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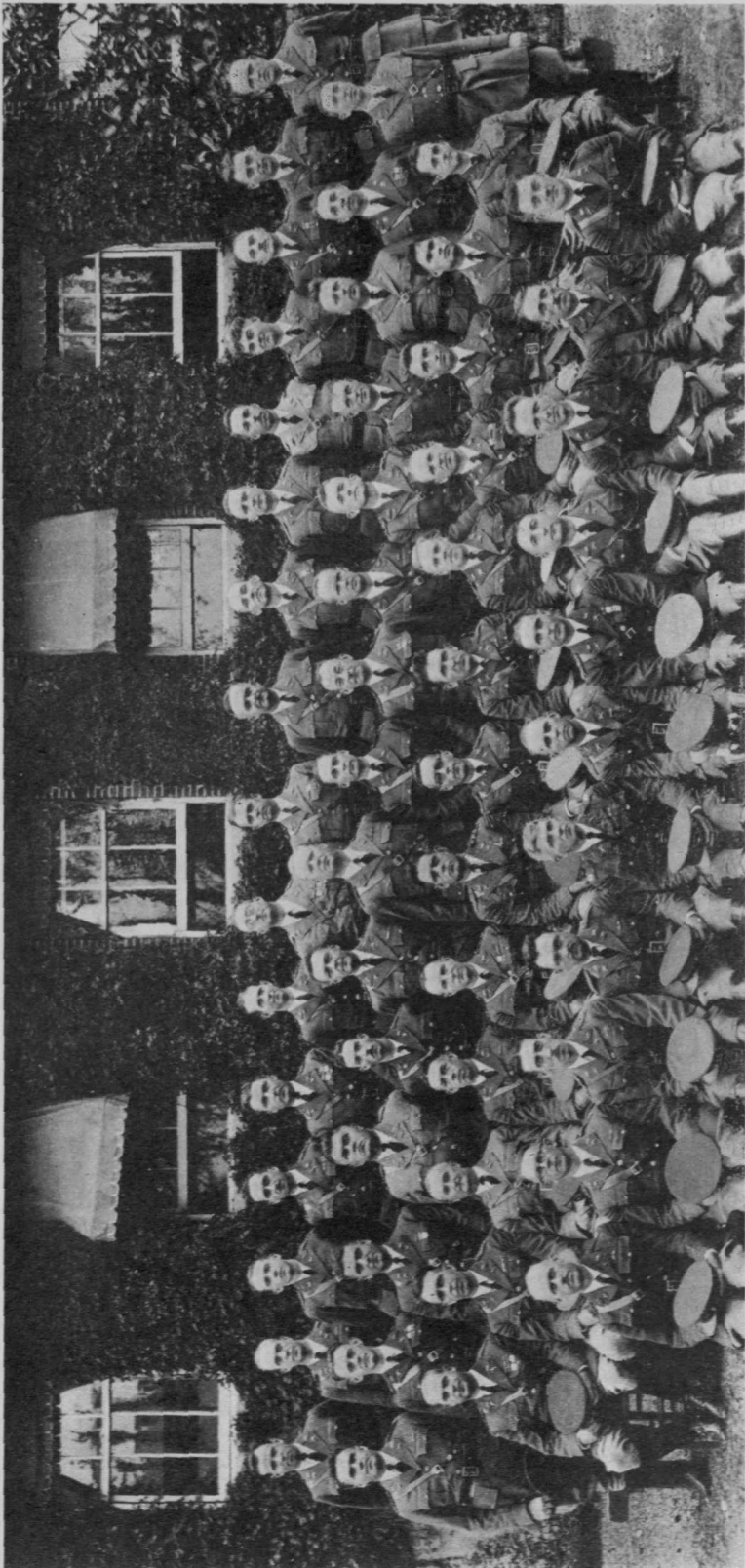
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BATTERY OFFICERS COURSE, 1929-1930, COAST ARTILLERY SCHOOL

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Reserve Officers Conduct the C. M. T. C. at Fort Monroe, Va.

By MAJ. L. L. STUART, C. A. C.

ALITTLE more than a year ago the 349th and 350th Infantry Reserve Regiments undertook a novel form of active duty training. They conducted a C. M. T. Camp. As a result of the success attained in this experimental training the War Department instructed all Corps Area Commanders that during the Summer of 1929 the experiment would be repeated at all C. M. T. Camps throughout the United States. In addition, the War Department further specified that, in the conduct of these camps, the following would govern is so far as practicable:

The necessary Regular Army means would be utilized for supply and mess.

The bulk of the Reserve officers must serve for not more than fifteen days. (In the Third Corps Area the only exceptions made were in the case of two Assistant Public Relations officers who served for thirty days).

The training program of the C. M. T. C. as issued by the War Department would remain unchanged, except that Reserve officers would occupy the officer positions formerly held by the Blue candidates.

Instruction of Reserve officers in their reserve capacity, which was incompatible with the schedule of the C. M. T. C., would be held in the afternoon, but such instruction was secondary to and would not be permitted to interfere with the conduct of the C. M. T. Camp.

The Reserve personnel assigned to conduct the camps would be properly prepared for the intensive instruction required previous to reporting for duty.

The conduct of the camps throughout the United States was observed closely by those in authority, and reports concerning the effect on the training both of the Organized Reserve and on the C. M. T. C. have already been forwarded to the War Department for study.

At the C. M. T. Camp held at Fort Monroe, Virginia, there were approximately three hundred and fifty Red, White, and Blue candidates, organized into a battalion of three batteries. Due to the necessity of limiting the period of active duty of Reserve officers to fourteen days (twelve days after deducting time for travel) it was decided to have four successive contingents conduct the camp. These contingents were made approximately

equal in strength and the periods of attendance overlapped three to four days, in order that the newly arrived officers would have an opportunity to understudy the officer whom they were to relieve, and to become familiar with the conduct of the camp, before taking over their active duties. As a result, each group of officers was actually in command of the camp for about eight days only.

It was desired that the Reserve officers actually conduct the camp, and that each officer assume the responsibility and functions appropriate to his grade and assignment. At the same time, it was necessary that the personnel in certain key positions be the same throughout the period of the camp in order to insure continuity of instruction, and that experienced officers be available to advise and assist the Reserve officers in matters where the latter's experience or knowledge was insufficient to guide them. These conflicting requirements were met by organizing the camp as explained below.

a. Training of Reserve officers was assured by assigning them as Camp Commander, Camp Adjutant, Battalion Commander, Battalion Adjutant, and a Battery Commander, Executive, and three Platoon Commanders for each battery. These officers performed all the duties, and assumed all the responsibilities, commensurate with their assignment, except responsibility for battery property. The remaining Reserve officers were assigned as assistants to the Supply, Mess, Athletic, Recreation, and Citizenship officers. From twenty-five to thirty Reserve officers trained with each contingent.

b. The continuity of the conduct of the camp was secured by assigning Regular officers for the full period as Camp Executive, Senior Instructor, Personnel Adjutant, and Supply, Mess, Athletic, Recreation, Citizenship and Public Relations officers.

c. As advisors and councilors, the Commanding Officer of the 12th Coast Artillery, Col. F. H. Lincoln, was appointed Camp Inspector, and an experienced officer of the 12th Coast Artillery was detailed as Inspector-Instructor of each battery. These officers assumed no command functions, but their greater experience and knowledge were thus made available to Reserve officers at all times. The Inspector-Instructors also assumed all property responsibilities in the batteries. In addition, five regular non-commissioned officers and five privates of the 12th Coast Artillery were assigned to each battery as First Sergeants and as assistant instructors in artillery.

On the morning of July 2nd the first contingent of the 603rd Coast Artillery (Ry) reported for duty. These officers were immediately given their physical examinations and inoculations, and rehearsed the process of receiving the candidates. Nearly all preparations having previously been made by the 12th Coast Artillery, everything was in readiness for the candidates on the morning of July 6th, and the actual work commenced. Each contingent of Reserve officers had a major objective: the first con-

tingent opened the camp, received and equipped the candidates, and commenced the drill; the second contingent bore the brunt of the preliminary instruction and of welding the camp into a smooth running unit; the third conducted subcaliber firings and the service practices; while the fourth completed the analysis and closed up the camp. Each contingent, during the three or four-day interval between their arrival at camp and the actual taking over of the command, were given saber drill, pistol practice, a general résumé of the training and instruction covered to date by the preceding contingents, and the training to be covered during their own tour. In addition, conferences were held daily by the Senior Instructor throughout the entire period of the camp, in which the work just completed was discussed and the training to be carried out the next day gone over in detail.

There is no doubt but that the frequent changes of officer personnel was the most unsatisfactory feature of the camp, both from the point of view of the Reserve officers and of the candidates. There was of necessity some interruption and repetition in the instruction, as well as some relaxation in discipline, as each new contingent took over the conduct of the camp. This was more pronounced with each successive contingent, due to the more advanced state of training of the candidates and to the fact that they soon began to feel that they knew more than the incoming officers. By the time the officers had hit their stride and were functioning as they should, their training period was nearly over and it was time for another change. Naturally these changes in officer personnel produced an unfavorable reaction on the candidates. As evidence of this, the following remarks are quoted from comments made by various candidates: "the changing of officers every week did not work very smoothly, and the battery spirit suffered."—"Officers were not with us long enough to get on to the state of instruction, and there was too much repetition"—and "as soon as we got used to one set of officers, they were changed and we had to break in a new set."

The discipline and morale also suffered by these frequent changes. As several Reserve officers stated, they did not get to know the candidates before it was time to leave, and that they believed they would have taken more interest in their battery had they known that they would be able to finish the work they had commenced. It was also found that one set of officers would be inclined to be lenient in regard to giving punishments or demerits, whereas another contingent would be more nearly "hard-boiled." These changes tended to keep the batteries in a state of unrest, and did not help the morale of the candidates. As one candidate expressed it, "much harm was done in my battery by having easy officers at first and hard ones later. Once men have come to look upon privileges as rights it is practically impossible to bring them back to a sound view of the situation." And another candidate states: "The men have been shown so much con-

sideration that they have been spoiled * * * The Reserve officers in Battery were too lax, due probably to lack of confidence. Offenders should be dealt with quickly and punished effectively, and officers should be more observant of breaches of discipline."

In order to correct or obviate the difficulties caused by the frequent changes in the officer personnel during the conduct of the camp, all concerned with the camp at Fort Monroe have recommended that hereafter the number of contingents be reduced to three. This will necessitate more thorough preparation by Reserve officers before reporting for duty, but will reduce the number of changes from three to two. Another recommendation was that at least half of the officers assigned to each battery be selected from those who have had previous experience in the conduct of a C. M. T. Camp. Still another recommendation was to the effect that Regular officers be given greater responsibility in the conduct of the camps, in order to carry over the instruction and discipline. This recommendation, if adopted, would tend to lessen the training received by Reserve officers, and therefore is not concurred in by the writer as it is not believed necessary.

In addition to the number of contingents ordered to conduct the C. M. T. Camps in the future, there is another matter where reports indicate that improvements can be made. It was apparent that some of the officers, on reporting for duty, were not as well prepared as they should have been. Last spring, upon receipt of orders for the conduct of the C. M. T. Camp, the Third Coast Artillery District drew up a Schedule of Inactive Duty Training in preparation for duty with the camp. The schedule, which was based on three correspondence school subcourses and a number of appropriate training regulations, was very comprehensive—in fact it required more time for its completion than most officers were able to spare from their civilian duties. To make matters worse, considerable difficulty was experienced in obtaining some of the more important Training Regulations for distribution to the officers who had applied. Other officers applied for training so late that it was impossible for them to do any appreciable amount of work before reporting for active duty. It would be very desirable if a special correspondence school subcourse were prepared, covering the fundamental training required for this duty. In this way officers could receive credit hours for the time spent in preparation for the camp. At any rate it would appear to be to the best interest of all concerned to require Reserve officers, and especially those who have not attended previous C. M. T. Camps, to complete a definite amount of work in preparation therefor.

The great advantages of this form of training to the Reserve officer are summarized as follows:

a. It gives him experience in receiving, organizing, and training a group of men of the type and state of training similar to that which he would come in contact with in the event of actual mobilization. In order to

instruct this type of man the officer must know the fundamentals of the subject under consideration, which is not always necessary in the normal Reserve Camp.

b. It gives the Reserve officer an opportunity to exercise command, and to meet daily the thousand and one questions arising therefrom, the answers to which can be learned only through actual experience. While the hours of work are no longer than in the older form of Reserve Camp, officers found that their responsibility lasted twenty-four hours every day.

c. It provides a means for the development of Leadership—that requisite so essential to all military men above the grade of private.

d. Another advantage, which has not been mentioned elsewhere, is the contact established between the Reserve officer and the candidate. One fact which impressed numerous Reserve officers was the wealth of excellent officer material among the candidates. In spite of this only seventeen C. M. T. C. candidates were commissioned in the Reserves during 1927. It is hoped that the contacts made in camp will induce the Reserve officers to look up those outstanding candidates who live in their vicinity, and to encourage them to secure their commissions as officers.

The C. M. T. Camp was by no means a picnic, and but little time and energy remained after the day's work for social activities or for recreation at the neighboring amusement resorts. But it is significant that not an officer indicated in any way that he would have preferred the old type of training. The following remarks, taken from the reports of the various Reserve Camp Commanders, illustrate the reaction of the Reserve officers:

“The reaction of the Reserve officer was favorable. In spite of a very hard schedule and long hours, all expressed a keen interest and desire to progress in the camp instruction. It is the opinion of the Camp Commander that all the members of the Officers' Reserve Corps received invaluable training during their tour of duty. They earnestly hope that a similar schedule of training will be given during the next fiscal year. This was the unanimous expression of the Reserve officers.

“It has been a most valuable experience and one that should be followed through, gradually abandoning the present Officers' Reserve Camps.

“The tour of active duty has been not only highly instructive but also most pleasant from every standpoint.”

While there is much room for improvement in future combined training of Reserve officers and the C. M. T. C., the camp conducted at Fort Monroe during the past summer was exceedingly encouraging in all respects. A number of Regular officers who were connected with the camps, and who were certain that sooner or later it would be necessary for them to step in and bring order out of chaos, have yet to recover from their utter amazement at the orderly and businesslike manner in which the Reserve officers handled the job. In general they used sound common sense and excellent judgment, ripened by contact with men in their busi-

ness pursuits. What they lacked in experience and technical knowledge they made up in their earnestness and in enthusiasm for their work.

In this connection Capt. William Hesketh, 12th Coast Artillery, who was Senior Instructor during the entire camp, and who probably came into closer contact with both the Reserve officers and the candidates than any one else, states in his report:

"On the whole I consider this experiment has been very successful. The quality of the training of the C. M. T. C. has been slightly less than under Regular officers in former years but this difference will disappear after the second or third year as more and more Reserve officers receive experience in this type of training. The benefit to the Reserve officers has been immeasurable. They are unanimous in their opinion to this effect. The success of this camp bears testimony to the high quality of the majority of our Officers' Reserve Corps. The inefficient small minority will be quickly weeded out under this system to still further increase the efficiency and prestige of the Organized Reserves as a whole."

The new Government helium plant near Amarillo, Texas, produced during July six hundred and fifty thousand cubic feet of helium of an average purity of approximately ninety-seven per cent and at an estimated cost less than twenty dollars per thousand. This is the lowest figure at which helium has ever been produced. Only a single unit of the plant is now in operation. When the second unit is completed in the near future, the capacity of the plant will be far in excess of government requirements.

The average cost of helium produced at the Fort Worth plant during 1926 was about thirty-four dollars per thousand. At a cost of twenty dollars per thousand, a saving of approximately thirty-six thousand dollars is saved in a single filling of the Los Angeles. Shipments are now being regularly made in specially designed tank cars to the Navy at Lakehurst and to the Army at Scott Field and Langley Field for use in the dirigibles operated by these services.

Before the war helium had been obtained only in small quantities and cost two thousand dollars per cubic foot. Research by the Bureau of Mines in co-operation with other agencies has reduced the cost to two cents per cubic foot. No other nation can provide its dirigibles with this gas unless it should be discovered in sufficient quantity for production. The Graf Zeppelin in its recent flight around the world depended on the highly inflammable hydrogen for its buoyancy.

Mechanization in Europe

Great Britain

By MAJ. C. C. BENSON, Cavalry

EDITOR'S NOTE: *This is the last of a series of articles by Major Benson on mechanization in foreign armies. By special arrangement between the author and the editors this article appears in publications other than the COAST ARTILLERY JOURNAL.*

The question and development of mechanization is one of the live subjects of today. Great Britain is outstanding in its efforts and experiments in this field. Our own country is not behind. The Ordnance Department has devised and tested numerous motor vehicles for mechanization purposes. The entire 34th Infantry, Fort Eustis, is motorized at the present time. During the period October 7-November 3, the First Cavalry Division conducted maneuvers in the field in the vicinity of El Paso. Not the least important phase of these maneuvers was the part played by Troop "A", First Armored Car Squadron—an armored car unit developed since the war.

The Coast Artillery is proud of its ubiquity. If the target is under the water we turn it over to our submarine miners; if it is on the surface our big guns know what to do with it; we have made air bombing and ground strafing something more serious than a joy ride. Nor did we hesitate, during the Big Show, to leave the beach line and follow after the army in the field with our trench mortars, our tractor-drawn, and railway artillery. Perhaps when we next go out to help the Field Artillery we'll find some of our targets to be mobile pill boxes, battleships of the land, or galloping little sixty-mile-an-hour demons such as Major Benson mentions in his articles.

THE British expect mechanization to overcome the dominant power of the defensive and to restore decisive maneuver in battle. Their present Director of Mechanization, Maj. Gen. S. C. Peck, C. B., D. S. O., sums up the situation thus: " * * * we are in a purely experimental stage—feeling our way; but personally I am convinced that mechanization has come to stay. It is the pivot around which future armies must organize * * *." The fighting machines that first appeared in action on the Somme thirteen years ago have risen to high estate. In Great Britain, at least, their technical improvement has kept pace with the rapid progress of automotive industries; and their tactical employment has become a matter of prime importance. Mechanization experiments, inconclusive as yet, have already worked a miracle—they have shifted the focus of military thought from the past to the future. Old methods are giving way to new; but in the present transitional period, no one can say definitely what effect the motor will have on the battlefield of tomorrow.

WORLD WAR PERIOD

British enthusiasm for fighting machines began with the men who saw the first tanks in action. A soldier's letter, written in September, 1916, and widely circulated in England at the time, gives a vivid impression of the amazement and delight with which those early tanks were received. "They can chew up barbed wire and turn it into munitions. As they run they slash their tails and clear away trees, houses, howitzers, and anything else

in the vicinity. They turn over on their backs and catch live shells in their caterpillar feet, and they can easily be adapted as submarines; in fact, most of them crossed the channel in this guise. They loop the loop; travel forwards, sideways and backwards, not only with equal speed but at the same time. They spin around like a top, only far more quickly; dig themselves in, bury themselves, scoop out a tunnel, and come out again ten miles away in half a hour." Slow, unwieldy, and mechanically unreliable though they were, some of these early machines crashed their way through strong German defenses; they terrified the German front line troops, and renewed British hopes for release from the hell of trench warfare. German leaders heaped scorn on their first clumsy efforts; but had they realized the moral effect of these machines, they might have come closer to estimating the true value of the new weapon.

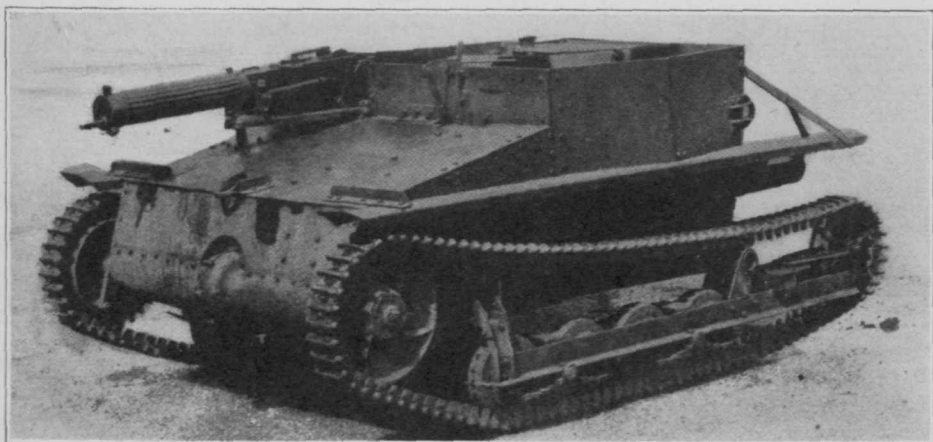
The tanks, having successfully passed their initial battle test, were rapidly improved. Sir Albert G. Stern in England and General Estienne in France independently fostered the tank idea, and it was largely through their individual efforts that the "chariots of assault" developed into effective weapons. It required, however, the smashing attack of nearly five hundred heavy tanks at Cambrai to convince the Allied leaders that this new weapon could overcome the power of the defensive. From then to the end of the war, the Allies employed tanks in increasing numbers; and had the war continued, 1919 would have witnessed great battles with tanks in the leading role. When the Armistice was signed, work was in progress on three thousand five hundred French light tanks, five thousand British heavies, fifteen hundred British-American extra heavies, and twenty-one thousand, eight hundred and ninety tanks of various types for the American Army. *A total of over thirty thousand tanks would have been ready for action in the Allied armies in the Spring of 1919.* Germany was making strenuous though belated efforts to supply her forces with tanks. Few military men knew the extent of the tank program that was under way when the war ended; and right now there are even fewer who would know how to use thirty thousand tanks. Even when employed in limited numbers, tanks had established the fighting machine as a powerful offensive weapon. They helped to restore movement to a situation that had become rigidly stabilized; reduced materially the casualties of attacking infantry; lowered German morale and raised that of the Allies; and pointed the way to one sure line of future development.

PRESENT CONDITIONS IN GREAT BRITAIN

These costly lessons from combat experience have stuck by the British army. It ended the World War with the best tanks then in existence, and definite ideas on how to use them. Since the war, Great Britain has spent large sums to develop better fighting machines and improved tactical methods. Her responsible civil and military leaders are definitely committed to the policy of extension mechanization for Regular Army units;

she has the necessary scientific and industrial resources to equip, man, and maintain large mechanized forces. There are naturally differences of opinion on when and how to apply this policy, and the usual dearth of peace-time funds for the necessary changes. Measures already taken have undoubtedly placed the British in the forefront of mechanization progress, and there they propose to stay.

Before going into the details of this subject, let us consider some of the factors that affect British mechanization plans. Industrially, the World War was disastrous to Great Britain. Her complicated industrial machinery was thrown badly out of alignment for commercial purposes; the progressive substitution of oil for coal, and extensive boycotts in India and China on British manufactured goods made matters worse. Furthermore, British



CARDEN-LOYD MACHINE GUN CARRIER

manufacturers have had to meet stiff competition from European and American producers. For ten years, unemployment has been, as it still is, the most vital domestic problem of the government. Within the past year, conditions have taken a turn for the better; and though there are still over a million workers unemployed, business is picking up. Despite hard times, the British found money for army mechanization experiments, and improved industrial conditions will probably bring more liberal appropriations.

The peculiar situation of the British army hinders any radical change in organization. The Cardwell system binds home organizations to similar units in India; and so long as this system remains in effect, the organization, equipment, and training of the correlated units must be such as to make them interchangeable. In India, the most likely scene of conflict is on the northwestern frontier, in a mountainous region entirely unsuited to machine warfare; consequently, the Indian Army authorities are loath to accept the full measure of mechanization that is desired for home units.

These home units may at any time be united into an expeditionary force for service in a theatre of operations where conditions differ materially from those in India. Clashes between Moslems and Jews in Palestine may require Great Britain to send an expedition to preserve order there. Detachments of aircraft, armored cars, and motorized foot troops have already been dispatched to the danger zone. British commitments under the Locarno Pacts indicate Europe as another possible theater of war. There the terrain is generally suitable for mechanized warfare; moreover, a British expeditionary force could rely upon the cooperation of Allied troops organized on traditional lines. Under these circumstances, the expeditionary force might well be completely mechanized. The British im-



CARDEN-LOYD, WITH MORTAR

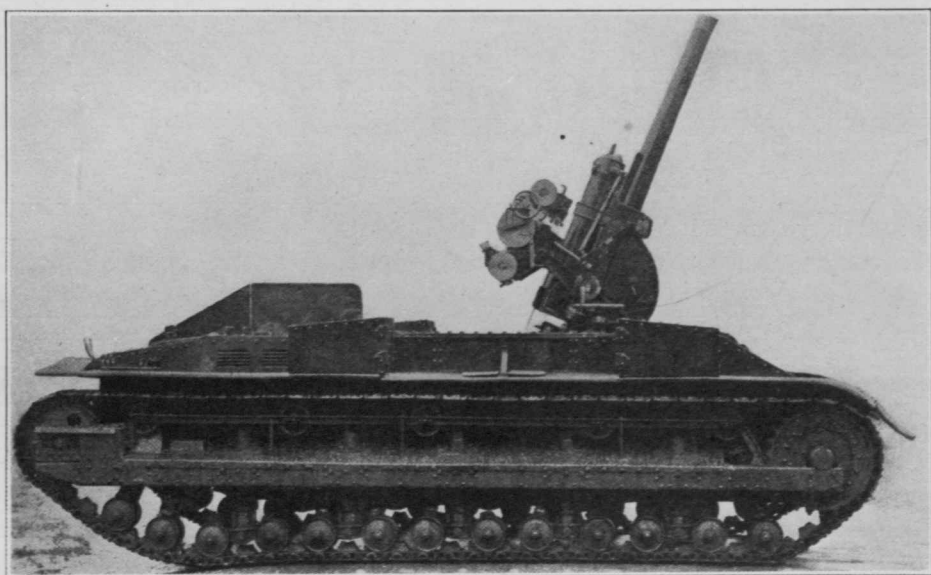
provided a Tank Corps during the World War, and an excellent job they made of it; but no such deliberate measures will do for an expeditionary force. It must be ready to go quickly when the need arises. Hence the protagonists of mechanization urge the immediate organization of strong mechanized units. The British War Office, prodded by enthusiasts at home and repressed by conservatives in India, is in a quandary. Its efforts to reconcile divergent but interdependent interests will take time, and until a satisfactory settlement is reached, British plans for extensive mechanization will be handicapped.

RECENT EXPERIMENTS

In the meantime, experiments in mechanization are under way in England. Fortunately for the progress of these experiments, the British Tank Corps has enjoyed a continuous existence ever since its creation as a new combat branch during the World War. It has preserved the high ideals

of service that characterized the Tank Corps pioneers, and has given continuous study to the organization, equipment, training, and tactical employment of mechanized units. Tank Corps units are not normally included in corps or divisions; they are considered as part of the G. H. Q. reserve. The Tank Corps at present includes only four tank battalions and eleven armored car companies; but these units are well equipped and have had a great variety of practical experience in England, Egypt, India and China, in the mechanical and tactical operation of their vehicles. They are well qualified to set the standard for whatever mechanized forces are organized.

The first of these forces, a mechanized brigade, was formed in 1926 to



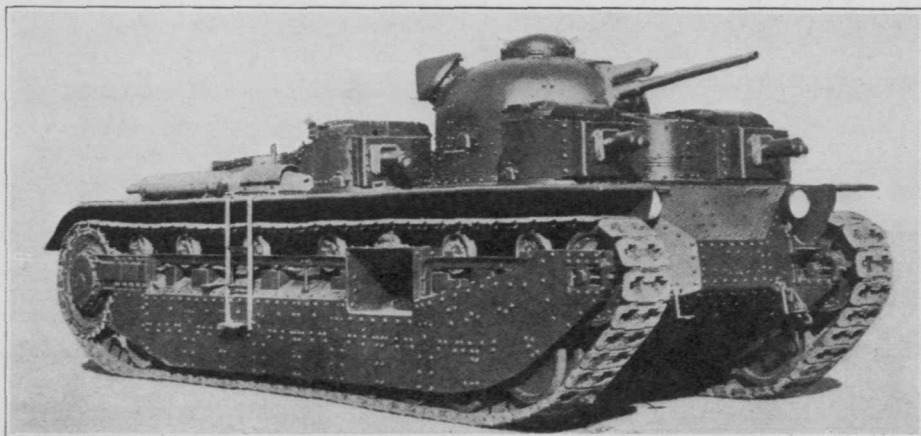
18-POUNDER ON SELF-PROPELLED MOUNT; EARLY TYPE

study the organization and tactics of a unit equipped with armored fighting machines. During 1927 and 1928 this force participated in maneuvers with infantry divisions and cavalry brigades. Having learned what they could from the operations of this force, with the equipment available, the War Office disbanded it. The 1929 program involves a number of experiments with the details of organization and equipment of various small units, but is principally concerned with a combination of motorization and mechanization as applied to two infantry and two cavalry brigades. Tests of various machines, including self-propelled gun mounts, already begun with two field artillery brigades, are to continue. This apparently radical change in the development of mechanization projects indicates expediency rather than policy. The Armored Force was discontinued in order to make its component units and vehicles available for important work in other

closely related fields. As in our own service, the real problem of mechanization is to work fighting machines into the tactical thought and practice of the army. When the older branches accept partial mechanization for their own purposes, they will better appreciate the need for separate fast-moving mechanized forces, and will understand how to cooperate with those forces. By enabling the older branches to educate themselves, British mechanization experiments of this year will have a far-reaching influence upon the army as a whole.

INTERESTS OF VARIOUS BRANCHES

So much has been written about the British mechanized maneuvers, by observers and participants, that it is hardly worth while to recount the



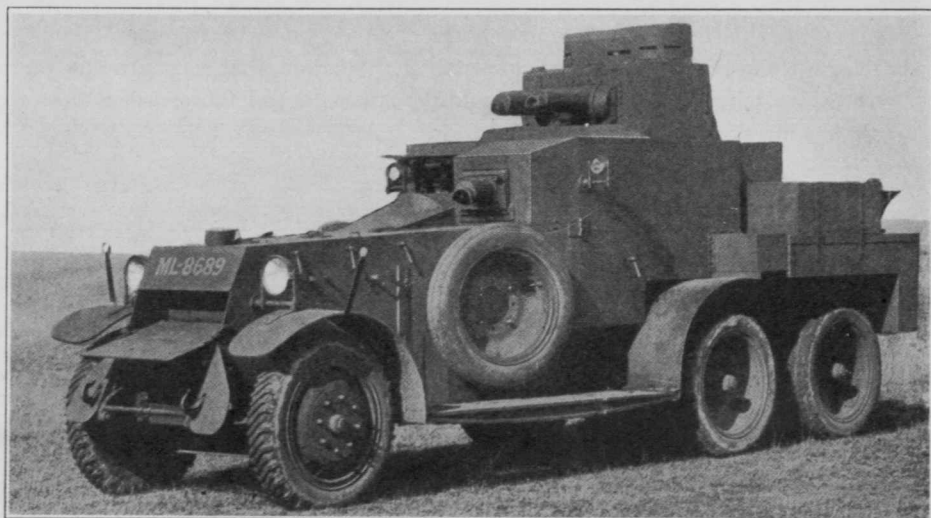
HEAVY TANK

details here. However, some items that apply to particular branches are of special interest.

Cavalry:

For close reconnaissance, the British consider the horse soldier indispensable and irreplaceable. Nevertheless, two cavalry regiments have had their horses replaced by armored cars. All of the home cavalry regiments have been supplied with light six-wheeled trucks for their first line transport. Each of the two cavalry brigades employed in the 1929 mechanization experiments has Carden-Loyd machine gun carriers in place of the light six-wheelers previously used; some "Baby" Austin scout cars for use on reconnaissance; and a mechanized 3.7-inch howitzer battery. On the march, the howitzer carriage is mounted on a caterpillar trailer which is towed by a Carden-Loyd. This rig appears to be awkward but it is reported to work well enough for experimental purposes. These cavalry brigades are assigned duties, particularly in difficult country, for which completely mechanized units are unsuitable.

The present British armored cars have limited ability to surmount obstacles encountered on the road, or to maneuver across country except on the most favorable terrain. The Rolls Royce car weighs eight thousand three hundred pounds; and the new Lanchester, with much heavier armor than heretofore, thirteen thousand five hundred pounds. Several different models of the wheel and track type have been tried without much success, but experimental work along this promising line continues. The service machines carry less armor and fewer weapons than tanks; they are, however, silent, fast, and reliable mechanically. Their great radius of action



LANCHESTER ARMORED CAR

makes them particularly suitable for long distance reconnaissance. Where the terrain permits, armored cars are used on many of the security and reconnaissance missions that were formerly assigned to cavalry detachments.

Engineers:

Remarkable progress has been made in the development and use of bridging equipment, including pontoons, for mechanized forces. The pontoons are light, collapsible, and can be conveniently nested. The roadway of the pontoon bridge is made with duckboards that can be placed in position quickly. It is proposed to carry the pontoons and some of the heavier materials on specially constructed trailers. The engineer units of the mechanized formations are provided with six-wheeled trucks, and have power driven tools to supplement their normal equipment.

Chemical Warfare:

All mechanized force troops have been equipped with training gas masks. Exhaustive tests have demonstrated that tanks can be operated

successfully under all expected field conditions by men wearing gas masks. The Superintendent of the British Chemical Warfare Research Department states, "We satisfied ourselves that it would be impossible to get in the field a sufficient concentration to appreciably affect the engine." To make tanks gas tight, and to provide adequate ventilation at the same time, is considered impracticable at present. The tank developed most recently, Vickers sixteen-ton model 1928, has no special provision for protection against gas.

Experiments have been conducted with Carden-Loyd machines as carriers for smoke producing devices; but though the smoke produced was satisfactory, this line of development has received no encouragement from the Tank Corps. An armored vehicle with a weapon that can fire smoke shells, either when in motion or stationary, is considered more useful than the smoke producing machine.

Signal Corps:

Radio telephone and telegraph have been developed for armored fighting machines, and have been in successful use since 1926. Short orders, suitable for drill and maneuver purposes, are sent readily by radio telephone. Changes of formation, direction, and speed of the fighting machines can thus be directed and controlled in a way that permits full utilization of their mobility. The use of signal flags within platoons has been tried and found wanting; at high speeds visibility is none too good at best and when fog, smoke, or dust interfere, the signal flags are useless. Two standard radio telephone sets are in use; one, powered by a gasoline motor, has a range of over fifty miles; the other, for which accumulators provide the power, has a range of five miles. Both can be used for wireless telegraphy with greatly increased ranges. Even with these facilities, which are probably better than those of any other army, the British are still confronted with many unsolved problems connected with the control of mechanized units.

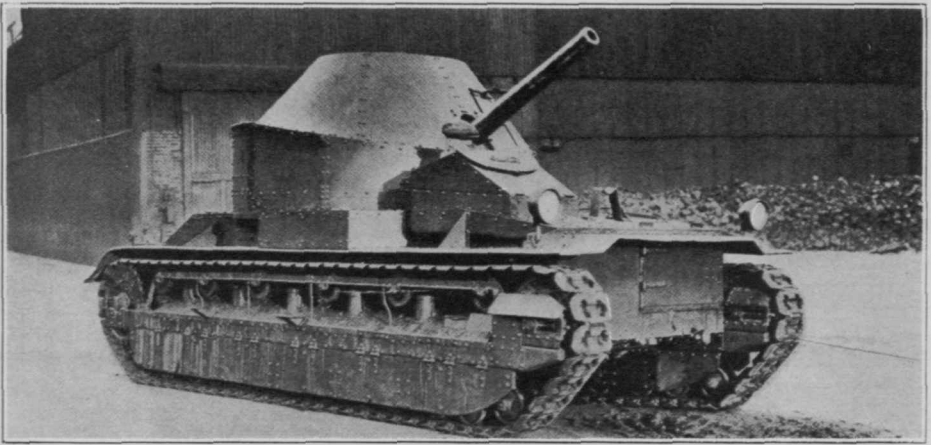
Successful tests have been made with a Vickers gyroscopic direction indicator. It is said to be a non-magnetic, compressed air operated device, which is far more reliable than a compass for the navigation of a tank.

Artillery:

Must we still figure in terms of six-horse teams when powerful motors are available? Why the three-inch gun for divisional artillery? If the motor can be used, why hitch it to a comparatively light weapon? To what extent can motors increase the power and mobility of artillery? These are a few of the questions that British experiments have aroused.

Extensive tests have been made with wheeled and half-track tractors, trailers, armored caterpillar tractors (Dragons), and self-propelled mounts. All mobile anti-aircraft artillery is now motorized, the guns being mounted on trailers which are towed by six-wheeled tractors. Anti-aircraft equip-

ment for the 1929 experiments includes machine guns and anti-aircraft guns mounted on special cross country carriers. The carriers provide armored protection for the engine, the driver, and for the members of the gun crew except when operating their weapons. Two 3.7-inch howitzer batteries, for the close support of cavalry, have been experimentally provided with caterpillar trailers of the Carden-Loyd Mark VI machines. Three brigades of field guns have been motorized with Burford and Crossley half-track (Kegresse) tractors, and "Dragons". The Dragons are apparently in excellent standing at present, presumably because they do the work and fit neatly into the mechanized force. Weight, about nine tons; speed, sixteen miles an hour; capacity, eleven men, one hundred and twenty-eight rounds of field gun ammunition, and a 3.3-inch gun in tow;



18-POUNDER ON SELF-PROPELLED MOUNT, LATEST TYPE

engine, air-cooled, the same as used in the medium tank. The latest model Dragon has proven satisfactory as a tractor for medium artillery, and has definitely been adopted for that purpose.

Experiments with self-propelled mounts for various artillery weapons have been continuous since the World War. The most recent development is probably the three-inch mortar mounted on a Carden-Loyd Mark VI. Two batteries with these experimental mounts are being tested for use in the close support of infantry. Self-propelled mounts for field guns have had their troubles. The first type produced carried a gun that could be used either as a field piece or an anti-aircraft gun—weight, twelve tons; speed, fifteen miles an hour; capacity, one eighteen-pounder gun, six men, and seventeen hundred and fifty pounds of ammunition; engine, air-cooled, the same as used in the medium tank. A second model gave the crew some protection. The latest model has abandoned the dual purpose idea; it provides simply an armored field gun on a tank chassis, and is in fact nothing more or less than a tank.

Some batteries are now equipped with radio telephones. To provide transportation for battery headquarters and instruments, a car with a specially designed body is to replace the touring car formerly used.

Infantry:

The following significant change appeared in the 1926 revision of the 1924 training regulations:

1924—Infantry in the end wins battles. To enable it to do so, the cooperation of other arms is essential. Separate and independent action by the latter cannot defeat the enemy.

1926—The proper cooperation of all arms wins battles and enables the infantry to confirm the victory.

What this change connotes is a question that British captains are called upon to discuss as part of their promotion examinations.

The infantry was represented in the Armored Force of 1926-27-28 by one battalion—three machine gun companies of twelve guns each, and one rifle company. Six-wheelers and half-track trucks were used for transportation. The 1929 experiments involve the partial motorization of two infantry brigades—the 6th at Aldershot and the 7th at Tidworth. The infantry battalions of these experimental brigades are not motorized. These tests include the use of Carden-Loyd armored tractors and caterpillar trailers for the transportation of men, ammunition, and weapons. The tractor is comparatively slow, but inconspicuous, light, simple and cheap. It provides partial armored protection for the driver and gunner, and carries either a .303 machine gun with three thousand five hundred rounds of ammunition, or a three-inch mortar which has a range of two thousand yards. The machine gun can be fired from the machine, but normally, as with the mortar, it is dismounted for firing. When traveling at six miles an hour, the carrier is so rough riding that it would be difficult for a machine gunner to hit a haystack a hundred yards away. The trailer can run on either wheels or caterpillar tracks; accommodates four men or extra ammunition as desired; and when equipped with tracks, has good cross country ability. The .8 antitank gun, on its own trailer mount, is towed by the tractor; the .5 antitank gun can be mounted on the tractor. All of these weapons are intended for the close support of the infantry. Their tactical uses, as well as the best methods of transportation, are being worked out. In addition, the attachment of a light tank battalion to each of the experimental infantry brigades will help to decide whether tanks should be an organic part of the infantry brigade. The idea that fighting machines must actually accompany associated troops has lost ground, but infantry commanders are not yet ready to concede this point. Tactical ideas change slowly, but it seems futile to tie fast, bullet-proof, modern tanks to slow-moving, unprotected infantry. Results of this year's test should throw some light on this question.

The following items from the *Army, Navy, and Air Force Gazette*,

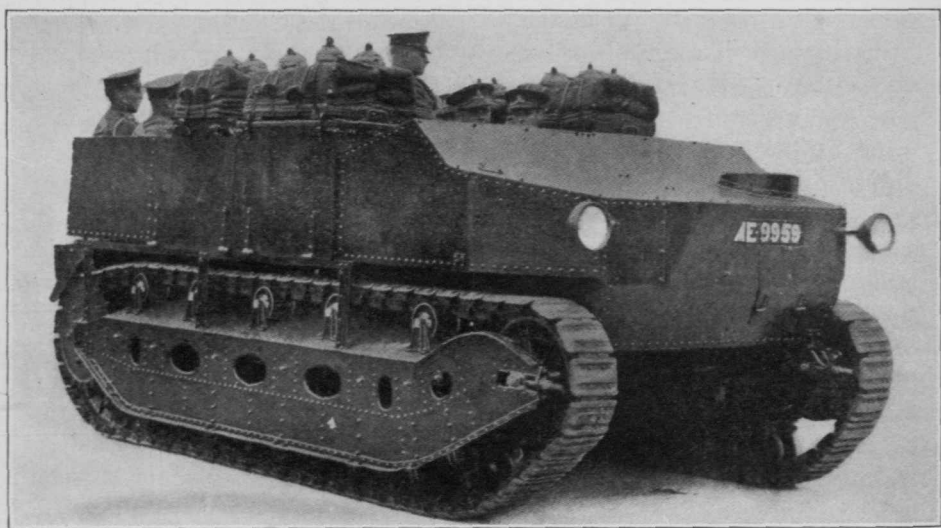
give an idea of the operations in which these brigades have taken part. Referring to a rear guard action of July 26-27, the *Gazette* says: "The Southern Commander * * * decided to make vigorous use of his light tanks. * * * Shortly after dawn * * * the whole of the Southern light tanks and the 1st Battalion, The King's Own Yorkshire Light Infantry, with motor-carried machine guns and mortars, passed over the flank and rear of Strawberry Hill in waves, covered by a battery of field guns firing over open sights. The attack consisted of a company of light tanks as the first wave. They were followed by the light infantry who, in turn, had two companies of light tanks behind them, the last of which was taken in flank by a company of Northern medium and light tanks coming southwards from the neighborhood of the Jolly Farmer Inn. There ensued a most entertaining mêlée in which the Carden-Loyds (simulating light tanks) dodged about like infuriated wasps, trying to elude their larger and heavier opponents. In the tumult and the dust, the task of the antitank gunners in distinguishing friend from foe became virtually impossible."

Another rear guard action, August 30th, in which the Reds alone had fighting machines, elicited the following: "Nothing had been heard of the Red medium tanks, and rumor says that they remained quiescent in Savernake Forest throughout the entire day and the early stages of the night. At this period the fog of war set in, and was in no way reduced by the presence of an effective Salisbury Plain mist which reduced visibility to less than fifty yards. An odd intermixture of friend and foe began which did not end until well after the cease fire. * * * Shortly after dawn, while the mist provided an excellent substitute for the natural darkness of the previous night, Reds' medium and 'light' tanks were sent across country to intercept Blue's passage to the Roon crossings. At this point confusion became complete. The tanks found their way with exceptional skill to the point indicated * * *. The infantry of the two sides became intermingled in a way which would defy the greatest skill in description possessed by an honest historian."

Tanks:

The British have as yet no light tanks, though a five-ton caterpillar machine, designed for a maximum speed of thirty miles an hour, is now under construction. Particular effort is being made to develop light tank tactics by using a number of Carden-Loyd Mark VI machines to simulate light tanks. These machines are agile and inconspicuous, but are only partially armored and lack the ability expected of a light tank to surmount obstacles. The one-man machine, that caused quite a stir two years ago, is now in disfavor because its operation imposed too great a burden on the driver-gunner. Even the lightest machines, Morris-Martels and Carden-Loyds, are now designed as two seaters. Some 250 of these machines were available for the 1929 experiments. At least six different models of the Carden-Loyd machine have been produced to date, the principal changes

being towards enlarged fighting compartments and improved running gear. The fourth model of this series was supplied with wheels for the road and tracks for cross-country going; had four ten-inch rubber-tired track wheels on each side; and used rigid track suspension. Mechanical performance was fairly satisfactory, but the machine was unnecessarily rough riding. In the fifth model, an effort was made to relieve the jolting by mounting the track rollers in pairs on rocker arms. The latest model is considered an improvement over previous efforts, particularly with regard to track durability. Some of these machines, painted so as to be identified as representing light tanks, were assigned to medium tank battalions this Summer to permit experiments with tank organization and tactics.



DRAGON, MARK III

The Vickers medium tank, though hot, noisy, and underpowered, is far superior to the best of the World War tanks. It carries machine guns mounted for simultaneous fire to the front and flanks, and a three-pounder cannon capable of all-around fire. An interesting feature of this machine is its air-cooled engine which was especially designed for tank use. It has proven to be less troublesome than the water-cooled motor; is immune to freezing; and has shown high efficiency in hot climates. The British are apparently well satisfied with the air-cooled type of engine, because they have now installed it in their latest armored tractor (Dragon) for medium artillery, and are using air-cooled motors in their experimental tanks. Units equipped with these machines can march fifty miles a day for six days out of seven. It is estimated that about two hundred and fifty of these machines have been built. They are now standard equipment for tank battalions, all World War machines having been discarded.

Caterpillar tracks for tanks have received constant attention, because the track is the least durable and most troublesome part of the machine. The demand for high speed has put track designers to the test. As with automobile tires, it is the pace that kills. The best tires that Major Sea-grave could get for his famous "Golden Arrow" were guaranteed for only two minutes at the speed he required, though at ordinary speeds, the best commercial tires easily withstand fifty thousand miles of wear. The riveted track plates used on the Vickers Medium Mark I were replaced with steel stamped plates on the Mark II. With these plates, the track pins and bushings had to be replaced after one thousand miles, but the plates themselves were still in good condition. Further improvements have been made which give the track an estimated life of three thousand miles at speeds between twelve and eighteen miles an hour.

Three other endless tracks are worthy of note. The Jackson ball and socket track, first used on the Martel tanks, was designed to permit lateral motion of the track plates, so as to facilitate turning. Lubrication of the socket joints proved to be difficult and ineffective, and was finally eliminated altogether. Theoretically excellent, the Jackson track was a practical failure. A rubber jointed track has now made its appearance—no rubbing surfaces; no lubrication; some lateral flexion; noiseless; no appreciable stretch, hence no need for adjustment; fairly simple manufacture; fewer jolts than with the all-metal tracks; two thousand five hundred miles without maintenance and still in excellent condition. These excellent qualities are somewhat neutralized by the excessive weight of the track assembly. The Kegresse rubber and fabric track has passed through several test and development stages. Originally invented in Russia, it has been highly developed in France and extensively tested in England. The latest design has driving lugs spaced along each side of the endless fabric band, and rubber-padded metal shoes. On hard roads, the metal shoes take much of the wear; on soft ground, the entire bearing surface makes contact and thus reduces the unit pressure. Advantages claimed for this track are: good capacity to cross rough country, no joints, no lubrication, easy to replace worn lugs or shoes, no damage to roads, lighter and possibly less vulnerable than metal tracks, silent, permits higher speeds than do most metal tracks. On a half track vehicle carrying two thousand pounds and dragging a field gun, this track is said to have gone two thousand five hundred miles without much deterioration. For similar duties, the French expect their latest Kegresse tracks to give seven thousand five hundred miles of service. Although the French are equipping some of their light tanks with Kegresse tracks, the British appear to have used the Kegresse on half track trucks only.

Two of the British experimental tanks of recent design, indicate the trend of development. The first of these, a Vickers machine weighing nearly thirty tons, was constructed in 1926-27. It carries four Vickers machine guns, one of which is mounted for anti-aircraft fire; and one three-

pounder gun capable of all around fire. Maximum speed over twenty miles an hour; controls, hydraulic; engine, air-cooled, said to be the most powerful of its kind in existence, probably Diesel. The fighting compartment is separated from the engine room by a double bulkhead, and is ventilated by means of a fan. The driver is placed farther forward than in any previous model, so that he can see obstacles encountered in cross-country driving. Tanks of this weight are not regarded as suitable for normal assignment to a mechanized force; but as the need for their use may arise, it was considered advisable to build an up-to-date pilot model.

Satisfactory tests of this heavy machine were followed in 1928 by the construction of a sixteen-ton tank of similar design. The new medium machine is intended as the principal weapon for decisive action in a mechanized force. It has a sustained speed, on normal terrain, of sixteen miles an hour; and is capable of making thirty-two miles an hour if pushed. Other characteristics are briefly as follows: armor on vital parts proof against .8 caliber bullets, elsewhere .303 armor piercing bullets; ground clearance about sixteen inches; well-sprung suspension; no special protection against gas; equipped with radio phone; engine in rear, one hundred and eighty horsepower air-cooled Armstrong-Siddeley. The crew consists of four men: driver, well forward; first gunner with an all-around-fire three-pounder gun and a .303 Vickers machine gun mounted together; second gunner with a pair of .303 Vickers machine guns; third gunner with two .303 Vickers machine guns, of which one is mounted for anti-aircraft defense. Though not so heavily armored as the French NC model 1927, this machine has more speed and more fire-power than any other known tank of its size. It is so far superior to the present standard medium machines that Great Britain would no doubt be pleased to sell the older models to any prospective enemy.

The Mechanized Force:

The variety of machines contemplated for use in British mechanized forces is rather surprising. There is an evident tendency to create a special vehicle for each particular type of duty, though multiplicity of types means confusion in supply and operation. The caterpillar machines proposed include: one-and-a-half-ton machines like the Carden-Loyds and Morris-Martels, primarily for reconnaissance and for duty with the infantry; light tanks for reconnaissance and combat; medium tanks for decisive combat; artillery tanks for the close support of other fighting machines; special anti-aircraft gun mounts; "Dragons" for hauling medium artillery. Wheeled vehicles range from the seven horsepower Austin scout car to the thirteen thousand five hundred pound Lanchester armored car, with two, four, or six-wheel drive. In addition, there are many different types of trailers. The extent to which experiments have been carried has given rise to an assumption that many of the experimental types will be available for eventual use in quantities when permanent

mechanized forces are organized. The British have purchased manufacturing rights on some promising foreign products, have borrowed progressive technical methods wherever they could be found, and have spent money liberally on numerous different experimental models. It has finally become apparent that the light tank is essential to the formation of a properly balanced mechanized force. An increasing number of British officers in the using services are becoming light tank enthusiasts; but this latest change in their desires has hardly had time to register on the drafting boards of the designers. When the British develop a good light tank, some of the present types will no doubt go into the discard, and with them will go much of the confusion from British thought on the composition of a mechanized force. Efficiency in a mechanized force as a whole demands simplicity in all things—the fewer the types of vehicles, the better.



ANTITANK GUN, TRACTOR AND DETACHMENT

A mechanized force, like the Navy, must have well-established bases, advanced depots, and efficient communications. Supply governs mobility. The force commander will naturally exploit the resources of the theater in which he operates, and by paying cash for what he needs, may be able to reduce his demands upon the normal supply agencies for food, oil, grease, and gasoline. However, he must rely upon stores carried, those delivered by airplane, and the normal supply agencies for spare parts, ammunition, and other items that are not locally procurable. The proper organization and efficient operation of supply echelons is vitally important to a mechanized force, for unlike men and animals, machines must have full rations.

The old phrase, "fire and movement," takes on new significance in British mechanized tactics. The fighting machine crews are protected by armor; they fire while moving and their movement often involves shock action. The fire-power of the modern machines is formidable; the speed with which they charge increases the terror inspired by their power to crush. If the ground is too rough for accurate running fire, the machine can use shock action; or move to a more favorable area and renew the attack with better chances of success. Fire for destructive effect may be

supplemented by the release of gas or smoke from containers in the machine. With comparative security, provided by speed and armor, the machine can employ a more effective combination of methods than is now possible with any other combat agency. The fighting machine has become the strongest "triple threat" member of the combat team.

British mechanization experience places a greater premium than ever upon leadership. The new force will require the firm guidance and control of a master's hand to exploit its powers to the full. On suitable terrain, a mechanized force has more mobility, more fire-power, and more crushing power than cavalry. Like cavalry, it can operate for a limited period independently of other troops; and for a few days, can cut loose from external sources of supply. It can create opportunities for decisive action, and can then concentrate quickly upon the decisive point. It can move much more rapidly than infantry, and is less vulnerable to gas and air attacks. By threat alone it can immobilize infantry that lacks effective protection. In short, a mechanized force, even with the present crude machines, is a powerful weapon that will demand from its leader sound judgment, quick decisions, and impetuous bravery on the battlefield. To find these qualities fully developed and combined in one man is rare indeed.

The 1929 mechanization program, involving as it does the disbandment of the Armored Forces of 1926-27-28, is bitter medicine for those who labored to build up that force. They would prefer to maintain it intact, and develop it as a technical and tactical laboratory for future mechanized units. Effective methods for reconnaissance and the transmission of information about the enemy and the terrain, require close cooperation between ground machines and aircraft—cooperation which can be developed only by combined training. Night marching, particularly when there has been no opportunity for previous reconnaissance of routes, should be practiced to determine powers and limitations. Methods of control must be developed; the use of command planes, radio, special maps, navigation aids, and other devices that can aid the commander, must be developed. New forms of combat, with increased speed in all phases of the operations, should be worked out, so that the full powers of the new weapons can be utilized. These problems can be solved only in an actual mechanized force, like the one that was recently disbanded. There were and are many excellent reasons for the continuous maintenance of such a force. However, its maintenance involved heavy expense. The British authorities considered that the possibilities of available equipment had been amply demonstrated, and that new equipment would be required to justify further operations of a mechanized force. While the new machines are being built, the old ones will serve to carry mechanization ideas into the infantry and cavalry. To discontinue the Armored Force even for one training season means the sacrifice of much progress that has already been made;

but the sacrifice will be well justified if it opens the way for changes in the organization, equipment, training, and tactics of infantry and cavalry.

WIDER HORIZONS

Continual change is the principal feature of British mechanization. Rapid changes naturally result from experimental development work; but the cause of these changes—technical and scientific progress—is a continuing factor which will be increasingly potent. For thousands of years the battlefield mobility of combat troops has remained practically constant. Now comes the fast motor-driven fighting machine, and with it the certainty of drastic changes in the tactics of land warfare. Navies have improved their weapons and their mobility simultaneously; consequently, modern naval tactics have evolved gradually. If the Navy had passed at one bound from wooden galleys to armored cruisers, what would have happened to wooden galley tactics? Centuries of tactical evolution would have been condensed into a decade of tactical revolution. A similar decade now confronts the Army, and it will be a period of intense activity for officers who seek to keep abreast of the times. The cost of a fighting machine is small compared to that of a ship; and with the world's automotive resources at the disposal of military designers, technical development will be far more rapid than is possible in naval practice. Army commanders of the future will have their fleets of armored ships on the battlefield. The presence of fast fighting machines will modify the tactics of other combat elements; and as the machines are improved in mechanical design, their own tactical uses will change. If we may judge from naval experience, and from facts already established by British experiments, mechanization of ground troops in the Army will act as an antidote for stagnant tradition.

A ground shipment of the major portion of the fire-control equipment for the 16-inch project at the harbor defenses of Balboa, Canal Zone, has been made. The remainder, consisting of instruments not yet in production, will follow as soon as manufactured. Sufficient equipment has been furnished, however, to allow target practice.

Anti-Aircraft Gunnery (British)

By CAPT. V. R. KROHN, M. C., R. A.

EDITOR'S NOTE: *Some time ago (June, 1929) we published an article in the JOURNAL by Lieut. John R. Burnett, C. A. C., on the subject, "Organization and Employment of British Antiaircraft Artillery." More recently in The Royal Engineers Journal we read the following article, delivered as a lecture, by Capt. V. R. Krohn, M. C., R. A., at the S. M. E. Chatham, early this year. We believe Captain Krohn's lecture is authoritative and since there are a few statements at variance with those made by Lieutenant Burnett we publish Captain Krohn's article for the purpose of correcting some impressions which might have been made by the previous article. We believe our readers are interested in the artillery progress of other nations, especially in anti-aircraft. Captain Krohn brings us up to date so far as the British are concerned. Since his lecture was prepared for delivery before a non-technical audience he goes into the elementary principles in very easily understood non-technical verbiage. After reading his article we can not understand why the British are generally set down as having no sense of humor.*

INTRODUCTION—The period of a normal lecture is too short for more than a general outline of the various and somewhat intricate problems confronting the A. A. gunner. If, therefore, I appear to pass some matters of interest rapidly, the shortness of time is to be blamed.

Reasons for Ground A. A. Defence—The first line of anti-aircraft defence is the aeroplane.

An aeroplane cannot, however, remain in the air continuously. The average "fighter" carries sufficient petrol for from two to two and a half hours' flight. Allowing for overhauls, etc., in order to keep one aeroplane patrolling continuously during the hours of daylight in Summer, a complete "flight" of six machines with their pilots and ground staff is needed. One has to remember also that the pilot himself can only fly for a limited number of hours each day.

From this we see that unless we had an almost unlimited supply of aircraft and pilots, some other form of A. A. defence must be found to supplement the defenses in the air and it is for this purpose that ground A. A. defences were introduced.

The primary role of ground A. A. is obviously the attack by fire of hostile aircraft with the object of destroying them, but there are other almost equally important roles such as:

- (a) breaking up enemy formations to allow our fighters to deal with the units thereof.
- (b) pointing out hostile aircraft to our own patrols.
- (c) protecting our own artillery observation aircraft from hostile attack, by means of barrage fire, or by direct fire on the enemy machine.
- (d) protecting our observation balloons as in (c) above.
- (e) protection of vulnerable points or areas against attack by bombing aircraft.
- (f) recording movement of all aircraft, particularly hostile. From

these records very valuable information can frequently be deduced by the General Staff.

What A. A. have we got?—At present we have to have A. A. units for the following jobs:

- I. Expeditionary Force.
- II. Defence of London.
- III. Defence of Home Ports.
- IV. Defence of Ports Abroad.

For the Expeditionary Force and London Defences we have A. A. units grouped into Air Defence Brigades.

For home ports and ports abroad special organizations are arranged depending on local requirements.

The composition of an Air Defence Brigade is shown on the diagram.

Guns—The standard gun for all purposes is at present the 3-inch 20-cwt. A. A. gun. This throws a sixteen-pound shell to a maximum height of about twenty-one thousand feet in about thirty seconds.

Actually its effective height is between sixteen thousand to eighteen thousand feet, for which the time of flight is about twenty-five seconds.

The sixteen-pound shell can be either H. E. or shrapnel. In the former case the shell breaks up into about one hundred and fifty pieces averaging a little less than two ounces in weight.

H. E. is the normal type used, and is issued with shrapnel in the proportion of eighty-five per cent to fifteen per cent respectively.

The shrapnel is used mainly against low flying attack, where the forward effect of the shrapnel bullets is useful, and also for putting low barrages over places such as bridges, where the use of H. E. would be dangerous to troops on the ground.

Experiments are being carried out with a 4.7-inch A. A. gun, but this will only be used for fixed or semi-fixed defences, as it is too heavy for mobile work.

Fire Unit—In all cases the basic minimum fire unit is the two-gun section.

Whenever possible, however, four-gun fire units will be used for two reasons:

- I. Volume of fire.
- II. Better and more economical control.

How does A. A. get about?—We have at present three types of platform on which we can carry our 3-inch gun and mountings, and in each case the gun and mounting are identical:

- I. Platform travelling A. A. mounting No. 2 Mark 1.

This was introduced into the Service in 1928. It is a trailer type platform with four wheels, and towed by a four or six-wheel drive tractor. In action the weight is taken on four jacks, but in an emergency the gun can be fired from the unjacked platform without danger. The platform is well

sprung, and can travel safely at any speed that a Service tractor is likely to be capable of. It is steady in action, and the gun can be fired horizontally without undue shaking. It can be got into and out of action in two or three minutes.

Expeditionary Force units are now being equipped with this.

II. Platform travelling A. A. mounting No. 1 Mark 1.

This is what is generally known as the semi-mobile platform. It is square in plan, and can be fitted at will with two detachable wheels. At each corner a girder is hinged, which carries a long jacking screw at the outer end. When in action the girders are swung outwards, forming a sort of starfish platform which can be levelled by means of the jacks. For travelling, the whole platform is jacked up, the wheels fitted, and then the girders can be folded in pairs, one girder of one pair being fitted with a sprung towing-eye which hooks on to a special towing-bar fitted to a tractor or three-ton lorry.

This platform is very steady when the gun is firing, but is sufficiently handy for moving when necessary. It takes from ten to fifteen minutes to get into and out of action.

III. Lorry mounting.

This platform is obsolescent, but is retained as a reserve mobile mounting. It is simply a lorry chassis fitted with four jacks, the gun being mounted on the floor above the rear axle. It is unsteady in action, and generally unsatisfactory.

Why not fixed like Coast Defence—Fixed A. A. guns on concrete platforms would be ideal for such defences as London, etc., but it would involve tremendous capital expenditure, and further enormous sums in maintenance.

Secondly, by having these semi-mobile mountings, which can be moved about comparatively easily, in the event of a war which does not involve fleet action, those guns earmarked for the A. A. defence ports abroad could be used on the L.-of-C., and so on.

Searchlights—These are necessary for night work. Without them, our own defending aircraft are also useless at night, so that searchlights are of the first importance. We have at present two types of searchlight:

I. 90-centimetre—mobile.

II. 120-centimetre—used for fixed defences only at present.

A new high-current density lamp is being introduced for the 90-cm. searchlight, which gives a considerable increase in range. Up to the present there is no lamp of this type for the 120-cm. searchlight.

The efficiency of any searchlight is so dependent on atmospheric conditions that it is often misleading to give any figures as to range. Under good conditions, however, the range of the new lamp may be taken as from six to eight thousand yards, measured along the beam.

The illumination required by the gunners is greater than that required

by the Air Force. When laid out for the illumination of targets for gun defences, the lights are spaced about *three thousand yards* apart all over the area. This system allows for illumination to be given by three lights at a time, and is then sufficient to allow the gunner to take the measurements he requires.

When laid out for the illumination of a target for the Air Force only, the spacing of the lights is increased to about three thousand five hundred yards.

For the gunners, it is necessary to get the target definitely into the beam. For the Air Force, it is frequently sufficient if the hostile aeroplane is to be found near the intersection of two searchlight beams which are following it by sound but not actually illuminating it. In such a case, a fighter machine can fly towards the intersection of the searchlight beams (which may even be above a bank of clouds), and locate the hostile machine either by the flame from its exhaust or by seeing it in silhouette, or faintly illuminated by diffuse light.

Sound Locator—The sound locator is a necessary adjunct to the searchlight, and is used for directing the light on to the target.

The principle upon which the sound locator functions is the use of the binaural effect obtained with the human ears. Briefly this binaural effect is as follows: A sound arriving from a fixed source which is not directly in front of an observer arrives at one ear a fraction of a second before the other, thus enabling the observer to get an idea of the direction from which the sound emanated.

If the observer commenced to turn his head in this direction, there would come a time when he would appear to hear the sound at the same instant, or at even intensity in both ears. He would then be looking in the direction from which the sound emanated.

The normal distance between the ears of a human being is only a few inches, and therefore the accuracy with which direction can be determined is not very great. If, however, we lengthen this base artificially to some feet, the accuracy is increased in direct proportion. Furthermore, if we introduce at the same time some means of amplifying the sound, we further increase the accuracy.

Both these points are achieved in the modern sound locator. Two large trumpets separated by a distance many times that of the ears, are mounted parallel to one another, and, from the narrow end, tubes, terminating in stethoscopes, are taken to the ears. The trumpets are of such a shape that amplification of the sound is obtained.

If now, these trumpets are mounted so that they can be revolved about a vertical point, the observer will be able to swing them until the intensity of the sound is even in both ears, and direction will have been obtained.

With the aeroplane target the job is somewhat more complicated, as we require direction in two senses, i. e., bearing and elevation. This is achieved

by using two observers, each supplied with a pair of trumpets. The trumpets, however, are now mounted on axes at right angles to one another, so that observation for direction can be obtained in two planes at right angles to one another. The movements now given are, therefore, about two axes, one vertical and one horizontal, so that bearing and elevation can be read from appropriate scales.

A further point which must be taken into account is that of sound "lag." With a fixed source of sound this does not affect the readings, but with a moving source such as the aeroplane, the readings on the scales at any given moment would correspond to the position of the target displaced from its present position, by the distance it travelled in the time the sound took to reach the observer.

For example: At the moment of observation, the aeroplane was three thousand three hundred yards away, or nine thousand nine hundred feet.

Sound travels at 1,100 feet per second, so that $\frac{9900}{1100} = 9$ seconds, is the time it took for the sound to reach the observer.

If the aeroplane was traveling at 100 miles per hour, = 50 yards per second, then at the moment of reading on the sound locator scales the aeroplane would be $9 \times 50 = 450$ yards further along its course.

At the present time this is allowed for by the use of a certain type of sight known as the ring sight, but space will not permit of a description being given. It is hoped, however, that in the future some more accurate and automatic method may be evolved.

Signals—As will be seen from the Table, there is a Signal Company to each Air Defence Brigade.

The units of this company are responsible for all the signals required within the Air Defence Brigade, down to Battery H. Q. in the case of the A. A. Brigades and to Sections in the case of the Searchlight Battalion.

Internal signals in the batteries, etc., are carried out with their own personnel and equipment.

The actual composition of the Signal Company is at present under revision.

A. A. Lewis Gun Sections—There is one of these sections to each A. A. Battery. At present it consists of eight A. A. Lewis guns carried in two vans or light lorries, but it is likely that these will be replaced in the near future by a multi-gun mounting, mounted permanently on a six-wheeled vehicle, as in this way a much greater volume of fire could be produced. If this scheme matures, it is likely that the total number of gun barrels will be increased.

The function of these guns is the protection against low-flying attack of units which have no protection of their own, such as ammunition, ration and supply dumps, etc. They are also used for picketing defiles, bridges, etc., in the line of march.

The existence of these guns in an area does not excuse units in that area from organizing their own A. A. Lewis gun defences.

What A. A. has done and hopes to do—Many of us still have vivid memories of seeing the hostile aeroplane in the sky, and anything up to two miles away, some A. A. shells bursting on their own. Or one saw a hostile plane travelling on a straight course, followed about five hundred yards behind by a string of A. A. bursts.

The first trouble may still occur. It was and will be due to the fact that the target turned just after the rounds left the guns, or at some time during their flight from the gun to the target. This is not the A. A. gunner's fault, although it was frequently thought to be so, and he came in for a considerable amount of scathing comment which was entirely undeserved.

The other case was due to inexperience and the lack of efficient fire control instruments.

During the Great War, A. A. gunnery was very much in its infancy; there were few instruments, some of which were merely adapted in a vain effort to solve a problem to which they were entirely unsuited.

Since the War, however, the development in A. A. gunnery has been more rapid than almost any other contemporaneous Service development, excepting always the improvement in aeroplanes themselves, but we have, I think, kept pace with them.

It has been calculated that it required to hit a target at the outset in 1914, one hundred thousand rounds. In 1916, ten thousand rounds. At the end of the War, three thousand rounds.

Now, we may reasonably place that figure at one hundred rounds. Of course, in peace time a figure of this sort can only be based on estimation.

In spite of indifferent A. A. shooting during the War, anti-aircraft fire accounted for one out of every twelve hostile aircraft brought down. This is a higher proportion than is generally realized.

What A. A. cannot do—We can compete with an invisible target only by putting up barrages, most wasteful in ammunition and the last resort of the A. A. gunner. We are, however, developing methods by means of which a barrage point is predicted, and a limited fire is opened at a given moment. If the prediction has been good, it is quite likely to have one or both of two effects if the hostile machine is a bomber, even though the aeroplane is not hit:

(a) It may turn it, or

(b) It may cause him to drop his bombs and go home.

Such results were frequently obtained from well-directed barrage during the War.

Some of the A. A. Gunner's Difficulties—(I) We are working in three dimensions, and if we consider the time factor which is all important, we then work in four dimensions.

Speed—(II) The speed at which our targets travel are at the bottom of our troubles. Nowadays a slow speed is one hundred m. p. h. A normal speed is one hundred and fifty m. p. h.

100 m. p. h. = 50 yds per sec. 150 m. p. h. = 75 yds. per sec.

Extreme Range—(III) We have to tackle our targets at extreme range in order to keep them away from our vulnerable points or areas.

This means that we are usually working at the most inaccurate part of our trajectory.

Observation—(IV) Any observations that are necessary, such as height, etc., are made very much more difficult by not only speed, but background. Certain types of sky give us beautifully defined targets, but on most apparently clear days there is a high haze which blurs outline and frequently completely obliterates targets.

The Gunnery Problem—Height. (I) With such a fast-moving target all the ordinary factors such as range, bearing, and so on, which are common to all gunnery and which are usually stationary once they are found, are changing very rapidly in A. A. gunnery. In a search for something which is likely to remain more or less constant we find that height should fill the bill. Unless disturbed, a pilot will fly at least at approximately the same height for considerable periods. Height is, therefore, the basic measurement in A. A. gunnery, and all subsequent calculations depend on obtaining the correct height.

Speed and Course—(II) For the same reasons, speed and course are likely to remain fairly constant. Height, speed and course are, of course, all subject to involuntary changes due to atmospheric conditions.

Three Assumptions—(III) In order to make any headway at all it has been found necessary to make the following assumptions:

That for a given target:

1. Height
2. Course
3. Speed

will remain constant over a short period.

Obviously, the shorter the period the better, but unfortunately we are limited in this by the performance of our gun. The shortest possible period at a given moment is the time that it will take the shell to reach the aeroplane (or the time of flight). This presupposes that no time at all is lost in making our calculations. I will try to show you in a minute, that we have practically achieved this now.

Measurement of Height—As is so often the case, we have, I regret to say, put the cart before the horse in A. A. gunnery. What I mean is this: Height being the basic measurement in A. A. gunnery, it is not much use thinking about anything else very seriously until we can get an accurate height whenever we want it. At the moment we can't do this, although

we can do almost everything else that is required with considerable precision.

We ought to get our height to within fifty to one hundred feet, but if you asked a surveyor to get you the height of a mountain six thousand feet high, he would take perhaps an hour to collect his instruments, another to take his readings, and calculate the answer. We want the answer in under 30 seconds.

At present we have two main systems:

- (I) The short base method.
- (II) The long base method.

(I) Short Base Method—This consists of the ordinary type of Barr and Stroud rangefinder, with which all branches of the Service are familiar, only it has a two-metre instead of a one-metre base. Attached to it is a complicated gear box which hatches out the height for you, when you mount the instrument on a levelled stand and feed it with angle of sight as well as range. This instrument isn't so bad up to about eight thousand feet, but after that it fails miserably.

Further research on these lines is being pushed on hard.

(II) Long Base Method—In this case, we have two instruments at the ends of a base perhaps six thousand feet long. The stations are connected telephonically and readings from one end sent to the other, where, after a single setting has been made, the height can be read off. The answer is pretty accurate, but as a service heightfinder the method is full of snags, which I will leave you to think about at your leisure. I suggest, however, that for one thing a two thousand-yard telephone line is not too easy to keep in order in a place like the Ypres Salient. I've tried it.

Here, again, research is being carried out, and we hope for answers in the near future.

Deflections—I think it is obvious to the most inexperienced that it would be useless to fire at the aeroplane at the position in space which it is occupying at the moment of firing, because the shell takes time to get there and in that time the aeroplane is also moving, and pretty fast, too.

Example: If time of flight is twenty seconds, and speed is seventy-five yards per second, then distance travelled equals one thousand five hundred yards.

Future Position—We must, therefore, fire at some future position of the aeroplane which, assuming the height remains constant, is dependent on:

- (I) Speed.
 - (II) Course.
 - (III) Time that it will take us to put a shell in that future position.
- In other words, we must give the guns a "lead" in the direction of the

target's flight. This is done by applying on the sights, deflections for travel in two senses:

- (I) The vertical sense.
- (II) The lateral sense.

(I) is known as the vertical deflection, and may be "up" or "down", depending on whether the target is travelling towards or away from the guns.

(II) may be "right" or "left". This is self explanatory.

Angular Velocity—Up to the present we have talked at length about "speed" and "course" of the target. By this we have meant the speed and course relative to the ground.

A target may quite easily have an "air speed" of sixty miles per hour, but if it is travelling into a sixty m. p. h. wind its "ground speed" at that moment is nil, and its course is stationary.

Now, in actual practice, for reasons we cannot go into here, we have found that it is not convenient to try and measure the actual ground speed and course of the target. We can, however, very easily measure what we call its "angular velocity." That is to say, supposing we had a target travelling directly away from us, its angle of sight (or elevation) is changing all the time; getting less, as a matter of fact. If we measure the rate at which this angle is changing we have found the "vertical angular velocity." If, now, we made that target travel away from us and to the right, say, at the same time, its bearing relative to true north or some chosen point is also changing at a certain rate, which can be measured. This is the target's "lateral angular velocity." In this case we have a bit of vertical and a bit of lateral angular velocity, and this, if you will think for a minute, is likely to be the usual state of affairs.

If, then, we multiply these angular velocities by the time of flight which we have already mentioned, we will get angles, in the same way that, if we multiply the speed at which we travelled from London to Chatham by the time that it took us, we will get the distance from London to Chatham. These angles are the travel deflections we have just talked of. In actual fact, they are subject to certain corrections which we need not go into here, but the principle remains true.

Crossing Point—It is interesting to note here, that although we can have targets which will approach or recede directly, giving us no lateral rate at all, we cannot have the converse except momentarily. Take any target crossing our front from say, right to left; at first it has an approaching element as well as a lateral element. When it arrives plumb opposite us, or, in other words, reaches the point on its course which is nearest to us, the approaching element changes to a receding element, while the lateral element remains "left." The moment of changing over is known as the crossing point, and it is at this point only that we have a purely lateral element, and it is only momentarily.

Fuze—We have seen that we want two deflections for travel, but we want also a fuze. Actually, what we really need is what other gunners think of as range, but A. A. gunners think of it as fuze-range. This is not just to make it more difficult, but because we find that the easiest way of applying range is in terms of fuze and angle of elevation. There is a dial on the gun which has fuze curves on it, which must be followed to order by the operator. The following of any given fuze curve on this dial automatically applies the correct elevation for that range to the gun.

This fuze must, however, be found somehow, and as it is the fuze to the future position which we require, and not to the present position, and as we don't yet know where this future position is in space, you will begin to see that our problem is not a simple one. To go a little further with this intriguing picture, until we know what the fuze is, we don't know what the time of flight is. Until we know what the time of flight is we cannot possibly get our travel deflections. So it looks as if we are doomed to go round and round in a circle like a kitten chasing its tail. As a matter of fact, it is all worked out on a system of balancing, or trial and error, and as our instrument does it for us almost automatically, I don't think we will bother with it any more. The method is known as obtaining the "A. A. balance."

Summing up, then, we have now got for our guns:

- (I) Vertical deflection.
- (II) Lateral deflection.
- (III) Fuze.

With these three things available we can fire the guns and hope for the best.

Methods of Application of Gun Data.

We can apply the data now obtained in two ways:

- (I) To dials on the gun sights in the form of deflections, etc., given above.
- (II) Or as composite elevation and training angles direct from instruments to electrical follow-the-pointer receiving dials specially fitted to the guns.

Case I. The first system is known as the Case I method, and as the various information must be read off from dials on the instruments, shouted to the guns, and there applied to the sights, you will see that a lot of valuable time will be wasted and the result will be that the deflections, etc., are likely to be stale by the time that the guns fire. In actual fact this "lost" or "dead" time is, on an average, about eight seconds, so that unless one did something about it, at seventy-five yards per sec. the target will travel $8 \times 75 = 600$ yards, and that is what one would miss the target by. Actually, allowances are made, but so far they have been dependent on the skill of the individual members of the instrument detachments, and this is not good enough.

Case III. The second system is known as the Case III method, and is a very different story.

Here, all the necessary data is evolved inside the instrument, and sent down continuously to the special follow-the-pointer receiving dials on the guns, so that all rounds are fired with the correct sight settings. This means that we have eliminated completely and accurately the whole of that dead time of eight seconds, so that we can hope to be at least six hundred yards nearer the one hundred and fifty miles per hour target every time.

Group Fire—With the Case I method, as it is impossible to cope with the continuously changing fuze by a corresponding continuous change at the guns, we fire groups of four rounds set at the same fuze. This is theoretically inaccurate, of course, but cannot be avoided in this method, even though we resort to an automatic fuze setter.

In Case III we can transmit the fuze continuously to an automatic fuze setter, so that each round is set at the correct fuze, so we gain here also.

The Predictor—The modern A. A. instruments which are used to give us the data we have been talking about are:

- (I) A height finder.
- (II) An anti-aircraft predictor.

The height found by the heightfinder is set into the predictor. The predictor is kept laid continuously on the target by two men. Other members of the predictor detachment perform comparatively simple operations such as following a curve or by means of a handwheel, preventing the revolution of a pointer visible in the dials opposite to them.

Further settings in the predictor are:

(I) For the effect of the wind on the shell. The strength and direction of the wind in the district is set into the instrument, together with another setting of height of target, and internal mechanism works out continuously and automatically the corrections required, and these are automatically applied to the main data before they are transmitted to the guns.

(II) Corrections for temperature, barometer and wear of guns are worked out and applied as a percentage correction to the height of the target. Therefore the height used in the predictor will not necessarily be the actual height of the target, but what is known as the ballistic height.

Secondary Methods—We have under trial at the moment two secondary methods. Both are of the Case I type, but allow more or less automatically for the “dead” time I have spoken of. As they are experimental, I will not do more than mention their existence. It is sufficient to say that they are required as substitutes for the predictor either in case of breakdown or in cases where the fire unit must be split, or again, in some very forward and dangerous position where the risk of getting the very expensive predictor hit was considered too great.

Eye Shooting—As a last resort, when all else fails the unfortunate A. A. gunner must take to eye-shooting. This is really a process of calculated guessing, the mental calculations being based on certain rough rules. Most of the shooting in the War was carried out in this way, and it seems that to be successful is to have the gift for it, though a great deal can be learnt by study of the subject. Furthermore, modern methods and ideas have certainly gone a long way towards making eye-shooting easier.

A. A. Fire Control—Generally speaking, it is impossible to obtain really accurate shooting without the use of instruments. The more accurate the shooting required, the more expensive and elaborate are the instruments.

This does not mean, however, that the work of the A. A. gunner becomes more difficult, but rather the reverse. The more complicated the instrument, the more completely automatic does it become, and so the actual operations performed by the members of the detachments become easier.

It is no exaggeration to say that a squad of intelligent young recruits should make an exceedingly efficient A. A. Section, and they could be trained to a very reasonable state of efficiency in a very short time.

It is the secondary system, including eye-shooting, which requires so much training.

The Case III method of fire is now the proven orthodox method of A. A. attack.

Every effort is, therefore, being made to perfect instruments and other gear to the most profitable employment of this method for both mobile and fixed defences.

Methods of Practice—This lecture would not be complete without some mention of the methods of practice of A. A. fire. It is obvious that we cannot actually shoot at a real aeroplane unless it could be controlled by wireless, and even then it would be an expensive business, because I have always found that when we are not particularly keen on bringing down our target, we generally succeed in doing so. There were occasions in the War in which our own or Allied planes were engaged by mistake, and I don't think we ever missed.

Two Methods—At present we have two methods:

- (a) Full charge shooting at a towed sleeve.
- (b) Reduced charge shooting at an actual aeroplane.

(a) **Full Charge**—In this case an aeroplane tows a twenty-foot long sleeve about two thousand yards behind at heights up to about ten thousand feet. So far, for safety reasons we can only shoot at this sleeve when it is crossing our front and then only through a limited arc of fire.

We do not record a large number of actual hits, because we use a special cheap cast-iron shell which breaks up into about ten pieces. The Service H. E. shell breaks up into about one hundred and fifty pieces.

Hits—In 1928, the R. A. F. calculated that we got about one hit for one thousand three hundred rounds fired, so that on this basis with the Service shell we ought to do about fifteen times better, which would mean a hit every eighty or ninety rounds. Of course, a hit does not by any means mean disablement. I knew a pilot in the R. F. C. who returned one day with three hundred and seventy odd holes in his machine from A. A. as well as small arms fire, but no vital part was hit. The machine was, of course, written off. This year we are going to fire some H. E. shell at the sleeve, so we hope to get more definite information.

(b) Reduced Charge—By arranging to use a very much reduced charge we have been able to reduce the ceiling of our 3-inch gun from about twenty-one thousand feet to eight thousand feet, and yet arrange that the times of flight for given fuze lengths are practically the same as with full charge.

By making the aeroplane fly above eight thousand feet, we ensure the pilot's safety.

By providing special scales for our instruments we can make them function absolutely normally.

The only difference is that the shell is only sent to about half-way to the target, although it takes about the same time to do this as the service charge would take to send it the whole distance. This means that deflections are of the same order, and an effective round is taken as one which bursts on the line of sight to the target at that moment. This is a more reasonable assumption than may be at first imagined, because we also take steps to check the height ordered. A. A. gunners are the first to admit, however, that this method is not so satisfactory as being able to record actual hits.

The outstanding advantage of the reduced charge method is that there is no restriction on the movement in space of the target other than range limitations, and so units get practice on all types of target which are likely to be met on service.

CONCLUSION

In conclusion, I suggest that there was never a time when the Army thought so much about the future of warfare.

Modern scientific inventions have completely changed the aspect, and it is not easy to see through the fog, but I do think that there does appear, clearly, to be a great increase in the air menace.

Aeroplanes of all sorts are becoming steadily cheaper, more efficient and reliable.

I hope I have convinced you that we have a technical reply in the gun.

Unless, however, officers appreciate the developments of anti-aircraft, and know how to handle, A. A. Units, we shall not obtain the great results which the technical developments will place within our reach.

A. A. gunnery is a science—and a new science—but it is not a mystery.

The Army as a Career

By MAJ. GEN. J. G. HARBORD, U. S. A.

EDITOR'S NOTE: *This article by General Harbord appeared a number of years ago in The Atlantic Monthly and is republished by permission. It is published again in the JOURNAL for the good effect it may have on the morale of many junior officers who can see very little to encourage them in continuing an Army career. Many of us have had these periods of depression and uncertainty and, perhaps, leanings towards the fleshpots. We can think of no one better qualified to talk upon this subject than General Harbord. All of us are familiar with his distinguished career in the service. Most of us know that today he is the President of the Radio Corporation of America—which is a sufficient indication of his success in civil life. He is competent, therefore, to compare an Army career with a civil career. In a letter giving us permission to use his article, he says: "I have nothing to add to the article, nor have my views undergone any serious change since it was written. I still think as I did as to the Army as a Career."*

IT IS a delicate matter to offer advice concerning the choice of a career. The selection of his life work is an intimate personal problem for the young man. It is easy for an elder generation to intrude upon this intimacy, and to rudely ignore the romantic visions of youth, from the practical viewpoint of age and mature knowledge.

Ours is a material age and Americans are particularly accused of being a "material" people. We alone have very great national wealth in a world now discouraged and discontented, and many of our young men appear to make the acquisition of wealth their chief aim in life. Such men confound the aim with the means of its achievement. Under the history of most of our great fortunes, however, lies a record of accomplishment. The youngster who wins his way from poverty to riches must have energy, enthusiasms and ambition. He who strives only for gold may lose the treasure that was his inheritance. Accomplishment is truly the American aim, and success must accord with the Christian ideal of service. Men's lives are their answers to the question of destiny, and America has called those lives great which have been of greatest service to mankind.

In this word *service* lies the measure of a career. To youth peering forward through the obscurity of inexperience the necessity of service in his own life is not always apparent, nor its meaning clear. If he will believe that *service* is not a compulsory process of subordinating his own aims, but is rather the means which will enable him to achieve them, he can pursue his ambition with a minimum of the confusion and stumbling which are often the experience of youth. In groping for the answer to what is a career, I conclude that there are as many careers as there are men and women. There is, however, a common denominator of success for all, and in this sense the successful career is *Service*.

In choosing a life work the normal young American of good physique, proper home training, and average attainments, has early to elect between the pursuit of mere wealth with the power it brings, and a career

of accomplishment with less of material reward. If thoughtful, and capable of weighing consideration before making a choice, he will probably decide for or against an Army career in the light of answers to such questions as these:

Will it be congenial employment? Shall I like it?

Does it offer sufficient remuneration to enable me to live decently, to marry, and raise the family to which every normal young American should look forward?

How does its opportunity for a service to country and humanity balance as against a career of commercial activity with the power that attends success in business life?

What opportunity does it offer for distinction, for fame, for such accomplishments as will make my name live beyond me?

The reply to the first of these questions is so much a matter of individual taste that it may only be answered by the youth standing at the threshold. The old Army life so dear to our frontier days, of a small selected community socially sufficient to itself, of summer Indian scouting and winter garrison schools, of long isolation on duty in the distant west with an occasional leave of absence and return to eastern civilization, is a phase of our history which has passed with the buffalo and the blanket Indian. It was a life of romance and adventure where survived something of the chivalry of a by-gone age, and in which the lives of fair women and brave men were sweetened by mutual dependence and self-sacrifice. The last of those who knew it and loved it are now at an age when all the associations of youth are fast receding in the purple haze of memory. In its place have come tours of duty in the Philippines, Panama, Alaska and Hawaii, stations near the larger cities, and much service with the citizen soldiery. So much of the future duty of our regular Army officer in time of peace will be with the National Guard and Organized Reserve that he can hardly expect more than two years with regular troops in each grade as he climbs the commissioned ladder. The posts with regular troops will be small, and the social activities will depend upon the nearest city rather than on the garrison life which was so attractive in the old Army. His brother officers will still be gentlemen—for the traditions of "An Officer and a Gentleman" have stood the test of time, and outlasted many storms of legislative displeasure. Duty, Honor, Country, are still the watchwords of the Regular service—as the record of many a gallant officer and many modest headstones in our national cemeteries and among the hills of France bear witness!

On duty, detached from troops, the officer will find himself quite often the associate of civilians whose individual incomes far exceed his own. Since the World War the necessities of national economy have imposed upon the Regular Army much hardship through enforced life in temporary camps and cantonments. There are today many Army families living in

unpainted, unplastered, wooden buildings erected in 1917 for an average life of three years, and located in more or less barren and unattractive surroundings. These hardships are less felt, however, than would be the case in civil life, for the entire military community shares the same fate, and are spared comparisons with wealthy neighbors. One result of such adversity shared together is to intensify the wonderful association which is perhaps the most lovable feature of Army life. Many an old wooden gymnasium once used to train the great overseas Army, or old Liberty Theater in which the Welfare Workers entertained the homesick recruits of 1917 and 1918, now lends itself well to decoration, and witnesses within its dingy walls hospitable occasions graced by gentle Army women. The enjoyment of such gatherings is not destroyed by the flavor of a Spartan environment.

One of the interesting phases of Army life has always been the care-free manner in which an entire Army community submits to being transplanted from the midst of a city to the frontier, or to tropical wilds, without much disruption of its social activities, and even with an increased development of camaraderie. When the nation returns to normal financial prosperity, and the reaction in Congress which follows each of our wars has once more spent itself, the proper housing of the Regular Army will doubtless receive its due attention, and conditions which are now disgraceful to our country will be remedied.

No man who yearns for sheltered ease and the fleshpots is apt to adopt a military career. He who seeks the companionship of gentlemen and gentlewomen, and the attractions of a disciplined and orderly life, will find them in the Army. For one who enjoys working with men in the open, with occasional opportunity for foreign duty, and the constant knowledge that he is preparing himself and those he commands to serve his country in her time of need, I know of no career more attractive than that of the American Army officer. The profession of arms is one of the oldest, and there is none more honorable.

The remuneration of the Army officer is quite moderate. He frankly is not as well paid as some branches of skilled labor, nor so liberally remunerated as many positions in civil life above the grade of laborer, but which demand less of education and character than does the Army. The compensation of a Major General after twenty-six years of service, including all allowances may not under the law exceed nine thousand seven hundred dollars per year, less the liberal subtraction for income tax. A lieutenant in his first three years of service receives per year some twenty-three hundred dollars, including all allowances. Formerly Army pay corresponded to rank and was presumed to increase with added responsibility. It is now based upon length of service, and does not necessarily correspond to either grade or responsibility. At the discretion of the President it may be slightly varied each year to correspond to the rise or fall of the

cost of living. There are fairly liberal allowances for quarters when not furnished in kind, and certain increases for growing family responsibilities. Medical attendance is free for members of the Army and their families.

The average young man is apt to gauge a place by its remuneration and, from the foregoing, Army pay may not seem attractive. With the Army system of retirement, however, the pay may be considered in the nature of income drawn upon the investment of a commission. The problem of saving for old age does not have to be solved in quite the same way that it is by the civilian. Insurance can safely be carried since steady pay is not threatened by sickness or absence from duty. In case of physical incapacity for active service due to accident or broken health, the Army officer is retired for life upon three-quarters of the pay he is drawing at the time of such retirement. At the age of sixty-four he is similarly retired. After thirty years of service he may on application be retired at the discretion of the President, and after forty years he can demand it. If an officer dies while on the active list his widow will receive a small pension; if he dies after retirement the law provides no such pension. There is, therefore, the continual urge of economy throughout life, and constant facing of the fact that there is no other class of public servant from whom so much is expected in proportion to his pay as is exacted from the Army officer.

The matter of pay is important when the officer contemplates marriage. In many walks of life wealth is the measure of the young man's ability to support a family, and determine his eligibility in the minds of the potential father-in-law. This is not so literally followed in the Army. There the rewards are of a different sort and it is the unworldly fashion of the service to prefer reputation to riches, and honor to opulence.

A commission in the Army gives the entry to as good society as there is in the world, and since there is frugality demanded of all, there is little competitive dressing or spending. There is no station of our modern life in which there are relatively more happy marriages than in our good American Army. In mere statistics Army marriages stand next to the bottom in divorce ratios. In these days of the high cost of living no Army officer can maintain a family on his pay without practicing close economy, but in normal times, while lacking luxury, the life is comfortable. The delightful associations of Army life make up in a measure for the lack of luxury. Service has its compensations.

The Army career compares well in its possibilities for service to country and humanity, with the power and opportunity that attend success in business life. The modern Army officer must be a composite of business man, lawyer, statesman and priest, as well as soldier. There is a popular misconception as to the usefulness of an Army career due to the belief that because soldiers are dressed alike, and drilled in masses, they are therefore stamped in a mold which crushes originality and initiative. There

must be in the military organization discipline and team work, each with his own hopes and ambitions, and his own ideas of accomplishment. It is this development of individuality which has distinguished the American soldier above those of other countries, and which indeed is principally responsible for the success which attended our arms in the World War. The common tie among our soldiers is the sense of service. Their discipline during the World War was largely a self-imposed code founded on their belief that it was necessary in order to accomplish that for which they had come to France. In the Army one serves the country while finding at the same time an opportunity for development along a chosen line.

In the long uneventful drowsy days of peace between our Spanish American War and the stirring times of 1917, the average American citizen thought only of his Regular Army as an organization which was comfortably housed in military posts whose original location had been due to something connected with Indian wars and frontier protection, or as standing guard at picturesque and rather useless old forts, conveniently situated with reference to fashionable summer resorts along the sea coast. He understood that it drilled a little, danced a good deal, paraded on national holidays, and performed a number of other vague and unimportant duties—all at considerable cost to the taxpayer. If it be true that the ideal self-government can only come through knowledge, the average American citizen's pre-war knowledge of his Regular Army would have entitled him to little participation in those historic institutions through which he thinks he governs himself.

With the coming of the Great War, the transformation of our young manhood into the great National Army, largely to be commanded and administered by officers trained in the Regular Army, brought home to the average citizen the fact that in the regular establishment lay much of its hope for success in the great military adventure which our country was undertaking beyond the sea. A year's contact on the Rio Grande border during the threatened trouble with Mexico had brought the National Guard and Regular Army into closer understanding than had ever before existed in their history, and has strengthened their mutual esteem. The Regular Army as the repository of the military traditions of our country, the exponents of the latest military teachings of the world; with the indispensable habit of discipline, and long experience in handling soldiers, enjoyed the confidence of the citizen soldier to a higher degree than ever before.

The national administration wisely kept high Army appointments out of politics when we entered the war, and to a larger extent than had been the case in our other wars made its appointments in the higher grades on a merit basis. It was thought as wise to keep the highest command in the hands of the Regular Army as it is to appoint only lawyers to the Supreme

Court, and to keep only experienced navigators on the bridge during a storm at sea. The war ended so quickly after we began to get our divisions to France in effective numbers that there was little opportunity for that rise to distinction through the actual practice of war which, during any long conflict in which our country has hitherto been engaged, has always brought to high rank our best type of citizen soldier. Consequently the Commander-in-Chief, the Army, Corps, and the majority of the division and brigade commanders were officers of the Regular Army. So too, in the higher grades of the staff, the leaven of the mass came from the Regular establishment. The strength and support brought to our military establishment, both in the Army and the War Department, through the splendid men which came to it from every field of business and professional life, can never be calculated. It was the support of her gallant sons which has never failed our country in her time of need, the memory of which may well alleviate the indifference that still half stuns the demobilized soldier in this land of short memories and brief regrets. With all this array of business and professional training at the disposition of the high command, and the rallying of our incomparable young manhood to the colors, the intelligent direction which the Regular Army was able to give to our military effort resulted in a share of the credit for the final triumph of the Allied arms, the assessment of which we may confidently leave to history.

Since December, 1918, when the victorious armies of the Allies marched to the Rhine, the presence of our contingent there, though small in numbers, has been the strongest steadying influence for peace in that war-weary region. Its attitude has been that of a mediator, seeking to allay misunderstandings and irritation, and so conducting itself as to reflect credit on the American name. The hauling down of our flag from the silent fortress of Ehrenbreitstein in January last, closed at least for the time, our military adventure across the Atlantic—the greatest the world has ever seen, in which the nation transported its men by millions across three thousand miles of ocean and counted the cost in billions as well spent in a good cause.

From the days of Lewis and Clarke, in the first years of the nineteenth century, the development and settlement of our country was largely through the agency of the Regular Army. It conducted practically all the preliminary explorations. It constructed the early roads, built bridges and canals, conducted the surveys and made the maps in the winning of the West. Army engineers initiated most of the accurate methods now employed in our geodetic, topographic and hydrographic surveys. When our pioneers went west they traveled routes laid out and constructed by the Army, and were protected by its frontier stations. They settled on lands surveyed by it, and the validity of their titles rested on such surveys. The linking of these outposts of civilization with the east was accomplished

through railroads located and in many cases constructed by the Army. Up to 1855 practically all railroads in this country were projected, built, and sometimes operated by our military establishment. The Baltimore and Ohio, the Erie, Northern Central, Boston and Providence, the New York, New Haven and Hartford, and the Boston and Albany were thus located, constructed and initially operated. An Army officer built the best locomotive of his time, after his own designs. Another was chosen by the Russian Czar to build the railroad from Moscow to St. Petersburg. He died before its completion, but a brother officer carried his work to successful termination. The Army built the Chesapeake and Ohio Canal, and the old Cumberland Pike from Maryland to Missouri. Practically all our Federal and State boundaries were surveyed by it. The Washington Monument, the wings and dome of the National Capitol, the old Postoffice Building, the Government Printing Office, the Library of Congress, the War College, the Agricultural Building, the Washington Aqueduct, the parks of the Districts of Columbia are the work of military engineers. Army engineers supervised the Lincoln Memorial. Their part in the river, port and harbor development for a century past is well known, and these activities are still going for a century past of a coordinated scheme for the entire country. They are studying present commercial facilities, the hinterlands which can be served, their proper development, and the factors which advance or retard their progress.

Within the present generation our country has faced the problems—always difficult for a representative government—of new possessions. Alaska, Hawaii, Cuba, Porto Rico, the Philippines, Guam, and the Canal Zone have each presented their problems, and the major part of the solution has been directed by or through the Regular Army. In the Klondyke it was the Army that opened the harbors, and built the roads and trails leading to the gold. It surveyed their lands and policed the frontiers. The link which bound the Klondyke to civilization was the cable laid and operated by the Army. The Philippines, Hawaii, Cuba, Porto Rico and Panama all have histories of achievement, histories in which the forces of civilization have struggled against reaction and backwardness. That civilization is triumphant is due largely to the constructive work of our Regular Army. Building up public utilities, eradicating decimating diseases, educating the children, creating institutions of self-government, and protecting such institutions from retrogression, in all these the Regular Army left its record of the day's duty well done. These are generalities true of all lands where our flag has flown outside of our continental limits.

To particularize as to Panama, we made success out of the failure of our predecessors on the Isthmus. The Canal was built under the worst possible initial conditions of sanitation, and in the face of tremendous engineering difficulties. In the last four months of 1922 our Government collected a million dollars per month in canal tolls. Seventy-five great

steamship lines served the world through the Panama Canal. Its equipment as a base for fuel, repair and supply is complete. Incidentally it is a tremendous military asset for national defense. As long as it remains in our possession it doubles the value of our Navy, though its total cost was only approximately that of ten modern battleships, with an average life of ten years before overtaken by obsolescence. Our occupation already exerts a powerful influence over the neighboring nations to the south. They are beginning to undertake necessary improvements under the stimulus of increased prosperity brought by the Canal. The building of the Canal was a monumental accomplishment worthy of any nation in any age.

So much for the peace-time opportunity for service to mankind and country which the Army afforded its officers in the era ending with our entrance into the World War. After the Armistice the cry of American Relief stirred the Army in France almost as had in other days the slogan of Westward Ho! Except for the titular head, and some minor officials and employes, the American Relief in Europe after the Armistice consisted of three hundred and twenty officers and nearly five hundred enlisted soldiers constituted the missions and agencies which distributed relief. In addition a great amount of convoy, and courier service, and much handling of supplies was done by the American Expeditionary Forces. The American Relief was little more than an Army activity. Russian Relief has been a similar activity whose management and administration has been principally the work of Army officers.

Our pioneering days in distant lands have perhaps ended. On the eve of a period of construction and progress which we hope will be one of the greatest our country has known, the Army is, however, once more a pioneer. A very significant influence in standardization of manufacture has been exerted by the War Department in its planning for the mobilization of national industries in time of war. The tractor industry has come of military experiments in design of tanks and artillery tractors. The activities of our air service are preparing the way for an aviation industry, and keeping the art alive in the meantime. The aerial development of the Army is not only real preparedness but it promises an extension to commercial life. The Army has likewise pioneered in radio. It modifies commercial apparatus for military purposes, but its research and development are continually presenting solutions of difficult problems. Among these are the loop, which to some extent superseded outside antennae, and led the way to the radio compass, besides the invention which applied radio principles to commercial telephones, and made possible broadcasting over telegraph, telephone and even power lines. The Army telephone system is second only to one on our continent.

The activities of the Army Chemical Warfare service promise one of the greatest opportunities for service. The deadly Mustard Gas is being hopefully tested for use in treatment of tuberculosis. The use of war

gases in medical treatment of influenza and similar diseases is very encouraging. This branch of the Army has apparently solved the problem of safe and effective fumigation of ships, warehouses, and other insect and animal refuges. Tear gases have been demonstrated as effective in controlling criminals, and in suppressing jail deliveries and riots. The gas mask has been tried out with success for mining, and the Army has produced the only substance protecting miners against carbon-monoxide gas. The control of the boll weevil will come from the same source. The Chemical Warfare service has led the way to foundation of an American dye industry that should one day be one of the great national assets.

The Army has played an important part in the development of the steel industry. It was the original market for steel, and led the entire industry in the specifications for design. The Army specifications for high-grade steel have generally been fifty per cent more severe than any others, thus promoting the production of superior quality. Alloy steels were introduced by the Army Ordnance Department. For years the Watertown Arsenal was the leader in metallurgical study, preceding the creation of the Bureau of Standards, and it exerted a strong influence in stimulating the work of the technical schools. Scientific Management was largely born of Army Arsenal methods, and the first card system of shop returns was devised at Frankford.

The Federal Power Commission organized under the War Department is now studying the proposed development of water power in excess of twenty million horsepower, or more than twice the existing power development of our country, and more than the combined potential resources of Norway, Sweden, Finland, and the Arctic and Baltic drainages of Russia—the principal water power region of Europe. The chief engineer of the Commission and his assistants, and the chief counsel are Army officers. Within two years it has studied projects for development of resources under Federal control amounting to six times the aggregate of projects for the development of resources under Federal control in the preceding twenty years.

Army engineers lead in flood prevention and are assisting in forest protection. During the past year over one hundred thousand square miles of forest lands were constantly and effectively patrolled by Army fliers and over fifty per cent of the twelve hundred and forty-eight fires occurring in the National Preserves of California in the critical three months of the danger season were reported by the aerial patrols.

The memory of the service of the Army in the San Francisco earthquake in administering the forces of order is still gratefully cherished at the Golden Gate. In the Galveston disaster of 1915 it made a record of heroic achievement. Its constructive value was felt in the Mount Pelee cataclysm, and during every great Ohio and Mississippi flood, for many years.

The Chief Coordinator under the Director of the Budget is an Army officer, and is assisted by nine others. The Army furnishes a Governor General to the Philippines, an Ambassador to Cuba, a Fuel Administrator to the great State of New York, a Director of the Budget, the active member of Alaskan Roads Commission, the Governor and the Chief Engineer of the Panama Canal and Zone, and the chief administrator of the railway of Alaska. The Assistant Secretary of War with his Army assistant is performing one of the most complicated and extensive tasks that has ever confronted an industrial organizer, in the Army plans for industrial mobilization in event of war.

The Act of June, 1920, gave this country the first real military policy it has ever had, and made it permanent, subject only to the pleasure of Congress. The function of the Regular Army in this three-part Army of the United States, is its principal duty, and is the paramount opportunity of our times for real service to kin and country. The Military policy itself is a conservative insurance policy against war and internal disturbances. In addition to assisting to train the National Guard and Organized Reserve the Regular Army constitutes the first line which in time of national danger would guard strategic points on our frontiers against invasion, while behind such protection there would be formed the armies necessary to guarantee our national safety in the war to follow. It further constitutes at the present time the dependable land force available in case of internal disturbance, and against destructive radical forces which are steadily working to overthrow our governmental institutions and loot the products of our industry. It is insurance of the participating kind. The training for national defense will always bring returns to the country in the physical and sanitary betterment of the young manhood of the nation. The draft statistics of the World War showed that about fifty per cent of our young men have disabling defects, most of which can be corrected by physical training and instruction. This is one of the most serious and interesting aspects of the Army opportunity.

This is an age when many serious people are studying problems of race betterment. The World War gave the opportunity for a survey of the physical condition of the nation. The majority of our World War recruits were narrow-chested, awkward, and under weight in proportion to height. Many basic diseases and disabilities, such as weak arches, weak backs, malaria, social diseases, incipient tuberculosis and numerous other troubles were discovered in time and eradicated. Inoculations and prophylactic treatments resulted in new minimum records for prevalence. The occurrence of these diseases throughout the country has been much lessened as a result of the medical administration and training of young men during the war. Camps were made models of neatness, and personal sanitation and hygiene were taught as fundamentals. This experience will largely govern the administration and conduct of the summer training camps

under the Act of June 4, 1920. Such achievements are the work not only of the medical officer but of his line brother. Yellow fever, malignant malaria, and tropical anaemia have largely disappeared from our neighbors to the south as the result of great constructive work by the Army Medical Corps. It is a work in which line and staff pull together in the team. The influence of the summer camps is a continual education against intemperance in all its forms. There can be no higher usefulness than to share in this regenerative work. The common thought of the best statesmen in our hundred and fifty years of national life has been that a program for continued peace is best served by plans for defense. The Army has always stood for peace. "I know of no war in which America has been engaged, offensive or defensive, which was brought about by Army pressure, or indeed, stimulated by military desire."—Secretary of War Baker.

The power that comes to the successful leader in civil life is very great. With such power comes the obligation for service. It is met in a very splendid way by many great chiefs of finance and industry, of whom all Americans are proud, and to whom humanity owes a great debt. But in civil life such opportunity comes to a man as the result of success, and when his years are few. In the Army the opportunity is present all through life, and the improvement of such opportunity for service is itself the success one seeks, and it depends only upon the individual desire and ability. The accumulated experience which makes the officer of value to his country in a time of great emergency, is itself born of what he has made of his opportunity for service to others.

What does the Army offer in the distinction which ambitious men seek; how shall one's name live after him; does the military brow ever wear the laurel? The Regular Army has furnished two Presidents of the United States and one to the Confederate States. Senators, cabinet ministers, members of the lower House, state officials, ambassadors and ministers have been proud to point to a Regular Army record. The Army has furnished forty-six presidents to universities and colleges, and a great many professors. It has graduated eighty-seven presidents of railroads and other great corporations. A Bishop of the Episcopal Church, a graduate of West Point, gave his life as a lieutenant general in the Confederate Army. The military establishment has to its credit a great number of editors, clergymen, engineers, bankers, judges, consuls, artists and authors.

History will honor the names of a great many professional soldiers of the United States Army. The verdict of history is generally just. In our country, or any country with a tendency toward pure democracy, the professional soldier seldom finds favor with the politicians. It is well recognized that the Regular officer and soldier being without the vote are generally without much serious representation among the statesmen of the Republic. The reaction which seems inevitable in the United States after every war, has sometimes resulted in belittling the accomplishments of our

successful soldiers during their lifetime. The full recognition of our great leaders of the Civil War was long delayed and in some cases never granted. Sheridan received a full generaley only when the world knew that he was dying. Forty years after the Civil War was ended a succession of lieutenant generals were appointed who had held only insignificant rank in that great conflict, but Meade and Thomas went to their graves unrewarded. A certain grim philosophy prevails among officers of the Army, and it is recognized that the best reward that can come to the American officer as he nears the end of his career is the approbation of those with whom he has served. If those who knew him best, who have shared with him the dangers of flood and field, the vicissitudes of peace and war, of prosperity and adversity, appraise him as a real man, when the riderless horse with the reversed boots is led slowly behind the flag-draped caisson, and the volleys and the trumpets sound in his honor for the last time, the servant of his country may well trust his fame to the verdict of history.

There is much about the Army that is naturally dear to one who has given his best years to it. The heart of any true soldier must tell him that his is one of the noblest professions. Prophecy for the future does not lie within the soldier's domain, yet he, like others, may read the future by the past. Looking backward he can find predecessors among those who in all ages have been great through service. At the waning of his days if he has kept the faith and held aloft his standards, Duty, Honor, Country, he who chooses the Army as a career will merit that tribute that the poet gives, and which can be won by neither wealth nor wile:

"His work is done,
But while the races of mankind endure
Let his great example stand
Colossal, seen of every land,
And keep the soldier firm, the statesman pure."
—Tennyson.

The War Department has advised Maj. Gen. Malin Craig, commanding the Panama Canal Department, that military personnel in the Panama Canal Department is authorized to wear civilian clothing under the same rules and regulations that now obtain in the United States.

EDITORIAL

Showmanship

NOT long ago when we were on duty with Reserves in one of our largest cities we had great difficulty in explaining who we were to the civilians with whom we came in contact. When told that we were in the Regular Army that much seemed to be clear but when told that we belonged to the Coast Artillery Corps that was beyond their comprehension and never seemed to register. They got the "Coast" part because some would ask us if we were "getting many rum runners now." A little questioning would disclose the fact that our branch of the Army had been confused with the United States Coast Guard.

Just recently a nationally known newspaper in an editorial stated as follows: "It is as easy to find Army men who say the Coast Artillery and Cavalry do not count any more as it is to find experts who regard these arms of the service as of paramount importance." We could quarrel with the truth of this statement. We know that you can't find any Army men who would make a statement to the effect that "the Coast Artillery and Cavalry don't count." This particular newspaper has always been very favorable to the Army and National Defense. In this very editorial it places itself on record as opposed to any reduction of expenditures for National Defense. The point of the matter is that they don't know what it's all about. We are going to let the Cavalry look out for itself and leave it out of this. But can you see what is wrong with this picture? *This nationally known newspaper doesn't know what the functions of the Coast Artillery are.* If we should explain and call attention to the fact that the Coast Artillery not only mans the fixed defenses but that it has charge of all the railway and antiaircraft artillery we have, that it is its duty to carry on sound ranging, that our mine defense is largely its concern, there is no doubt that this editorial writer would see at once that only a half-wit would consider eliminating the Coast Artillery.

We know what it was that Nero drank when Rome was burning even if we don't know what was in it. We are assured that we wouldn't like to know Marvin. We know what it is that four out of five have. Any moron knows who will build better automobiles when they are built. Is there anyone who doesn't know what Al Jolson reaches for instead of a sweet? Then why doesn't everyone know what the Coast Artillery is? It is more important to the country than some particular brand of tooth paste. The answer to this, it is almost unnecessary to state, is publicity.

Publicity is not an unknown realm to military men. Our friends the Marines thrive on it. We don't know who initiates all their publicity but we have our suspicions. We are not slamming them. We are humbly acting like novices in the presence of the master. And in the Army we have

COAST ARTILLERY ACTIVITIES

EDITOR'S NOTE: Under this heading we shall publish each month news from all parts and places and which we believe to be of interest to the Corps. We shall begin with the Chief's Office, listing monthly the personnel on duty there. Under this subheading we shall report any news pertaining to the Coast Artillery as a whole as well as interpreting and making audible such policies as the Chief of Coast Artillery desires to become widely known. We shall not quote the Chief or anyone on duty in his office unless specifically so stated. The Coast Artillery Board and the Coast Artillery School will be included as well as the regiments throughout the States and on foreign service. It is believed that Coast Artillery officers in Hawaii may be expected to be interested in learning what the 61st has been doing all summer. In time it is hoped that all organizations will send a short résumé of their monthly activities to the Editor for publication. Considerable interest has been expressed by a number of regimental commanders even to the extent of detailing an officer as correspondent. We welcome contributions from all individuals. If an item of particular interest should be presented and should the subject appear to be sufficiently important every effort will be made to induce a qualified officer to expand it into an informative and useful article for separate publication. The cooperation of all our readers is sought in this particular effort to make the JOURNAL more interesting.

Office of Chief of Coast Artillery

Chief of Coast Artillery

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They Used to Call It a Figure of Merit

Whenever two or more officers get together conversation is apt to result. The amount of conversation which results like the solutions of Leavenworth map problems "depends upon the situation." In some situations more conversation takes place than at other times. It isn't always about golf. We have seen all the problems of the universe solved to the satisfaction of whoever happened to be doing the talking at the time. But the others present are never satisfied with the solution—which is a fortunate condition because if it were otherwise there would soon be nothing left to talk about.

Of recent years there has been much discussion of the competitive spirit

in military training and instruction. The competitive idea which formerly existed in our Service schools has its champions as well as its enemies. It can be argued that competition furnishes incentive and this argument cannot be refuted although a spirit of competition sometimes engenders other qualities not so desirable. The tenseness which it introduces is an undesirable by-product and believed to be so harmful that the relative standing of students in the schools is not made known to them until the end of the course, if then. The desire to excel others is a human instinct which seems to be inherent. If this desire in the individual can be called selfish it can hardly be denied that it also increases the efficiency of an organization made up of such individuals. The effect is more pronounced when individual striving is combined with a spirit of cooperation and good sportsmanship. Good sportsmanship is altogether a human characteristic.

Competition connotes a rating of some kind. An efficiency report is one form of rating of which we are constantly reminded and of which (believe it or not) we stand in some awe. An argument on this subject can be started at any time. It is generally admitted that efficiency reports cannot be altogether just and fair. We are reminded and we know it is true that some Commanding Officers are "soft" (kind-hearted) and others are "hard" (hard-boiled), that the same officer delivering about the same kind of bacon to one as the other will get a high rating from one and a low one from the other. Prejudice sometimes plays a part even though the reporting officer would deny vociferously that it exists. In the long run the average of all the efficiency reports made upon an individual will be just. No better way has been devised to obtain a comparison of individuals.

In the Coast Artillery we have had for many years a rating system applied to firing batteries. The immediate necessity for a rating of firing batteries is to select that one which excels all others as the recipient of the Knox Trophy for excellence in target practice presented annually by the Massachusetts Society of the Sons of the Revolution. Of course this necessity for a rating system is only incidental. The real reason, as Major Jarman has said, is to increase the H. P. G. P. M. Unlike the efficiency report, the element of personality does not appear in the rating of firing batteries. Another element does appear which affects any system of rating. That is the various types of armament now manned by the Coast Artillery. No difficulty is encountered in comparing organizations as to discipline, condition of barracks, condition of armament, drill, or the results of target practice with small arms and special weapons. But when an attempt is made to compare the results of target practices fired by A. A. machine guns, A. A. guns, tractor artillery, railway artillery, fixed artillery batteries, not to mention searchlight batteries and mine batteries we could call in Archimedes, Einstein, and P. Eekles to devise a suitable comparative

formula and the resulting conference would sound like a meeting of an anti-war society.

Many officers believe that no equitable basis of comparison can be devised. Others believe that equalizing factors, entirely empirical, can be determined if a great number of firings are considered. The scoring matter is now receiving the consideration of the Gunnery section in the Chief's Office and the Coast Artillery Board. Any officers who desire to horn in on this question can do so by submitting their idea of the solution to the JOURNAL. We would be glad to publish it, if suitable, and would feel that we were accomplishing one of the purposes for which the JOURNAL exists.

Minor Joint Army-Navy Exercises

The importance to the Coast Artillery of Joint Army and Navy exercises has always been appreciated. In recent years the opportunity for these exercises has been increased so that they may be regarded almost a routine occurrence. If present plans are carried out there will be five minor exercises of this kind in which the Coast Artillery will participate in 1930. While the plans are not finally completed it is probable that three of these war games will be played outside the States—in the Philippines, Hawaii, and Panama. Long Island Sound and San Francisco have been tentatively selected as the location of the two to be conducted in the States.

The exercises in Panama have been conducted for a number of years during the annual concentration of the Battle Fleet in these waters. The Navy schedule governs in this case but the concentration is expected during the early part of March. For the exercises in the States an effort will be made to select a period when National Guard and Reserve Units may be concentrated and assist the Regular Units in manning the defenses. To obtain the greatest amount of training for all components is the object sought in this concentration. The availability of the Naval forces at a time suitable for the National Guard and Reserve is a matter for adjustment by those charged with the preparations.

Aberdeen A. A. Firing Tests

The firing tests conducted at Aberdeen Proving Ground during September and October not only were the means of determining the efficiency of the new equipment and methods but also enabled a great number of officers to become familiar with the latest developments in this materiel.

Army Ordnance Day brought visitors from all parts of the East. Among these were many Coast Artillerymen who traveled at their own expense not only to see the entire demonstration but in particular to see in action the newest antiaircraft equipment. Visits have been made since by the War College Class, by Coast Artillery School students, and many individuals.

Several officers on duty as instructors with Organized Reserve Anti-

aircraft Regiments were ordered to Aberdeen for a period of ten days to observe and learn. Among these were Lieut. Col. James F. Walker, New York, N. Y.; Maj. Reuben N. Perley, New Orleans, La.; Capt. John R. Clark, Cleveland, Ohio. One National Guard instructor from each A. A. National Guard Regiment located in the First, Second, Third, Sixth, and Seventh Corps Areas (nine, in all) were also at Aberdeen for a period of five days beginning October 14.

Although the results of the tests are to remain confidential when published by the board it can be said that the tests conducted showed an increased efficiency in much of the materiel tested, over the same or similar materiel tested last year.

Maj. Sanderford Jarman and Capt. Frank J. McSherry of the office of the Chief of Coast Artillery have been frequent visitors at Aberdeen in connection with their duties on the test board. They also visited Watertown Arsenal during October to observe tests of a height finder and other materiel under development by the Ordnance Department at that station.

Long Range Firing Tests

During the period May 1-June 30, 1930, a series of long range list firings on 16-inch guns will be conducted against Naval targets in Panama. A sufficient number of 16-inch shells have been allotted for this purpose and the Coast Artillery Board is at present drawing up the program for the tests.

While the details of the test have not been made known it is said that the ranges at which the firing will be conducted will be beyond the ranges which may be reached by the present fire control system. Perhaps those who have studied this question may guess the form of fire control which will be utilized.

Antiaircraft Training Film

At the beginning of the World War the War Department early recognized the usefulness of the training film. Much money was expended in the preparation of these films for all branches of the service. Today nearly all the training films prepared during the War are useless. Methods have changed, drill has changed, and the propaganda feature of the War films is decidedly out of place in these days of peace.

The Coast Artillery Corps had its share of the War-time films. But recently the Coast as well as other branches has begun to feel the need for up-to-date films. Perhaps we need new films more than other branches since in the development of an efficient Antiaircraft Artillery the changes have been numerous and radical. A film made by the 61st Coast Artillery (A. A.) only a few years ago showing the tactical employment of an anti-aircraft battery is today obsolete because old equipment is shown.

Due to lack of funds it has not been easy to keep even the antiaircraft films up-to-date. However, plans are under way to manufacture an up-to-

date A. A. film which, however, will not be available for showing before some time next year. The film will be made by the Signal Corps Moving Picture Laboratory during April or May, 1930. The 62d Coast Artillery will be the actors for this picture and it will be taken during the 62d's stay at Aberdeen Proving Ground.

The preparations for the taking of a training film are elaborate and worked out to the smallest detail. There must be a scenario. A liaison officer (technical adviser) must be present with the Signal Corps for several weeks prior to the actual filming. This picture taking differs from the commercial picture because the smallest error would be instantly noted and the value of the film as a training agency lessened.

Films are an important means of training. They are valuable to the enlisted personnel of regular units but those who really appreciate them are those officers on detached service with Organized Reserve or R. O. T. C. units where neither the personnel or the materiel is at hand and where the imagination of those who are trying to learn is stretched to the limit to visualize what actually occurs. With the film the team work can be observed as well as the detail duties of each individual. With the perfection (?) of the talkies a still wider film field is opened. The actual noises of the materiel, the exhaust of the motors, the rumbling of the trucks, the crack of the guns, not only leave less to the imagination but bring a realization that noise of operation of a firing battery is something to be taken into consideration in action. Sound films would be invaluable for certain special instruction, voice inflection and command drill, for instance. Those who used to conduct Butt's Manual, and like it, would enthuse, no end, over a sound film, with band music and all trimmings.

The Coast Artillery School

There is now being conducted at the School a course known as the Refresher Course. It has been provided for senior officers of Coast Artillery who have been detached from the Corps for a considerable period and offers them an opportunity to quickly inform themselves of all developments in materiel and methods which have taken place during their period of duty away from their branch. General officers appointed from other branches and assigned to command of Coast Artillery troops are generally given an opportunity to become more familiar with Coast Artillery methods through the medium of the refresher course.

This course differs from the other courses. There is no definite and prescribed period of duration although it generally runs for about three months. It is conducted under the direct supervision of the Assistant Commandant and consists of faculty-directed study, conferences, and discussions. No tests are given. Monroe is an ideal location for the conduct of a refresher course. The facilities of the School including its faculty, materiel, and library are available while in addition nearly every form of

Artillery activity can be observed at first hand in the Harbor Defenses of Chesapeake Bay or at nearby posts. Langley Field with the Air Corps Tactical School is also an asset and much information from the air viewpoint is available.

At the present time Brig. Gen. Andrew Moses, Col. George H. McManus, and Lieut. Col. Francis G. Behr are taking the course.

Perhaps our memory is at fault but it seems to us that never has there been a period when so many opportunities were offered to students and instructors of the School to observe Navy materiel and gunnery methods. During September a number of school officers and members of the Coast Artillery Board were permitted to witness the calibration firings recently conducted by two newly gunned battleships. Since the Navy policy is to hold the details of such firings confidential it is not desired to jeopardize the present friendly relations which exist by publishing any information as to methods used and results obtained. Nevertheless, those Coast Artillerymen who witnessed these firings increased and broadened their knowledge of gunnery. Again in October a number of officers were permitted to be present at night firings conducted by the Navy off the Capes. The closest cooperation should exist between the Coast Artillery and the Navy. Although "enemies" in all the war games the closest liaison is sought at all other times.

The School officers will ("will", when this was written) also be given a trip to Aberdeen Proving Ground to witness the firing tests now being conducted there by the 61st Coast Artillery (A. A.) before the board appointed for the purpose. October 24th is the tentative date set for this visit.

Speaking for ourself, it appears that the school as now conducted is combining much of the practical with the theoretical; that unusual opportunities are offered for observation and the gaining of knowledge which would be impossible, to as great an extent, at any other place of duty.

Harbor Defenses of Cristobal

1st C. A. (H. D.), 2d C. A. (H. D.), 2d Bn. 65th C. A. (A. A.)

Recent activities in the Harbor Defenses of Cristobal have been confined to gunners' examinations and preparations for the annual inspection by the District Commander, Brig. Gen. William M. Cruikshank. General Cruikshank conducted his inspection of personnel, infantry drill, and barracks during the last week in August. This is the last inspection to be made by General Cruikshank since he will leave in a few months to command the 2d Coast Artillery District, Fort Totten.

The 1st Coast Artillery (H. D.) completed their gunners' examination with a perfect score—one hundred per cent qualified. (The active organizations of the 1st are Headquarters and "E" Batteries.) Battery "C" of the 2d led that regiment with ninety-seven and five-tenths per cent qualified.

Athletics in the Panama Coast Artillery District (in the entire Department for that matter) is an important part of the training. Baseball, swimming, basketball, boxing, and track are the outstanding sports. Football, it might be supposed, is not a popular tropical sport although basketball seems to thrive and it is strenuous enough in a hot climate. The popularity of athletics in Panama is probably due to the encouragement furnished by Department Headquarters in conjunction with a similar encouragement of athletics by the Canal Zone Government. There is little opportunity for professionalism in the Zone itself or even in Panama, with the possible exception of boxing. At the present time swimming is the active sport although track men and boxers are beginning their preparations for the season which culminates in the Department in November and December.

No regiment is prouder of its record than the 1st Coast Artillery and well it may be. The numeral "1" which gives an indication as to the age of this regiment has a place in its motto which is "First among equals." So it is not surprising to find this unit celebrating on its Organization Day its participation in the Battle of Churubusco during the Mexican War. This celebration was held on August 20 with fitting ceremonies. The Regimental Commander, Col. R. E. Wyllie, briefly reviewed the regimental history for the benefit of those who have joined since the last Organization Day. One could not fail to be impressed with the honor of being a member of a regiment with such a glorious history. The celebration was topped off by a picnic and a baseball game between Randolph and DeLesseps—a close game which Randolph won, 1-0.

The entire Harbor Defense is preparing for the active artillery season which, in Panama, takes place during the Winter months (the dry season). Last year all firing batteries received a rating "Excellent." While it is impossible to excel this, every effort is being made to equal the record of last year and the indications at present are that it will be done.

The 16th C. A. (H. D.) Fort Ruger

It does not seem reasonable that a battery of Coast Artillery should be giving swimming lessons to native Hawaiians, but we are informed by our correspondent of the 16th that such is the case. Battery "A" of this regiment is very proud of the prowess of its swimmers. Its First Sergeant, E. C. Corn, is the instructor, coach, and general pep injector of the swimming team of the Harbor Defenses of Honolulu which, it should be noted, is made up entirely of men from Battery "A".

During the latter part of September the swimming team, in charge of Sergeant Corn, visited the island of Maui to give an exhibition of diving and swimming. Their schedule included an exhibition before five hundred school children and several clubs including the exclusive Puunene Club. They visited the more important towns on the island including Wailuku and Puunene. The people of Maui are very hospitable and made every

effort to make the Coast Artillerymen's visit a pleasant one. It is recalled that there are many sights on this island worth visiting, including the largest volcanic crater in the world. The swimming team reports that it saw them all and received much praise for the exhibitions which they gave.

Our personal opinion is that the battery letter of this outfit is no misnomer and that it is A-1 in everything it undertakes. We know it keeps itself informed on artillery matters because it has been a subscriber to the JOURNAL for the past five years.

Practice March of the 51st Coast Artillery from Fort Eustis to Fort Story, Virginia

By MAJ. E. K. SMITH, C. A. C.

The 51st Coast Artillery left Fort Eustis, Va., April 29, 1929, on its annual practice march. The requirements at that time were that the regiment remain on the road for one week; also the 51st C. A. was ordered to Fort Story, Va., for its annual practices and to participate in a battle practice during the month of May.

The two requirements mentioned above were combined and upon completion of the practice march the regiment was at Fort Story, Va.

In preparation for the march the regiment was divided into two columns, the heavy and the light column, with the following composition:

Heavy Column

- 8—155 M/M G. P. F. Guns
- 13—10-ton Tractors
- 2—5-ton Tractors
- 2—Plotting Cars (Ordnance Baggage Van)
- 1—10-ton Trailer
- 1—5-ton Trailer
- 2—Water Carts
- 1—Rolling Kitchen
- 4—G. M. C. Trucks
- 1—G. M. C. Ambulance
- 8—F. W. D. Trucks
- 1—F. W. D. Gas Tank
- 1—Dodge Light Repair
- 1—Cross Country Car
- 2—Passenger Cars

Personnel: 4 Officers, 132 Enlisted Men

Light Column

- 29—F. W. D. Trucks
 - 3—F. W. D. Gas Tanks
 - 15—G. M. C. Trucks
 - 1—G. M. C. Ambulance
 - 5—Motorcycles
 - 2—White Recon. Cars
 - 1—White Radio
 - 4—Water Carts
 - 3—Rolling Kitchens
 - 1—Ordnance Trailer (for spare parts)
 - 8—Passenger Cars
- Personnel: 8 Officers, 175 Enlisted Men

The routes selected and actually followed by both columns were as follows:

Heavy Column:

Fort Eustis—Fort Monroe—via ferry to Army Base, Norfolk, Va.—Fort Story via Virginia Beach. Bivouacked at Hampton, April 29, Army Base, April 30, and at Fort Story, May 1.

Light Column:

Fort Eustis—Richmond—Petersburg—South Hill—Camp Lee (Petersburg)—Franklin—Portsmouth—Fort Story. Bivouacked at Kingsland, Va.,

April 29—South Hill, April 30—Camp Lee, May 1—Beaver Dam Church, May 2—Portsmouth, May 3—Fort Story, May 4.

The return march to Fort Eustis covered the period May 31-June 1, 1929. The heavy column with the same number of personnel returned by the same route as stated above. The light column returned via Fort Story—Norfolk—Portsmouth—Drivers—James River Bridge System—Newport News—Fort Eustis. The light column arrived at Fort Eustis, 11:00 a. m., May 31 and the heavy column 1:30 p. m., June 1, 1929.

The heavy column cleared Fort Eustis at 5:30 a. m., April 29, and was on the march by 4:00 a. m., daily, thereafter, arriving at the new camp at or before 2:00 p. m.

The light column cleared Fort Eustis at 6:00 a. m., April 29, and was on the march by 6:00 a. m., daily, thereafter, and arrived at the new camp about noon, except for the first day. Due to the heavy traffic on the Richmond road the column was delayed, but all were in camp by 3:00 p. m.

The march of both columns was made an outing as far as possible. The early departure from and arrival at camps gave the column a good start before a heavy traffic was encountered, and plenty of time to make any repairs, to oil, grease, gas, and water all vehicles in preparation for the next day's march. All men not needed at camp were given passes to visit the cities in the vicinity of camp as soon as their vehicles were prepared for the next day's march.

One complete firing battery plus the gun and tractors of the other firing battery, with an ambulance and a light truck for the Ordnance personnel and spare parts of vehicles carried on the march, constituted the heavy section. Two G. M. C. trucks carried the military police used on the march to mark the route, prevent accidents at dangerous crossings, etc. For purpose of training one firing battery handled the administration, messing, etc., of this column one way. On the return the other firing battery took over these duties. This gave the personnel of each firing battery, especially the officer personnel, experience with both columns.

The performance of the materiel was as follows:

Guns and materiel:

Functioned without trouble of any kind.

Tractors:

Some difficulty was experienced with the tractors on this convoy. A brief résumé of the principal troubles is given below.

Six magnetos had to be replaced, due to jumping out of time and melting of shellac. Corrected on the road.

Four top roller brackets broken on 5-ton tractor caused by a part of a broken top roller catching in the track. Repaired while ferrying across Hampton Roads.

Blown cylinder head gasket on one tractor. Repaired while ferrying across Hampton Roads.

Burned out bearings on three tractors. Tractors left at Fort Monroe on return trip, overhauled and driven back to Fort Eustis. This was caused apparently, by using too light oil in the crank cases.

F. W. D. Trucks:

Very little serious trouble was experienced with these trucks which is considered exceptional for war-time materiel.

Three cases of carburetor trouble. Repaired on road.

Four magnetos jumped time. Five magnetos replaced due to melting of shellac. Repaired on the road.

Burned out connecting rod bearings on one truck, cause unknown. Repaired in camp.

Broken water manifold, eaten through and corroded. Repaired in camp.

Four cam shaft flexible couplings broken, due to dry-rot. Repaired on road.

Two gasoline lines broken. Repaired on road.

One service brake burned out.

One front drive shaft broken, one rear jack-shaft broken. Both trucks proceeded under own power. Replaced at Fort Eustis.

G. M. C. Trucks:

Functioned properly and with only minor troubles occurring and these corrected at once on the road.

Dodge Light Repair Truck:

Functioned O. K.

Passenger Cars:

Chrysler touring functioned perfectly. Chevrolet sedan—had to purchase, to keep in running condition, one new generator, one new motor armature, complete new wiring system and new fender.

Motoreycles:

Gas line broken in two cases:

Clutch slipped—three adjusted on road.

One—magneto trouble.

Five motoreycles beyond road repair.

White Reconnaissance and Staff Cars:

Functioned satisfactorily.

Practically all of the various defects and injuries noted above were repaired by battery mechanics, the small Ordnance detachment, and drivers, on the road.

All vehicles used on this convoy were of war-time vintage. Considering this, their performance on the road was very good, even better than could reasonably have been expected. Every vehicle in the regiment except three ten-ton tractors and one five-ton tractor was taken on the march.

The morale of both officers and men was high. Everyone wished to remain on the road another week. Not a single man was sick or injured. Light lunches were served at noon, when the columns were on the march. After arrival at camp, good hot meals were served. If the drivers are served heavy noon meals while on the road, they become drowsy—and almost any kind of an accident might be expected.

The preparation for the march consisted in reconnaissance of the routes, selection of the routes to be followed, selection of camp sites, arrangements with the owners of the land for their use, selection of cities and the letting of contracts for replenishing the supply of gasoline and oil, arrangements with the chiefs of police of large cities for escort through their cities, with the city manager or fire department for water, a length of hose and a hydrant wrench, through Chambers of Commerce inquiries were made where to purchase fresh vegetables, meat, ice, etc., besides the preparation of the transportation, personnel and materiel and the drawing of staple articles of the ration for the duration of the absence from Fort Eustis, and designation of equipment and baggage to be carried.

The supply officer was designated Agent Finance Officer for the march, which facilitates the transaction of business.

Organization Day Celebration

52nd Coast Artillery (Ry.) Fort Eustis, Va.

On Thursday, September 26, the 52d Coast Artillery (Ry.), celebrated its eleventh anniversary of Organization Day. September 26 was chosen as Organization Day of the regiment for on that day, 1918, the regiment as a unit engaged the enemy in the World War, the date of the beginning of the Meuse-Argonne offensive, and not as the day the regiment was first organized.

Departing from the usual custom of making it a gala day by holding exercises and athletic events covering the entire day, the procedure this year was more of a holiday and day of rest for the command.

The following is the program for the day:

7:30 a. m.—Reveille March around Regimental Area by Band.

9:00-10:00—Exercises at 52nd Athletic Field consisting of

Band Concert 52nd C. A. Band

Invocation Chaplain Dignan

Reading of History of Regiment Capt. A. W. Gower
Regimental Adjutant

Greetings from Post Commander Brig. Gen. C. D. Roberts

Benediction Chaplain Boyd

Star Spangled Banner 52nd C. A. Band

12:30 p. m.—Holiday dinner at all batteries.

8:00 p. m.—Regimental Dance.

The 52nd Coast Artillery (Ry.), was organized from units of the 7th Regiment, C. A. C., while in France on August 6, 1918, and at the present time consists of the following organizations:

Regimental Headquarters and Band
Headquarters Battery
Service Battery
Battery "C"
Battery "D"
Battery "E"
Battery "F"

The 61st Coast Artillery (A. A.)
Aberdeen Proving Ground, Maryland

The month of September has been an eventful one for the 61st, inasmuch as the annual fall tests have started at Aberdeen Proving Ground, Maryland, and the regiment has again been assigned to duty there.

The first ten days were spent in barracks at Monroe, while loose ends remaining from Summer camps were gathered up, and the batteries began to get in shape for the intensive work ahead.

On September the 6th the advance party left by light convoy. Captain Marquat took with him Lieutenants Mendenhall and Merritt and about forty men, comprising supply and mess details and chauffeurs, and manning most of the light trucks of the regiment, including the six 1925 Cadillac searchlight units (than which there are no better looking pieces of rolling stock in the Coast). The trip was made in good time, Fort Humphreys being the overnight stop after a one hundred and eighty-five-mile haul. A broken rear axle on one of the Cadillacs was repaired in Richmond by the Cadillac people; and a G. M. C. had stripped its running gear completely out, and also wrenched its frame, when the drive shaft broke while running downhill, was practically rebuilt overnight, four skilled mechanics from Battery "A" working in pairs on it until 11:00 p. m. When the convoy moved out of Humphreys the next day every vehicle was under its own power, a point on which the regiment has always prided itself. Aberdeen was reached about 2:00 p. m., and the two hundred and eighty-five-mile trip had been successfully negotiated. Police escorts through Richmond, Washington and Baltimore were courteously efficient.

The main body of the regiment left Monroe at 10:15 p. m. the night of the 11th. The trip was made by water, and the night march of the regiment to the docks, led by the 12th C. A. Band, caused much favorable comment on the fine appearance of the troops. The mine planter, *General J. M. Schofield*, towing an open barge full of trucks and guns, and a closed barge housing most of the troops, furnished the motive power for the "Amphibians." The tail end of a storm made the early part of the

trip a bit rough, matters being complicated by a parted towline. The greater part of the journey was without incident, however, and at 11:00 a. m. on the 13th the mine planter hove to three miles off the Proving Ground dock. Small launches towed the barges the rest of the way. Unloading proceeding smoothly and efficiently, the men going ashore first for dinner, and the materiel and trucks being swung off in the afternoon, the latter with the help of a traveling crane.

The week-end enabled the regiment to settle down for the firing, which began in earnest the 17th. This year efforts are being concentrated on developing fire control instruments and distant control features. The 1917 and 1918 guns and the 30 and 50-caliber machine guns are being used throughout the tests.

The morale has been kept high by special efforts to divert the men. One of the few disadvantages of Aberdeen is its isolation, which necessitates a greater emphasis being placed on recreation. Regular week-end bus schedules to nearby towns, and a football convoy every week-end—usually to Annapolis—good Post golf course, an excellent Officers' Club and up ahead the prospects of some good shooting before the regiment's tour is up.

The season of special events has just begun. The test firings draw many spectators, professionally speaking. A Turkish mission of officers visiting this country for military reasons opened the ball the week of the 23rd. Group visits from the Naval Post Graduate School at Annapolis have started. Boards from Washington, and observers from practically all the other branches, drop in frequently.

October promises more of the same interesting if intensive work, some of it routine and much of it special in nature. The 61st looks forward with interest and pleasant anticipation to the rest of its stay at Aberdeen. Its treatment has been of the best; all are especially pleased at the way the Ordnance and the Coast team up.

The 240th Coast Artillery (H. D.) Maine National Guard

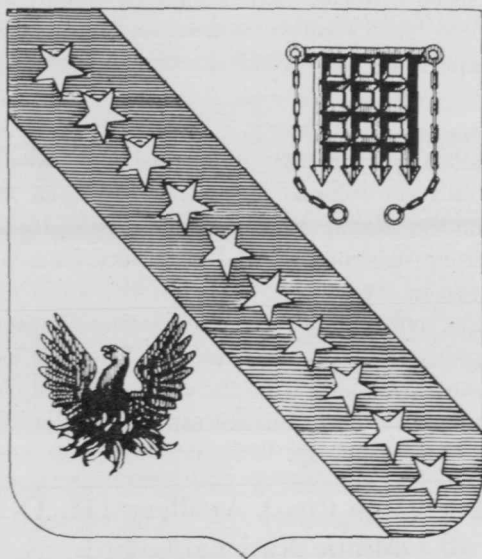
By MAJ. O. C. WARNER

Before any regiment may wear a distinctive regimental insignia, usually the coat of arms, its history must first be written and approved by the Historical Section, Army War College. The history of the 240th Coast Artillery, Maine National Guard, and its separate units, and former units was compiled and written in 1927-28 after a great amount of research. It consists of eighty closely typed pages. Each page has its left margin well filled with references showing where the statement of fact was obtained. The document is divided into four chapters as follows: History of the 240th C. A. Regiment; Chapter 2, The Ten Battles of the Civil War; Chapter 3, The History of the Twelve Units Now in the Regiment; Chapter

4, The History of Each of the Twenty-five Units formerly in the Regiment. Appendix I, Bibliography; Appendix II, Abbreviations; Appendix III, Copies of Orders and Documents.

The Coat of Arms of the regiment (see cut) has a white background with a bend filled with ten stars for the ten battles of the Civil War in which it participated. On top of the shield is a porteullis, signifying the regiment's main duty as defenders of Portland, Maine, and underneath the bend a Phoenix taken from the Crest of the City of Portland, Maine. The crest above the shield is a Pine Tree for all Maine Regiments.

Seven of the eight firing batteries now organized have been reconstituted from World War units. Batteries "A" and "D" were organized in 1803 and 1807, respectively, in Portland, Maine, when Maine was a part of the State of Massachusetts. The regiment was reorganized in 1854 as the First Maine Infantry Regiment, and has a continuous history since that time.



The Colors of the Regiment are decorated for the following campaigns:

Valley
Manassas
Antietam
Chancellorsville
Louisiana, 1864
Shenandoah

The regiment was overseas during the World War as a part of the 54th Artillery. Part of it remained in the C. D. of Portland, Maine, as defenders of that harbor.

No unit in the United States has a better historical background than the 240th C. A. The regiment has had only fifteen commanders since 1854. The present commander since 1921 is Col. George E. Fogg, of Portland, Maine. Its lieutenant colonel is Henry W. Owen of Bath, Maine, who has served with the regiment since 1906. Other officers who have had long service with the regiment and are now with the regiment are Maj. George Kern, Commanding the First Battalion, Portland, Maine, and Capt. Burr T. Davis, of Battery "D", Portland, Maine. There are still in the regiment about fifteen key non-commissioned officers who have had long service in the regiment including war service.

The motto of the regiment is: *Semper Primus et Fidelis* (Always First and Faithful).

The regiment is now organized in Portland, Sanford, Brunswick, Rockland, Thomaston and Camden, Maine. It is mobilized annually and trains for fifteen days at Portland, Maine, harbor defenses. Four firing batteries hold target practice on 10" rifles, and four on 12" rifles. One battery has for two years past fired the long range 12" battery (Foote) on Fort Leavitt. This battery has no permanent communications. Twenty miles or more of temporary wire communications are laid and taken up by the Regimental Communications Section as a matter of training so that this battery may be fired each year. All batteries use airplane spotting each year and in addition train terrestrial spotting sections in each battery. All of its six armories are provided with moving target devices for training of its range sections before active duty periods. The regiment has a large number of qualified first, second and expert gunners, who are examined each year after intensive training in the armories and at the harbor defenses. The intense interest of most of the units in rifle marksmanship is an indication of the excellent military spirit pervading the entire regiment.

What is this something that shatters the bonds of fear? We call it discipline. But we can not speak the word and pass it by. Discipline is a complex and organic entity, its development is a process of growth. Blind, automatic obedience does not constitute discipline. The man, be he soldier or civilian who does only what he is told, and that grudgingly, is not disciplined, nor is he destined to long survival on the field of play, of business, or of battle. The essential of discipline is the will to play the game out, regardless of comfort, of glory or of personal risk.—From an address by Gen. Charles P. Summerall, Chief of Staff, at Louisville, Kentucky.

PROFESSIONAL NOTES

The Coast Artillery (A. A.) Camp for Reserve Officers at Camp Knox, Kentucky, July 28-August 10, 1929

By LIEUT. COL. J. R. MUSGRAVE, C. A. C.

For the past three years there has been conducted each Summer at Camp Knox, Kentucky, a fourteen-day training camp for the Coast Artillery Reserve officers of the Fifth, Sixth, and Seventh Corps Areas who are assigned to Reserve Antiaircraft Artillery Regiments. Camp Knox is not an ideal place for the conduct of a Coast Artillery Reserve Camp. The camp itself is a war-time construction. There are no regular Coast Artillery troops stationed here and no modern antiaircraft materiel. Economy is the principal consideration in the designation of Camp Knox as a location for training the Coast Artillery Reserve Antiaircraft officers of the three Corps Areas. The saving in mileage paid Reserve officers is considerable.

The camp, in some ways, is unique. It is believed to be the largest group of antiaircraft artillery officers assembled together at one time for training in the United States. In 1927, the number trained was one hundred and twenty-three; in 1928, one hundred and forty-one; and this year two hundred and five officers reported for training. Its members came from fifteen states. It depends mainly for its training materiel on that brought to camp by the detachment from the 62d Coast Artillery (A. A.), Fort Totten, N. Y.

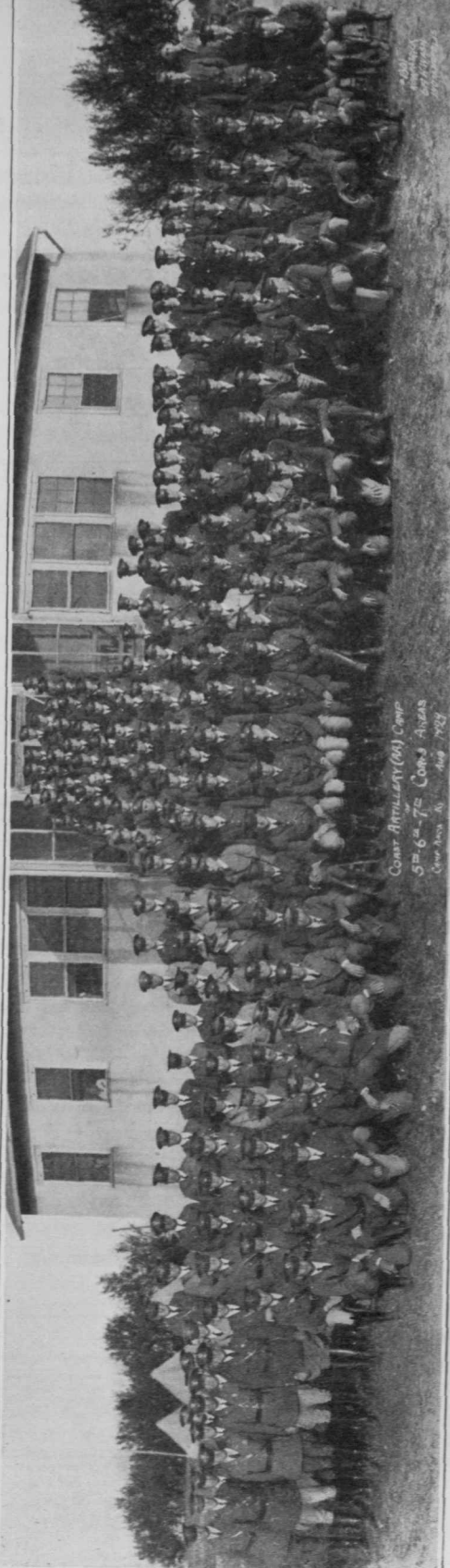
Although the camp possesses a number of points of interest, this article will confine itself principally to the discussion of organization for and conduct of antiaircraft artillery training and materiel.

Some months prior to the opening of camp, the Commanding General, Fifth Corps Area, announced in orders the approximate number of Reserve officers who would attend from each Corps Area, the strength of the detachment to be sent to the camp from the 62d Coast Artillery (A. A.), and later, by letter, designated a Regular Army Coast Artillery officer in the Corps Area to command and to prepare a training schedule for the camp. After approval of the schedule, sufficient copies were furnished each Corps Area for distribution to individual officers ordered to camp.

Reserve officers upon reporting at camp (which for some from the Seventh Corps Area is not until the afternoon of the second day) were divided into two sections which in turn were organized into two gun batteries with the surplus of each section going to make up a machine gun battery, in whole or in part. Incidentally, the section should be, when practicable, of sufficient size to form both a gun and machine gun battery and the two batteries should be approximately the same strength which will facilitate the shifting of personnel from gun to machine gun battery and vice versa. The change from gun to machine gun battery can be made without loss of time at Camp Knox, since the sector of fire being small (four hundred and thirty mils), the guns and machine guns were placed in close proximity at the apex of the sector.

Each section remained intact for other instruction such as terrain exercise, pistol practice, and close order drill.

Battery manning tables for both gun and machine gun batteries, in which all positions were filled by Reserve officers, were prepared and ready for use when the officers reported at the armament for their first drill. In this organization such field officers of both sections as had a satisfactory knowledge of the antiaircraft artillery being studied were formed into a Field officers' class and



received special instruction. Otherwise, they were designated to take battery training.

Each officer, although he may have an assigned position in the manning table, was given instruction in gun, machine gun, and searchlight battery work. A blank form with all subjects of instruction listed, as shown below, was furnished each officer early in the training period and served as a guide to him in seeking out instruction and at the same time indicated to instructors the scope of individual qualification. An inspection of these sheets at the end of camp showed that with but few exceptions officers had received instruction in all subjects.

COAST ARTILLERY (A. A.) CAMP

Camp Knox, Ky.

July 28—August 10, 1929

Name: C. A. Res. C. A. (A. A.)

The above-named officer has received instruction in subjects indicated.
“V” indicates instruction received. “VV” indicates is qualified to instruct.

	Check “V” or “VV”	Initial of Instructor
1. 3" A. A. Gun:		
Battery Commander		
Executive Officer		
Range Officer		
Vickers Data Computer		
Height Finder		
Altimeter		
Spotting System		
Meteorological Data		
Gun Drill		
Trial Shot Problem		
Correction of fire from obser- vation of shots.....		
Analysis of Practice		
2. A. A. Machine Gun:		
Battery Commander		
Battery Officer		
Range Officer		
Data Computer		
Altimeter		
Sight Setter		
Control Station		
3. Searchlight Platoon:		
Platoon Commander		
Searchlight Electrician		
Searchlight Detail		
Sound Locator:		
Listeners		
Comparator Operator		
4. Various:		
Terrain Exercise		
Pistol Practice		
Military Correspondence		
Salutes		
Uniform Regulations		
Company Close Order Drill		

Except for one Cadillac Searchlight Unit, all of the antiaircraft artillery training materiel was brought overland from Fort Totten, New York, by the detachment of the 62d Coast Artillery (A. A.). This materiel consisted of two 3-inch guns, Model 1918 MI (the latest model and the Standard Mobile A. A. Artillery weapon); the gun battery fire control equipment, including the Vicker's Data Computer and Stereoscopic height finder; eight machine guns with tripods, four of which were equipped with the Morrison sight control and used in connection with an improvised fire control installation in which deflections are obtained from a converted R. A. Corrector; three Cadillac 60" Sperry Searchlight Units; and one Long Horn Sound Locator. A prime mover and a Coleman Truck were employed for transporting the two 3-inch guns.

The instructing personnel for the camp consisted of Regular Army Unit Instructors from the Fifth, Sixth, and Seventh Corps Areas, a training detachment from the 62d Coast Artillery, and 1st Lieut. Harry F. Meyers, C. A. C., on duty with the R. O. T. C. Unit, University of Kansas. Maj. I. E. Titus, C. W. S., Chemical Warfare Officer, Fifth Corps Area, was also present and gave an instructive demonstration in gas defense.

The Unit Instructors present:

From the Fifth Corps Area:

Lieut. Col. J. R. Musgrave, C. A. C.

Maj. H. LeR. Muller, C. A. C.

Capt. John R. Clark, C. A. C.

From the Sixth Corps Area:

Maj. Kelley B. Lemmon, C. A. C.

Maj. Donald N. Cole, C. A. C.

From the Seventh Corps Area:

Col. Wm. H. Raymond, C. A. C.

Lieut. Col. Frank B. Edwards, C. A. C.

The training detachment was made up from specially qualified officers and enlisted men of the 62d Coast Artillery (A. A.) and consisted of:

Capt. John T. Lewis, 62d C. A. (A. A.), commanding

Capt. Douglas E. Morrison, 62d C. A. (A. A.)

2nd Lieut. Sylvan Berliner, 62d C. A. (A. A.)

and sixty enlisted men. Among these enlisted men was a number of non-commissioned officers whose knowledge of antiaircraft artillery was surprisingly extensive. They made valuable assistant instructors. The instruction given by 1st Sgt. Theodore R. Wiley, Battery "C", 62d C. A. (A. A.) on the Vicker's instrument was noticeably excellent.

Two planes for towing targets were furnished for the camp by the Commanding General, Sixth Corps Area from Selfridge Field, Michigan. These planes operated every morning, afternoon, and for night firing from Bowman Field, Louisville, Kentucky, distant thirty miles from Camp Knox. They were piloted by 2d Lieut. Paul E. Shanahan, Air Corps, and 2d Lieut. C. F. Davidson, Air Corps Reserve. The work of these two pilots, although neither had had previous experience in towing targets for antiaircraft practice, was consistently good and punctual.

The officers of the 62d Coast Artillery (A. A.), having been selected for this duty by reason of their special knowledge of antiaircraft artillery were made responsible for the technical artillery instruction at the batteries. Unit Instructors cooperated and assisted in the artillery instruction. The instruction in antiaircraft artillery terrain exercises was conducted by Maj. H. LeR. Muller,

C. A. C., (D. O. L.), while the instruction in the trial shot problem and analysis of practice was directly in charge of Lieutenant Meyers.

The training day of seven hours was divided, in so far as possible, so as to allow each section four hours' instruction daily on armament and three hours for other scheduled training including instruction in the trial shot problem, correction of fire from recorded observations of shots, and a course in analysis of practice. The four hours for battery work (less about forty-five minutes for formations and going to and from the battery, four miles from quarters) was divided between gun battery and machine gun battery instruction, the latter period including also instruction in searchlights and sound locator.

On the afternoon of the second day of camp, officers were given general instruction in materiel. The third day of camp, drills were held with a plane present for tracking purposes. The fourth day the batteries were ready for firing on the towed target but as the target towing plane had to undergo repairs it did not report for towing service until the fifth day. During the period of the camp one section held six-day and one-night practices on the gun battery and a like number on the machine gun battery; the other section, five-day and one-night practices. Due to lack of time and the inexperience of the analysis board, composed of Reserve officers and coached by Lieutenant Meyers, it was practicable to complete the analysis of but two gun and three machine gun day practices. In both cases early practices were selected for analysis, which although satisfactory as to time and hits made, were not so good as later practices appeared to be. During the entire firing at camp three towed targets were shot down, one by a direct hit which shot away the forward end of the target. The following shows the results of those practices analyzed.

Guns—

	No. Rounds	Hits	H. P. G. P.M.	Score
Group A	66	6	1.37	73.1
Group B	140	5	.56	41.0

Machine Guns—

Group A	4263	35	3.98	26.5
Group B	3835	20	2.92	32.5

The training given at the Camp Knox camp was conducted with a view to imparting the maximum of instruction in antiaircraft artillery under the conditions existing, particularly in familiarizing officers with antiaircraft materiel, its practical operation, and analysis of firing. After undergoing this training, the theory and various discussions met with in the correspondence school texts are readily comprehended. The training was based also on the assumption that regardless of battery or staff assignments all Reserve officers should have a practical knowledge of the materiel and equipment of an antiaircraft artillery regiment since there are frequent changes in battery or staff assignments in Reserve regiments not only while in the same grade but upon promotion. A general knowledge of all antiaircraft materiel should be imparted in the training of Reserve officers, particularly field officers, for the reason that they are often called upon to act in the capacity of instructors of other Reserve officers at troop schools when a general knowledge of antiaircraft artillery will be found most useful.

We depended and leaned heavily on the officers from the 62d Coast Artillery (A. A.) for the technical training in antiaircraft at the Camp Knox camp. Their knowledge is thorough and up-to-date and in the limited period of the camp, they were able to cover much ground. Until such time as a Regular Army A. A. Artillery unit is stationed in the wide area served by the Camp Knox

glider. It is exactly similar to a slide down a hill on a bob-sled, only the slide is made about ten feet or less above the contour of the hill. The longer the hill with the proper slope, the longer the ride. The controls of a primary-glider are identical with an airplane and during the glide the student may use the rudder-bar with his feet for steering right or left, and the joy-stick moving in four quadrants controlling the elevator and ailerons. Now let us watch a boy fourteen make his first glide. The glider is poised on the top of the slope, its skid, used in place of landing wheels, resting upon a wooden runway. And facing the wind which rolling up the hill-slope creates an upward current of air. Attached to a hook in the nose of the glider is the center part of a long rubber rope, the ends of which are each held by three or four men who are in advance of the plane and slightly to one side, forming a V. The skilled German instructor (there are five German experts at the camp) instructs the student in the use of the controls, something like this, "Keep the stick slightly back until you feel that you are at the top of the trajectory then level the glider by moving the stick slightly forward, then by moving the stick ahead, the glider will slowly settle until the skid hits the ground. Don't use the rudder or ailerons as you are just going to make a straightaway glide, and don't worry, nothing can happen to hurt you no matter what you do." Remember when you were a kid, how you bent a pin and placing a rubber band over two fingers, drew the pin back and let go? The pin flew forward and away on its mission of annoyance. Well that is just how a glider is shot into the air. When all is ready the command is given "Walk," the men on the end of the rubber rope take up the slack, then at "Run" they move forward on the run and cause the rope to stretch. When there is sufficient tension, the command "let go" is given to the man holding the tail. Up she shoots, and then like a leaf fluttering along the wind, the glider floats along until it meets the ground.

Now, supposing the student gets cold feet as soon as the ship is in the air and pushes the stick forward. Why, nothing happens except that the gliding angle is decreased and the glider lands short of its maximum glide. It is sailing at a very slow speed, not more than ten miles per hour so the bump on the landing is slight. The student is strapped in and the worst that can happen to him is the habitual kidding of his fellow students. He learns in very few flights that a good flyer must stay in the air. I witnessed dozens of flights by students of varied experience and the manner in which these boys handled the gliders in flight was astounding.

The students are kept flying the primary glider until they can maintain the maximum elevation, thereby making the ultimate time of flight, can turn right and left, and are able to land at a designated spot along the beach.

The advanced course, called Soaring or Sail-planing, entails all the knowledge of gliding plus the knowledge and use of air currents. The extreme lightness of these finely constructed planes enables them to gain altitude by utilizing the elevating characteristics of the winds. Much the same as a sail boat makes forward progress by tacking back and forth so does the soaring pilot seek and utilize these currents to aid him in gaining altitude. The length of time the pilot can remain in the air depends upon his properly using the upward air currents which eddy above the hilltops or other projections above the ground.

It is difficult to explain the delicacy of construction of these advanced soarers. The best example I can think of is the wing construction of a butterfly. Hold one up to the light and look through the wing. Hundreds of fine spider-web fibres forming the frame for the wing fabric. See a soarer in flight and the same effect is given. The framework over which the fabric is glued consists of hundreds of sections of light wood, no thicker than a pencil all glued together

into a framework. The extreme lightness coupled with the large wing area gives a high degree of buoyancy which reacts like a feather to the upward current of air. Soaring above a vertical current the soarer reaches the limit of elevation, then, as a seagull, he glides slowly and gracefully to the nearest hill, above which his experience has told him another vertical column of air will be found. And so it goes, rising, circling, soaring and rising again, until the birdman lightly touches the ground. The record for time in the air is sixteen hours. Imagine one stating that this method is impracticable. Did any motor plane, in the third year of its infancy, stay aloft so many hours?

I was very much interested in learning that the Navy, being alert to the advantage of training its pilots first in the art of gliding, had sent one of its officers to this school for the complete course. This officer completed the thirty-day course and qualified as a soaring pilot. He made a very successful flight and has become very enthusiastic as to its values as the ground school of aviation. Here is a system of training where the student makes an actual flight alone in a plane on the first day he arrives in camp. It seems to me, knowing nothing about flying, that this method would give me a lot more confidence than to make my first flight in a noisy plane taking off and landing at sixty miles per hour. In a power plane the problems of motor, controls, stalls, and landings seem to push the student in the face all at once. Gliding as I saw it seemed to enable a boy to fly safely with nothing much to worry him at any time.

There seems to be a belief that gliding is limited to a certain type of terrain. The hill that I saw being used at Cape Cod is no different from thousands around the suburbs of New York. As a matter of fact primary gliding can be done from any hill one hundred feet high.

The thrill that comes from witnessing flights of this character as well as the cordial manner in which this camp is run, prompts me to recommend a motor trip to Cape Cod, by all Coast Artillery officers, who I am assured will be welcomed most heartily by their buddies of the 607th.

NOTE: Commencing in 1926, the Chief of Coast Artillery has directed effort toward providing glider targets for antiaircraft target practice. The work of development has been undertaken by the Air Corps at his request. The first gliders were delivered to the Coast Artillery Corps in May, 1929, and fired on by the 61st and 62nd C. A., at Fort Story, Va. This first model did not perform satisfactorily, though great interest in the possibilities of such a target was aroused.

The gliders used at Fort Story were well made and quite expensive. They weighed about twenty pounds and had a wing spread of ten to fourteen feet. They were taken up and released from a plane in flight, gliding to earth much the same as would an airplane, losing altitude slowly, in the meantime serving as a target for the antiaircraft guns. Some of them were used time after time, making their landings without injury. Buildings, trees and steep banks damaged many of them, however, some being totally destroyed in their first flight.

To prevent such damage, experiments have been conducted with parachutes fitted to the glider. The chutes have a time fuse so set that it will operate a definite period of time after the release of the glider by the plane. Upon the functioning of the fuse, a small parachute is released which checks the forward flight of the glider and allows it to settle very slowly to earth, where it may be recovered for repeated use.

YOU TELL EM

This Is Our Apology: Television Is Not Perfected. We Have Spoken to Him About It.

HEADQUARTERS 62ND COAST ARTILLERY (A. A.)
Office of the Regimental Commander

Fort Totten, N. Y.,
September 19, 1929.

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

First let me congratulate you on your September issue. If you continue to send out a publication as alive and full of interest as this issue, the JOURNAL will sell itself with little or no assistance from Regimental Commanders and in my opinion it will be but a short time before your subscription list will contain practically a hundred per cent of the officers of the Coast Artillery Corps.

Now just one little criticism—not of you but of the author of the article “Joint Coast Artillery—Navy Exercises in Southern New York Harbor,” pages 234-236 of the September issue. In that article a list of the troops participating in those exercises appears on page 235. You will note that no antiaircraft troops are mentioned in that list, nor were any mentioned in the text of the article. A very large detachment of the 62d Coast Artillery, under command of Lieut. Col. L. B. Magruder, participated in the exercises and created considerable interest in their activities at every conference held at the conclusion of any phase of the exercises. As it would be expressed in *Time*, I think you should administer a well-earned reprimand to the author of this article for omitting from his text any mention of such an important part of the exercises which he described.

With very best wishes for a continuance of the good work which you have done in making a start on the JOURNAL, I remain,

Sincerely yours,

H. C. BARNES,
Colonel, 62d C. A., Commanding.

Help! Help!

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Some time ago I received a letter from you asking why I did not subscribe to the JOURNAL. I did not mean to delay so long to reply, but for various reasons, none of them good, I have done so.

My remarks below will probably indicate why I am not a subscriber.

Cut out the school-boy essays on all subjects which are based on legiti-

mate texts and which the writer knows no more about than the reader, except that the former has paraphrased it out of some legitimate text. If the reader is interested in the subject he would rather read the original authority.

Publish only articles by people who have experience, and know by experience, about what they are writing.

Publish interesting articles concerning the Coast Artillery, and reprint from other service Journals concerning interesting things in the other branches. See if you cannot get monthly, from the Military Intelligence Department, interesting items concerning the other armies of the world.

I have looked over the last few issues of the JOURNAL. The style is improved but I haven't noticed much improvement in the articles. I do not believe it has reached the point where it is of interest to soldiers.

Yours truly,

Battery Commander.

We Wonder What HE Wants

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

I have just finished reading thirty pages in the September JOURNAL—something that I have not done before in years. It is human and it is interesting. I am not like (better not say it). I want to see something besides "how do guns shoot and why!!" Dry technical subjects do not appeal to me but then I am only one out of the multitude.

Sincerely,

ABOU BEN ADHEM.

(May his tribe increase)

Yes, Sir

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

I hesitate to criticize in any way the conduct of your excellent magazine. It must essentially consist of two classes of articles: one of a technical character and the other on more general subjects to keep its readers abreast of the improvements in Coast Artillery defense. I might suggest that articles on Antiaircraft Defense would meet with prompt approval and studies on Railroad Artillery for Coast Defense purposes, as well as the best development of garrisoned posts, under the reduced personnel, would also be helpful. Personally I have felt for a long time that the Coast Artillery Corps has restricted its scope too much in its title. In my judgment the Coast Artillery should be only a subordinate bureau in a heavy artillery organization which should be represented at each Corps Headquarters and in Army Organization Tables as a part of the mobile army with the corresponding right to engage in war not as a privilege but as an accepted duty. Antiaircraft defense of mobile troops in the

field can scarcely be defended on the basis of being part of the Coast Artillery Corps.

However, this is a digression, not for publication, but merely as a matter of interest and has not been elaborated by me sufficiently to present in any precise form.

Sincerely yours,

Brigadier General U. S. Army.

What One Reserve Officer Wants

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Your request for my worthless thoughts on the JOURNAL and the Reserve was quite disarming. I had always thought that an officer had to be of field grade before his cogitations were of any interest to the Service.

I have been a reader of the JOURNAL ever since its publication was resumed shortly after the Big Show (Note: The JOURNAL has never suspended publication) and will continue to read it until it suspends publication (God forbid) or I can no longer avail myself of the opportunity. I can't very well say what I like in the JOURNAL without saying "Everything!" but please permit a hint of the things that would particularly interest me. Why not more amusing and entertaining descriptions of the classical examples of good and bad strategy and tactics? Some past contributions on various campaigns have been rather dry reading. Inject more of the human element—humor—and you will find your name blessed. I would also like to read more on the elements of leadership—of command, both from the theoretical and practical viewpoints. Applied psychology is of equal benefit to the officer and the civilian, so would be of particular value to the civilian officer. Further, I would like more on the tactical employment of A. A. artillery in light of modern developments and a course of *light* reading that would help fit an officer for promotion.

That's all (and too much) but help yourself and sign me, please,

UP FROM THE RANKS.

We Hoped Someone Would Like "Activities"

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Your letter of the 16th invites criticism of the JOURNAL and while I have none to offer, I want to tell you what articles I like best in it.

It is surprising how out of touch and isolated one feels on an R. O. T. C. detail of this sort. You have no idea of what is going on in the Corps or what the trend of thought is except from what you pick up in the various publications or get incidentally in other ways. You never hear of maneuvers until they are over, of new material until after it is tested or changes in policy until after they have been published in orders. It seems to me that one of the best things the JOURNAL can do is to keep

D. O. L. officers in touch with the rest of the Corps and I like best the articles describing what is going on elsewhere in or for the Corps.

Of course it is difficult for a monthly magazine to be much of a newspaper, but it's news I am mostly interested in.

C. THOMAS-STAHLE,
Major, C. A. C. (D. O. L.).

**Anyone Is Free to Express His Opinions in the Journal so Long as
They Are Not Malignant**

OFFICE OF THE INSTRUCTOR 248TH C. A. (H. D.)
Camp Murray, Fort Lewis, Wash.

The Editor, the-COAST ARTILLERY JOURNAL

Dear Sir:

Your letter has been on my desk for the past month; answer has been delayed due to the rush of Summer work.*

I wish to state that I will continue to support the JOURNAL for the next year and inclose herewith a check for \$3.00 for my subscription.

I do feel that an officer should be able to submit an article to the JOURNAL without fear of incurring the displeasure of higher authority. After all, when the JOURNAL publishes an article it should protect the writer to the limit of its ability. For example, the case of First Lieut. (resigned) who published an article on Engineer Maps (as I recall) sometime in 1920 or 1921. (Note: page 477, Vol. 54, No. 5). There are other instances more recent.

The result of this and other things is the COAST ARTILLERY JOURNAL of today, which publishes a copy of T. R. 435-55, and the JOURNAL arrives in the mail a few days after the T. R. has been received from the War Department. It also publishes copies of speeches delivered by students of the Coast Artillery School—six months or a year before. Approximately one hundred officers, the majority of whom are subscribers of the JOURNAL, having been compelled to listen to said lectures.

Articles of interest to me are articles that might cause me to think or perhaps give information on a subject that is not readily available in an officer's personal library or a post library.

I am not interested in a copy of a speech delivered under compulsion that I have already read or heard. I am not interested in a copy in the JOURNAL of Training Regulations or Army Regulations that have already reached my office and with which I am thoroughly familiar.

This letter is written in a friendly spirit and with little knowledge on my part of the handicaps under which you labor.

Very sincerely yours,

LEE E. GRAY,
First Lieutenant C. A. C. (D. O. L.)

* Note: Advt. (?)

Score One for History

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

I am in receipt of your September issue of the COAST ARTILLERY JOURNAL and have read most—not all—of it. Not having the wit, or the erudite and analytical mind* of the editor my comments are reduced to mere utterances of one whose literary tastes run to ten-cent magazines.

The September issue of the JOURNAL tends to indicate that hereafter it will be profitable to read the publication even if only to get the humor of the editor's wise cracks. A sense of humor will go a long ways towards brightening the pages of the dry and learned JOURNAL.

Practical experiences and how the other fellow handles the job are of interest. The problems of the National Guard and Reserves, while perhaps not of concern to some do concern a large number of officers on those duties and may redound advantageously by increasing the interest of the citizen soldiery in the publication, although my experience with the National Guard indicates that it takes about all of their fifteen minutes per day reading the numerous training regulations and Militia Bureau circulars.

My trend of composition is towards the historical, as it is easier to write of what has happened than deduce what may transpire in the future. One of your contributors bewails the large number of historical accounts which have been published and I do not wish to jeopardize your chances of securing his subscription. However, I shall be pleased to continue my subscription as long as most of the articles are not too deep nor require too intensive concentration during perusal.

With best wishes for success,

Sincerely,

GEORGE RUHLEN, JR.,

Major, C. A. C. (D. O. L.)

He Got It Over

United States Soldiers' Home Hospital,

Ward L,

Washington, D. C.

August 19, 1929.

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

I wish you would send me one or two COAST ARTILLERY JOURNALS, that are a month or two old, so I can buy them off of you for about one-third of their real price, or better yet, if you will send me a few to read I will keep them for about a month and then mail them back to you. I will pay all postage.

* Editor's Note: Boloney.

The thing I want to get over is this, I do not want to pay that big price for the JOURNALS yet I like to read them.

What can you do for me along this line?

It may be that I will bother you for a few of your JOURNALS and later on I might see a better way.

Sincerely yours,

JOHN W. BOHN.

How About It, Jimmy?

The Editor, the COAST ARTILLERY JOURNAL

Dear Sir:

Apropos of the diversity of the activities of our Corps I would submit the following very condensed statement of our missions. I don't think we can claim much for the M. G. bullet for anything but local (close in?) defense.

By bursting 'charge to seek the foe,
In the air above or the depths below,
Dug in the earth or afloat on the sea
Is the job of the Coast Artillerie.

Perhaps some one in your sanctum can put this into much better form. I think the recent article on mine defense very timely and valuable.

By the way, what in blazes have you done to it? August and September are corking good. Must have had a blood transfusion. Keep it up. Also, by the way, why don't you get papers published each month at each Corps Area C. A. Reserve H. Q., like "*Impact*", to carry a little free "ad" for the JOURNAL each month? They extract from it and they ought to boost it regularly. * * *

Sincerely,

AZEL AMES,

Colonel 602d C. A.

If the national defenses are adequate, the chances of war become more remote, because no nation will pick a war with the United States fully armed.—Washington Post.

COAST ARTILLERY ORDERS

Brig. Gen. William M. Cruikshank, to command 2nd C. A. Dist., Fort Totten, instead of 30th Brig., Fort Eustis.

Brig. Gen. Charles D. Roberts, from Fort Eustis to Fort Davis, Canal Zone; sail New York, December 11.

Col. Francis N. Cooke, leave two months and twenty-seven days, September 5.

Col. Francis N. Cooke, retired, December 2.

Col. Percy P. Bishop, from Portland, Maine, to Boston, duty with Hqrs., First Corps Area.

Col. Harry L. Steele, detailed member of retiring board, Washington.

Maj. William M. Cravens, from Walter Reed Hospital, to C. & G. S., Fort Leavenworth.

Maj. Francis P. Hardaway, orders to Panama revoked; from Fort Monroe to Org. Res., St. Louis, Mo.

Maj. Francis P. Hardaway, leave extended two months.

Maj. Kelley B. Lemmon, from Org. Res., Detroit, Mich., to 3rd, Fort MacArthur.

Maj. Earl H. Metzger, placed on flying duty, October 1.

Maj. Sherman Miles (G. S. C.) promoted Lieut. Col., August 24.

Maj. Samuel T. Stewart, from Fitzsimons General Hospital to home (Centerville, Mass.) and await retirement.

Maj. Francis J. Toohey, orders from Fort Monroe to Fort Worden revoked.

Maj. Francis J. Toohey, from C. A. S., Fort Monroe, to Org. Res., Detroit, Mich.

Capt. Raymond B. Bottom, from 12th, Fort Monroe, to 61st, Fort Monroe.

Capt. Clarence E. Brand, from Philippines to 52nd, Fort Eustis.

Capt. Coleman F. Driver, from Letterman General Hospital to home and await retirement.

Capt. Charles S. Harris, from 6th, Fort Scott, to 63rd, Fort Scott.

Capt. Arthur L. Lavery, orders from 51st, Fort Eustis, to Philippines, revoked.

Capt. Arthur L. Lavery detailed in J. A. G. Dept. and to Harvard University Law School, Cambridge, Mass.

Capt. Cedric F. Maguire, orders amended to assign him to recruiting at Providence, R. I.

Capt. Samuel L. McCroskey, leave extended four days.

Capt. Thomas P. Walsh, relieved from Walter Reed Hospital.

1st Lieut. Herbert T. Benz, from Philippines to 62nd, Fort Totten.

1st Lieut. William H. J. Dunham, from recruiting, Denver, Colo., to Panama; sail San Francisco, January 29.

1st Lieut. Wilbur R. Ellis, from instructor, Coast Artillery School, to the 12th, Fort Monroe.

1st Lieut. Edwin B. Fitzpatrick, leave extended three months.

1st Lieut. Edwin B. Fitzpatrick, to sail New York, November 22, instead of September 19.

1st Lieut. Walter R. Goodrich, promoted Capt., August 27.

1st Lieut. Eugene R. Guild, leave extended one month, sick.

1st Lieut. Harold P. Hennessy, from 62nd, Fort Totten, to Philippines; sail New York, January 17.

1st Lieut. Edward A. Kleinman, from 3rd, Fort MacArthur, to Philippines; sail San Francisco, February 8.

1st Lieut. Robert H. Krueger, from Panama, to 51st, Fort Eustis.

1st Lieut. William L. McPherson (Ord. Dept.), from Dover, New Jersey, and detail in Ord. to Philippines; sail New York, January 17.

1st Lieut. William B. Waters, transferred to Field Artillery, September 20, and to Fort Sill.

1st Lieut. Fred B. Waters (Q. M. C.), leave three months and ten days, October 29.

1st Lieut. Fred J. Woods, from Philippines, to 61st, Fort Monroe.

2d Lieut. Samuel E. Anderson (A. C.), from A. C. Adv. Flying School, Kelly Field, to Mitchel Field, October 12.

2d Lieut. Joseph A. Bulger (A. C.), from A. C. Adv. Flying School, Kelly Field, to Selfridge Field, October 12.

2d Lieut. Howard G. Bunker (A. C.), from A. C. Adv. Flying School, Kelly Field, to Rockwell Field, October 12.

2d Lieut. John S. Henn, from U. S. A. M. P. "General Bell", Fort Worden, to Philippines; sail San Francisco, February 8.

2d Lieut. Paul H. Johnston (A. C.), from A. C. Adv. Flying School, Kelly Field, to Mitchel Field, October 12.

2d Lieut. William H. Kendall, promoted 1st Lieut., August 29.

2d Lieut. Alfred R. Maxwell (A. C.), from A. C. Adv. Flying School, Kelly Field, to Rockwell Field, October 12.

2d Lieut. John J. Morrow (A. C.), from A. C. Adv. Flying School, Kelly Field, to Mitchel Field, October 12.

2d Lieut. Thayer S. Olds (A. C.), from A. C. Adv. Flying School, Kelly Field, to Selfridge Field, October 12.

2d Lieut. Frank T. Ostenberg, relieved from detail in the Air Corps, Fort Sam Houston, to 51st, Fort Eustis.

2d Lieut. Paul D. Peery, leave extended two months, sick.

2d Lieut. Marion G. Pohl, from 12th, Fort Monroe, to Hawaii; sail New York, December 11.

2d Lieut. Norman B. Simmonds, from Hawaii, to 12th, Fort Monroe.

2d Lieut. Lawrence D. Solomonson, leave one month, September 1, and retired.

2d Lieut. William M. Vestal, to sail from New York, December 11, instead of October 15.

2d Lieut. Lewis A. Vincent, from 63d, Fort Winfield Scott, to Panama; sail San Francisco, November 27.

Warrant Officer Patrick J. Keating, A. M. P. S., Fort Hancock, to Walter Reed Hospital.

Warrant Officer Herbert H. Short (band leader) from 9th, Fort Banks, to 14th Inf., Panama; sail New York, November 22.

Warrant Officer Walter L. Smith, second mate, Fort Wright, resignation accepted.

Warrant Officer Manuel J. Suarez, A. M. P. S., Fort Wright, leave extended one month.

Master Sgt. Charles W. Danver, C. A. S., Fort Monroe, retired.

Staff Sgt. William F. Pascoe, Fort Wright, appointed warrant officer, A. M. P. S., September 24.

1st Sgt. William G. Krause, 10th, Fort Adams, retired.

1st Sgt. George W. Love, 62nd, Fort Totten, retired.

1st Sgt. Frank McGraw, 6th, Fort Scott, retired.

1st Sergeant Michael Miller, 14th, Fort Worden, retired.

1st Sgt. George P. Robinson, 2d, Fort Sherman, retired.

BOOK REVIEWS

Wings on My Feet. By Howard W. Odum. Indiana: Bobbs-Merrill Company.
5½" x 8". 309 p. \$2.50.

Those of us who were stationed during the World War near the camps where the colored units of the A. E. F. were mobilized or discharged, must always retain vivid recollections of the colored brother in uniform—recollections at times humorous to a degree and at other times quite the reverse. Since the war, short stories have appeared at intervals with the colored soldier as the hero, but it has remained for Dr. Odum, the author of that remarkable portrayal of negro life, "Rainbow Round My Shoulder," to present the first serious study of the black soldier of the A. E. F. in "Wings on My Feet."

Written in the inimitable dialect that carries conviction to ears accustomed to the musical, rhythmic intonation of the American negro, with a plentiful sprinkling of extempore song, the book takes the form of a biography—a recital of personal experiences in camp, on ship board, at ports of debarkation, driving ammunition trucks and burying the dead, "cleaning up" after the Armistice, and the return home to a South that was not sympathetic with the colored soldier. "Some boys maybe made fools of 'selves after coming home from war. Look like war went to heads. Wanted to show off. In army couldn't say 'yes, sir' and 'no, sir' to nobody 'scusin' officers. So some boys would come home an' try same thing. Made white folks mad."

The Black Ulysses of "Wings on My Feet" represents one marked type of negro soldier—the happy medium between the ignorant, plodding, docile field hand of the rural South and the educated, ambitious negro of the urban communities. Obedient and dependable until he feels his "hell a-risin'", childishly hilarious when amused or sullenly dangerous when aroused, he has a fatalistic attitude toward war that prevents its horror and its tragedy from making any lasting impression. "War never got me, never will. Got my buddies, never got me." Whatever came he accepted without surprise; and the hardship and brutalities he regarded with a calm philosophy, for his whole life had been hard and brutal.

"Me an' war same thing. Want me to fight; I been doin' it all my life . . . Want me to march in rain all day an' mud all night. Well, all my days captain been workin' me in rain an' hail. . . . Make me sleep standin' an' marchin', settin' down an' rollin' over an' every other kind o' way; well rock been my pillow an' freezin' ground my foldin' bed for many po' boy weary day. Bible say deep sleep fell on Adam; well, Adam didn't have nothin' on me. March me all day an' night, don't give me nothin' to eat, nothin' to drink, no place to sleep. Well, I been travelin' down that long, lonesome road, po' boy long way from home, ever since I lef' my mama's house. . . . Want to take me cross deep blue sea. Well, I been workin' on river boats. . . . Diggin' trenches an' buildin' railroads and bridges like ole times to me. Unloadin' ships an' ammunition easy thing to do ever since I worked on county roads an' railroad gangs. Me an' war's buddies, diggin's my middle name. . . . Maybe one reason I don't git no mo' excited 'bout goin' to war than I does is because I seen heap of trouble in my day an' likewise many bloody killin's. I seen heap o' heart-breakin' things in war, but I been seein' 'em ever since I been born. . . . If need me to run an' fly, I got wings on my feet an' ain't no disgrace to run when you git skeered. I been trained a heap in my day, an' I can run from Jerry jes' same as I can run from the Law, or I can meet Jerries like I can meet desperado Bill. Sometimes I been skeered like

I ain' never been skeered befo' . . . howsomever, nothin' tq do about it. . . Me an' war jes' naturally had to be buddies; nothin' else to do. Ain't no hero, ain't no coward. But I can do what I have to do. Don't know if I likes it, don't know if I dislikes it."

These fragmentary quotations serve only to give an idea of "Tiger" Gordon's philosophic attitude toward war as a condition that must be accepted—they cannot give the charm of the running narrative style used by Dr. Odum in his biography of the negro soldier, nor do they more than hint at the deep vein of pathos that runs just underneath the surface of his life. Perhaps it would be more exact to say, the deep vein of pathos that lies just under the surface of every negro laborer's life, for it seems that in his two books Dr. Odum is seeking to picture a sort of negro Everyman, although doubtless the leaders of the race would refuse to admit that the average negro is as elemental and uncomplicated as this Black Ulysses, who comes home from the war and takes up his wandering life again. Homeless, penniless, maimed, out of work, persecuted, he faces life undaunted. "Been mighty change since I been born. Change where I been, never changed me. Gonna rock trouble to sleep, rainbow round my shoulders, wings on my feet. Well, don't you grieve after me, Lord, don't you grieve after me."—E. L. B.

Raw Materials of Industrialism. By Hugh B. and Lucy W. Killough. New York: Thomas Y. Crowell & Co. 1929. 6" x 9". 399 p. with 88 tables and graphs. \$3.75.

All military men are familiar with the important part played by questions of economics in the origin and conduct of wars, nevertheless, too few of us have devoted serious study to the subject—we are inclined to leave it to the Supply Officer and the G-4, to whom it is a matter of more immediate concern. Of all economical questions probably that of raw materials is the most vital from a military standpoint and this new book by the two Doctors Killough presents this phase in such a lucid and thorough manner that it will form an admirable textbook for military readers with a limited knowledge of the general subject of economics.

The principal raw materials are discussed, their uses shown and the country of origin, manufacture and consumption given in tables and graphs, so that a clear picture can be obtained of the economic interdependence of the nations.

Fortunately the United States is well blessed with raw materials, no nation is so nearly independent economically, nevertheless there are a number of vital products which we have to import. We can learn what they are from this book, and the countries from which we obtain them, the deficiencies of other nations being likewise shown. The value of this in the construction of war plans is evident.

We can satisfy our own demands in food supplies, except for a few items, the most important being sugar and coffee, and those we obtain from our own hemisphere. We have to import all of our rubber and raw silk, half the wool used in our factories, increasing amounts of petroleum, wood and hides, practically all the nitrates used for fertilizers and explosives and large amounts of minor commodities, minor in respect to amounts consumed, but some very important from a military standpoint.

The greater part of the land planted with rubber is under the political control of Great Britain; nearly all the remainder is under the Netherlands. The Stevenson plan, whereby Britain attempted to fix the price of rubber throughout the world is discussed. Its failure was due to increased Dutch production of the

expense of the British, which is generally the fate of an attempted monopoly—someone else gets busy.

Among the metals deficient in the United States are the important steel alloys. We produce only ten per cent of the manganese required in our factories. Canada produces eight-five per cent of the world's nickel supply from its mines at Sudbury, Ontario. Cobalt is another Canadian metal. Chromium comes from British South Africa, while China is the principal source of antimony and tungsten. Although we produce fifty per cent of the pig iron in the world, we are dependent on those foreign countries for the alloys required in the manufacture of high grade steel.

Leather is an important commodity in time of war, but notwithstanding the fact that we produce a surplus of meat over our demands, we import hides to supply the leather requirements of the country. The importance of this can be appreciated when we know that the leather demands of the A. E. F. alone during the World War were greater than the peace-time requirements of the entire country.

Coal is the one raw material of major importance which Great Britain possesses in abundance, everything else must be imported. The coal reserves of the world are sufficient for many centuries, possibly millenniums, but such is not the case with petroleum. The demand for this important fuel has increased sevenfold during the past twenty-five years, since the advent of the motor car, and at the present rate of consumption there will be no petroleum in fifty years, unless new, and hitherto unsuspected, sources are discovered. A substitute, therefore, is imperative, and this may be found in oil obtained from shale, which is abundant in nearly all countries.

Nitrates used for explosives are obtained from Chile, which has a virtual monopoly of this commodity. Nitrogen fixation from the air is expensive. It could and would be used in time of war, but in the meantime Chile is the source from which all nations obtain their nitrates, both for explosives and for fertilizers.

The authors complete the book with an interesting discussion on international commercial policies and the penetration of undeveloped regions. Tariffs and free trade are compared and analyzed and the reasons for the adoption of each are shown. The demand for the protection of agriculture in this country and the principles of the resulting McNary-Haugen bill are explained most clearly. This discussion is timely.

This book should certainly be included in every officer's reading course, as not one can afford to neglect it.—R. E. W.

Pope or Mussolini By John Hearly. New York: The Macaulay Co. 5½" x 8¼". 256 p. \$2.50.

Future historians will probably say that the most important event occurring in the years immediately following the Treaty of Versailles was the recent agreement concluded between the Pope and the Italian government, whereby the temporal power of the Papacy was restored.

The effect of this agreement cannot be measured by the size of the new Papal dominions, they are minute, it is only a vest-pocket nation, but the fact that the Pope is again a temporal sovereign and the Vatican City has all the rights, privileges and powers which, under international law, pertain to all sovereign states is momentous and its full effect on future history not yet apparent.

This is the subject matter of Mr. Hearly's book and he discusses the question in all its ramifications. His attitude, however, is not judicial but partisan.

He is an avowed opponent of the temporal power of the Pope in this day and generation and of Fascism and he writes from that viewpoint entirely. He has had exceptional opportunities for observing modern Italy. During the war he was an attache of our embassy in Rome and later a special correspondent there. He is an excellent Italian scholar and, as he himself says, was "reared and educated in Catholic surroundings." There can, therefore, be no doubt that he knows his subject and his opinions are entitled to every consideration.

The agreement between Italy and the Pope is usually referred to as the Concordat, in fact the Concordat was only one of three simultaneous agreements, all of which are translated in full in the Appendix to Mr. Hearly's book. There was a treaty establishing the Vatican City and certain other territories under the sovereignty of the Pope. The Concordat itself dealt with the conditions of religion and the Church in Italy, while a financial settlement completed the agreements.

"Has His Holiness become an aid to the Fascist government? Has Mussolini spectacularly placed papal influence behind Fascism for the furtherance of his own ambition?" This is the way that Mr. Hearly starts his discussion of the subject. So far as its effect on the Church is concerned he says "signs are not wanting that the accord for the time being will strengthen the Church in Italy and weaken it everywhere else. . . . The Vatican's position (before the agreement) was extralegal and, theoretically at least, international in status. No nation would have dared to act against her. Now that the Pope is an actual sovereign you have an entirely different set of circumstances." The Concordat places the law of the Church, known as the Canon Law, virtually on a par in Italy with the civil law and this will be "the seed out of which international Catholic chaos and foreign governmental clashes will grow." Mr. Hearly quotes a "prominent international lawyer" who is "convinced that the Pope is destined to pay a high price for the opening of his 'bronze prison gates.'"

The author is a firm believer in the American doctrine of the separation of Church and State, and says "the recent moves of Pope and Duce on the checkerboard of religion and politics are out of line with the twentieth century and its revelations, scientific, educational and spiritual." He also quotes Father Duffy, the militant Catholic chaplain of the 69th New York Regiment, as saying, a year before the agreement was reached, "if the Pope were a civil ruler and there was a conflict I would go to war against the Pope. . . . If I lived in a country governed by clergymen I would soon be an emigrant." This Mr. Hearly contends is the point of view of the thinking American Catholic, quoting others in the same strain.

The Curial government of the Church is almost entirely Italian, "the delicate situation existing between Church and State in Italy" made this necessary, "now that this 'delicate situation' is a thing of the past" Mr. Hearly wonders whether the Catholics . . . of other countries will be given proportionate representation in the College of Cardinals and in the Curia and so "make possible the election of a foreign and perhaps antifascist Pope." The answer to this will "go far towards revealing whether the Pope or the Duce was the dominant participant in the wedding of Italy's Church and State."

These are a few of the high lights in the book, based on numerous quotations from the Pope, Mussolini and other prominent people, and a study of the lives of the two principal actors in the drama. The story of Mussolini includes his actors in the drama. The story of Mussolini includes his pre-war socialist activities.

Notwithstanding the obvious fact that it is a book with a purpose it is of value to any one who desires to keep in touch with world politics and the highly controversial nature of the subject makes it doubly interesting.—R. E. W.

Savage Gentlemen. By Mabel Cook Cole. New York: D. Van Nostrand Co., Inc. 1929. 6" x 9". 249 p. \$3.50.

The majority of Army people look forward to their foreign duty tours with interest, if not with eagerness, for the new scenes and strange races give a different outlook and an added zest to life. Naturally any book of travel is welcome that will prepare a proper background for the new surroundings and will help toward an intelligent and sympathetic understanding of the alien civilizations met outside the limits of the United States proper.

Just such a book has recently been published—"Savage Gentlemen" by Mabel Cook Cole—which introduces the reader to parts of the Philippine Archipelago that lie away from the beaten paths and have not been subjected in any noticeable degree to our so-called civilization.

Mrs. Cole accompanied her husband, an anthropologist from the Field Museum in Chicago, when he was sent to make ethnologic studies of certain little-known, non-Christian tribes of the Philippines; and the first year or more was spent in the almost inaccessible mountainous country of Northern Luzon among the Tinguian and allied tribes, idolaters, savage fighters and headhunters all. As Dr. and Mrs. Cole, with the precious camera, the still more precious phonograph and the two indispensable air mattresses, moved from one isolated mountain valley to another, spending a few months with each tribe, they shared the life of the people in every way and their unusual adventures and experiences make the most fascinating reading. There were many difficulties to be overcome before they could gain the confidence of the mountain tribes; at times there was danger, and the inconveniences and hardships were nearly always present. But Mrs. Cole treats these lightly and conditions never became so serious but that her sound common sense and her ability to see the humorous side of the situation comes to the rescue; it is plain that Mrs. Cole would make a good Army wife.

The descriptions of the scenic beauty of that wild country are vividly done; and Mrs. Cole's literary style—or rather, the lack of a fixed style—makes the book a charming and intimate narrative. It is as if a keen and vivacious friend who has just returned from a long trip had dropped in for a chat about the adventures met on the way. One understands how a personality as attractive as Mrs. Cole's would make friends among the tribes, so that the head man of each village would give his house to be their home; would mount a nightly guard at the foot of the ladder leading to the one entrance way; and would furnish the armed escort through the jungle to the next village. "It must have seemed to them that we asked many questions as, indeed, we did; but they, in turn, asked many of us, and sometimes it would be hard to conjecture which anthropological study would be most complete, theirs or ours. We entered as much as possible into their life and strove to do things in what they considered the proper way Just at sunrise we left Manabo. Bulakano, as he raised our hands to his face, showed concern and sorrow. The whole town gathered to see us off. Both they and we were sorry. They had been most interesting to us and we had added greatly to their pleasures. Never since they were born, they declared, had they seen anything to equal us. And we might have said the same of them! As we rode out of the village, they shouted their good-byes and waved the tin cans we had added to their wealth. . . . They were kind and tolerant of our strange ways; anxious to guard us from evil spirits and glad to make us acquainted with those kindly disposed. Their ways are not our ways, nor would we change them. They are happy and contented. They follow the custom."

After the work in Northern Luzon was finished, Dr. and Mrs. Cole visited the Pygmies, Negrito people living back in the hill jungles across the bay from

Manila. "The last day we were with the Pygmies, we asked Baraca, "What shall we bring you the next time we come?"

He looked at his inadequate clout—the only clothing he wore—"You need not bring me a clout, for I have one." Then he looked into his bare house, at his silk hat hanging on a crooked stick, at his silverheaded cane stuck in the roof, his watch dangling from his clout. He sighed. "I have everything." So we left these little people at peace in the hills. They had enjoyed our visit, but it had been strenuous."

The Coles then went to the savagely wild country of Central Mindanao, "lured there by scant government reports of the Bukidnon who practice soul catching; of the Mandaya, who live in trees; and of the Bagobo, who perform human sacrifice, and were suspected of being cannibalistic." They saw the Bukidnon at their soul catching and of the house given over to their use by the tribe, Mrs. Cole says: "We should have been quite comfortable had it not been for the centipedes in the roof. One dropped on our dinner table the first night. The lizard to which he was clinging dropped his tail and departed, but the centipede, still holding the lizard's tail remained until forcibly removed." . . . These people loved castor oil and were willing to be cured of anything if they could only taste it. . . . The time came, however, when we saw that we must conserve our castor oil, so we substituted Epsom salts. There was a marked falling off in patients."

The Bagobo they found on the slopes of Mt. Apo, a volcano ten thousand feet high, and close to the edge of the Moro country where raids were an ever present danger. They learned that the Bagobo had been slandered; they were not cannibalistic; they ate only the hearts and livers of their slaughtered enemies to acquire valor in battle. The Coles were the house guests of Dato Tongkaling, "who had eaten the hearts and livers of thirty enemies to acquire valor, but somewhere else he had acquired a vast amount of human kindness."

Along the lonely east coast of Mindanao only two white men live, and there Dr. and Mrs. Cole found the Mandaya who live in trees; "Life is insecure, and fear ever with them. Honor and distinction being gained by taking human life, there are many enemies to be guarded against."

Dr. and Mrs. Cole ended their three and a half years of life in the jungle by both coming down with malignant malaria. They were taken to Davao, where it was thought for a time they would not recover, but "in our sane moments we were determined to live. It would have been so stupid to die of mere malaria after all the chances we had had to gain renown by an unusual death."

"There was the time at Licuan when we might have lost our heads had we broken taboo. There was the chance of death at Dagondalahan had the Moro raided it a little sooner. We might have been murdered by the Bukidnon who sacked and burned our host's place after we left. We had slept on the rim of Taal volcano a short time before it erupted and killed a thousand people. We had been through flood and cholera. Now we could not endure to die of fever."

And they did not die, but recovered and returned to Chicago, Dr. Cole with his unrivaled collection of Philippine ethnology and Mrs. Cole with her experiences which she has passed on to us so delightfully in "Savage Gentlemen."

If one contemplates a list of books for Christmas Mrs. Cole's book would be a welcome addition, for it is the type of travel narrative that would be universally acceptable.—E. L. B.