.

No. 886. Comparative Test of Antiaircraft Directors (T-8, M-2, and M1A1 uncoupled).—Undergoing tests at Aberdeen.

No. 887. Test of Height Finder T-12.—Undergoing tests at Aberdeen.

No. 893. Labor and Time Saving Equipment for Cleaning Seacoast Armament.—Partial report submitted. Final tests in progress.

No. 900. Test of 3-inch Antiaircraft Truck Mount T-1 (CAB)—Report in preparation.

No. 901. Modified Shot Truck and Guide for 12-inch Barquette Carriages, M1917.—Awaiting tests to be conducted at Fort Hancock.

No. 905. Preparation of Coast Artillery Memorandum No. 13.—Under study.

No. 910. Test of Field Telephone Type EE-8-T2.—Under test.

No. 912. Service Test of Demountable Steel Tower for Seacoast Searchlight Use.—Under test.

No. 913. Test of British Panoramic Sight.—Under study.

No. 914. Test of Radio Set, SCR-183-T4.—Under test.

No. 915. Test of N. H. Powder Charges (D. P. Lot X-3701) for 12-inch Mortar M1890-08.—Tests to be held during August and September.

No. 916. Test of Jack Beam T1 for 155-mm. Gun Materiel.—Materiel just received.

No. 920. Test of Fire Control Tower for Tractor Drawn Artillery.—Awaiting receipt of materiel.

No. 921. Test of Light Weight Experimental Mask E27R4-E8R34-E8R47.—Awaiting receipt of materiel.

No. 922. Comparative Test of Harrison and Signal Corps Time Interval Apparatus.—Awaiting receipt of materiel.

No. 923. Test of Sight Mount, M4.—Awaiting receipt of materiel.

No. 924. Test of Signal Lamp Equipment, Type EE-84-T1.—Under test.

No. 925. Use of Paint on Gun Emplacements as a Means of Preventing Light Reflection.—Under study.

PROFESSIONAL NOTES

British Antiaircraft Artillery

THE following, extracted from an article, "Anti-aircraft Gunnery," (by an anonymous writer) appearing in the *Journal Royal United Service Institution* gives some data on the British AA gun and its accuracy, believed to be of interest to our readers.

"In August 1930, a 75-mm. mobile AA equipment, recently perfected by Messrs. Vickers-Armstrong, carried out a shoot against a canvas sleeve-target 18 ft. long, tapering from a diameter of 4 ft. at the front end to 3 ft. at the rear end. This sleeve-target, towed at a speed of 120 m.p.h. at an altitude of about 7000 ft., was engaged by this gun firing H. E. shell by the indirect method of fire, the gun being controlled by the Vickers AA Predictor with electrical transmission gear.

The first target was brought down by the 21st round fired, the second target by the 9th round, and the third target, after being engaged with 30 rounds, although not brought down, was found to have six holes in it.

In October, 1931, at the invitation of the Belgian Ministry of Defense, a firing demonstration with this same equipment was carried out on the Belgian Coast near Ostend. The demonstration was witnessed by the representatives of fifteen foreign countries. The equipment, which was drawn by a Vickers Carden-Loyd light tractor, was brought into action at the gun position of the Belgian "Defense Terrestre contre Aeronefs", which consists of a broken concrete platform, arranged on the seaward edge of the sand dunes at Westende-Middelkerke. The equipment was manned exclusively by men employed in the offices and works of the firm, who had had three days training with it in the previous August, and who could not, therefore, be regarded in any sense as fully trained. The detachment operating the Vickers Predictor were fully cognizant of their duties, but the height-finders, operating the 3-metre Barr and Stroud instrument, were still under instruction at the time of the demonstration.

The shoot was carried out under the direction of the Belgian authorities, the sleeve-target and aircraft being provided by the Royal Belgian Air Force. The Belgians were also responsible for the provision of meteorological data and for the safety arrangements. The whole of the equipment went through the demonstration with scarcely a hitch, and, bearing in mind that the personnel were not regular soldiers, the results obtained must be considered highly satisfactory.

The following summary of each of the five series fired gives the percentage of effective burst obtained, those burst being classed as effective in which the errors in elevation and direction did not exceed 50 metres in 5000 metres.

Series 1—against a sleeve-target towed at a speed of 100 m.p.h. at a height of 2000 metres and at a horizontal range of 3000 metres—54 effective bursts out of 70 were obtained; percentage effective bursts, 77.

Series 2—against a sleeve-target towed at a speed of 100 m.p.h. at a height of 3000 metres—23 effective bursts out of 57; percentage of effective bursts, 40.

Series 3—against a Fairey Fighter aircraft, flying at a speed of 188 m.p.h. at a height of 1500 meters and at a minimum horizontal range of 5000 metres, the gun being laid at 180 degrees off the target—7 bursts were effective out of 24 bursts observed; percentage of effective bursts, 29.

Series 4—against a Fairey Fighter aircraft, engaged also at 180 degrees off the target, flying at a speed of 188 m.p.h. in still and hazy atmosphere, which made observation most difficult, at a height of 3000 metres, and a minimum horizontal range of 5000 metres—23 bursts were effective out of 49 bursts observed; percentage of effective bursts, 47.

Series 5—At the request of the Belgian authorities, a series was fired on the last day of the demonstration to see what results could be obtained with a detachment of their own troops, untrained in the operation of the Vickers Predictor. At the time of the shoot the sky was overcast, while low clouds made it impossible for the target to be seen, except at low altitudes. In these conditions the sleeve, moving at a high angular velocity, presented an unusually difficult target. The Predictor was operated entirely by Belgian personnel, who had received a short instruction during the previous evening. The gun was served by its British detachment. The number of rounds fired was 17, against a sleeve-target, towed at a height of 450 metres, at a minimum horizontal range of 2300 metres. Of the 17 rounds fired, it was possible to observe only 10 rounds, all of which were effective, giving 100 per cent of effective bursts.

The Vickers-Armstrong equipment consists of a gun, mounting and firing platform on a separate axle. For purpose of transport it may either be provided with a limber or not according as to whether it is to be drawn by horse or mechanical traction. Both the gun and limber are mounted on springs, the wheels being provided with rubber tires. The equipment can travel comfortably over ordinary roads at speeds up to 22 m.p.h. The platform is provided with a cross-levelling gear, allowing for an 8 degree correction on level or sloping ground. The elevation, training and fuze receivers on the gun are connected electrically with the Vickers Predictor, and a mechanical fuze-setter is provided.

The gun may be brought from the traveling to the firing position, and vice versa, in two minutes by a simple rocking movement, without the use of winches

or other lifting devices. The detachment consists of a No. 1 and nine men. Owing to the low height of the axis of the gun from the ground, the equipment is perfectly stable, even when firing horizontally. Such steadiness when the gun is firing antiaircraft is, of course, essential with an instrument of the degree of precision of the Vickers Predictor, while the stability at the horizontal makes it possible for the gun to maintain accurate and rapid fire against such rapidly moving targets as tanks and armored cars.

With the 46 calibre gun, the muzzle velocity is 2641 f.s., giving a maximum horizontal range of 16,000 yards and a maximum vertical range of 32,150 feet. The rate of fire is such that, with a fully trained detachment, it is possible for a section of two guns to fire a group of six rounds in five seconds.

Air Spotting in the 250th C. A. (Cal. N. G.)

By Capt. Bedford W. Boyes, 250th C. A.
(Cal. N. G.)

(With a Foreword by Maj. J. D. MacMullen, CAC)

FOREWORD

The following article by Captain Bedford W. Boyes, 250th Coast Artillery, should be of interest to the Corps. First, the spotting of five practices with a mean error of 14 yards, and with 42 out of 67 spots within ten yards of the plotted impacts, shows what can be done by a Coast Artilleryman with but limited experience in the air. Second, such spotting certainly tends to remove any mistrust of air spotting such as has existed in the minds of many battery commanders. Third, although under war conditions the position of the plane over the target would admittedly be untenable, and the "yardstick" used would not be available, an even better yardstick—the known length or breadth of the vessel fired on—would be at hand, and it is believed that the performance described in the article shows real progress, and that it indicates the possibility of spotting with at least fair accuracy from a plane flying over or in rear of the battery position.

This observer, who did some of the air spotting in 1930, devoted a great deal of time and thought to preparation for the 1931 firings, the results being self-evident.

The unilateral terrestrial spotting for these firings—the mean spotting error for the four batteries (A, B, C, and E) using this method being 12 yards—and the handling of communications were also, it is believed, outstanding. Two-way radio communication with the plane and the flank station was maintained and the spots were broadcast over telephone lines to the regimental command post and all batteries, the voice of the spotter being heard in the plotting room and the spots being furnished while the splashes were still in the air.

THE service practice problem of the 250th C. A. (T. D.) during the field training period is essentially the conduct of fire on moving naval targets. As a part of this problem, the observation of fire is,

of course, important. Ordinarily, two types of terrestrial spotting—bi-lateral through the base and O.P.'s and unilateral from a spotting station located on the shore in prolongation of the target's course—are used by this regiment. In 1929, the regimental commander decided to add aerial spotting as an additional source of spotting information for the gun batteries.

An observation plane from the 40th Division Air Squadron was made available that year and some observation was carried on. Some of the lessons learned then were utilized in 1930 and a serious effort was made to obtain spotting data and get it to the gun batteries effectively. Due to lack of training on the part of the observers and frequent break-downs in plane-to-ground radio communications, the air spotting for this year was not entirely satisfactory. It was good enough, however, to convince the regimental commander that air spotting could be employed to advantage and planes were secured for the 1931 field training period.

The plan agreed upon was one stripped to its simplest form. No effort was made to provide protection against enemy aircraft so far as the observation plane was concerned, nor was consideration given to the possibilities of antiaircraft fire from enemy vessels. The problem given to the observer and pilot was elementary. It was to spot overs and shorts and send these deviations in yards to the regimental radio station as quickly as possible.

The target was the usual Coast Artillery pyramidal target, towed by a tug at about five knots. The course roughly paralleled the shoreline at the batteries, from 5000 yards to 7000 yards offshore. The two-gun batteries were to fire salvos, ten of them totalling twenty rounds. The guns were the 1918 type 155-mm. weapons, emplaced by burying trail spades, but without platforms as the hard ground rendered them unnecessary.

The battery positions were at Camp McQuade, Capitola, California, on the shore of Monterey Bay. Since Monterey Bay is really only a bight in the coastline about 12 miles deep and 25 miles from headland to headland, its openness to the Pacific Ocean added fog and haze as obstacles to observation with which it was necessary to reckon seriously. The middle of July is a fairly good season of the year for comparative freedom from fog in that locality and it was during that time that the field training period was held.

Adjacent to the camp was a fairly good small landing field. On it landed a Douglas observation plane of the latest type, equipped with transmitting and receiving radio of a later and better type than that used the previous year. Several test flights were made to make sure that the radio equipment functioned and to acquaint the observer with its operation.

Subcalibre fire was observed on Monday. The next day settling shots of service ammunition were observed. During these two days certain details of radio communication were ironed out and developed to a smooth-working organization. The radio transmission from

the plane was broadcast at radio central and from there went directly to the battery firing.

Wednesday morning Battery A lead off in the service practice. Since this particular battery commander had been the most skeptical in regard to the effectiveness of aerial spotting, the observer was very anxious to give a good account of himself. The plane took off well before firing time, the radio antenna was run out, the set tested and everything was fine. Suddenly the observer dimly heard the ground station asking why he was not calling. The worst had occurred! The radio was out. There was nothing to do but go down and repair. This was done and in fifteen minutes the plane was in the air again, but too late to get any of Battery A's fire. With the exception of that battery, however, every other shot fired during the entire practice was spotted. The following table gives the details.

TABULATION OF RESULTS OF 1931 SERVICE PRACTICE

Batteries	A	B	C	D	E	F	Regiment Total	Average
Shots fired	22	20	22	20	20	20	124	
Salvos (incl. single shots)	11	11	14	12	17	13	78	13
Range probable error	32	28	30	29	30	28	..	30
D. A. P. E.	38	27	37	41	29	39	..	35
Average long. dev.	56	46	57	107	35	45	..	58
Spotting:								
No. Errors 0-10 yds.	TS 6	6	4	3	9	..	28	
No. Errors greater than 10 yds.	AS ..	7	9	4	13	9	42	..
	TS 5	5	10	9	8	..	37	..
	AS ..	4	5	8	4	4	25	..
Devs. too large	TS 2	3	7	4	6	..	22	..
	AS ..	0	4	6	1	0	11	..
Devs. too small	TS 3	2	3	5	2	..	15	..
	AS ..	4	1	2	3	4	14	..
Wrong sensing	TS 0	0	0	1	0	..	1	..
	AS ..	0	0	0	0	0	0	..
Shots lost	TS 0	0	0	0	0	0	0	..
	AS ..	0	0	0	0	0	0	..
Mean error	TS 9	9	18	37	12	17
	AS ..	14	12	26	9	10	..	14
Center of Impact:								
Plotted	- 5	+34	-30	-84	+ 5	+ 7		
Spotted (TS)	-15	+22	-36	-29	+14	..		
Air Spotted (AS)	..	+13	-37	-89	+ 8	+ 9		
Note: T. S.—Terrestrial spotting. A. S.—Air spotting.								

The essentials of spotting for this particular problem were (1) accuracy, (2) speed, (3) continuity.

Accuracy is largely a matter of practice. However, since this observer had had but little previous experience, consisting of a few hours in the air at Camp Kearny, San Diego, in 1917-1918 observing field artillery fire of 3-inch guns and tinkering with the first aerial "telegraph", a few more hours at Camp de Souge, Bordeaux, in 1918 in an observation balloon spotting artillery fire and a number of hours in Germany on reconnaissance and propaganda flying, it was necessary to find some simple yardstick which he could use effectively. This was supplied by the length of the tow line, roughly 500 yds., and the length of the tug, 99.6 ft., roughly 35 yds. From an elevation of 3000 ft., the tug could be used satisfactorily as a measuring medium for the small deviations, and the towline for the maximum deviations.

Sensings were given immediately the splash occurred and estimations of the deviations were radioed within two seconds, approximately. It is estimated that the splash was, on the average 20-25 yards high and 7

yards in diameter. This subsided in 2 or 3 seconds, leaving a circle of white bubbles clearly visible for another 3 or 4 seconds. At 3000 ft. altitude, this splash was very clear, even with an occasional slight mist that lay over the water. In making the estimation of deviation, the edge of the splash nearest the guns was used when deviations were small.

A "10 per cent rule" was worked out by the observer as a guide in making estimations. Multiples of 5 yards up to 50 yards deviation (10 per cent of 50) were used; multiples of 10 yards up to 100 yards (10 per cent of 100); multiples of 20 yards up to 200 yards; multiples of 30 yards up to 300 yards and so on. The chief difficulty with partially trained observers seems to be the under-estimation of deviations. This "10 per cent rule" apparently works—at least for this particular observer. At longer firing ranges and higher flying elevations, it may not apply so accurately.

Speed in getting these data to the plotting rooms is extremely important. The direct line hook-up from plane to plotting room insured maximum speed in data reception. It remained only for the observer to make his estimations and get them on the air as quickly as possible. Battery salvos were fired at 18 second intervals, providing there were no relays affecting one or both guns. These often occurred, however, and the observer had to use his own judgment in deciding when to wait for the second shot of the salvo.

The time rule developed here was to wait not longer than two seconds for the second shot before sending down a spotting. If number two did come out after number one's spot was sent down, it was read as a single shot. Of course, the range officer would take this second deviation and apply it with the first, as he chose.

Continuity depended on three things—(1) radio, (2) observer's ability to keep track of every shot, (3) pilot's ability to keep the plane in such position that the observer could see every shot.

Whenever it was possible the plane was grounded. This saved fuel and oil and, since there was only one available plane, pilot and observer it gave equipment and personnel rest periods. On Wednesday, the firing lasted from morning until dark. The longest flight was 1 hour 40 minutes, but several flights were made during the day. On Thursday, the fog was heavy and for several hours the target could not be seen. It was finally discovered by the plane, long before it was visible from the ground. It was during the firing of Battery F on this morning, that the terrestrial spotting was unable to function, while the aerial spotting continued to send in data.

The net results of these operations were: (1) delivering of accurate spotting data to the plotting rooms within an average of less than five seconds after the impact of the projectile and, (2) the training of personnel in using aerial observation, together with the increased confidence of the battery commanders in the effectiveness of this type of spotting.

It is expected that the same method of aerial observation will be used again this year.

COAST ARTILLERY ACTIVITIES

Office of Chief of Coast Artillery

Chief of Coast Artillery

MAJOR GENERAL JOHN W. GULICK

Executive

COLONEL W. F. HASE

Personnel Section

MAJOR G. F. MOORE

MAJOR S. S. GIFFIN

Materiel and Finance Section

MAJOR R. E. HAINES

MAJOR O. L. SPILLER

MAJOR J. H. COCHRAN

Organization and Training Section

CAPTAIN J. H. WILSON

Plans and Projects Section

MAJOR G. R. MEYER

MAJOR R. V. CRAMER

Changes in Office Chief of Coast Artillery

SEVERAL changes have been made during the month of August in the personnel on duty in the Chief's office. Major James (Jimmy) B. Crawford left the office during the month to attend the Army War College. Major E. E. Bennett will relieve Major Crawford but will not arrive from the Philippines until late in the fall. In the meantime Captain John H. Wilson will hold down the job as head of the Organization and Training Section.

Captain F. J. McSherry completed his detail in the Chief's office during the month and will attend the Command and General Staff School at Leavenworth. Major O. L. Spiller will take Captain McSherry's desk. Major Spiller has been on duty at Aberdeen Proving Ground for the past two years as representative of the Chief of Coast Artillery in connection with the development of Coast Artillery materiel.

The Coast Artillery School

FORT Monroe is comparatively quiet after the close of another school year. Most of the graduates of the Advanced and Battery Officers' Classes are on leave or enroute to their new stations. Several members of the Battery Officers' Class however have been held over for a special course in Submarine Mining.

Due to the uncertainty of the Economy Bill and the requirements for summer training, a majority of the regular School and garrison personnel are remaining at Fort Monroe during the summer months.

"Randolph Hall" the new officers mess started operation on July 5th. The old Sherwood Inn has been vacated and will be torn down in the near future. Ran-

dolph Hall is a modern and attractive building and adds much to the appearance of the post. Trees and shrubbery have been planted about the building and, under the watchful eye of Captain Goeppert, have prospered remarkably well considering the late start. A good stand of grass has already been obtained. A concrete walk from the Liberty Theatre corner to Mill Creek Guard House (next Randolph Hall) has recently been completed.

The Fort Monroe Beach Club is the favorite rendezvous for most of the officers and their families each afternoon. Improvements in the Club building and grounds have continued. Rafts have been built, additional walks laid and lawns prepared. The new outdoor dancing floor located between the Club House and the beach is a decided success.

The troops at Fort Monroe are busily engaged in various duties in connection with the National Guard, Reserve and CMT camps. The West Point cadets completed a most successful period of training early in the summer. The antiaircraft firing especially was about the best conducted by any group at Fort Monroe during the past year.

The Corps Area Commander, Major General Paul B. Malone, inspected the ROTC and CMT camps on July 13th. After the inspection, he addressed the candidates and the officers and enlisted men of the command at the Liberty Theatre.

Schedules and training programs are in process of preparation for the next school year, which opens on Sept. 10th. The consolidated schedules for the ensuing year are shown on pages 304 and 306. It will be noted that the course in Submarine Mining for the Battery Officers' Class has been advanced in the schedule so that it now precedes the seacoast firing period and the practical exercises at Fort Story. Each class will have only one equitation period per week, as was the case during the past school year.

The Coast Artillery School 1932 - 1933

Faculty

Commandant: Brig. Gen. J. P. Tracy
Asst. Commandant: Col. P. P. Bishop
Secretary: Maj. R. L. Tilton
Librarian: Maj. C. E. Hocker

Department of Tactics

Maj. T. C. Cook, Director

Maj. C. M. S. Skene	Maj. J. N. Caperton, (Cav.)
Maj. W. C. Foote	Maj. L. R. Boyd, (Inf.)
Maj. H. W. Stark	Capt. H. F. Grimm, Jr.
Maj. D. D. Hinman	Capt. W. W. Irvine
1st Lt. J. P. Hodges, (A. C.)	

Department of Artillery

Maj. H. H. Acheson, Director

Capt. J. T. Campbell	Capt. L. L. Davis
Capt. B. L. Milburn	1st Lt. R. W. Crichlow, Jr.
1st Lt. H. Hewitt	

Department of Engineering

Maj. C. W. Bundy, Director

Capt. S. R. Mickelson	1st Lt. G. W. Trichel
1st Lt. L. D. Flory	

Department of Enlisted Specialists

Maj. K. T. Blood, Director

Capt. C. W. Higgins	Capt. J. T. DeCamp
Capt. R. W. Argo	1st Lt. L. M. Morton

Department of Extension Courses

Maj. W. S. Phillips, Director

Capt. W. H. Warren	Capt. F. L. Christian
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Advanced Course

Maj. A. V. Rinearson, Jr.	Capt. D. W. Hickey
Capt. J. C. Bates	Capt. G. W. Hovey
Capt. J. C. Brown	Capt. J. P. Jacobs
Capt. H. McC. Cochran	Capt. J. P. Kohn
Capt. L. C. Dennis	Capt. W. F. LaFrenz
Capt. L. W. Goepfert	Capt. G. C. McFarland
Capt. A. W. Gower	Capt. H. S. McKirdy
Capt. J. H. Harrington	Capt. D. E. Morrison
Capt. C. S. Harris	Capt. M. M. Read
Capt. J. L. Hayden	Capt. E. L. Supple
Capt. Milton Heilfron	Capt. R. J. Van Buskirk
Capt. W. W. Wertz	

Advanced Engineering Course

1st Lt. E. O. Englehart	1st Lt. E. B. Thompson
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Advanced Gunnery Course

1st Lt. N. A. Burnell	1st Lt. Grayson Schmidt
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Battery Officers Course

1st Lt. L. W. Bartlett	1st Lt. N. B. Simmonds
1st Lt. H. T. Benz	1st Lt. D. H. Smith
1st Lt. R. W. Berry	1st Lt. J. C. Smith
1st Lt. C. N. Branham	1st Lt. L. S. Smith
1st Lt. P. G. Caluya	1st Lt. A. C. Spalding
1st Lt. C. M. Conzelman	1st Lt. W. F. Steer
1st Lt. E. E. Count	1st Lt. V. C. Stevens
1st Lt. P. B. Denson	1st Lt. H. E. Strickland
1st Lt. R. H. Grinder	1st Lt. G. A. Tucker
1st Lt. W. B. Hawthorne	1st Lt. W. A. Weddell
1st Lt. J. S. Henn	1st Lt. T. B. White
1st Lt. H. L. Hughes	1st Lt. F. J. Woods
1st Lt. J. W. Huyssoon	2d Lt. A. H. Bender
1st Lt. J. J. Johnson	2d Lt. M. K. Deichelmann
1st Lt. W. H. Kendall	2d Lt. P. W. Edwards
1st Lt. E. A. Kleinman	2d Lt. A. G. Franklin
1st Lt. A. D. Miller	2d Lt. P. A. Jaccard
1st Lt. F. F. Miter	2d Lt. J. H. Kochevar
1st Lt. S. H. Morrow	2d Lt. F. T. Ostenberg
1st Lt. J. W. Mosteller	2d Lt. G. F. Peirce
1st Lt. R. W. Russell	2d Lt. G. E. Thrans
1st Lt. F. F. Scheffler	2d Lt. H. F. Townsend
2d Lt. J. T. Wrean	

Students

Coast Artillery at Command and General Staff School

Instructors

Lieut. Col. L. P. Horsfall
Lieut. Col. J. S. Pratt
Lieut. Col. H. F. Spurgin
Lieut. E. N. Woodbury
Major E. B. Walker
Major W. R. Nichols
Major J. H. Hood
Major F. L. Hoskins

Students—1931-1933 Class

Major W. M. Chapin
Major R. M. Levy
Major A. F. Englehart
Capt. B. Bowering
Capt. R. N. Mackin
Capt. F. E. Edgcomb
Capt. F. G. Epling
Capt. H. Case
Capt. H. N. Herrick
Capt. R. V. Ladd
Capt. L. H. Lohman
Capt. W. F. Marquat
Capt. T. R. Parker

Students—1932-1934 Class

Major D. S. Lenzner
Major C. D. Y. Ostrom
Major A. E. Potts
Major G. B. Robison
Major H. R. Jackson
Capt. W. C. Braly
Capt. H. F. E. Bultman
Capt. F. J. McSherry
Capt. B. F. Harmon
Capt. G. W. Ricker

Coast Artillery at Army War College 1932 - 1933

Instructor

Lt. Col. P. H. Worcester

Students

Lt. Col. G. A. Wildrick	Major B. S. DuBois
Major R. T. Pendleton	Major A. G. Strong
Major J. B. Crawford	Major R. H. Van Volkenburgh
Maj. H. F. Nichols	

Coast Artillery Special Students 1932 - 1933

Naval War College Maj. F. E. Gross	Air Corps Tactical School Maj. R. W. Welshmer (Instr.)
	Maj. H. R. Oldfield
Ecole de Guerre Maj. H. F. Loomis	Maj. G. P. Anderson
Army Industrial College Lt. Col. C. W. Baird	1st Lt. H. P. Ellis
	1st Lt. F. K. Gurley
	Maj. F. A. Price

Enlisted Men's Courses, Coast Artillery School, 1932-33

DATES (Incl) OPENING EX SEPT 10.	WEEK No	ADVANCED COURSE	BATTERY OFFICERS' COURSE		COURSES FOR NATIONAL GUARD AND RESERVE OFFICERS			ADVANCED ENGINEERING COURSE	ADVANCED GUNNERY COURSE	REFRESHER COURSE FOR GENERAL AND SENIOR FIELD OFFICERS
			1ST SECTION	2D SECTION	FIELD OFFICERS	BATTERY OFFICERS				
		8:00-12:00 & 1:00-4:00 or 5:00		8:00-12:00 & 1-4 or 5			8:00-12:00 & 1:00-4:00		8:30-12:00-4:00	
Sept 12-16	1	SEACOAST	MILITARY FIELD ENGINEERING (E-88)					FORTIFICATION		GIVEN FOR EIGHT WEEKS WHEN REQUIRED
19-23	2	MATERIEL & GUNNERY (A-100)	MILITARY TOPOGRAPHY (E-39)		MIL TOPOG (E-25)			POWER PLANTS (E-66)		
26-30	3		COMB'D ARMS IN COAST DEF (3-5WK) (F-2)		ORGANIZATION TACTICS AND TECHNIQUE (F-160) (WITH B O CLASS) TARGET PRACTICES (A-64) OR SEACOAST MAT'L & GUNNERY (A-108) OR A.A. MATERIEL & GUNNERY (A-103)			HD SEARCHLIGHTS (E-121) STOR. CIRCUITS (E-11)		
Oct 3-7	4		INFANTRY & COMB'D ARMS (3-6WK) (F-41)		ANTIAIRCRAFT MATERIEL & GUNNERY (A-128)			BASIC GUNNERY (A-60)		
10-14	5	ANTIAIRCRAFT	FIELD ARTILLERY (3-7WK) (F-31)		ANTIAIRCRAFT			SEACOAST MATERIEL & GUNNERY (A-96)		
17-21	6	MATERIEL & GUNNERY (A-103)	SEACOAST ARTILLERY (4-7WK) (F-35)		SEACOAST ARTILLERY FIRING (A-92)			ORIENTATION (E-33)		
24-28	7		ANTIAIRCRAFT ARTILLERY (4-7WK) (F-37)					DUTIES OF ARTY ENGR GENERAL (E-47)		
31-Nov 4	8	ANTIAIRCRAFT	AIR CORPS (5-7WK) (F-2)					ADVANCED ELECTRICITY		
Nov 7-10	9	FIRING (A-64)	CHEM WARFARE SERVICE (7WK) (F-2)					AND MATHEMATICS (E-196)		
14-18	10		ORIENTATION (E-111)		ARMISTICE DAY					
21-23	11	MAP READING (10-12 WK) (F-14)			THANKSGIVING					
28-Dec 2	12	COMBINED ARMS IN COAST DEFENSE (10-26 WK) (F-25)	8:30 AM	8:30 AM						RECENT DEVELOPMENTS SEACOAST MATERIEL & GUNNERY (A-10) A.A. MATERIEL & GUNNERY (A-70) TACTICS & TECHNIQUE COMBINED ARMS IN COAST DEFENSE SEACOAST ARTILLERY A.A. ARTILLERY AIR CORPS LOGISTICS (F-120)
Dec 5-9	13		ELECTRICAL	MOTOR	BASIC GUNNERY (A-89)			ANTIAIRCRAFT ARTILLERY		
12-16	14	INFANTRY AND COMBINED ARMS (10-38 WK) (F-264)		TRANS-PORTATION	SEACOAST MATERIEL & GUNNERY (A-82)			MATERIEL AND GUNNERY (A-164)		
19-23	15				ANTIAIRCRAFT MATERIEL AND GUNNERY (A-111)			TELEPHONY (E-92)		
Jan 3-6	16	FIELD ARTILLERY (11-33WK) (F-90)			WASHINGTON'S BIRTHDAY			RADIO (E-148)		
9-13	17				NOTE 1 HOURS OF INSTRUCTION SHOWN THIS (A-100)-DEPARTMENT OF ARTILLERY-100 HOURS (E-18)-DEPARTMENT OF ENGINEERING-18 HOURS (F-25)-DEPARTMENT OF TACTICS-25 HOURS (E-104)-DEPT OF ENLISTED SPECIALISTS-104 HOURS			SEACOAST ARTILLERY		
16-20	18	SEACOAST ARTILLERY (11-38 WK) (F-125)			NOTE 2 GENERAL CONFERENCES-(RESEARCH STUDIES) WEDNESDAY AFTERNOONS PREPARATION SEPT 14-OCT 26-14 HOURS PRESENTATION NOV 2-APR 12-22 HOURS			MATERIEL AND GUNNERY (A-166)		
23-27	19	A.A. ARTILLERY (15-38WK) (F-124)			EASTER			ELEMENTARY BALLISTICS & CALCULUS (A-57)		
30-Feb 3	20	AIR CORPS (15-38WK) (F-75)			EQUITATION ADVANCED CLASS THURSDAYS 3-30 PM SEPT 22- MAY 11 - 45 HOURS BATTERY OFFICERS' CLASS 1ST SECTION TUESDAYS 3-30 PM SEPT 27- MAY 9 - 45 HOURS 2D SECTION FRIDAYS 3-30 PM SEPT 23- MAY 12 - 45 HOURS			INSPECTION TRIP (A-30)		
Feb 6-10	21				FORT MEMORIAL DAY			METHOD OF INSTR'N & MONOGRAPH (A-31)		
13-17	22				GRADUATION			AT ABERDEEN PROVING GROUND		
20-21-23-24	23	SIGNAL CORPS (17 WK) (F-5)								
27-Mar 3	24	CHEMICAL WARFARE (17-18 WK) (F-17)								
Mar 6-10	25									
13-17	26	LOGISTICS (19-34 WK) (F-60)								
20-24	27									
27-31	28	COMBAT INTELLIGENCE (23-31 WK) (F-8)								
Apr 3-7	29	MEDICAL SERVICE (28 WK) (F-5)								
10-12	30									
17-21	31	CAVALRY (30-37 WK) (F-33)								
24-28	32									
May 1-5	33	MILITARY HISTORY (37-39 WK) (F-10)								
8-12	34									
15-19	35									
22-26	36									
29-Jun 2	37									
June 5-9	38									
12-16	39									

Enlisted Students, Coast Artillery School

THE following named men have been assigned to duty as students in the indicated courses at the Coast Artillery School, Fort Monroe, Virginia, which will begin early in September.

Master Gunner's Course

Pvt. Arthur A. Brown, 2nd Coast Artillery, Ft. Monroe, Va.; Pvt. Edward F. King, 62nd Coast Artillery,

Radio Course

Pvt. Arthur P. O'Leary, 14th Coast Artillery, Ft. Worden, Wash.; Pvt. William J. Hill, 3rd Coast Ar-

Ft. Totten, N. Y.; Pvt. George P. Heaton, 51st Coast Artillery, Ft. Monroe, Va.; Pvt. Henry C. Goodwin, 69th Coast Artillery, Ft. McClellan, Ala.; Pvt. Frederick W. Block, C. A. School Det., Ft. Monroe, Va.; Pvt. 1 Cl. Owen K. Williams, 14th Coast Artillery, Ft. Worden, Wash.; Pvt. Carl H. Killian, Hq. 2nd Coast Artillery Dist., New York, N. Y.; Pvt. 1 Cl. Willard J. Allen, 61st Coast Artillery, Ft. Sheridan, Ill.

tillery, Ft. Rosecrans, Calif.; Pvt. 1 Cl. James R. Caron, 11th Coast Artillery, Ft. H. G. Wright, N. Y.; Pvt. Otis Martin, 13th Coast Artillery, Ft. Barrancas, Fla.; Pvt. 1 Cl. Jacques M. Rousseau, 13th Coast Artillery, Ft. Barrancas, Fla.; Pvt. 1 Cl. Jesse A. Jackson, 13th Coast Artillery, Ft. Barrancas, Fla.; Pvt. 1 Cl. William D. Holt, 13th Coast Artillery, Ft. Moultrie, S. C.

Electrical Course, Section A

Pvt. Harold E. Pierce, 14th Coast Artillery, Ft. Worden, Wash.; Pvt. Warren P. Ackerman, 2nd Coast Artillery, Ft. Monroe, Va.; Pvt. William V. Green, 63rd Coast Artillery, Ft. MacArthur, Calif.; Corp. Harvey B. Clifton, 69th Coast Artillery, Ft. McClellan, Ala.; Pvt. 1 Cl. Harvey F. Emery, 51st Coast Artillery, Ft. Monroe, Va.; Corp. William J. Wilson, 14th Coast Artillery, Ft. Worden, Wash.; Pvt. Raymond G. Lamberston, 62nd Coast Artillery, Ft. Totten, N. Y.; Pvt. 1 Cl. John F. Driessen, 2nd Coast Artillery, Ft. Monroe, Va.; Pvt. 1 Cl. John Cusik, 52nd Coast Artillery, Ft. Hancock, N. J.; Pvt. Jack Morris, 2nd Coast Artillery, Ft. Monroe, Va.; Corp. Joseph J. Yeager, 2nd Coast Artillery, Ft. Monroe, Va.; Pvt. Edwin E. Beal, 6th Coast Artillery, Ft. Winfield Scott, Calif.; Pvt. Wilber J. Whaite, 14th Coast Artillery, Ft. Worden, Wash.; Corp. William J. Dept, 51st Coast Artillery, Ft. Monroe, Va.; Pvt. Donald E. Cragg, 62nd Coast Artillery, Ft. Totten, N. Y.

Electrical Course, Section B

Sgt. David Brown, 63rd Coast Artillery, Ft. MacArthur, Calif.; Staff Sgt. Roy M. Phillips, 62nd Coast Artillery, Ft. Totten, N. Y.; Sgt. Werner Boehme, 62nd Coast Artillery, Ft. Totten, N. Y.; Corp. Morris W. Coolbaugh, 69th Coast Artillery, Ft. McClellan, Ala.; Sgt. Larkin L. Danford, 61st Coast Artillery, Ft. Sheridan, Ill.; Corp. Edward J. Bartsch, 51st Coast Artillery, Ft. Monroe, Va.; Pvt. 1 Cl. George J. Siegel, Coast Art. School Det., Ft. Monroe, Va.

Coast Artillery Reserves, Second Corps Area

Colonel F. W. Stopford, CAC (DOL) Executive Metropolitan District

ON May 25, the Coast Artillery Reserve officers of the Second Coast Artillery District, Metropolitan Area, had their Annual Dinner at the Hotel Governor Clinton, New York City. The dinner was a great success and despite the existing depression the number of officers present equalled that of last year. Colonel Robert Starr Allyn, 607th C. A., acted as toastmaster. The address of the evening was made by the Chief of Coast Artillery, Major General Gulick, who reviewed in an informative way the present activities of the Coast Artillery. His address was warmly applauded by those present. Other addresses were made by Brigadier Generals Byrne and Borden, Colonels Frank K. Fergusson, F. W. Stopford, J. C. Johnson, Arthur S. Conklin. Mr. Sokolsky, the well known writer of the *New York Times* gave a most interesting talk on the Chinese-

Japanese situation, and Major R. V. Cramer, of the office of the Chief of Coast Artillery discussed the fortifications at Woo Sung, China, illustrating the same with well selected pictures. Lateness of the hour prevented the showing of the latest 155 guns training film. Each regiment had as its guest one of this years ROTC graduates of Fordham University. Practically the entire assemblage wore uniforms and this very successful dinner will long be remembered by the participants.

On May 16 Colonel Stopford and the officers of Reserve Headquarters and a representative from each Coast Artillery Reserve regiment, Metropolitan Area, were present at the graduating exercises of the ROTC Class of Fordham University. Colonel Fergusson received the review of the ROTC and presented the reserve commissions to graduates. Father Hogan, head of Fordham University addressed the ROTC unit in a most appropriate manner.

On May 19 Colonel Stopford led a group of Sojourners 350 strong to West Point, N. Y. Everyone reported a very successful trip.

Fourteen officers of the 602nd CA (Ry) were on active duty at Fort Hancock, N. J., May 29—June 11. They were attached to the 52d C.A. for training and observation of the service practice of this regiment.

Twenty-seven newly commissioned Coast Artillery Reserve officers, this year's graduates from various R. O. T. C. units and who reside in the Second Corps Area had 14 days active duty training at Fort Totten, June 17—30.

Upstate New York Coast Artillery Reserves

Major Joseph C. Haw, C.A.C. (DOL), Unit Instr.

513th Coast Artillery (AA), Colonel John P. Young (Ithaca) Commanding.

514th Coast Artillery (AA), Major N. E. Devereux, Jr. (Utica) Commanding.

522nd Coast Artillery (AA), Lt. Col. F. W. Gilchrist (Kenmore) Commanding.

Small arms firing in Schenectady continues to attract marksmen in considerable numbers. This firing is conducted in cooperation with the Infantry Reserve and is open to Reserve officers of all branches. Following the conclusion of small bore shooting indoors, pistol firing was inaugurated outdoors and by the end of this phase a total of twenty nine individuals had qualified with the caliber .45 automatic.

It was very difficult to locate a satisfactory site for a 200 yard range for the caliber .30 rifle, and the spot finally chosen is 20 miles from Schenectady. In spite of this disadvantage, the attendance has averaged about twenty every Saturday and about the same number every Sunday. Firing on this range with the service rifle will continue into the summer.

In all respects, the past twelve months covered a period of remarkable activity in every line of Reserve work in this area. The three upstate New York Regiments of the Coast Artillery Reserve have broken all of their own previous records for meetings, attendance, and extension school work. The progress achieved is

best illustrated by the figures on completed extension school subcourses, which show that the three Regiments combined completed over 300% as many subcourses as in the preceding school year and more than 660% as many as in the school year 1929-30.

In May, a new chapter of the Coast Artillery Association was started in the Buffalo-Rochester area, to be known as the 522nd Chapter. The following officers were elected: President, Lieutenant Colonel Gilchrist; Vice President, First Lieutenant Campbell; members of Executive Council, Major Ryan, Captain Walker, First Lieutenants Hamilton and Heggie, Second Lieutenant Thomson; Secretary-Treasurer, Captain Toler.

The following promotion has been recorded recently: to be First Lieutenant, William V. Honey, of Schenectady, New York.

The 69th Coast Artillery (AA)

Ft. McClellan

SUBSEQUENT to its visit to New Orleans in April the 69th put on a demonstration "for the benefit of all the military personnel in and around Birmingham and for members of the Reserve Officers Training Corps, University of Alabama." This exercise occurred on June 3 and was conducted by Colonel Andrew Bramlett and the officers of the 540th C. A. (AA), assisted by the 106th Observation Squadron (Ala. N. G.). The 69th furnished the enlisted personnel and the materiel, 69th officers acting as instructors.

The entire regiment moved to Birmingham on June 2, camp being made at the Municipal Airport. Colonel Bramlett took charge of the regiment upon arrival, making assignments of the 540th officers who were present and conducting officers school in the evening.

These demonstrations are somewhat unusual in our own army but might be compared to the "tattoos" which are very popular with the British public. In Great Britain a tattoo generally calls for a concentration of troops of all arms and a careful planning of the schedule of events so that the public can see and understand them and at the same time permit the participating troops to obtain some actual training from the exercises.

The 69th is a "demonstrating" regiment and through experience has become proficient in preparing demonstration programs with proper consideration for publicity, public information, and tactical training. The program of the Birmingham demonstration indicates considerable thought in its preparation. These demonstrations generally include a "parade" (by popular request). In this case there is the problem of traffic and the necessity to cooperate with the municipal police. The exercise itself generally requires one or more speakers to explain to the public just what is taking place. Careful timing is required to prevent "voids" when nothing happens and interest might be lost. The talks must be carefully prepared, the materiel must be in place at the proper time, the Air Corps must "come over" at the right time. Of course the band is available to play for the public entertainment in case an intermission is necessary. There are

cues for this and that which makes a playwright out of the officer preparing the program.

The exercise at Birmingham was well prepared and conducted. Demonstrations of this kind accomplish several purposes: the regular army troops obtain tactical training in localities with which they are not familiar and which they might be ordered to defend in time of war; the reserve units obtain practical experience which they could obtain otherwise only on active duty; the public becomes better informed concerning the purpose and activities of the army and is able to actually witness its operations at first hand.

The 52d Coast Artillery (Ry)

Fort Hancock

THE tactical exercises of the regiment held at Wildwood, N. J., early in June and the target practices at Fort Hancock on June 11 have attracted considerable newspaper and film publicity and focused no little interest by the public on the Coast Artillery, and particularly the railway guns. The exercise at Wildwood will be covered in full from a tactical viewpoint in an article to be published in an early number of the Journal.

The firings by Batteries E (two 8-inch guns) and C (two 12-inch mortars) were especially good as the table below will show. Captain Coburn L. Berry and Lieut. Frederick B. Dodge, Jr., the respective battery commanders, when interviewed by our correspondent, claimed no "secret processes" or particular knowledge of mysterious methods patented by themselves. They did say that they had made every effort to prepare both the materiel and personnel of their batteries to fire a practice using the established and usual methods. They were pleased that the practices were successful but further these deponents would say not. The table shows the results.

	No. shots	Time per round (sec.)	Average range	Hits broadside	Hits bow-on	Score
Battery E (8-inch guns) Captain Berry	11	45.9	11085	4	5	91.6
Battery C (12-inch mortars) Lieut. Dodge	20	72.65	10100	5	6	80.7

The news reel people succeeded in getting some excellent pictures of the practice both on shore and on the tug. They were shown all over the country and impressed movie audiences wherever shown. Major General D. E. Nolan, 2d, Corps Area Commander, witnessed the practices and expressed his approbation in a letter to Colonel Jacob C. Johnson, the Harbor Defense Commander, who, in turn, commended the Regimental Commander, Lieut. Col. Lewis Turtle. Extracts from the letter are as follows:

"I was very much pleased with the target practice of the 52d Coast Artillery (Ry) observed by me at Fort Hancock on June 11, 1932.

"The arrangements for this target practice were thorough and complete and the practice itself showed that the officers and men of the regiment were well trained, interested and zealous. This was mentioned,

also, by all staff officers who observed the movement to and from Wildwood Crest, N. J.

"I wish you would convey the above to Colonel Turtle and the officers and men of his regiment."

Notes from the Harbor Defenses of Pensacola

By Capt. E. A. Manthey, C. A. C.

THE spring season in the Harbor Defenses of Pensacola was a rushing one and everyone from the "Kernel" to the latest joined cosmoline, was on the jump. To start the season off with a bang a fitting ceremony consisting of "Escort to the Colors" and "Evening Retreat Parade" was presented to the public on the afternoon of "Army Day," April 6, 1932. The troops of the entire command in full service uniform of the new issue khaki, with white gloves and bayonets fixed presented an imposing spectacle. Publicity and editorials presented through the cooperation of the Pensacola Press disseminated the information with a resulting large attendance by friends of the garrison. The members of the Florida State Hotel Operators Convention were our special guests and paid their respects by attending in several motorcades.

At the conclusion of gunners instruction and subsequent examinations, the shock troops from Batteries A and B, 13th Coast Artillery went into extensive drill and preparation for their annual seacoast firings, Battery A being scheduled to fire their practice from Battery Langdon (12-inch Barbette Battery), and Battery B from Battery Sevier (10-inch Disappearing Battery). After days of faithful towing of pyramidal targets by the Harbor Boats "Jenkins" and "Condon" and many sub-caliber and ex-caliber practices from Sevier and Langdon, respectively, with their accompanying analysis of target practice, April 25 was selected for the record firings.

Major General Edward L. King, Fourth Corps Area Commander, piloted by Lieutenant Brown, Air Corps, visited Barrancas via airplane to witness the firing. Brigadier General William S. McNair, Commanding the Fourth Coast Artillery District, Major Walter K. Dunn, Jr., District Adjutant, and Major Burton O. Lewis, Corps Area Ordnance Officer, also attended. As is usually the case during record practices, the weather went Bolshevik and a low hanging fog bank over the towing course made the target hard to observe by both gun pointers and observers. The Battery Sevier practice of 4 trial and 11 record shots was fired by Battery B, Captain K. C. Bonney, commanding, and Lieuts. Mortimer and Earle assigned. While the results of analysis have not been approved, it is certain that the battery had a very successful target practice. At the conclusion of the Sevier practice, personnel and officials were transferred to Battery Langdon via the intricate rail-net recently completed on Santa Rosa Island, and the towing tug started on the Langdon course. During the firing of the trial shots, the tug-bolts on the bracket holding the recoil cylinder were stripped and the practice was called off. The Ordnance made repairs but the practice had to be postponed.

Both Generals King and McNair made an inspection of the local garrison and the summer training camp area and expressed themselves as well pleased with the appearance of the post and garrison and the arrangements made for the housing and training of R. O. T. C., C. M. T. C., O. R. C. and National Guard units during the summer.

Reminiscent of the hectic days of "17", the personnel of the 13th Coast Artillery spent the period May 21-28 participating in its annual war condition period, and tactical inspection by the Fourth Coast Artillery District Commander, Brigadier General William S. McNair, U. S. Army.

In accordance with pre-drafted field orders the regiment went under canvas at Ft. Pickens at 10 A. M., Saturday, May 21. Battery A encamped in the rear of their assigned armament, Battery Langdon (12-inch barbette); Battery B in the vicinity of Battery Sevier (10-inch rifles); and Headquarters Battery hither and yon around Santa Rosa Island and as far west as the mainland across Ft. McRee, this battery furnishing the man-power for all artillery engineer installations and the fort command stations.

The amount of time spent in horizontal position doing bunk fatigue was decidedly limited. During the lulls between engagements with the "enemy", a power line to provide commercial current was installed between Battery Worth and Battery Langdon, the intricate Chipman railway system was renovated by detailed section crews, and various vegetation was removed from stations and installations. Nevertheless morale was at a high peak, assisted greatly by the battery mess sergeants who conducted friendly competitions as to who could serve the greatest quantity and the best quality of chow. Fried chicken and ice cream were customarily a part of the menu. How they get that way—only an old Army Mess Sergeant knows.

During the maneuvers the Harbor Defense Command engaged in a problem representing an aerial raid and bombing attack on the night of May 25 upon Pensacola harbor and the Naval Air Station, simultaneously with a long range bombardment, of the Harbor Defenses. Evolvement of the tactical phases with chronological messages began at 2:00 P. M., and ended at midnight. When the problem had developed to the proper phase in which attack from the "enemy" was imminent about 10:30 P. M., Battery A, 13th C. A. commanded by Captain J. L. Craig, with Lieut. N. B. McLamb, Lieut. R. F. Tomlin, and Lieut. M. B. Raymond assigned as battery officers, manning Battery Langdon opened fire on moving targets towed by steamers "Jenkins" and "Condon" at a range of 6500 yards. Altho Battery Langdon is equipped with 12-inch Barbette rifles with a range of 20,000 yards, the actually firing was with ex-calibre by 3-inch guns, firing first on the target towed by the "Jenkins" and then shifted to the second target towed by the "Condon" some considerable distance behind the first target, both steamers and targets representing divisions of battleships and cruisers. Eleven rounds were fired at the first target and twelve rounds at the second, with a total of seventeen hits broadside and bow-on out

of the twenty-three rounds fired. The zones from which attack was imminent were searched by the harbor defense searchlights and the "enemy" ships were quickly picked up and excellently illuminated. Considering the character of the fire obtained from small calibre guns at short ranges, the number of hits obtained was considered excellent for a night practice. A proposed battle practice by several of the seacoast batteries firing simultaneously at towed targets had to be dispensed with in this year's tactical inspection on account of non-availability of ammunition therefor. The Harbor Defense Commander, Colonel F. H. Lincoln, was greatly pleased with the results obtained. General McNair, who witnessed the entire problem was most commendatory as to the manner of performance, stating that this Coast Artillery command was the best equipped for field service, had the best morale and was the most proficient coast artillery defense, in the entire 4th Corps Area. The report of his inspection states, in part, as follows: "The personnel of the command made an excellent impression—well instructed, alert, and interested in its work. The morale of the officers and men was noticeably high, loyalty to the commanding officer on the part of all was especially noted. Colonel F. H. Lincoln, C. A. C., the commanding officer, is entitled to credit for the excellent morale of the command. As a result of this inspection it is considered that each unit of these defenses and the defenses as a whole are in a satisfactory state of training and preparedness for field service."

The regiment returned to barracks on May 28 and began preparations for the Summer Training Camps. The Summer Camp Area was for the largest camp ever held at this post. 600 C. M. T. C., 260 R. O. T. C., 180 O. R. C., and the full regiments of the Arkansas, Illinois and Missouri, C. A. C. (AA) National Guard were trained here.

In closing it might be stated that although this 3-battery regiment carries on an intensive training schedule during practically the entire year, the element of recreation for the enlisted personnel is not neglected. Barrancas has long been recognized as the fishing paradise of the South and the Isaac Waltons of this command are numerous. Dances for the enlisted personnel are held twice monthly and the attendance is limited by the capacity of the hall only. Bathing suits of various hues and colors are making their appearance and the garrison is fortunate in having two completely equipped beaches on the shores of the Gulf within ten minutes walk of the barracks. The fact that the post for the past several months has maintained 100 per cent rating in reenlistments to fill own vacancies is a true indication of its popularity with the men.

264th Coast Artillery (HD) (Ga. N.G.)

READERS of the COAST ARTILLERY JOURNAL will be interested in two target practices fired by the regiment at Fort Moultrie, S. C., with 10-inch D. C. guns on July 27, 1932. The results are tabulated below. Major LeRoy Cowart commands the regiment, Capt. L. H. Thompson is the regular army instructor:

	Battery A	Battery B
Number of record shots	8	8
Average range of record shots	7800	7600
Score, 1932 N.G. scoring formula	118.1	118.8
Hits in zone A	7	8
Hits in zone B	1	0
No. of line shots	6	8
Average lateral deviation	1.2 yds	0
Hits on battleship, broadside	7	8
Hits on battleships, bow-on	8	8
Score computed by 1931 formula	143.4	166.1
Score, 1932 formula for Reg. Army	115.5	129.1
Time per shot	58 sec	64 sec
DAPE of record shots	37	19.4
Average spotting error by btry.	52	36
Average spotting error by air (not used in Adjustment	16	3
	(record only)	
C. I. if all shots had been fired with last correction	12 over	22 over

The third shot of record fire of Battery B completely destroyed the pyramidal target. Fire was switched to the other target and the eighth shot broke the mast on this target. An unusual point of interest in Battery B practice was the fact that the first shot of trial fire (both batteries using trial shots at moving target) was so far over that it could not be plotted on spotting board. A down correction of 4 per cent was applied and the next shot was still over too far to be plotted on the Stevens spotting board. Trial fire was halted and a thorough check made on the orientation of all instrument, plotting board, range percentage corrector and data set on gun. Nothing could be found wrong so the B. C. applied a total correction of down 9 per cent for the last two rounds of trial fire. Deviation of C. I. was reported short 2 per cent. Net correction of down 7 per cent was applied for record fire. The C. I. of first four record shots was reported 1 per cent short and a net correction of down 6 per cent was applied for the last four shots, the C. I. of which was short ½ yard (from camera record). The M. V. assumed for the practice was 2380 at 83 degrees, which was the adjusted M. V. obtained from the last practice fired four days previously with same powder at same temperature. After the practice the gun was checked with a clinometer and found to be O. K. No reason could be found for the difference of 6 per cent between this practice and the one fired four days previously by the South Carolina regiment (263d).

It is interesting to note that the 264th C. A. not only did excellent work but was also very lucky. In every case in both batteries the errors of spotting sections improved the score.

The battalion commander permitted his batteries to fire at ranges less than the normal because the base line was only 1900 yards long and the B arm on both plotting boards was so flexible that it was almost impossible to get an accurate plot at 10,000 yards or more.

The method of determining deflections may be of interest because it produced such good results. The de-

deflection board was not used. The travel during 30 seconds was taken from the B. C. instrument and using this and range as arguments the travel during time of flight was read from a set of curves prepared for this purpose. Travel, wind and drift corrections were added algebraically to 3.00 to obtain the deflection. After the first shot the gun pointer jumped splashes and was checked by the B. C. instrument.

Two Air Corps officers from the Tennessee National Guard came down to spot, but the Director of Training recommended that the batteries depend only upon their own spotting sections; consequently communication was not maintained with the plane. When the two Air Corps officers came in they turned in a report of their observations for comparative purposes. A glance at the tabulated data will show how extremely accurate this spotting was.

The 213th Coast Artillery (A. A.) (Pa. N. G.)

"The First Defenders" will hereafter be the official motto of the 213th Coast Artillery (AA) regiment of the Pennsylvania National Guard, headquarters of which unit are located in Allentown, with Col. C. J. Smith in command of the regiment.

Announcement to this effect was received from the War Department with the final approval

of the new insignia of the regiment, a reproduction of which is presented herewith. This insignia will be embroidered on the regimental standard and will be worn by the officers and men of the regiment on their campaign hats and uniforms.

Co-incident with the announcement of the approval of the new coat of arms for the regiment comes also the final approval of the history of the regiment by the War Department Historical Section and the award to the organization of battle streamers for the war of 1812, Mexican war of 1847, war of the rebellion '61 to '65; Spanish American War and the World War of 1917-18. The accredited battle streamers for the various wars give the 213th regiment the distinction of being awarded more battle honors than any other regiment in the United States.

The battle streamers, which will be attached to the regimental standard under War department orders, include the following:

Mexican war: Vera Cruz, Cerro Gordo; Pueblo, 1847.
Civil War: Manassas, Antietam, Fredricksburg, Chancellorsville, Wilderness, Spottsylvania, Cold Harbor, Petersburg, Shenandoah, Virginia in 1862.
Spanish American War, Porto Rico 1898.
World War: Champagne Marne, Aisne-Marne, Oise-Aisne, St. Mihiel, Meuse-Argonne, Champagne, Lorraine.

Special credits to units of the regiment, in which the regiment as a whole does not participate and which

will be represented by silver bands on the guidons of the several batteries, include the following:

Headquarters battery, Schuylkill Haven: Civil War; Peninsula, Gettysburg, Virginia, '63, Virginia '64.

Service Battery Pottsville: Tennessee 1863.

Headquarters Det and Combat train, Allentown: Florida 1862, South Carolina 1862, Louisiana 1864.

Battery A, Reading: War of 1812.

Mexican War: Conteras Chrususeo, Molino Del Ray, Chapultepec.

These battle honors are awarded only after the closest scrutiny of the records by the Historical Section of the War Department and are only awarded where there is proven a continuity of service on the part of the units of the regiment.

Following the approval of the history and the award of the battle honors a requisition was forwarded from the office of the Adjutant General of the Army to the office of the Quartermaster General of the Army for the manufacture of the streamers and the embroidering of the coat of arms on the regimental standard.

The presentation of the battle honors took place during the field training period of the regiment at Virginia Beach, July 22—August 6.

In addition the streamers, which are attached to the regimental standard, units of the regiment, which are descended from organizations which served in earlier wars but whose participation therein does not entitle the honor to the entire regiment, are awarded silver bands which are placed on the battery, or company guidon.

Compilation of the history of the 213th regiment, which following the World War, succeeded the old Fourth infantry, was begun some years ago in the office of the Adjutant General at Harrisburg during the regime of Brig. Gen. Frank D. Beary, of this city, as the adjutant general. A vast amount of research and delving into old records was required in order to establish indisputably the claims of the various units for the necessary continuity of service.

The design of the new insignia was prepared in the office of the heraldry division of the war department from an original submitted by General Beary and Col. Smith. The background of the shield is in red to denote the artillery branch of the service of the regiment. In the center of the shield there is a white maple leaf, the heraldic design to represent the War of 1812. A scorpion in blue tells of the participation of units of the regiment in the Mexican War of 1847.

Superimposed on the maple leaf appears the dome of the capitol building at Washington to represent the service in the war of the rebellion. A Maltese cross in blue represents the service of the Fourth infantry in Porto Rico during the Spanish-American War.

For the service in the World War there appear seven fleur de lis, one for each of seven major engagements in that war in which the organizations which now make up the 213th regiment, participated as units of the 28th Penna and the 42nd (Rainbow) divisions.

The motto "The First Defenders" commemorates the fact that units from Reading, Pottsville and Allentown, which are now represented by batteries in the 213th,



were the first troops to reach Washington, D. C., in response to President Lincoln's call for 75,000 volunteers, in April 1865.

The title of "First Defenders" was awarded to these units by act of congress and the passing of this title to the present organization as its regimental motto is an unusual honor. Congress also voted a special medal to the survivors of these "First Defenders" companies, nearly all of whom have answered their last roll call.

Col. Smith, commander of the present organization, is desirous of having one of these special medals for the purpose of having a reproduction made to be used in connection with the history of the regiment which will soon be in readiness for publication. Any descendant of one of the First Defenders in possession of one of these medals can confer a favor in the interest of the history by lending it for a day for the purpose of reproduction.

Pittsburgh Chapter U. S. C. A. Assn.

WITH the passing of the 1931-32 school year, the Pittsburgh Chapter of the United States Coast Artillery Association, looks back upon the most profitable year in its experience.

The high point of the year came with the visit of Major General John W. Gulick, the Chief of Coast Artillery, and his aide, Major Stewart S. Giffin, C. A. C., last November—an event that marked the culmination of four years' effort by this chapter.

During the year, the 503d and 508th Coast Artillery regiments were joined by the 523d Coast Artillery (AA), transferred from Erie, Pennsylvania. This brought the local units up to a strength of 300 reserve officers and about 50 enlisted reservists, 250 of whom reside in Pittsburgh metropolitan district. The rapid growth of unit activities and inactive duty work, following this concentration, exceeds by 300 per cent the results secured during the preceding year.

The adoption of the new extension school scheme has stirred the deepest interest in this locality. Enrollment has increased to 80 per cent, lessons to 4000, subcourses to 700, attendance at conferences to 1400 for the year—representing in all, some 16,000 hours work, or an average of 50 hours work for each of the 300 officers in this group. These results have made it possible to qualify over 50 per cent of our officers for promotion during the past year, in one-half the time our unit missions prescribed. The benefit to the individual is better qualification for active duty; to the

service, increased demand for active duty training, and acceleration of proficiency in unit commanders in advance of a major mobilization.

The table shows the standing of the regiments assigned to the Pittsburgh office.

Regt.	Strength	Enrolled	Subcourses	Subcourses per member
508 C. A. (AA)	91	91	292	3.24
503 C. A. (AA)	101	76	282	2.80
523 C. A. (AA)	63	33	96	1.52

The 508th, commanded by Colonel J. S. Ervin, not only leads all regiments under the Pittsburgh headquarters but those of the 3d Corps Area. It has an excellent chance to win the Association Trophy—at least it will stand well up among all the regiments of the United States. However when it came to individual honors the 503d, commanded by Colonel E. A. Zeigler, ran away with the race. 2d Lieut. E. L. Thomson, 503d, tops the list with 321 credit-hours while 1st Lieut. John W. C. Remaley is second with 307.

During the recent Sino-Japanese trouble, a large class of officers constructed maps covering the various centers of operations. These maps were kept up to date, with daily G-2 and G-3 estimates, with journals, annexes and situation files. The practical result was to develop a substantial number of assistant instructors, capable of enlarging the activities during the coming year. Supplementing the Extension School courses and the Sino-Japanese class, the tactical employment of anti-aircraft was applied to the defense of the Pittsburgh area; a study that brought forth lively interest of local newspapers and of the people throughout the industrial district.

During April of this year, the National Convention of the Reserve Officers' Association of the United States was held here, in which officers of our chapter played a part on the various committees. It was at this convention that important policies were evolved, for acquainting Congress with the existing military situation, and which had much to do with the preservation of our National Defense system at the present session.

The 503d Coast Artillery (AA) participating in the Pistol Match held by the Reserves during the Convention, took second place in the Individual Competition, and fourth place among competing Pennsylvania units.

Altogether, it has been such a busy year in our Chapter, that we almost forgot about this thing they call "depression and unemployment. Anything BUT!

COAST ARTILLERY ORDERS

Colonel Jacob C. Johnson, from 7th, Ft. Hancock, to duty with Org. Res., 9th Corps Area, Presidio of San Francisco, sailing New York, July 27.

Colonel Ralph M. Mitchell, from Panama to R. O. T. C., University of Cincinnati.

Colonel Russell P. Reeder, to sail New York September 2 for Panama instead of as previously ordered.

Colonel Marcellus G. Spinks, from detail in I. G. D., August 31.

Colonel Robert F. Woods, to report to retiring board, San Francisco.

Lt. Col. Clair W. Baird, from Submarine Mine Depot, Fort Monroe, to Army Industrial College, Washington.

Lt. Col. Myron S. Crissy, from headquarters, 5th Corps Area, Ft. Hayes, to 63d, Ft. MacArthur, sailing New York, August 20.

Major E. E. Bennett, from Philippines to Office Chief of Coast Artillery, Washington.

Major Gordon DeL. Carrington, detailed to General Staff, headquarters, 1st Corps Area, Boston.

Major Clarence E. Cotter, from duty at Sperry Gyroscope Co., Brooklyn, to 7th, Ft. Hancock.

Major Joseph A. Cygon, from detail in I. G. D., headquarters, 3d Corps Area, Baltimore.

Major Frank Drake, detailed to General Staff, headquarters, 7th Corps Area, Omaha, August 2.

Major Ward E. Duyall, student, C. & G. S. S., Ft. Leavenworth, to Hawaii, sailing New York, August 26.

Major William C. Hanna, Ft. Worden, retired, May 21.

Major Christopher D. Peirce, 7th, Ft. Hancock to Philippines, sailing New York, August 20.

Major Harold W. Rehm, O. D., from C. A. B., Fort Monroe, to Aberdeen Proving Ground, June 30.

Major Frank C. Scofield, instructor, D. C. N. G., Washington, to Philippines, sailing New York, August 26.

Major Robert R. Welshmer, A. C. T. S., Maxwell Field, Montgomery, placed on flying duty, July 1.

Captain Ben B. Blair from Hawaii to 63d, Fort MacArthur.

Captain Frederick R. Chamberlain, Jr., from Hawaii to 52d, Fort Monroe.

Captain Albert C. Chesledon, 62d, Ft. Totten, to Philippines, sailing New York, August 26.

Captain Ira A. Crump, O. D., from Fort Hoyle to Ordnance Officer, Fort Monroe, June 30.

Captain Philip W. Hardie, 13th, Fort Barrancas, to Hawaii, sailing New York, October 7.

Captain Reginald J. Imperatori from Panama to 52d, Fort Hancock.

Captain Harold R. Jackson promoted major, July 1.

Captain Abraham M. Lawrence, 69th, Ft. McClellan, to Philippines, sailing New York, August 26.

Captain Adrin B. Smith, from Panama to 14th, Fort Worden.

Captain Charles H. Stewart, Fitzsimons General Hospital, Denver, to retiring board.

Captain Joseph H. Twyman, retired, July 31.

Captain Henry W. Ulmo from Panama to 11th, Ft. H. G. Wright.

1st Lt. Orley D. Bowman promoted Captain, July 1.

1st Lt. Henry H. Duval, 52d, Ft. Hancock, to Philippines, sailing New York, August 26.

1st Lt. Ovid T. Forman, student C. A. S., Ft. Monroe, to Philippines sailing New York, August 26.

1st Lt. John L. Goff, 69th, Fort McClelland, relieved from flying duty, July 1.

1st Lt. Joseph E. Harriman to Submarine Mine Depot, Fort Monroe, instead of C. A. S.

1st Lt. John Harry, student, C. A. S., Ft. Monroe, to R. O. T. C., Miss. State College.

1st Lt. Malcolm H. Harwell, student, C. A. S., Ft. Monroe, to Hawaii, sailing New York, October 7.

1st Lt. Raleigh R. Hendrix from Hawaii to 2d, Ft. Monroe.

1st Lt. John A. McComsey, student, C. A. S., Ft. Monroe, to Philippines, sailing New York, August 26.

1st Lt. George W. MacMillan to 2d, Fort Monroe, instead of as previously ordered.

1st Lt. Harry E. Magnuson from Hawaii to 51st, Fort Monroe.

1st Lt. Henry F. Myers from Philippines to 2d, Fort Monroe.

1st Lt. Robbin B. Pape sailing for Hawaii, July 27, thence to Japan, Sept. 29.

1st Lt. Harold W. Smith promoted Captain, July 1.

1st Lt. Vern Walbridge from student, C. A. S., Fort Monroe, to 2d, Fort Monroe.

1st Lt. George E. Young, from Panama to 51st, Fort Monroe.

2d Lt. John B. Ackerman, U. S. M. A., 1932, to 63d, Ft. MacArthur.

2d Lt. Gilbert N. Adams, U. S. M. A., 1932, to 14th, Ft. Worden.

2d Lt. Charles K. Allen, U. S. M. A., 1932, to 62d, Ft. Totten.

2d Lt. Arthur H. Bender promoted 1st Lt., July 1.

2d Lt. Wallace H. Brucker, U. S. M. A., 1932, to 52d, Ft. Monroe.

2d Lt. William A. Call, U. S. M. A., 1932, to the Philippines.

2d Lt. Edgar N. Chace, U. S. M. A., 1932, to 52d, Ft. Monroe.

2d Lt. William S. Coit, U. S. M. A., 1932, to 6th, Ft. Winfield Scott.

2d Lt. James H. Cunningham, Jr., U. S. M. A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Leo P. Dahl, U. S. M. A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. William V. Davis promoted 1st Lt. June 1.

2d Lt. Philip V. Doyle, U. S. M. A., 1932, to 52d, Ft. Hancock.

2d Lt. Christian F. Dreyer, U. S. M. A., 1932, to duty as assistant to constructing quartermaster, Mitchel Field.

2d Lt. Joe C. East transferred from Inf., Ft. Benjamin Harrison, to C. A. C. and Hawaii, sailing New York, Nov. 9.

2d Lt. Dwight D. Edison, U. S. M. A., 1932, to Hawaii.

2d Lt. Edward E. Farnsworth, Jr., U. S. M. A., 1932, to 62d, Ft. Totten.

2d Lt. Norman R. Ford, U. S. M. A., 1932, to 11th, Ft. H. G. Wright.

2d Lt. Arthur L. Fuller, Jr., from Hawaii to 2d, Ft. Monroe.

2d Lt. Harrison A. Gerhardt, U. S. M. A., 1932, to 63d, Ft. MacArthur.

2d Lt. Robert D. Glassburn, U. S. M. A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Noble T. Haaskensen promoted 1st Lt. May 23.

2d Lt. William A. Hampton from Air Corps, Randolph Field to 14th, Ft. Worden.

2d Lt. Donald L. Hardy, U. S. M. A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Thomas H. Harvey, U. S. M. A., 1932, to Hawaii.

2d Lt. Lauri J. Hillberg, U. S. M. A., 1932, to 51st, Ft. Monroe.

2d Lt. Henry L. Hughes promoted to 1st Lt. April 17.

2d Lt. John J. Hutchison, U. S. M. A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Dwight B. Johnson, U. S. M. A., 1932, to 61st, Ft. Sheridan.

2d Lt. Adam A. Koscielniak from detail in Q. M. C., Ft. Sheridan, to 61st, Ft. Sheridan.

2d Lt. Aaron M. Lazar, U. S. M. A., 1932, to Panama.

2d Lt. Francis A. Liwski, U. S. M. A., 1932, to Hawaii.

2d Lt. Charles R. Longanecker, U. S. M. A., 1932, to 63d, Ft. MacArthur.

2d Lt. Archibald W. Lyon, U. S. M. A., 1932, to duty as assistant to constructing quartermaster, Hamilton Field, Calif.

2d Lt. Henry G. McFeely, U. S. M. A., 1932, to Hawaii.

2d Lt. Howard R. Martindell, U. S. M. A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. William Masselo, Jr., U. S. M. A., 1932, to 11th, Ft. H. G. Wright.

2d Lt. Stephen M. Mellnik, U. S. M. A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. John E. Metzler, U. S. M. A., 1932, to 2d, Ft. Monroe.

2d Lt. Robert F. Moore, U. S. M. A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Russell M. Nelson, U. S. M. A., 1932, to 62d, Ft. Totten.

2d Lt. Milton L. Ogden, U. S. M. A., 1932, to Hawaii.

2d Lt. Byron L. Paige, U. S. M. A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Jacob G. Reynolds from Hawaii to 63d, Ft. MacArthur.

2d Lt. Irving D. Roth, U.S.M.A., 1932, to 52d, Ft. Hancock.

2d Lt. Paul A. Roy from Hawaii to 52d, Ft. Hancock.

2d Lt. Walter A. Rude, U.S.M.A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Sam C. Russell, U.S.M.A., 1932, to 61st, Ft. Sheridan.

2d Lt. Robert E. Schukraft, U.S.M.A., 1932, to Panama.

2d Lt. Carl M. Seiple, U.S.M.A., 1932, detailed assistant to constructing quartermaster, Bolling Field.

2d Lt. Clifford McC. Snyder, U.S.M.A., 1932, to 14th, Ft. Worden.

2d Lt. Erven C. Somerville, U.S.M.A., 1932, to 13th, Ft. Barrancas.

2d Lt. Arnold Sommer, U.S.M.A., 1932, to the Philippines.

2d Lt. Daniel S. Spengler, U.S.M.A., 1932, to 61st, Ft. Sheridan.

2d Lt. William F. Spurgin, U.S.M.A., 1932, to 13th, Ft. Barrancas.

2d Lt. Joch C. Steele, U.S.M.A., 1932, to Hawaii.

2d Lt. Preston Steele, U.S.M.A., 1932, to 6th, Ft. Winfield Scott.

2d Lt. Stanley R. Stewart, U.S.M.A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Alden P. Taber from Hawaii to 14th, Ft. Worden.

2d Lt. William M. Vestal from Hawaii to 2d, Ft. Monroe.

2d Lt. Donald B. Webber from detail in Q.M.C. and Mitchel Field, to Hawaii, sailing New York, July 27.

2d Lt. Benjamin J. Webster, U.S.M.A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Charles E. Wheatley, Jr., U.S.M.A., 1932, to 51st, Ft. Monroe.

2d Lt. Robert L. Williams, Jr., U.S.M.A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Torgils G. Wold, U.S.M.A., 1932, detailed in Air Corps and to Randolph Field.

2d Lt. Frederick R. Young, U.S.M.A., 1932, to 2d, Ft. Monroe.

2d Lt. Layton A. Zimmer from Hawaii to 52d, Ft. Monroe.

W. O. Hermann Webel, band leader, 14th, Ft. Worden, to Hawaii sailing San Francisco, August 17.

Mast. Sgt. Frank L. Deuel, 9th, Ft. Banks, retired, May 31.

Mast. Sgt. Lee Kye, 15th, Ft. Shafter, retired, May 31.

Mast. Sgt. Walter T. Payne, 52d, Ft. Hancock, retired, May 31.

1st Sgt. Robert L. Cook, 14th, Ft. Worden, retired, June 30.

1st Sgt. William J. Dynes from 1st, Ft. Sherman, retired, June 30.

1st Sgt. Alfred M. Goodie, 2d, Ft. Monroe, retired, July 31.

1st Sgt. Readdy Lockaby, 2d, Ft. Monroe, retired, July 31.

1st Sgt. Andrew J. Monahan from 6th, Ft. Winfield Scott, retired, June 30.

1st Sgt. Francisco Mora, 10th, Ft. Adams, retired, May 31.

1st Sgt. George W. Morrison, 2d Ft. Monroe, retired, May 31.

1st Sgt. Elmer O. Robison, 59th, Ft. Mills, retired, July 31.

1st Sgt. David Widman, 6th, Ft. Winfield Scott, retired, May 31.

Tech. Sgt. George Strother, 2d, Ft. Monroe, retired, June 30.

Staff Sgt. Charles Green, 62d, Ft. Totten, retired, May 31.

Sgt. Joseph Newman from 14th, Ft. Worden, retired, June 30.

Coast Artillery Song

By Lieut. William A. Roberts, C. A.-Res.

The Infantry and the Cavalry,
Are good enough so they say,
But a foreign foe will never know,
'Cause the Coast is in the way.
And whether they come by sea,
Or whether they come by air,
A riot of shell will knock 'em to hell,
So Beware! Take care!
The Coast is waiting there,
The Coast Artillery.

Guardians of Midnight Skies,
First barrier to the foe,
Come let your song arise,
From Shafter to Monroe.
Proud of your ancient lore,
From rampart and from shore,
Full-hearted cheers will roar,
For the Coast Artillery.

Note: The above is Lieut. Roberts' response to the request for a Coast Artillery Song which appeared in the Journal a few months ago. Other contributions are desired.

YOU TELL 'EM

Don't Believe It

THROUGH incessant cribbing from the 79th Division Bulletin, *Recruiting News*, Ripley, and others, the following important facts (?) have been uncovered. Don't ask for proof. It will not be furnished.

Airplanes travel faster than the cannon balls of the Civil War. Cannon balls of the Civil War had something on those of the Mexican War. General Grant states that during the Mexican campaign it was customary for troops to give way to the right and left to let them through. Now and then some former boat-rocker would attempt to stop one with this foot.

A Coast Artilleryman shares with a Cavalryman the honor of holding the greatest number of decorations (excluding foreign) awarded to a single individual. He is General Charles E. Kilbourne now commanding at Corregidor. He holds the Medal of Honor, the Distinguished Service Cross, and the Distinguished Service Medal. Colonel Gordon Johnson of the Cavalry also wears these medals. General John J. Pershing, perplexed by a score or more decorations he is entitled to wear, frequently appears wearing only our own Distinguished Service Medal.

During the Nicaraguan Survey Colonel Dan I. Sultan's Engineer detachment carried over thirty-five different kinds of snake bite serum. (Yes, *serum*).

General Abner Doubleday, a West Point graduate and veteran of the Civil War, invented the game of baseball.

General Grant did not smoke cigars incessantly until he captured Fort Donelson. Following this victory, for some unknown reason he was habitually depicted in Northern newspapers, smoking a cigar. This brought a flood of gift cigars which caused him to take up smoking seriously. (Besides it was good publicity.) He had trouble keeping these cigars lit at Shiloh.

Speaking of General Grant, let not the lack of a uniform keep any Reserve officer from active duty training. When General Grant first came into the service during the Civil War he had no uniform, no horse, and only a battered second-hand cavalry saber. To make matters worse he could find no one to loan him money to buy a uniform and had to let subordinate officers drill the men. Friends finally came to his rescue and furnished money for uniform and horse. (He was little better off at Appomattox.)

The Army first was introduced to cigarettes during the war with Mexico. They were not toasted but they must have satisfied because the habit was brought back when the Army returned.

Whiskers. In 1842 Army officers were required to wear beards. There may have been some method in this regulation when promotion was slow and grand-

fathers commanded batteries. There is one famous example of an outfit where the grandfather was in command, his son was first lieutenant, and his grandson second lieutenant. And in these days we hear talk of slow promotion from fledgling captains who have reached the immature age of 40. (There are, today, plenty of captains who are grandfathers.) General Scott was Chief of Staff and ranking officer of the Army when the Civil War began. He was 75 years of age.

Abolition of artillery has been advocated many times in our Army. The air fanatics are the most recent but have brought forth nothing new. When the Minie ball was introduced it had a range of 800 yards compared to 400 yards for the twenty-four pounder. Many people thought this was the end of artillery.

The American Army received its first important consignment of artillery material from the British in 1775. The cannon captured at Fort Ticonderoga was about the first consignment received. The National Guard Coast Artillery are considering a revival of this method since they don't seem to be able to get it any other way.

Has your application for active duty been turned down? Don't be discouraged. General Grant applied for active duty in 1861 and never knew what action was taken on his application until he became President. (*No action was taken.*)

Sheridan never rode a horse on the dead run from Winchester to Cedar Creek. (The horse walked most of the distance.) The best road maps give the distance as 11 miles (not 20). He could have made it faster by walking (since he required six hours to make the trip). And he didn't say "Turn boys, turn we're going back." (We can't tell you what he said.) You can see the horse he rode (stuffed and mounted) at the Smithsonian Institute, if you are interested.

At one time, artillery officers could not be tried before a court martial unless the court was composed entirely of artillery officers.

The Editor, THE COAST ARTILLERY JOURNAL,
Dear Sir:

I do not lay claim to an expert knowledge of the methods of Coast Artillery target practice, but what humble partisan of the Big Gun Corps has not sat atop a sand dune or cooled his heels in the bowels of the earth in a fire control station, awaiting that propitious moment when a fool fishing smack, or a saucy speedboat or mayhap even an ocean liner shall condescend to clear the field of fire. Or worse luck, when the day of days arrives one is greeted by a cool, damp fog or misty haze, and grits his teeth as the safety officer reports the field of fire unsafe. And with the day wearing into noon, and noon into night without

opportunity to begin the fire there goes a glimmering all his pet data saved for that particular occasion. Coast Artillery target practice, notwithstanding these uncertainties of action, has become a fixed and methodical rote, and which has robbed the personnel of that training and initiative in meeting the unusual and unexpected situation and so necessary to success in battle. Against the day of the stated practice there have been many preparations. Powder has been blended—usually an admixture of the vintage of many, many years ago, data checked and rechecked, guns bore sighted, the various crews through a strenuous training both on the gun itself, in the powder magazine and shell chambers, plotting room and observing stations. Should the day dawn clear enough for practice, and all other factors, including that special grace which permits the tug to be on the job and the specified course as expected, the red flag goes up and we are ready to begin. And then there occurs what to my mind is an absurdity. That is, the tug steams serenely back and forth in the field of fire, towing its pyramidal or other form of target, at fixed speed and on more or less fixed courses, and permitting practice under the best obtainable conditions.

Why not alter some of these conditions of target practice? In other words, why could not the Coast Defense Commander on some bright, sunny day, when the flies were buzzing lazily around and the Post expecting no more than a routine day of duty, and having made prior arrangements with the Coast Guard or Navy people, direct the sounding of the Call to Arms, the details formed and marched to their posts, equipment broken out, stations manned, and then in due time a Naval vessel appear somewhere in the field of fire, with a tow line of sufficient length connecting it with the target, which could be towed at approximate speeds much greater than the slow plodding Army tug, and on courses unfamiliar to the methodical courses followed so many times in routine practice. I wonder if that would not be a practice worth while. But, as I have stated in beginning, no claim is merited to being an expert, and perhaps my dream of such a radical change in target practice methods is as fleeting as the Coast Artilleryman's chances of holding practice on the day set without encountering a dozen or more handicaps to completing his job.

Sincerely yours,

Lt. Col., C. A. Res.

Seems Reasonable

The Editor, THE COAST ARTILLERY JOURNAL.

Dear Sir:

Regarding my criticisms, favorable or otherwise, I hardly feel competent to discuss the JOURNAL. I do believe that it has made excellent strides forward in the past few years—last 12 month?—and I really look forward to it each month, so much so that when your May-June edition was a bit late in arriving, I was about to drop you a line asking for another copy. Then it did come.

As to a choice of material, I would simply state,—first, that I am a Reserve Officer; second, that I believe I am among the alert group. Then, what can the COAST ARTILLERY JOURNAL offer ME that will best serve MY purpose, and which will make ME await its receipt each month? I believe the answer is NEWS. Keeping abreast of the *military* times is about the hardest thing that some of us fellows can do. We know what is going on in civil life; we have our troop schools each month (some, each week), and we take the so-called Extension Courses, and we try real hard during the winter for the proper preparation for summer duty with guns, and tractors, and CMTC boys.

But when some Old Timer (usually a Regular Army man) comes along and says, "Yeah, true enuf, but didn't you know that so-and-so * * *," that is when you feel a sinking in the somewhere, and wish you could have read it in the JOURNAL. Of course, it is true that some of the boys like History, and some prefer Materiel. Some like a lot of AA theory, and others want to argue on the relative merits of a battery of 155s versus a good old Army Mine Planter.

Give ME the Materiel and the PRACTICAL THINGS; I'll try to study the theory in the Extension Course.

Capt., 607th C. A.

Will It Come to This?

(Good Work, Infantry)

"There are many Morro Castles in the Caribbean region. One of these is in San Juan. Soon after America entered the war, in 1917, German vessels in the harbor of San Juan were ordered interned. Morro Castle was the only fort which could make even a pretense of enforcing the order. It had been dismantled years before, and all that remained of its ordnance was an ancient four-inch muzzle-loading gun, used for firing salutes.

"The captain of a big German freighter, as soon as he received the interment order, weighed anchor and steamed for the open sea.

* * *

"The captain of the garrison, much excited, roused his squad of soldiers from their siestas. "This is war!" he shouted. The soldiers loaded the old smoothbore to the muzzle with powder and a rusty cannon ball, and blazed away with a mighty boom!—at the fast steaming freighter. The projectile, by good luck, sailed across the vessel's bow in the approved manner of a command to heave to.

"But the unaccustomed power of the explosion was too much for the rusty recoil mechanism of the old gun. It broke away from its mounting, kicked back about thirty feet and rolled away in the bushes.

"The German captain, who from the bridge had been studying the ramparts through his glass, turned to his first officer in dismay. 'We are lost,' he said, 'unless we turn back. I had no idea they had modern artillery. That shot was from a disappearing rifle.' The freighter returned to her anchorage, and no other German ship dared make a run for it."

—Extracted from *The Lantern*, N. Y. Herald Tribune.

BOOK REVIEWS

PHILIPPINE UNCERTAINTY—AN AMERICAN PROBLEM, by Harry B. Hawes; foreword by Senator William E. Borah. 360 pages. The Century Co., New York, 1932. Price \$3.00.

If the Philippine problem harbors any uncertainty, it is not in the mind of the author. Senator Hawes has some very positive ideas regarding the solution of this problem, and the volume he offers to the public constitutes his brief in support of his case. Senator Hawes frankly admits that irritation was one of the causes for his book. That frame of mind is an easily discernible *leitmotif* throughout the able though by no means judicial presentation of his argument. That Senator Hawes was deeply impressed by the well organized demonstrations in favor of Philippine independence is quite understandable. Filipinos are splendid organizers, astute showmen, picturesque performers, but only the ignorant and naively credulous will be swayed by mere appearances and tricks of trade. It is evident, however, that Senator Hawes accepted at face value everything he saw or heard that seemed to support his thesis. Thus, writing of Colonel Santos of the Philippine Constabulary and former governor of the province of Lanao, unquestionably a brave soldier, able administrator and astute politician, the author observes that "during his term there was little trouble with the Moros. They understood him and he understood them." One is tempted to say in the language of the street: "And How!" Evidently Senator Hawes heard nothing about the Datu Amai Binaning and similar atrocious affairs. Indeed, the Constabulary force under Colonel, then Captain, Santos among disarmed Moros was a potent factor in bringing about that understanding of which the Senator from Missouri writes.

Again, Senator Hawes, to refute "allegations" of tribal differences among the Filipinos, quotes the genial Camilo Osias, one of the resident Commissioners in Washington, who at a Senate hearing on bills looking to Philippine independence, pointed to the Filipino gentlemen present, and asked Senator Hawes and his colleagues to pick among them the Ilocanos, the Tagalogs and the Visayans: "I ask you to look at the various Filipinos here and see if there is any more difference among us than there is between an American of the Connecticut Tribe, let us say, and one of the Michigan Tribe, or of the Missouri Tribe, or of the Maryland Tribe, or of the Pacific Coast Tribe, or some other American Tribe." Evidently the gentleman from Missouri was easily persuaded by this verisimilar mode of reasoning. Had this comparison been applied to various tribes of American Indians, or to Caucasians, let us say, of the German Tribe, the French Tribe, the Italian Tribe, the Polish

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MAGAZINES

STATIONERY

AN ECONOMIC AND SOCIAL HISTORY OF EUROPE IN THE LATER MIDDLE AGES: 1300-1530, by James Westfall Thompson, Ph. D.; 545 pages. The Century Co., New York, 1931. Price \$5.00.

The author of this comprehensive study is professor of mediaeval history at the University of Chicago, and is regarded as one of the leading authorities on the subject. He covers in this volume the period of European history between 1300 and 1530. Embodying the latest historical researches, the author seeks to interpret history in terms of economic and social rather than in terms of political factors. Although it strongly reflects German influence, notably in the unwarranted use of German geographical names in countries other than Germany, Dr. Thompson's work is an authoritative contribution to the literature of mediæval history.

=====

TWENTY YEARS OF THE CHINESE REPUBLIC, by Harold Archer Van Dorn, Ph.D. Published by Alfred A. Knopf, New York, 1932. 309 pages. Price \$3.50.

Doctor Van Dorn has written a most interesting book on the progress China has made after twenty years of a republican form of government. He divides his subject into five general headings—political, social, economic, educational, and religious. Many data are

presented on each subhead, and readers who have never been to China will be able to obtain a rather clear picture of some of the progress so far achieved, and some of the major objectives being striven for by the various civilian leaders of China. Even the reader who has been made more or less cynical by residence, or extended visits, in China will undoubtedly have his store of knowledge added to by some of the author's statistics, which are presented in a very entertaining narrative form.

The author states in the foreword—"I have endeavored to set forth both the record and an interpretation of the progress achieved." Very little fault can be found with the "record" as presented, but some of the "interpretations," as is perfectly natural, are open to question. For example, there are a number of well-informed people who would dispute the statement that China is now unified under the Kuomintang Party! In discussing the wave of nationalism sweeping the country, an unbiased reader could very well be pardoned for wondering if the author were not allowing his enthusiasm a rather free rein and "letting the wish be father to the thought!" And so with other "interpretations." On the whole, though, the book is worth reading, if one does not let the author's enthusiasm and unquestioned bias sweep him off his mental balance. With this caution it is recommended to officers who are interested in the Far Eastern situation.



"Between The Big Parades"

by Franklin W. Ward

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COAST ARTILLERY JOURNAL



COLONEL H. B. GRANT

Commanding the 15th C. A. (H. D.), whose regiment won the U. S. Coast Artillery Association trophy for the training year ending June 30, 1932.

September-October, 1932



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