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German Antiaircraft Battery in Action

The Coast Artillery Corps

By Senator Morris Sheppard *of Texas*

Its Future is One of Promise and Advancement.

THE World War brought international renunciation of war as an instrument of national policy but it did not end strife. Many of the 1914 world political conditions that were conducive to that war still exist.

During and since the War, the people of the United States have increasingly realized the importance of adequate national defense. By such adequate defense, we strengthen and maintain our national policy of non-aggression. As a peace-loving people we emphasize our pacific intent and our normal engagement only in defensive war—to protect our honor, our families, and our property. The United States should maintain the principles of Army organization embodied in the present national defense laws, calling for sustained modernization of military equipment, with new and improved matériel as a result of modern inventions. Expenditures if programmed carefully over a period of years, will lighten the annual burden and permit a systematic treatment of obsolescence. It is false economy to countenance longer the nonreplacement of worn-out and obsolete equipment. Congress has been impressed with the Coast Artillery's ability to ward off attacks. During the last war our coast defenses were partially modernized and materially strengthened. Recent developments in design and effectiveness of armament indicate the wisdom of proper protection of our investment and necessary steps for the modernization of coast defense matériel. The normal missions assigned to the Coast Artillery play a large part in national defense maintenance, and the importance of the position of seacoast armament and antiaircraft cannot be overstressed.

Honorable Morris Sheppard
Chairman, Military Affairs Committee U. S. Senate

The fact that Congress realizes this is indicated by their action in adopting the five-year plan for the rehabilitation of the Pacific Coast, Panama, and Hawaiian seacoast armament. Some military leaders have said that the 74th Congress was generous during its second session, but this seems to be an overstatement. We were not generous because the limited funds available precluded any such action. We only indicated that we realize our responsibilities. The five-year plan when carried to completion, should result in adequate defense for our Pacific coast, Panama, and Hawaii. After completion of this program it is my belief that the Congress should give its most earnest attention to the ever pressing matter of providing adequate defense for our Atlantic and Gulf coasts.

The question of supplying tractor and railway artillery for seacoast defense has been seriously considered. Considerable weight had to be given to the fact that sufficient war stocks were on hand for the armament of all tractor and railway units. It was further realized that although this equipment was not of the latest desired type that it could serve a very useful purpose. The supply of improved railway and tractor matériel should be given a high priority as there is a real want of the latest modern equipment and this need is realized; however precedence should be given to more important seacoast and antiaircraft defense requirements.

The review of the antiaircraft situation is very difficult, for it must be realized that the condition there is most startling due to lack of proper equipment. The popular demand for a large and efficient air corps has overshadowed antiaircraft requirements. Some members of Congress and a majority of the people are not aware of the real needs of this essential arm. The actions of foreign governments in making the equipping of this arm one of first priority might well serve as a guide. Congress has provided funds for continued research and development and these funds have been expended wisely. Intensive research and development have been pursued with the result that at the present time we have efficient, standardized types of matériel. However, the lack of funds and the desire to perfect and standardize types before initiating their manufacture have prevented the supply of modern equipment to but a very limited number of units. A rearmament program for adequate antiaircraft defense should be seriously considered and sufficient funds made available for its execution.

Congress in its annual broad review of those items essential to provide and maintain a suitable National Defense, in keeping with our national policy, may be expected to bring the Coast Artillery into its proper relation to the general plan. For it to be properly trained in time of peace and to evolve its plans to be followed in the event of war, it is necessary to replace worn-out equipment and provide newly designed equipment more rapidly than in the past.

With a strong conviction that adequate defense is the best guarantee of peace, I promise whole-hearted support of measures to provide sufficient funds to build up the units of the Coast Artillery Corps.

Antiaircraft Defense in the Combat Zone

By Lieutenant Colonel J. B. Crawford, C.A.C.

There is absolutely no connection between field artillery and antiaircraft artillery other than they have both been called artillery.

CERTAIN students of military aviation in picturing the war of the future assign to the Army and to the Navy the minor rôles of affording a purely passive defense of the land and sea frontiers. This conception of the future war is predicated on the belief that victory will be attained by the employment of large forces of bombardment aviation which will launch attacks on critical centers of industry and of population in the zone of the interior until the will to fight of the hostile people has been broken.

There is yet another trend of thought which, while acknowledging that the final decision will be gained by land forces seizing critical areas in the hostile territory, holds that air operations will be chiefly conducted against sensitive points in the zone of the interior and important supply establishments and service elements in the theater of operations. Whether or not these thoughts are responsible therefor, it is apparent from a study of foreign and domestic military publications that considerable thought has been given to the defense of cities against air attacks. When compared to the detail in which plans for the defense of localities have been worked out, the subject of antiaircraft defense in the combat zone appears to have been treated in a more casual manner.

The Aerial Front

This paper is based upon the premise that the war of the future like wars of the past and of the present will finally be decided by the result of combat between land forces. This being the case, while in the early stages of a war the major air operations may be conducted primarily against the zone of the interior, it is believed that in the final stages every means available will be employed to secure a decision on the land. This will involve the concentrated employment of aviation against the hostile armies. If we examine the records of the final months of the World War we find the Germans in their offensive of March, 1918 concentrating the effort of their combat aviation against the forward British defensive elements with the purpose of furthering the advance of their assault divisions, and so in the war of the future it is believed that the commander who is attempting to gain a decision will not necessarily employ his combat aviation against large installations of the communications zone and service elements in the army rear area but against those elements of the opposing forces which offer the greatest threat to the attainment of victory on the battlefield.

The introduction of mechanized units has greatly increased the extent of the flanks of the terrestrial front with which any commander will be concerned. The introduction of aviation has added an aerial front to the terrestrial front and in any operation against troops of a first class power a commander of an independent force will be concerned with the establishment of an effective defense on this new front.

Antiaircraft Defense Measures

It should be accepted as fundamental that the commander will be responsible for the antiaircraft defense of his command to a degree commensurate with the means available to him for effecting that defense. In order that the commander may effectively combat hostile aviation he must have a clear perception of the capabilities of the hostile air force, a comprehension of how different lines of hostile air action may affect his tactical plan, and a thorough understanding of the different antiaircraft defense measures available to him as well as of the relative effectiveness of these measures. As regards hostile air capabilities, it is desired to stress the point that in many situations hostile air observation will afford a greater threat to the execution of the commander's plan than will combat aviation and that a careful estimate of the weight of these relative threats must be made in the formulation of an antiaircraft defense plan. Antiaircraft defense measures may be divided into two general classes, which for the sake of discussion may be described as passive defense measures and active defense measures. In effecting antiaircraft defense the coördinated employment of these two means of combating the air threat is imperative.

Passive Defense Measures

Concealment from air observation forms the basis of an effective passive defense against hostile aviation. While combat aviation may launch heavy attacks against important centers in the zone of the interior based on pre-war intelligence, it appears obvious that the effective employment of hostile combat aviation in the combat zone presupposes the prior location of suitable targets by air observation. In the war of the future in order to secure concealment it seems probable that marches will habitually be made at night without lights and in many

columns. Concealment suggests the desirability of locating service trains in villages and towns and the use of wooded areas for the bivouac and assembly areas of combat units, particularly those whose maneuver is planned to effect surprise. Camouflage will be employed to afford concealment to artillery in firing positions, ammunition dumps and other installations of a similar character. The use of dummy installations will assist in effecting a passive defense. Concealment during the concentration of large forces may indicate the desirability of such concentrations being made in large towns or in heavily wooded areas.

Dispersion of troops and installations will make the problem of hostile observation aviation more difficult and will offer less suitable targets to hostile combat aviation. This may necessitate the employment of extended distances and intervals between marching columns. When conditions demand that daylight marches be conducted the need for dispersion may result in marches being made across country in battalion or even smaller columns. It may make necessary the complete separation of foot troops from motor columns, the latter moving by long bounds from one area offering good concealment from air observation to a similar area. The dispersion of supply establishments should prove an effective means for providing a passive defense against combat aviation. However, in areas where the terrain is highly favorable for hostile mechanized attacks a greater dispersion of supply establishments may prove undesirable. Consideration of the questions of air and of mechanized defense may indicate the desirability of concentrating the supply establishments in one area and effecting antiaircraft defense through active means.

The emplacement of balloon barrages (barriers) proved very effective in the defense of London. Generally the employment of air obstacles in the combat zone appears to be impractical. However, in more stabilized situations and during marches through lengthy defiles or to protect concentrations which are being effected by rail, the employment of balloon barrages in coördination with planned antiaircraft artillery fires may prove effective.

It is desired to stress the thought that where other tactical considerations will permit, every available means for effecting a passive defense against hostile aviation should be employed. *So important is this question that it is believed that one very important use of our own air service will be to test by means of air observation and air photography the effectiveness of the means adopted to secure concealment and dispersion throughout the command.*

Active Defense Measures

With the present organization of our Army the commander of a larger unit may have available to him all or part of the following means for effecting an active defense against hostile aviation:

a. The automatic weapons and rifles of his combat and service units.
b. The machine guns of the antiaircraft artillery.
c. The gun batteries of the antiaircraft artillery.
d. Pursuit aviation.

A commander who has a clear picture of the effectiveness of the passive defense provided by his antiaircraft plan can more intelligently employ his active defense measures. For example when the tactical plan provides that a large reserve be located in a woods which provides effective concealment from air observation it will not only be unnecessary to provide active defense measures but the antiaircraft defense plan in order to secure secrecy may prescribe that this reserve withhold all fires against hostile aviation except when actually subjected to attack. In a defensive situation a commander will be particularly concerned with reducing the effectiveness of hostile counterbattery fires and this will involve on his part an estimate of the hostile capabilities for effecting air observation for the control of these fires. Are the passive defense measures provided by his antiaircraft plan sufficient or will he employ antiaircraft artillery machine guns or his antiaircraft artillery gun batteries or both to supplement these passive defense measures? Have satisfactory passive defense measures been provided for the defense of his airdromes, his command post, his larger supply establishments or must these measures be reinforced by active ones?

As far as practicable active defense measures should be employed to establish a coördinated defense. In some cases, particularly in defensive situations and in concentrations, this coördination should be such as to produce the equivalent of an area defense. In other words, the antiaircraft defense plan instead of conceiving of each unit of the command employing its weapons for its own close-in defense, should, if practicable, provide for the employment of these weapons so as to provide an effective defense over a given area. A case that comes to mind is that in a defensive situation where the antiaircraft machine-gun fires of the artillery with a division may well be coördinated with the fires of the antiaircraft machine guns of the artillery of an adjacent division and with those of the corps artillery. The machine guns of troops in reserve and in bivouac areas may be sited for antiaircraft fire and these fires may be similarly coordinated.

Antiaircraft Artillery

There is a conception of antiaircraft defense quite prevalent among military men which holds that combat troops must provide their own defense and that antiaircraft artillery units will be employed exclusively for protecting service elements and rear area establishments. Any such restricted employment of antiaircraft artillery by a commander appears to be faulty.

A commander will look upon his antiaircraft artillery machine guns as a means for reinforcing the fires of the automatic weapons and rifles of his combat and service units. With these fires coördinated an effective defense against low-flying aviation appears practicable. The

question of whether these machine guns will be used to protect combat elements from low-flying observation aviation or supply elements from low-flying attack aviation will be a matter for decision by the commander.

It should be clearly kept in mind that any belief to the effect that antiaircraft guns will be employed solely against high-flying bombardment aviation is an erroneous one. These may be the only weapons available to a commander for defeating hostile air observation and in many situations the defeat of hostile air observation may be more essential to the success of the commander's tactical plan than the nullification of bombardment activities.

Surprise, that element which has so often proved the most important essential to the success of a military operation, will prove more difficult of attainment as means to effect observation from high altitudes are improved. It is not difficult to conceive that a commander seeking to effect surprise may feel that the defeat of hostile observation is so essential to the success of his tactical plan that he will sacrifice the antiaircraft defense of his rear establishments in order to secure secrecy in the maneuver of his combat units.

It would appear that pursuit aviation will be employed chiefly to assist in launching offensive blows against the hostile air force and that the attachment of pursuit aviation to an independent corps or an army will not be normal. However, during secret concentrations and in similar situations the employment of pursuit aviation in support of or attached to a land force may be necessitated in order to insure secrecy. In this case every attempt should be made to coördinate the employment of the defensive pursuit aviation with that of the antiaircraft ground fires and with the antiaircraft-artillery searchlights. In more stabilized situations this coördination may be carried to such a degree that gun defense areas and air defense areas will be established.

Regardless of the measures taken to warn troops of impending air attacks, the speed of the airplane is so great that attacks from the viewpoint of ground troops will at times come with great suddenness. Under such conditions our air service and friendly combat aviation operating in the combat zone will probably be subjected to our own ground fires unless positive steps are taken to correct this defect. Such steps will probably include provisions for the employment of routes for friendly aviation that will avoid the gun fire areas of our antiaircraft artillery. The employment of such routes will also serve the purpose of positively identifying as hostile any air formations not following the prescribed routes. Planes should be marked and identification signals from air to ground provided for, and means should be provided to warn the ground elements, particularly the antiaircraft artillery, of impending friendly air operations within range of our ground fires.

Antiaircraft Intelligence

It is highly essential that there be disseminated throughout a command knowledge of the general characteristics of hostile airplanes and a general picture of the tactics enemy aviation is most likely to employ.

Furthermore, if prearranged antiaircraft defense measures are to be taken promptly to resist air attacks, means must be provided to determine when hostile air action is imminent and to give warning to troops of the approach of hostile aviation. This will necessitate the establishment of an observation net on the ground with which our own air service will coöperate and the provision of an effective alarm system. The reports on the air defense of London and of our own exercises held at Aberdeen Proving Ground and Fort Knox provide valuable lessons on antiaircraft intelligence in the zone of the interior. These lessons could well form the background for the development of an effective means for providing antiaircraft intelligence in the combat zone. Incidentally study of this question may develop the fact that an antiaircraft observation net may also be effectively employed to give warning of the approach of mechanized forces.

In our present organization, units have not been provided to perform this function of observation from the ground except for the antiaircraft artillery. With some expansion, however, it is believed that the antiaircraft-artillery intelligence service could be effectively employed to provide timely antiaircraft intelligence for the whole command. It seems essential that the personnel employed for antiaircraft observation purposes should be highly trained. With untrained observers false alarms sent out at the approach of friendly aviation would soon adversely affect the morale of a command and completely wear it down through constantly forcing it needlessly to adopt antiaircraft defense formations.

It is highly essential that an alarm system be provided. For this purpose *visual alarm systems will probably prove unsatisfactory*. The employment of howlers or other sound apparatus which can be set off by radio should be provided.

Coördination of Antiaircraft Defense Measures

From the foregoing we note that the means available to the commander in the combat zone for effecting antiaircraft defense include the employment of cover and dispersion by all elements of his command. We note also that the commander may employ the fires of the automatic weapons and rifles of his subordinate units and that he may reinforce these with his antiaircraft artillery machine guns. Furthermore his antiaircraft artillery gun batteries afford him an active means of defense against high flying aviation and on occasion these gun batteries may be employed in conjunction with pursuit aviation which has been placed at his disposal. It seems reasonable to suppose that a command which has been indoctrinated with a sound and uniform scheme of passive defense measures and whose antiaircraft defense plan provides for the coördination of its antiaircraft fires, should prove far less vulnerable to air observation and air attack than does one which has not adopted such measures.

While a commander will still be chiefly concerned with the maneuver of his forces on the terrain with a view to accomplishing his mission, most certainly in a war of the future an effective defense of this force from hostile air operations will deeply concern him. With this tactical plan in mind he will give consideration to the hostile air capabilities and to those elements of his command whose protection from hostile air operations is most essential to the success of his tactical plan. He will be concerned with the question of whether his antiaircraft plan provides for the employment of every available means for effecting a passive defense. He will give consideration to the abilities of different elements of the command to effect antiaircraft defense with their organic weapons. His antiaircraft defense plan will then provide for the reinforcement of these antiaircraft fires by the fire of his antiaircraft artillery and he will make every effort to see that the antiaircraft defense plan provides for a coördinated employment of all these means of antiaircraft defense.

Our Present Organization

While our present War Department publications are not uniform on the subject, the bulk of them seem to indicate that the antiaircraft artillery in the corps and the army will operate under the Chief of Corps Artillery or the Chief of Army Artillery. This appears to be a very faulty arrangement. Without going into any lengthy discussion of the matter it would appear that considering their missions, there is absolutely no connection between field artillery and antiaircraft artillery other than that they have both been called artillery. The author of this paper has observed the conduct of map exercises and map maneuvers through a period of years at the Command and General Staff School. Attempts to troop lead the command and staff elements of the corps in various tactical situations and to show any reasonable connection between the antiaircraft artillery and the Corps Chief of Artillery have always proved embarrassing. Instructors and student officers of different arms of the service who have dealt with this matter have invariably come to the conclusion that our present organization should be changed and that the antiaircraft artillery should operate directly under the corps or army commander. As a result in map exercises now being conducted at the Command and General Staff School the antiaircraft artillery operates under the corps commander, not under the Corps Chief of Artillery.

If the commander of an independent force will in the war of the future be so concerned with an establishment of an effective antiaircraft defense as this paper would imply, it seems essential that the commander have on his staff an officer who will act as his adviser on all antiaircraft defense measures. This officer could well be the antiaircraft artillery commander.

Summary

Considering the important part that aviation will play in war the following steps are considered of importance to enable our army to operate effectively:

a. Our corps of officers should be indoctrinated with the thought that the coördinated employment of every available means of antiaircraft defense will be a most important function of command. This involves the placing of antiaircraft artillery directly under the commander.

b. The staffs of the division and larger units should provide an adviser to the commander on antiaircraft defense matters.

c. The organization of the corps and the army should provide the means for establishing an antiaircraft observation net.

d. The technical means for providing an effective alarm system should be developed.

Battery B, 62d C.A. (AA) Fort Ontario, N. Y.

A Bas Eligibility!

By Major General Johnson Hagood, *U. S. Army, Retired*

General Staff officers were selected by main strength and awkwardness.

THE Army has a predilection for tying its hands by establishing rigid rules of eligibility that eventually interfere with the most effective use of military personnel.

The procedure for regaining the freedom of action that is properly the prerogative of those responsible for the efficient administration of the Army varies. It may take the form of expanding the eligibility lists until they are meaningless. Otherwise, the obstacles to placing in key positions the officers whom those in authority consider best qualified must be circumvented by a resort to technicalities. For instance, officers who for one reason or another are not eligible for detail on the General Staff are *attached* to the General Staff and serve in such capacity at almost every corps area headquarters. They do the General Staff work but they cannot wear the General Staff insignia or enjoy the prestige that attaches to serving on a General Staff detail. Some of them lay down their tools and go off to school to qualify for the same work they have been doing in superb fashion.

There was the case of an officer who served on the General Staff before the World War. He was re-detailed on the General Staff and served in that capacity in France during the entire period of the World War. He received the Distinguished Service Medal for his war-time General Staff work (he also received a Silver Star Citation). He was a distinguished graduate of The Infantry and Cavalry School, a graduate of The Staff College, and a pre-war graduate of the Army War College. After the war, while serving as chief of staff of a corps area, he received word that he was not on the General Staff Eligible List, and for that reason would be forthwith relieved from duty with the General Staff. This blow was somewhat alleviated by the statement that he would shortly be subjected to a purifying process. He would be sent back to the Army War College to take over again the course in which he had already graduated and would by this means be made eligible to perform the duties that he had already been performing with marked distinction for a considerable period of years. And that is what was done.

The common-sense practice of utilizing capable officers in staff positions regardless of technical disqualifications for the performance of such duty brings to the fore the whole question of eligibility.

Now the purpose of an eligible list is to isolate certain supermen especially qualified for some particular class of duty. In theory all others are thereby excluded from performing that work. The inherent difficulty is that the smaller the eligible list the greater number of qualified men excluded therefrom. And the larger the eligible list the less excuse there is for its existence.

I hold that the average American Army officer is qualified to perform any duty in the Army (line officers are excluded from medical work, but medical officers are not excluded from line work). When I say qualified I mean that they are better qualified than the average of those who have performed corresponding work in the past or will perform corresponding work in the future *in time of war*. In a great war, we will have to have from three to five hundred thousand officers. Is it not ridiculous, then, to say that there is any type or class of ordinary routine peace-time duty that cannot be well performed by the average young officer of the regular forces? I say young because, in my opinion, age and other physical infirmities are the only limitations. It is an advantage for an officer to have had a college education, to have gone to West Point, to have been graduated from the service schools, to have exercised an independent command, to have had duty with the civilian components, to have served under the tutelage of able superiors. But Napoleon had none of these advantages and no one of them is necessary to fit an officer for the performance of routine duty.

A man's qualification to perform staff duty is a matter of fact or a matter of opinion on the part of the man who wants to use him. It has no relation whatever to any artificial set of human standards established by law or regulation.

Up to 1920 we had no General Staff Eligible List. Prior to that date General Staff officers were selected by main strength and awkwardness. This system brought to the fore men like Colonel E. H. Crowder; Lieutenant Colonel Henry P. McCain; Majors George W. Goethals, William P. Duvall, and Montgomery M. Macomb; Captains John J. Pershing, Peyton C. March, Joseph T. Dickman, Charles H. Muir, Charles T. Menoher, William G. Haan, Dennis E. Nolan, and others of the original 1903 General Staff who today might be classed as military illiterates, since they were never educated in a General Staff school. They, like Bell, Liggett, Craig, McCoy, Malone, Moseley, Fox Conner, and others, crashed the General Staff for a period of fifteen years, but still the Army and the country managed somehow to survive. In the World War, civilians and ex-Quartermaster sergeants served creditably—even with distinction—as General Staff officers. Then with peace came the sudden realization of the importance of protecting ourselves by an eligible list.

And consider our experience in the selection of gen-

eral officers. Evidently the old-fashioned method of picking out such men as Grant, Sherman, Sheridan, McClellan, Lee, Jackson, Beauregard, Johnston, Pershing, Wood, March, and Bliss was all wrong, for we now have a law providing that generals should be selected only from colonels carried on the eligible list.

It would be difficult to name the particular American officers who served with greatest distinction during the World War. But merely on an *ex officio* basis we may be excused for suggesting the following:

The commander of the A.E.F.	1
The army commanders	3
The corps commanders who had active service at the front	7
The commanders of the S.O.S.	2
The American representative on the Supreme War Council (Bliss)	1
The chief of staff of the Army (March)	1
The head of the War Department Supply System (Goethals)	1
The author and administrator of the Draft (Crowder)	1
The commander of the Army of Occupation (Allen)	1
The commander of the Siberian Expedition (Graves)	1
The father of preparedness (Wood)	1
Total	20

None of these except Liggett and Bliss had ever been prominently identified with the service schools. The significance of this would appear to be that intrinsic character is more important than the ever-changing military technique taught at Leavenworth. The schools are tremendously important, but there are other things that count.

Every ambitious officer in the Army wants to go to school. He will sacrifice anything for a school detail. But he does not thirst for knowledge. What he really wants is to get the schools on his record. And the sad part of it is that many of the best officers in the Army are eating their hearts out because Father Time has beaten them out in the race. While serving in the grade of captain they become forever ineligible for promotion to general. At least that is what they fear.

The present General Staff with troops is picked by corps area commanders, by chiefs of staff, by G's, and by others who, without access to records, paw over the voluminous eligible lists. In many cases they ask for men whom they would not recognize if they met them on the street. The original General Staff of 1903 was picked by a board of officers who knew their men. That day may come again.

It is all right to have a preferred list. It is essential to have men slated in advance for high command in war. It is of prime importance that we should develop in time of peace a system of selection that we could use in time of war. But we should not have a fast-running stream of eligibility which carries down the great mass of mediocrity and leaves behind in the eddies some of the best men in the Army.

MODERN RAILWAY BATTERY FIRES A SALVO
14-inch guns of the 3d Coast Artillery, at Don, California.

The Man Behind

By Colonel George U. Harvey, Inf.-Res.

THE essentials of a system of national defense may be said to be officers, munitions and men. In many of the older European countries all are represented in large standing armies. For these the democratic alternative is a nuclear system which may be expanded when danger threatens and expanded promptly enough to avert it. The idea back of the latter is not to be immediately ready but to be ready to make ready when the time comes.

The old notion that "embattled farmers" could be transformed over night into a defensive fighting machine was dispelled by the World War. It might have had some force when there were certain parallels between squirrel hunting and fighting battles but they no longer exist. Besides, squirrel hunting has ceased to be a national avocation.

The World War brought home the disconcerting fact that the only difference between the American system of national defense and the systems of older countries was that theirs were big and ours was little. The "resiliency" or "expansibility" by which a little system could be converted with reasonable promptness into a big system—which was to have been provided by the militia—did not exist. Subjected to the tension of actual conflict it snapped like an old rubber band.

Under the circumstances it was necessary to build up a new big army to supplement the old little one, not to stretch a little army into a big one. Industry had to be relied upon to provide munitions. The draft provided the men but, obviously, neither was of much value without the skill to use them to best advantage. Accordingly, effort was centered at the outset upon the training of officers. We have since come, as a matter of policy, to regard officers as the primary requisite in providing the "expansibility" which is essential to a nuclear system of national defense. They supply the resiliency which makes it possible to convert a small defensive force into a large defensive force with a minimum of delay and expense.

The older men in the service will remember that at the outbreak of the World War the dearth of properly trained officers was the most formidable difficulty that lay in the way of raising an army. All told there was available only a sufficient number to handle a force of about 250,000 men. The War Department called for an army of four millions. Fortunately, while we were trying frantically to train the men necessary to that end, our allies held the lines. Some day a situation might arise when there are no allies to afford us such a breathing spell.

War was declared on April 6, 1917. By the middle of May men were assembled in officers' training camps to receive ninety days of instruction. These ninety-day commanders—and I was one of them—were, in September, given charge of drafted men. How we accomplished what we did is still one of the mysteries of the War.

It is possible, of course, to acquire, out of books, a considerable store of information in ninety days and we did our best. But there are many things about soldiering that are not to be learned from books. They can be taught only by experience. The individual soldier is not like a piece of mechanism that will always respond the same way to the same conditions. He cannot be reduced to a mathematical formula. To make him an efficient fighting unit one must know something of what he thinks and how he acts. Textbook study ill prepared us for dealing with the human equation. It helped little to weld into an effective combat unit men who had never been in an army and had only vague notions of military training and practice.

The new men, like the new officers, came from all walks of life. They knew nothing of time-honored organization traditions. Discipline—army discipline—was foreign to them. It was not to be expected from men who had all their lives up to that time, conducted their own affairs in their own way. We had exceptional raw material in both officers and men but without actual army training they made slow progress in adjusting themselves to their new status as soldier. We spent much of our time arguing with our seniors, questioning orders and wondering who the hell was bossing us. As free Americans, subordinate officers and men had a hard lesson to learn before settling down to what they were told. Few of the real difficulties we encountered in learning soldiering could be met by consulting textbooks.

In 1917 and 1918 the situation confronting us appeared to many of us to be little short of hopeless. Only dogged perseverance and a willingness to learn made it possible to build up the great army which eventually faced the foe abroad.

Today these conditions have changed. There are 96,000 in the Reserve Corps who, unlike the officers who stepped out of civilian life in the World War, have learned to obey orders, to understand team work, and to make the most of the spirit of pride in the organizations in which they serve. Ninety to ninety-five per cent of these Reserve officers have been commissioned since the War. They know their duties, they have been properly disciplined, they have the book knowledge, but they do not know the soldier—how he acts under fire, what can be done to sustain his morale, how he can be fitted most advantageously into the fighting unit of which he is a part.

This is not the fault of the War Department. It is due to the lack of an enlisted reserve—a sufficient enlisted reserve to provide a rounded, complete nuclear system of defense which would have all the elements of a large fighting force. At the present time the enlisted

reserve has dropped to 3,847 men. The Chief of Staff and the Secretary of War agree that a minimum of 150,000 is necessary. Up to the present time we have had a potential reserve of men who served in the World War, but after nineteen years of civilian life without training they cannot be relied upon to meet this need. Their effectiveness has also been reduced, in many cases, due to increased age.

Under the circumstances it would appear to be the part of wisdom to consider establishing an enlisted reserve that would not only constitute a nucleus of man power but would afford officers of the Reserve an opportunity to supplement their textbook training, and limited periods of active duty training with actual experience in the command of enlisted men of their own component.

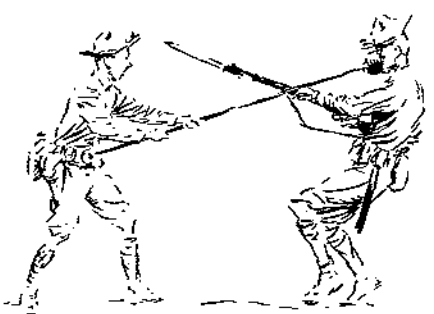
We have such a potential enlisted reserve in the Civilian Conservation Corps, or, at least, the foundations for it. The plan, with some modifications, would provide a reservoir of more than a million young men who would be available for the enlisted reserve for the next fifteen years.

Now that the depression is passing, the pressing need of C.C.C. camps for the purposes of relief will probably subside. Instead of abandoning the system, which has served a very useful purpose, altogether, the framework might be taken over by the War Department and made a part of the military establishment. The boys could carry on the usual activities without serious interference with their military training. As potential soldiers they would be assets of inestimable value. At the end of their courses they would be familiar with military training and could be called upon in an emergency. Given six months in the army, they could, after discharge, be assigned for five years to the enlisted reserve. The cost would be small compared with the saving, in lives and money, that it would effect in the event of war.

The youths of this reserve could be drilled once or more a week and ordered to a military camp each summer for thirty days. They probably would enter into the spirit of military life and their work could be divided into fifteen days of drills and fifteen days in the field or on the march. By this means the country could be given, for the first time in its history, an adequate reserve and the Reserve officers afforded actual experience in the command of enlisted men of their own component which is now lacking.

MILITARY DRILL *is one of the most democratizing elements at work in our student body. It crosses all lines of college, church, fraternity, or social organization. It is susceptible to no pull or favoritism. It measures all classes, rich and poor, idle and industrious, social and misanthropic, by the same standard and insist on efficiency or elimination. Its principle is "do" or "get out"—a most desirable antidote for the enervating policy of indulgence pursued by so many American parents and college faculties which tends to develop a race of mollycoddles and inefficients.*

I am not disturbed by the fears of some of my pacifist friends that such military drill as we are proposing will develop a militaristic spirit. This nation is much more likely to go to pieces upon the greed of Mammon, or indulgence in the lust of eye and of the flesh, or the pursuit of pleasure and other dangerous rocks of that kind than upon any development of a warlike spirit.—DR. EDMUND J. JAMES, president of the University of Illinois, before the Military Committee, House of Representatives.



Highway Traffic and Modern War—I

By Captain Joseph I. Greene, *Infantry*

The victory may indeed go to the commander who best knows how to use the arteries of civilization.

IN the short space of 24 hours more than 50,000 motor vehicles can pass a given point on an ordinary paved highway. These figures involve no special conditions or methods of traffic control, and no special type of vehicle. They show simply the number of cars, trucks, vans, and busses, of ordinary civil traffic, that would pass a point on any good two-lane highway, if the highway operated to full uncongested capacity during every hour of a single day. In fact, every day, on hundreds of highways, vehicles pass at this rate during the busiest hours. And on a few super-highways and stretches of three-, four-, and six-lane roads, the rate of flow rises considerably higher. A modern, fully motorized division would contain something like 2,000 vehicles; a corps, perhaps 10,000; an army, several times that number. Thus the total quantity of traffic that a single primary two-lane highway will carry in one day without jamming up the traffic is roughly equivalent to the vehicles of a motorized army in the field.

The commanders of divisions, corps, and armies, however, are not so interested—in time of war, at least—in watching their units pass a given point in review, as they are in moving them from one place to another in carrying out a plan of maneuver. Their main interest lies in knowing how long it will take to move their forces from one area to another; how long, for example, will it take to move 50,000 vehicles 100 miles?

If military traffic can be made to flow in a manner comparable to that of civil traffic—and there is no reason, much of the time, why this cannot be done—50,000 vehicles can move a distance of 100 miles on a single good road in 27.5 hours; 10,000 in about 8.5 hours; and 2,000 in about 4.5 hours. It is not likely, to be sure, that an army of this present age will ever need to move on a single road. The foregoing figures simply show, by way of introduction, what is reasonably possible on one road. Where there are five highway routes running approximately parallel, 50,000 vehicles could be moved 100 miles in 8.5 hours; and where there are 10 routes, they could be moved that distance in about 6 hours.

As this article will show, these figures are entirely within reason. If the conglomerate stream of civil traffic can flow at these rates, certainly, when the emergency requires and primary highways are available, military traffic can do the same thing. That is, it can do it, if we learn to use our roads efficiently to their full capacity. And this we must learn by studying the manner in which civil traffic flows and the general laws that govern its flow.

There is no aspect of modern traffic that does not have importance in warfare. Rapidity of movement is what we want. The faster we can move troops over long distances, the closer we can come to taking advantage, strategically or tactically, of the speed we know that modern vehicles are capable of. But this we cannot do without placing traffic high upon our military curriculum.

"We shall never be able to handle vehicles in such numbers!" is a cry that we often hear. A cry not so much expressing a reactionary or conservative opinion as an honest belief, based upon the memory of hideously tangled traffic in narrow French roads, and of Sunday traffic jams on highways leading into any American city. Should we not see first, before we join in this cry, whether modern methods do not successfully avoid such traffic tangles? Can we observe any busy highway, along which thousands of independently moving vehicles go by in an hour's time, and still say "It can't be done"?

Until we have studied and are thoroughly familiar with every subdivision of modern traffic methods—in particular, highway traffic control and highway road capacities, we have no right to decide that roads are too rough, highways too narrow, or potential military drivers too unskilled. Until we acquaint ourselves with matters that are vital to a warfare of motors, we are not even justified in despairing of the threat from the air. The division commander who can move his unit 100 miles or more between dawn and the hour at which the morning haze has cleared away can thumb his nose toward the hostile skies. And so can the army commander who moves his fighting units a like distance between dawn and dark, on a day when friendly clouds hang low. But if either of them expects to take the road without a thorough knowledge of highway traffic, delay may all too easily follow delay, leaving the force exposed to hostile bombardment and attack.

What does it signify that motor columns became badly tangled at the Army maneuvers of 1935 or 1936? Were road capacities studied beforehand? Was allowance made for superimposing a heavy military traffic upon existing civil traffic? Were the delays due to normal or unusual cross traffic studied beforehand? Was information available as to the reasonable speeds of travel on all roads in the area? Or did columns move out half blindly, trusting to luck to get them through on time?

What we learn in summer maneuvers involving motorized and mechanized units is all to the good except in one respect. There, we move peace-time maneuver units under peace-time conditions. The limitations of these

conditions are far too great for us to learn what we need to know about the handling of motorized and mechanized units in modern war. We only learn how to operate sizeable motor units smoothly and efficiently under the circumstances of highway and city traffic that daily obtain. The very care we take to interrupt civil traffic as little as possible, and to fit our military units into the normal flow, cannot help blinding us to the full possibilities of motor movement.

It is also worth while to anticipate here at the beginning one other pessimistic question before we tackle the main job at hand: What good will a study of traffic on travelled highways do us, it may be asked, when motorized and mechanized units may often have to use byways, or move across country when that is practicable? The answer to this question is easy. First, the word "highway," as most motorists know, may signify a twisting, narrow, one-lane, topsoil road meandering into remote districts, as well as a magnificent, hundred-foot speedway connecting neighboring cities. This is the broad sense in which "highway" will be used in this article. At the same time the total mileage of hard-surfaced roads of two lanes and more in the United States forms a remarkably large fraction of all our highways. There are about 400,000 miles in our primary highway system, and about 2,700,000 in our secondary system. In motor movements covering long distances the primary roads are the main channels. Then again, much that applies to traffic on a good highway applies also to a cross-country track through a cow pasture. In general, however, by far the greater part of a motorized or mechanized movement will be made on the best roads available. It will not strike the byways until contact with the enemy is imminent. This is especially true of mechanized elements. Weak bridges prevent long-distance cross-country movement unless recourse is had to bridge building. Not even amphibious tanks can cross steep-banked streams without preparation of approaches.

Although the first part of this article will deal chiefly with the possibilities of traffic on primary highways, we should remember that the broader laws of traffic movement hold on any kind of a road. Traffic on secondary highways will not be discussed until after we have studied in detail the military applications of traffic on primary highways.

We have just seen two wars in which motors were vitally important. Although thousands of pack animals were used, the progress of the Italian army in Ethiopia depended in large part upon motor vehicles. In the Spanish civil war, both armies have made heavy use of motor columns, requisitioning civilian-owned vehicles in considerable numbers. The first of these wars took place where motor roads were non-existent; the second, where the main road net is good but thin. But if war should come where great road nets spread their close web over the land, where highways vie with railroads as the arteries of civilization, the victory may indeed go to the commander who knows best how to use them both.

Let us turn now to consider traffic in its daily flow, and see what we can learn from it.

On any morning of the year some millions of people in the United States get into automobiles and drive to the towns and cities where they work, or sell their produce. During the day commercial vehicles, also numbered in millions, move on their errands, not only within municipal areas, but out along main highways to more distant places and back again. As the day ends, the general movement surges out again from centers of population to homes and farms.

To these three main traffic waves of any given day must be added a fourth, which overlaps all of them. We must include those vehicles, numbered by hundreds of thousands, whose travel is not limited to a 40- or 50-mile radius around cities or towns. Busses, freight vans, and trucks on regular runs, cars of commercial travellers, and those of tourists—all of these are superimposed on the more local traffic surges, extending the flow throughout the hours of the night.

There are nearly 26,200,000 motor vehicles registered in this country. Most of them go somewhere daily. And for the most part they get where they are going with surprisingly little difficulty in spite of their numbers. It is only in the cities and towns, and on the main highways, that the major problems of traffic arise. But in those two places traffic troubles are often acute.

These troubles are not merely matters of police control or of common rules of the road. Indeed, the broader aspects of highway and city traffic are nothing short of major engineering problems, comparable to such vast projects as flood control. And to the direction and control of our great vehicular streams some of the most capable and practical engineering minds of the nation have turned.

When these men began to examine into the traffic difficulties of large cities, they at once found that few if any of the traffic problems were purely local. They found that all of the traffic within a large area had to be studied before they could arrive at solutions for specific traffic tangles. Today, the main principles governing traffic flow, especially those that have to do with the capacities of highways and streets under various methods of traffic control and regulation, are well established. True, not all of the biggest puzzles have been solved. The Coney Island traffic returning to New York City at the end of a summer day still jams the East River bridges and their approaches for hours at a time. Nevertheless, the reasons for such congestion are now clearly understood, and in many places it has been possible to apply corrective measures. Where one hard tangle of traffic remains incomplete of final solution, a hundred highways and streets now carry their heavy traffic streams easily and rapidly because guesswork has been brought to an end and the basic laws of traffic have been applied.

The recent safety campaign to cut down the tremendous number of accidents has also contributed to an understanding of traffic. For the first time such matters as safe braking distances and universal rules of the road have received the wide attention they deserve. Safety, however, has simply caused a particular and important

stress upon traffic factors that had already been studied at length. And as will be shown in detail later, accidents, in spite of their appalling numbers, actually have little effect upon traffic flow and its governing laws. It is true that there are over 3,000 reported accidents each day. But then the automobiles in this country travel some 650 million miles a day, which means that there are more than 200,000 miles of car travel per accident.

The foremost traffic expert of the United States, Dr. Miller McClintock, Director of the Bureau of Street Traffic Research of Harvard University,[1] compares the flow of traffic to the flow of streams—especially with regard to the "frictions" within the traffic flow which bring about accidents. A highway is also comparable to a river in that it will carry only a certain maximum load. But engineers can often increase the rate of flow of a river by straightening its course and making its banks smoother. Likewise many things can be done to increase the speed and quantity of flow on a highway. Dr. McClintock and his co-workers are the leading authorities today on these matters. His writings have been a primary reference source in preparing this article.

Another important source is the work of Dean A. N. Johnson, College of Engineering, University of Maryland,[2] whose studies on highway capacities contain much data of value. A third source is a study made in 1931 by a committee of the American Road Builders Association, consisting of the chairman, Mr. M. O. Eldridge, Assistant Director of Traffic, Washington, D. C., and fifteen traffic engineers and other experts on city and highway traffic from different parts of the country.[3] Various traffic surveys made by the Bureau of Public Roads, U. S. Department of Agriculture, during the past few years, have formed still another source of important data. These will be referred to by title at the appropriate places in the remainder of this article.

It is only from such authoritative sources that we can obtain the basic information we need. It is true that this data has to do with peace-time civil traffic. We shall have to interpret it in the light of war-time motor movements. Hence, a brief comparison of the differences between military traffic in war and daily traffic in peace may well be our next step.

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In war, it is true, we do everything we reasonably can to avoid interference with civil pursuits. But can we suppose for a moment that a modern army in movement will not take over full control of the highways for its uses when a real necessity for so doing arises—a condition that seldom if ever happens in time of peace? This does not mean that an army may block off main routes for weeks or months. But for a period of hours or days, while important troop movements are under way, the highways must come under military control. Actually, as a matter of past experience, they do come under military control in war by virtue of the very passage of great bodies of troops over them. During the passage of large motor units hastening on a military mission, this is particularly true. Such civil traffic as hazards movement on the same route may do so at considerable risk, for when it comes to an immediate determination of right of way, the military traffic will ordinarily get it through sheer numbers. At the same time, any amount of civil traffic on the route of a motor movement will not only hinder it, but may even reduce its speed to the point of crawling congestion. A highway can only carry a certain number of vehicles at a given time. (This is a point that we neglect entirely in map problems, which are customarily presented as if roads were empty of all traffic save the military.)

The blocking of main highways for the passage of an army does not necessarily mean that civil traffic flow must cease. Ordinarily the road net in any civilized nation today will permit detour routes. Moreover, it is a simple matter to construct temporary overhead viaducts for cross traffic on main highways. This is a step that must be taken, of course, when interference by military traffic is of long duration or otherwise serious.

However we look at the matter, then, it is desirable for highways over which great quantities of military traffic must pass, to come under military control during the passage. Only in this way can full military advantage of them be taken. This will require advance traffic details large enough to block off the route to all but military traffic, and to coöperate with civil police in accomplishing this end. But there should be no great difficulty in that.

This indeed, is the one big difference between military motor movements in peace and in war. For when we can take over the complete control of a highway for the passage of a military force, we immediately eliminate the factor that hampers our peace-time motor movements and change the whole aspect of traffic. Instead of a ribbon of roadway along which we must filter our motor columns through the never-ceasing and irregular eddies of two-way civil traffic, we have a through channel down which our motorized and mechanized brigades and divisions should be able to flow smoothly and rapidly.

Most important of all is the fact that this control of highways permits us to establish a one-way flow whenever we need it. This gives us a further advantage that we can never have in time of peace. All main highways have at least two traffic lanes. When traffic moves uninterruptedly in a single direction, there is nothing whatever to prevent the full use of two, three, or four lanes, where they exist, instead of a single lane. We can use all the road for one-way traffic instead of half the road. We have a double track instead of a single. This important advantage we shall go into in greater detail a little later on.

There are, of course, other differences between war-time and peace-time motor movements, particularly as regards drivers, military training and control, condition

[1] Dr. McClintock is also head of the Traffic Audit Bureau, New York City. A summary of the work of the Harvard Bureau of Street Traffic Research appeared in *Fortune*, August, 1936.

[2] *Public Roads*, May, 1932.

[3] *Bulletin No. 23, A. R. B. Association*, Washington, D. C.

of vehicles, and visibility. These require only the briefest consideration.

In the United States today there are roughly 1,000,000 men who are gainfully employed as chauffeurs and drivers. There were, however, nearly 3,500,000 trucks registered in 1935, more than half of which are of 1½-ton capacity or larger.[1] Can there be any question as to the availability of experienced drivers if war should come?

Military drivers have the advantages of uniform methods of operating vehicles and of being under military discipline and control. Moreover, in war the average military vehicle will be in better running condition than the average car on the street or highway. In extended operations it may not be possible to maintain a high state of repair and maintenance, but it is hardly likely that the care of military vehicles will ever become as haphazard as that of the average civilian vehicle on the highway.

It is true that military vehicles may have to be used under more severe conditions of terrain, and during periods of lower visibility, than are usually encountered by the average non-military vehicle. But for the time being let us postpone consideration of such matters as cross-country runs, night movements without lights, and the effect of hostile activities on motor movements, until we have studied at some length what can be accomplished on primary roads. For it is on the good roads, as suggested earlier, that we shall reap the greatest military benefits of motorization and, in large part, of mechanization. Only on primary highways can we travel at full speed.

But what is full speed? In 1930 and 1931 a comprehensive study of highway traffic capacity was undertaken coöperatively by the Bureau of Public Roads, the State Roads Commission of Maryland, and the University of Maryland, under the supervision of Dean A. N. Johnson. In this study, traffic counts were made at 107 points on 2-, 3-, and 4-lane highways to determine the number of cars passing in both directions per hour, and also to determine the point at which traffic congestion began. The cars in free traffic move at different speeds, of course. But during the study, notation was made of the average speed of vehicles on the open highway. When the flow of traffic was not so great as to cause congestion, the average speed of traffic was found to be as shown in Table I.

TABLE I

Width of road	Speed of traffic (mph.)
2-lane	25 to 35
3-lane	35 to 40
4-lane	35 to 40

A more recent survey, carried out during the summer of 1934 in Rhode Island, gives further data on the speeds of highway traffic. Here are some of the findings:

The average driving speed of 675,000 vehicles observed on the open highway was 33.8 miles per hour.

The average driving speed of through traffic (vehicles from outside the State) was 35.9 miles per hour.

The average driving speed of light trucks was 31.2 miles per hour; and of heavy trucks, 28.4 miles per hour.

The percentage of drivers exceeding the speed limit of 45 miles an hour was 10.7 per cent. (The speed limit signs in Rhode Island are advisory only.)

The average driving speeds given above include all variations of weather between June 29 and September 26. The report states that the effect of weather conditions on vehicle speed was apparently negligible.

The effects of grades and curves on speeds were also negligible. The roads surveyed, however, were of high standard design having no sharp curves or steep grades.

It should be noted that these average figures also included the slower traffic of the rush hours on suburban highways. We may therefore assume that the average speeds, exclusive of rush hours, were somewhat higher. This is borne out by other figures obtained by the University of Maryland—43.3 miles per hour as the average open highway driving speed of civilian vehicles during daylight hours, and by the University of Michigan figure of 41.5 miles per hour as the average driving speed at night. All of these figures include vehicles of every type and age.

A glance at these figures tells us that they are within our own experience. In driving an individual car, 50 or 60 miles per hour is readily possible, when traffic is light. But when traffic is heavy, although not heavy enough to cause real congestion, 25 to 45 miles per hour is about the average bracket of speed.

When traffic flows in one direction only, and cross traffic is closed off, as must largely be the case in important motor movements, the daylight speed on good roads should be about the same as that of ordinary traffic. The fact that military columns are usually composed of heavier vehicles than ordinary traffic should make little difference. On good roads cleared of other traffic, most types of military vehicles can be driven at 40 miles an hour or even better. This we know to be true for individual tanks, armored cars, medium and light trucks, truck-drawn light artillery, scout cars, and reconnaissance cars. A few heavy types of special vehicles such as ordnance repair trucks, gasoline tankers, and similar vehicles, may not be capable of 40 miles per hour. Nevertheless, it is a common sight on all main highways to see freight vans, busses, and tank trucks, every bit as heavy as comparable military vehicles, moving 45, and even 55 and 60 miles an hour. Thus, we are forced to the conclusion that whatever heavy military vehicles we now have that cannot move at 40 miles an hour are obsolete. However even the fastest heavy vehicles must take grades and turns more slowly, and may thus delay the movement of lighter vehicles in columns composed of both.

A column made up entirely of scout cars, reconnaissance cars, light (1½-ton) trucks, motorcycles, and truck-drawn 75-mm. artillery, with all heavier vehicles moving in another echelon, can approximate under good conditions, the average speeds of highway traffic. Such columns can move at a maximum running speed of 40 miles per hour, and can keep up an average speed, including all normal halts, of 30 miles per hour or better.

[1] *Public Roads*, August, 1936; and *The World Almanac*, 1936.

In other words, on primary roads closed to cross traffic, large columns of vehicles should be able to cover somewhat greater distances in a given time than are now generally believed or taught as possible in our schools. Certainly if vehicles of every type and weight can move 40 miles per hour in the give and take of daily traffic, military vehicles, all moving at the same speed, can go just as fast on similar highways under similar conditions.

The speed for daylight motor movements now used in problems at the Command and General Staff School is 25 miles per hour. When halts and unnecessarily long periods for entrucking and detrucking are averaged in, few motor movements in these problems will average much above 20 miles per hour. It is suggested here that although a set speed for daylight motor movements makes for simplicity in the solution of map problems, the use of a set speed is bound to get us into a bad habit of mind.

Existing tables of rates of march take far too little cognizance of the probable variations in motor vehicle road speeds. They give us only one speed for each principal type of vehicle for all types of roads. Common sense and daily experience tell us that practicable running speeds may vary from about 1 mile an hour to 45. We can go 50 times as fast skimming down a main route as we can creeping through the mud of a cornfield detour. Thus, if the logistics of any extended motor movement are to be estimated with even fair accuracy, we need to know the reasonable running speeds for all the types of roads on the route. In fact, the type of road is more important than the type of vehicle, when motor vehicles alone are concerned, because modern motor vehicles of all sizes are capable of high speeds on good roads. At the appropriate place in this article, detailed suggestions for thus enlarging rates of march tables will be presented.

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In order to approach logically a study of the capacity of primary highways of two or more lanes, let us first consider a *one-lane, one-way* road. Let us see what such a road will carry under the conditions we have already discussed—no cross traffic, no civil traffic mixed in with the military, and daylight hours.

Of course, a one-lane, one-way road is never found as a main highway. In some states 9-foot roads with good shoulders were the first type built on long main routes through sparsely settled regions. But for the most part, these have long since been replaced by 18- and 20-foot roadways of the usual types. Nevertheless, let us think for the present of a one-lane, one-way road, which is equivalent in most respects to a single lane of a two-lane road.

In order to determine the maximum traffic that any road will bear, we must ordinarily think in terms of columns of vehicles. Under certain circumstances, military vehicles in numbers may be operated in much the same manner as civil traffic, but for the present let us confine our attention to column movements.

The maximum number of vehicles that can pass over a given stretch of road at a given average speed depends chiefly on the driving distance, or the length of road each vehicle occupies while in movement. The driving distance, we may assume, can be set in advance for all the vehicles of a column. It may be advisable to have two driving distances, one for fast travel on the open highways, and one for closed-up movement through populous districts. Or it may be best simply to have a set driving distance for the fastest running speed and permit vehicles to close in naturally at slower speeds. In either case, it is not to be expected that driving speeds can be maintained rigorously throughout a motor movement. However, some normal driving distance for the maximum running speed should be set, and adhered to in general by all drivers in a column.

We must also think of the driving distance as including the length of a vehicle; that is, driving distance is measured from the rear of one vehicle to the rear of the next. In much of the discussion that follows, and in all considerations of column lengths, road spaces, and time of travel for columns as a whole, it is necessary to include the vehicle length as well as the space between vehicles. It is only from the driver's viewpoint that the space to the next vehicle ahead, considered alone, is important.

A column with 100 yards driving distance per vehicle is twice as long as a column with 50 yards driving distance per vehicle. At present, driving distances vary all the way from the 35 yards given in *Reference Data*, The Command and General Staff School, 1936, to the wide bracket of 100 to 250 yards taught for peace-time convoy movements at The Infantry School. For example in a recent maneuver at The Infantry School, the driving distance prescribed was 175 yards. But where great numbers of vehicles are involved, we cannot use driving distances of this length without wasting the possibilities of highway capacity. Long driving distances are now looked upon as a measure of antiaircraft protection. Under certain conditions this may be the best practice, but often the best protection against air attack will lie in speed rather than extension of columns. And this means not only speed of vehicle travel but still more, speed of column travel. A column 60 miles long, using a driving distance of 100 yards and moving at an average speed of 30 miles an hour, will take an hour longer to move *any distance* than a column containing the same number of vehicles travelling with 50 yards driving distance. If 200 yards driving distance is used, it will take three hours longer to move the same number of vehicles any distance.

At the same time, it is not practicable for the vehicles of a column to attempt movement of any length employing less than *safe driving distance*. Safe driving distance is the minimum. And if a single driving distance is to be used, it must be the safe driving distance for the fastest sustained speed at which the vehicles of a column will move. This, from our previous discussion, we shall assume is 40 miles per hour.

Safe driving distance depends upon two things— reaction time and braking time. Reaction time is the time it takes a driver to shift his foot from the accelerator to the brake pedal and begin applying pressure. It must

be measured from the moment the driver becomes aware of a reason for slowing down, to the moment he begins to apply the brake. Braking time is the time required for a vehicle to come to a stop, measured from the moment the driver first applies pressure to the brake. For full safety, we must assume that the total of reaction time and braking time is long enough for a driver to bring his vehicle to a dead stop, lest an accident should cause the next vehicle ahead to come to a dead stop.

Such accidents would, of course, be rare on a one-way road without cross traffic. With all vehicles moving in the same direction, the chance of a dead-stop accident is small indeed. In two-way traffic there is always the chance of a head-on collision, but this is not present in one-way traffic.

Moreover, in civil traffic the average driver by no means maintains in heavy traffic a safe driving distance as we have just described it. As Mr. H. C. Dickinson, U. S. Bureau of Standards has pointed out,[1] "Every driver seems to take for granted that the driver ahead will not stop suddenly without warning except in an emergency," and that "the driver behind is in almost as good a position to appreciate an emergency as the driver ahead."

Mr. Thomas Rochester, Chief Engineer of the Traffic Section of the New York City Police Department, has also expressed the opinion that safe driving distance, as we have defined it, is more than enough in one-way traffic. Opinions to the contrary, and also in agreement, have been received from officers who have had experience in handling convoys of modern vehicles in time of peace. On the whole then, it seems reasonable to use our calculations.

Table II is based upon this assumption. The data in the first two columns is taken from a table prepared by Mr. H. H. Allen of the U. S. Bureau of Standards.[1] In column (1) we find the speed in miles per hour; and in column (2) the distance in yards in which a driver can stop his vehicle when it takes him one second to change his foot to the brake pedal. This is slower than the average reaction time of civil drivers, as ascertained by the examination of many thousands of drivers. Data tabulated by Dr. Harry DeSilva of the Harvard Bureau of Street Traffic Research indicates that the average reaction time is three-quarters of a second.

In column (3) is included an additional safety factor of 20 per cent of the stopping distances given in column (2). This factor is added to take care of a possible difference in the braking time of loaded light trucks over that of passenger cars for which Mr. Allen's original table was probably calculated. On the other hand, trucks ordinarily have a larger braking surface than passenger cars, and also have the friction surface of six large tires on the road instead of four. The safe driving distances given in column (3) are greater than those given wide publicity during the safe-driving campaign of 1936; for example, those given in *Sudden Death and How To Avoid It*, by J. C. Furnas and Ernest N. Smith; *Guides To Highway Safety*, by Harry W. McGalliard and Harry Tucker; a General Motors pamphlet on safe driving; and a recent study on the same subject by the Massachusetts Institute of Technology.

In column (4) of the table, 7 yards is added to the values given in column (3). This is taken as the average length of light military vehicles.

TABLE II

SAFE DRIVING DISTANCE*

Speed (mph)	Stopping distance (yards)	Stopping distance plus addition safety factor of 20% (yards)	Safe driving distance per vehicle, including 7 yards for vehicle length (round numbers in parentheses) (yards)
(1)	(2)	(3)	(4)
5	2.7	3.2	10.2 (10)
10	6.0	7.2	14.2 (15)
15	10.0	12.0	19.0 (20)
20	14.3	17.2	24.2 (25)
25	19.0	22.8	29.8 (30)
30	24.7	29.6	36.6 (35)
35	30.7	36.8	43.8 (45)
40	37.3	44.8	51.8 (50)
45	44.3	53.2	60.2 (60)

Table II gives us our basic unit of measurement. We can now find out how many motor vehicles, at the different speeds and safe-driving distances given in column (4), can pass by a given point per hour on a highway of one lane. This is given in Table III.

TABLE III

VEHICLES PASSING A GIVEN POINT PER HOUR WHILE TRAVELLING AT SAFE DRIVING DISTANCES

Speed (mph)	Vehicles Per Hour — Without additional safety factor	With additional safety factor of 20%
(1)	(2)	(3)
5	905	860
10	1355	1240
15	1555	1390
20	1650	1455
25	1695	1475
30	1665	1445
35	1635	1410
40	1590	1360
45	1545	1300

From Table III it is plain that more vehicles will pass by a given point at 25 miles per hour than at any lesser or greater speed. The reason for this is that the safe driving distance does not increase in direct ratio to the speed but at a faster rate. The safe driving distance at 40 miles an hour, as we can see from Table II, is somewhat more than twice that at 20 miles per hour.

But what we are mainly interested in is covering long distances with motor columns of any size, as rapidly as we can within reason. We know on the face of it that a single car travelling 40 miles an hour will finish a long trip in half the time it would take at 20 miles an hour.

[1] *American Road Builders' Association Bulletin No. 23.*

*This table and several others used in the first part of this article appeared in a preliminary study on highway traffic in Volume 12, *The Infantry School Mailing List*, January, 1936.

Thus, what we need to find out next is whether the loss in number of vehicles passing by a given point at speeds above 25 miles an hour—the point at which the greatest number pass by—is enough to offset seriously the advantage of moving at higher speeds. For if that should be true, there would be small point in moving motor columns at speeds faster than 25 miles per hour.

Table IV, however, shows us that this is by no means the case. Here, in column (3), we have the percentage losses in number of vehicles passing per hour at speeds above 25 miles per hour; and in column (4), we have the percentage gains in distance covered due to greater speeds. At all speeds up to the greatest speed shown (45 miles an hour), the loss forms only a small fraction of the gain due to greater speed.

TABLE IV

COMPARISON OF LOSS IN NUMBERS OF VEHICLES PASSING A GIVEN POINT PER HOUR AND PERCENTAGE INCREASES IN SPEED AT SPEEDS ABOVE 25 MPH

Speed (mph)	Loss in Number of Vehicles Passing a Given Point Per Hour: Without additional safety factor (Per Cent)	With additional safety factor of 20% (Per Cent)	Increase in speed above 25 mph (Per Cent)
(1)	(2)	(3)	(4)
30	2	2	20
35	4	5	40
40	6	8	60
45	9	12	80

* * *

Thus far we have found no reason why we cannot move motor columns at 40 miles per hour on good roads, regardless of the numbers of vehicles in the column. And we have yet to find a reason for operating at distances greater than safe driving distances (51.8 yards at 40 mph). True, there may be conditions under which it is best to use driving distances of 100 yards or more. But for the present purposes of this article, let us continue to keep in mind the movement of large numbers of vehicles in the shortest time possible.

It will seldom be possible, of course, to maintain a continuous speed of 40 miles per hour. On a primary highway that avoids towns and cities, and that has no sharp curves or steep grades, the maximum speed could be maintained by all vehicles with little variation once the motor column took the road. However, these factors will usually be present and will cause the average speed to fall somewhere between 30 and 35 miles an hour; and where much of the movement has to be made at slower speeds, the average speed may fall still lower. The amount of delay that can be expected from these various factors will be studied in detail in the second part of this article. In the pages immediately following it will be assumed that a running speed of 40 miles an hour, and an average speed of 30 miles an hour, with 1,020 vehicles passing a given point per hour on the average, are reasonable for most motor movements on primary highways. (A driving distance of 51.8 yards for the top running speed of 40 miles an hour, taken with an *average* speed of 30 miles an hour, gives us the figure of 1,020 vehicles per hour.) With these data in mind, let us now consider road capacities—in other words, let us see how many vehicles can be moved over a given stretch of road from one place to another in a given time. This is the important thing to any commander.

* * *

It will be best at this point to decide just what we mean by "road capacity." On brief reflection it is evident that this term should mean something different from the conception of the number of vehicles passing by a given point per hour. But unless we pin the term down to a clear meaning, the reader and the writer may find themselves at cross purposes.

Since it is important for a commander to know whether he can move his force from one area to another, on one or more roads, within a certain number of hours, let us define road capacity as *the number of vehicles that can pass over a given stretch of road at a given average speed within a given time.* This definition assumes that the road is empty of vehicles at the beginning of the period and at its end. And in general, when we use the term "road capacity," let us think of it as the *practicable maximum capacity.* For if a commander knows the *maximum capacity* of a proposed route, and finds that it is more than enough, he thus has opportunity to use the extra capacity in a number of different ways which we need not go into here.

In Table V we see the truly astonishing numbers of vehicles that a single one-lane, one-way road will carry. Columns (2) to (4) show how many vehicles can pass over, and clear, different lengths of highway in different periods of time.

TABLE V

ROAD CAPACITY OF A ONE-LANE, ONE-WAY ROAD AT AN AVERAGE SPEED OF 30 MILES PER HOUR AND WITH 1,020 VEHICLES PASSING A GIVEN POINT PER HOUR

Length of Road (Miles)	Total Hours of Motor Movement Travel: 4 Hours (Vehicles)	8 Hours (Vehicles)	12 Hours (Vehicles)
(1)	(2)	(3)	(4)
50	2,380	6,460	10,540
100	680	4,760	8,840
150	—	3,060	7,140
200	—	1,360	5,440
250	—	—	3,740
300	—	—	2,040

Table V indicates, among other things, the following: On a single lane of primary highway, from which all other traffic, including cross traffic, has been barred: (1) A motorized brigade (about 700 vehicles), or its equivalent in a mechanized force, can move 100 miles in 4 hours, about 225 miles in 8 hours, and 300 miles in about 10.5 hours. (2) A division (about 2,000 vehicles), can move about 60 miles in 4 hours, about 175 miles 8 hours, and about 300 miles in 12 hours.

This is what can be done on one-half (one lane) of an ordinary first-class highway. But let us now see what we can do with the other half of the road to better these figures.

Ordinarily, we think of the left-hand lane of a two-lane, one-way road as being available for passing in the direction of traffic flow. Roads of this type are to be found at present leading into the majority of American cities of any size. The two one-direction parts of the roads are separated, usually by a parkway in the middle. Any good two-lane highway, used for one-way traffic, is the equivalent of either half of a divided four-lane road. In theory, and sometimes in practice, where the regulation of traffic is strictly enforced, the outer lane is habitually used by slow vehicles and the inner lane for the passage of faster cars, which are supposed to return to the outer lane when the chance affords. On through roads, such as the Pulaski Skyway which leads from New Jersey toward New York City, vehicles remain more generally in the same lane except for passing. In this case the traffic on an inner lane is often heavier than on an outer lane.

What we must imagine now, however, is a two-lane road on which there is no passing at all, and on which both lanes are carrying their full capacity of vehicles in the same direction. This is entirely possible, and when we consider it carefully, is far less dangerous or difficult from the viewpoint of driving than the traffic on a crowded highway. There, a driver must continuously watch out for those who pass him—sometimes on both sides—and for those he passes. The double, one-way traffic we are now going to consider maintains a uniform speed except where it is necessary to reduce or increase speed, as before and after an abrupt turn.

With both lanes operating to full capacity, a highway becomes analogous to a two-track railroad, with this exception: the highway permits two methods of use instead of one, since the vehicles of a motor column are not hooked together in one long string like the cars of a train. In one method, the two lanes can be used for separate columns, even of entirely distinct units, like two separate passenger trains on a double track, or like a passenger train on one track and a freight train on the other.

But of greater advantage in important military movements is the second way of using both lanes, a way that has no parallel on a two-track railroad. The vehicles of a single unit can use both lanes by staggering the alternate vehicles of the motor column in both lanes. (See Figure 1.) Thus, although safe driving distance is observed in both lanes, the actual driving distance, taking all vehicles into consideration, is half driving distance, as shown in the figure.

The vehicles in the two lanes could, of course, be driven abreast; but the staggered formation has several advantages. It is much less fatiguing. The strain of driving abreast of another vehicle is considerable. Staggering also gives individual vehicles a chance to swing over into the interval between two vehicles in the next lane for a few moments, if it should be necessary. (See Figure 2.) This is not usually dangerous at 40 miles an hour. It is a thing commonly done by thousands upon thousands of drivers every day, on our busiest highways.

Any reader can readily prove to his own satisfaction the feasibility of the staggered formation by driving for a few minutes in the left-hand lane of a two-lane road, about 20 yards in rear of another car moving 40 or 45 miles an hour. Only a little practice is required for any

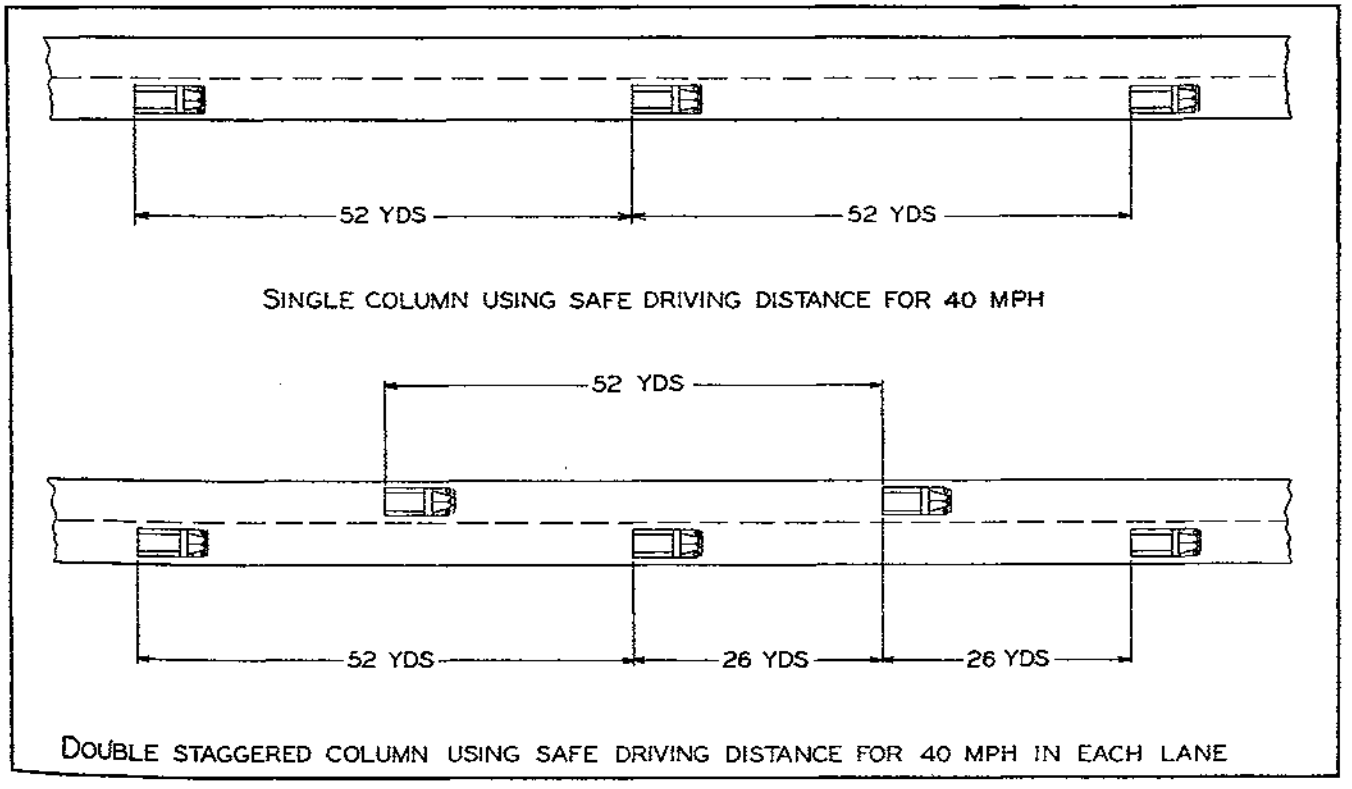


Figure 1

driver to feel at home in the left-hand lane, particularly when he knows that there is to be no passing in the column.

The staggered formation also permits the vehicles in either lane to swing into the spaces in the other lane in order to pass through a short narrow stretch, as already indicated. However, before undertaking any major motor movement of the kind we are discussing, it will be highly desirable to eliminate all possible bottle-necks. Fortunately, in the United States, hundreds of these, such as narrow bridges and viaducts, are being widened each year on the system of primary roads.

It should be understood here that no mathematical precision of driving is contemplated. A new device now under test should enable drivers to maintain with fair accuracy driving distances up to 50 or 60 yards. But there will always be a certain amount of give and take in any motor column. (The causes and effects of closing up and extending driving distances within a motor column are to be studied in Part II of this article.)

The use, in this manner, of both traffic lanes has as its main effect a doubling of the number of vehicles that can pass by a given point in an hour's time. This means, of course, that road capacity is also doubled. And in addition, the length of any column, and the duration of its interference with cross traffic, are cut in half.

This method of operation is not proposed as a standard method for habitual use, but mainly for use in important movements, where good two-lane highways are available, and where every minute saved has the importance it usually has in war. At the same time, both lanes can also be used for traffic in one direction on busy roads in rear areas, in order to reduce the hours of road use, or in order to make the utmost use of roads during periods of poor visibility from the air.

Only one thing is sacrificed, and that not entirely. Other vehicles cannot pass freely up and down the column. However, the formation does not prevent the passage of motorcycles in the direction the column is moving. And passage back down the column can be accomplished by an occasional vehicle by requiring the left-lane vehicles to swing momentarily over into the right-lane distances between vehicles. But for the most part, there should be little need for such communication up and down a column during a rapid motor movement once it is under way.

The road capacity of a two-lane highway is found by multiplying by 2 the values given in Table V, since 2,040 vehicles pass a given point per hour instead of 1,020.

Let us now compare motor movements made in several different types of columns, in order to bring out the advantages of using the entire surface of a highway. Table VI gives the data on a brigade movement, and Table VII gives like data on a movement involving 10,000 vehicles.

These two tables bring out the advantage of the double column, especially in movements involving a large number of vehicles. In the movement of a brigade (Table VI) there is no great difference between the time of travel of a double and a single column at 30 miles an hour. (Time of travel is measured from the start of the first vehicle of a column to the arrival of the last vehicle at the end of the 150-mile run.) But 1.3 hours, which may be precious indeed, are saved by moving 30 miles an hour in a double column instead of 25 in a single column. And the double column takes 1.7 hours less to

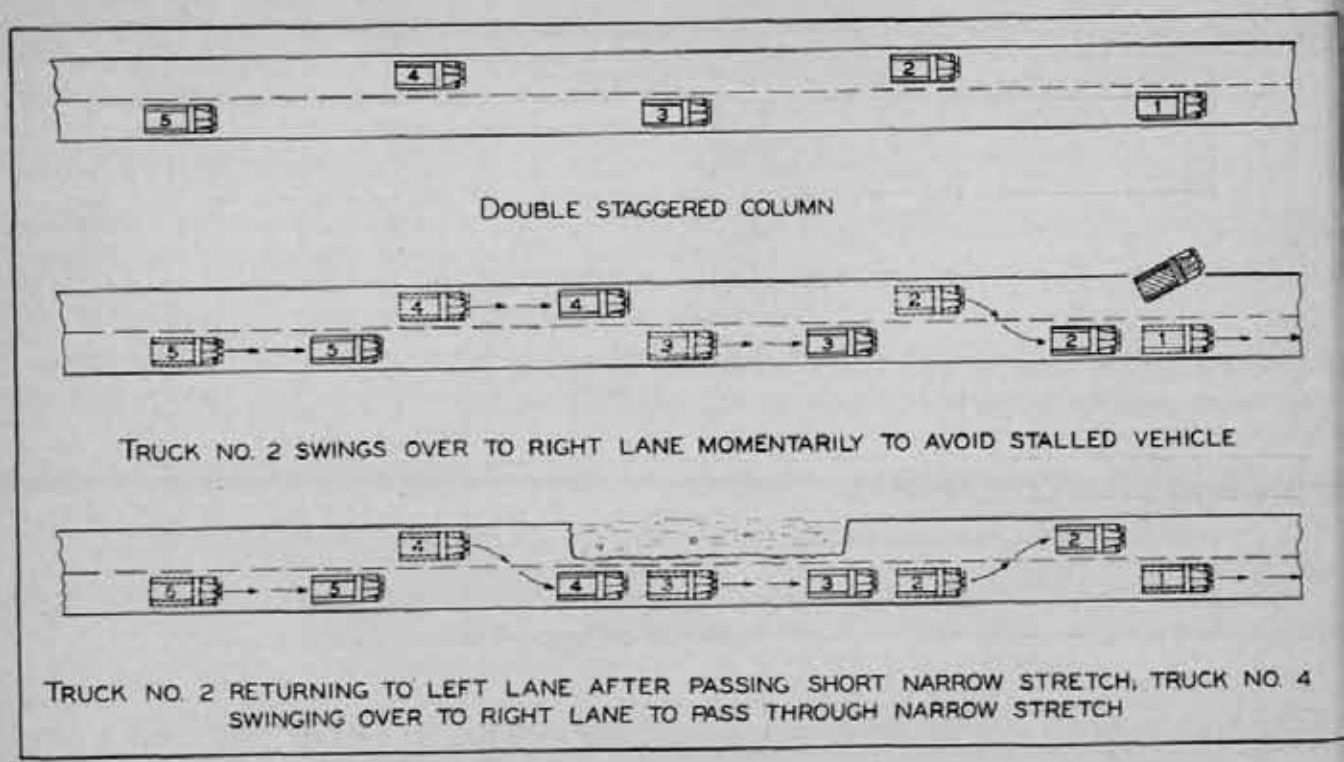


Figure 2

complete a 150-mile journey than a single column using a long driving distance. It should be noted also that there is a great difference in the length of the four types of columns, and in the period of interruption to cross traffic.

TABLE VI

COMPARISON OF A BRIGADE OF 700 VEHICLES MOVING 150 MILES BY DIFFERENT METHODS

Type of road column	Length of column (Miles)	Time of travel (Hours)	Interference with cross traffic at any point (Minutes)
(1)	(2)	(3)	(4)
Staggered double column (average speed, 30 mph.; driving distance in each lane, 52 yards)	10.3	5.3	20.5
Single column (30 mph.; 52-yd. driving distance	20.6	5.7	41.0
Single column (25 mph.; 35-yd. driving distance	13.9	6.6	33.4
Single column (30 mph.; 150-yd. driving distance	59.6	7.0	119.2

TABLE VII

COMPARISON OF A COLUMN OF 10,000 VEHICLES MOVING 150 MILES BY DIFFERENT METHODS (Daylight Travel Only)[1]

Type of road column	Length of column (Miles)	Time of travel (Hours)	Time of travel (Days)	Interference with cross traffic at any point (Hours)
(1)	(2)	(3)	(4)	(5)
Staggered double column (average speed 30 mph.; driving distance in each lane, 52 yards)	147	9.9	0.7	4.9
Single column (30 mph.; 52-yd. driving distance)	294	14.8	1.05[2]	9.8
Single column (25 mph.; 35-yd. driving distance)	199	18.0	1.3[2]	9.9
Single column (30 mph.; 150-yd. driving distance)	852	33.4	2.3[2]	28.3

[1]The longest actual time of travel for any individual vehicle in any of the types of column given is 6 hours (at 25 mph.).

[2]In column (4), 14 hours is taken as the length of a day for daylight running. Any large motor movement might, of course, be continued at night at slower speeds. The all-daylight running hours are given here simply for comparison.

In Table VII, the difference in time of travel for the various types of columns is far more marked. In fact, this difference is vital in one respect. The double column is the only method that permits 10,000 vehicles to be moved 150 miles between daylight and dark, assuming 14 hours as the length of a day.

Table VIII shows the time of travel for various sizes of columns and over various distances—for the double column method only.

TABLE VIII

TIME OF TRAVEL (DAYLIGHT) FOR A DOUBLE STAGGERED COLUMN MOVING AT A RUNNING SPEED OF 40 MPH. AND AN AVERAGE SPEED OF 30 MPH. ON A TWO-LANE, ONE-WAY HIGHWAY[1]

Size of motor column (Vehicles)	Length of column (Miles)	Distance of Movement Miles 50 (Hr.)	100 (Hr.)	150 (Hr.)	200 (Hr.)	250 (Hr.)	300 (Hr.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
100	1.5	1.7	3.4	5.0	6.7	8.4	10.0
500	7.4	1.9	3.6	5.2	6.9	8.6	10.2
1,000	14.8	2.2	3.8	5.5	7.2	8.8	10.5
2,000	29.5	2.7	4.3	6.0	7.6	9.3	11.0
3,000	44.3	3.1	4.8	6.5	8.1	9.8	11.5
4,000	59.0	3.6	5.3	7.0	8.6	10.3	12.0
5,000	73.8	4.1	5.8	7.5	9.1	10.8	12.5
6,000	88.5	4.6	6.3	7.9	9.6	11.3	12.9
8,000	118.0	5.6	7.3	8.9	10.6	12.3	13.9[2]
10,000	147.5	6.6	8.3	9.9	11.6	13.2	....

[1]Halts of 10 minutes every two hours and a 20-minute halt for refueling after 150 miles are included. On long runs more halting time may be necessary.

[2]Total daylight of 14 hours is taken as a maximum.

Now, after examining Table VIII let us check once more against the figures on traffic flow that have been presented by authorities on highway traffic, and against the figures of actual traffic. Table IX, from a source that has been quoted before,[1] is based on the following assumption: (1) Length of car, 5 yards; (2) Distance between cars equal to a time interval of 1½ seconds at whatever speed is indicated; (3) Traffic in *one lane*.

TABLE IX

Speed	Cars passing a given point per hour
5	1,180
10	1,780
15	2,140
20	2,380
25	2,560
30	2,700
35	2,800
40	2,880
45	2,940

This table, it is true, refers to passenger cars and not to traffic largely composed of trucks. But it is surely indicative of the fact that we are staying well on the safe side in assuming that military traffic on two lanes is less than Mr. Dickinson considers possible for passenger cars on a single lane (2,040 vehicles per hour in contrast to 2,700 vehicles per hour).

In the same reference source, Mr. Charles Gordon, Managing Director, American Electric Railway Association, states: "The figure of 1,500 vehicles *per lane per hour* for a highway with no grade crossing represents the practical maximum at satisfactory speeds." Here is a table given by Mr. Gordon, which is of particular interest inasmuch as it gives us a comparison of traffic flow under different conditions:

[1]Mr. H. O. Dickinson, in *American Road Builders Association Bulletin No. 23.*

TABLE X

MAXIMUM PRACTICAL TRAFFIC FLOW PER HOUR ON ROADWAYS UNDER TYPICAL CONDITIONS

Roadway width in one direction	No grade crossings. No stopping permitted		City Boulevard with grade crossings—parking prohibited		City streets with grade crossings—parking permitted	
	No. of moving lanes	Vehicles per hour	No. of moving lanes	Vehicles per hour	No. of moving lanes	Vehicles per hour
(1)	(2)	(3)	(4)	(5)	(6)	(7)
20 ft.	2	2,650*	2	1,200	1	750
30 ft.	3	3,550	3	1,800	2	1,450
40 ft.	4	4,200	4	2,200	3	2,000

*New Jersey State Highway Department estimates 2,400 cars per hour under similar conditions on Route No. 25, which is an elevated express highway.

The Holland Tunnel traffic most closely approximates in its method of operation, the double staggered method of motor movement suggested above. The Tunnel averages more than 30,000 cars per 24-hour day in four lanes, or 15,000 in two lanes. Peak traffic on holidays exceeds 20,000 vehicles in each two lanes. But even then the Tunnel is by no means worked to capacity throughout the day. When the tide of traffic is at its heaviest, 2,500 vehicles are discharged on two lanes in an hour. The record for a half hour is roughly 1,500 cars.

The average speed maintained by vehicles in the Tunnel is about 30 miles an hour, with 25 to 30 yards between vehicles. A column of 10,000 military vehicles steadily pouring into the Tunnel would require less than 6.5 hours to pass through it.

The enforcement of the simple driving rules within the Tunnel are carried out by policemen stationed at intervals along its course. They require vehicles to move at the 30-mile speed and keep closed up to the minimum driving distance. They also require vehicles to stay in one of the two lanes throughout passage of the Tunnel. A total of 100,000,000 vehicles passed through the Tunnel during its first nine years. Only 5 persons were killed in accidents during that whole time. In military motor columns the enforcement of similar driving methods would come more from training and discipline than from police control.

What we have done, in effect, in the foregoing discussion, is to assume conditions of traffic flow well below the maximum possible for short stretches like the Holland Tunnel, and extend those conditions over long stretches of good highway blocked off for the passage of a military column of motors or vehicles of mechanized forces. In concluding the first part of this article, it should be pointed out that we have so far considered only the actual movement on the highway, and not the important phases of forming the motor column as it begins a run and of distributing traffic at the end of a run. Regarding the latter phase, especially, we can learn much from modern traffic methods. These matters will be covered in the second part of this article.

THE COAST ARTILLERY SCHOOL STAFF AND FACULTY — 1936-1937

FRONT ROW *(left to right)*—Major Poland (Inf.), Lt. Col. Cramer, Lt. Col. Cox, Brig. Gen. Tracy, Col. Gardner, Lt. Col. Pendleton, Lt. Col. Kahle, Major Carrington.

SECOND ROW *(left to right)*—Major Trigg (Cav.), Major Jackson, Major Lowry, Major Mackin, Major Edgecomb, Major Townsend, Major Cochran, Major Hickey, Major Paul (A.C.)

BACK ROW *(left to right)*—Captain Starr, Captain Burnell, Captain Lemnitzer, Captain Bartlett, Captain Barber, Captain Kane, Captain Thompson, Captain McPherson, Captain Stevens.

Give Us This Day Our Daily Bread

By Major E. D. Cooke, *Infantry*

SOLDIERS are always hungry. That is why army regulations require a commanding officer to have mess call blown three times a day—even in war time. But blow as hard as he likes, the lustiest of windjammers will be unable to blow food into Mr. Soldier's mess kit unless some radical changes are made in the present archaic doctrine of Class I supply.

Sustenance will not reach combat troops if the enemy can prevent it and he won't miss any tricks in trying to starve us into submission. Hostile forces will prowl about by sea, air, and land, with all manner of evil designs on our groceries.

Dispatching supplies by rail sends our subsistence down a groove which invites disruption at any point by the enemy. A small mechanized force with only a few demolitions can tie up rail traffic for days—because trains can't detour a broken rail, nor span a stream except on a specially prepared bridge or boat.

Furthermore, a road bed is there for anyone to see and a string of box cars cannot hide anywhere along the right of way except in tunnels.

Even if the cars carrying our calories do reach a regulating station they will be shunted onto sidings where a hostile aviator could destroy them as easily as he could shoot fish with dynamite.

The latter sport is prohibited by game laws and something equally effective should be done to make sure that our shock troops have the privilege of using toothpicks for something besides exercise.

If we hope to eat, our victuals should be given a fifty-fifty chance against the enemy.

Mobility, maneuverability, and flexibility (hide-and-go-seek to you) is the cry of all modern tacticians; and what is good enough for the field marshals is none too good for our breakfasts, dinners, and suppers.

The first step toward filling our mess kits is to load enough food for one battalion for one day on a truck-trailer at an initial depot far back in the zone of the interior. With perishables packed in dry ice, the trailers should then be officially sealed at the depot.

The sealing of these vehicles is advocated because regulations stipulate that fore and hind quarters of beef shall be issued alternately to troops. Moreover, while admitting the need for proper nourishment of the massive minds in special units, it cannot be denied that the locations of command-post installations have too frequently been disclosed through an adjacent pile of well-gnawed T-bones. On the other hand, the course of the soldier has been followed just as readily by a trail of polished shin bones left in the wake of his rolling kitchens. Therefore, merely to circumvent the machinations of hostile espionage, let it be assumed that the trailers are sealed.

Our rations are now ready to roll. Cab-trucks, with Diesel engines, hook onto the trailers and by single runs or by relays, transport our eatables into the communication zone. The trucks return to the zone of the interior with empty trailers, leaving those filled with the precious grub in a protected area.

A new set of trucks and drivers hook onto the trailers and make a night run of from two to three hundred miles into the combat zone.

Of course, the trucks and trailers will be subject to attack by hostile airplanes; so, to diminish losses and reduce the size of targets, the food-laden vehicles will go in small groups, utilizing all available routes to the front.

When attacked from the air the trucks scatter, leave the highway and seek cover. While executing this maneuver the alternate driver unlimbers a machine gun affixed to the cab and gives the hostile planes a dose of their own medicine.

When set upon by mechanized forces the trucks depend on their speed for escape. They keep on roads because their cross-country mobility is less than that of the armored vehicles in pursuit. When cut off or cornered, the trucks stay in a group, relying for defense on the fire power of their combined machine guns.

Undoubtedly there will be impassable stretches of road that must be detoured. Again, there will be many spots so bad that only one trailer at a time can be gotten through—one truck pulling and another unhooking from its own trailer to push. In extreme cases, the trailers and even the trucks may have to be pulled through by tractors.

Bridges over sizable streams may be found destroyed; if so the trucks and trailers will cross on pontoons or ferries.

In the combat zone, trailers will be received at a corps or division park. The requirements for such a park are merely hard standing and cover, protected by antiaircraft and antitank weapons.

These parks will frequently be discovered by the enemy, but, unlike a regulating station, they can be moved on short notice, without undue effort. They can also be spread over such a large area as to make hostile bombing too expensive, if not entirely ineffective.

When the hostile air force becomes over-active, the trailers will be taken directly to rendezvous points and transferred to regimental trucks.

In either case, regimental or battalion transportation hauls the staff of life on its last night dash to the bivouac areas of the rolling kitchens. Here the trailers are unsealed by S-4.

No damage has occurred through careless or excessive handling. Untouched by human hands, our rations have come direct from the initial depot to their proper destination—to wit, the innards of the combat troops.

A Typical American Field Uniform

By Captain Burgo D. Gill, *Coast Artillery Corps*

STUDY the pictures of U. S. Army uniforms since the inception of the Republic and you will notice that they are a splendid example of the *Laws of Imitation* as laid down by *Tarde*. Not only is a foreign uniform invariably copied, but it is always the uniform of a European country that at the time appears to be a great military nation. We have never developed a national uniform patterned after American tastes and customs. Why?

First, as was quite natural, the American uniform followed the British. Revolutionary Buff and Blue uniforms, except for color, were the same pattern as British Redcoats. Next, we see Napoleonic and the French influence. This was carried to such an absurdity during the Civil War that the Federal forces had zouave regiments dressed in gaudy, harem-like pants just because some French Zouaves had made a name for themselves in Africa.

When the Germans cleaned up the French in 1870, spiked helmets crept into fashion in some of our regiments. After that came British khaki. We must admit that this was partially due to the fact that we began to suspect that a field uniform must afford camouflage. Hitherto, we used blue, or some other loud shade bull's-eye for enemy sharpshooters.

The American field uniform after the Spanish-American War period was a cross between British khaki and the German style dinky-cap-jammed-down-over-the-eyes. But, as the World War wiped out the German influence we strutted next, quite British you know, with long tailed coats, Woodrow caps, pink breeches, and polished buttons. It was the period of the "British glittered when they went into the Battle of Mons. Although they were almost wiped out, those that returned from that battle still glittered."

That might have been fine for American morale, but we doubt it! Whoever heard of Americans desiring to glitter on the field of battle? No one really believes that Americans take willingly to spit and polish. The Civil War proved that.

A certain major doing duty on the Mexican border said the following to his battalion. "Don't shave until I do! Officers must wear bandanna handkerchiefs like myself; the enlisted men can if they wish to buy them." He was a lot closer to American psychology and desires than those who preach the "glitter" policy.

The War Department has decided upon a comfortable dress uniform and we hear rumors that the field uniform will also be changed. It is for a really improved field uniform that we make our plea. Make it distinctly American and make it smart but more comfortable and suitable to the wearer when in the field.

The urgent need for a comfortable field uniform was forcibly impressed upon the writer during the recent CCC mobilization. He was on duty in Vermont, where the thermometer dropped to forty below on many occasions. The work clothes issued to the CCC were adequate to keep the enrollees warm and at the same time were comfortable to work in. In fact, many of the officers and enlisted men started wearing CCC clothing such as "woodsmen" mackinaws, furred caps, heavy lumbermen's sox, and the like. The practice became so widespread that it came to the notice of the military authorities. An order was finally issued that the army per

The Artillerymen of 1776. The gunners of the Revolution.

sonnel must refrain from wearing such clothes.

Comfort and suitability should be the deciding factors but we believe that American traits and customs should also be depicted whenever possible. The Poles wear square topped caps in their army. It's an old Polish custom, and a constant reminder of their nationality. The British wear the Sam Browne belt. Sure, we admit it looks swanky, it's so British! But why should we look typically British? The French Foreign legionnaires love their kepis. They have them! The American trooper should have something about his uniform that he can look at with pride and say, "It is American!"

Americans at work don't like coats. We should develop a shirt they can wear with pride. The hunting shirt is thoroughly American, but at many posts it is considered a disgrace for a man to be seen without a coat, even in the summer time.

Our working men and soldiers take unkindly to ties while working or in the field. Why bother with ties? Wool shirts and coats are apt to rasp the neck; use a khaki-colored, silken neckerchief. Anyhow, the neckerchief is about as American a bit of uniform as could be selected. It lends dash to the uniform. Besides if you have ever done duty on the Border, or lived in the West you'll readily understand how useful a neckerchief can be when sand or dust storms are encountered.

The Civil War style of felt hat, or the later way of peaking it instead of creasing is typically American. But, we are becoming trench-cappy, and tin-hatty, and we certainly suffer, especially in the tropics. No doubt now that the Italians have been successful in Ethiopia, we'll be having feathers, à la Alpine, next.

Americans like sweaters. Under present regulations they must be used hidden like an undershirt. Down on the Border, they once saw daylight, but then we weren't worried about spoiling Villa's finer sensibilities by shocking him with a *de trop* garment. Any worker will certainly testify that a wool shirt, sweater, or mackinaw is comfortable. But, no—we insist on a tight coat instead of a sweater.

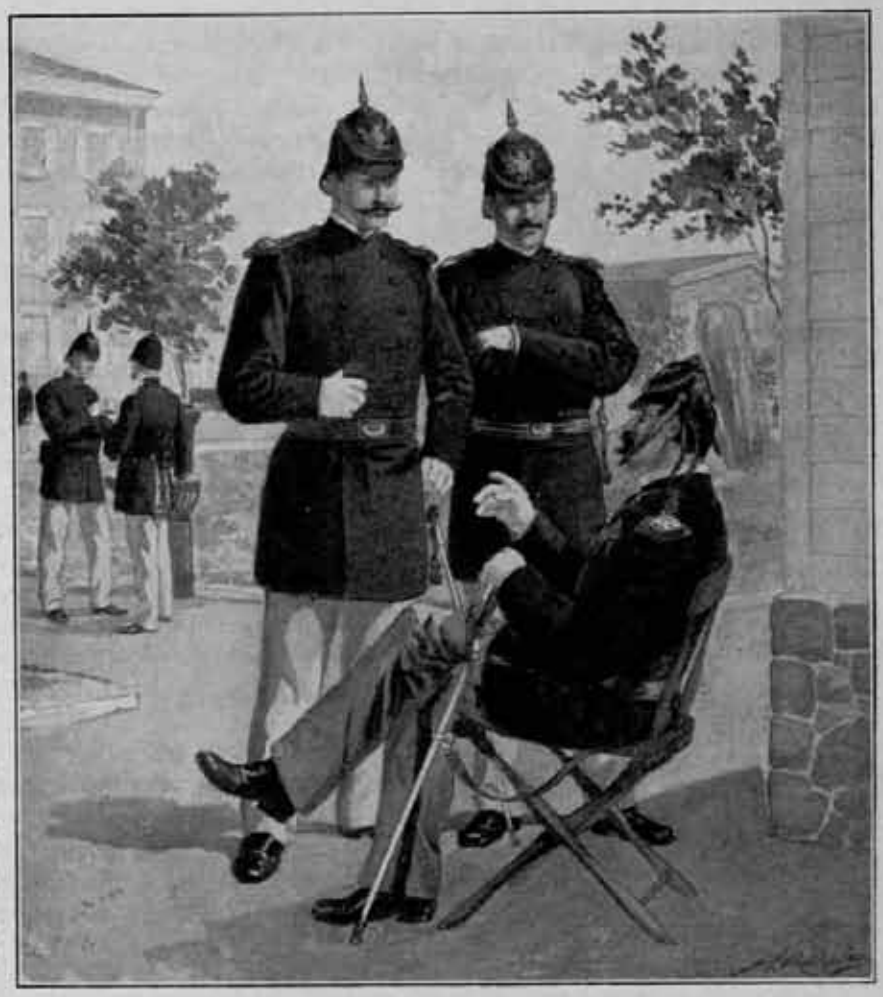
And, those wrap leggins! Well, the British in India got them, and that was why we did. Or, was it? What's the matter with something more American in foot and leg wear? And by that, we know we open ourselves wide for someone to growl, "Does he expect us to use moccasins?"

Every time there is a change in uniform, especially toward a more comfortable one, we hear loud wails that it doesn't look military. In the first place, it is "military" as long as the powers that be issue the order. In the second place, growling is a time-honored custom, anyhow. But we think we are justified in our stand.

For example, compare uniforms designed for athletic wear with those designed for show like the Army, doormen, bellhops, and the like. Athletic uniforms are attractive, and—above all, they are designed for maximum usage for their particular sport. This is true whether it be polo, track, football, or swimming. But, for the military, hotel doormen, or the like, the uniform is first designed for show and is cluttered with useless gadgets. Sabre chains, leather corsets, and whatnots dangle all over us.

Why not get back to common sense in designing a field uniform? Navy gobs don't have to polish uniform brass buttons, or insignia by the hour. Why should a soldier? Moreover, we are getting slightly sick and tired of being told by some admiring civilian when we are all dolled up in our best O.D's that we "look so foreign." Bah!

So, let's be American and comfortable. That in itself is synonymous—except in the present American Army field uniforms.



The dress uniform of 1885. Note the pickelhauben—*spiked helmets.*

Military Justice in Ancient Rome

By Major C. E. Brand, J.A.G.D.

ANCIENT Rome was a world power over a longer period than England has so far enjoyed a like distinction. She acquired her empire through military conquest, and maintained it for the most part through the exercise of military dominion. Equally distinguished with her military achievements was the Roman genius for government. During the fifteen years that Hannibal ravaged Roman territory, it was the impregnable solidarity of the Roman state that preserved the republic from disintegration. Following the repeated successes of her armies, it was a similar genius for government that extended the *pax Romana* from the British Isles to the Red Sea.

The living substance of Roman government is to be found in the body of the Roman law, which, after a lapse of a thousand years, was digested and codified by Tribonian, under the direction of the Emperor Justinian. When the military power of Rome passed away, the *Corpus Juris Civilis* lived on, hardly altered, in the law of mediæval Europe, and became the progenitor of the laws of a major portion of the modern world. It is obvious therefore that the military law of the universal lawgiver and of the greatest military power of antiquity should be of absorbing interest in any consideration of modern military justice.

Source material for the study of criminal law, and particularly of military law, is therefore scant and uncodified, and such authorities as exist are found chiefly in the histories of Livy, Polybius and Dionysius, rather than in legal contexts. The difficulties of synthesis are greatly increased by the fact that the period of history involved extends over more than a thousand years, during which time Rome grew from a tiny city-kingdom on the banks of the Tiber through the stages of republic and principate to an empire that embraced the civilized world.

Discipline in Family Life and Civil Government

No feature of Roman social life is so striking as the absolute power of coercion, or *coercitio*, that was possessed by the *paterfamilias* with respect to his entire household. Not only his slaves, but his wife and children as well were virtually his personal chattels, not greatly different in character from domestic animals. This all-inclusive paternal authority, known as the *patria potestas*, had its origin in the foundations of law. Maine says that it is "the first and greatest landmark in the course of legal history." The law of the "Twelve Tables" provided:

> "The father shall, during his whole life, have absolute power over his children. He may imprison his son, or scourge him, or make him work in the fields in chains, or kill him—even though the son hold the highest office of state and is distinguished for his public services.
>
> "But if a father sell his son three times, then the son shall be free."

The *patria potestas* was not affected by the arrival of children at maturity, nor by a son's marriage and the addition of grandchildren to the *familia*. A daughter, upon her marriage, became a member of her husband's family and therefore passed from her father's control only to come under the like authority of her father-in-law.

It is not to be supposed that children were habitually treated with all the brutality that the law allowed. Moderation was the first of Roman virtues, and family relationships were highly cherished. Moral limitations upon paternal authority, however, detracted from its drastic legal implications. Dionysius, evidently impressed after his long residence in Rome by the anomaly of such paternal despotism, tells of high officers of state being dragged from the rostrum and led home by their fathers when displeased with their conduct. The *dominium* of a master over his slaves, incident to his chattel ownership of them, was equally complete, and subject to fewer moral restrictions. Even in the later empire, when wanton cruelty to slaves was forbidden, the disciplinary power of coercion suffered no material impairment. The head of the Roman *familia*—which included slaves as well as unmarried daughters and unemancipated sons and their offspring—remained to the last, in legal contemplation, its despotic master.

Largely as a corollary of the *patria potestas*, the importance of the *familia* in Roman social and political life cannot be exaggerated. To the extent that the state transcended the family it was simply a super-family. The king, in the early days, was the *super-paterfamilias*—the source of all authority, with the unquestioned power of life and death known as the *imperium*, which was simply the *patria potestas* of the super-family. The lesser magistrates were deputies of the king and acted upon his authority, not their own. Even the violent reaction against the Tarquins, which expelled the kings from Rome and made the kingly office anathema, left undisturbed the concept of the *imperium* as the necessary ultimate authority without which neither the family nor the state could exist.

Under the republic the *imperium* was held in joint tenancy by two coördinate heads of the state who were first known as generals *(praetors)* or judges *(iudices)* but later simply as colleagues *(consules)*. The exercise of the *imperium* by the consuls was greatly limited in practice both by the neutralizing effect of its joint tenancy—each consul having complete veto power over his colleague—and by limiting the term of office to a single year, after which both consuls returned to private life and could be made responsible for their acts. This limitation was a carefully designed feature of the republican constitution. It emphasized, however, the conception that the *imperium* was essentially absolute; and its absolute char-

acter asserted itself without limitation when it was, in times of crisis, invested in a dictator *(magister populi)*, who was not subject to veto.

The absolute and arbitrary authority of the *paterfamilias* and of the magistrate with the *imperium* cannot be called law. It is a power of coercion which, for want of a better word, we may call *discipline*.

Within the prescribed limits of his authority the magistrate enforced obedience to his own orders or regulations. He was both author of the regulations and judge of their violation. Within this jurisdiction the citizen had no "rights." He stood before the magistrate as the son or slave stood before the *paterfamilias*, or as a child stands before its parents in matters of family discipline in our own society. "Law" came into consideration in the Roman system only if the magistrate, in enforcing obedience, exceeded his jurisdiction by awarding punishment against which the citizen had a regularized or "legal" right to appeal. The *Lex Valeria* gave the right of appeal in all cases where capital punishment was involved, and also in cases of fines above certain limits. Law appeared in Roman criminal administration only as a limitation upon the disciplinary power of the magistrate; and discipline itself was the active governing principle.

Disciplinary Power of the Commanding General

In the government and control of an army, with which discipline is habitually and necessarily associated, it is natural that the restraining influence of law would be much less felt than in a civil community. Even in modern states, where criminal law is sufficiently developed to embrace every wrongful act that a citizen may commit, the necessity of some degree of unregulated discipline in the armies is universally recognized. In the early Roman state, where discipline was the essence of criminal administration even within the city, it was inescapable that in the army authoritative discipline, consisting essentially of the unrestrained discretion of its commander, should be the natural order. Such was in fact the *imperium militiae*—as absolute beyond the walls of the city as was that *imperium in imperio*, the *patria potestas*, in the Roman *familia*. In the words of Cicero in his model Roman constitution:

> "There shall be no appeal from the commander of an army in the field. The orders of the commanding general must be accepted as unquestioned law."

The summary disciplinary jurisdiction of the commanding general was as a rule, though not always, exercised from the *tribunal*—a judgment seat erected near the general headquarters and facing the *forum* of the Roman camp. Through the medium of the *tribunal* the judgments of the commander were both published and dramatized, with a maximum of exemplary effect. The brutal harshness of Roman discipline, as well as its cold and calculated efficacy, are thus exhibited in the case related by Livy of the Consul Manlius Torquatus and his son, Titus Manlius, commander of a squadron of cavalry in his father's army. Upon a reconnoitering expedition young Manlius' squadron had come upon a group of enemy cavalry, and, in response to a taunting and insulting challenge of the enemy chieftain, Manlius engaged him in single combat and killed him. Upon laying the spoils of his victory before his father, however, the stern old consul turned away in disgust from such "idle show of honor," had assembly sounded, and made an example of his son for disregard of orders against engaging in such affrays. Declaring that, though he was moved by the instinctive love of a man for his son, and by admiration of his bravery (perverted though it was in this case), nevertheless, the authority of the consuls must either be established by the young man's death or forever abrogated by his immunity, he commanded the lictors to bind his son to the stake and had him forthwith beheaded before the shocked and astounded command.

Livy relates elsewhere the following incident in which discipline is attended with less ceremony. In the Samnite wars a certain Praenestine practor (a high-ranking subordinate commander) had been slow in bringing up the reserves. When back in camp after the battle Papirius Cursor, the commanding general, came to the praetor's tent and called him out. He then commanded a lictor to prepare his axe; and after waiting in silence until the axe was ready—while of course the praetor stood aghast expecting the next command to direct his execution—Papirius continued to the lictor: "Come, cut this root; someone will stumble on it." Having thus frightened the praetor out of his wits, the general fined him for his misconduct and left him thoroughly chastened and grateful.

Instances of such summary justice in the case of military offenses, without trial and without appeal, and with whatever ceremony the commander might choose for the occasion, recur with too great frequency in all the histories to admit of doubt as to the complete freedom of its exercise. In the case of a near mutiny in the army of the consul Appius Claudius, for example, we find that (according to Dionysius) the consul ordered the centurions of the centuries (that ran away from the battle) beheaded, and the centuries themselves decimated. Livy adds to the list of the condemned all soldiers found without arms, standard-bearers without their standards, and all soldiers with decorations, as well as the centurions who had quit their posts. This drastic action of the consul was taken against the advice of the subordinate commanders. The dictator Lucius Papirius sentenced to death Quintus Fabius, his Master of the Horse (second in command), for engaging in a battle against orders in the dictator's absence, and this in spite of the fact that the battle was won. The Master of the Horse was saved only because he escaped to Rome before the dictator could lay hands upon him, and, once there, the entreaties of his father, added to the prayers of the Senate and the People, and a long career of distinguished service, moved Papirius to spare him. Polybius tells of the suppression of a mutiny by Scipio through seizure of its leaders, whipping and beheading them in the presence of the troops in which the mutiny had been brewing. Such instances may be multi-

plied *ad libitum*. Frontinus, who wrote during the reign of the Emperor Trajan, devotes an entire chapter of his book to an enumeration of summary and arbitrary punishments which appealed to him as particularly ingenious or effective.

Officers of the Legion—Law and Discipline

The Roman legion of about 5,000 men corresponded roughly with the division in modern armies. The officers of the legion were in two distinct categories. First was the "college" of six military tribunes who jointly commanded each legion, assuming the routine functions of command in rotation somewhat after the manner of officers-of-the-day. The tribunes formed the category of the élite in the military officialdom. They were the officers of high social caste and enjoyed great dignity of rank and position, being, in general, young men of senatorial or equestrian rank launched upon their politico-military careers, in which the military tribuneship was a logical step. Of a far inferior social category were the 60 centurions who commanded the centuries or maniples, and who rose from the ranks to their positions on a basis of merit. The centurion was recognized as the best soldier of his century, and the *primipilus*, the senior centurion, as the best soldier of the legion. He in fact virtually commanded the legion, subject to the college of tribunes, for there were no officers of intermediate rank.

It appears unquestioned from the accounts of the historians and from certain passages of the *Corpus Juris* that to the military tribunes were delegated definite authority to administer disciplinary punishment through a procedure that had at least the authority of customary law. Unfortunately these references are brief and no elaboration of the disciplinary functions of the tribunes is to be found. The most instructive references are contained in Polybius' account of posting and inspecting the guard, for which important function the tribunes were responsible. As Polybius describes it, "all the sentinels, before they began their tour of duty, were brought before the tribune on duty, who gave to each a small tablet, or *tessera*. Later the cavalry patrols (who were required to make the rounds of the sentry posts) were called before the tribune, and each patrol was assigned a definite time and tour of inspection. Each sentry, when inspected, gave his *tessera* to the patrol. The next morning the patrols reported to the tribune and delivered the *tesserae* they had collected. If any of them were missing, indicating that a sentinel had been absent from his post, or the patrol lax in making his rounds, Polybius continues,

> ". . . the tribunes sit forthwith together in council to try him, and if found guilty, he is sentenced to the *fustuarium*."

The *fustuarium* he then describes as follows:

> "The tribune takes a cudgel and just touches the condemned man with it, after which all in the camp beat or stone him, in most cases dispatching him in the camp itself. But even those who manage to escape are not saved thereby; impossible! for they are not allowed to return to their homes, and none of the family would dare receive such a man in his house. So that those who have once fallen into this misfortune are utterly ruined."

The pertinent observation is added:

> "Thus owing to the extreme severity and inevitableness of the penalty, the night watches of the Roman army are most scrupulously kept."

In this trial before the tribunes we have a true instance of administration of law, as distinguished from the disciplinary action of the commander. The law so administered, we must believe, was little more than custom, with the sanction of the commanding general. Anglo-American case law, however, rests upon the same foundation, with a sovereign people substituted for the sovereign commander. There is the distinction that the personal sovereignty of the Roman commander—more suited to the necessities of military command—rendered him, as an individual, immune from the restraint of rules through which the more ponderous sovereignty of a people must find expression. His judgments, in accordance with his own personal sense of propriety at the moment, are therefore essentially coercive or disciplinary. No trial was required to justify his action, since such formulary procedure serves merely the purposes of regularity in the exercise of delegated authority, and as a measure of protection for a subordinate from the arbitrariness of a superior.

The sovereign commander acts upon such information as he judges to be sufficient. Effective originality of treatment for each offense, rather than adherence to rule, is the mark of the resourceful disciplinarian as well as of the resourceful strategist. Thus in case of mutiny, or cowardice in battle, it may be decided that certain leaders only will be executed, or perhaps certain classes—for example, centurions, or soldiers with decorations. An officer who has fallen into disgrace is made to stand barefoot all day before his commander's tent, or to hold a clod in his hands as a mark of servility. A subordinate commander is frightened by a display of the lictor's axe, and then let off with a fine. Through ingenious measures of torture, frightful examples are made of those who misconduct themselves in battle, and disobedience—the highest offense against discipline—is crushed with dramatic ruthlessness.

In many matters of detail the purposes of discipline are also served by impressing upon the command set patterns of conduct to enforce regularity. The tribunes, charged with enforcing conformance to these plans or patterns, were not, as such, disciplinarians, but rather agencies for the enforcement of law; for norms or patterns of conduct enforced by authority *are* law. Here a trial was necessary both to assure conformance with the patterns and to prevent their modification. This is not to suggest that the tribunes did not possess disciplinary power commensurate with their rank, but rather to differentiate this power of immediate and arbitrary coercion (the limits of which are, unfortunately, not known) from the regularized procedure described by Polybius through which they enforced the law relating to the service of

security, even to the infliction of the death penalty for violations.

Passing now to the centurion, we find that his authority was purely disciplinary and highly personal. His badge of office was a vine-staff *(vitis)* with which, through personal chastisement, he compelled instant obedience to his commands. It is to be recalled that the authority of the centurion did not rest upon a basis of aloofness and dignity. He was chosen from among the soldiers and was looked upon as the best man of his maniple or century. He impressed this physical fact upon his comrades through close association with them, and through the weight of his vine-staff. In the last analysis it was the centurions who formed what we call the "backbone of discipline" in the Roman armies.

To be struck with the centurion's vine-staff had none of the implications of disgrace associated with the "whipping with rods" *(virgae)* which was often inflicted upon criminals before their execution, or with the cudgelling to death with clubs *(fustes)*—the dread *fustuarium* described by Polybius—which was a common penalty for the most serious military offenses. The vine-staff was no mere badge of office, and in the hands of a brutal centurion could become an instrument of severe punishment. Tacitus tells of a centurion, Lucillius by name, who was surnamed *"cedo alteram"* because of his habit of crying "Give me another!" when he broke his staff upon the back of a soldier. It is significant that the centurion Lucillius was one of the first victims of the soldiers in the revolt of the legions at Pannonia; but this adds emphasis to the stinging force of the centurion's vine-staff as an instrument of discipline.

The disciplinary authority of the centurion, and his use of the vine-staff in enforcing it, rested upon customary law that was firmly imbedded in the legionary organization. In the familiar words of Macer (from Justinian's Digest):

> "The undutiful soldier must be disciplined not only by the tribune or the centurion, but also by the *principalis;* for, from of old, one who resists a centurion about to chastise him is a marked man. If he seizes the vine-staff, he is degraded in service; if he purposely breaks it, or raises his hand against the centurion, his punishment is death."

The *principales* were rated men corresponding in a general way with noncommissioned officers of modern armies. As Macer observes, they, too, had powers of coercion or discipline commensurate with their rank.

Conclusion

By way of summary and for purposes of comparison with modern systems of military justice, it is to be observed that disciplinary coercion, the natural and traditional means of Roman criminal administration even in civic affairs, was necessarily fundamental in the disciplinary administration of the Roman armies. Such regularity or "law" as existed in the army looked as a matter of course to the commanding general as its sovereign authority. Its administrative agencies were subject to his direction and bound by his will in any case where he might elect personally to intervene. The disciplinary authority of the company officers (centurions), being based upon the full liberty of administering personal chastisement, was drastic and compelling. "Minor" offenses were thus eliminated from "legal" consideration, as were the serious cases of extra-routine discipline with which the sovereign commander elected personally to concern himself. In other routine cases of a serious nature, the military tribunes acted in judicial capacity as courts-martial, and, as such, administered a true military justice according to accepted military law.

In modern armies the power of purely disciplinary coercion is greatly limited. In our own army it is practically non-existent, except in a tentative way, pending appeal to the next higher authority, and then only as to very mild forms of punishment. In other modern armies it exists only as to distinctly minor offenses. The Roman conception that discipline belongs ultimately to the commanding general has been preserved only in the Anglo-American system. In practically all other countries the accused soldier is allowed his day in court—either in first instance or upon appeal—before civil judges, or at least before judges who are independent of army command. It is a striking paradox that this is especially true of those countries of continental Europe which adopted Roman law most completely. Great Britain and the United States, whose common law is usually regarded indigenous, thus reproduce the central conception of the Roman system of disciplinary administration, while the direct heirs of Rome's civil law have departed radically from the basic Roman conception of the prerogatives of military command. It must be admitted that the British or American commander is severely limited by statutory rules in his exercise of military criminal jurisdiction. Such statutory restrictions in fact give the military court a large measure of independence from his nominal command, and even subject him to the practical necessity, in many cases, of following its recommendations, whether or not he actually approves of them. It is significant, however, that in spite of agitation in favor of the continental point of view, which is further urged by the principle of the separation of powers, the English-speaking countries have adhered to the early tradition—no less English than Roman—that discipline is essentially a function of command.

A Spell on the Yukon

By Captain John M. Tatum, *Infantry Reserve*

Oh the North Countree is a hard countree
And it harbors a bloody brood.
From *The Hermit of Shark Tooth Shoal*

WELL do I recall my intense disappointment as I surveyed Fort Gibbon, Alaska, that chill October day some twenty years ago. Clustered about a small semicircular parade ground was a frontier miniature of an army post—barracks, headquarters, quartermaster warehouses, and officers' quarters. The gaunt towers of the Signal Corps station lent the only modern touch; and were a telling reminder of the many miles between us and the "outside." West of the post, the broad Yukon rolled by in its course from the Circle to the Sea.

The post town, Tanana, was as unprepossessing as Gibbon. This Arctic metropolis consisted of one double tow of wooden houses, cabins, and small stores precariously perched on the banks of the river. Touch up this scene with a weatherbeaten board sidewalk and you have Tanana—all of it.

It took no lengthy inspection for me to decide that this place was not only far removed in miles from the three posts I had known in my army career, but equally remote in living standards.

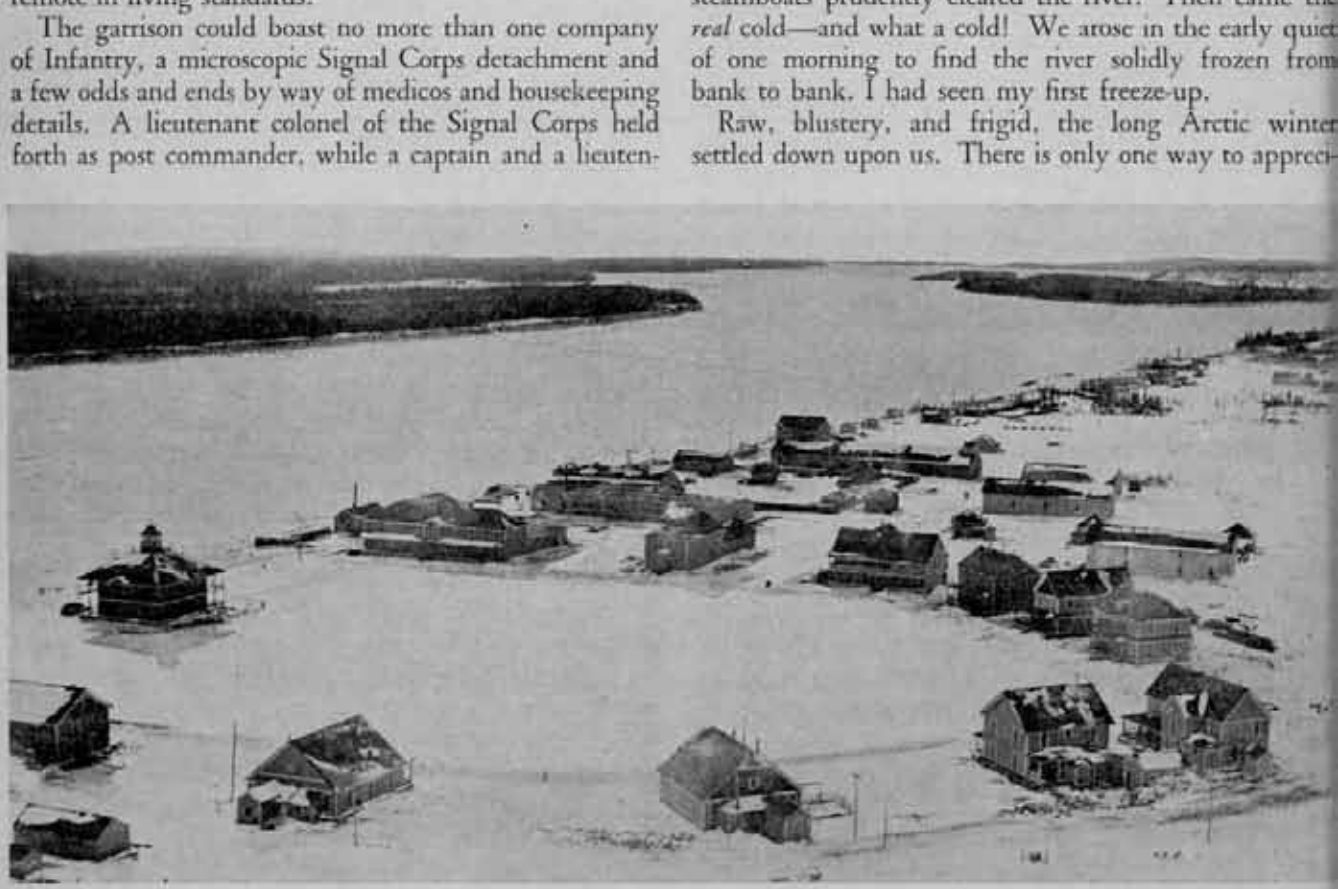
The garrison could boast no more than one company of Infantry, a microscopic Signal Corps detachment and a few odds and ends by way of medicos and housekeeping details. A lieutenant colonel of the Signal Corps held forth as post commander, while a captain and a lieutenant did their stuff with the Infantry company. Another Doughboy captain doubled in brass as post quartermaster, and a lieutenant doctor represented the Medical Corps.

Only two of the three married officers had their wives with them; the girl "outside" had decided not to risk the North because of a sick child. In the true spirit of Army women the two wives did what they could to make life more bearable for the bachelors.

A dance in our honor enlivened our arrival, for we were as much an event to the community as it was to us. The Loyal Order of Moose, appropriately enough a strong organization in that home of the antlered tribe, threw the party. The gathering was truly representative of the region—officers, enlisted men, the inevitable half-breeds, sourdoughs, and all the white women that could be drummed up in several days' march. The bachelors made much over two unmarried white girls, the only two within 200 miles.

Not long after our arrival ice began floating down the river. Then the first snow fell, the ground froze, and steamboats prudently cleared the river. Then came the *real* cold—and what a cold! We arose in the early quiet of one morning to find the river solidly frozen from bank to bank. I had seen my first freeze-up.

Raw, blustery, and frigid, the long Arctic winter settled down upon us. There is only one way to appreci-



Fort Gibbon was not a preferred station.

Tanana—the neighboring metropolis.

ate what a winter on the Arctic Circle means, and that is to spend one there. To say that it is hard on the nerves is not enough; but then I suppose it is about impossible to portray the state of mind that comes with the realization that you are to be snow-bound and ice-locked for eight months. Of course, isolation in itself is not necessarily nerve-racking, but when that isolation is scarred by physical discomforts, inconveniences, and a never-ending monotony of the same duties, same food, same companions and same "pleasures," it is another story. Under such conditions the nerves of even the most phlegmatic grow taut.

At Gibbon I have seen the thermometer register seventy below in the middle of the day. Need I say that there was no piped water during such weather? Sleds hauled water from house to house and delivery was made by bucket. Icicles hung to the ground from the nozzles on the water sled, and it was not uncommon to see them dangling from the nostrils of the horses. In barracks the water supply was kept in GI cans in heated rooms.

Tanana's solution to the water problem interested me. Two methods were used. Those who lived on the river bank sawed holes in the ice and drew up the water, farm fashion, with bucket and rope. Those too far removed from the river sawed ice blocks, hauled them to their cabins and stacked them like cordwood in the front yard. It was then a simple matter to chip off pieces for drinking and cooking purposes. An old sourdough gravely informed me that on one occasion iceworms nearly ruined his water supply.

Fort Gibbon had a community bath house. True enough, it was no Roman Bath, but then it was well-heated and afforded us the luxury of a warm shower. A schedule allotted bathing hours equitably among officers, women, and men.

Fires burned continuously in the buildings during the winter. There was no coal; we used wood and lots of it —at twelve dollars a cord. Our frontier heating system required a long special duty list—janitors, stokers, and a few watchmen to keep an eye on the stoves.

During the winter months electric lights glowed all day in offices, quarters, and barracks. Some days we never saw the sun; on others it would peep over the horizon at about eleven in the morning and then hastily duck back. Part of the time we had a greyish sort of daylight.

There seemed no limit to the snow. Day in and day out it fell in dry powdery crystals creating a vast whiteness that covered everything.

The Fairbanks mail came once a week by dog sled. From down the river the mail came very irregularly. The "outside" mail, mushed in over the trail, was rarely less than thirty days old when it arrived. The sparks that crackled in the radio station appeared later on our bulletin board in the form of a daily poopsheet that gave us the gist of the doings in the States. Those steel masts were our tie with home.

Food was *the* problem during the winter. There just were no fresh vegetables, milk, eggs, butter, and the like. So, the answer was canned foods aplenty. Fresh and frozen meats we had in abundance, for these were easily procured by the hunters. Moose appeared on our tables almost daily; properly prepared and seasoned it isn't bad.

The poor mess officer really had a job. All he had to do was supply a balanced ration and avoid monotony on the bill of fare. No wonder he went about with wrinkled brow.

Messing the bachelor officers was troublesome. We tried messing with the company and promptly ran into difficulties. The extras—sweets and cakes—on our table

brought growls from the men; they didn't, or wouldn't, understand that these were paid for by the officers. The dissatisfaction grew to such an extent that the bachelors finally sought eating facilities elsewhere. The Doughboy-quartermaster took refuge at the QM mess. I stuck to the company for breakfast, snatched lunch wherever I could, and the Chinaman's restaurant downtown gave me dinner. The memory of the half dollars that went for eggs, when in season, is still a sour one, and I still regret the many quarters spent for soft drinks and poor cigars. As a matter of fact, two-bits was the smallest medium of exchange in town, except at the post office—there two-cent stamps still sold for two cents. I decided that some day I would look up that officer who had congratulated me upon my Alaskan orders, alleging that I'd save money!

Prohibition was just another word in Alaska. Bootleg hooch was plentiful and cheap; moreover, former saloon keepers had thoughtfully provided for the prosperous by caching large supplies of bonded whiskey just before giving up the legal ghost.

The liquor problem brought dual headaches. Bored to death, fed up with routine, with nothing in store for the next year but a similar winter, the men were in a receptive mood for the bottle. We had real parties to contend with.

One officer broke up a noisy shindig in town, and although singlehanded, managed to shepherd fifteen hilarious and drunken soldiers safely back to barracks. A payday razee in the Doughboy barracks almost culminated in a mutiny. We tried discipline on the drunks, but then we couldn't jail half the company.

To top off this depressing situation we had narcotics to combat. Several dope peddlers plied their racket in the vicinity and found a lucrative market. On two occasions coke-crazed soldiers narrowly escaped committing murder. One lad, full of happy dust, shot a hole through the orderly-room window which had been graced by the company clerk's head a split-second before. Another demonstrated his marksmanship upon the tam-o-shanter of the post exchange sergeant while that worthy still had it on. The bullet deftly lifted the tam from the sergeant's head, leaving him uninjured but considerably startled.

One old sergeant, almost ready for retirement and hitherto thoroughly dependable, went completely haywire while on guard. It was only with considerable difficulty that the officer of the day succeeded in calming him down. Solitary was the cure for the corporal who ran amok. Two privates of the guard stuck rifles in the snow and blithely started out over the hill—this in a land where there was no place to go. Even the usually harmless QM detachment had its moments. There a ninety-pound private suddenly went berserk and emerged looking for trouble. He picked a 200-pound Infantry sergeant and did his determined best to take him apart.

These little incidents portray the mood and temper of men under the strain of monotony. Under such conditions an officer must be truly understanding and tactful to hold his men together.

The trouble was not confined to the enlisted men—the officers themselves grew increasingly quarrelsome and irritable. The most trifling incident was enough to turn one's best pal into a pettish schoolboy. Before the winter was over, our little garrison had divided into two moody and bitter factions.

Civilians were no more immune from spells of Arctic lunacy than we. In fact, the craziest show I ever saw was staged by a civilian. This bucko hated the town marshal who had once laid him by the heels for a minor offense. So, one fine day, our village bad man got himself a snootful and forthwith descended upon the jail. Finding its guardian absent, he took possession, and at once began shouting drunken defiance at the sovereign territory of Alaska in general and at the town marshal in particular. I came into the picture when the marshal burst into my room at the hotel and demanded my pistol. His, it seemed, had been left at the jail. I passed over my Colt, and thus armed, this stout son of the North Countree stormed the lockup. Only in Alaska can I conceive of a yegg breaking his way *into* jail.

We fought the dreariness of indoor life with an endless round of dances, smokers, boxing matches, bowling tournaments, competitive games, picture shows, and every conceivable kind of contest. But still to no effect—a look out of the window and you saw the same cheerless expanse of white, unending and unbroken.

Not all our time was spent indoors, for we did engage in winter sports. Mushing dog teams was a favorite recreation. The quartermaster corral boasted several good teams. A few of the noncoms bought dogs, or won them with practiced fingers over the gambling tables in town. I shared a team with the Doughboy-quartermaster and the surgeon acquired one, too.

A satisfactory dog sled set you back fifty dollars, but a good lead dog came higher and was worth whatever he cost. Dogs are not pampered parlor pets in Alaska—they are beasts of burden. At times, they are ferocious, snarling beasts, best handled with whip or club. But these wolfish animals possess an uncanny intelligence, and many a man owes his life to the unerring accuracy of a lead dog's nose bent on a snow-covered trail that is invisible to his master.

On all outdoor duty or activities it was necessary to wear the special type of clothing known as Alaskan issue. This outfit, though decidedly effective in providing protection against the elements, could scarcely be classed as rakish. Reading from top to bottom the principal items included: fur caps, flapped for face protection; heavy outer coats over the thick breeches; long woolen stockings worn over the breeches legs and rolled below the knees; and moccasins with thick felt insoles. In damp weather we wore mucklucks, but these were not often necessary, for Alaskan snow is usually quite dry. Ordinary shoes were out, for leather froze as hard as a brick.

The moccasins were quite comfortable in spite of their lack of heels.

A soldier in this get-up looked about as military as a Maori chieftain. Perhaps this strictly utilitarian ensemble had something to do with the lack of discipline.

As the months wore on, the day imperceptibly grew longer. At last the snow began to melt, and the ground became mushy. Now, as if to make up for his long nap, the sun worked overtime. One fine morning we woke up to a series of deafening crashes—for the ice had started moving in the Yukon! The river turned into a crashing, grinding torrent of ice floes. For ten days it was unsafe to cross. Longingly we eyed the mail, piled within sight on the opposite bank.

Ducks winged in from the south. Soon the ponds were alive with them and it was no feat at all to bag five or six varieties on one hunt.

Now came new surprises. The uninterrupted daylight was hard to get used to. At taps it required a sort of self-hypnosis to make bedtime convincing with the sun going full blast. Reveille would find the sun at midsky. On the 21st of June it shone right on through midnight.

Flowers sprang up in the sun-warmed turf, and with them came clouds of mosquitoes and gnats. Large and vicious, they swarmed everywhere. On one memorable occasion our midnight baseball game was called after five innings, but not on account of darkness—we fled before an onslaught of determined mosquitoes. Out of doors we wore protective clothing—a wide-brimmed hat with a veil to cover the face, and long gauntlets to protect hands and wrists.

The mosquitoes were formidable enough to defeat the Air Corps. A captain, up to give our station the once-over for use as a temporary landing field, did not tarry long. One bout with these winged furies and he confessed himself routed. He turned in an adverse report.

Before the flier made his retreat we introduced him to Scotty Kay, famed the length and breadth of the Yukon as a king among poker players. Planes were new to the old sourdough and he was quite stirred. On the return trip the squadron flew low over Scotty's hotel, dipped in salute, and dropped a note. The old settler was pleased as a schoolboy.

* * *

But with all its bitterness, Alaska offers beauty that is breath-taking. From the top of a rise one looks down on diamond-bright snowfields that stretch away to lost horizons. Sunlight slanting through ice-sheeted evergreens has to be seen to be believed. The northern lights are weird and awe-inspiring. They are best seen by moonlight when their streamers ride across the night in brilliant and blinding color. No one can look on this play of unearthly fire without an emotion compounded of fear and wonder.

Love it or hate it; call it what you will; Alaska is a wonderful land—a rich country, a hospitable country, and withal, a topsy-turvy country. Poised, as it is, on the flank of the world, who knows the size of the American garrison it may some day harbor? *You* may see Alaska yet!

Government transportation at Fort Gibbon.

"Idiot's Delight"

By Agnosticus

The hare cannot depend upon the tortoise for advice and orders.

WITH commingled interest and astonishment, I have just put aside several mammoth commentaries dealing with the late lamented Second Army Maneuvers. Mansized and many were the paragraphs that dwelt on our errors which were also mansized and many. But in all this welter of analysis I found nary a word on what I consider the basic mistake of the whole affair, to wit, our utter failure to realize that methods suitable to a war of attrition cannot be used in a war of rapid movement. We fought the War of Michigan with the slow, cumbersome, mimeograph-ridden methods of 1918 where opposing forces were dug in and all hell couldn't move them much, if any. Here's how those methods worked in the great Northwest.

On one memorable day the situation indicated that we could expect attacks from the air and from a strong mechanized force on both flanks. We also had every reason to expect a nice blanket of gas. Finally, we knew full well that the good old infantry-artillery gang was all set to come pounding in. In short, the enemy was ready to give us the well-known works. We knew it would be hop, skip, and jump all day and all night and the devil take the hindermost. Now we were not babes in the wood. We had been subjected to mechanized attacks before and knew what to expect. We had seen the futility of trying to use old methods of staff functioning. So what did we do? We did just what we had been doing.

We selected our command post. We pitched large wall tents for each of the G's and the Chief. We dug ourselves a fine, deep, straddle trench. The lad in charge of our mess pitched the big mess tent and aligned our chairs in orderly rows. We unlimbered our mimeographs; we set up our map boards; we tacked up our work sheets; we put out our journals and diaries. In brief, we established an office set-up that would have served the Standard Oil Company of Indiana. But, then, our foemen did the same thing, so we were even anyway.

After the usual priming and cranking, our staff machine spluttered, coughed, and then spewed out a beautifully mimeographed G-2 report. Among other things, it proudly signalled the presence of Red mechanized forces at a half dozen nicely located points. Now this information was several hours old when it was mimeographed and certainly another hour toddled by before it got down to the battalion command posts. But it was a model of the mimeographing art, by gad, so what more could be asked? It told the shock troops all about the weather and visibility in four or five resounding sentences. It told them where Red mechanized units had been, although the boys knew that these gas buggies might be in the next county by now. But all that was unimportant. The big thing was this: we had discharged our duty as good staff officers should —we had clung resolutely to time-honored form and tradition.

Yeah, we had imaginations and they worked all right too. That wasn't the trouble. The trouble was we didn't have the guts to say—"Aw, what the hell! This dope is hours old! It's no good now. Why waste a lot of time handing down inaccurate and useless information?" No, we didn't dare, lest some higher-up think we hadn't been working on command post exercises for the past 15 years and didn't know the number and contents of each paragraph and subparagraph in our field orders, administrative orders, annexes, signal instructions and similar military curiosa of the field.

Our first field order was another gem. Its margins were true, its pages were stapled together with precision, and its distribution was indicated so plainly that any sergeant major could pass it along with only half an hour's study. Its technical verbiage alone proclaimed a major military erudition. But was it worth a damn with a lot of here-they-come-there-they-go fighting in prospect? No. It was too detailed. It left too little to subordinate commanders. It tried, as did every order from army on down, to coördinate and control everybody down to Private Chiselwitz, Number 3, rear rank, 3d Squad, 2d Platoon, Company A, 970th Fusiliers. Leaders of small units scarcely dared to fire on the enemy without authority in writing. And this in spite of the fact that everyone realized that a highly mobile situation screams for decentralization of command.

My own contact with all manner of intelligence sections was constant. The S-2 of one regiment was especially grateful for the bits of obsolete enemy information that I passed on. Every time I told him that Red vehicles had been reported at such-and-such a road junction he was tickled pink. Did he think these space-eaters would linger long at that point? Of course he didn't; but it was his duty to fill message books, journals, and work sheets with enemy information. And fill them he did. Sure, he knew it was hokum, but that didn't matter; he was merely playing the game according to the rules.

My criticism, then, strikes at the very vitals of our whole staff procedure. That procedure was all right in 1918. It has even been touched up a little since. *But it has not been brought up to date for use in the new type of warfare that is here and here to stay.* The whole cumbersome set-up should be junked and a fresh start made. Is all of our elaborate staff overhead necessary? Should each one of the G's try to keep a map when in a swiftly moving situation it is almost impossible to keep even one

map reasonably up to date? Do we need the small army of clerks we now have? Should G-3 and G-2 be separately functioning sections? Should it ever be necessary for G-3 to walk as far as 20 feet to look over a G-2 map of questionable accuracy and reliability? You and the rest of the army know the answers to these questions as well as I do.

We know that the tempo of staff operation must be at least quadrupled if we are to survive in mile-a-minute battle. A staff cannot function a-horseback when troops move at a 50-mile clip. The hare cannot depend upon the tortoise for advice and orders. Were real bullets to fly, we would be forced to change these methods in a hurry. Why can't we imagine the bullets now?

The Vickers-Armstrong 12.7 mm. (0.5 in.) Antiaircraft and Antitank Equipments

THE following description of the Vickers antiaircraft and antitank equipment is published to bring attention not only to this particular successful equipment and acquaint those interested with its characteristics, but also to emphasize again the importance of dual purpose antiaircraft and antitank weapons. In the design and manufacture of dual purpose weapons there is contained a partial answer to those persons who are concerned primarily with economy requirements. Many foreign nations have equipped units with dual purpose antitank-antiaircraft weapons and it might be well that we do likewise.

It is somewhat generally conceded that the popularity of the air corps in this country has retarded the manufacture and supply of essential equipment, such as described below, and that impetus to its manufacture, at the present time, will be for the common good.

The antiaircraft machine gunner of the future should be equipped to execute not only his normal antiaircraft missions but he should also be prepared to satisfy antitank and other defense requirements, in cases of emergency.

This equipment is manufactured with both single and multiple gun mountings.

Guns

The guns on both mounts are the 0.5 in. high velocity Vickers automatic guns. They were specially designed and developed for the purpose of delivering a sustained volume of rapid and accurate fire against aircraft flying at low or medium heights and against tanks. The design of the gun is based on the same principles as the Vickers rifle caliber machine gun. The characteristics of the gun are listed below:

Muzzle Velocity	914 m.s.	3,000 f.s.
Maximum Horizontal Range	6,400 m	7,000 yds.
Maximum Height at 90° Elevation	4,750 m	15,600 ft.
Rate of Fire	350-450 r.p.m.	
Maximum Elevation	90°	
Maximum Depression	10°	

The barrel of the gun is water-cooled and permits continuous fire for a long period without becoming overheated. The firing mechanism is readily accessible and a particular feature of the gun is that the feed mechanism and the lock are each self-contained units, and either may be removed or replaced in a few seconds without any tools. No adjustment of the mechanism is necessary to fire the gun at any angle of depression or elevation. The lock has a reciprocating motion, and at the end of its forward movement, is positively locked to the barrel by a toggle action. Additional safety arrangements are incorporated to insure that the cartridge will not fire until it is supported in the barrel. The mechanism is of robust construction and it is especially built to withstand firing for long periods under unfavorable conditions.

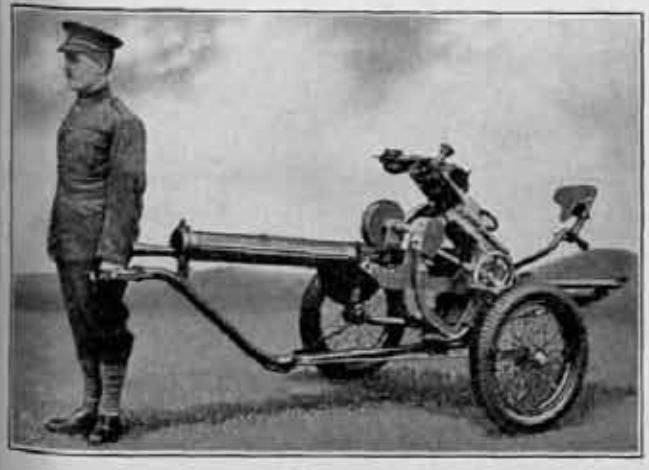


Fig. 1

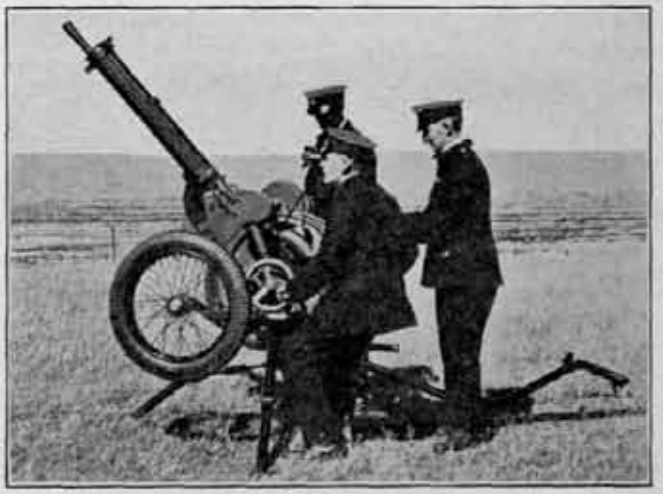


Fig. 2

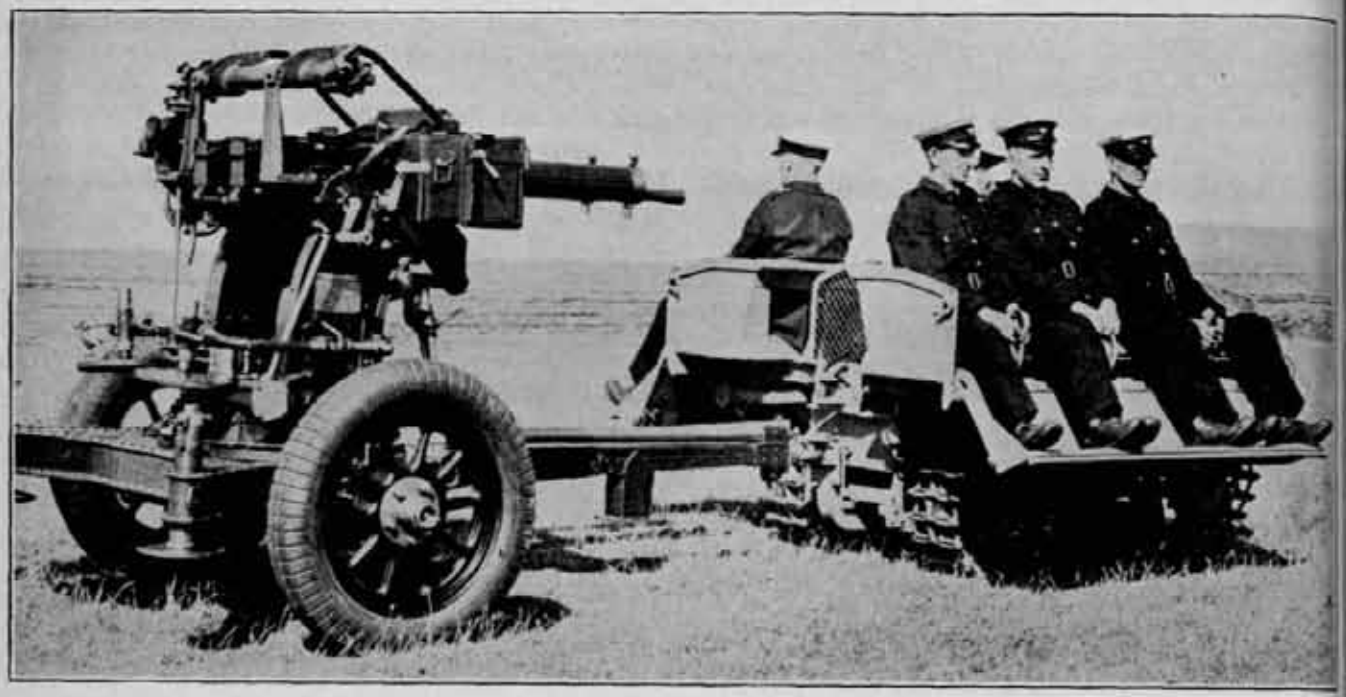


FIG. 3

AMMUNITION

The following types of ammunition are supplied for use in the gun:

1. Service (Mild Steel Core).
2. Armor Piercing (Hardened Steel Core).
3. Flame Tracer (Mild Steel Core).
4. Armor Piercing Flame Tracer (Hardened Steel Core).
5. Smoke Tracer Incendiary.

Ammunition is fed by means of ammunition belts. The belts provided are either 100-round canvas belts or articulated metallic link belts.

MOBILE SINGLE GUN MOUNTING

The details of the single gun mounting are shown in both the firing and travelling position in figures 1 and 2. This mounting can be towed by a small tractor, truck, or car, and can travel at speeds up to about 25 miles per hour. It is, as shown in the above illustrations, so light that it can be moved readily by hand and can be brought rapidly and easily into and out of the firing position.

MOBILE TWIN GUN MOUNTING

The mobile twin gun mounting is shown in figure 3 and consists of the guns, mounting and firing platform, together with a separate axle with two wheels for transport purposes. The separate axle fits into spring housings on the firing platform. The equipment can be brought rapidly into action, by simple rocking movements, without the use of winches, jacks or other means. The weight of the equipment in action, complete with water, is approximately 1 ton. It has a 60-in. wheel track. It can also be towed by a small tractor, truck, or car and can maintain the same speed as the single gun mounting. Provisions have been made for levelling the mounting, movement up to 3° in any direction being provided.

SPECIAL ANTIAIRCRAFT CORRECTOR SIGHT

This equipment is provided with the Vickers-Armstrong corrector sight which is a calculating as well as a pointing sight. It is so constructed that, when the settings of target course, speed and range are made, the telescope is automatically deflected through the necessary angles of elevation and direction to engage high- or low-flying aerial targets, or moving ground targets. A mechanism is also provided for combating climbing and diving targets.

GENERAL FROSSARD, *although he was not beaten, thought he was beaten, and therefore was beaten. General Zastrow, though half beaten, refused to be beaten, and therefore was victorious.*—COLONEL F. E. WHITTON, *Moltke.*

The Will of the Leader—Part II

By Major Richard G. Tindall, *Infantry*

Every important decision was a leap in the dark.

When the Chief of the Great General Staff awoke on September 1, 1914, he might well view the future with confidence. As the date of the German national festival approached—the forty-fourth anniversary of the surrender of Napoleon III at Sedan—German armies, again under the guidance of a von Moltke, were once more sweeping on to victory over their hereditary enemy. Victorious in the first great clash, they were now approaching the heart of France.

The enemy's left was separated from his central grouping and was retreating by forced marches to avoid destruction. On the other hand, the French central group seemed to be making a desperate effort to retrieve the situation by a general counter-offensive.

So much the better! The German Fourth and Fifth Armies would meet the French frontally while the new direction given to von Hausen's Third Army would automatically result in an envelopment of the left flank of the French central grouping. Things seemed to be moving rapidly to a successful climax.

However, the situation soon lost some of its rosy aspect. Almost before Moltke had entered the little red-brick school on the anniversary of the Battle of Sedan, von Tappen thrust a message from Hausen before him. The Third Army reported that on the evening of August 31 it had run into a strong enemy occupying an organized position behind the Aisne. The Third Army felt it could not launch an attack against this position before September 2.

Thus the hope of enveloping the enemy's central mass with Hausen's army went glimmering. But still worse, this left the Fourth and Fifth Armies to work out their own salvation unassisted. The Fifth Army was in an awkward position and the Fourth was seriously weakened by the heavy losses it had sustained in forcing the line of the Meuse. OHL saw no choice. The Third Army must help at once—at any cost. Out went the following radio:

> Immediate continuation of a resistless attack toward the *southeast* by the Third Army is absolutely indicated, since on this the success of the day depends.

But to OHL even this seemed insufficient, since Hausen could not envelop the French whose forces extended farther west than had been thought. How about von Bülow's Second Army? It had only a beaten enemy before it. Couldn't this army spare troops to make the envelopment? There *was* an idea and so, at 11:55 A.M., this radiogram went to Bülow:

> Third, Fourth and Fifth Armies engaged in a hard battle against a superior enemy. Right flank Third Army at Château-Porcien on the Aisne. Advance of the left wing in this direction, and if possible, intervention with cavalry today urgently desired. An enemy cavalry division is in position west of Château-Porcien.

It was "shift left" again. The left wing of the Second Army would now move to the *southeast*. The message which ordered this "shift left" had been doctored quite a bit. Presumably, Tappen thought that hard-headed old Bülow might not coöperate unless he believed matters were serious.

Having thus dealt quickly, vigorously, and somewhat imaginatively with the situation, it now occurred to OHL that it might be a good idea to find out just what the situation of its center armies really was. About noon out went radios to the Third, Fourth, and Fifth Armies, asking for the locations of their corps, their wings, and their front lines, and for the day's objectives of the various corps.

Hausen's reply at 2:30 P.M. delighted OHL. In accordance with its orders, the Third Army had been about to attack when aviators reported the enemy retiring to the southwest. The Third Army would launch an energetic pursuit—to the south, since OHL wished it that way. (Map 1.)

OHL certainly saw no reason to object. Neither did it feel called upon to countermand its recent order to Bülow. Hausen was notifying Bülow of the new situation and Bülow would issue his own counter-orders.

Soon afterward an intercepted radio from the Fourth to the Fifth Army stated that the former was attacking, and added that according to prisoners' statements, dissolution was beginning in the French forces. Throughout the rest of the afternoon, one victory-message followed another. The enemy was now in retreat before the Fourth Army. Soon the Fifth Army reported that it was "progressing victoriously all along the front." Its center had crossed the Meuse! At 7:25 P.M. the Fourth Army asked for instructions.

Moltke, Tappen, and Hentsch briefly estimated the situation. The French central armies were fleeing and beginning to break up. This success must be exploited; therefore, the direction of pursuit prescribed on August 27 must be altered. Pursuit to the south was now indicated. The Third Army was moving south already. The Fifth Army could not turn south yet. What should the Fourth Army do?

The experience of the day had cured OHL of that masterful feeling. Just now it was through doing any coördinating. The Fourth Army, in accordance with the principle that the buck is passed down, never up, received the following order:

> Exploit success in coöperation with Third and Fifth Armies.

The Fifth Army reported soon afterward that there was danger of interference between the left wing of the Fourth Army which was to march south, and the right wing of the Fifth Army. The Fifth Army was still maneuvering under the directive of August 27 and therefore march southwest.

OHL felt that the important thing at this time was to reap the reward of victory; it would regulate boundary details later. Therefore, it disregarded the Fifth Army's dilemma and, at 10:30 P.M., dispatched the following radio to the Third and Fourth Armies:

> West and east of the Argonne Forest, French bivouacs over a large area. Columns of vehicles marching toward the southwest. Enemy attempt to retreat to southwest probable. Early energetic advance of Third and Fourth Armies to the south may bring great success.

As a result of the rapidly changing situation in the center, the affairs of the left wing received comparatively little attention. Early in the day OHL had learned the outcome of the Bauer-Rupprecht-Xylander-Tappen-Moltke episode. The Sixth Army reported that the prescribed attack across the Moselle could not be launched before September 2; furthermore, it would attack Nancy at the same time despite OHL's objections. The artillery deployment, made in accordance with Major Bauer's plan, could not be modified conveniently so the Sixth Army would have to go ahead with the Nancy attack.

To OHL this indicated that the Sixth Army's previous objections to the Moselle attack could not have been well-founded. A few days ago the Sixth Army had seen no chance of success in the Moselle attack—it had insisted it was too weak. Now it was willing to tackle both the Moselle crossing and the formidable Nancy position at the same time. Despite this change of heart, Moltke was somewhat dissatisfied this evening with the Sixth Army and its desire for methodical plodding. Its viewpoint always seemed to differ radically from that of OHL.

From Luxemburg to Dieuze, Sixth Army headquarters, is less than 100 kilometers. Two hours at best separated Moltke from Rupprecht and Krafft von Dellmensingen —if Moltke felt in the mood for auto riding. He did plan to take an auto ride the next day—he would drive to Longwy and examine the ruins of the little French fortress and admire the effects of the German heavy artillery.

As to the situation of the right wing, OHL was in the dark. Since early morning Cologne had been having trouble reaching the First and Second Armies. The powerful Metz post would soon take this over but the necessary arrangements had not yet been completed. Anyhow, OHL had become accustomed to waiting for reports from Bülow and Kluck. The situation was virtually normal. In any case the success in the center was the outstanding factor. That night Moltke wrote again to the Countess Elsa:

> Today on the anniversary *(Schlachttage)* of Sedan, we have again scored a great success against the French.
>
> * * *

This great success was the victory of a dream—an hallucination brought about by misinterpretation of overenthusiastic reports. Far from seeking a decision with their central armies, the French had even countermanded a counter-attack by which they had once hoped to delay the German advance, and had withdrawn without fighting.

Preconceived ideas die hard—particularly in the minds of exponents of that intelligence system known as the *method of intentions*. Moltke was the nephew of the leading exponent of that system which, by interpreting the known and, by surmise the unknown, seeks to read the mind of the opposing commander and ascertain his *intention*.[1]

Thus, a captured French order and one or two extravagant phrases sufficed to rivet Moltke's attention on his central armies to the detriment of his right wing. It seems improbable that he fully realized the density of the concentration he ordered for his imaginaty battle as the German central armies approached the Meuse-Argonne region where American forces were to fight four years later. Some 18 infantry and 2 cavalry divisions were jammed into the difficult region between Attigny on the Aisne and the Meuse a little north of Verdun—55 kilometers of hills, woods, and bad roads. American officers will remember acutely the inadequate communications in this region.

Meanwhile, on the German right, nine corps, without depth and with no reserves behind them, were scattered over 100 kilometers. Moreover, the First Army on the marching flank was as ignorant of the general situation as OHL was of the First Army's situation. Let us quote General Fuller of the British Army:

> If intercommunication between events in front and ideas behind is not maintained, then two battles will be fought—a mythical headquarters battle and an actual front-line one, in which case the real enemy is to be found in our own headquarters.

The mythical battle had been fought. The real battle was yet to come.

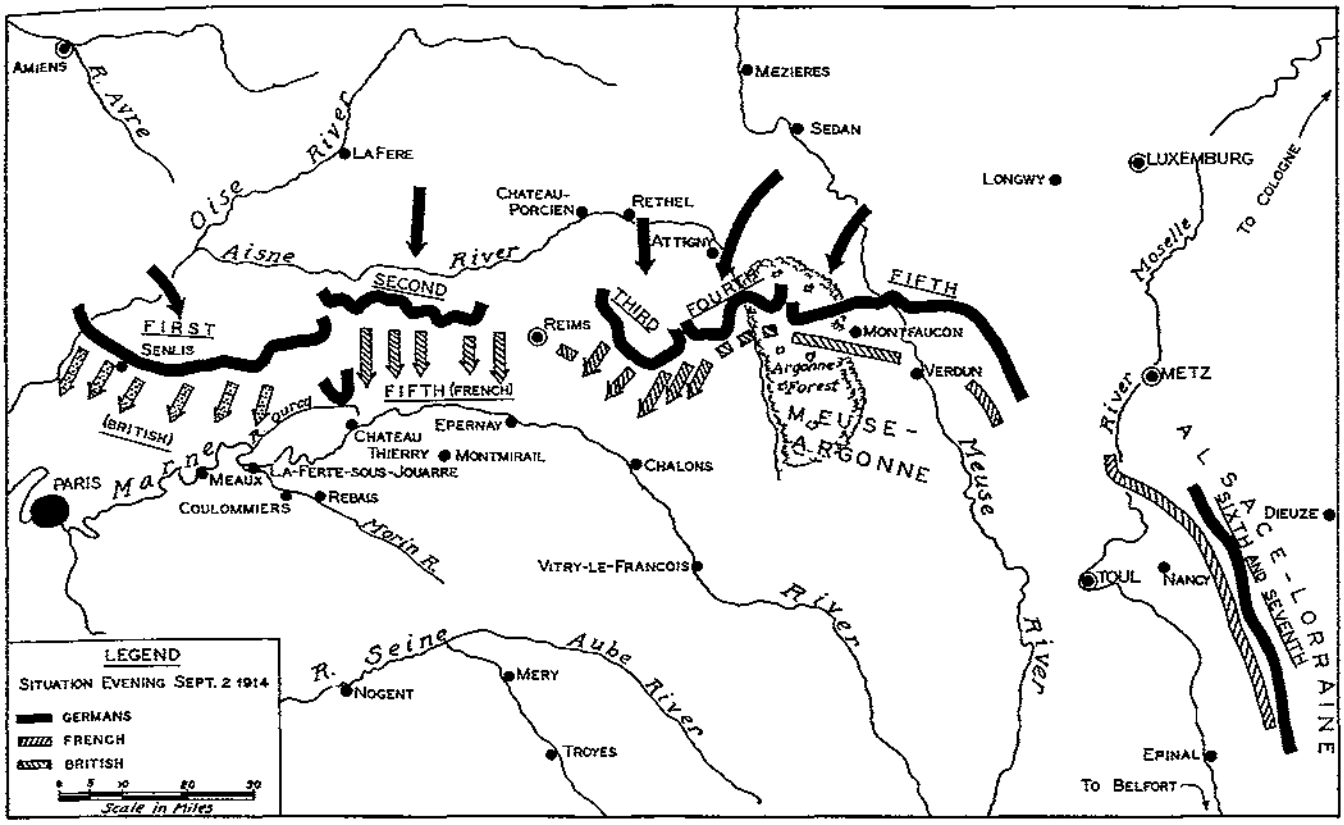
SEPTEMBER 2

On the morning of September 2, Moltke still had precious little news from his right flank. Not a word had been received from Bülow since his report of August 31. A delayed report from Kluck arrived, but it contained nothing not already known.

According to an intercepted radio, Hausen's Third Army was advancing rapidly and the enemy to its front was in *flight*. The Fourth and Fifth Armies reported that they would continue the pursuit. Thereupon, OHL at last found time to settle the question of boundaries for the central armies. These were so set as to cause these armies to continue on to the south.

Finally, at 9:50 A.M., Bülow reported that he had captured La Fere and expected to reach the Aisne by the night of September 2. OHL was quite pleased by the location of his objectives for it appeared that Bülow had

[1] The other intelligence system—the *method of capabilities*—holds that the enemy commander may endeavor to deceive, or may change his original intention, and therefore that information bearing *solely* on the hostile commander's *intention* is insufficient. This method concentrates on establishing accurately the enemy's physical ability to adopt various lines of action. It does not discard any enemy line of action until it appears that the enemy is *physically unable to adopt it*.



MAP 1 — *It was time to make a decision—information or no information.*

resumed his march to the south. The order of the day before, directing him to swing to the southeast to help Hausen had done no harm. He had evidently corrected his march direction very promptly when Hausen notified him of the changed situation.[2]

Shortly before 10:00 A.M. Krafft von Dellmensingen, Chief of Staff, and Major von Mertz, G-3, of the Sixth Army, arrived at OHL. If Moltke would not go to the Sixth Army, the Sixth Army felt it essential to go to Moltke. Things must be straightened out. Major von Mertz, who feared that recent misunderstandings were the prelude to disaster, had insisted on a personal interview.

Colonel Tappen saw these two officers first and painted a glowing picture of the general situation. Krafft aggressively insisted that the Sixth and Seventh Armies had pulled their weight and estimated that they had continuously occupied the equivalent of eleven French corps. Hentsch, questioned as to these figures, was even more enthusiastic. He thought there were thirteen and a half corps still in Lorraine.

Krafft then discussed the present mission of the Lorraine forces—to hold in place an equal number of the enemy. He said this could not be done. The French were backed up against their fortresses, which, together with the river lines, offered defenses that could easily be held by inferior forces. Even a vigorous attack could not fix forces equal to the Sixth and Seventh Armies. Consequently the French could not be prevented from pulling forces out of Lorraine for employment elsewhere. Tappen admitted all this.

Krafft then discussed the plan to withdraw the Sixth Army and use a portion of the troops to help the Fifth, as Tappen's directive, dictated to Major Xylander, had suggested. Krafft rejected this because of the bad moral effect of a withdrawal, and because of the slowness with which such a movement must be executed. The heavy artillery, just deployed, would have to be withdrawn, and since it did not have teams, this would be a slow business. Moreover, large quantities of munitions had been brought to the front in preparation for an attack. This, too, would have to be evacuated. And finally, since the armies west of the Meuse were pursuing, could the Sixth Army arrive in time? Tappen admitted that Krafft's views were well founded.

Krafft then explained why the main attack had to be against Nancy, and not between Toul and Epinal as OHL desired. The effort must be made against Nancy because OHL wanted an attack launched as soon as possible, and it was possible only to engage the heavy artillery quickly in the vicinity of Nancy. Tappen concurred.

Krafft promised to launch the big attack on September 4. He showed the many things that had to be done and Tappen recognized that the Sixth Army had been right not to make a premature uncoördinated rush against the formidable French positions. Krafft promised that the Sixth Army would follow up vigorously if the enemy retired.

[2] This complacency was scarcely justified. Hausen's message had been delayed several hours, so the failure of OHL to promptly countermand its own order resulted in much useless marching by two of Bülow's corps. Von Kühl lays part of the blame for the escape of the French Fifth Army to this movement.

About the time agreement had been reached on all points, Moltke entered the office. Things were explained to him and he approved the plans of the Sixth Army. To make things unanimous, Stein came in, and he too agreed. In parting Moltke said, "Be sure and prepare your attacks well with artillery."

Thus, in the interview with the aggressive Krafft, OHL completely reversed its previous stand, and let the attack between Toul and Epinal, which it had previously considered as essential, be relegated to a back seat.

The brain child of Major Bauer, which OHL at first had violently disowned, had been adopted into the family. The unauthorized mouthings of a junior staff officer had changed the strategical plans of two armies.

But OHL was now too involved to consider this. Late in the afternoon an intercepted radio from Bülow to Kluck, showed that the enemy was retreating behind the Marne and that the Second Army expected to reach this river on September 3. But there was still no news from Kluck and this was disquieting. It was now forty-eight hours since his situation had been known. Moreover, the exact situation of the Third and Fourth Armies was not known at 8:00 P.M.

In almost total ignorance of the situation, Moltke now made one of the most important decisions of the Marne campaign.

Two days had gone by since the pursuit on the right wing had swung to the south. Therefore it was time to make a decision, information or no information. The armies must know whether they should continue to move south or return to the ideas of the directive of August 27. Unless this matter were clarified, misunderstandings would follow.

From captured documents Hentsch had drawn up a table showing the French order of battle. Most of the French regular corps had been identified; of the reserve formations, only six divisions had not been definitely spotted. Unfortunately, the missing information was the most vital. What forces did the French have available in the Paris region? Were other troops being moved there?

Without this vital information, and without adequate intelligence of his own troops, Moltke was forced to base his decision on the quicksands of assumption. He knew the entrenched camp of Paris had to be considered—French forces might be concentrating there secretly. In fact, rumor indicated as much. Since French troops had already been shifted from Alsace to Amiens, other troops might equally well be shifted from Alsace to Paris.

And speaking of Amiens, what had become of the French force that had been defeated near that city and vanished behind the Avre? In the absence of actual information Moltke assumed that this force did not "require much strategical consideration." He dismissed the British in like manner. The thing to do now, he concluded, was to strike the mass of the French. The left flank of this mass was the French Fifth Army. This army was overlapped by the German right flank and was retiring southward to the east of Paris. It must be enveloped and driven to the southeast.

Thus, the original idea of envelopment came back again in an attenuated form. Moltke, however, was not prepared to dispense with flank protection from the dangerous direction of Paris, now that it seemed that the Germans, too, must pass east of that city. Therefore, the First Army, echeloned behind the Second Army, would protect the right flank. The Second Army, instead of the First, would make the envelopment.

At 9:20 P.M. Moltke signed the following radio for Kluck and Bülow:

> The intention of OHL is to throw the French back to the southeast, cutting them off from Paris. The First Army will follow the Second in echelon and will protect the right flank of the armies.

As luck would have it, no sooner had this somewhat carelessly worded radio been sent than news of the right wing began to arrive. Hausen reported enemy forces entraining at several railway stations in front of the Third Army. Several long trains had been seen moving to the southwest. Thus, OHL received the first unmistakable warning that German pressure was not strong enough to prevent the French from regrouping their forces by means of rail movements. Regardless of a growing fear for the safety of their right flank, Moltke and Hentsch did not consider it necessary to pass this information on to Kluck and Bülow. The dissemination of information was not OHL's forte.

Shortly before midnight OHL received a radio from Kluck dated 5:00 P.M., September 1. He reported that he had failed to strike the flank of the French Fifth Army, and, by implication, asked for instructions. OHL saw no reason to send further orders; it was assumed that the radio it had just dispatched would be sufficient.

Kluck's radio had taken some thirty-one hours to reach Luxemburg. OHL's information was no longer forty-eight hours old; it was only thirty-one hours old. Things were looking up.

September 3

A vigorous pursuit by Bülow's Second Army was now of supreme importance. Moltke still hoped for great results from Bülow. It was also essential that the center and left exert enough pressure to prevent the French from maneuvering. This was the viewpoint of OHL as reports of the day before began to come in.

The Fourth Army reported that it had made progress. Hausen had been engaged and had captured prisoners from four French corps. Bülow reported that he had pursued beyond the Aisne *in constant contact with the enemy* and that on September 3 he would pursue toward the Marne.

A report from Kluck—thirty-six hours old this time—said there were three English divisions in his front between the Oise and the Ourcq and that he would attack them on September 2d. After throwing them back, he would hold himself in readiness for further orders. OHL

did not feel bound to answer this second request for instructions. It felt that the radio sent the evening before would be sufficient.

A series of radios now came in. These indicated that the enemy was retreating in orderly fashion before the left of the Fourth Army and the right of the Fifth. The Fourth Army confirmed hostile entrainments in the region north of Châlons and reported intense activity on certain railway lines in its front. Bivouacs seen the day before had disappeared. OHL realized that the French had escaped the pressure of the Fourth Army and were moving troops away from its front. But where? For what purpose? OHL wondered—but took no steps to insure continuity of investigation.

In the afternoon, a radio from Kluck (written on the evening of September 2) stated that his cavalry and advance guards had failed to pin down the English. One of his corps on the right had thrown back a French division and an English cavalry division near Senlis. The bulk of the English were retiring in the region of Meaux and strong French forces were retiring by way of Château-Thierry. Kluck had sent his left corps, the IX, to strike the flank of these French forces. Two corps were facing Paris, covering the movement, and two were echeloned to the right of the IX. The Marne was clear of the enemy to the west of Château-Thierry. Kluck added that any attempt by the First Army to cross the Marne on September 3 would have doubtful results.

OHL was not worried. This radio had been sent before Kluck had gotten his new orders. Moreover, his views seemed generally in accord with those of OHL. It could do no harm to Kluck's left to coöperate temporarily with Bülow's pursuit, since Kluck himself was limiting that pursuit to the Marne, and was keeping an eye on Paris.

Consequently Kluck got no new orders. Nor did he get any new information as to French entrainments in front of other armies. He was not even asked to identify the French division he had thrown back near Senlis. As a result, German Intelligence failed to learn that the force which had vanished behind the Avre, supposedly in dissolution, had reappeared in the Paris region. Therefore it underestimated the danger. To quote the British General Spears:

> Once again their Intelligence Service was showing itself inadequate, badly organized, and incapable of deducing conclusions from ascertained facts.

At about 7:00 P.M. OHL received a radio from Bülow dated 5:30 P.M.:

> The Second Army following close on the enemy's heels, pursued until across the Marne. Even south of the Marne the enemy is retreating in complete dissolution. The Marne bridges are partly destroyed. Are there any orders for the Second Army?

OHL promptly replied:

> Your actions approved. The south bank of the Marne should be won.

The Crown Prince reported that his Fifth Army had captured a strongly fortified position near Montfaucon and that the enemy was retiring. He stated that he intended to rest his army the next day.

OHL bounded into action. What could the Crown Prince's chief of staff be thinking of? This was no time to rest. The Fifth Army was told in unmistakable terms that it must advance on September 4; that any halt would seriously interfere with operations as a whole.

Meanwhile, buried in a mass of long, private messages and official telegrams of no importance, three short radiograms awaited their turn to be sent to Luxemburg. These were radios from Kluck which were to be sent to Metz, decoded and then passed on to OHL. They waited because the post of Metz was swamped. They were short and concise and important, but they did not get to Luxemburg that evening.

Moltke went to the Hôtel de Cologne without knowing that Kluck's First Army was plunging on across the Marne; that contrary to orders, it was ahead of the Second Army instead of being echeloned to its right and rear; and that (perhaps because of faulty wording of OHL's order) Kluck was not worrying much at this time about protecting the right flank of the German armies from the direction of Paris.

SEPTEMBER 4

Early on a fateful day, "rich in worries and disappointments," the first of Kluck's radios got through. This message, dated 5:00 P.M., September 3, read:

> The First Army crossed the Marne today at Château-Thierry and west thereof; partial indications of enemy dissolution.

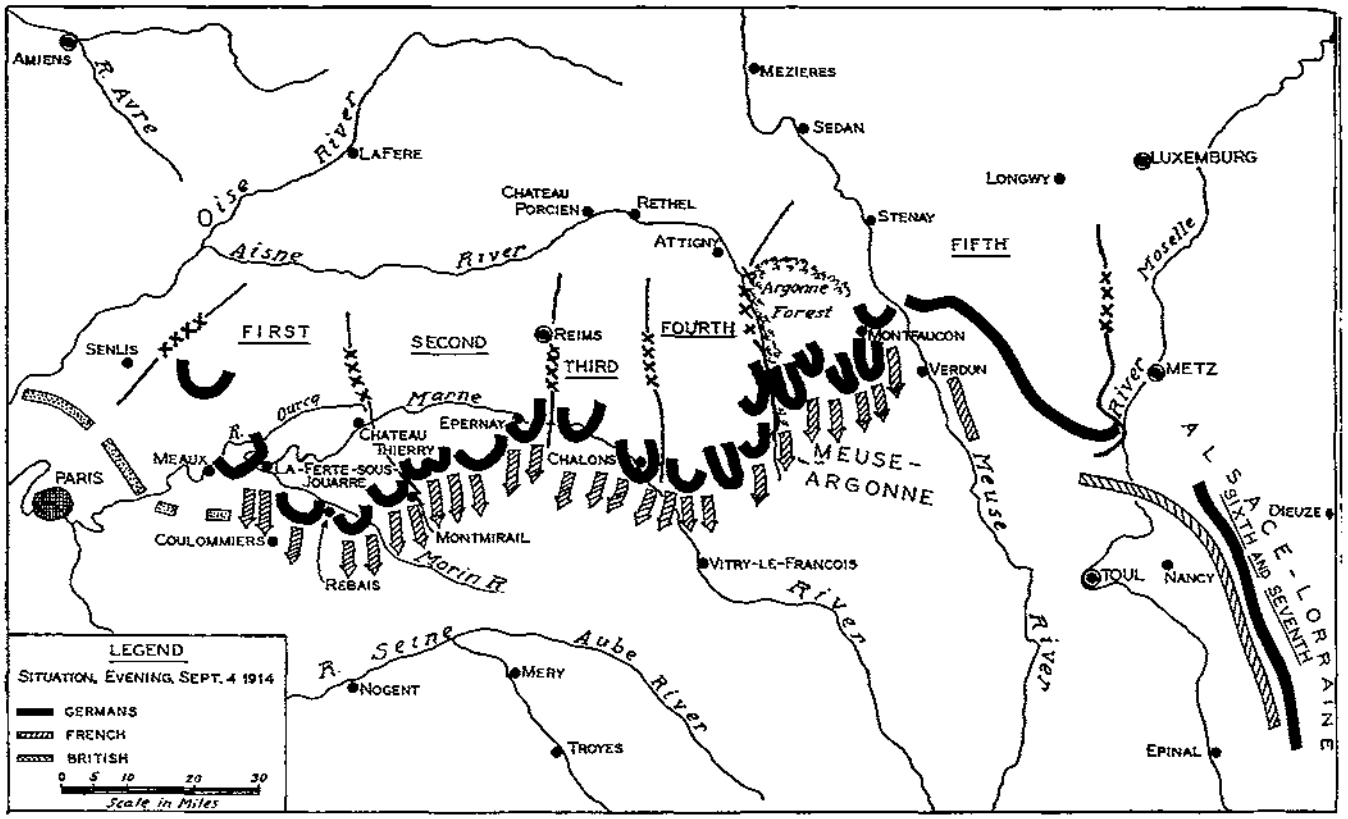
OHL could not understand why Kluck had failed to execute the order sent him. Although it was not clear whether all the First Army had gone south of the Marne, Moltke felt that Kluck had violated not only the letter, but the spirit of his orders. But in any event, a dangerous situation had arisen—in fact, the very one that Moltke had wished to avoid.

OHL felt strongly about the matter, but it did nothing. It kept hoping for more news. Kluck would certainly not go far south of the Marne. His chief of staff, von Kühl, was one of the best, and there was no need to rush off a new set of instructions. Surely too, the First Army would order air reconnaissance of the Paris region. OHL did not need to remind Kluck to do that.

Hausen announced the capture of Reims and stated that the Third Army expected to reach the Marne near Châlons. The Fourth Army reported progress. The offensive of the Sixth Army seemed to have started or to be about to start. The Seventh Army had launched its attack and was progressing slowly. General von Beseler, commanding the forces observing the Belgians in Antwerp, complained that an English landing at Ostend had made his situation difficult.

Moltke, in accordance with his previous desire to obtain a decision against the French central armies, ordered Duke Albrecht to push his Fourth Army toward *the southeast.* (Map 2.)

About noon Hentsch reported to Moltke with a grave



MAP 2 — *The right wing would no longer have the principal rôle.*

face. A reliable secret agent reported that two French corps, the IX and XXI, were being taken away from the Nancy-Belfort front. This meant that the enemy was drawing troops not only from his center but from his right as well. Relying on the strength of the eastern fortress line, the French were moving large forces behind their front by rail. They *must* be reinforcing their left. The movements started September 2 in Champagne and would take several days. However, by September 8 they might well have several corps assembled near Paris.

This news was a severe blow to Moltke. The thing which should have been prevented at all costs had happened—*the enemy in Lorraine and in the center had not been contained*. He had freedom of action and the ability to maneuver.

A radio from Bülow stated that the Second Army had crossed the Marne and gave the line it had reached. For some reason this army seemed to have side-slipped to the left. Since there was no word about the enemy, OHL surmised that the French Fifth Army had escaped and that Bülow was now incapable of driving it toward the southeast.

Kluck's second message came through about 7:00 P.M. It showed that he had left two corps north of the Marne to watch Paris. This was something of a reassurance to OHL.

The big jolt came a few moments later when the last of the three messages arrived—Kluck's report of the day before, sent at 10:30 P.M. It read:

> First Army has crossed the line of the Marne: La-Ferte-sous-Jouarre — Château-Thierry with leading elements; the French are pivoting toward their left wing. English to the north of Coulommiers. First Army will continue on the 4th, movement via Rebais—Montmirail.

The worst had happened. Not only was the bulk of the First Army south of the Marne, but it was pushing onward even now. This report made no mention of any forces left north of the Marne and there was not the slightest allusion to Paris.

OHL realized that things were now in a mess and that a big decision must be made quickly. Superficially, the situation seemed to consist of a joyful pursuit against a disorganized enemy, but recent rail movements pointing toward a concentration in Paris, together with the known weakness of German forces on the right flank, convinced OHL that things were not quite so simple. Groups of staff officers calculated and discussed things in the little class-rooms by the light of flickering candles and dingy oil lamps.

Gradually three schools of thought developed: to halt on the Marne, regroup forces and resume enveloping operations later; to face toward Paris with strong forces and smash the attempted counter-blow when it came; or, finally, to stake everything on operations in Lorraine. These three ideas were developed in conference between Moltke and his assistants.

Moltke rejected the plan to halt and regroup forces. This would take time and Germany needed a quick decision. There must be no halt in operations. The other two plans were discussed and the final solution was a compromise of sorts.

The danger from Paris was recognized, but was not

yet considered imminent. There was still time to have the First Army face Paris, provided it could be stopped from going south. However, this army alone would be too weak to meet the threat. Bülow's Second Army would have to help. It had a fleeing enemy in its front and therefore could maneuver. Moreover, there was no longer any hope of driving the French Fifth Army to the southeast. All things considered, this plan had no drawbacks. True, the right wing would no longer have the principal rôle; it would be reduced to protecting a flank, but that could not be helped.

The hope for a decision now rested on the ability of the Third, Fourth and Fifth Armies, assisted by the attack from Lorraine, to rapidly crush the enemy's central mass. The Fourth and Fifth would attack to the southeast and the Sixth and Seventh to the west. The Third, continuing to the south, would be able to reinforce either the offensive or defensive forces.

The Third Army got its orders promptly. The Fourth and Fifth were notified in good time of their new missions—"to open the crossings of the Moselle to the Sixth and Seventh Armies by a rapid advance to the southeast." Bülow received the following radio at 10:45 P.M.:

> First and Second Armies will remain facing the east front of Paris. First Army between the Oise and the Marne, holding the crossings of the Marne west of Château-Thierry; Second Army between the Marne and the Seine, holding crossings of the Seine between Nogent and Méry, inclusive. Third Army will march on Troyes.

This message was also sent to Kluck, but it did not reach the First Army until 6:40 A.M., eleven hours after it was signed by Moltke. Indeed, OHL failed to do itself very proud, either in transmitting or in composing messages. The words "remain facing Paris" were hardly suitable when OHL knew Kluck was already south of the Marne. These words might give Kluck the impression that OHL had no idea what was going on.

Some of the staff officers at OHL had their doubts as to whether the new decision was justified. This may explain why the staff work seems to have suffered on this evening.

In any case, when Hausen indicated that he was going to give his army a day of rest, OHL did not react as it had in the case of the Fifth Army. Perhaps Moltke felt that when the Third Army got the radio he had just sent, ordering it to march on Troyes, that Hausen would change his mind about resting. However that may be, OHL did nothing.

* * * *

Miles away, in French General Headquarters another commander in chief had also made a grave decision that evening. But there was this difference: unlike Moltke, General Joffre knew what he was doing. He had regrouped his forces with their center of gravity in the west; he had filled up the French ranks with replacements; he had weeded out incompetent commanders. Now, well-informed as to the movements of the German right wing, he knew that the French armies would go into battle under extremely favorable strategical conditions. In particular, the Allied left would have a numerical superiority of nearly two to one over the German right.

Barring miracles, the Germans had lost the Battle of the Marne two days before it started.

SEPTEMBER 5

On the morning of September 5th the decision of OHL was somewhat further developed in a general directive for the armies. While staff officers were drafting this, a radio from Kluck arrived, dated 10:30 P.M., September 4th, and therefore relatively recent. Kluck had thrown the French back on Montmirail with his left. Four corps were to push on southward on September 5th, pursuing the retreating enemy, who would be attacked wherever met. The IV Reserve Corps and a cavalry division had been left north of the Marne.

Gott im Himmel! Would the First Army never stop going south? Kluck might consider one weak corps enough to face Paris north of the Marne, but OHL wanted the entire First Army there. Kluck seemed blind to the danger from Paris.

As usual, OHL debated but took no action. It continued to wait for another report to clear up the situation. Moreover, it took no action on a message from Hausen, which had certainly been sent after receipt of last night's radio, repeating that his army would have a rest day on September 5th.

OHL waited, but the clock didn't. One by one the hours crept by, each burdened with the destiny of nations. At 9:00 A.M. the new directive was presented to Moltke:

> The enemy has evaded the enveloping attack of the First and Second Armies and a part of his forces has joined up with those about Paris. From reports and other information, it appears that the enemy is moving troops westward from the front: Toul—Belfort (Alsace-Lorraine) and is also taking them from the fronts of the Third, Fourth and Fifth Armies. The attempt to force the whole French Army back in a southeasterly direction toward the Swiss frontier is thus rendered impracticable. It is far more probable that the enemy is bringing up new formations and concentrating superior forces in the neighborhood of Paris, to protect the capital and threaten the flank of the German Army.
>
> The First and Second Armies must therefore remain facing the east front of Paris. Their task is to act against any operations of the enemy from the neighborhood of Paris and to give each other mutual support to this end.
>
> The Fourth and Fifth Armies are still operating against superior forces. They must maintain constant pressure to drive them southeastward, and by this means open a passage for the Sixth Army over the Moselle between Toul and Epinal. It cannot yet be foreseen whether, by coöperating with the Sixth and Seventh Armies, they will then succeed in driving any considerable part of the enemy's forces toward Swiss territory.
>
> The Sixth and Seventh Armies will continue to hold the enemy in position on their front, but will take the offensive as soon as possible against the line of the Moselle between Toul and Epinal, securing their flanks against these fortresses. * * *
>
> The Third Army * * *

This document, though little more than a confirmation of the radio messages sent the evening before, is nevertheless of considerable psychological interest. Inconsistency is its outstanding characteristic—inconsistency both with itself and with the fundamentals of German tactical and strategical doctrine.

On the one hand it confesses the failure to obtain a decision, and on the other the breakdown of the plan for the sake of which Germany had made enemies of Britain and Belgium. It suggests that the initiative on the west flank is about to pass to the enemy. It paints a somber picture of the situation of the Fourth and Fifth Armies, opposed by "superior forces."

Under these conditions one might logically expect that a complete regrouping of the German forces would be ordered, prior to any renewal or continuation of the offensive. But instead, the order provides for frontal attack by two armies against "superior forces" and by two others against the fortified line of the Moselle. And to make the inconsistency complete, it then proceeds to cast doubt on the success of the operations it has just finished prescribing.

The issue of this order, the drafting of which had apparently taken twelve hours, marked the last of the successive retouches by which Moltke transformed Schlieffen's wide envelopment into a frontal attack, delivered under particularly adverse conditions.

The danger from Paris was now becoming more pronounced. That morning Hentsch told Moltke that secret service agents reported strong French forces being moved there.

Almost simultaneously the real miracle of the Marne occurred. A radio from Kluck reached OHL within two hours after the time it had been signed. It showed that the First Army was still marching south on September 5th and, moreover, that Kluck did not intend to obey the order sent him the evening before.

The radio showed that Kluck did not understand why OHL wanted to stop his advance to the south. He did not seem to recognize the danger from Paris, or even realize that strong French forces were assembling there. (OHL had not informed him and he does not appear to have bothered much about reconnoitering that region himself.) He apparently believed that OHL had ordered him to face Paris merely for the purpose of beginning its investment. Therefore, he proposed to continue the pursuit to the Seine. After that he would return north of the Marne and face Paris. Kluck said he considered it dangerous to cease pressure on the enemy on the south, and thus allow him freedom of action.

Kluck's appreciation of the situation and OHL's were as far as apart as the poles. Confronted by this unmistakable fact, Moltke finally took action. OHL would send a liaison officer to Kluck; this officer would take a copy of the new directive with him and explain the situation. Hentsch would be a good man—he knew von Kühl, Kluck's chief of staff, and could explain the enemy situation and the very real danger from Paris. Radio messages seemed ineffectual; perhaps a staff officer might be able to induce Kluck to act in accordance with the will of OHL.

Before leaving Luxemburg, Hentsch took occasion to emphasize another danger that threatened the German Army. English forces were concentrating in Belgium and the north of France, and growing stronger and stronger. One report had it that 80,000 Russians had disembarked at Ostend. Acting from Belgian ports and from the Lille region, where reports also said enemy forces were concentrating, the enemy might march on Antwerp or cut the communications of the whole German right wing. These reports made a deep impression on the Chief of Staff.

Moltke's attention became particularly riveted on the region of Lille (in the north of France, not far from the Belgian frontier), where an agglomeration of industrial cities and mining communities with a population of nearly a million, could conceal several corps. Placing his finger on the red spot which marked the location of Lille on the situation map, Moltke said to Tappen, "Here is the danger; the danger is here."

To guard against this danger, Moltke immediately decided to take two corps from the left wing and send them to Belgium. Even at this late date, anything remotely resembling the reinforcement of the right wing was desirable. However, Moltke seemed consistently destined to weaken his main effort. Here, at the very moment when he was avowedly seeking the decision of the war with his center and left, he proposed the withdrawal of two corps from the left wing. But he met a snag.

The Seventh Army promised to give up a corps but the stubborn chief of staff of the Sixth Army protested that he was making an important attack and could surrender no forces. Although Moltke had grown somewhat accustomed to yielding to the Sixth Army, he decided, on this occasion, to place the matter before his Imperial Master for a decision. The Kaiser, who had just returned from a visit to the Sixth Army, decided that this army could spare no troops at present. Later, perhaps, but not now.

Meanwhile, Bülow had sent OHL an unsolicited but gratefully received estimate of the situation. He believed the enemy to be concentrating near Paris in order to obtain a decision by a blow against the right flank of the German armies. He reported important rail movements toward the west in front of his army which, incidentally, was continuing its advance. This message emphasized the divergent views of the commanders of the two right-flank armies and foreshadowed a complete lack of cooperation. Kluck was not only out of step with OHL, but with Bülow as well. The situation obviously called for Moltke to go to the front and do some first-class coordinating.

The question of moving OHL forward behind the right flank appears to have been revived at this time. The Kaiser had expressed this wish several times and most of the staff agreed that it would be a good thing to locate OHL at Mézières, for example. The German official

history explains that the general "ponderosity" of OHL prevented the move being made at this time. Talk of establishing a small advanced command post ended only in talk.

Meanwhile, the Fourth and Fifth Armies reported a continuation of the advance. Late in the evening nothing had been heard from Hentsch, but a radio had come in from Kluck. He asked for information of the movements of the other armies and said that without this information he would be unable to make the proper decisions. He also asked to have his right wing reinforced and explained his reasons for pushing on toward the Seine. Finally, he pointed out that the fundamental scheme of OHL—pushing the French toward the southeast—could be realized only if the First Army preceded the Second Army, instead of being echeloned behind it.

Well, Hentsch must have reached the dynamic Kluck by this time and clarified OHL's views. For some reason a wave of optimism again flooded OHL. Everything would turn out all right.

However, the Minister of War, General von Falkenhayn, was far from sharing this pleasant view. For several days he had held the opinion that the French were retiring according to plan and in good order. He insisted that they had never been beaten decisively. If so, where were all the prisoners and the trophies? But, then, Falkenhayn had been to the front, at least as far as army headquarters.

SEPTEMBER 6

Morning brought great news to OHL. A radio from Kluck, sent about midnight, announced that the First Army would at last begin its movement back to the north of the Marne to face Paris. It would pivot on its left, to the rear. There was no mention of the enemy.

Favorable information also arrived from Belgium. The danger there had been overestimated. The Ostend enemy had reëmbarked and there were no new landings. All through the morning pleasant news arrived.

But shortly after noon tension began to grow. First, an intercepted radio from one cavalry division to another (both belonging to the Second Army) stated that "a great battle had started on the front of the IX and III Corps" (two left corps of the First Army). The III Corps was asking for help.

There was still no news from Hentsch and OHL did not understand what the radio could mean. The Second Army had reported no battle and it was in touch with the First.

The slow, anxious hours of the afternoon passed. Then, about 5:00 P.M. a telephone call from the Fourth Army announced that it was *attacking* all along its front and that the Fifth Army was doing the same thing. An enemy column *coming from the south* was reported moving on Vitry. The enemy must have turned around. The Fourth Army reported that one of its corps believed it was being desperately counter-attacked by enemy troops at the end of their strength—so exhausted that they could no longer retreat. The message added that the situation of the Fourth Army was good.

About 7:00 P.M. an intercepted radio from Bülow to Hausen stated that *fractions of the First and Second Armies* were engaged in a stubborn battle on the Morin River (south of the Marne). The help of the Third Army was requested. It was unfortunate that Hausen had taken a rest day while the other armies advanced. That had left a big gap in the front. The gap could be directly attributed to OHL's negligence, but there was no use crying over spilt milk. Besides, OHL was rather used to Bülow's calls for help.

Nevertheless, the First, Second, Fourth and Fifth Armies were obviously heavily engaged. What was the enemy trying to do? Bülow had not mentioned any attack from the direction of Paris and the French could not have anything ready there yet. However, the liaison officer who had taken the new directive to Hausen, returned with the information that Hausen believed a great battle was starting. Moreover, railroad records captured at Châlons showed that the French had already moved their IV Corps from the region of the Argonne toward Paris. Moreover, the Fourth Army confirmed the fact that *since August 28th* there had been heavy French rail movements toward the left flank.

A report from the Crown Prince, arriving soon afterward, brought more perplexity. The Fifth Army *had been attacked* and had been engaged in stubborn fighting all day. A blow from Verdun had been repulsed, but the army was in an awkward situation.

The situation on the right remained obscure. Hentsch had now been gone thirty-six hours, and still there was no word from him. Tension and apprehension increased.

At 8:00 P.M. an urgent telephone call came from the Fourth Army. Lieutenant Colonel von Werder, G-3 of that army, wanted to talk to Tappen or at least to some officer of the Operations Section. An important enemy order had been found on the battlefield near Vitry-le-François. Yes, an order from the commander of the French Fourth Army. It was dated 9:00 A.M., September 6th. It repeated an order of the day of General Joffre.

The fateful words came in one by one over the telephone as the staff officer wrote slowly and carefully:

> At the moment of beginning a battle on which the fate of the nation depends, all concerned should realize that the time for looking to the rear has passed; all efforts should be directed toward attacking and throwing back the enemy. Troops who are unable to advance further must retain the conquered ground, cost what it may, and die rather than fall back. In the existing situation, no weakness will be tolerated.

OHL at last understood. All the French armies had turned and were attacking and the final battle for a decision was now in progress. That was what had been going on all day. But what of the counter-offensive from Paris? When would that be launched and with what forces? The little schoolrooms resounded with sharp discussions. Opinions differed. To some officers, the German situation was none too favorable. Tappen, however, was

enthusiastic. He hailed the news with gladness, confident in the superior quality of German troops and tactics.

"The enemy is now pinned down," he said. "The force of German arms will prevail. We will turn on the power, and elemental strength will win the victory."

OHL felt that there was nothing much it could do except transmit news of the French offensive to all armies. It saw no need to issue orders—it had just sent out a directive and it had no reserves. It did not take the trouble to issue any order of the day to German troops. It waited and devoutly hoped that victory would crown the German arms.

Late that night Hentsch returned. From him, more than twenty-four hours after it had happened, the Chief of Staff learned for the first time that the blow from Paris had also fallen. About noon on September 5th, von Gronau's IV Reserve Corps, the only corps Kluck had left north of the Marne, had attacked superior French forces advancing from the direction of Paris. This corps had been forced to retire after dark in order to escape envelopment by French reinforcements. Kluck was rushing troops to the rescue. But Hentsch did not know what had happened on September 6th. He had left Kluck's headquarters early.

The one thing certain was this: The German right flank, the original enveloping flank, was now overlapped and being enveloped by a superior enemy.

* * * *

Moltke, sitting in his office in the little red schoolhouse amid the ruins of the Schlieffen Plan, was a pathetic figure. His dreams of a great strategic victory, a Cannæ, were gone. Now, like his principal collaborator, Tappen, he was reduced to a hope—a hope that German valor would compensate for the failure of German leadership—that a "soldiers' battle" would be won.

Little by little, the original scheme had faded, submerged by events or by the mistaken initiative of subordinates. Two weeks after Moltke had considered the war as good as won, his dislocated right wing was being attacked in flank, his left was stopped before a fortified front and all hope of victory was based in that frontal attack which Schlieffen had despised and which German tactical thought condemned.

Moreover, the condition of German troops at this time shows the fragility of the foundation on which the hopes for victory in a "soldiers' battle" were based. All units had been nearly marched to death. Most were down to half strength. The right was weak and over-extended; its communications were threatened and it was facing greatly superior numbers.

Under these conditions, even Germany's unequalled troops would do well to avert disaster. Their valor could not compensate for the cumulated blunders of OHL and the German commanders in the previous three weeks. These mistakes stand clearly revealed in the white light of history.

The enveloping mass had become too weak. Schlieffen had visualized a strong right wing, constantly reinforced, continuing to make the main effort throughout. Instead, the right wing, never reinforced, grew steadily weaker, and gradually lost both its offensive mission and its capacity for offensive action.

The maneuver lacked unity. Schlieffen had visualized armies linked together; guiding right, and obedient to the will of the leader; armies that moved with the precision and regularity of battalions on the parade ground. Instead, the united effort was changed by the uncoordinated impulses of various armies into divergent efforts with dwindling forces. Better organization of command—employment of the group-of-armies echelon—would have helped to avoid this.

The maneuver, initially wide enough, drifted into a groove and the enveloping flank was itself enveloped. Rapidity, the only essential quality of an envelopment which the maneuver possessed throughout, was obtained at the price of marching the troops to death. While mobility is greatly to be desired, it may prove an expensive asset if gained at the expense of power, cohesion and security. Mobility alone is not enough.

Moltke's assistants failed to render him the service which a leader has the right to expect of a staff. The failure to secure accurate and complete information of the enemy, and the breakdown of signal communication cannot be charged solely against Moltke.

Colonel Koeltz (French G-2 today), who has made a careful study of the Marne Campaign, insists that Hentsch as a G-2 was a mere recorder of information and intimates that any high-priced clerk would have done as well. Even allowing for a possible French bias, there seems much truth in what he says.

As a result of the failure of the Great General Staff to do its job, nearly every important decision was a leap in the dark. As Colonel Koeltz points out, the entire maneuver was conducted on unverified hypotheses, or hunches, which is as good a way as another of losing a war.

Moltke's principal subordinates showed little appreciation of team-work. The army commanders have been likened to an orchestra of master musicians each insisting on his own interpretation and ignoring the conductor. Each played vigorously but the result was merely a wild assortment of discords and sour notes.

As a leader, Moltke never enforced his will. The armies did as they saw fit. Far away, their chief sat quietly in a little schoolhouse and hoped for the best. He never initiated those steps which would have enabled him to exercise his influence. He did not go forward to see for himself and he refused to send anyone to see for him. The difficulties with signal communications were details that could have been easily remedied. There were other radio sets in Germany; there were plenty of telephone experts and operators; there was a French commercial telephone system only partially destroyed; there were automobiles and staff officers and there were airplanes. A forward information center could have been

established at the end of telephone communication and steadily pushed forward. Liaison officers could have operated from this center. Many things could have been done and, undoubtedly, would have been done if impulse had come from above.

In short, the maneuver was not conducted because Moltke lacked the will of the leader. But it was not only an individual who proved inadequate in the Marne Campaign. It was a system of command—a system of lax control and subordinates running wild. Before the war, German leadership placed the greatest emphasis on inculcating initiative in all ranks. In his last address to the students of the *Kriegsakademie,* the elder von Moltke stated: "The determining factor in war is the initiative of subordinate leaders."

Unless this initiative is appropriate and is exercised with judgment, it may be the determining factor—in favor of the other fellow. Mere quantity of initiative may mean nothing at all.

During the Marne Campaign, German subordinate leaders exercised initiative aplenty, but much of it was detrimental to the success of German arms. One reason for this lies in the fact that subordinates made far-reaching decisions involving units other than their own; they did this *when it was not necessary,* and when it was entirely possible to obtain a decision from higher authority. Some never even bothered to report their actions for hours. They lacked that intellectual discipline which Foch considered so necessary.

Another answer may be that in striving for initiative by subordinates, German tactical training overemphasized the initiative which takes action contrary to the mission. It is said that before the war, nearly every "approved solution" to German problems contained some infraction of the mission. Consequently, this came to be regarded as routine. In the Marne Campaign instructions from higher authority were disregarded at the slightest pretext. OHL's culpable laxity of control undoubtedly encouraged this tendency.

Today—just as in 1914—the German Army still places the highest emphasis on initiative. However, it trains its subordinates not only to exercise initiative, but under what conditions to exercise it.

We, too, recognize the importance of initiative. But mere lip service is not enough and never will be enough. The amount of initiative officers display in war will probably be in direct proportion to the effort made to inculcate it in peace-time training.

Unfortunately, with too many officers the word initiative is still synonymous with abandonment of a mission. Actually the finest examples of initiative are frequently pursuant to a mission. For instance in a vague situation, von Gronau and his weak IV Reserve Corps, with a flank-protection mission, attacked toward Paris on September 5, 1914. The attack revealed an entire French army moving east from Paris and Kluck was warned before it was too late. This was initiative pursuant to the mission. German authorities consider it one of the finest decisions of the World War.

Undoubtedly there will be times when a subordinate will be justified in disregarding the orders of his superior. The difference between initiative and disobedience must be thoroughly understood. It is clearly indicated in a Command and General Staff School publication, extracts from which follow:

> Only a radical change in the situation will justify an abandonment of a mission. In such circumstances the following principles will guide the commander in deciding his course of action. A mission will never be departed from in letter or spirit:
>
> *a.* So long as the officer who assigned it is present and does not himself alter it.
>
> *b.* If the officer who assigned it is not present, so long as there is time to report to him and await a reply without losing an opportunity or endangering the command.
>
> If the above conditions do not exist, a departure from either the spirit or letter is justified if the subordinate who assumes the responsibility bases his decision on some facts which could not be known to the officer who assigned it, and if he is satisfied that he is acting as his superior, were he present, would order him to act.
>
> If a subordinate does not depart from the letter of his mission when such a departure is clearly demanded, he will be held responsible for any failure which may ensue.

It would seem to be desirable for our service schools to include among their tactical problems a certain number purposely drawn to illustrate abandonment or adherence to the mission. However, abandonment of the mission should be the exception, not the rule. *If subordinate units have to depart from their missions frequently, it merely means that higher authority is not up to its job and is assigning defective missions.* Let us trust that in war our higher commanders will not always be wrong.

Now although we wish to teach initiative, we certainly can't do much abandoning of missions in peacetime except in problems. What can we do?

One solution might be to emphasize initiative on the part of subordinates in executing the orders of their superiors. This would involve not only activity by the subordinates, but considerable thought, not to mention restraint, on the part of superiors. However, it is something that can be practiced daily, in peace as in war, in administrative as well as in tactical matters, and in it there lurks no psychological danger.

And although it may not sound quite as high-powered as the other kind, the initiative that is the most valuable in war and should be the most frequent is *initiative within the frame-work of the mission.*

(To be continued)

RED ARMY ACTIVITIES. *A medium caliber gun on a caterpillar mount. A motorcycle unit passes in review. An AA battery rumbles through the streets of Moscow.*

Left: FRANCE—*A parabolic sound locator used at the 1936 air maneuvers.*

Center: SWITZERLAND—*A newly organize AA unit goes into action in the shadow the Alps. The equipment is new. All gu ners are armed with the rifle.*

Acme

Lower left: ENGLAND—*An AA machin gun searches the skies. Note the groun rest tripod, forward area sight and rear sigh ing device.*

Pictures, Inc.

Lower right: U.S.S.R.—*Multiple mou AA machine gun protecting Red troops the march. Note the concentric ring sigh*

Sovfoto

An Antiaircraft Impact Chart

By Captain John Harry, C.A.C.

THE Antiaircraft Impact Chart is a device to be used, in conjunction with the Lewis Chart, and with the Trial Shot and Calibration Correction Scales which are furnished therewith, in order to simulate the firing of Trial Shot Problems and Calibration Problems while teaching practical antiaircraft gunnery. It has been used successfully at Mississippi State College.

Essentially, the chart is a means of determining what would be the deviation of a shot from the trial shot point, or from the calibration point, as seen from the O_1 station and the O_2 station in the directions,

> lateral (deflection) and vertical (angular height) from O_1, and later (range) from O_2.

To accomplish this object, the chart is constructed as follows: Trial Shot Point No. 1 is plotted on the chart; then through this point is drawn a line representing the trajectory for a quadrant elevation of 700 mils. Also, the trajectories for every 10-mils change in quadrant elevation, from a quadrant elevation of 650 mils to a quadrant elevation of 750 mils, are drawn. Superimposed on this system of trajectories, and through the trial shot point, there is drawn the equal fuze line for a fuze range of 13. The line representing the line of position for an angular height of 608 mils, and the muzzle velocity differential line are then added.

Above and below the line of position, at the proper distances therefrom, lines are drawn for each 5 mils change in angular height. The lines representing the even 10 mils are full lines; those representing the intervening 5 mil intervals are entered as dash lines. These lines are not parallel to the line of position, for the distance from the point of observation has been considered in their location. The maximum vertical deviation which has been provided for is plus or minus 40 mils.

Above and below the muzzle velocity differential line there are entered at distances which correspond to quadrant elevation errors in increments of 5 mils up to a maximum of 25 mils, high or low, a series of lines. These lines are not parallel to the muzzle velocity differential line. Intersecting this series of lines at distances from the equal fuze line for fuze range 13, corresponding to changes in muzzle velocity of 20 feet per second, another series of lines is drawn. The maximum change in muzzle velocity is plus 170 feet per second, or minus 210 feet per second, from the normal muzzle velocity of 2,600 feet per second. Each 100 foot per second line is made heavier than the others to aid in rapid identification.

By the use of these two systems of lines, any combination of quadrant elevation and muzzle velocity can be represented within the limits; for quadrant elevation, of plus or minus 25 mils; and for muzzle velocity of from 2,390 to 2,770 feet per second. These limits are those prescribed by the Trial Shot Correction Scales already used with the Lewis Chart.

On the lower portion of the chart a graphical scale is placed: its zero is directly below the plotted position of the trial shot point, at a horizontal range of 4,740 yards from O_1. The purpose of this scale is to make possible the determination of the lateral (range) deviation of the shot from the trial shot point as seen from O_2 in the inclined plane, the plane of sight being normal to the plane of fire. This scale is really a series of scales, so arranged that any horizontal distance from O_2 to the trial shot point greater than 2,500 yards, and less than 7,000 yards, can be accommodated. The maximum lateral (range) deviation which can be read is either right or left 60 mils.

Just above and to the right of this series of scales is a graphical chart for correcting the deviation, as observed from O_2 normal to the plane of fire, for the angle of obliquity.

The foregoing described graphs, scales, and chart will, if properly used, determine the vertical (angular height) deviation and the lateral (range) deviation of the burst from the trial shot point. In order to determine the direction (deflection) deviation of the burst, there is placed in the upper portion of the chart a scale of deflection probable errors. The center of this scale is directly over the plotted position of the trial shot point. The scale is made long enough to allow for right or left 20 mils deflection probable errors. Just above this deflection probable error scale is a mils scale, placed in such a way that its zero deviation graduation has the same lateral position as the center of the deflection probable error scale. The maximum deviation from the trial shot point which can be read is a right or left 25 mils.

To complete the chart, on the left edge an altitude scale is placed, and along the bottom there is added a horizontal range scale. A table of dispersion, as indicated by the fall of two dice, is also placed on the chart for quick reference.

An accessory to the chart, essential to its use in the solution of problems, is a xylonite dispersion diagram scale. Probable error data for Trial Shot Point No. 1 are used for the construction of this scale. There is a slight error inherent in this use, for no consideration is given to that variation in the values of the probable errors which is involved in moving away from the exact position of the trial shot point; it is considered that the practical difficulties encountered in trying to allow for such changes in the value of the probable error would overbalance the small theoretical increase in accuracy to be gained by their use, and these variations are therefore ignored. Another accessory to the chart is a set of dice, 6 in number, whereby dispersion is secured. There should be three colors, and two dice of each color. Any other method of

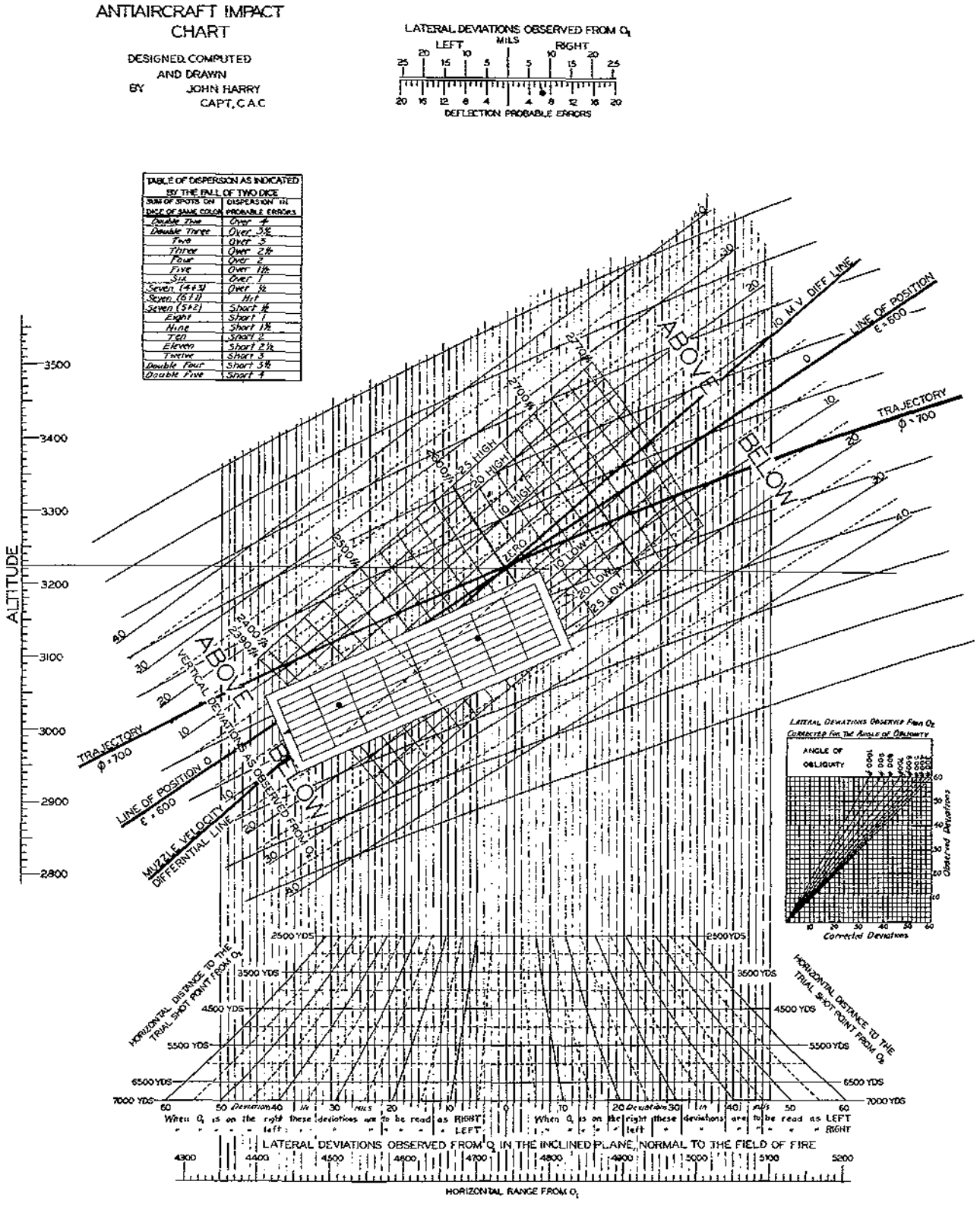


FIG. 1

securing dispersion would be satisfactory, but use of the dice seems to be the method most convenient.

As stated in the beginning of this article, the chart is used in conjunction with the Lewis Chart to simulate the firing of trial shot problems and calibration problems in teaching antiaircraft gunnery. It is presumed that students firing the problems are already familiar with the use of the Lewis Chart so that no description of its use will be attempted. To use the impact chart with the greatest facility, a detail of four students is required. The duties of each member of the detail is, in general, as follows:

No. 1 is the Chief, and exercises general supervision. He locates the xylonite dispersion diagram scale at the desired place on the chart, casts the dice, and indicates the position of the burst in the dispersion diagram scale.

No. 2 locates the center of impact pin at the desired place on the deflection probable error scale. He reads and announces the vertical and lateral deviations as observed from O_1.

No. 3 reads the lateral deviation as observed from O_2, corrects it for the angle of obliquity, and announces the deviation.

No. 4 is the recorder. Using a prescribed form, he records all data used or determined by the impact chart detail.

To simulate the fire of a problem, the student firing must furnish the detail at the chart with the following:

1. The horizontal distance from O_2 to the trial shot point.

2. The angle of obliquity of the plane of sight with the normal to the plane of fire.

3. Whether O_1 is on the right or the left end of the base line.

4. The number of rounds to be fired.

Having been furnished with the necessary data, the impact chart detail proceeds with the following:

1. The xylonite dispersion diagram scale is located with its center at any convenient point; this point is identified by means of the coördinates of muzzle velocity and quadrant elevation. The scale is placed on the chart so that the arrow head points toward the battery; the central line is parallel to the trajectory lines on the chart. Thereafter, during the firing of one trial shot problem, this scale must not move.

2. A pin is placed at any convenient position on the scale of deflection probable errors; it should be more than 4 probable errors from either end of the scale. This locates the center of impact for the lateral dispersion ladder.

3. Preparations for firing the trial shot problem are now complete. One throw of the 6 dice (2 red, 2 green, and 2 white) is required for each shot. The three colors are designed to represent the 3 dimensions of the antiaircraft volume of dispersion.

a. At the command "Commence Firing," from the student representing the battery commander, fire as many shots as he directs and determine the deviations of each individual burst as it is fired. These deviations are determined as follows; after the dice are thrown, by reference to the table of dispersion as indicated by the fall of two dice, the sum of the spots on the side uppermost on the dice of the same color will determine the amount, in terms of probable errors, by which the burst deviates from the center of impact in the dimension of the antiaircraft volume of dispersion represented by that color. When the vertical and range deviations in terms of probable errors are combined, the position of the burst on the dispersion diagram scale will be fixed, also in the plane of fire since the dispersion diagram scale is in the plane of fire. Now, by reference to the angular height lines, the deviation of the burst in angular height from the trial shot point, as observed from O_1, can be determined. This is read to the nearest mil, interpolating by eye between the angular height lines on the chart.

The next step is to determine the lateral deviation of the burst from the trial shot point, as observed from O_2 in the inclined plane. This is done as is shown hereinafter; follow the vertical lines from the position of the burst in the plane of fire, downward to the scales for determining the "lateral deviations observed from O_2 in the inclined plane normal to the plane of fire." The manner in use of these scales is thus explained; the horizontal range from O_2 to the trial shot point, as announced by the battery commander, fixes the horizontal line on which the deviations are to be read. Every 500 yard change in horizontal range is actually indicated by a line, but for the required accuracy to be obtained, interpolation to the nearest 100 yards of range must be practiced. On the proper horizontal line is read the deviation in mils, either right or left from the trial shot point following the directions on the chart, to the nearest mil, interpolating between the curved lines where necessary. After determining this value, it must be corrected for the angle of obliquity. This is done by means of the subsidiary chart called "lateral deviations observed from O_2 corrected for the angle of obliquity" in the following manner: enter the chart on the left edge with the deviation just determined, move to the right along the horizontal line for the deviation read until the slanting line for the particular angle of obliquity, which was announced by the Battery Commander, is encountered; then move vertically downward to the bottom margin of the chart, where the corrected deviation may be read. This value is announced to the Battery Commander.

b. The lateral (direction) deviation is determined as follows: from the position of the pin in the deflection probable error scale, there is laid off a distance on the scale which corresponds to the deviation, in terms of probable errors, determined by the fall of the dice. This is the position of the burst. Just above this position, on the mil scale, the deviation of the burst, right or left from the trial shot point as observed from O_1, may be read. This is read to the nearest mil, and is announced to the Battery Commander without correction in any way.

The foregoing repeated five times constitutes a normal trial shot problem.

The procedure to be followed in the firing of a calibration problem is very similar to that involved in firing a trial shot problem, except that a center of impact must be chosen for each gun, both for the location of the xylonite dispersion diagram scale and for the location of the center of impact pin for the lateral dispersion ladder. This requirement thus demands that 4 centers of impact in the plane of fire be located, and that 4 pins be placed in the deflection probable error scale.

The angle of obliquity is determined by the use of these two formulae:

With O_1 on the right end of the base line this one is used:

Angle of Obliquity = Angle B − Angle A + 1,600 mils.

With O_1 on the left end of the base line this one is used:

Angle of Obliquity = Angle A − Angle B + 1,600 mils.

The chart is drawn to a scale of fifty yards per inch. All ballistic data required were taken from Firing Table 3AA-J-2, Firing Tables for 3-Inch Antiaircraft Gun, Models of 1917, 1917 M1, 1917 MII, 1925 M1, and M1, M2, M3, and M4 firing AA Shrapnel, Mark 1; Weight 15 lbs. armed with Mark III Scovill Fuze. It was found necessary to modify the data taken from the tables so as to conform to the results obtained by using the trial shot correction scales furnished with the Lewis Chart.

The following table gives the data by which the system of lines, representing changes in muzzle velocity and in quadrant elevation, was plotted. The coördinates used are horizontal range and altitude in yards from O_1:

Quadrant Elevation Error	Muzzle Velocity Deviation	Altitude in Yards	Horizontal Range in Yards
− 25 m	− 210 f/s	2913	4574
− 25 m	Zero	3118	4916
− 25 m	+ 170 f/s	3282	5007
+ 25 m	− 210 f/s	3096	4401
+ 25 m	Zero	3335	4667
+ 25 m	+ 170 f/s	3505	4856

To locate the intermediate points between those whose coördinates are given above, the distance between the control points was divided evenly and then the lines connecting the points located were drawn.

In Fig. 1, the true center of impact is located at a point the coördinates of which are quadrant elevation deviation of −5 mils, and a muzzle velocity of 2,480 feet per second. The pin representing the true center of impact for lateral dispersion is 6 deflection probable errors to the right of the trial shot point.

An Organized Reserve

By Major Charles I. Clark, C.A.-Res.

A RECENT tour of duty with the C.M.T.C. at which junior officers were expected to be able to carry on the responsibilities of their grade, proved clearly that officers educated solely by book learning were useless when troops were to be handled. At the end of the camp we came to the conclusion that the primary training of the young officer should stress ability to command. A study of training regulations can not attain this objective. There must be men to handle and there must be responsibility for their training. Without this opportunity the average Reserve officer is hopeless as far as his ability as a battery officer is concerned. Several of us got our heads together and tried to figure out the answer.

Two general defects in the national defense plan were apparent; 1st: There were elaborate programs and considerable funds to secure and train the C.M.T.C. for one month each year, and then the boys were left high and dry until someone remembered them the following year. No system was provided to hold these men together, or to make their training continuous throughout the year. 2d: The four years at C.M.T.C. and the four years in R.O.T.C. did not provide sufficient command training, to assume that the graduates were thereupon qualified to be officers in an emergency. True, our program expects them to continue active. But, no follow-through is prescribed.

The analysis brought us to this conclusion. Each C.M.T.C. student should be required to enroll in a local unit of a reserve regiment which would conduct weekly drills and instruction between summer camps. This method would create greater interest, would hold groups together, increase their military knowledge, and enable many to survive to the Blue camps and commission. It would instill the habit of service and duty, and would produce Reserve officers who had really earned their spurs. Such new officers would naturally continue the pleasant local associations made during the four years of intensive training. But, somebody had to train these students; lectures must be prepared and delivered; correspondence courses must be concluded; and someone must explain and conduct the infantry drill. In a word, officers assigned to local units must do the job.

Having found what we believed to be the answer we tried it out to see if it would work. We took the plan to our regular army officers, and receiving encouragement, went ahead. First we had ourselves transferred from a very active regiment into one which had so few officers with active interest as to be almost dormant. The mobilization area of this regiment being out at old Camp Upton, we agreed to call ourselves The Long Island Regiment. This gave us a tie-up with the communities we planned to work in. We picked out a favorable community in which to establish our first unit. To Lynbrook, L. I., fell the honor. Having made our decision we rolled up our sleeves and went to work. We went before the local post of the American Legion, told them our story and got their support, and the use of their club house for our organization meeting. Then we appeared before the school board which gladly gave us a school for our meetings. The local papers gave us publicity and favorable editorials which urged parents to support this movement. Then to the town officials, where the same response was

forthcoming. So, all set to go, with three officers (one stolen from the Infantry) we secured a list of all C.M.T.C. students residing in this community and made personal contact with each. Twelve responded to this appeal and formed the backbone of this unit. We had decided to include in our battery membership all high school boys, and much to our surprise and elation the school authorities announced our meeting over the loud speaker system in each of the high schools. Thirty-two young men came to our first meeting to find out what all the shouting was about. We told our story and most of them signed up as charter members of the unit which we call the Cadet Corps of Lynbrook Battery of the 530th Coast Artillery. This all happened in September, and today, four months later we have over 60 boys enrolled, and an average attendance of about 40 cadets.

Over in Great Neck, the colonel of the regiment had been instructing a group of boys of assorted ages, during the year prior to the adoption of this plan. He reorganized this group, dropping those under 16, and with an inactive Infantry officer, started the Great Neck battery with a nucleus of seven of the older boys. The same methods of contact and publicity were followed, and now we have in this unit two officers and 30 cadets. Remember that all of our units drill weekly.

Now we began to really go places. Publicity was pushed and contacts were made with the various churches, who began to understand that military training could make men and Americans as well as potential soldiers. The county organization of the American Legion heard our story and the County Commander immediately established a new county committee, known as the Junior National Defense, and appointed thereto those officers of our regiment who are legionnaires. This action gave us official recognition and gave us access to every post in the county.

The movement began to expand and more communities, recognizing the value of this youth movement, were asking for units. But we had the task of finding the right kind of officers to direct such new organizations. Then we got another idea, which went up in smoke. We would write to every junior Reserve officer in the county, explain our activity and ask for such assistance as they felt they could give. Twelve letters were sent to these officers on two different occasions, asking them to witness the drill of the Lynbrook Battery, but not a one appeared, or replied to the letters. Rather disappointing. Our general staff of brain busters then went into a huddle and came out with another decision. We concluded not to bother with this deadwood, but to forge ahead with our plans, doubling up our officers where necessary, encourage senior C.M.T.C. students to assume leadership by acting as cadet officers, and to secure our future officers from members of our own organization upon their graduation from the Blue camp.

The Valley Stream unit was then organized with a nucleus of two officers and 18 C.M.T.C. students. This battery, after four meetings, turns out regularly over 40 boys and puts over an infantry drill that would do credit to old soldiers.

Just last week, three lieutenants came into the area, and hearing of our activity, joined up with us. We then pushed ahead to establish our next unit in Rockville Centre. An address before the Legion post of that village brought enthusiasm, coöperation, and support. This battery, with three officers available, and about 20 C.M.T.C. students, began drill immediately.

This summary covers only four months. We have four batteries established. These meet weekly, with nearly 150 young men and 11 officers in attendance and provide continuous instruction based on the schedule of training in force at the Coast Artillery C.M.T.C. The attendance record of each battery improves weekly, and the regiment is driving ahead to complete our objective, which is the establishment of 12 batteries in Nassau County, each with 5 officers and 60 young men. We plan the purchase of a modest uniform, consisting of an overseas cap, white shirt, black tie, cotton slacks, and web belt. We can secure this outfit for less than two dollars. The use of rifles is not contemplated because of the character of our regiment. Colors will be procured and each battery will be provided with guidons. We propose to so improve the military education of each student that his advancement in the C.M.T.C. will be assured, thereby resulting in an increase in the commission output of this source of officer supply. The future officer personnel for this regiment will come mainly from those receiving commissions while members of our batteries. Such officers will be required to carry on our pioneer work and maintain the high standards now in effect.

Our efforts have proved that C.M.T.C. students want to continue their training under competent direction. We have found that the youth of our country are still much the same as we were, and that young Reserve officers will become devoted to duty if properly inspired.

Many of us have come to the conclusion that initial reserve commissions should be probationary for one year. The permanent commission should be based solely upon active interest in reserve inactive training and attention to duty during the probationary period. If these young officers understand clearly that their commission in the Army presumes the ability to assume leadership in an emergency, and that this must be demonstrated during their period as second lieutenants, the entire attitude regarding inactive training will be changed.

"Promotion's Very Slow"

By Captain E. Carl Engelhart, C.A.C.

THE immortal ballad, Benny Havens, contains the plaint, "promotion's very slow." This was very true when the lyric was written, and it is still applicable today.

Assure every shavetail that some day he will retire at the top of the promotion ladder.

For ten years, officers have consoled themselves with the optimistic hope that promotion would pick up considerably with the retirement of the Spanish-American War group. No noticeable relief has as yet been experienced from that source, and a strict examination of the promotion list fails to indicate that there will be any. The original hump of 1901 is now merely a figure of speech, and only a ripple on the promotion list.

The promotion bill of 1935 was hailed with delight by the army, or at least by the lieutenants and other officers who were advanced in rank. The shouting has died down to an annual inconsequential cheer by the few first and second lieutenants who do profit thereby, while the rest of us, the great majority, again are reconciled to the same old stagnation.

That bill was probably the best that could be obtained at the time, but it does not alleviate the promotion situation one iota. Roughly, it removed quotas from the grades of captain and first lieutenant and increased those for the field grades. A lieutenant now becomes a captain after ten years of service. It is extremely doubtful, however, if he will be promoted to the grade of colonel any sooner than he would have without the assistance of the 1935 bill.

Under present conditions, a large proportion of the World War officers (the hump) can expect to retire for age as majors, due to the fact that so many of them are approximately of the same age. Another contributory factor is that our pre-war officers, senior to the hump, are young in comparison with the World War and post-war officers down to include the West Point class of 1922.

The majority of pre-war officers on the promotion list acquired seniority in rank very early in their service. There are colonels for instance, who have been colonels for sixteen years in addition to their war service as such. Similarly, there are a number of officers who have drawn field officer's pay for all but a year or so of their commissioned service. They are to be congratulated on their good fortune—no one begrudges it to them—but the war which brought them advanced rank has resulted in a frozen promotion list.

Eventually, the World War officers will approach retirement age, and there will be wholesale retirements in the field officer grades. During these hectic few years, here are the general officers and chiefs of branches coming from? Below the hump? It will have to be a long way below, because the 1920 West Point class and their neighbors on the list can expect to vault from the grade of major to that of colonel and retire before they learn to quote their new rank properly in answering the telephone. Some of them won't even experience this delirium, but will retire a few months too soon, as majors or junior lieutenant colonels.

Speaking of lieutenant colonels brings up another point. Quite a few lieutenant colonels have been retired recently on their own applications after thirty years of service. More have been heard publicly counting the months until they can do likewise. These officers, some of the best in the army, are terminating their careers bitterly disappointed because the future holds nothing for them on the active list. They contribute their files to their juniors, but their juniors don't want files gained at the expense of such officers.

The frozen promotion list can be thawed out.

How? Bearing down on the hump to reduce its size can't help the lieutenant colonels. Forced attrition has been tried. It results only in spreading more discontent with an attendant lowering of efficiency in general, due to worry as to where the axe will fall next.

Promotion by selection is just as bad. We have enough of that in the picking of students for Leavenworth and the War College with a resultant high casualty list of broken hearts. Promotion by selection will put 10,000 officers to polishing apples, one eye on the main chance and a scant glance for the honest effectiveness of the job on hand. Who, then, would do the work?

Something must be done to relieve the stagnation. Whatever it is, it must not tamper with the quotas for the various grades. It must be independent of such quotas and based on a regular flow from the bottom and out at the top.

Out at the top. There is a clue. Assure every shavetail that some day he will retire at the top of the ladder provided he doesn't fall off a rung on his way up. The system, then, must have a long-term application and not be an attempt to cure the ills of 1936 in one big dose. Furthermore, it must play no favorites.

Favorites? There is no favoritism in our present plan of promotion. Or is there? Let's see.

One bright summer day long ago, three youths, Pistol George, Bow 'n' Arrow, and Judge Charlie, filed up in that order of rank and became second lieutenants in the United States Army.

These three stepped upon the ladder of promotion at five-second intervals, but if all survive the temporal and

spiritual hazards of Army life, they will reluctantly give way to their juniors in a new sequence. Judge Charlie, the lowest ranking, will be the first to retire, on October 31, 1962. Pistol George goes next, on May 31, 1963, but Bow 'n' Arrow will hang on until June 30, 1964.

The reason for this peculiar re-arrangement is that the accident of birth automatically endowed Bow 'n Arrow with sufficient professional merit to entitle him to draw active duty pay so much longer than the other two.

Pistol George, Bow 'n' Arrow, and Judge Charlie, if they read the foregoing statement, will vigorously comment "Nuts!"

These three files are a definite bloc on the promotion list—a group in which all members have approximately the same length of commissioned service. The officers in this group vary in age through a span of about four years, but their actual professional values to the service varies more directly with their length of service than with any other factor. After the first few years of service, age is forgotten and length of service takes its place.

When an officer is originally commissioned he is given any consideration which is due him on account of his age. The fact that he usually gets none has no bearing on the aspect that his claim, if any, is really settled at that time.

So, why play favorites some forty years later and give preferential treatment to an officer like Bow 'n' Arrow, on the basis of nothing more virtuous than his age?

Maybe we are on the track of something to thaw out our frozen promotion list.

Each year, we commission new officers in the army. Throw out age favoritism. Group the year's acquisitions, assign the group a reasonable length of time to serve, and at the end of that time, retire the survivors of the group on one day.

There is our new promotion system, complete with acceleration and retardation, when and where needed. No favoritism, no selection, no forced attrition, and no tampering with the established quotas in any grade.

Let's tentatively apply this new scheme to our present promotion list to see if it will melt it enough to make it flow.

First, take the promotion list in the October, 1936 Army List & Directory and split it into groups, all in any one group having approximately the same length of commissioned service. The list is already arranged with all officers in precedence according to their commissioned service, actual or constructive. We merely have to find places to divide it.

A West Point class goes on the bottom each year. Suppose we let the senior surviving graduate of each class head a group.

The oldest class which we can identify readily on the October, 1936 list is that of 1899, led by Edward M. Markham, CE, No. 46 on the list of colonels. We then arbitrarily let the senior 45 colonels form the first group.

TABLE A

EQUAL-SERVICE GROUPS

October 1936 Promotion List Nos.	*U.S.M.A. class*	*Name and branch*	*No. of files in group*
Col. 1		McMaster, Richard H., FA	
45		Allison, James B., SC	45
46	1899	Markham, Edward M., CE	
116		Seaman, A. Owen, QMC	71
117	1900	Pillsbury, Geo. B., CE	
188		Graham, Wm. A., JAGD	72
189	Feb. '01	Peek, Ernest D., CE	
286		Hunt, Chas. A., INF	98
287	1902	Hannum, Warren T., CE	
330		Lewis, Converse R., INF	44
331	1903	Tyler, Max C., CE	
379		Dravo, Chas. A., INF	49
380	1904	Pettis, Chas. R., CE	
453		Emery, Ambrose R., INF	74
454	1905	Jones, DeWitt C., CE	
499		Emmanuelli, Felix, INF	46
500	1906	Johnson, Wm. A., CE	
553		Booker, Phillip W., FA	54
554	1907	O'Connor, James A., CE	
621		Crockett, Cary I., INF	68
622	1908	Edgerton, Glen E., CE	
Lt. Col. 117		Bennett, Eli E., CAC	130
118	1909	Godfrey, Stuart C., CE	
244		Frink, James L., QMC	127
245	1910	Garlington, Creswell, CE	
389		McCormick, Edw. G., INF	145
390	1911	Fleming, Phillip B., CE	
580		Thomas, Chas. W., Jr. INF	191
581	1912	Crawford, Roscoe C., CE	
704		Rawls, Walter O., AGD	124
705	1913	Newcomer, Francis K., CE	
800		Davison, Paul R., CAV	96
801	1914	Holcombe, Wm. H., CE	
874		Landreth, Earl, INF	74
875	1915	Covell, Wm. E. R., CE	
Maj. 56		Ely, Edwin F., FD	133
57	1916	Moses, Raymond G., CE	
602		Tupper, Joseph L., INF	546
603	April '17	Heavey, Wm. F., CE	
Capt. 1074		Laughinghouse, Newman R., AC	3116
1075	June '18	Dean, John P., CE	
1563		Horne, Chester A., FA	489
1564	Nov. '18	Griffiths, David W., CE	
1705		Aaron, Thomas R., INF	142
1706	1919	Newcomer, David A., CE	
1963	(Nov. '18)	Reed, Geo. W., Jr., CAV	258
1964	1920	Oxx, Francis H., CE	
2135		Bare, Geo. H., INF	172
2136	1921	Marcus, Morris H., CAV	
2309		Marvin, Geo. W., CE	174
2310	1922	Barrett, Chas. J., Jr., CE	
2455		Williams, Robert B., AC	146
2456	1923	Palmer, Glen H., SC	
2694		Ramsey, Arthur C., INF	239
2695	1924	Hastings, Wallace H., CE	
3068		Stodter, Chas. S., SC	374
3069	1925	Barth, Chas. H., Jr., CE	
3284		Roberts, Harold V., INF	216

The promotion list, divided into such groups as far down as 1925, is shown in Table A. There are three very large groups, however: 546 in that headed by the West Point class of 1916, 3,116 files in that led by April, 1917,

and 489 in that by June, 1918. This is the World War hump, still 4,151 files strong.

Nearly all promotion schemes which have been advanced in the past ten years have been predicated, directly or obliquely, on doing something to the World War hump to reduce its size. This writer would be selfishly interested in reducing the hump—the more the better—but just to be different suppose we leave the hump alone and let nature take its course.

We want a promotion system with a long-term application, so let us start with a post-war group. The 1922 group, which includes the West Point class of that year is a good average one of this classification. As of June 1937, the average age of the officers in that group will be 38. Our system, or any other system for that matter, must be such that the surviving members of this group will retire at the top of the list of colonels in 1963, say June 30, 1963. This permits a group length of service of forty-one years; entirely too long, but we will let it go at that for our tentative planning. The youngest member should have no objection to retiring on June 30, 1963 after forty-one years of service, even if only 62 years old at that time. The over-age members of the group will, of course, retire earlier, whenever they become 64 years old.

Taking the 1922 group as a base, and assuming a retirement date of June 30, 1963, we find that it will be necessary to retire 26 groups of officers, one each year, beginning June 30, 1937, so that the group of 1922 will be at the top of the list of colonels from July 1, 1962 until June 30, 1963.

There are only twenty-five groups on Table A senior to the 1922 group. That means we can split the World War hump into four instead of its present three groups. These will still be much too large to dispose of in four years at the top of the promotion list, and such action would be no better than the outlook at present.

Table A also shows eight small pre-war groups. Suppose we combine some of the neighboring small groups and give the resultant vacancies to the World War hump? Table B is the result.

TABLE B

GROUP RETIREMENT

October 1396 Promotion List Nos.	*No. of files in group*	*Retire on or before June 30*	*U.S.M.A. class*	*Name and branch*
Col. 1	45	1937	(Several)	McMaster, Richard H., FA
45				Allison, James R., SC
46	71	1938	1899	Markham, Edward M., CE
116				Seaman, A. Owen, QMC
117	72	1939	1900	Pillsbury, Geo. B., CE
188				Graham, Wm. A., JAGD
189	98	1940	Feb. '01	Peek, Ernest D., CE
286				Hunt, Chas. A., INF
287	93	1941	1902	Hannum, Warren T., CE
379			1903	Dravo, Chas. A., INF
380	120	1942	1904	Pettis, Chas. R., CE
499			1905	Emmanuelli, Felix, INF
500	124	1943	1906	Johnson, Wm. A., CE
621			1907	Crockett, Cary I., INF
622	130	1944	1908	Edgerton, Glen E., CE
Lt. Col. 117				Bennett, Eli E., CAC
118	127	1945	1909	Godfrey, Stuart C., CE
244				Frink, James L., QMC
245	145	1946	1910	Garlington, Creswell, CE
389				McCormick, Edw. G., INF
390	191	1947	1911	Fleming, Phillip B., CE
580				Thomas, Chas. W., Jr., INF
581	124	1948	1912	Crawford, Roscoe C., CE
704				Rawls, Walter O., AGD
705	170	1949	1913	Newcomer, Francis K., CE
874			1914	Landreth, Earl, INF
875	376	1950	1915	Covell, Wm. E. R., CE
Maj. 299			1916	Allen, Leven C., INF
300	400	1951	April '17	Daly, Cornelius M., CAV
699				Powers, Joshua D., CAC
700	425	1952		Keating, Frank A., INF
1124				Ball, John H., FA
1125	450	1953		Baker, Russell, INF
1574				Wiggins, Porter P., INF
1575	450	1954		Cheves, Gilbert X., CAV
2024				Price, Wesley W., QMC
2025	450	1955		Lloyd, James P., INF
2474				Johnson, Geo. P., AC
2475	450	1956	Aug. '17	Finter, Clyde V., AC
Capt. 280				Tigue, John R., QMC
281	475	1957		Green, John C., SC
755				Whipple, Stephen C., CE
756	475	1958	June '18	Gutkowski, Joseph J., INF
1230				Corkille, John D., AC
1231	475	1959	Nov. '18	Mackinnon, Wm. R., QMC
1705				Aaron, Thomas R., INF
1706	258	1960	1919	Newcomer, David A., CE
1963			(Nov. '18)	Reed, Geo. W., Jr., INF
1964	172	1961	1920	Oxx, Francis H., CE
2135				Bare, Geo. H., INF
2136	174	1962	1921	Marcus, Morris H., CAV
2309				Marvin, Geo. W., CE
2310	146	1963	1922	Barrett, Chas. J., Jr., CE
2455				Williams, Robert B., AC
2456	239	1964	1923	Palmer, Glen H., SC
2694				Ramsey, Arthur C., INF
2695	374	1965	1924	Hastings, Wallace H., CE
3068				Stodter, Chas. S., SC
3069	216	1966	1925	Barth, Chas. H., Jr., CE
3284				Roberts, Harold V., INF

This table shows the promotion list down to include the group of 1925. In practice, of course, it would be continued down to the last officer on the list, each group being assigned its retirement date.

It lists the promotion list numbers according to the October, 1936 Army List & Directory, the number of files at present in each group, the suggested date of retirement for the survivors, the West Point class which happens to be in the group, and the names of the senior and junior officers.[1]

Now let us see what our new promotion system does, using Table B.

First, the average officer is assured that he will gain files each year at a fairly steady rate, fluctuations being caused principally by the natural variations in attrition;

[1]We have not mentioned general officers. Suppose we consider that any officer who is appointed to the rank of general officer, permanent or temporary, is thereby removed from the promotion list until he should revert to a promotion list grade. While a general officer, he is automatically exempted from the retirement provisions assigned to his former promotion list group.

and that he can expect to retire as a colonel if he doesn't get stars.

Second, colonels eligible for the grades of general officer or chiefs of branches will always be found near the top of the list of colonels.

Third, the retirement of the World War officers has now been spread out over a period of years without imposing unduly on either the pre-war or the post-war officers. The effect of either meagre or abnormally excessive attrition within the World War hump is minimized, as far as the post-war officers are concerned.

Fourth, officers who entered the service as a group and have been known throughout their service as members of that group, now retire together companionably.

Fifth, the established quotas for the various grades on the promotion list have not been disturbed and are of no moment.

There is our system. It can be applied to thaw out our frozen promotion list for any desired rate of flow.

The tentative details, shown in Table B, undoubtedly can be improved, particularly in the division of the groups and the establishment of the group length of service. We have used forty-one years for the length of service for post-war groups, to be conservative. In application, this is much too long; thirty-eight years would be better, but that is a decision for the War Department.

Mentioning that Department seems to have brought results, for no sooner than the two words were written, in came the *Army & Navy Journal* of December 12th, containing a release entitled "Analyze Army Promotion."

The first reading of this brought amazement because a statistician seemed to be pleasantly optimistic about the promotion situation. Before throwing our manuscript into the waste-basket, however, we read it again.

The news item, to all intents and purposes, states that we may expect an increase in the attrition rate until it reaches an all-time high about 1956. Briefly, the rate of promotion will reach a maximum in 1956 and then will slow down again, or so the article says.

This prophecy directly contradicts our claim that promotion is slow today and is going to get slower.

The release includes a tabulation showing the dates of probable promotion of a number of representative officers. We will now interpolate in the tabulation and find out what is going to happen to some of the officers in Table A, for whom we have predicted a long period of stagnation.

The following is based on the War Department's estimate and shows the resultant number of years of service required to reach the indicated grades:

U.S.M.A. class	*Name and branch*	*Colonel*	*Lt. Col.*	*Major*
1916	Moses, Raymond G., CE	(1944)28	21	
Apr. '17	Heavey, Wm. F., CE	(1948)31	23	15
June '18	Dean, John P., CE	(1955)37	33	23
Nov. '18	Griffiths, David W.. CE	(1956)38	35	24

There are approximately 3,600 officers on the promotion list today between Major Heavey and Captain Griffiths. The promise of an increased promotion rate most definitely does not apply to these officers during the next twenty years. As a matter of fact, they are going to experience a declining rate of promotion, each one requiring more service to gain a grade than it took his seniors.

Look at John Paul Dean's prospects! 23 years to major 33 years to lieutenant colonel, and 37 years to become the junior colonel!

General John I. Rodgers, Chief of Artillery during the Spanish-American War, made slightly better time than that. General Rodgers became a major in 22 years, a lieutenant colonel in 33, and a colonel in 36 years, one year less than it will take Dean. General Rodgers, by the way, was in the U.S.M.A. class of 1861, and served in the days when promotion was really slow, if we can believe the old-timers.

Going down the promotion list farther, the estimate indicates minute improvement from year-group to year-group, but we have to go down as far as the 1929 group to find any appreciable "improvement." Horace F. Sykes, Jr., CE, the senior man in the U.S.M.A. class of 1929 will need 20 years to become a major, 28 years to lieutenant colonel, and 32 years to colonel. Thus, Sykes will acquire his silver leaves and his eagles in exactly the same length of time it took Colonel Cunliffe H. Murray of the U.S.M.A. class of 1877.

Briefly, then, the coming "improvement" in the rate of promotion is a return to the rate prevalent in our Army fifty years ago. And when we die, hell will sure pop in hell when the Indian fighters claim that promotion was really slow when they were on active service!

And now, we must apologize for seeming to disparage the opinion of some hard-working statistician. He says promotion is going to get better; we claim it isn't. We both acknowledge the same prospects for promotion, but I am interested principally in the total length of service it will take for an officer to become a colonel compared with the time it will take his seniors. The rate of promotion is a relative thing, and that is the comparison which most acutely concerns us in the army today.

Some officers in the army will always get the breaks when it comes to promotion. The U.S.M.A. class of 1925, for instance, became captains in ten years. Is there any room for pleasant optimism, however, when it is going to take these same officers almost exactly an additional quarter of a century to obtain their eagles?

It is very nice for a young officer to become a first lieutenant after three years, and a captain after ten, but that does not improve the general situation if he virtually marks time thereafter.

Promotion today is slow, and it is going to stay slow, or get slower, until 1956 when officers will begin to become colonels in less time than it took their seniors.

There is only one way to improve conditions: thaw out the list. The longer we wait to apply the heat, the more difficult it will be to get approval for the method and the more drastic its provisions must be. Why not do it now?

The Knox Trophy

THE Knox Trophy which is named after the first outstanding American Coast Artilleryman, General John Knox, is awarded annually by the Society of the Sons of the Revolution in the Commonwealth of Massachusetts to the Coast Artillery battery demonstrating the greatest efficiency.

The determination of the battery demonstrating the greatest efficiency is a most difficult task. It is first necessary to segregate those batteries that are eligible for consideration. This necessitates a most careful review and detailed study of all target practice records. Batteries that have demonstrated their efficiency and which are conspicuous for excellence in gunnery are listed for consideration. Naturally these batteries are those which obtained conspicuous high scores in their record practices. The most meritorious of the advanced practices are also considered. The final method of selection this year was similar to that followed in the previous year.

Briefly, the method consists in computing the average score attained in each class of armament during a period of several years. The deviations from the average and the resulting probable errors are then calculated in much the same manner that armament errors and probable errors are computed in artillery practices. The highest score obtained during the current year with each class of armament is then taken, and the amount of variation above the minimum score for an excellent classification is calculated in terms of probable errors. Those scores which show the greatest deviation, in terms of probable errors, above the minimum score for classification as excellent are then considered in detail. Batteries which fired record practices and showed conspicuous merit in gunnery during the 1936 target practice year are listed in the following table. Each of the practices considered were recommended by the appropriate district commander for classification as excellent.

The outstanding advanced practices conducted during 1936 were those of Battery E, 59th Coast Artillery, Battery E, 63d Coast Artillery and Battery B, 55th Coast Artillery.

The practice of Battery E, 59th Coast Artillery, firing the turret guns at Fort Drum, was well planned and excellently carried out. The hits per gun per minute were high, the battery changed from one target to another during the shoot, and a high-speed target was used. Personnel casualties were inflicted during the practice but these had been carefully rehearsed in preparation for the practice. An outstanding particular of the practice was the fact that both turrets were simultaneously kept in excellent mechanical shape for firing.

The practice of Battery E, 63d Coast Artillery furnished valuable information in antiaircraft machine-gun gunnery and fire control. Fire control instruments designed by the battery commander and constructed by battery personnel were used throughout the practice.

Battery B, 55th Coast Artillery fired with 155 mm. guns. In the practice the battery was required to shift fire through an angle of 90 degrees from a high-speed

BATTERIES SHOWING CONSPICUOUS MERIT IN GUNNERY TARGET PRACTICE 1936

(Record Practices Only)

Organization	Score	Organization Score	Minimum Score for Excellent Classification	Deviation Above Minimum for Excellent in PE's	Armament
F-62	327.6				Cal. .30 MG
	236.0				" "
	363.4				" .50 MG
	213.4	285.1	97.3	12.96	" "
E-62	168.2				Cal. .30 MG
	179.2				" "
	291.9				" .50 MG
	273.0	228.1	97.3	9.02	" "
A-64	192.0				AA Searchlight
	194.0				" "
	190.4	192.1	124.2	8.77	" "
E-64	186.0				AA Searchlight
	185.2				" "
	183.6	184.9	124.2	6.82	" "
A-63	183.6				AA Searchlight
	163.0	173.3	126.1	4.37	" "
F-64	148.6				3" AA Gun
	112.6				" "
	64.7	112.0	75.6	3.43	" "
B-69	123.6				3" AA Gun
	86.0				" "
	99.4	103.0	75.6	2.59	" "
B-61	139.2				3" AA Gun
	87.0				" "
	75.4	100.5	75.6	2.35	" "
A-11	130.9	130.9	87.9	2.29	12" Mortar (SC)
B-62	107.7				3" AA Gun
	101.8				" "
	95.4	103.6	81.5	2.01	" "
D-91	122.3	122.3	87.2	1.89	14" DC Gun
B-91	101.0				155 mm.
	164.5	132.8	103.8	1.69	6" DC Gun
A-92	333.9				3" SC Gun
	60.5	197.2	134.0	1.55	" "
B-59	189.8	189.8	152.1	1.25	12" DC Gun
D-52	104.3	104.3	87.9	0.87	12" Ry Mortar
F-59	223.7	223.7	182.1	0.85	12" BC Gun
A-59	211.8	211.8	182.1	0.61	12" BC Gun
E-52	121.1	121.1	109.6	0.59	8" Ry Gun
G-91	100.0				Mines
	116.3	108.2	102.0	0.57	6" DC Gun
F-60	102.0				Cal. .30 MG
	74.7				" "
	136.1				" .50 MG
	105.2	104.5	97.3	0.50	" "
B-15	205.3	205.3	182.1	0.47	12" BC Gun
C-15	134.1	134.1	130.3	0.18	16" BC Gun

target to a medium-speed target. Excellent results were obtained.

After a thorough consideration of the factors listed in the above table, those discussed relative to the outstanding advanced practices and the other important conditions attending the conduct of each practice, it was finally determined that the three outstanding batteries in the Regular Army Coast Artillery for 1936 were the following in the order named:

1. Battery A, 63d C.A., Captain Arnold F. Amoroso, commanding.

2. Battery A, 11th C.A., Captain James R. Goodall, commanding.

3. Battery E, 59th C.A., Captain Russell E. Bates, commanding.

The fine records made by the several batteries are a true indication of their high state of training and their fitness for service. The Society of the Sons of the Revolution in the Commonwealth of Massachusetts will present the trophy that has been awarded to Battery A, 63d C.A. to an officer disignated to receive it on January 16, 1937, at their annual dinner in Boston.

The Chief of Coast Artillery has expressed his heartiest congratulations to all members of Battery A, 63d C.A., Battery A, 11th C.A. and Battery E, 59th C.A. on their fine achievements and the Coast Artillery Association desires to add their congratulations to those of our Chief and to commend the members of all the organizations considered for their fine work. The results obtained are most gratifying and show real efficiency and preparedness.

The Knox Medal

THE Society of the Sons of the Revolution in the Commonwealth of Massachusetts also awards annually an individual medal to the best enlisted student in the Coast Artillery School. The competition for this particular medal is marked as it is much coveted and highly prized.

Only special selected enlisted men of the highest type are afforded the opportunity of attending the enlisted specialists' courses at the Coast Artillery School. To be chosen as the one who is most outstanding among this group of specially selected contestants drawn from the best men of the Coast Artillery Corps is indeed a singular honor. This year the competition was of the keenest sort and the winner was determined only after detailed and careful consideration of the records of the leading students of the class. Special consideration was given to scholastic standing, cooperation, diligence, conduct, attention to duty, military bearing, neatness and character.

Private John J. Shoemaker, winner of the Knox Medal.

Private John J. Shoemaker, Headquarters Battery, 16th Coast Artillery, Fort Ruger, Hawaii, recently transferred to the Engineer Branch, Department Headquarters Detachment, Fort Shafter, Hawaii, has been selected by the Chief of Coast Artillery as the outstanding enlisted student of the 1935-1936 class at the Coast Artillery School and he is therefore announced as the winner of the medal named in honor of our first Secretary of War who was the father of American Artillery.

The Chief of Coast Artillery has sent his congratulations to Private Shoemaker for his outstanding demonstration of soldierly qualities.

The Knox medal is normally presented to the outstanding student by the Society of the Sons of the Revolution in the Commonwealth of Massachusetts at their annual dinner held in Boston, Mass. Due to the absence of Private Shoemaker, on foreign service, the medal this year will be received for him by a representative of the Chief of Coast Artillery and forwarded to Hawaii. It is understood that the actual presentation of the medal will be made on behalf of the Sons of the Revolution in the Commonwealth of Massachusetts at Ft. Shafter, Hawaii, by an officer specially designated by the Commanding General, Hawaiian Department.

Private Shoemaker has proved to be deserving of the highest commendation. He has shown by his work throughout the school year that he possesses exceptional ability, a high sense of duty, and is a man of the highest character.

The Coast Artillery Association congratulates and commends Private Shoemaker upon his achievement. He has earned the admiration of all the members of our Corps and he has our sincere wishes for a successful Army career.

COAST ARTILLERY ACTIVITIES

Office of Chief of Coast Artillery

Chief of Coast Artillery
MAJOR GENERAL A. H. SUNDERLAND

Executive
COLONEL HENRY T. BURGIN

Personnel Section
MAJOR CLARE H. ARMSTRONG

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

Organization and Training Section
LIEUT. COL. C. M. S. SKENE
MAJOR AARON BRADSHAW, JR.
MAJOR W. H. WARREN

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

Fort Monroe News Letter

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

COLONEL HORACE F. SPURGIN
Commanding Harbor Defenses of Chesapeake Bay and 2d C.A.

LIEUTENANT COLONEL EUGENE B. WALKER
Commanding 51st C.A.

LIEUTENANT COLONEL FREDERIC A. PRICE
Commanding 52d C.A.

By Major Oliver B. Bucher and 2d Lieutenant H. Bennett Whipple

BRIGADIER GENERAL and Mrs. Joseph P. Tracy departed on the Washington boat on the evening of November 24. The Second Coast Artillery Band and many friends were at the wharf to bid them farewell. Good-byes were shouted back and forth as the band played "California Here I Come," "The Girl I Left Behind Me," and other appropriate selections. Tears came to the eyes of many as the boat swung out and the sad strains of "Home Sweet Home" floated over the water. This was a gloomy parting for the entire command.

There have been several new assignments to the post. Captain Albert D. Miller and family arrived on November 20. Captain Miller took command of Battery "D," 52nd Coast Artillery and immediately started preparation for next year's target practices. Major William C. Mahoney, Q.M.C., and family arrived on December 1 with their trailer from Fort Mason, California. Major Mahoney is assigned as assistant to the post quartermaster. Impending arrivals and departures are numerous. Major J. T. Campbell, recently ordered to Amherst, Virginia, on CCC duty, has now been ordered to the Philippine Islands to sail from New York on the March transport. Second Lieutenant Clifford Hildebrandt and Captain H. A. Brusher and family are also ordered to leave on this transport. Captain Lloyd Shepard, C.A.C. has been ordered from Fort Worden to arrive at Fort Monroe on January 20. Captain Shepard has been designated to attend the Chemical Warfare School from February 7, 1937 until May 5, 1937. Other impending arrivals are Lieut. J. J. Lane, on February 22; Lieut. Arthur L. Fuller, on December 31; Lieut. V. M. Kimm on February 28; Captain Willard Wright on January 4; and Lieutenants Turner, Johnson, Patterson, Williams, Andrews, Gillman, and Beazley.

Second Lieutenant Norman C. Skinrood and Miss Gail Wilkinson were married at the post chapel on November 24, by Chaplain J. Knox Bodel. The groom's classmates officiated at the colorful ceremony. Immediately after the services at the chapel the bridal party was entertained at a reception at the home of Major and Mrs. Oliver B. Bucher. Lieutenant and Mrs. Skinrood departed on their honeymoon immediately after the reception.

During the football season many officers and their families were attracted to the Casemate Club to enjoy the football games in front of the radio and the football board. On days of big games free beer and soft drinks were served.

The various organizations including the Coast Artillery Board and Coast Artillery School have been carrying on numerous activities. The Mine Planter *General Schofield* went to dry-dock in Norfolk on November 1st and the

Brigadier General John W. Gulick

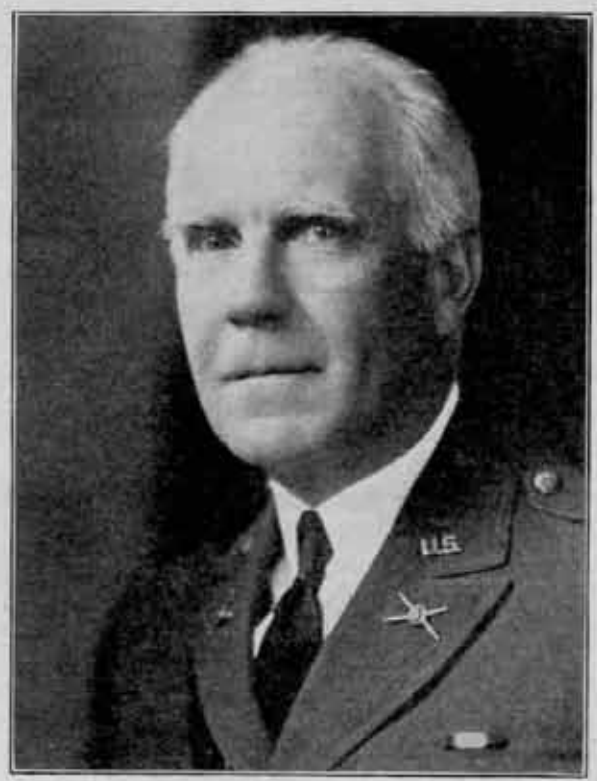
Planter *General E. O. C. Ord*, commanded by Captain Charles Wolff, was ordered to Fort Monroe from Fort Hancock, New Jersey, to cover the period of repair of the *Schofield*. The *Ord* has been on extensive mine work for the Coast Artillery Board since its arrival. For many days the weather was such that the planter found it necessary to feel its way around the bay because fog and rain were so persistent. On one occasion a radio had to be sent requesting a bell to be rung at the mine dock in order to get her in safely. As far as is known at the present time Captain Wolff and the *Ord* will remain here until the first of March.

During the month of November, antiaircraft target practice was conducted for the Coast Artillery School by Battery "C," of the Second Coast Artillery, commanded by Captain A. M. Wilson, Jr. The purpose of the firing was for the training of Reserve and National Guard Officers in the technique of antiaircraft fire. About a score of student officers performed various functions from the matching of hand wheels on the guns to the performance of duties of range officer on the director. Problems in calibration fire, trial fire, and orientation were solved by groups of students under the supervision of Major James Townsend and Captain Edward Barber. Various types of armament were used. The M1918 with trailer mount using the RA corrector was first used, to give training in the use of war reserve matériel. This firing was followed by practice with the M4 fixed mounts using the M1A1 and M2 directors and the M3 mobile guns with the T8 E3 director. The results obtained with the M1A1 were the best, two sleeve targets being cut down. This practice developed a score of 98. Successful communication with the towing plane, flown by Captain Oscar Beal, Air Corps, was maintained by use of radio with remote control to lessen interference by vibration from the gun fire. Even in the night firing no trouble was experienced. Firing stopped with completion of the National Guard and the Reserve courses at the School on November 27, 1936.

Battery "F," 52nd Coast Artillery fired two target practices, one on November 5 with the 10" guns at Battery Eustis and one on November 16 with the 8" Railway guns. Captain H. A. Brusher trained the gun crews and the School National Guard Officers actually conducted the practice under the supervision of Captain N. A. Burnell and Major H. McC. Cochran.

On September 23 a recruiting drive was inaugurated. The strength of the command on that date was 1,483. Three sergeants were ordered out to work under the regular recruiting officers until December 31. Advertisements were carried in all the local papers for applicants for the Army. Recruits flocked in to the post particularly from Richmond, Va. and Harrisburg, Penna. The type of applicants enlisting this year is on the average much younger than the recruits taken in last year. The applicants were so slight in stature that it was several weeks until two big men were discovered who could be used to augment the ramming detail on the 12" disappearing guns. At present the strength of the command is 1596, an increase of 113 men.

The Harbor Defenses are so short of officers this year that the Class of '36 has not had the customary school training usually given the new second lieutenants. Five of the seven second lieutenants from this class are as-



Brigadier General Joseph P. Tracy

signed to duties that make it almost impossible to attend classes.

The Special Course for officers of the National Guard and Officers' Reserve Corps, which opened on September 8th, terminated on November 28th, with a formal graduation ceremony in the assembly hall of the main school building. The class consisted of twenty-three National Guard officers and sixteen Reserve officers, all of battery grades, and was divided according to regimental assignments into an antiaircraft artillery section of twenty-five officers and a seacoast artillery section of fourteen officers. This class was the first to attend the Coast Artillery School under the policy of a twelve weeks instead of an eight weeks course. The members of the class enthusiastically entered into the social life of the post, and judging from numerous expressions, enjoyed and profited greatly from their course of instruction.

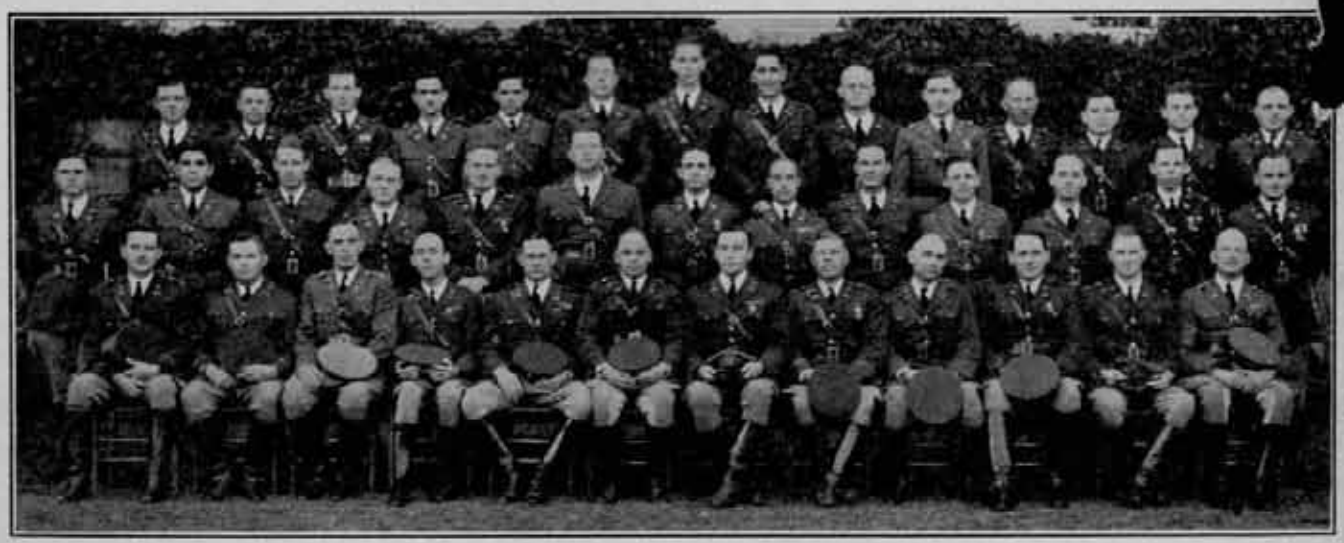
The class adopted the Oozlefinch as a mascot; one of the members of the class (Lieutenant Ramon) modeled the mascot in plaster for reproduction in bronze. A class year-book, *Bursts and Splashes*, was published under the supervision of Captain Cann, and what is intended to become a school tradition—the "Order of the Oozlefinchlings" to which future National Guard and Reserve students will be eligible—was established largely through the efforts of Lieutenant Swett. It was a live class; we miss its enthusiastic activities.

The special class for warrant officers of the Army Mine Planter Service completed its studies at the school on December 18th. This class, consisting of Warrant Officers Christensen, Mickel, Lastovka, Reeve, and Carlson, have been studying Diesel Engine operation and maintenance preparatory to assignments to the new Mine Planter *Ellery Niles*. They will continue their instruction at the Westinghouse plant in Pittsburgh, the Winston Plant in Cleveland, and the Pusey and Jones shipbuilding plant in Wilmington, Delaware.

The Fort Monroe football season wound up even more successfully than it began. After definitely trouncing the strong Fort Totten team and the 260th Coast Artillery, National Guard of Washington, D. C., early in the season, however, Fort Monroe unexpectedly went into a reverse for three games, taking its worst lickings from the Portsmouth Cubs and the Richmond Arrow A.C., both members of the Dixie Professional League. These defeats seemed to be just what the team needed to stir it up. The next and last two games of the season were played at Monroe before large crowds of enthusiastic supporters, who were pleased to see their team display power on the ground and skill in the air to such an extent that it easily defeated the Pennsylvania Carlisle Barracks team and the Norfolk Marines in that order, thus cleaning up the Third Corps Area championship. To Major J. L. Hartman, the coach, goes much of the credit for an outstanding team.

On December 14, a parade of the harbor defense troops was called for the purpose of presenting the athletic trophies won during the past year in inter-battery athletics. Captain A. M. Wilson, Battery "C," 2nd C.A. carried off the season's honors when his battery took the annual trophy for securing the greatest number of points in the combined sports.

At present, in the midst of the 1936-37 season, the Coast Artillery School Detachment under Captain F. [illegible] Kane is out in front with Battery "A," 51st Coast Artillery and Battery "F," 52nd C.A. running a close second and third. Second Lieutenant H. J. Katz and Captain [illegible] A. Brusher, respectively, command the runners up. Of



1936 SPECIAL CLASS OF OFFICERS OF THE NATIONAL GUARD AND OFFICERS' RESERVE CORPS

FRONT ROW *(left to right)*—Capt. Meadows, Capt. Beck, Capt. Bates, Capt. Paul, Capt. Isreall, Capt. Emery, Capt. Kolish, Capt. Hiden, Capt. Tatum, Capt. Adams, Capt. Schartle, Capt. Cann.

SECOND ROW *(left to right)*—2d Lt. Stephens, 1st Lt. Shumsky, 1st Lt. Walker, 1st Lt. Schouman, 1st Lt. Swett, 1st Lt. DeBarry, 1st Lt. Linehan, 1st Lt. Ramon, Capt. Courtenay, Capt. Johnson, 1st Lt. Thompson, 1st Lt. Flewelling, 2d Lt. Nagel.

THIRD ROW *(left to right)*—1st Lt. Strahn, 1st Lt. Efford, 2d Lt. Commons, Jr., 2d Lt. Thomas, 1st Lt. Breckenridge, 2d Lt. Haynes, 1st Lt. Johnson, 1st Lt. Aul, 2d Lt. Cosden, 1st Lt. Ladd, 1st Lt. Milz, 2d Lt. Czorny, 2d Lt. Faust, 1st Lt. Mohler.

the sports included in the inter-battery competition only volley ball, bowling, swimming and one cross-country run have been completed. Volley ball was taken by Battery "A," 51st C.A., bowling and swimming by the School Detachment. In the cross country run, Battery "D," 52nd C.A., Captain A. D. Miller, commanding, put up the first five men across the finish line to win first place. However P.F.C. Bowen of Battery "A," 2nd Coast Artillery was the first individual contestant to finish, breaking last year's record by almost one minute.

At the end of the first half of the inter-battery basketball competition Headquarters Battery, 51st Coast Artillery, under Captain H. H. Newman, is leading, with Battery "A," 2nd Coast Artillery under Captain Joe D. Moss trailing closely. Instead of presenting trophies to the winning batteries as has been done in the past, this year individual medals will be awarded to those athletes competing on the winning team. This practice presents something definite and personal for the competitors to strive for.

The post basketball team has just been organized. With much good material Lieutenant E. W. Thompson C.A. Res., who distinguished himself on the football field last fall, hopes for a winning team. The program calls for a series of games with Langley Field to determine first the winner of the so-called Monroe Circuit; the Third Corps Area having been divided into two districts, the southern of which is further divided into the Monroe and Washington Circuits. The championship will go to the winning team of a series between the best teams, one from each district.

Plans for probably the most popular of the Fort Monroe winter sports have been laid. "Speedy" Lawrence, once long time Corps Area lightweight champion, plans to have a boxing tournament early in January to determine the best fighters in each class. With these as drawing cards, two or three shows will be staged later on. Judging by the interest already shown by the post personnel, these coming bouts will be a great success. Lieutenant John R. Lovell, Olympic Games boxing referee, is forming a boxing class from among the youngsters on the post. It is planned to put on several bouts between these boys at our regular boxing shows.

Fort Monroe started its Christmas festivities on Sunday, December 20th, when a Christmas pageant depicting the Christmas story was presented at the Liberty Theater on the post. The pageant was attended by over eleven hundred people from Fort Monroe and the surrounding communities, and was acclaimed as a beautiful and inspiring picture of the old, old story.

There was no admission charge, nor was an offering taken, but those attending were requested to bring a gift for a White Christmas for the needy in the neighborhood, and in response to this plea, a large quantity of food supplies were given for distribution by the post Red Cross and community chest committee.

The stage for the tableaux was framed on one side by the post choir in vestments. Back of the stage were two lighted church windows, while on the other side there was a large pulpit occupied by the seer, who read from the scripture. On this side of the stage also, above the piano, were placed gilded pipes in a frame, which gave the appearance of an organ. Both settings gave the effect of the interior of a church.

The general chairman of the pageant was Major Eugene M. Foster. Mrs. Alva F. Englehart as organist and director of music furnished a splendid program of Christmas songs. Miss Mabel Marsh was in charge of the committee on tableaux, which committee staged eight impressive pictures. An orchestra from the 2nd Coast Artillery Band, under the direction of Warrant Officer M. A. Quinto, rendered a prelude and postlude of appropriate Christmas music.

Promptly at 6:00 P.M., December 23, the ancient live oak tree on the parade ground again took over the job of czar of all the army Christmas trees. With hundreds of colored lights the gigantic tree presented a most wonderful sight. A large number of other trees on the post were wired for electric lights and especially those on the water front were beautiful sights to behold.

The 2d C.A. Band in accordance with the old, old custom paraded around the post on Christmas morning playing Christmas carols. This custom adds materially to the Christmas spirit and the members of the garrison appreciate deeply this service rendered by the band.

The home service committee of the local Red Cross Chapter performed a wonderful service for the needy families at Monroe on Christmas day. Members of the garrison donated over 300 toys both new and old and hundreds of articles of clothing. The Boy Scouts repaired and painted the old toys and the home service committee assisted by the Girl Scouts renovated the clothing which was donated. Thirty baskets of food and 32 baskets of toys and clothing were prepared and delivered to the needy families on Christmas Eve. Three toys were furnished to each of 81 children and for weeks before Christmas the Red Cross Rooms resembled Santa Claus's Work Shop. The post is deeply indebted to Mrs. Richard Cox, Mrs. Sam Parker, Mrs. Oliver Bucher, Mrs. Cecil Spann and Mrs. Warren Blair for the handling of the enormous amount of work connected with this worthy cause, which brought so much happiness to the less fortunate members of our garrison.

The entire garrison is now eagerly anticipating the arrival of General and Mrs. Gulick. General Gulick will arrive at Fort Monroe on January 3rd and will assume duties as commanding general of the Post. Welcome home to General and Mrs. Gulick.

Hawaiian Separate Coast Artillery Brigade News Letter

BRIGADE COMMANDER, BRIGADIER GENERAL JAMES A. WOODRUFF

CHIEF OF STAFF, COLONEL BENJAMIN H. L. WILLIAMS, C.A.C.

S-1, LIEUTENANT COLONEL E. C. DESOBRY, A.G.D.
S-2, MAJOR JOHN T. LEWIS, C.A.C.
S-3, LIEUTENANT COLONEL RALPH E. HAINES, C.A.C.
S-4, LIEUTENANT COLONEL J. P. SMITH, C.A.C.

LIEUTENANT COLONEL HENRY C. DAVIS, JR., C.A.C.
Com. and Engineer Officer

Harbor Defenses of Honolulu
16th C.A.
COLONEL G. A. WILDRICK, *Commanding*

Harbor Defenses of Pearl Harbor
15th C.A.
COLONEL EARL BISCOE, *Commanding*

64th Coast Artillery
COLONEL RALPH M. MITCHELL, *Commanding*

By Lieutenant William M. Vestal, C.A.C.

BRIGADIER General Robert S. Abernethy, having served over four years on his present tour in the Hawaiian Department, will be succeeded on January 19, 1937 by Brigadier General James A. Woodruff. A review of the technical, tactical, and athletic advancement of the brigade during his tour is recorded in the JOURNAL news-letters, but no pen can put in black and white the influence of his personality and foresight on the future of the Coast Artillery garrisons here. The brigade welcomes General Woodruff and assures him its loyal support and pride of service.

The 64th Coast Artillery regrets the close of the three-year term of Colonel Willis G. Peace. Colonel and Mrs. Peace will return to the mainland December 7th, carrying with them a heartfelt *aloha* that will be as indelible in their memories as the record of the 64th Coast Artillery (AA) is on the rolls of the Hawaiian Department. Colonel Ralph M. Mitchell, accompanied by Mrs. Mitchell, arrived December 1. He will assume command of the 64th Coast Artillery and the post of Fort Shafter upon the departure of Colonel Peace.

Along with the semi-annual audits, inventories, and reports, we might well consider what has been accomplished in the past year at the various posts in the Brigade. Each (Kam, Shafter, and Ruger) has its mutually agreed upon Saturday night for a monthly hop, and the tuxedo rules supreme instead of the mess-jacket. The Kam Officers' Club has been completely redecorated. A fine hardwood dance floor, indirect lighting system, and new interior decorations make this club the outstanding one in the South Sector. At Ruger, the old theatre next to the Service Club has been torn down, rendering many a termite homeless. On its site, tightly packed coral with rock retaining walls give an excellent automobile parking space, a Saturday night necessity. The Post Theatres get shows soon after the leading Honolulu emporiums, whose facilities have been broadened by the addition of the new King, down-town, and the very beautiful Waikiki, across from the Royal Hawaiian Hotel.

A three-way road, cutting a new route through Kapiolani Park, from Waikiki through Ruger and back of Diamond Head to Kahala Avenue, is the P. W. A's contribution to the beautification of Fort Ruger. Fort DeRussy beach projects, which are for the benefit of all personnel in the department, were pushed forward by Major A. V. Rinearson, and energetically completed under Major W. H. Sweet, his successor as post commander. New walks near the sea-wall, Kau arbor, handball and paddle-tennis courts, have been put in here. A meeting house for the boy-scout troop has finally been provided near the courts, and fills a much needed Friday night want. Of course Kilauea is still with us, but to many is still just a happy anticipation.

Fort Kam "old-timers" would never recognize "Jack's" Restaurant. The Post Exchange proper, has shared too in the glory of a complete refurbishing. "Jack's" boasts new chrome and leather chairs, modern counter, and a new officers' dining room, made from part of the old Post Exchange office. For those who disbelieve fish stories, we can refer them to the pictures on the walls of this room. The "Hase Gate" now graces the main road entrance to

REGIMENTAL COMMANDERS
Colonel Willis G. Peace, Colonel Earl Biscoe, and Colonel G. A. Wildrick at department military competition, Fort DeRussy.

1936 SECTOR SWIMMING CHAMPS
Fort Kamehameha repeats its 1935 triumph.

Kam, and a new landscape program gives the arrival a very pleasant picture.

After a calm June, the fall and winter took a terrible toll from the bachelors, Lieutenants Voehl, Clark, Moorman, and Turner joining the benedicts.

Turning to the subject of those labors for which we draw our shekels, you will find the antiaircraft machine-gun scores that were missing in our last letter, below:

Organization: Battery I, 64th Coast Artillery. Battery Commander, Major W. H. Donaldson. Dates, October 2-13, 1936. Fire Control, Central Tracer.

	SCORES	
Platoon	*Caliber .30*	*Caliber .50*
1st	114.8 (Day)	106.3 (Day)
2nd	103.8 "	74.6 "
3rd	121.8 "	102.8 "
Average	113.5 "	94.6 "
4th	95.4 (Night)	44.9 (Night)
5th	81.2 "	47.4 "
6th	85.5 "	51.1 "
Average	87.4 "	47.8 "

The brigade commander's annual administrative inspection will be completed by the middle of January. With the Barrette Trophy as an added incentive, all batteries are particularly anxious to make a good showing.

General Drum instituted department military competitions this fall, which took place from November 9th to 13th. Covering all phases of field training, much benefit was derived in the preparation for the events, and the brigade attained great satisfaction from the results obtained in those events in which they were matched against the other arms. With the exception of the 64th the Coast Artillery units competed as battalions. That they did so well in regimental competition speaks highly for the organization and training of the competitors, made doubly difficult with men doubling up on events when only a week was allowed for the preliminary preparations.

The department commander presented the Coast Artillery Cup for efficiency in the use of arms to the Harbor Defenses of Pearl Harbor at a brigade review held at Fort DeRussy on November 27. Battery B, 15th Coast Artillery, was awarded a department streamer for "general military efficiency" in the use of arms for the training year 1935-36, as the outstanding firing battery in the brigade. The Brigadier General John D. Barrette Trophy was awarded to Battery C, 16th Coast Artillery for excellence in administration, training, and activities for the same period. The competition for this trophy was exceedingly keen. Detailed records kept throughout the training year just closed, required careful consideration before the winner was announced.

Interbattery boxing and basketball have been completed on all posts, and the Sector season will start in January. The Coast Artillery regiments are the only (3) entrants for the South Sector boxing title, but Luke Field, Fleet Air Base, Subron Four, the Marines, and Staff are added entries for the basketball gonfalon.

With an exceedingly profitable, happy and eventful 1936 behind it, the Hawaiian Separate Coast Artillery Brigade extends its ALOHA to the Coast Artillery for the coming New Year!

AN OFFICER *who is unwilling to study and to work to become efficient should not in justice to himself, to his men, and to his government continue as such. It is criminal of an officer who is knowingly ignorant of troop leading to take men into battle, and it is brutal of a government to permit ignorant or inefficient officers to do so.*—CAPTAIN HUGH D. WISE.

Panama Canal Department News Letter

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

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

Fort Sherman
COLONEL WILLIAM T. CARPENTER
1st C.A.

Fort Randolph
COLONEL CHARLES B. MEYER
1st C.A.

By Major Harry R. Pierce, C.A.C.

FORT AMADOR

Small Arms

As a grand finale to the small arms training season the annual regimental rifle and pistol matches were held on December 4th, rifle in the forenoon and pistol in the afternoon. The Pacific Sector Headquarters Company, although not a part of the Fourth Coast Artillery, is, in other ways an integral part of the post and was included in the pistol match.

Rifle

In the rifle match each battery was permitted to enter a team of five members, and a silver plaque was given by the regimental commander for the high team aggregate. It will be remembered that we have been running a series of quarterly small-bore matches during the past six months for the permanent possession of a bronze plaque for the battery winning three competitions. In these small-bore matches the Service Battery has won two and had looked forward to winning the .30 calibre match as well. At the end of the slow fire strings the Service Battery was ahead and it still looked to them as though it was in the bag but, as in many contests, the game is not won until the last shot is fired, and during the rapid fire C Battery came through with a few possibles at the psychological time and won.

The plaque was presented to C Battery on December 21st at an appropriate ceremony on the parade ground.

In addition to the trophy, individual prizes were given in post exchange coupons as follows:

$10.00 to the winner of the match; $3.00 to second place and $2.00 to third place. The $10.00 prize, only, was open to officers as well as enlisted men with the proviso that if an officer won it an additional prize of $5.00 was to be given to the high enlisted man. Since the match was won by an enlisted man this $5.00 prize was not used. Winners appear below:

Rifle Match (.30 calibre Springfield, all at 200 yards)

Winner of Trophy—Battery "C," 4th C.A. (AA).

Winners of Individual prizes:

1st Place—Corporal Roop, Service Battery, 4th C.A. (AA).
2d Place—Private 1cl. Reese, Battery "C," 4th C.A. (AA).
3d Place—Corporal Hyland, Battery "C," 4th C.A. (AA).

Team Prizes:

Private 1cl. Reese, Battery "C," 4th C.A. (AA).
Corporal Hyland, Battery "C," 4th C.A. (AA).
Private Barry, Battery "C," 4th C.A. (AA).
Corporal Deitz, Battery "C," 4th C.A. (AA).
Corporal Williams, Battery "C," 4th C.A. (AA).

Pistol

In this match, two enlisted men were permitted to enter from each battery of the Fourth Coast Artillery and two from the Pacific Sector Headquarters Company. No team prize was offered but the individual prizes were the same as for the rifle. The .45 calibre automatic pistol was used and the course was the same as in the national matches, 50 and 25 yards on the standard American target.

High scores were as follows:

1st place—Captain Holger N. Toftoy	238
1st Enlisted man—Pvt. Geo. W. Brown, Pac. Sect. Hq. Co.	206
2d Enlisted man—Sgt. Donald Stauffer, Service Battery	200
3d Enlisted man—Sgt. Clarence Madsen, Pac. Sect. Hq. Co.	196
4th Enlisted man—Sgt. Dominic Stramock, Service Battery	192

Captain Toftoy and the first three enlisted men received prizes.

The Department small arms matches are scheduled for January 11-17 and one idea in holding the regimental matches was to unearth material for entries. With the enlisted men it was relatively easy and Lieut. Ledward is now training a squad of riflemen while Major Pierce

New golf club near main gate at Fort Amador.

is working with the two high enlisted pistol shots. Both report satisfactory improvement and we look forward to bringing to Amador a medal or two.

With the officers it was different. Lieut. Ledward was the only officer to shoot in the regimental rifle match and has shown a great deal of interest in the development of the Service Battery team this last year. He would normally have been the one to represent the regiment in the department match but Captain Reierson who was unable to shoot on December 4th challenged such an idea. Captain Reierson and Major Pierce both challenged Captain Toftoy's right to shoot the pistol. As a result a series of five matches with the rifle and with the pistol was arranged to be completed by the end of the year.

At the present writing, only one rifle match has been fired with Captain Reierson six points ahead. They expect to fire the remainder within the next few days.

Captain Reierson dropped out of the pistol series after the fourth match leaving Major Pierce and Capt. Toftoy to fight it out. The competition was rather keen. Major Pierce holds two silver medals and Captain Toftoy one gold medal, already, and both were extremely desirous of entering the department match. This keenness was reflected in the scores which suffered accordingly. They were as follows:

	Pierce	*Toftoy*
December 11	240	244
13	249	225
16	236	233
23	243	233
27	266	241
	1,234	1,176

Boxing

The boxing events have come and gone with Amador ending in second place with 515 points against Clayton with 570. Corozal scored a total of 400 and Allbrook Field, 30. The competition between Amador and Clayton was strong from start to finish, and although Clayton led from the start, it was really nip and tuck as to which would finish first.

The bouts were arranged into three matching programs of two smokers, each. The smokers were held at the various posts. The following shows the results of these matching programs:

1st Matching Program

Clayton	165
Corozal	110
Amador	105
Albrook	25

2d Matching Program Plus the 1st Matching Program

Clayton	375
Amador	265
Corozal	195
Albrook	30

3d Matching Program Plus the 1st and 2d

Clayton	570
Amador	515
Corozal	400
Albrook	30

As a result of these bouts a Pacific Sector team was sent to the Atlantic side to Fort Davis to decide the department championship. A special train was run as is the custom and a large crowd went over for the day. Unfortunately for the Pacific Sector they had better fighters over there and won the championship.

Baseball

As a result of the Fort Amador local league a final series of three games was played between Battery C and Battery F of the Fourth. F Battery won one and C Battery won one. The play-off game was one that would delight the heart of even the most critical baseball fan. In eleven innings the score was still nothing to nothing. Finally F Battery scored one run in the first half and at the end of the eleventh inning C Battery had all three bases full. No wonder F Battery is proud of the cup it wins as a result.

Now, the Pacific Sector team is tuning up in preparation for the department championship.

In the meantime the Pacific Sector team will play with the Isthmian League, a Canal Zone affair in which there is a lot of interest as well as some real good baseball. These games will be played at the Balboa Stadium.

In this connection Colonel Pearce has been elected President of the league and will officiate during the series.

Social

The Christmas holiday season is seeing its usual run of parties of all kinds, some large, some small, all imbued with the holiday spirit. (We might make a pun at this point but will leave it to your imagination, instead.)

The Amador Officers' Club held an eggnog party at noon on Christmas Day which was a very friendly informal gathering. The regular monthly dance was held on the 26th and an additional one in place of the regular January dance will be held New Year's Eve.

Colonel Pearce returned to the command on December 29th after a leave of a little over a month in San Francisco. Returning on the same transport, also from a short leave was Major Jackson. Perhaps, needless to say the regiment welcomes them both back.

Miss Jennie Gray Pearce left early in December for an extended cruise down the coast of South America.

A number of other members of the garrison took advantage of the holidays to visit Costa Rica, a favorite trip from here. Still others went away for a few days into the interior of Panama. These are gradually drifting back one by one.

Training

December saw the end of the year's training program. All antiaircraft practices were finally fired, those for 1936

as well as a couple left over from 1935. We start the new year with a clean sheet.

For the first time, of recent years, at least, the anti-aircraft practices will be held in January and February. Heretofore these have been held later in the year with accompanying difficulties caused by poor weather. This next year they will be fired while the sky is the clearest. This decision should be reflected in target practice scores.

Small arms, also, will be started early in the year with, presumably, better results than before.

Fort Randolph

Fort Randolph has a new commanding officer. Lieut. Colonel and Mrs. Charles B. Meyer arrived Tuesday, December 22, 1936. Colonel Meyer assumed command that date, relieving Major H. P. Detwiler, C.A.C. Other recent arrivals are Captain George B. Anderson, C.A.C. on December 22d, and 2d Lieut. Jack Alfrey, C.A.C. on December 15, 1936.

Fort Randolph made a splendid showing in the department boxing tournament, having six out of the eight contestants from the Atlantic Sector, and winning three of the five bouts won by the sector.

The Randolph boxing squad also won the intra-sector tournament, having seven of the medalists, which brought the boxing cup to Fort Randolph.

Fort Sherman

Colonel William M. Colvin left for the United States September 15th, on which date Colonel William T. Carpenter became harbor defense and regimental commander and commanding officer of Fort Sherman.

On account of the death of the Secretary of War, all social activities of the post were suspended. Due to an unusually dry spell in the rainy season, Battery "H" was able to fire all of its 3" AA practices held over from 1935. Early in October it was decided that the batteries in the First Battalion at Fort Randolph could complete the target practices more quickly here at Sherman, so they came over, one at a time, pitched camp in the corral near Fort San Lorenzo, and with the able coöperation of our friends in the Air Corps and some breaks in the weather, "A" and "B" Batteries finished all their firing and "E" Battery finished all their day firing, having only one night practice held over. Fort Sherman officers were the officials of these practices, and the time lost waiting for clouds to lift or scatter was most discouraging, but the new system of rotating assignments prevented anyone from suffering any great hardship.

The improved liaison with the Air Corps, consisting of an Air Corps officer at Fort Sherman and an Artillery officer at France Field, was a great help in getting planes on the courses at the right time. This resulted in frequent landings of planes here during the month, carrying liaison officers back and forth.

During October, Fort Sherman saw the largest number of departures from its shores in many months, and many were the fond farewells. To replace this stream of departures was the largest single body of recruits seen here in months. Colonel Carpenter's slogan of "Athletics for every recruit" has shown up some otherwise hidden athletic talent which should prove valuable on the various post teams during the coming year.

The post baseball league schedule ended early in the month. Battery "H" won the post championship with a record of 8 victories and one defeat. The competition was so close and interest so keen, that a second schedule was immediately inaugurated, Battery "H" again winning, with Battery "F" in second place. Very few games in the league this year have been won by a margin of more than one or two runs. The pitchers, in general, have demonstrated their superiority over the batters, and a srong pitching staff is assured for the post team.

Although the boxers have been training for months, their first public appearance was October 17th, when they held their final eliminations for places on the post team. On November 7, the post boxing team went to Fort Davis and won 3 out of 8 bouts with the 14th Infantry.

The smoker staged October 31 was an outstanding success. The seats in the playshed ran out and many men could find standing room only. The exhibition boxing bouts were well matched and packed with action. The post suddenly became aware that a glee club had been organized, and in only two short weeks were able to give a very creditable performance. Most of the crowd also found out for the first time that there is a first class solo cornetist in the band. The climax of the afternoon was the presentation of trophies by Colonel Carpenter to the winning teams in the post baseball, basketball, track, and volleyball leagues for 1936. The winners were: track, Battery "F"; basketball, Battery "F"; baseball, Battery "H"; and volleyball, Battery "C."

The Fort Sherman "Navy" was augmented early in the month by the arrival of the Junior Mine Planter *Schumm* from Fort Amador. It was immediately put on the schedule and is the only passenger boat in the Sherman Navy which was not laid up for repairs at some time during the month. The Mine Planter *Graham* has been kept busy with Battery "F's" Mine Practice and an extensive cable-laying project.

READINESSS FOR WAR *depends on more than mere numbers, even numbers under arms. It depends on what has been well-called fitness to win, which in turn is made up of more things than are dreamed of in the philosophy of most men. But of all its factors, readiness to meet the first blow is probably most important.*

Corregidor News Letter

BRIGADIER GENERAL P. P. BISHOP, *Commanding*

LIEUTENANT COLONEL T. A. TERRY, C.A.C., *Executive*

59th Coast Artillery
COLONEL PAUL D. BUNKER

60th Coast Artillery
COLONEL ALLEN KIMBERLY

91st Coast Artillery (PS)
LIEUTENANT COLONEL J. H. CUNNINGHAM

92d Coast Artillery (PS)
LIEUTENANT COLONEL REINOLD MELBERG

By Lieutenant Colonel Oscar C. Warner, C.A.C.

OCTOBER and November have been cooler. The N. E. monsoon began blowing about November first. The weather is delightful in November and December; only two strong typhoons have interrupted the enjoyment of our tropical paradise.

General Bishop arrived on October 30th and General Gulick left on November 4th. The command was turned over to General Bishop by General Gulick at a garrison review on the Topside parade ground the morning of November 2d.

AA machine-gun practices will be completed by all four regiments by December 22d. During these practices, the Air Corps has coöperated by furnishing two one-hour missions at Corregidor 5 days a week.

ARRIVALS AND DEPARTURES

Due to arrive February 24, 1937—Lieutenant Colonel Albert H. Warren, Lieutenant Colonel Richard S. Dodson, Major Allison W. Jones, Captain James W. Smith, Captain Charles H. Crim, Captain Donald C. Tredennick, Captain George A. Tucker, 1st Lieutenant Robert L. Anderson, 1st Lieutenant George E. Keeler, Jr., 2d Lieutenant Bernard S. Waterman, 2d Lieutenant William H. Baynes, 2d Lieutenant Norman A. Skinrood, 2d Lieutenant Clarence A. Cogart, 2d Lieutenant Russell M. Miner.

Due to depart March 3, 1937—Colonel Allen Kimberly, Major Charles J. Herzer, Major Frank C. Hershberger, Major Philip F. Biehl, Major Manly B. Gibson, Major William Hesketh, Captain John A. McLaughlin, Captain Fred C. Thomas, Captain Charles M. Myers, Captain John R. Copenhaver, Captain Samuel Rubin, Captain Thomas B. White, 1st Lieutenant Dwight B. Johnson, 1st Lieutenant Robert L. Williams, Jr., Lieutenant Charles G. Patterson, 2d Lieutenant Lewis K. Beazley.

ATHLETICS

By Lieutenant E. W. Moore, Assistant Recreation Officer

Following a very successful bowling season, athletic interest for October and November has been centered around the basketball court. In the inter-battery leagues

BATTERY "G," 59TH COAST ARTILLERY (P.I.) BASKETBALL CHAMPIONS 1936
Back row: Sgt. R. Anderson, Pfc. Winovich, Sgt. Bierman, Lieut. D. S. Spengler, Pvt. Hines, Pvt. Willms, Pvt. B. Brown.
Front row: Capt. D. J. Bailey, Pfc. Hrin, Corp. Vancio, Corp. Sartin, Pfc. Bushardt, Pfc. Bonsall, 1st Sgt. R. McLure.

much keen competition was encountered in both the American and Philippine Scout Divisions before Batteries "G" of the 59th C.A. and "B" of the 91st C.A.(PS) emerged as the championship battery teams.

The 60th C.A. and the 92d C.A.(PS) reversed the tables, however, in the Post Inter-Regimental League by winning their respective Division titles from the 59th C.A. and 91st C.A.(PS) in a series of hard-fought games in the new athletic arena.

Then came the Department Basketball Tournament with still another reverse as the 59th C.A. established themselves as the best American team in the department by winning the championship with four successive wins.

The 60th C.A. finished fourth. In the Scout Division, the 91st C.A.(PS) was a close runner-up to the 14th Engineers (PS) while the 92d finished far down in sixth place.

With the finish of basketball, activity is turning toward boxing, track, and baseball, with excellent prospects in each sport.

Fifty-Ninth Coast Artillery

By Major E. R. Barrows, Adjutant

Since our last letter, the regiment has been busily engaged in miscellaneous outdoor training. All men not previously qualified have fired rifle or pistol. The third phase gas training including road marches, firing antiaircraft machine guns at free balloons and firing sub- and ex-caliber wearing the masks has been completed by all but one or two batteries. Much time has been devoted to schools and preliminary training for the antiaircraft machine-gun service firings which start December 1st. Two hundred and three recruits, including seventy prior service men, were received on the October 30th transport. They are being held in one group and given recruit training under selected N.C.O's.

The Fifty-Niners have continued their successes in athletics. A team entered in the Manila Bowling Association, an association including the best local military and civilian teams, took first place by winning forty-one out of forty-eight games. Our basketball team finished at the top of the Department Basketball Tournament by winning four straight games with a total of one hundred and sixty-four points to their opponents' ninety-eight. The post boxing contest was fought to a draw between the 59th and 60th when each regiment took three bouts and one was declared a draw. The battle took place in the new athletic arena and the improved accommodations were appreciated by all. The bowling cups and medals which were given as a result of the competitions reported in our last letter were presented by General Gulick at a regimental review on October 20th.

The regiment turned out a battalion as part of the escort which was commanded by our Colonel Bunker upon the departure of General Gulick for Fort Monroe.

Captain Victor Schmidt left us on the September *Meigs* and Captains Bell and Stone, and Lieutenants Hampton and Taylor on the November *Grant*. Just at the last minute Lieutenant Spengler was transferred to the Engineer Corps and ordered to the States. We hated to see them all go but welcomed Captains Kleinman and Woods and Lieutenants Woodbury and Reybold as replacements.

60th Coast Artillery

By Captain W. L. Richardson, Adjutant

The 60th Coast Artillery has been primarily engaged during the past month with machine-gun and searchlight target practices. Batteries E and F have been on the range at Corregidor and Battery A journeyed to Fort Stotsenburg for their "shooting."

Although the results are not yet completely analysed, it appears that Captain White's Battery E and Lieutenant Dunn's Battery F did quite well with machine guns. A local adaptation of individual and central tracer control was used. Each machine gun was equipped with an alignment sight which could be set, by means of control cables, to the desired lateral and vertical leads. The sight was mounted on the gun exactly as the conventional sight, issued with the gun, is mounted. The worm, by means of which windage is set on the issue sight, was removed, allowing free lateral traverse of the sight. The base of the locally made sight carried a vertical bar, slotted at the upper end. The sighting bar was pivoted in this slot, allowing the necessary movement for setting vertical lead. To each sight were connected two control cables of the automobile choke type; one to the sighting bar to set vertical lead and one to the sight base to set lateral lead.

Thus, when a target appeared, the battery commander estimated and announced the initial lateral and vertical leads. On each gun, by means of the control cables, one man quickly set the lateral, another the vertical. The gunner merely aimed at the target and fired. The lateral and vertical lead setters observed the tracers and adjusted fire. At the end of each course reports from flank positions verified the results.

It would have been better, no doubt, to bring the lateral lead cables and the vertical lead cables to a central control point, and to have the adjusters in 'phone communcation with distant spotters. However, suitable cable and telephones to accomplish this were not available.

Captain A. H. Bender's Battery "A" achieved good results with searchlights at Fort Stotsenburg, in spite of lack of any distant controllers and comparators, and a limited number of air missions.

General Gulick presents cups and medals.

The regiment welcomed Captain Graham Martin and Lieutenant C. W. Hill from the October boat, and bid goodbye to Lieutenants Ostenburg and McMorrow when that boat pulled out on November 6th.

Colonel Kimberly is in Sternberg General Hospital with a broken arm resulting from a fall from a horse on December 1st.

91st Coast Artillery (PS)

By Captain Donald H. Smith

On the arrival of the USAT *Grant* on October 30, 1936, the following officers were assigned to duty with the 91st C.A. (PS):

Lt. Colonel James H. Cunningham, Captain Ernest A. Merkle, 1st Lieut. Marion G. Pohl, and 2d Lieut. David B. Routh.

Lieut. Colonel Clair W. Baird, who had been in command of the regiment since January 26, 1935, Captain Donald D. Lamson, 1st Lieutenants William Massello, Jr., and Lamar C. Ratcliffe, were among those sailing for United States on November 6th.

On Tuesday, November 10th, the regiment celebrated the 12th anniversary of its organization. Athletic contests featured the morning hours prior to special battery dinners at noon. In the evening a dance was held at the Army Service Club. Our new harbor defense commander, Brigadier General P. P. Bishop, was introduced by Lieut. Colonel Cunningham and voiced his appreciation of the musical entertainment that preceded the dance. He recalled that several of the present batteries of the 91st were previously under his command when they formed part of the 59th.

Training within the regiment has progressed at a merry clip during the past two months. Batteries A, B, C, D, F, and G completed antiaircraft machine-gun target practices during the month of October. During the first two weeks of November all beach defense firings of automatic rifles, machine guns, 37-mm. and 75-mm. guns was completed. Subcaliber firing under gas was next on the schedule and the familiar muffled growls of telephone operators equipped with gas masks was heard at each battery emplacement.

At the date of writing, all but two firings have been completed with results that show that our rate of fire and accuracy would not suffer materially under the gas-mask handicap.

Captain E. A. Merkle assumed command of the 91st Outpost, Fort Frank, on November 15, 1936, relieving Captain F. J. Woods, who has been transferred to the 59th C.A.

During the period November 16th to 24th, the 91st basketball team under the tutelage of Captain S. H. Morrow invaded Manila to take second place in the scout division of the Philippine Department basketball tournament. Our team suffered one defeat, losing to the champion, the 14th Engineers by a close score.

Battery B, commanded by 1st Lieut. Arthur Roth, won the regimental field and track meet held on November 27th. Some excellent marks were made during this meet and the regiment expects all contestants to be out in front at the post meet scheduled for December 23d.

92d Coast Artillery (PS)

By Lieutenant W. F. McKee, Adjutant

The four batteries of the 1st Battalion, 92d C.A. (PS) completed their antiaircraft machine-gun practices during November. Two of the batteries made scores between 75 and 80, which is considered most creditable in view of the limited number of flying missions available and to the fact that antiaircraft is a secondary assignment. No unusual methods of control were used. Every effort was made to train the maximum number of gunners in individual control.

The 92d is at present conducting intensive artillery training in preparation for annual service practices to be held in February and March. With the exception of Battery A, which will fire 3-inch guns, all batteries are assigned 155-mm. guns.

Recent subcaliber firings under tear gas, with all personnel wearing the gas masks, have proved successful as well as profitable.

Lt. Colonel Melberg, Captains Pamplin and McKinney, Lieutenants Russell, McReynolds, and Weitzel were placed on detached service during the month of November for the purpose of participating in department terrain exercises on the Island of Luzon. These officers have reported, without exception, very interesting trips to many localities which the average officer never sees during his tour in the Philippines.

On November 6th, the 92d basketball team defeated the 91st C.A. (PS) team by a score of 16-14 to clinch the title and win the cup. The game was hotly contested throughout and the winner was not decided until the last few minutes of play.

Success of Fort Hughes, P. I. Basketball Team

BATTERY "G," 59th Coast Artillery, the garrison of Fort Hughes, Caballo Island (a small outpost island of the Harbor Defenses of Manila and Subic Bays, Philippine Islands), achieved the unusual distinction of winning the basketball championship, American division, of the entire harbor defenses for the 1936 season. What makes the achievement so unusual is that facilities for practice were decidedly limited, the competition at Fort Mills was keen and strenuous, and the strength of the battery was the lowest it has been for many years.

Harbor Defenses of the Columbia News Letter

By Captain H. C. Reuter, 3d C.A.

THE Harbor Defenses of the Columbia is the largest, in acreage, of the continental harbor defenses. The rugged fir-clad hills, the storm-lashed shores and rain-drenched skies here are much the same as recorded in the

maps and reports of Lieutenant Sydenham 1873, Hayden 1891, Burgess 1894, Cloke 1898, and Cooper 1904.

For eighteen years no bugle or reveille gun has broken the silence at Forts Columbia and Canby, on the highlands of the Washington shore. Nevertheless, progress has not entirely passed up these posts. Former personnel, who return to this locality, may drive their cars to the top of Scarboro Hill for a magnificent view of the Pacific coast and the Columbia River, with its hundreds of fishing boats. Another surprise will be the all-weather road completed by the Washington State Highway Commission to North Head Lighthouse. A branch trail built by the C.C.C. provides access to Fort Canby. The trip from Fort Canby to Astoria by motor and ferry now requires fifty-five minutes, when the ferry is operating. There were hardy men in 1887, who pulled the long boat across an eight-mile tide and current, to Astoria in four hours.

At Fort Stevens, Oregon, the reveille gun and bugle again announce the beginning of a new day and Oregon officials say a new era for the only military post in the state.

Major William R. Stewart, 3d Coast Artillery, the commanding officer, has been in command since June, 1934. During his administration he has directed the numerous C.C.C. and federal work projects that have completely rejuvenated the outward appearance of Fort Stevens. In April he is scheduled to sail for a tour of foreign service in the Philippine Islands. Major Allison W. Jones, 3d Coast Artillery, the ordnance and artillery engineer officer, has been at Fort Stevens since 1930, which establishes an all-time record for continuous service in this harbor defense.

Major W. W. Price, Q.M.C., commands the quartermaster detachment of fifteen men and administers all the varied quartermaster activities of a three-post harbor defense. In addition to caring for the sick of the regular army, Major R. C. Murphy, M.C., is surgeon at the post hospital, which cares for C.C.C. patients in this area. Capt. A. K. Chambers, 3d C.A., who is now on leave, will report for duty on Dec. 25, 1936. Tentative plans indicate that he will be assigned to duty as plans and training officer. 1st Lieut. G. N. Adams, 3d C.A., who, reported for duty in June, 1936, is the first adjutant this harbor defense has had since 1921. Capt. H. C. Reuter, 3d C.A., has commanded Battery E, 3d C.A. during its transition from a caretaking organization of thirty-nine men to a mine battery of 247 men. This battery will probably go down in the records as being the last organization to hold an excellent mine practice with the nineteen conductor mine system.

Fifty per cent of the increased enlisted personnel strength has been recruited in the state of Oregon. The enlistment of four pairs of brothers and one father and son is a unique record. A group of twenty-five recruits from the south added to the men returning from foreign service, makes this battery truly a representative section of American youth.

The Fort Stevens baseball team finished second in the Lower Columbia League during the past summer. Football and basketball teams are handicapped by lack of local competition and a gymnasium. An excellent nine-hole golf course with grass greens has been built since 1934. The Fort Stevens Golf Club has a membership of thirty (30) enlisted men and three (3) officers.

Sixty inches of rain are scheduled to fall before September, 1937. Between showers, Battery E will fire an antiaircraft machine-gun practice, a submarine mine practice, a six-inch gun practice, and put one hundred men through course D on the rifle range.

Just to prove that out of the north come strong men, here is one for Ripley. Despite warnings, two Finnish fishermen, in a 26-foot gill-net boat, about the size of a mine yawl, drifted into a mine field at midnight. Their net fouled a steel marking buoy. Before daylight they had lifted the buoy, 150 feet of mooring rope, and 1,000-pound anchor aboard their boat, hauled it to Astoria, Oregon, and dumped it on the dock.

The forgotten Army women here noted the removal of *ancient* electric ranges at Fort Hancock, N. J., on page 462 of the Nov.-Dec., 1936, number. Coal stoves and ranges are still modern at Stevens.

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Fort Barrancas Notes

COLONEL ROBERT ARTHUR, C.A.C., *Commanding*

By Captain M. A. Hatch, C.A.C.

WE enjoyed a visit from Major General and Mrs. Archibald Sunderland from November 18th to November 22d. Besides the usual inspections and conferences a number of parties were held in their honor.

Winter as well as summer training camps are the rule at Fort Barrancas. The 540th Coast Artillery (AA), a Reserve regiment commanded by Major Caldwell Dumas, trained here the first two weeks of November. Small groups for individual training are expected during the period January 1st to March 31st.

Outstanding among the many entertainments of the holiday season was the post Christmas tree. Santa distributed presents to 175 post children. Music was furnished by the 13th Coast Artillery Band. Lieutenant C. A. Roach acted as guest conductor in honor of his retirement on December 31st.

To make room for new tennis courts W.P.A. workers uprooted an old rotted live oak tree situated in the southeastern corner of the parade ground and in so doing unearthed a complete skeleton, two three-inch cannon balls, and a union belt buckle of the Civil War period. About six feet directly beneath the trunk a third ball was discovered. This ball is four inches in diameter and contains a lead fringe plug and a half-inch fuse. There has been much speculation as to its probable age and country of manufacture.

Completion on December 31 of the many W.P.A. projects mentioned in the November-December issue of THE JOURNAL has left the post in far better shape than

it has been since the war. As there is still much to be done we are eagerly awaiting an allotment of funds for the third quarter. Largest single item on the program is a motion picture theatre. After two years of planning and pleading, prospects are bright for being able to start construction this spring.

Harbor Defenses of Sandy Hook Notes

COLONEL L. B. MAGRUDER, C.A.C., *Commanding*

By Lieutenant Colonel E. B. Dennis, C.A.C.

EVERY American knows Sandy Hook by name but few realize that almost the entire area of this peninsula is included in the Fort Hancock military reservation. To the voyager from Europe it is the extended right arm, lamp in hand, which offers first greeting to the land of promise. It consists of a low, sandy peninsula, of drift formation about six miles long and has a maximum width of a mile. Some fourteen hundred acres are included in this area which is constantly increasing due to the effects of the ocean currents, which strange at it may seem, generally flow in a northerly direction regardless of the effect of the tides. Those who look upon it from the incoming yachts or from the numerous fishing boats which make their rendezvous at the point of the Hook, see only a strip of white sand-beach and a thick growth of cedars which reminds one of the first glimpse of Bermuda. Beach plums and that variety of cactus known as prickly pear also grow in profusion.

The New Jersey coast has long been known as an earthly paradise and Fort Hancock is no exception to this rule. While Atlantic City may have a boardwalk, its beach is not one bit finer than the one inside the reservation which is used by the Fort Hancock garrison. Rabbits and opossum abound in the woods while seagulls and fish hawks can usually be seen in the air overhead. To improve this paradise the game commission of the State of New Jersey has been induced, largely through the efforts of the adjutant, Lieutenant T. K. MacNair, 7th C.A., to release several varieties of game birds within the reservation. This was recently done (October 29, 1936) under the supervision of Mr. William Small who released 70 pheasants of mixed breeds and 60 quail of the eastern variety. It is expected that additional planting will be accomplished in October, 1937.

The deepening and widening of the Shrewsbury River which flows past the southern entrance to the post and forms a part of the western boundary, commenced in October. The project provides for a channel 300 feet wide and 12 feet deep at mean low water. It is expected that it will be at least 12 months before it is completed and that after this improvement is generally known that the visiting yachtsmen will appear in thousands instead of in hundreds as they did during the last season and that more boats of the commercial type will be in evidence.

The grading of the main post road, preparatory to future widening, is well under way, and it is estimated that the soft shoulders on each side of this road have been completed for a distance of at least three miles. In addition a large fill has been made for a distance of some three hundred yards north of the main gate and many of the low spots in this area have been completely filled in. The memorable 20-inch Rodman gun has been moved and remounted on an imposing concrete carriage northeast of the theater at the entrance to the road to the Brick House. It is quite large and yearly excites great interest among the members of the C.M.T.C. who like to have their pictures taken in front of it.

The new barracks for the Coast Guard personnel is nearing completion. It is quite attractive in appearance, resembing very much a summer hotel with its red roof and white walls. Many badly-needed improvements have been completed, or show signs of material progress. The outside of the Officers' Club has been painted (the inside was painted a year ago) and the wooden trim on the bachelor officers' quarters.

At the Officers' Club, a monthly game night has been inaugurated, this is in addition to the regular dances.

A Noncommissioned Officers' Club of Fort Hancock has recently been organized. It makes its first bow under the able guidance of Master Sergeant Charles F. Ayers, 52d C.A., its first president. Membership in this club is limited to noncommissioned officers in the first four grades. The club occupies the wooden building northwest of the Officers' Club where it is expected that rooms will be available for transient noncommissioned officers and their families.

On the afternoon of December 24th the annual Christmas tree party was given in the Post Theater for about 160 children of the garrison. A brilliantly lighted Christmas tree decorated in silver was featured in the middle of the stage. Christmas Day was ushered in with appropriate music by the 52d Coast Artillery band which marched around the garrisoned area. The sunshine was very much in evidence and overcoats were left at home. The numerous holly trees native to the peninsula give a holiday air to Fort Hancock which is very pleasing. On New Year's Eve a very attractive dance was held at the Officers' Club.

Landscaping at Fort Tilden proceeds at a fair pace. Fresh paint, new trees, and shrubs have increased the natural charm of this post and the rapid progress made on the Far Rockaway bridge will soon offer possibilities in the way of rapid transportation to Brooklyn and New York City which will appeal to those soldiers who seek higher education or light recreation.

Washington Chapter Coast Artillery Association

THE Coast Artillery Association is the meeting place for all the various components of the Corps, whether they bear the designation of regular, national guard, reserve, or retired. The Washington Chapter is very proud

of the comradery of its membership, regardless of rank or of organization. The annual dinner of this chapter was held at the Army-Navy Country Club at Arlington, Virginia, on the evening of November 17th, with about 75 in attendance; thirty from the Reserves, sixteen from the National Guard, twenty-four from the regulars, and five from the retired list. Preceded by conviviality in the Club's tap-room, the dinner was served in the main dining room. A colored orchestra played war songs, songs of the various Corps, and modern swing music. The membership even tried to sing "Crash On, Artillery" and after the third verse thought it was pretty good. The time between courses was enlivened by much parliamentary maneuvering by an organized minority to throw out the balloting on the "canned" slate for the executive committee of the Association, but the presiding officer had the loudest voice in the hall and won the argument, and the voting proceeded.

The toastmaster of the evening was the retiring president, Colonel Earl W. Thomson, commanding officer of the 916th C.A.(AA). Among the speakers of the evening were Major General Henry D. Todd, U.S.A. (ret.), who introduced the subject of Old Gun Forty at Fort Monroe and its romantic history; Colonel Thompson Short, C.O. of the 913th C.A.(AA); Colonel J. Bruce Bentley, C.O. of the 622nd C.A.(HD); Colonel H. T. Burgin, C.A.C., Executive Officer to the Chief of Coast Artillery; Colonel J. Brady Mitchell, C.A.C. (ret.); Colonel F. H. Lincoln, G.S., who reminisced about his "undisciplined" candidates at Monroe during the War; Colonel H. K. Loughry, G.S.; Colonel H. G. Merriam, I.G.D.; Colonel Clifford Jones, G.S.; Colonel Douglas Duval, M.C. (ret.); Lt. Col. E. B. "Dolly" Gray, C.A.C. (ret.); Major Aaron Bradshaw, Jr., C.A.C., editor of The Coast Artillery Journal; Lt. Col. D. S. Lenzner, C.A.C. (D.O.L.), instructor of the District of Columbia National Guard; Major Frank McSherry, C.A.C.; Major Robert M. Carswell, C.A.C., unit instructor of the 916th and 917th C.A.(AA); Colonel H. P. Newton, C.O. of the 917th C.A.(AA); Lt. Col. Walter Burns, C.O. of the 260th C.A., D.C.N.G.; Colonel Avery Cooper, G.S.; Lieut. W. R. Leek, 913th C.A.(AA); Colonel John Pratt, C.A.C., instructor at the Army War College, and Lt. Col. William Foote, C.A.C. This seems a rather long list of speakers, but the toastmaster had provided himself with a gong of the Major Bowes variety; and the speakers had to be short, to the point, and quick on the getaway, or the gong did its bit toward speeding up matters.

The retiring officers were: Colonel Earl W. Thomson, 916th C.A.(AA), President; Major LeRoy S. Mann, 260th D.C.N.G., Vice-President; Lt. Col. Roy Atwood, C.A.C., Secretary-Treasurer. The new officers, elected by acclamation, are: Major Mann, President; Major Aaron Bradshaw, Jr., Vice-President; Capt. Joseph H. Church, 913th C.A.(AA), Secretary-Treasurer. Major Mann appointed a committee whose duty it will be to arrange informal meetings of the Chapter during the coming year.

The retiring president made no report of the curtailed activities of the past year, except that many members of the Chapter were present at the meeting of the Association at Fort Monroe, in August, and enjoyed greatly the program offered by the personnel at the post.

The Washington Chapter feels greatly elated that so many members of the Coast Artillery are filling key positions on the General Staff and at the Army War College, so that they may be considered as members of the Chapter.

Los Angeles Chapter

THE Los Angeles Chapter of the Coast Artillery Association held a meeting on December 14, 1936, at the Griffith Park Planetarium through the courtesy of Colonel Dinsmore Alter, CA-Res. After the regular lecture Colonel Alter gave an interesting lecture on the stars, especially Polaris. During the lecture he gave a rough outline of the methods of astronomical measurements and demonstrated how easy it was for an army officer to make astronomical observations on Polaris, the sun and other heavenly bodies with no other instrument than a field gun. He recommended that every officer have in his professional library *The Nautical Almanac*. Colonel Alter proved himself to be an exceptional lecturer for he treated a complex subject in an interesting manner and in words of one syllable so that the least informed could follow him closely. He has made the Planetarium one of the popular show-houses of Los Angeles and it always plays to a capacity audience.

Following the lecture the election of officers was held. The following officers were elected:

President: Lieutenant Colonel F. H. Holden, CA-Res., 975th CA (AA).
1st Vice President: Captain Vivian Rapp, Calif. N. G., 251st CA(AA).
2nd Vice President: First Lieutenant H. R. Fisher, CA-Res., 519th CA-Res.
Secretary-Treasurer: Major Glen I. Miller, CA-Res., 625th CA(RAI).
Members of the Executive Council:
Colonel R. H. Williams, CAC.
Colonel E. A. Evans, CA-Res., 977th CA(AA).
Lieutenant Colonel C. M. Thiele, CAC.
Lieutenant Colonel G. W. Oertly, Calif. N. G., 251st CA(AA).
Lieutenant Colonel F. R. McReynolds, CA-Res., 626th CA(RAI).

The Griffith Park Planetarium is located high on the hills of Hollywood, and even though we were having most unusual weather, a heavy rainstorm, approximately 200 officers and their wives attended this meeting.

The coming year promises real activity for the Los Angeles Chapter. An executive council meeting is to be held in the near future, and it is hoped to map out a real program at that time.

Manhattan Chapter

DUE to the splendid spirit of coöperation existing between the Regular Army, National Guard, and Organized Reserve Coast Artillery in the Second Corps Area, the members of the Manhattan Chapter were invited by Brigadier General William Ottmann, commanding the National Guard Coast Artillery Brigade, to attend one of those glamorous and inspiring events, a three-regiment brigade review. This review, held in the armory of the 245th C.A. on December 10, 1936, was tendered to Major General A. H. Sunderland, Chief of Coast Artillery and National President of the Association.

In spite of a serious fire which swept the front part of the armory the preceding night damaging the officers' quarters and main reception rooms, Colonel Bryer H. Pendry, commanding the 245th C.A., worked out ingenious arrangements to handle the large numbers present. Several boxes adjoining the reviewing box were reserved for members of the association, who were included in the reception and collation which followed the review.

The 244th C.A., commanded by Colonel Mills Miller, the 212th C.A., commanded by Colonel Edward E. Gauche, and the 245th C.A. constituted the brigade and put on a perfect show. Three bands and over 3,000 men were present and they were maneuvered within the limits of the armory through several formations. The smoothness with which this difficult task was executed speaks well of the high efficiency attained by the entire brigade and reflects great credit on the officers who planned and carried out the maneuvers.

As a tribute to Fireman Nevielle, a former soldier, who was killed during the fire, the colors were trooped off to the strains of "Abide With Me," while those present stood in respectful silence.

Major General John J. Byrne, President of Manhattan Chapter, wishes to express the official appreciation of the chapter to General Ottmann, whose fine spirit of courtesy and coöperation made possible this splendid gathering of Coast Artillery officers of the three components of our army. A continuance of this spirit of mutual interest forecasts a brilliant future for the Association in this district. In unity there is strength, divided we all fall.

Duluth Chapter

THE Duluth Chapter has been functioning with the local chapter of the Reserve Officers' Association, due to the number of the members of the chapter who are on C.C.C. duty. The season's activities were started with a stag keno party. Captain Carl A. Anderson, the District Commander, C.C.C., arranged an officers' meeting in Duluth on the date of this party which added much to its success.

Regimental troop school conferences are held every third Wednesday of each month. During these conferences a series of tactical map problems are solved.

The Army and Navy football game luncheon held in combination with the Naval Reserve officers was a fine party. The annual military ball which is to be held after the Christmas holidays gives indication of being a real success.

Philadelphia Chapter

SINCE the publication of the last number of The JOURNAL the Philadelphia Chapter has been especially active. Captain Galen M. Taylor, Ordnance Department, the officer in charge of the fire control design section at Frankford Arsenal, appeared before the chapter and discussed the latest developments in antiaircraft fire control. Lieutenants J. H. Simpson and Van Meter, U. S. Navy, presented to the chapter at another meeting the naval antiaircraft gunnery picture. Some one said that the lieutenants went over with a "bang" but some of the gunnery problems went way over the heads of some and bounded lightly against the rear wall. All of the in and out of town field officers of the two regiments gave short talks on general welfare at another meeting. Major J. A. Malone came through for the 603d, Colonels Bennett and Herr, Majors Bullock and Dimmick for the 510th. Colonel H. P. Newton, C.O. of the 917th was present and contributed some helpful remarks as well as two choice stories of high merit.

On December 5, Colonel J. B. Bennett, commanding officer of the 510th C.A., broadcast the story of the Coast Artillery as it relates to the citizens of Philadelphia over station KYW.

Special emphasis is being placed on the necessity for unit training in preparation for the active duty training periods at Fort Monroe. The 510th Coast Artillery (AA) will train during the period August 8, to August 21, 1937, and the 603d Coast Artillery (Ry), August 22, to September 4, 1937.

The Philadelphia Chapter does not neglect its social activities, and it has been reported that their dances are getting bigger and better every time.

ABOUT SUCCESS *in getting work done "I'll let you into the secret—there's nothing really difficult if you only* begin—*some people contemplate a task until it looms so big, it seems impossible, but I* just begin *and it gets done somehow. There would be no coral islands if the first bug sat down and began to wonder how the job was to be done."*—COLONEL JOHN SHAW BILLINGS, M.D., LL.D., D.C.L., Father of the Army Medical Library.

NEWS AND COMMENT

The United States Coast Artillery Association

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

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COLONEL CHARLES J. MUND — MAJOR LEROY LUTES
MAJOR JOHN CASWELL

Increase Morale and Spread Contentment

IT has been strongly contended by many that the surest way to increase morale and spread contentment is to give added weight to service with troops and increase the number of officers attending the Command and General Staff School and the War College. Thus, there will be less chance of a deserving officer being denied the privilege of getting on the General Staff Corps Eligible List. Modification of the age restrictions might result in some good. It has been proposed that a command list be established; it might help, but there is always the fear it might lead to some of the pitfalls of the present system.

There is wide discussion pointing to the belief that the yearly Command and General Staff School and War College lists do material harm. It is claimed the favored boys who bask in the sunlight of continuous staff duty under direct observation of those in power have had their innings and have done well for themselves at the expense of officers who serve the major part of the time with troops. The latter group will be the backbone of our Army in time of an emergency. Some even go so far as to claim that some of those who have been so fortunate as to have gotten on one or both of the two desired lists have never done duty with troops, i.e. really in command of troops, with the possible exception of that performed in obedience to an order directing that they serve with the Organized Reserves of ..... Corps Area in addition to their other duties.

Past wars have indicated training at the higher service schools is not necessarily essential to successful command of large bodies of troops in battle. A check of the records of the late war will show, with few exceptions, the outstanding commanders were not graduates of the higher service schools. All agree peacetime training should have as its ultimate purpose, actual command of troops in battle.

A large group contends a change is necessary and that no one can deny this if he will face the facts in the case.

Rumor says a change of policy is coming—may it bring to deserving officers their long over-due reward. May the ultimate outcome be contentment and a material increase in morale. May there be no more broken hearts. May the incessant criticism alleged to be destructive of morale be stopped.

Shortage of Heavy and Seacoast Artillery Contributors

WE have a real shortage of material for publication covering heavy and seacoast artillery activities. For this reason your editor fears that he may be accused of favoring the antiaircraft artillery.

We are sure that the people manning the heavies write as interestingly as the antiaircrafters. There are problems in the seacoast and heavy artillery sections, the solution of which will be brought nearer by expression of ideas. Therefore, send us articles for publication which will create the needed interest and understanding.

We want to feed our readers an all-around Coast Artillery diet, properly balanced as to items of general interest, seacoast, heavy, and antiaircraft artillery.

Opportunity Knocks

WE HAVE received several letters asking whether we are wide awake to our responsibility and our opportunities for advancement of antiaircraft defense.

Some of these letters are caustic and state we are allowing the golden opportunity to pass without realizing it. Because these letters are intemperate and not altogether constructive, they will not be published. However, many of the questions raised do excite considerable thought.

These questions are especially timely as the late issues of foreign publications carry reports of activities and increases in the allotment of funds, personnel, and matériel to antiaircraft defense. The reports as to the new German division are to the effect that it contains a battalion of antiaircraft artillery, a mechanized antiaircraft battery manned with 8.8 cm. (3.5 in.) guns of .50 caliber length, two 75 mm. batteries and one 37 mm. battery. Other units of the division are reported to be armed with a small AA gun of light high velocity, 2½ pounder. This latter gun, according to the *Royal United Service Institution Journal*, November, 1936 issue, is also an efficient antitank weapon. It is a miniature of the heavier gun and is reported to possess all of the advantages of that gun. Searchlights accompany the gun batteries. The infantry units are reported as equipped with special tripods intended for use with light machine guns against low-flying aircraft.

The British military publications, including the *United States Service Review*, indicate that the deficiency in their antiaircraft units is regarded as serious and that steps are being taken to bring them up to strength. New measures are under way to strengthen the antiaircraft forces and in some instances infantry battalions are being converted into antiaircraft units. Activities of other foreign Governments are given in photographs in various issues. In view of our deficiency in antiaircraft units and also the deficiencies in matériel, it is probable the questions raised will be given serious consideration, to the end at least of satisfying the minimum requirements of this important arm.

"Regulating Stations Require Antiaircraft Defense"

Major General Geo. Van Horn Moseley

TUCKED away in an article by Major General Geo. Van Horn Moseley in the January-February, 1937 issue of *Army Ordnance*—"Military Supply of Large Units"—is a simple sentence which was referred to in our previous number.

> Regulating stations require antiaircraft defense.

General Moseley in making this statement is thinking of the military supply of large units. Let us suppose that a commanding general of a field force restates this sentence from his broad viewpoint. It becomes quite a sentence:

> Concentration areas, corps establishments, army establishments, railway yards, airdromes, air bases, naval bases, wharves and docks, manufacturing centers, vital areas within and adjacent to cities, troops on the march, troops in bivouac, railway bridges, railway defiles, detraining points, require antiaircraft defense.

This statement covers fairly well the strictly military requirements. But how about the protection of civilian communities from air attack, our National Capitol, the many cities on or near either seaboard? Compared to the plaints of Atlantic Coast cities for seacoast protection in 1898, the demand for antiaircraft protection in a future emergency will be as the roar of a lion to the squeak of a mouse.

What is meant by antiaircraft defense? Training Regulations 440-5 on "Employment of Air Forces of the Army" gives these definitions:

> *a.* Antiaircraft defense is a defense against air attack.
>
> *b.* Antiaircraft defense includes air forces; fixed and mobile antiaircraft artillery; antiaircraft machine guns; searchlights; small arms; passive antiaircraft defense measures, particularly those for the protection of civilians; and an aircraft warning service for alerting air forces, antiaircraft artillery, antiaircraft machine gun units, and other troops in the threatened area, and for warning civilians.

The two most important elements in antiaircraft defense are the air forces and the antiaircraft artillery.

The program for building up Air Corps equipment to the figures set by the Baker Board is well under way. Generous annual appropriations have inaugurated this program and there is every reason to believe that future appropriations will suffice to complete the program and then maintain its status quo.

The situation as to equipment for antiaircraft artillery is vastly different. There are various reasons for the paucity of antiaircraft equipment. In the first place, antiaircraft is a new form of artillery, born during the World War, and up to the late 1920's still in its swaddling clothes. Time was required for research and development of the most suitable cannon, searchlights and fire control equipment. Until recent years it would have been poor economy to spend large sums for antiaircraft equipment, for no suitable equipment was available. Now, however, exceptionally efficient equipment has been perfected. Secondly, since suitable antiaircraft equipment has become available, the Air Corps has held the stage to a great extent. There can be no strong objection to this, for the forging of the great weapon of the G.H.Q. Air Force should have high priority. But now is the time to strengthen the weak link in the chain of antiaircraft defense, the antiaircraft artillery. Even the G.H.Q. Air Force leans on antiaircraft artillery for the protection of its airdromes, for nothing is more helpless than an airplane on the ground.

Antiaircraft equipment cannot be obtained overnight. The complexities of manufacture with the exacting requirements demand long periods of time to turn out the finished product. The special manufacturing skill and experience needed limit procurement to not more than one or two manufacturers. Experts know that the greatest number of air attacks will occur in the early days of an emergency. The conclusion follows that we must provide the protecting armament before the emergency arises.

Such provision has not yet been made.

R.O.T.C. Training Victory

ONE of the outstanding victories in the last election was the defeat of the proposal before voters of Oregon to forbid courses of military training at the University and State College of that state. This proposal, which was a direct threat to the R.O.T.C. policy, was overwhelmingly defeated. The City Club of Portland aided greatly in its defeat. In their Bulletin No. 26, published October 23, 1936, there was published a report on the public safety and defense. It contains a fine impartial statement of the facts in the case. The committee came to the conclusion that the bill should be defeated as an unwarranted interference with the internal affairs of the two schools affected and it favored the continuance of the present system of required military training.

The Reserve Officers' Association of the United States, Department of Oregon, published in August, 1936, a pamphlet entitled "Education for Peace," written by Major Carlton E. Spencer, Judge Advocate General, Reserves. He contends that the source of the trouble was not in Oregon but that Oregon had been chosen for a fertile field for trouble-making merely because they had the initiative and are a tolerant and liberal-minded people willing to stand for a great deal from outsiders. Major Spencer brings out pointedly that training in the schools provides a non-militaristic type of national defense and is of sound educational value. He discusses the case for and against military training and concludes that the so-called, but misnamed, advocates of peace oppose the one phase of our national defense policy which makes most strongly for non-militarism, a citizen soldiery. He says these advocates strike at the institution which makes possible the Reserve corps, and that they seek to force all military defense into hands of a powerful standing army. He states that on the other hand we see the real advocates of peace going all the way for the prevention of war, including training in our schools as a safe, sane, and non-militaristic type of national defense and as a rational educational policy in training for the full duties of citizenship.

Executive Council

THE new members of the Executive Council of the Coast Artillery Association elected for the period January 1, 1937 to December 31, 1938, are:

Brig. Gen. William Ottmann, N.Y.N.G.
Colonel Charles J. Mund, CA-Res.
Colonel Clifford Jones, C.A.C.

The interest expressed by the members of the Association, as indicated by the heavy vote cast, is certainly gratifying. The records available show that the vote cast this year exceeded any vote cast in the past by approximately 50%. The candidates selected by the nominating committee received the bulk of the votes but the fact that many of our members took the trouble to write in the names of other candidates indicates a real interest in our welfare and progress.

Colonel George J. Schulz, 198th Del. N.G., Colonel Walter S. Pollitz, C.A.-Res., Lt. Col. Harry D. Spencer, 211th C.A.N.G. and Major C. M. Cade, 950th C.A.-Res., have a strong appeal judging from the number of votes cast for them. Other candidates whom our members saw fit to write upon their ballots were the following: Colonel E. S. Ervin, 508th C.A.-Res.; Colonel H. T. Burgin, C.A.C.; Colonel F. H. Smith, C.A.C.; Colonel Frank Fergusson, C.A.C.; Colonel E. E. Gauche, 212th C.A.N.G.; Major Thomas R. Parker, C.A.C.; Captain A. B. C. Graves, 260th D.C.N.G.

We offer our sincere congratulations to the successful candidates.

Former Coast Artilleryman Named President of the University of New Hampshire

DR. FRED ENGELHARDT, whom many of us remember so well as a major at Ft. Monroe during the World War, was unanimously selected as the President of the University of New Hampshire by the Board of Trustees on December 10, 1936. Dr. Engelhardt, who is a graduate of Andover Academy, Yale, and Columbia University, has been since 1924 professor and head of the department of educational administration at the University of Minnesota.

He was inspector of instruction at Ft. Monroe during the World War and had the responsibility of distributing all literature for the Coast Artillery training center units there. This selection is indeed a wise one and Dr. Engelhardt's many friends in the service congratulate him and the University authorities upon it.

Flying Infantrymen

THE pictorial sections of the press have contained recently many interesting photographs of the activities of the Red air infantry. We have been shown doughboy parachutists landing *en masse* to demonstrate a landing in rear of enemy lines. The Soviets have apparently progressed and appear to be demonstrating that the uses of aircraft are really inexhaustible. In the not-too-distant past their idea was dismissed as visionary, but now that they have taken the initial steps real development may be expected, for other armies are toying with aerial infantry.

The French have organized two units of air infantry. Each consists of a company of light infantry and a squadron of troop-carrying planes. The limited information available indicates that the French intend to use their air infantry in a more restricted manner than the Russians. They contemplate training their units to execute acts of sabotage and destruction in the rear areas, and along lines of communication.

If this idea is developed further, it may be well to anticipate an expansion in antiaircraft machine-gun units to cope with this new menace from the clouds.

100% Subscribers

WE are proud to announce that since the last number of The JOURNAL the following posts and organizations have joined the list of hundred per cent subscribers.

Ft. Totten—Colonel Frank K. Fergusson, C.A.C.
Ft. Hancock—Colonel L. B. Magruder, C.A.C.
First CCC District, Ft. Williams, Maine, Capt. A. H. Merrill, CA-Res.

Now that the ice has been broken, with two regular army units joining the "illustrious," more will follow and take their place beside these and our other loyal supporters who always come forward with their help one hundred per cent strong.

Fort Monroe, the Coast Artillery contingent at the U.S.M.A., West Point, the 249th C.A. (Ore. N. G.), the 243d C.A. (N.Y.N.G.) are close to obtaining 100% subscribers. May they and many others join the 100-per-centers so that succeeding issues may carry the reports of our progress.

Scoring Method National Guard Trophy

THE prescribed method of scoring for determining the most efficient National Guard regiment which annually receives the trophy of the Coast Artillery Association was changed beginning with the training year 1933-34. This method of scoring is as outlined below and will continue in force until further notice.

	Maximum Weight
Results attained at target practice with the principal weapon	70
Per cent of units rated "satisfactory" at the annual armory inspection	10
Attendance at drill during the 12 months prior to the annual armory inspection	10
Per cent of units rated "satisfactory" at field inspection	10

The above information was furnished by the Chief of the National Guard Bureau. Its publication should settle some of the uncertainty that National Guard regiments have had regarding the manner of selection of the most efficient regiment.

In order to be eligible for consideration a regiment must be rated satisfactory at both the annual armory and field inspections. In arriving at the score to be awarded for the results attained at target practice the recommendations of the Coast Artillery Board have been the principal deciding factors.

Stereoscopic Height Finder—Unilateral Spotting

THE 1936 target practice reports contain remarks to the effect that stereoscopic height finders are of no value for spotting.

As a result the Coast Artillery Board made an exhaustive study of this problem and came to the conclusion that the general unsatisfactory results obtained were due, in part, to the lack of confidence in the instruments, failure to take cognizance of well recognized limitations of this method of spotting, and insufficient training. The lack of availability of a suitable text on training methods was considered a contributory cause, and general distribution of the Coast Artillery School text "Stereoscopy and Stereoscopic range finding" was recommended. The board contends that an observer cannot usually read altitudes and spot at the same time and that in order to be correctly sensed, a burst has to occur on or close to the line of position and that these facts must be recognized. It is their belief that the possibilities of stereoscopic spotting are not being exploited to the maximum degree.

The importance of training stereoscopic observers should be emphasized throughout the service and the text referred to above merits the attention of all concerned. These instruments should not be condemned without a fair trial.

Motorcycles With the Modern Army

IN the past there has been a great deal of discussion pro and con as to the value and need of motorcycles with motorized units. The motorcycles have strong advocates and many opponents. Judging from recent activities in virtually all foreign armies, as shown in press reports and photographs, motorcycles have won their battle and have taken an important place not only as a means of supplementing convoy control but also for use with scouting parties as connecting links, for carrying machine gunners with covering forces, and for filling gaps between units. If the activities of our foreign friends are studied in detail it is believed that there will be less doubt as to the value and the uses that can be made of motorcycles in the modern motorized or mechanized army.

Our Belief Was Not Founded on Facts

COLONEL RICHARD H. WILLIAMS, of the 251st C.A.N.G., has graciously called our attention to the fact that the statement on page 454 of the last number of The JOURNAL that "we believed Lt. Graham's an all-time record" was made because we were apparently not familiar with Lt. Harold I. Strahn's record as outlined on page 334 of the September-October, 1935, issue. Lt. Strahn piled up a winning total of 1,069 hours of extension course work. Colonel Williams is entirely correct. Although we take our hat off to Lt. Graham's fine record we willingly admit that Lt. Strahn's, not Lt. Graham's record, is probably the all-time one.

Switzerland—Antiaircraft Defense

LATE reports received indicate the realization of the growing importance of antiaircraft defense by the Swiss government. The antiaircraft defense service has been newly constituted and comprises all the means of active and passive antiaircraft defense.

The antiaircraft artillery is being completely reorganized and equipped. Observation, liaison and aerial communication services are being provided for. Elaborate measures have been taken for the "passive defense" of the civil population against aerial attacks. These measures are to be used in conjunction with the active defense of the military forces. The obligations of the civilian population are clearly set forth. Formations of local organizations are made and a decree of the federal council prescribes penalties against those who "without being prevented by other public obligations or reasons of health, refuse to fulfill their obligations required of them by the aerial defense organization." The measures to be taken in all homes, public and private institutions, including industrial plants, and vehicles to permit the complete extinguishment of lights which might serve as orientation for foreign aviators or reconnaissance or attack missions are rigidly laid down. Unofficial organizations have been set up to interest the population through propaganda and for the purpose of conducting instructions in the details of local defense. In each locality or group of localities required to organize passive air defense there is instituted a local committee for passive air defense charged with foreseeing the necessary measures.

Pictures

MANY of our readers are camera enthusiasts. Some of them may occasionally have pictures that they believe worthy of publication. Send them in to The JOURNAL. For those we accept a fee will be paid. Those not used will be promptly returned.

We want action shots of subjects of interest to all Coast Artillerymen. Comb through your files and send us your best.

Antitank Defense

CAPTAIN GILL, one of our contributors in this issue, is the author of a feature article on the subject of Antitank Defense in the December, 1936, issue of *Our Army*. In this article he urged the Coast Artillery Corps not to become too hidebound or narrow, for he believes the antiaircrafters in the next war will bang away at the tanks. He brought out the fact that antiaircraft guns are especially adapted for antitank defense and further that antiaircraft searchlights are available for the same purpose. The headlines of his article ask the question, "Who Will Halt the Tanks?" and he answered it with the following reply:

"Antiaircraft—With its quick-firing, robot-operated three-inch guns, its mechanical data-computing system, and its 360-degree field of fire—is hailed as the answer to the threat of mile-a-minute tanks and other mechanized battlefield comets."

Antiaircrafters—What do you think?

Inequality in Service Compensation and Inadequacy of Service Pay

THE press has been carrying daily articles advocating increases in compensation for federal employees. Strong arguments have been made that the decided improvement in economic conditions warrants an upward revision of pay schedules at this time. Service pay is not adequate and junior officers have suffered the most. The benefits that would accrue from granting much deserved increased pay to junior officers would be unlimited.

Particular attention of all concerned is invited to the following recommendations contained in the annual report of the Chief of Finance, Major General F. W. Boschen. General Boschen asks that the War Department at the next meeting of Congress make a strong move to procure legislation correcting inequality in service compensation and the inadequacy of service pay. He states in his fine report the following:

"The present pay law, Act of June 10, 1922, contains a feature never before embodied in any pay law of the United States Army, namely, the provision under which the amount of monthly rental allowance and subsistence allowance to be paid to commissioned officers is determined on the basis of their family or domestic relationships and not upon the service rendered by them. In other words, under existing law, an officer with dependents is given, in certain pay periods, a greater rental allowance and subsistence allowance than is a brother officer of the same rank and length of service who has no dependents. Until the enactment of the Act of June 10, 1922, pay and allowances of officers were based solely on rank and length of service without any consideration whatever of the marital status of the officers, or of the question of whether or not they had dependents in any degree of relationship. The present law presumably was based on conditions affecting the cost of living; that is, the law took cognizance of the fact that it cost an officer with dependents more to maintain his domestic establishment than it normally would an officer of the same rank and length of service without dependents, and undertook to measure the compensation of these two classes of officers accordingly.

"The law has not worked well. Officers without dependents have felt with much reason, that they are being discriminated against since they render the same service, assume the same risks, and suffer the same hardships as do their brother officers with dependents, but receive less rental and subsistence allowances than do these other officers. In fact, it often results that senior officers without dependents receive less total compensation—the total of all pay and allowance—than do officers junior to them

and under their command, because of this differential in the matter of allowances.

"I am firmly of the opinion, based on experience gained in the 14 years since the present pay law was enacted, that this provision in that act was a mistake, and that we should go back to the sound principle that pay and allowances should be on the basis of service rendered by the military personnel concerned and not on domestic or marital conditions entirely foreign to the performance of their military duties.

Inadequacy of Service Pay

"For several years past the comments in the annual reports of the Chief of Finance on service pay have had to do only with the adverse discrimination against military personnel found in the provisions of the various so-called Economy Acts effective after June 30, 1932. As stated in these previous reports, the effect of these laws was, speaking generally, that junior officers of the Army—the class least able to make financial sacrifices—contributed far more than the 8⅓ or the 15% deduction from the pay of Government servants, generally, required for different periods by those laws, since for a considerable portion of the period from July 1, 1932, to July 1, 1935, the Economy Acts prohibited the advancement of such military personnel from one longevity period to another, or from one pay period to another by reason of service or promotion. However, all of these adverse discriminations have now happily been removed; but there is still for consideration the general inadequacy of the pay of military personnel, not only with reference to existing living conditions, but also in comparison with the salaries paid to civil officers or employees with relatively commensurate duties and responsibilities.

"The last comprehensive revision of the Army pay was effected by the Congress in 1908—more than a quarter of a century ago. The rates then prescribed are presumed to have been adequate at that time. With the lapse of years, however, the cost of living mounted and cognizance was taken of this fact by the Congress in its action with respect to the salaries of its civil officers and employees, whose pay was increased, not merely once, but, with respect to some classes, several times, within the last twenty or twenty-five years. In fact, the pay of some civil officers has been increased within that period as much as 175%, while the pay of the Army and the other uniformed services has lagged far behind in this regard. In 1929 and 1930, an Interdepartmental Pay Board, made up of officers representing the six uniformed services of the United States, studied the subject of service pay carefully and exhaustively, and, in its final report dated October 31, 1930, set out data showing conclusively the need for a substantial increase in pay of the personnel of the Army and the other uniformed services. However, the country was then in the midst of a financial depression, and it is presumed, principally for this reason, nothing came of the report of that board, and shortly thereafter the general reduction in pay with its special discriminatory features with respect to service personnel, was effected by the Economy Acts.

"In view of improved economic conditions in this country it is believed that the time is now ripe for a renewal of action by the War Department, either individually or in collaboration with the executive departments administering the other uniformed services, looking to an increase in service pay."

CLASSIFICATION OF COAST ARTILLERY OFFICERS IN SERVICE DECEMBER 24, 1936 BASED ON EFFICIENCY REPORTS TO JUNE 30, 1936

	Superior	Excellent	Very Satisfactory	Satisfactory	Unsatisfactory	Not Rated	Totals
Colonels	23	31	4	..	..	..	' 58
Lieutenant Colonels	36	88	6	2	..	1	133
Majors	45	142	8	5	..	1	201
Captains	35	234	27	6	1	2	305
1st Lieutenants	7	146	43	12	..	1	209
2d Lieutenants	1	21	33	4	..	29	88
Totals	147	662	121	29	1	34	994

Note:—1. Major General A. H. Sunderland, Chief of Coast Artillery, and Major General Thomas Q. Ashburn, Chairman Advisory Board, are not included in the above figures.

2. Lieutenant Colonel R. B. Crocroft, Major P. F. Biehl, Captains H. E. Magnuson and Frank Richards, and First Lieutenant Preston Steele, have not yet been rated for the F. Y. 1936. Complete reports on these officers for the year in question have not been received to date.

3. The 29 Second Lieutenants listed above as not rated are graduates of the 1936 class, the U.S.M.A.

OPEN FORUM

MAY VIGOROUS THOUGHT BE STIMULATED AND CRYSTALLIZE INTO ACTION

Legion of the Lost

Sir:

In an essay of considerable exhortatory power, the spirit of which does him much credit, Invictus tries to rally the sagging morale of those who fear themselves eliminated from consideration for detail to the various advanced schools of the Army. He encouragingly addresses them as the Legion of the Lost. It would be hard to improve upon the quality of his appeal to them to accept their situation cheerfully, as soldiers should. A fine officer of our Army, once himself the victim of a bitter injustice of which he never complained, came as near as he ever did to commenting upon it by saying: "An indispensable quality of a leader is to be able to take it on the chin."

Invictus has done a great service. He has brought out into the open a situation which should disturb every citizen devoted to the National Defense, a situation which has been discussed for years in quiet corners, but with no helpful improvement as a result. It is normal for officers to accept cheerfully the conditions of service. When a large group departs from the norm, the moment has come to examine not only the officers of the group, but also the conditions of service. Why should such an article as that of Invictus require writing? Why should a situation be permitted to continue which calls forth such expressions as these, culled from the article: "dry-rot eating out their hearts," "this monstrous bitterness"? The vitalizing force of any Army is the spiritual solidarity of its corps of officers—the comradeship of arms. If it is lacking, there is no army. By so much as it is attained, by so much is the conquering force of that army increased.

Ours is the Army of a democracy. Yet our system of selection for the Command and General Staff School, the Army War College, the Industrial College and the eligible list for grade of general is foreign to democratic principles, repugnant to Anglo-Saxon traditions, and vulnerable to personal influence and to accidents of service. The whole business is done in camera until that final triumph of secretiveness is reached, the list of eligibles for the grade of general. That is not only prepared in camera, but it is never permitted to escape from the Stygian darkness of its birthplace. In the main, the Anglo-Saxon has resented—and not infrequently with violence—the determination of his fate, or fortune, by star-chamber proceedings. He insists upon his chance—fair, full, and free—in the open, against his fellow. If he loses under such circumstances, he cheers the winner. That spirit has made great our race. We all decry the existence of the Legion of the Lost, and "the monstrous bitterness" in their hearts. But a man must be woefully ignorant of the genius of his own people to wonder that the bitterness is there. I once discussed this same subject with a profound student of history, a member of the faculty of the École Supérieure de Guerre. He said he found the closest parallel to our system in that obtaining in the autocratic army of Russia at the opening of the World War. In his opinion, the jealousies and spiritual disunion bred of it were major contributory factors to the lack of cohesion in the Russian Army, and its consequent series of defeats.

There is no use blinking at the fact that our present system is soul-destroying. Of the many who fail of selection by it but few have the spiritual mellowness of Invictus. The rest are admirable humans whose disappointment turns in upon itself and brews within them a poisonous broth of resentment, jealousy, lost hope, destroyed ambitions, critical envy. Deploring it does not exorcise it. The cure must be found in revision of the system which distills it.

No one presents the thesis that all officers are suited for General Staff duty, nor possible material for high command. To attempt to pass all officers through the processes necessary to prepare for such functions is incompatible with the day-to-day tasks of the Army. But every officer who wishes to do so should have the right to be tested for fitness for such processing. Open, free competition, carried on sequentially over a period of years, for the Command and General Staff School, the War College, the Industrial College, and the eligible list for general officers, is the only method consistent with the genius of our people. What an up-on-its-toes Army we'd have, as a result! There would be an end to labelling as a son of Mary, a son of Martha, and vice versa—an error which happens all too frequently now.

COLONEL, C.A.C.

Sir:

That the general morale of all ranks in our Army is excellent is hardly open to argument. There can be no argument, however, but that in certain groups and ranks the morale is far above what it is in other groups and ranks. But not all officers enjoy this contented and happy state. In fact it is believed true that the majority of the officers below field grade are not so happy. The officers in this category who are on duty with troops have watched with anxiety the increasing restrictions placed upon their eligibility to attend the Command and General Staff School and the War College. They see in the age and other restrictions a lessening chance of their going to these schools or of their ever getting on the General Staff eligible list.

A majority of these affected have had prolonged command duty with troops and have acquired experience and skill far above those who have enjoyed easy jobs and staff details. Yet the latter class gets the breaks.

There is no question that the officers on staff duty are favored in efficiency report ratings. They perform service generally under a sympathetic commander; have the advice, assistance of fellow staff officers in their work. It is not so with the officer in command of troops. If he can be right nearly all the time he is a wonder. A commanding officer is particularly on the spot. If he can accomplish all the 367 missions listed in Army Regulations he should be placed on a pedestal with history's most accomplished soldiers.

The officer on troop duty feels that the construction placed upon the National Defense Act in respect to "actual duty with troops" affects him adversely. It is not infrequent now that a student in one school goes immediately to another, completing two successive years of school duty. Although he never wears a uniform and hardly ever sees a soldier, he is rated as having been in "actual command of troops of one or more combatant arms" during the two years he is at school. Thus a "fair haired boy" with outstanding capacity to memorize textbooks, establishes himself with a rating of "superior" in the actual command of troops without ever having any of the responsibilities or duties.

The time is ripe to give fitter recognition to the young troop leaders of today who will be commanders of units in an emergency. Is there not some way whereby these officers may attend the Command and General Staff School and the War College, and enjoy a rating of "superior" in their efficiency reports to the same extent as the "fair haired boys" who have less soldierly ability but who have been given preferment? COLONEL, C.A.C.

Sir:

Troop duty—no one wants it because it gets you no place. Boiled down, no one wants an efficiency report from an officer who is only one rank above him.

One study I would like to see—it can easily be compiled. Take any ten Coast Artillery officers who have been to Leavenworth or the War College or are ordered there—figure the per cent of time in the five years preceding their selection that they have *actually* been with troops, the per cent of time they have served on staff duty or away from troops with a compilation of that duty. I know it will be illuminating.

Now for something really constructive—why is the required study of staff problems confined to a few—is it not a part of the mental equipment of every officer? As you know—battery commanders and lieutenants can be had for a dime a dozen in an emergency. What we need is a *vast* reservoir of officers who have had at least a smattering of staff training—theoretical at least. Men who have been to Leavenworth tell me that it is very heavily padded—actually the work could be done in three or four months. I would suggest basic training for everyone—by mail if necessary—then a short period at a staff school for actual competition with others in the solution of problems. Probably this should follow at the end of 10, 15 and 20 years service. Don't take families—go for intensive study and application. Then we can all talk the same language. It has always appeared odd to me that we, as officers, are never examined in a thing. We examine *all* enlisted men—gunners, promotion in 1st three grades, warrant officers, cadets for commission, etc., but as soon as you become an officer, your mental acceleration along professional lines is negative unless you do it yourself by your own initiative—and there are mighty few of us who have that initiative because we can see no actual competition ahead of us. This discussion will naturally lead to a direct criticism of our entire officer schooling system. It is queer but I believe we stand alone in the army school system of the world in our methods. CAPTAIN, C.A.C.

Sir:

The article "Legion of the Lost" was fine. The conditions discussed in it should be corrected.

Why not expand the C. & G. S. School and the War College—why have just a limited number go? Every year there are a number of disappointments—some justified, others not. However when you limit the number to ten out of the entire C.A.C. no index in the world will give you a happy answer. On the other hand an officer should be made to have *real* troop duty. Pershing writes from France "Officers selected for appointment general officer of line should be those with experience in actively commanding troops. Officers not fulfilling above conditions can be usefully employed at home training troops." 1ST LT., C.A.C.

Sir:

The article on the "Legion of the Lost" was the best thing I've read in years. That man would make an excellent chief of staff for any outfit. HE ought to go to Leavenworth.

Very truly,
E. CARL ENGELHART,
Captain, C.A.C.

Another Antitank Defense Advocate

Sir:

Congratulations on the first issue; I found it very readable.

I was very much interested in your remarks in the Open Forum as to the use of AA guns against tanks and other mechanized forces. At either Fort Monroe or at Leavenworth I was frowned upon by one of the instructors when I suggested such a possibility.

It seems to me to be a point worthy of considerable emphasis and study. One can easily visualize a case where the air might be clear but the ground forces in need of

support. In such a situation a battery of AA guns with their range and rapidity of fire could be very useful if the battery commander knew how to use them.

Sincerely yours,
SAMUEL T. STEWART,
Major, U.S.A., Ret.

Horse Enthusiast

Sir:

There is a decided trend towards mechanization as distinguished from motorization but it appears to me that the mechanization advocates are allowing their enthusiasm to run away with their better judgment. We hear from many sources arguments for a completely mechanized army.

The First and Second Army maneuvers created some doubt as to the efficacy of completely mechanized units at the front. It is believed to be the consensus that it would be a mistake to rely entirely upon completely mechanized units. In its present state of development mechanical transportation is not as dependable in bad country as animal-drawn. We should not allow our imagination to run away with us, neither should we allow our lack of imagination to interfere with progress. The trend toward mechanization should not be allowed to go to extremes. It is believed that animal-drawn transportation will be essential to carry out our mission in modern warfare.

Very truly yours,
CAPTAIN, C.A.C.

Antiaircraft Organization

Sir:

I wish to thank you for forwarding me the issues of "The Fighting Forces" and "Royal United Service Institution." Your attention is invited to the article on page 785 of the November, 1936 issue of the Royal United Service Institution in regard to the antiaircraft equipment of the German division and the tactical employment and administration of the antiaircraft organizations outlined there. The Germans place the entire antiaircraft armament under the orders of the air force, so much so that all antiaircraft troops even wear air force uniforms.

On page 395 in the December, 1936 issue of "The Fighting Forces," this same fact is again brought forth. In this article this method of employment of the antiaircraft artillery is not endorsed but they make the suggestion that it certainly is desirable that we should examine the new German organization with unprejudiced eyes, and they stress the importance of this question.

I do not agree with the German organization for it is believed that if we place our antiaircraft organizations under the control of the air force it will become a stepchild and make less progress and advancement than it is making at the present time. The antiaircraft defense problem is certainly a matter to be solved under the direction of an artilleryman, but nevertheless we should examine the new German organization in an impartial and unprejudiced manner so that there will be no stagnation.

CAPTAIN, C.A.C.

Duplication of Effort

Sir:

In the current number of a military magazine a Coast Artilleryman suggests that antiaircraft artillery is just the thing to stop the tanks. Moreover, he intimates that it is better furnished with the technical means required than any other arm.

Although he did not intend it so, his article opens a line of thought worth pursuing further. That is the fact that there is much duplication of effort among all the arms and services. We find two or three branches devoting time and brains, in independent efforts, to solve problems of interest to all. We find also that some arms and services duplicate the tactical efforts of the others.

More particularly, I contend that there is no reason, tactical, administrative, or economic, for two separate gunnery arms. All the artillery should be grouped under one head. If necessary, the Chief of Artillery should have general officer assistants—say three, one for antiaircraft, one for coast defense, and one for that function that we commonly associate with the term "field" artillery.

Then, when M day comes we will not find ourselves in an administrative muddle where it would be possible to find regiments of artillery, manning the same type of hardware and with the same tactical mission, but owing allegiance to different chiefs of arms.

RESERVE OFFICER.

EDITOR'S NOTE: There should be the minimum duplication of effort. Originally, the two artillery branches were combined and serious consideration has been given to combining them again. But the studies made indicated that a radical change in the existing system would not result in great gain in efficiency or reduction in overhead. An administrative muddle such as you anticipate on M day did not arise in the employment of artillery in the last war. It is reasonable to assume that it will not arise in the future especially if the fire control equipment pertaining to the matériel used by both branches is standardized and provisions are made for its operation against both land and marine targets. It is understood that there is already a movement under way to simplify and standardize the fire control equipment for 155 GPF guns so that both the Field and Coast Artillery organizations manning this equipment will be equipped and trained in a similar manner. It is believed that in an emergency all artillery, with the possible exception of antiaircraft artillery, will be employed under one head during operations in the combat zone.

COAST ARTILLERY BOARD NOTES

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

SECTION I

Projects Completed Since Last Issue of the Journal

PROJECT NO. 1065—FLASHLESS POWDER FOR ANTI-AIRCRAFT GUNS.—The two experimental lots of flashless powders proved to be unsatisfactory. Although there was a considerable reduction in the amount of flash and some reduction in the amount of shock and noise, the large quantity of smoke generated proved to be so conspicuous that a hostile observer could have located the battery position by the smoke from the FNH powders easier than by the flashes of the standard smokeless powder. The Coast Artillery Board recommended that development work on flashless powders be continued with a view to decreasing the amount of smoke while maintaining, as far as possible, the same degree of flash suppression which obtains with the present FNH propellants.

PROJECT NO. 1072—MACHINE GUN FIRE CONTROL SYSTEM, 63d Coast Artillery.—The desirability of carrying on further development of the fire control matériel developed and used by the 63d Coast Artillery for its advanced practices with caliber .30 and caliber .50 machine guns was carefully studied. This system differs from the central control equipment, which was tested by the Board in connection with Project No. 1046, mainly in that the 63d Coast Artillery employed an electrical system of data transmission whereas the Coast Artillery Board System relied upon flexible shafting. Also, the machine gun deflection computor which formed part of the 63d Coast Artillery system operated upon the angular travel principle, while the lead computor used in the firings for Project No. 1046 was a linear speed instrument. The 63d Coast Artillery system is workable but is somewhat more complicated and difficult to operate than the flexible shaft system. It was recommended that the deflection computor be given further tests in connection with the flexible shaft type of central control system.

PROJECT NO. 1077—BELTS, WAIST, WEB, ENLISTED MEN'S.—Three types of belt were under investigation; the standard issue belt one inch wide, an experimental belt one and one-fourth inch wide provided with a new type buckle, and a flying cadet type of belt one and one-half inch wide with the standard type of buckle. The new type of buckle consists of a hollow shell, through which the belt passes, provided with a knurled vertical bar which holds the belt by friction. The new buckle has a neater appearance than the old. The one and one-half inch belt was found to wrinkle after long wear, a defect which did not occur with either of the narrower belts. The adoption of the one and one-fourth inch belt with new type buckle was recommended.

PROJECT NO. 1080—VARIABLE FUNCTION CONVERTER.—The Board tested this device, described in the preceding issue of The JOURNAL, and found that it did in fact determine the log sine of any angle, within its range of action, to an accuracy of one unit in the fourth place of decimals. However, when angles are set into the instrument continuously, thus requiring continuous operation of the color-matching arrangement to secure a continuous setting of the log sines, the maximum degree of precision is not readily attainable. The most useful application for an instrument such as this appeared to be in the solution of the triangulations involved in position finding. In making such an application, the resulting instrument would, it seemed, perform the same functions in much the same manner as the Lewis-Trichel seacoast computor E-1 (now the gun data computor T5). The variable function computor would merely replace the cams of the Lewis-Trichel system which is also expected to determine data continuously. The cams of the Lewis-Trichel system operate with less manual intervention than the variable function converter. Replacing the cams of the T5 computor with converters would add ten operators to the range section. The accuracy to be expected under these conditions did not appear to be appreciably greater than that which was attained by the pilot model of the Lewis-Trichel instrument during its tests. None of the other possible applications for the variable function converter appeared to offer any important advantages over the methods and devices already in use. For these reasons, it was recommended that no action be taken to apply the

variable function converter to any instrument or device for Coast Artillery use.

PROJECT NO. 1084—OVER-ALL COVERS FOR 155-MM GUN MATÉRIEL.—A set of these covers consists of three parts; namely, a carriage cover, a breech cover for use when the gun is emplaced, and another breech cover with an extension sleeve to cover the splines and retracting rack when the gun is in the traveling position. They were designed to protect all important bearing surfaces, gears, and racks from the effects of wind-blown sand when the gun is emplaced, and from dirt thrown by the wheels when the gun is being towed. The tarpaulin, now issued, is ineffective for these purposes. The Coast Artillery Board found that the covers provided the desired protection, but that in placing the carriage cover on the piece it was necessary to slide this irregularly shaped piece of canvas under the axle and then fold the ends and flaps up over the carriage and gun trunnions. In performing this operation some sand was invariably scooped up through the notches of the pattern and unless undue care was exercised, this sand was thrown on the bearing surfaces when the ends and flaps were folded over the top of the gun. This difficulty tended to vitiate the advantages derived from the protection otherwise afforded. The Coast Artillery Board recommended a redesign of the covers to permit the carriage cover being put in place from the top.

SECTION II

Projects Under Consideration

PROJECT NO. 953—RADIO-CONTROLLED HIGH SPEED TARGET.—Visibility tests have been temporarily suspended until the completion of a major overhaul of the engine. Meanwhile, a new control unit which appears to be more positive in operation and less susceptible to parasitic radio signals has been built.

PROJECT NO. 1075—CABLE INSTALLATION FOR FIXED ANTIAIRCRAFT GUNS.—Matériel for this installation is now being installed on three of the carriages of a fixed antiaircraft gun battery at Fort Monroe. Manholes have been completed. The main junction box has been installed and several of the underground cables have been laid. Arrangements are being made to provide either post power or power from a mobile power plant for operation of the data transmission system. It is expected that the entire installation will be completed early in 1937. Tests will continue through the spring and summer training season of that year. Firings for the students of the Coast Artillery School and the various civilian components training during this period will be utilized to determine the serviceability of this matériel.

PROJECT NO. 1081—MODIFIED KITCHEN TENTS.—This is a continuation of Project No. 1047, described in previous issues of THE JOURNAL, which was concerned with an early model of the proposed kitchen tent. Under the present table of basic allowances, the field kitchens of Coast Artillery units are supposed to be sheltered beneath a tent fly. Such a cover is obviously inadequate for anything except to give some shade in fair weather and as a result the tent fly is usually supplemented by improvised or "borrowed" shelter of some kind. The present project pertains to a determination of the relative merits of several proposed substitutes for the kitchen tent fly. The modified kitchen tent is shaped like a pyramidal tent except that the floor area is smaller and any one or all of the side walls, which are about six and one-half feet high, can be raised to form awnings. For comparison with the kitchen tent, a model 1934 pyramidal tent has been furnished. This latter is the latest model of the old familiar squad tent. It is a marked improvement on the original, having the same floor area but higher (one foot) sidewalls and thus will accommodate eight men with comfort. Both the modified kitchen tent and the Model 1934 pyramidal tent are being considered also as officers, headquarters, and mess tents.

PROJECT NO. 1082—MAP REPRODUCTION EQUIPMENT.—Two recently developed types of map reproduction equipment have been furnished for test. One set of equipment consists of bromide developing paper with the accessories necessary to finish the prints. The other set uses a less sensitive type of paper, comparable to blueprint paper in that respect, which gives black line prints on white ground. Either set is intended to supersede the unit set of duplicator equipment which is now authorized for brigade and regimental headquarters. In addition to making reproductions of maps and drawings, both sets can make facsimiles of prints and documents for which photostat processes are now used and thus may have a wide field of usefulness in headquarters where no photostat machines are available.

SECTION III

Miscellaneous

CHANGES IN TRAINING MEMORANDUM NO. 1, WAR DEPARTMENT, SEPTEMBER 28, 1936.—The Board recently recommended two important changes to the annual training memorandum for the Coast Artillery target practices to be held during the calendar year 1937. One recommendation was to the effect that in night practices by Regular Army antiaircraft machine-gun batteries the sleeve will not be illuminated. The opportunity to fire at night with 60-inch searchlight illumination will seldom occur in actual service. On the other hand it is known that under favorable conditions, such as twilight or moonlight, both airplane and sleeve can be seen and fired on at machine-gun ranges.

The second recommendation was to put into effect a safety precaution to eliminate the danger to ground personnel from a cut tow line when the target is being towed over the heads of the troops. This precaution was inspired by the knowledge that two casualties had been caused at Fort Riley by a tow line which was cut during antiaircraft firing.

ANTIAIRCRAFT SEARCHLIGHT TRANSPORTATION.—A

study has been made and tests have been proposed with a view to determining whether some method of transporting the searchlight, less expensive than by use of the present specially designed power plant trucks, can be devised. It appears possible that commercially available trucks or trailers might be used to transport; in separate loads, the portable type of power plant, the searchlight and the sound locator. The awkward size and shape of the loads involved may cause some difficulty in finding suitable vehicles. Arrangements are being made to conduct practical tests and secure data for a continuation of the study.

TOW LINE LENGTHS FOR ANTIAIRCRAFT GUN TARGET PRACTICE.—The Coast Artillery Board undertook a study to determine the minimum lengths of tow line that will be safe for (1) the higher towing speeds to be expected with modern aircraft and, (2) the longer times of flight necessitated by the recent requirement that practices will be fired at generally higher altitudes. The Board was of the opinion that there is no adequate means of insuring the safety of the towing airplane in case of a gross error in the data except by prescribing that the "line of metal" observers should at no time permit the gun to be fired when pointing ahead of the target. The Board found that tow lines of from 1,500 to 2,000 yards in length would be necessary if the target altitude exceeded 3,500 yards and the ground speed exceeded 120 miles an hour. With tow lines of less length, the safe portion of a course is very short.

WINCHES FOR ANTIAIRCRAFT PRIME MOVERS.—It has been proposed that, in order to decrease the cost per unit, the winches might be omitted from the antiaircraft gun prime movers. Very little data on the efficiency of the winches is available. Likewise, there is little on record to indicate to what extent the medium tractor, authorized for each gun battery, can be employed as a substitute for the winches. The improvements constantly being effected in the flotation and tractive power of trucks combine to suggest that a modern truck with traction devices and a winch will be able to get itself and the gun out of difficulties without the aid of a tractor. The Board proposed that a test be made in the near future to determine the relative usefulness of the winches and the tractors.

WIRE-LAYING DEVICE.—In laying wire from motor vehicles, the slowest element of the job is the operation of manually dragging the wire off the road and out of the way of other vehicles. Staff Sergeant Cletus L. Luebbe has proposed an interesting method of wire laying which will be described in a later number of The JOURNAL. The Board recommended further study of this device to determine whether the mechanism could be simplified.

COAST ARTILLERY ORDERS

(Covering the Period November 1, 1936 to December 31, 1936)

Colonel J. C. Johnson, retired, Nov. 30.

Colonel G. A. Nugent, retired, Dec. 31.

Colonel Lewis Turtle, from Panama, to duty in connection with recruiting, Seattle, Wash.

Lieutenant Colonel C. W. Baird, promoted, Colonel, Dec. 1.

Lieutenant Colonel T. M. Chase, from 2d C.A. Dist., New York, to Org. Res., Third Corps Area, Richmond.

Lieutenant Colonel J. H. Cochran, from student, Army War College, Ft. Humphreys, D. C., to Coast Artillery representative, Ordnance Board, Aberdeen Proving Ground.

Lieutenant Colonel E. B. Colladay, from U.S.M.A., West Point, to member of General Staff Corps, War Department, Washington, D. C.

Lieutenant Colonel T. C. Cook, from Hawaii, to General Staff with troops, Governors Island.

Lieutenant Colonel Richard Donovan, promoted, Colonel, Nov. 1.

Lieutenant Colonel Sanderford Jarman, promoted, Colonel, Dec. 1.

Lieutenant Colonel C. R. Jones, from 13th, Ft. Barrancas, to Org. Res., Atlanta, Ga., March 1.

Lieutenant Colonel A. L. Loustalot, promoted, Colonel, Nov. 1.

Lieutenant Colonel Gilbert Marshall, retired on account of physical disability, Dec. 31.

Lieutenant Colonel L. L. Pendelton, promoted, Colonel, Dec. 22.

Lieutenant Colonel E. W. Putney, promoted, Colonel, Dec. 1.

Lieutenant Colonel R. H. Smith, promoted, Colonel, Nov. 1.

Lieutenant Colonel T. A. Terry, promoted, Colonel, Dec. 24.

Major H. C. Barnes, Jr., from American Battle Monuments Commission, Washington, D. C., to General Staff Corps, Panama, sailing New York, May 4.

Major P. F. Bichl, from the Philippines, to instructor, New York Natl. Guard, N. Y.

Major Benjamin Bowering, from instructor, N.Y.N.G., New York to the Philippines, sailing New York, March 18.

Major J. T. Campbell, from 2d, Ft. Monroe, to the Philippines, sailing New York, March 18.

Major G. deL. Carrington, from instructor, C.A. School, Ft. Monroe, to instructor, Army War College, Ft. Humphreys, Aug. 15.

Major R. M. Carswell, from Org. Res. Third Corps Area, to the Philippines, sailing New York, March 18.

Major C. R. Finley, promoted, Lieutenant Colonel, Dec. 23.

Major M. B. Gibson, from the Philippines, to 14th, Ft. Worden.

Major W. M. Goodman, from student, Naval War College, Newport, to member General Staff Corps, War Department, Washington, D. C.

Major P. W. Hardie, from Ft. H. G. Wright, to his home, and await retirement.

Major J. H. Harrington, from 13th, Ft. Barrancas, to the Philippines, sailing New York, March 18.

Major William Hesketh, from the Philippines, to instructor, Conn. N.G., Bridgeport.

Major J. C. Hutson, from 61st, Ft. Sheridan, to Panama, sailing New York, March 2.

Major C. D. Y. Ostrom, from 6th, Ft. Winfield Scott, to General Staff Corps, Ninth Corps Area.

Major W. R. Stewart, from 3d, Ft. Stevens, to the Philippines, sailing San Francisco, April 9.

Major F. S. Swett, from 13th, Ft. Barrancas, to the Philippines, sailing New York, March 18.

Captain G. B. Anderson, to Panama, sailing New York, Dec. 16. Previous orders amended.

Captain H. A. Brusher, from 2d, Ft. Monroe, to the Philippines, sailing New York, March 18.

Captain F. B. Dodge, Jr., from Hawaii, to 13th, Ft. Crockett.

Captain B. D. Gill, from Army mine planter *Joseph Henry*, Ft. Hancock, to the Philippines, sailing New York, March 18.

Captain H. P. Ellis, from 61st, Ft. Sheridan, to Hawaii, sailing New York, March 18.

Captain W. R. Ellis, from duty as assistant to the port quartermaster, Brooklyn, to 53d Quartermaster Regiment, Holabird, Baltimore, Jan. 1.

Captain J. M. England, from 11th, Ft. H. G. Wright, to the Philippines, sailing New York, March 18.

Captain P. W. George, transferred to Quartermaster Corps, Dec. 7.

Captain J. J. Johnson, from 10th, Ft. Rodman, to Hawaii, sailing New York, March 18.

Captain E. P. Jolls, from Hawaii, to 10th, Ft. Adams.

Captain W. H. Kendall, from 13th, Ft. Crockett, to Hawaii, sailing San Francisco, April 13.

Captain F. F. Miter, from Hawaii, to 62d, Ft. Totten.

Captain L. M. Morton, transferred to Quartermaster Corps, Dec. 1.

Captain M. M. Read, from Hawaii, to 10th, Ft. Rodman.

Captain Samuel Rubin, from the Philippines, to Harbor Defenses of San Francisco, Ft. Winfield Scott.

Captain F. F. Scheiffler, from Hawaii, to 69th, Ft. Crockett.

Captain Raymond Stone, Jr., from the Philippines, to First Cavalry Division, Ft. Bliss, Tex.

Captain T. B. White, from the Philippines, to 6th, Ft. Winfield Scott.

First Lieutenant D. R. Corum, from Ordnance Dept., Randolph Field, to Hawaii, Air Corps Training Center.

First Lieutenant P. N. Gillon, from Hawaii, to Ordnance Dept., Watertown Arsenal, Watertown, Mass.

First Lieutenant A. R. Hartman, from Army mine planter *General John M. Schofield*, Ft. Monroe, to the Philippines, sailing New York, March 18.

First Lieutenant D. B. Johnson, from the Philippines, to 2d, Ft. Monroe.

First Lieutenant J. J. Lane, from the Philippines, to 2d, Ft. Monroe.

First Lieutenant C. G. Patterson, from the Philippines, to 51st, Ft. Monroe.

First Lieutenant H. W. Schenck, to 3d, Ft. Rosecrans. Previous orders amended.

First Lieutenant F. H. Shepardson, from 14th, Ft. Worden, to Hawaii, sailing San Francisco, March 12.

First Lieutenant D. S. Spengler, from the Philippines, to Corps of Engineers, Boston, Mass.

First Lieutenant R. A. Turner, from the Philippines, to 51st, Ft. Monroe.

First Lieutenant R. L. Williams, Jr., from the Philippines, to 52d, Ft. Monroe.

Second Lieutenant C. L. Andrews, from the Philippines, to 2d, Ft. Monroe.

Second Lieutenant Alfred Ashman, from 6th, Ft. Winfield Scott, to the Philippines, sailing San Francisco, Feb. 3.

Second Lieutenant L. K. Beazley, from the Philippines, to 2d, Ft. Monroe.

Second Lieutenant R. E. Frith, Jr., from 69th, Ft. Crockett, to the Philippines, sailing San Francisco, April 9.

Second Lieutenant S. I. Gilman, from the Philippines, to 51st, Ft. Monroe.

Second Lieutenant C. W. Hildebrandt, from 2d, Ft. Monroe, to the Philippines, sailing New York, March 18.

Second Lieutenant A. D. Robbins, from 62d, Ft. Totten, to the Philippines, sailing New York, March 18.

Second Lieutenant G. R. Wilkins, from 13th, Ft. Barrancas, to the Philippines, sailing New York, March 18.

THE CONTRIBUTORS

AGNOSTICUS, who hopes to keep his identity hidden, says he is a Guard officer with a persistent flair for getting in wrong. Inspired by both sincerity and mischief, he is forever taking a crack at something or somebody. Except for bird hunting, duck hunting, still fishing, fly casting, skiing, skeet shooting, tennis, and amateur photography, the Guard is his only hobby. He professes to believe that he can run a newspaper better than any publisher, operate a hotel better than any owner or run an army better than any general. He therefore advises that his pronouncements be taken as those of one who may be suffering from delusions of infallibility.

Major CLARENCE E. BRAND, Judge Advocate General's Department, was born in Alabama. He received his A.B. and A.M. degrees from the University of Texas, while in attendance at the First Officers' Training Camp at Leon Springs, Texas. After service in the Coast Artillery during the World War he was commissioned in that arm in the Regular Army, on July 1, 1920. He is a graduate of the Coast Artillery School, Battery Officers' Course, 1925.

Since 1930 Major Brand has been affiliated with the J.A.G.D., first by detail and then by permanent transfer to that service. He has attended the law school of Yale, from which he received the degrees of LL.B. and D.C.L. He is a member of the bar of New York State and that of the Supreme Court of the United States.

Major Brand's article on Roman Military Law eventually will form the first part of a larger work to embrace the modern military law of all leading countries. A number of articles from Major Brand's pen have appeared in The JOURNAL on various occasions; three of these were prize winners in the essay contests formerly sponsored. Although he has left the Coast Artillery Corps, Major Brand still follows our doings with interest, and, what is more, still subscribes to The JOURNAL.

Major CHARLES I. CLARK, C.A.-Res., is the secretary-treasurer of the Manhattan Chapter, Coast Artillery Association. He has been a leader in the reserve movement for years and has always been one of the Coast Artillery Association's strongest advocates.

Major ELLIOT D. COOKE (pronounced by his friends with accent on the "e") was born on Staten Island, New York. He early abandoned a prearranged career of stock broker for the more wandering vocation of mining engineering, which took him over most of North, South, and Central America. He never quite got around to completing the formal requirements of his adopted profession; so many interesting events taking place around the world seemed to require his personal attention. The outbreak of the World War brought him into the Army on the ground floor. He waited two years for the United States to enter the conflict, during which time he progressed from a recruit to first sergeant—a greater accomplishment, Cooke believes, than returning from France as a major; because, says he, anyone in the 2d Division who stayed in the front line and out of the division cemetery got promoted. Major Cooke claims the distinction of being the only Army officer to put in his entire war service with the 5th Marines. He returned with the 9th Infantry, went out on a National Guard detail, took the Company Officers' Course at Benning, returned to a DOL job with the ROTC and then served three years with the 7th Infantry. He recently graduated from the two-year class at Leavenworth.

Lt. Colonel JAMES B. CRAWFORD, Coast Artillery Corps, was born in New York. He is a graduate of West Point (1911) and an honor graduate of the C.&G.S.S. (1926). All of his service has been in the Coast Artillery, throughout which he is known for his pleasing personality, and as a scholar and a gentleman. At present he is on duty at Fort Leavenworth as chief of the Extension Course Section, C.&G.S.S.

Captain E. CARL ENGELHART, Coast Artillery Corps, is on duty with the Submarine Mine Depot, Fort Monroe. We were spared the labor of preparing his biography as he wrote his own ticket. Here it is:

U.S.M.A. 1920. Graduated a runt. Went to Hawaii and regretfully lost an inch in height; medical corps records prove it. Went to Japan and for three and a half years enjoyed being a moderately tall man among men.

Coast Artillery School, "Inc." Course, 1920-21. Graduated, became a mine property officer. Later learned to identify mine property, late enough to be short $80,000 worth. Acquired some practical knowledge on the subject of O. S. & D. reports, surveys, expenditure vouchers, and accidents, in a hurry. Tested mine cable. C.A. School Battery Officers' Course, 1931-32. Learned how mine cable should be tested. Majored in traffic control at the Yorktown Sesquicentennial. Held over for the Advanced Engineering Course, 1932-33, because of demonstrated ability to guess wrong in placing a decimal point. Majored in bridge surveying at Yorktown. Have a pretty fair idea of how to get to Yorktown. Sperry Gyroscope Company, winter of '32-'33. Set up a new director. Adjutant, C.C.C. Reconditioning and Replacement Camp, Fort Monroe. Lesson: avoid a staff job if you want a command.

Assistant in the Police Office when the 1933 hurricane hit Monroe. Learned about logging then. Became an

expert at pumping out cellars and planting shrubs. Started pounding a typewriter twenty-three years ago, swinging from the elbows, and leave a wake of irreparable machines. Had a brief career as a columnist. Submarine Mine Depot, 1934 to date, a permanent change of station without a change of quarters. Principal qualification: no preconceived notions about Ohm's Law.

Addicted to Kelly pool and bowling. Handle a pool cue so skillfully it appears like unvarnished luck. Presented friend wife with a bowling ball last Christmas which miraculously fits my hand-span. Very consistent in bowling; almost good. Expert Rifle and Expert Pistol. Secret ambition: to coach a girls' rifle team.

Highest compliment received from a Japanese policeman on the arrival of my first-born, a son: "Ah-h-h! you are very expert!"

Captain BURGO D. GILL, Coast Artillery Corps, hails from Florida. After graduation from the university of his native state with the degree of B.S. in 1921, he attended Leland Stanford University. His first military service was as a second lieutenant of Field Artillery Reserve in 1923. While in the reserve he attended the Reserve Officers' Course at the Field Artillery School, Fort Sill in 1924. Captain Gill then had an interlude as a flying cadet after which he was appointed a second lieutenant of Field Artillery in the regular army. He transferred to the Coast Artillery Corps in 1928, and is now on duty with the Cable Ship *Joseph Henry*. In 1935 he graduated from the Coast Artillery School.

Captain Gill is a prolific writer. Articles and stories bearing his by-line have appeared in numerous service and civilian magazines.

Captain JOSEPH I. GREENE, Infantry, is well known to the readers of The JOURNAL. He is a prolific writer on military subjects. At present Captain Greene is on duty as a student at The Infantry School.

Major General JOHNSON HAGOOD spent a great part of his service with the Coast Artillery and is well known to our readers. He retired from active service on May 31, 1936, and has taken up writing and lecturing as a profession. Four articles by him were published by the *Saturday Evening Post* during the fall of 1936. One of these, "Rational Defense" appeared in condensed form in *Reader's Digest*. His new book, *We Can Defend America*, will be for sale after January 22, 1937.

Captain JOHN HARRY, Coast Artillery Corps, was born in Conway, Kansas, May 19, 1894. He graduated from the University of Colorado in 1921 with the degree of B.S. in Engineering. During the World War, while at Colorado, he served in the SATC. Appointed second lieutenant of Field Artillery in the Regular Army on August 4, 1921. In February of 1924 he was transferred to the Coast Artillery Corps. Attended the Field Artillery School, Basic Course (1922), and the Coast Artillery School Battery Officers' Course (1932). In addition to usual troop duty assignments he has had a tour with the R.O.T.C. and during the early days of the C.C.C., assisted with that project. He is now on duty with the R.O.T.C. unit of Mississippi State College.

Captain Harry served on the staff of the *Engineers' Magazine*, the student publication of the College of Engineering of his alma mater for three years. He lists amateur photography as a hobby, and golf as a recreation. In connection with the last named he gave no scores, so it is impossible to state how seriously he takes his recreation.

GEORGE U. HARVEY, soldier-statesman. Lieutenant Colonel commanding 307th Inf., 77th Division, D.S.C., C.S.C., V.C., President of the Borough of Queens, New York City.

MORRIS SHEPPARD, senator from Texas. Dean of Congress by virtue of having a longer continued service than that of any other living member. Chairman committee on Military Affairs, U. S. Senate. Well known to all soldiers and officers because of his interest in National Defense, the welfare of officers and enlisted men and army activities.

Captain JOHN M. TATUM was born on June 19, 1895, in Orangeburg County, South Carolina. He spent a year at Wofford College and a year at The Citadel. He entered West Point in 1916 where he pursued but, according to Captain Jimmy Crawford, never caught up with his studies.

Captain Tatum resigned from the service on January 23, 1922, and has regretted it ever since. He accepted a Reserve commission in August, 1928. At present he is the Inspector-Instructor of District "F," CCC Headquarters, Tampa, Florida.

Major RICHARD G. TINDALL, Infantry, entered the service in 1916 with the First Provisional Officers' Class. Prior to that time he had lived a while in Europe, had been pronounced educated by the University of Missouri in 1911, and had held various jobs from cub reporter to night editor on the St. Louis *Republic*. While on the last named assignment he distinguished himself by making the front page with a poem on bedbugs. Thereafter he was accorded the privilege of having his longer yarns published under a by-line.

In 1918 Major Tindall went overseas and got on the fringes of the war in the Vosges and elsewhere. He also served with the 7th Infantry in the Army of Occupation on the Rhine. He is a graduate of The Infantry School (1927) and The Command and General Staff School (1928).

Major Tindall entered the École Supérieure de Guerre in 1933 and graduated in 1935. During vacation periods he tramped or rode over most of the battlefields of northern France and the Belgian Ardennes. At present he is an instructor at Leavenworth.

BOOK REVIEWS

RAYMOND III OF TRIPOLIS AND THE FALL OF JERUSALEM (1140-1187). By Marshall Whithed Baldwin, Assistant Professor of History, New York University. Princeton University Press. 160 pp. 2 maps. $2.00.

By Colonel Robt. E. Wyllie, C.A.C., Retired

Submitted as part of his doctor's thesis at Princeton, this work of Professor Baldwin's is more than a biography of Raymond III, Count of Tripolis and Lord of Tiberias. Raymond was unquestionably the ablest leader and the most prominent figure of his time in the Latin kingdom of Jerusalem, so an account of his life becomes virtually a history of the closing years of that realm. That his life ended in failure and the kingdom collapsed was due not so much to any weakness of his, nor even to the superior energy and ability of the enemy, the great Saladin, but to discord and dissension among the Christian leaders, a fact which is clearly shown in the author's scholarly narrative.

Warfare was almost continuous in the Palestine of the twelfth century, so the military reader will find much of interest in this book notwithstanding the archaic weapons then in use. The great principles of strategy and tactics are unchanging and the crusading period affords many instances of the truth of that statement.

The culmination of Raymond's life was the battle of Hattin, and his description and critical analysis of that engagement is likewise the highlight of Professor Baldwin's book. This battle is not as well known as it deserves. It was one of the decisive battles of history. Not only was it a complete victory but it also settled the fate of the Holy Land and of Jerusalem until the campaign of Allenby in 1918, a period of over seven hundred years. Furthermore several of the eternal verities of strategy and tactics are well illustrated, either by their performance of neglect. The battle has been described in several blocks of a popular nature, but only once from a critical military standpoint. That was by Sir Charles Oman, the well-known historian of the art of warfare, and his account was sketchy and was evidently based on only a few of the quite numerous original sources available.

Professor Baldwin has now filled this gap in an able

and thorough manner. His critical analysis of the battle, of the events, political and military, which lead up to it and of the results which followed mark him as a competent military historian, able to interpret the strategy and tactics of campaigns in an illuminating and instructive way.

Unfortunately the map of Palestine is so reduced that a reading glass is necessary, but there is no such defect in the map illustrating the battle of Hattin. By the way, it may be noted that that battle was fought on the slopes of the hill on which tradition says the Sermon on the Mount was delivered.

This book is recommended to all students and also to those who have an interest in the history of the Middle Ages.

THE ROMANTIC FLAGS OF TEXAS. By Mamie Wynne Cox. Banks Upshaw & Co., Dallas, Texas. 366 pp., 71 ills., many in color. $3.50.

By Colonel Robt. E. Wyllie, C.A.C., Ret.

Texas shares with Hawaii the distinction of being a portion of United States territory which was independent before admission to the Union. Texas was the only one, after the original thirteen, which did not have to pass through the probationary status of a territory. It is sometimes called the "six-flag state," having been under the dominion of Spain, France, Mexico, itself, the United States, and the Southern Confederacy.

The expression "six-flag" however really means "six-nation," because many more than six flags floated officially over Texas during the last three hundred and fifty years. The Confederacy had three national flags during its existence; and the Republic of Texas had two during its nine years of independence. We do not know accurately just what flags were flown by the Spaniards and French who came to Texas in the Sixteenth and Seventeenth Centuries, as they possessed no national flags in the modern sense.

This gives a peculiar interest to the flags of Texas; and Mrs. Cox has written an entertaining and instructive book. She outlines the state's history, relating many interesting incidents unknown to the general public, but treasured by Texans. She quotes freely from contemporary newspapers, documents, and other original sources, and her book shows evidence of careful research.

The illustrations are excellent, many being in color as is necessary in a work on flags. The book is recommended to all who are interested in flags and the history of a great Southern state.

AIR POWER AND ARMIES. By Wing Commander J. C. Slessor, R.A.F. New York: Oxford University Press, 1936. 215 pages; V Appendices; 4 Maps; Index. $4.00.

In his introduction Commander Slessor states, "And so long as we live in a world which maintains national forces numbering millions of men and consisting largely of the traditional arms, it is obviously important that all officers . . . should understand how the new power of the air is likely to affect the problems of land warfare." The author develops this subject clearly and interestingly.

He points out that in future land operations the air power available to a commander will have to be considered a major factor—not an incidental one, as was often the case in the last war. To bring out this point he uses the great Battle of Amiens in the summer of 1918, as an illustration.

He believes that the principal duty of air forces will be to isolate the main battlefield, and to deny the enemy the use of his lines of communication. Staffs will have "to think wider and use larger maps."

Air forces will have to be concentrated at the main battle point—even though it cost air supremacy in other parts of the theater of operations—and given a few key strategic targets for continuous bombing. The necessary ground strafing, reconnaissance, and artillery spotting will, of course, still go on. But the World War method of using bombers close behind the enemy front, hitting everywhere and not fully effective anywhere, must be discarded.

Commander Slessor sets forth no claims to air force omnipotence. He does set forth reasoned ideas which should provoke serious thought.—G.S.M.

THE PRE-WAR YEARS, 1913-17. By Professor Frederic L. Paxson. Boston: Houghton Mifflin & Company, 1936. 420 Pages; Illustrated; Index. $3.75.

Professor Paxson has begun what may be described as the definitive history of American Democracy in the period of the World War. He served as head of the Historical Branch of the War Plans Division of the General Staff and now occupies a chair of history at the University of California. His purpose is to "reveal the more important stresses" under which the United States acted from 1913-1917, and "to describe the adaptability of the people and the Constitution of the United States" to meet those stresses in a world of upset.

The admirable policy of "no-politics" which sets the army apart from the rest of society has its unfortunate sides. Too often military officers in democratic countries are quite out of touch with political forces. Professor Paxson's work provides a substantial background to the political forces at work in the United States just prior to the outbreak of war. This volume is a much sounder treatise than the glib best-seller of Mr. Walter Millis, *The Road to War*. —H. A. D.

ASIA ANSWERS. By Ralph Townsend. New York: G. P. Putnam's Sons, 1936. 272 Pages. $2.50.

Mr. Townsend, who has been a newspaper reporter in San Francisco and American Vice-Consul at Shanghai, speaks his mind about the Chinese. He also discusses a good many other matters that bear directly or indirectly on the problems of the Far East. His observations on the manner in which our State Department arrives at its policies are especially illuminating. So, too, are his comments on the powerful influence of the press on our foreign policy. Mr. Townsend comes to the rather obvious conclusion that we will have no valid reason for locking horns with Japan so long as we mind our own business.

—G. S. M.

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New Books

AIRCRAFT OF THE BRITISH EMPIRE. Second edition. $2.50.

AND WE ARE CIVILIZED, W. Ackerman. An Austrian Army officer's recollections of the war. $2.50.

EUROPE SINCE 1914, F. L. Benns. New and revised edition. $5.00. (School edition, $3.75.)

KITCHENER, General C. R. Ballard. A biography. $1.50.

MEMOIRS OF COUNT BERNSTORFF. Memoirs of Germany's ambassador to Washington during the first years of the war and one of the key figures in the German diplomatic world until his retirement in 1932. $3.50.

DEVIL THEORY OF WAR, Prof. C. A. Beard. An inquiry into the nature of history and the possibility of keeping out of war. $1.50.

Loyalty