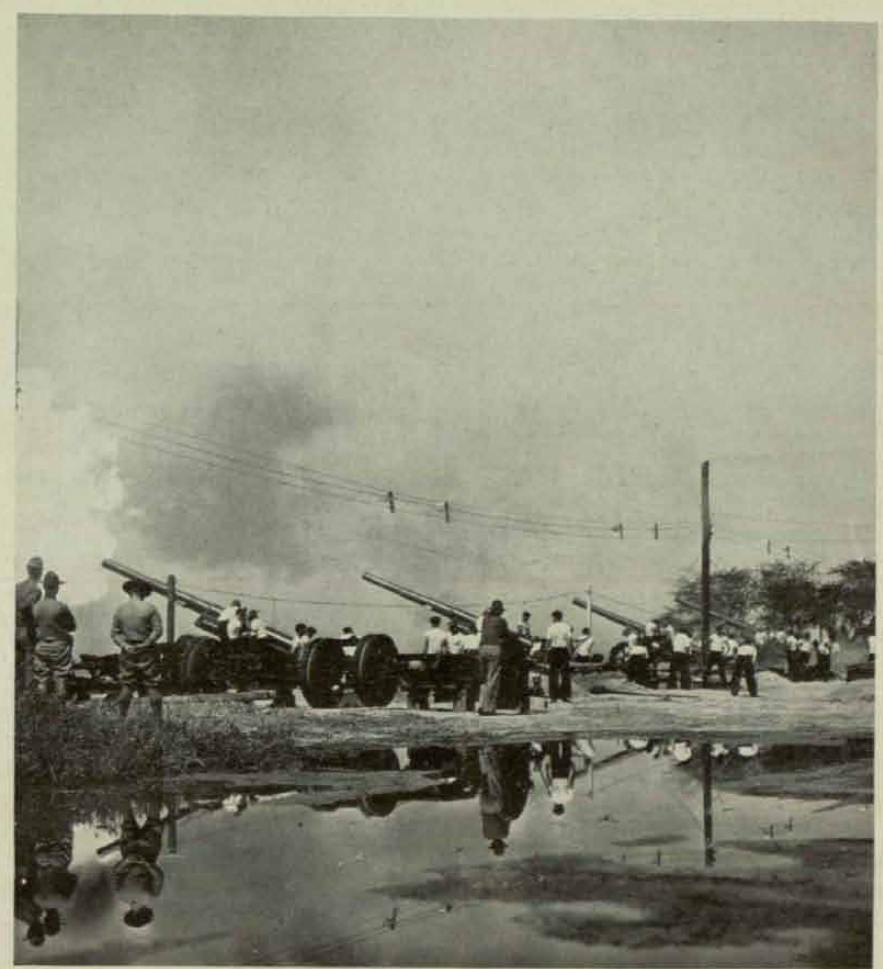
COAST ARTILLERY JOURNAL



Battery C, 55th C. A. (AA), Winning the Knox Trophy

January-February, 1932

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Contents

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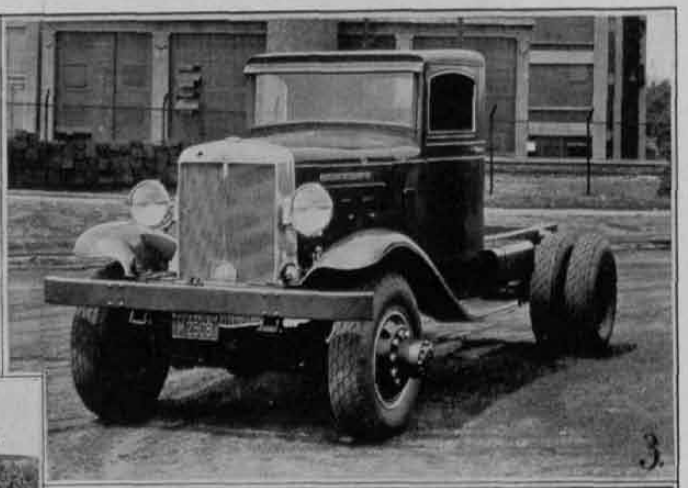

Fig. 1. Group I—1¼-ton, 4-wheel, 4-wheel-drive chassis, standard military type, with Continental water-cooled motor, under cargo body. Chassis and all unit assemblies interchangeable with chassis and unit assemblies in armored car, Fig. 2.

Fig. 2. Group I—1¼-ton, 4-wheel, 4-wheel-drive chassis, standard military type, with Franklin air-cooled motor, under cavalry armored car. Chassis and all unit assemblies interchangeable with chassis and unit assemblies in cargo truck, Fig. 1.

Fig. 3. Group II—2-ton, 4-wheel, 4-wheel drive standardized military type chassis, procured in fiscal year 1931. Principal unit assemblies as named below or interchangeable equivalent sold by any commercial purveyor. Motor: Continental or Hercules Motor Companies. Frame: Parish Pressed Steel Company. Steering gear: Ross Tool and Gear Company. Transmission and clutch: Brown-Lipe Company. Universal joints and propeller shafts: Blood Bros. Radiator: Young Manufacturing Company. Wheels: Budd Wheel Company. Rims: Firestone Steel Products Company. Brakes: Westinghouse Air Brakes. Other parts and accessories from various parts manufacturers. All unit assemblies interchangeable in all vehicles of this group regardless of type of vehicle or maker of parts.

Fig. 4. Group III—3-ton, 4-wheel, 4-wheel drive, standardized military type chassis with cargo body, procured in F. Y. 1932. Principal unit assemblies, as explained in Fig. 3.

Fig. 5. Tactical Mobility: Grade-climbing performance typical of all standard military types—A Group III, 3-ton, 4-wheel, 4-wheel drive, with normal capacity load climbing a 65% grade. Strategical Mobility: Standard Road Performance—Radius, 300-400 miles per day. Maximum speed, 60 M. P. H. Maximum sustained speed, 52 M. P. H.

Fig. 6. Tactical Mobility: Cross-country performance typical of all standard military types. A group I air-cooled or water-cooled engine, 1¼-ton, 4-wheel, 4-wheel-drive chassis plowing through deep mudhole filled with water. Note absence of chains or other cross-country devices.

See article "Military Motor Transport Required by the Army for War."

Antiaircraft Artillery—Its Functions, Organization and Present Development

By Major H. R. Oldfield, General Staff (Coast Artillery Corps)

I. Definition of Antiaircraft Artillery

LET us first define antiaircraft artillery. Field Service Regulations, U. S., 1923, states (Par. 78):—"The organization of corps and higher commands includes antiaircraft artillery units equipped with antiaircraft guns, machine guns, searchlights, and the material required for observation, listening, flash and sound ranging, and signal communications.* * *"

Material for flash and sound ranging has now been assigned to field artillery units and does not pertain to antiaircraft artillery. No other change has been made in the above provisions. We may then conclude that antiaircraft artillery comprises units equipped with the foregoing material, less that for flash and sound ranging.

II. Functions of Antiaircraft Artillery

The most authoritative statement of the functions of antiaircraft artillery is contained in the same paragraph of Field Service Regulations which states further:

"In principle, other combatant arms and other artillery units take the necessary measures for their own immediate protection against low flying hostile aircraft.

"Antiaircraft artillery reinforces the antiaircraft measures of other arms and units and operates especially against hostile aircraft flying beyond the range of their materiel. By driving hostile aircraft to higher altitudes, it decreases the effectiveness of enemy observation, fire control and bombardment. Its searchlights and listening service enable it to operate by night.

"Antiaircraft artillery is also employed in the immediate protection of sensitive points in rear of the leading troops.

"Antiaircraft artillery cooperates closely with the air service. In night defense, its searchlights create illuminated zones within which the night pursuit of the air service is enabled to attack hostile aircraft coming under observation.

"Antiaircraft artillery informs the command and the air service relative to hostile aerial activity. It establishes an observation and communication system which enables it to give prompt warning to the air service and threatened elements of impending aerial attack."

The above statement of functions has not been changed. It has been amplified, however, in T. R. 435-30, which states (Par. 7 a):—

"* * * Where equipment is adequate and time is available for its installation, the antiaircraft units should accomplish for the air force what the harbor defenses accomplish for the fleet; that is, furnish such defense of vital areas as to relieve the air units of the necessity for making the close defense of such areas a primary mission * * *."

As antiaircraft artillery is provided as a counter measure against enemy aerial action, a clear understanding of its functions must be based on a consideration of the action that a hostile air force can take to our detriment. Such a force can influence operations by the following measures which, to avoid controversial issues, are listed without attempting to fix their relative importance.

a. By destroying and/or harassing our military personnel, materiel and installations and the roads, railroads, canals and signal communications essential to their efficient employment.

b. By observing and reporting our military dispositions, movements and operations.

c. By maintaining contact between the elements, other than air units, of its own fighting forces.

d. By protecting its own fighting forces and the supply and signal communications pertaining thereto against our aerial attacks.

e. By attacking our civilian population, installations and communications.

f. By protecting its own civilian population, installations and communications against our aerial attacks.

Our air units, naturally, can influence operations by similar action against the enemy. Our antiaircraft artillery cooperates with our air units in providing dedense against enemy aerial action and aids them in their offensive operations when it may. Coordination of effort between the two is essential.

Hostile aerial action can be prevented or defeated, in order of effectiveness:—

First—By capture or destruction of the hostile aircraft before they can be flown over areas in, or over, which their objectives are located.

Second—By destroying the hostile aircraft after they arrive over the areas in, or over, which their objectives are located and before they can accomplish their missions.

Third—By harrassing aircraft crews to such an extent that these crews are unable to carry out their missions effectively.

Fourth—By hiding aircraft targets and/or the navigation marks necessary to the identification of these targets.

The strength and effectiveness of subsequent enemy aerial attacks may be decreased by destruction of their aircraft after they have carried out their missions and prior to their arrival over their own territory. In protracted operations such destruction may be the deciding factor in aerial operations.

Enemy aircraft can be captured in their own territory only by occupying that territory, including its aircraft bases and factories. Army land elements must be employed. Destruction of enemy aircraft behind enemy frontiers can be accomplished only by aircraft whose chief weapons are the machine gun or small cannon against aircraft in the air, and the bomb against them on the ground.

Destruction and harassment of enemy aircraft can be accomplished, after they have passed beyond their own frontiers, by two agencies. The most effective is the airplane once it has found the hostile aircraft. Its chief weapons, at present, are the small caliber cannon and the machine gun. The use of the bomb in aerial fighting offers large possibilities but is still undeveloped. Dirigibles are not now adapted to aerial offensive combat.

The other agency consists of antiaircraft artillery and the antiaircraft weapons of other arms. This agency is less effective than the airplane because it can not follow the hostile aircraft. It must wait for them to come within range. It is, however, much the more dependable. After being placed in position, antiaircraft artillery can go into action promptly, can more readily keep track of movements of enemy aircraft inside our lines and can protect itself against surprise. Antiaircraft weapons of other arms can also protect themselves against surprise and go into action promptly. Airplanes, on the other hand, can be kept in the air only for limited periods and when on the ground require a relatively long time to get into action. They can locate enemy aircraft, once these are in the air, only with difficulty and, while on their airdromes, can protect themselves against surprise only at the expense of great effort by day and not at all by night.

Aircraft targets and aerial navigation marks can be hidden by camouflage, including special smoke installations, and under certain conditions by suppressing all ground lights at night. Suppression of a part of normal ground lights and false installations of others may be used effectively at times.

It follows that enemy aerial activities can best be prevented by occupying his territory with a land army. The next best solution is to destroy his aircraft before they can attain a position over our territory. Air units furnish our sole means of accomplishing this end. The third method is to destroy hostile aircraft after they start their missions and before they can carry them out. The air corps and ground weapons and installations are available for this. Fourth, we can hide. Hiding never won any nation a war although it may be a factor in a favorable solution, i. e., camouflage should not be neglected but cannot be a decisive factor.

Occupation of enemy territory will win the war. Prior to the attainment of that desirable end, the activities of a considerable enemy air force will exert an appreciable influence on the progress of any war in which we may be engaged. The extent and importance of this influence is subject to debate, but all admit that it is so considerable that it can not be ngelected. The most effective counter-measures have been seen to be the destruction of enemy aircraft in enemy territory. The only agent capable of performing this mission is found in our air units.

As a practical matter, enemy aircraft once in the air can be located and intercepted by our units, most efficiently through the aid of the ground observers of our antiaircraft artillery. We have seen that the establishment of such a system of observation and the notification of our air corps of the movements of hostile aircraft are functions of the antiaircraft artillery. Paragraph 63 of T. R. 435-30, states:

"63. General.—a. The great speed and wide radius of action of aircraft require that the surveillance of the air by means of observation from the ground be continuous over extensive areas. * * *

"b. The coordination of the antiaircraft intelligence service within an area covered by the army is a function of the Army commander. In rear of this area and within the theater of operations, appropriate commanders organize the antiaircraft intelligence service necessary and maintain communications with the service of the armies in their front under the general direction of G. H. Q. When the zone of the interior abuts upon the theater of operations and is within the radius of enemy aerial operations, similar action is taken by responsible territorial commanders. In this manner a continuous chain of communication is maintained from the line of contact with the enemy to the rearmost element exposed to enemy air attack or observation. * * *"

The air is too big a place to permit any air force to constantly maintain aerial patrols sufficiently numerous and far-flung to insure such air force notice of the movements of enemy aerial forces. The countering of enemy aircraft over our territory therefore develops on the air corps and the antiaircraft artillery working as a team. The antiaircraft artillery keeps track of the hostile aircraft, keeps our aerial units informed of their movements and attacks by fire all such aircraft coming within range of its weapons. Our air units, guided by our antiaircraft artillery, attack the hostile aircraft as soon as they gain contact.

How does this defensive action fit in with the offensive missions of our air corps? The American conception may be stated as follows:

a. Our air corps will contribute most when it can maintain an ascendency over the enemy aerial forces and have liberty of action to carry out missions directly contributing to the success of our major combat forces —either ground or naval.

b. To secure and maintain this ascendency it must defeat the enemy air units and reduce their numbers to a position of inferiority—i. e., enemy aircraft must be destroyed.

c. Enemy aircraft can best be found and destroyed when on their airdromes.

d. Success demands a concentrated air force employed on the offensive.

We see, then, that success demands that our antiaircraft artillery be able, when supplemented by the antiaircraft action of other ground units, to protect our military and civilian personnel, communications and installations sufficiently to permit our air force to be con-

centrated and free to engage in offensive operations. It must also assist our air force with intelligence of the movement of enemy air forces over our territory. Only thus can the enemy be engaged under the most favorable conditions. Without such intelligence, our air units will lose many favorable opportunities for attack.

The above conclusions are strengthened by a consideration of the possibilities of employing aircraft in defensive operations. A concentrated air force, even when served by an efficient antiaircraft intelligence service, can not intervene in time to defeat enemy aerial attacks in the general case. Neither can a dispersed air force expect to defeat concentrated enemy air attacks, as dispersed forces are always subject to attack by superior forces and to defeat in detail.

Aircraft are poorly adapted to defensive operations in any case. Military aircraft are divided into four types, viz—Pursuit (sometimes designated as fighters), attack, bombardment and observation. Pursuit (fighters) are the only type designed primarily for the attack of other aircraft in the air. Attack planes have considerable ability to attack other aircraft in the air, but are designed primarily to attack ground targets. Bombardment planes are designed to carry bombs for the attack of ground targets and, altho they cary heavy armament for defense purposes in the air, they are not adapted to offensive combat. Observation planes are designed as observing platforms and their armament is provided for defensive action.

It must also be remembered that aircraft stationed less than approximately 50 miles from the seashore or from the enemy front lines are subject to surprise or at least to aerial attack before they can clear their airdromes and attain sufficient altitude to meet the attacking force on equal terms. When stationed at a greater distance to the rear they are largely dependent on ground intelligence if they are to make counter attacks on ground objectives.

Thus, only one type (pursuit) of aviation is suitable for defensive operations and this type is largely dependent on ground intelligence for its efficient employment in such operations. Time and space factors are such that pursuit aviation, even when served by an efficient ground intelligence service, must be stationed within approximately 10 miles of the point it is to protect if that point is 50 miles behind a seacoast or the line of contact with the enemy and within approximately 25 miles if the point to be defended is withdrawn 100 miles from such seacoast or line of contact. Any point in excess of 100 miles from the seacoast or line of contact can be defended by pursuit aviation stationed anywhere within a circle centered at the point and having a radius approximately 75 miles less than the distance of the point from the seacoast or line of contact. When not served by an efficient ground intelligence system, pursuit aviation can not be effective in defensive operations for the protection of ground objectives.

Where military units, cities, canals, bridges, manufacturing plants or other tempting targets for aerial attack are scattered over wide areas, as is the case in our territory in the belt 400 miles deep paralleling our northern border from west of St. Paul to the Atlantic and paralleling the Atlantic Coast from Maine to North Carolina, any attempt to provide a defense by dispersing our available pursuit aviation throughout this area is certain to prove ineffective.

The question then arises, how can our territory be defended against aerial attack? Can it be protected by antiaircraft artillery? The answer is that it can not be defended by purely defensive means. Its best and only certain defense is from offensive operations by our air force. Antiaircraft artillery can not be provided in sufficient quantity to protect all vulnerable points.

However, to permit our air force freedom of action for concentrated offensive measures, we must protect a certain minimum of our most vulnerable points, including the airdromes of our air force, by antiaircraft artillery. We must also provide such a farflung and efficient anti-aircraft intelligence service that our air force, wherever based, and such bases, (airdromes) may be changed frequently—may interpose, whenever opportunity offers, to defeat enemy aerial attacks and may, in the greatest practicable number of cases, engage in superior force enemy aircraft coming within striking distance of our pursuit airdromes before such enemy aircraft can leave our territory. The enemy will have gained the initiative in the air and control of the air to an appreciable degree whenever he succeeds in inducing us to tie our air units, or any considerable part thereof, down to the defense of particular formation or areas.

The above conclusions are consistent with air corps training regulations and with present air corps thought in our service. They may be summarized:—

Keep our air units concentrated for a vigorous and unrelenting offensive against the enemy air units.

Protect a sufficient number of our ground installations and troop formation, including our operating airdromes, from enemy aerial attack by antiaircraft artillery to permit our air force to be employed on the offensive.

Provide an antiaircraft intelligence service for the warning of all personnel and installations subject to enemy aerial attack and to render the necessary aid to our air units when they are operating over friendly territory and while on their airdromes.

III. Organization of Antiaircraft Artillery

Our present antiaircraft units are organized into regiments which are mostly skeletonized. They consist, except in the case of three especially organized for special missions, of two battalions and the usual headquarters units. One battalion, when all units are active, has a battalion headquarters and combat train, a searchlight battery and three gun batteries. The other has a battalion headquarters and combat train (the latter only recently approved) and four machine gun batteries. In war we plan: one such regiment for each army corps; one brigade of three such regiments for each army; additional brigade headquarters and regiments for the G. H. Q. Reserve; and other regiments for zone of the interior defense. The last are to

be specially organized in many cases. Neither in peace nor in our theoretical war strength set-up, is any definite provision made for the means of establishing the ground intelligence system that is so necessary to the successful operation of air corps units over our own territory and for the safety of our combat forces, and civilian population and installations in case of air attack. Plans for its establishment and for its operation are either non-existent or rudimentary and without sanction.

Antiaircraft artillery units operate under the command of the chiefs of artillery of corps and armies. T. R. 430-105, in listing the functions of these chiefs of artillery make them responsibile for the preparation of plans for the antiaircraft defense and for the supervision of the execution of the orders promulgating these plans. No mention is made of any duties they may have in connection with the antiaircraft intelligence service. Neither is any mention made of the antiaircraft intelligence service in chapter XIX of this training regulation which treats of the artillery intelligence service.

Air Intelligence Regulations (T. R. 440-325) makes brief mention of such intelligence but of no coordinated system of antiaircraft intelligence, viz:-

"Par. 10 e. Antiaircraft Artillery.—Antiaircraft artillery units are, whenever possiblefi connected by direct "telephone to pursuit units. They furnish valuable information concerning hostile aerial activity. The locations of hostile formations are often signaled, by a prearranged number of bursts, to friendly formations already in the air."

The Manual for Commanders of Large Units contain no provisions pertinent to the question at issue. T. R. 210-10, Military Intelligence,—makes no mention of the antiaircraft intelligence service nor of any necessity for such intelligence. T. R. 160-15, Signal Communications, all Arms and Services,—makes no mention of this intelligence service and specifies no procedure that will insure the speed required in handling the messages that must be transmitted in a successful operation of this service.

One controversial question as to organization is now a live issue. It concerns the protection of combat and service troops and trains, particularly those of divisions, against attack by low flying aircraft. Proposals vary from making no provisions, other than those now possible by using small arms now authorized, to providing either an antiaircraft machine gun battalion for each division or an additional antiaircraft regiment for each corps to permit attachment of provisional battalions to divisions when required. This question, as well as proper provision for an antiaircraft intelligence service, warrants the best efforts of all concerned.

IV. The Present Development of Antiaircraft Artillery

The present state of development with respect to organization has been discussed above. With respect to material, our 3″ guns, searchlights and sound locators have been brought to a high state of efficiency. The progress made in this development has been remarkable. This development has exceeded the development of aircraft since the World War. The modern gun, assisted at night by searchlights and sound locators, is several times more efficient against modern aircraft than was the war-time material against the war-time aircraft.

When supplied in sufficient quantities, they will provide the means for antiaircraft artillery units to carry out their assigned firing missions and thus free the Air Corps for offensive operations.

The 3″ gun material has, however, still one outstanding defect. It can not be fired with reasonable efficiency unless the operators of the battery director can see the target at least a major portion of the time. In clear weather, searchlight beams can now be placed very close to a target by the use of sound locators. Methods permitting barrage fire to be delivered on sound data are badly needed. Such a development would permit the guns to fire at targets now hidden by clouds. Aircraft flying above somewhat broken clouds can frequently carry out their missions. At present, they are difficult targets by day and impossible ones by night.

Our machine guns have been perfected in step with our 3″ guns, but our fire control for machine guns has lagged far behind. Our caliber 50 machine gun is a splendid weapon capable of great results up to at least 1,500 yards vertically and 2,500 yards horizontally, if properly pointed. With present pointing equipment and methods, its effective range is not more than half of the above.

There have been two contending schools of thought in antiaircraft machine gunnery. The first has looked for a solution in instrumental control somewhat similar to that provided for the antiaircraft gun. The second has sought to answer the question by correcting pointing errors from observation of tracers. This school contends that machine gun targets will appear too suddenly and remain in the field of fire too short a time to permit instruments to function. The net result of post-war development has been a marked increase in the efficiency of antiaircraft machine gun fire, but an increase that still falls far short of the possibilities.

Both schools of thought are sound. The attack plane, more often than not, will have to be countered in such a brief time that no instruments can be used. On the other hand, other types of planes, because of low ceiling and other reasons, will frequently fly at altitudes well within the ballistic possibilities of efficient fire of caliber 50 machine guns. Also the terrain in many localities will be such that attack planes are within range for considerable intervals. We must learn to fire our machine guns with the utmost dispatch and efficiency at fleeting targets, but must not neglect the target at a considerable range against which more deliberate and more scientific fire is practicable.

The development of listening devices for use in directing searchlights has reached a high plane. Such devices for use as adjuncts of the antiaircraft intelligence service, have, however, received no attention. The development of a light listening device which will extend the listening range of intelligence observers is badly needed.

The development of a communication system for the

antiaircraft intelligence service, and, in fact, of this entire service, has made little progress. This matter, however, is now receiving attention. Several special exercises to develop such a service to meet the special needs of our overseas garrisons have been held in the last few years. Two rather extensive tests have recently been held in the United States. Others are projected. It is patent that this development should be pushed vigorously.

At the present time, the United States has developed splendid antiaircraft artillery weapons and accessories fully capable of fulfilling the role assigned them by our Field Service Regulations. We are backward, however, in developing methods of firing guns on sound data, methods of pointing machine guns, listening devices for intelligence observers and a coordinated intelligence service. When we contemplate what has been accomplished in the last 13 years, we can expect a solution of our outstanding problems in the near future, provided the efforts of the past are continued.

The picture, however, is very different when we consider our progress in actually getting this efficient materiel manufactured in sufficient quantities to meet the needs of the National Defense. In from 15 to 20 years, we may have fairly adequate materiel for our foreign garrisons. At the present rate of progress, it will be at least 400 years before we can have enough of this materiel built to meet the needs of the National Defense at the outbreak of a major emergency.

Until this condition is remedied, we must expect to start any major war at a very grave disadvantage as several other Nations are now equipped or are rapidly equipping themselves with post-war antiaircraft materiel. During the interim, either our Air Corps will be immobilized for defense of critical areas and defeated in detail, or these areas will be subjected to unopposed aerial attacks on an extended scale. The vigorous prosecution of an extensive antiaircraft rearmament program is indicated.

Military Motor Transport Required by the Army for War

By Lieutenant Colonel Brainerd Taylor, Q. M. C.

Strategical Mobility

MOTOR transport has already revolutionized military strategy because of the greatly increased mobility it has given to armies. In the civil War strategical maneuver depended upon rail or water transport, followed by the slow marches of foot troops and animal transport. Military operations were not only extremely slow and limited, up to and including the Civil War, but the officers who planned and executed them were seriously handicapped, in the eyes of modern strategists, by the halting movements caused by loading, unloading, and reloading in necessary changes from one gauge railroad to another. Eleven different gauges of railways had to be reckoned with in the theatre of operations of the Civil War. Too frequent loading and unloading of supplies, troops and tactical transport upon faster moving rail, water and motor transport, still handicap the military strategist in the theatre of military operations. Standardization of railway gauges, accomplished after the Civil War, materially changed the character of strategical movements in military operations. The effect of railway standardization upon warfare and commerce stimulates speculation as to the further changes that might result from standardization of motor transport and its coordination with standardized rail and water transportation. If standardization of rails physically unified the United States and multiplied its power in commerce and war a hundred-fold, what might not be expected from standardization of motor transport in coordination with our national railway and international water transport systems?

In the World War the general character of motor transport procured for our Army consisted of 274.000 vehicles representing 216 different makes and models. The truck transport consisted of 86,000 vehicles of 1½ to 5½ ton, 4 cylinder, solid-tired types driving on the rear axle only; 57,600 trucks, 2 and 3 ton, 4 cylinder solid tired types driving on front and rear axles, and 21,400 light trucks 1 ton and less, 4 cylinder, pneumatic tired, driving on rear axles only. The practical or average operating radius of our war time motor transport was from 50 to 75 miles per day on good roads, and the average speed of convoys was eight miles per hour, with slowing up and elongation of columns on grades and poor roads. Notwithstanding the difficulties of controlling military traffic on road nets congested by eight miles per hour motor convoys, four miles per hour tanks, two and one-half miles per hour animal-drawn transport and foot troops, the strategical mobility of the Army had taken a great step forward in its new use of motor transport.

In the World War long distance troop and supply movements by truck convoys characterized military operations that a decade before would have had to rely upon railways and long, hard marches. Even in the stationary phases of warfare, that predominated in the World War, motor vehicles passed far beyond the scope of animal-drawn transport and replaced, without doubt, much short haul railway transportation.

Since the World War motor vehicle design and construction and the rapid development of hard surfaced roads have still further advanced the value of motor transport as a means of strategical mobility. The modern truck and bus are powerfully engined with six and a few eight cylindered motors. Solid tires have been replaced by pneumatic tires of great efficiency and durability. The road performances of 4 wheel, 2 wheel drive vehicles which still represent over 98% of the motor vehicles of commerce have increased the potential radius of action of motor transport to 200 and 300 miles per day and more. With modern braking systems and straight, wide, hard-surfaced highways motor vehicles can travel safely at 50 to 60 miles per hour. The average rate of speed that can be developed in convoys made up exclusively of modern trucks and buses may in small convoys be as high as 30 miles, and for large convoys 20 miles, with some slowing up for grades and poor roads but much less elongation of columns. The effect that such motor transport will have upon the strategical mobility of future armies operating in the field is tremendous. It can best be realized by consideration of the present effect of modern motor transport upon commerce, formerly carried on by railways the traffic of which is now so depleted as to constitute one of the most serious of the economic problems puzzling the entire world in this period of business depression. Not only has motor transport replaced all but a small percentage of animal transport in commerce, it has replaced or crippled a great portion of our branch line railway operations and threatens to cut deeply into trunk line railway traffic, and further to jeopardize our arterial railway systems which still form and always will form, the back-bone of our national and international commerce and of our National Defense. In commerce existing railways and a rapidly expanding motor transport constitute an over-capacity in our mechanical means of transportation far in excess of our immediate transportation requirements. Lacking greater demand rails or motors must yield in competition or be coordinated, because of the immutable law of supply and demand.

NOTE: See frontispiece for illustration.

For strategical movements in any theatre of military operations, modern wheeled motor transport offers the greatest flexibility and therefore freedom of action and the best means of mobility of any form of transport now existing, except under certain military conditions wherein track-laying or animal transport must still be used. With commercial types of motor vehicles, driving on rear axles only, military troop and supply movements may be made in any direction, at high speed, at the rate of 200 to 300 miles per day in areas covered by a net work of good roads. The power of modern wheeled motor transport has been so developed as to eliminate many of the loading and unloading operations necessary in the use of short haul rail transportation. As compared to rail transportation with the time, labor, and cost of truckage or cartage at both ends, motor transportation within certain economical distances, considering time, labor and transportation costs, offers advantages that are too great to be ignored. These advantages, in local fields of general transportation, coupled with the fundamental importance of retaining, unimpaired, trunk-line railroad service, have apparently been ignored by railroad executives or by legislative bodies whose responsibility it is to coordinate the nations transportation system with public convenience and necessity, until now we face a serious transportation situation in which the welfare of other great industries is involved. In this revolution of commercial transportation is to be found the counterpart of the revolution to be expected in military operations.

The existing type of commercial motor transport that best meets strategical requirements, irrespective of questions of maintenance, of sustaining the power of strategical mobility and of general motor transport administrative economy is the commercial bus and truck representing the most quickly available commercial motor transportation. Ninety-eight percent of this type of transportation is not suitable however for tactical use. Its power of mobility cannot be long continued without excessive costs in automotive supply, repair and replacement. Satisfactory maintenance of this type of motor transport, in a prolonged war, especially overseas, will be impossible of accomplishment. In short, motor transport composed of a great diversification of commercial types, makes, and models of vehicles, would ultimately break the back of any major military operation and end in the early immobility of any army that depended upon such a conglomeration of motor transport, for either strategical or tactical mobility. Only a motor transport designed to meet both operating and maintenance requirements can be relied upon to insure the success of any great enterprise that is based upon motor mobility.

Tactical Mobility

World War motor transport had little or no cross-country ability and therefore was not suited to use as a means of tactical mobility. Notwithstanding the fact that G. H. Q. published in orders to the A. E. F. the conception that motor vehicles merely replaced animal drawn vehicles, reliance for tactical mobility still rested upon the animal, except in the case of motor-driven tanks, which moved on the track-laying principle, and a few combat vehicles of the then crude 4-wheel drive type.

At St. Mihiel and in the Argonne the limitation of the horse and mule in relation to time and distance factors, the importance of which are more and more emphasized in modern warfare, began to be apparent. Keeping pace with the development of warfare, experimental development in the use of motor vehicles for organizational equipment has gone steadily on since the World War, stimulated by the lively interest taken by all military powers in the subject of "motorized" and "mechanized forces." The motorization of animal-drawn elements of combat and technical troop organizations is also stimulated by the greatly increased speed and distance abilities of motor vehicles as compared to animals and by the rapidly increasing power of motor vehicles to satisfy military performance requirements as a means of tactical mobility.

Limited by War Department policy to responsibility for the development and procurement of wheeled types of motor vehicles only, the Motor Transport Branch of the Quartermaster Corps has endeavored to increase the cross-country ability of all wheeled types that might be required to produce tactical mobility, without sacrificing the already highly developed road performance required for strategical mobility.

Commercial vehicles driving on one or more rear axles that are used in road building, excavation work, mining and agriculture possess considerable cross-country ability, but commercial multi-wheel vehicles driving on both front and rear axles have developed ability to negotiate sand, mud, steep grades and underbrush, to such an extent as to supplant the animal on terrain heretofore pre-empted by animal drawn transport and to challenge the track-laying tractor in its pet wallows. These types of super-cross-country wheeled vehicles are, however, produced in commerce by comparatively few companies and in very limited numbers. The combined capacity of existing producers of 4 wheel, 4 wheel drive trucks is nowhere near that required to produce the motor vehicles suitable for tactical motor transport required by the Army in the early phases of a major war, but neither is the entire industry prepared to produce in quantities required by the Army any type of truck above 2-ton capacity. Therefore it will be just as expedient for the industry to expand for production of heavier trucks of military types as it will be to expand for the production of the heavier commercial types driving on rear axles only.

Ever since the World War, engineering tests on nearly all the important types, makes and models of commercial trucks have been conducted at the Holabird Quartermaster Depot and models, representing the best of these from a military point of view, have been turned over to the arms and services for extended service tests by their service boards and other field agencies, under the direction and supervision of their chiefs.

The Cavalry, the Coast (Anti-aircraft) and Field Artillery, the Infantry and Air Corps, and the technical services that go to make up divisions, corps and armies, not to mention experimental motorized regiments and mechanized forces, have in the last few years been rapidly developing their military vehicle

performance requirements and planning to carry out their own missions and to develop their own motorized and mechanized tactics and technique. In this the Motor Transport Branch of the Quartermaster Corps has endeavored to advise and assist with its greater experience in motor transport operations and maintenance, and through its closer touch with the automotive industry. However, in accord with the Quartermaster General's belief that it is extremely unsafe to interfere or dictate to the arms and services concerning the military characteristics of vehicles required by them, advice only has been offered. Vehicles have actually been developed to meet performance requirements as directed, maintenance requirements only being provided for by Motor Transport Branch plans. Assuming that the military characteristics of vehicles envisioned by chiefs of arms and services are necessary in tactical transport, regardless of differences that may exist between such vehicles commonly used in commerce, the Quartermaster Corps has translated envisioned vehicle characteristics, performance and tactical requirements made known to it, into specifications and drawings from which vehicles of extraordinary cross-country ability have been produced, utilizing standard commercial unit assemblies available in the automotive industry.

Where unusual ratios of rated payload to vehicle weight appear to exist, it is assumed that excess weight, caused by the combination of road and cross-country ability in one vehicle, and its more than ordinary ruggedness, is necessary in designating capacity ratings of military types of vehicles. These differences between military and commercial ratios of vehicle weight to pay load weight are purely fictitious however. There are no commercial standards. The military 1¼-ton for instance is the equivalent in these ratios and in cost of production, to commercial trucks of 1½ to 2-tons capacity, the military 2-ton is the equivalent of commercial trucks of 3 to 4 tons and so on through the military list. On a comparative cost per pound basis of construction and in estimated maintenance costs military types developed at Holabird and produced with equal ease in the industry or at Holabird show up most favorably.

Extended service tests with modern vehicles have been held by the arms and services at such places as Fort Bragg, Fort Riley, Fort George G. Meade, Fort Eustis, Fort Benning, Air Corps fields and other stations where their field agencies are located, and where all kinds of terrain that must be negotiated in combat operations impose collectively the most varied and difficult conditions to be met in tactical motor transportation. These developments and service tests of commercial models of 4 wheel, 2-wheel drive and multi-wheel drive trucks have been reported from time to time to the Quartermaster General by chiefs of arms and services. These reports, accompanied by detailed reports and recommendations of their service boards, have shown performance requirements, mechanical defects and weaknesses developed in unit assemblies of various vehicles, and the failures and successes of the vehicles tested.

These reports and recommendations have clearly shown that standard commercial vehicles driving on rear axles only and used in accordance with commercial ratings do not possess the cross-country ability and sturdiness required for tactical mobility. On the other hand, these reports have shown that multi-wheel drive vehicles driving on front axles, as well as rear, have developed such a high degree of cross-country ability as to make certain that they are a satisfactory mechanical means of tactical mobility in all arms and services. It has also been shown that greater vehicle weights in ratio to rated payload capacity are necessary in tactical or cross-country transportation as opposed to road transportation.

Strategical and Tactical Mobility Combined

In military operations all transport assigned to the arms and services, including the equipment that represents their tactical mobility, must be considered in every strategical road movement involving the transport assigned to divisions, corps and armies and to G. H. Q. reserves. Tactical transport, if it lacks the operating radius or road performance of the motor transport troop and supply columns that make up the mass of strategical movements, will complicate and limit such movements. Slow moving tactical transport, because of its limited road performance, will affect the time element and control of traffic over the road nets, or it will have to be loaded on faster moving rail or motor transport, and unloaded, often at critical points, in the approach to or development of tactical dispositions. In either case time is lost, heavy labor required, and a duplication of transport equipment, in an area already congested, will result in one and the same transportation effort.

All truck chassis of military types recently procured possess a very high degree of tactical mobility and are capable of operation in all modern strategical motor transport movements in accordance with the best road performance of the present day. What is more valuable from a military point of view, they can be easily and economically maintained.

Strategical motor ability is the connecting link between rail and water trunk line transportation and tactical operations. It should be able, if its full military value is to be realized, to extend rail and water trunk lines on the one hand and to develop, without halting, tactical operations on the other hand. In other words, the interruption of movement, due to different vehicle characteristics, that now exists between strategical and tactical transport should and can be removed in military motor transport by "combining standard road performance with maximum cross-country ability" in one and the same vehicle. This all-embracing military characteristic was voiced by the Secretary of War in his first directive to purchase modern motor trucks for tactical training in the Fiscal Year 1930.

Motor vehicles that combine the standard road performance of commercial motor transportation with the maximum cross-country ability required of tactical transport will greatly simplify, economize in and speed up military operations. Provisions of ways and means to procure and successfully maintain the mobility of motor transport that combines tactical and strategical

ability is all that is required. This is the principal objective of the Quartermaster General in his experimental work looking to the development of military types of motor vehicles required in war.

In short his plans contemplate utilizing the engines, radiators, frames, axles, wheels, transmissions, steering and braking systems, universal joints and other unit-assemblies now used in the production of standard commercial vehicles to produce in time of war standard military types. His plans contemplate specifying military performance requirements, and the quality of materials and sturdiness of design that military experimentation and development determine as necessary. In addition his plans seek the maximum interchangeability of unit-assemblies, in vehicles of different types and kinds but similar in size, in order to insure a workable maintenance system under the conditions of war. In this the approval and assistance of the automotive industry, that did its utmost to advise and assist the War Department in meeting the motor transport requirement of the Army in the World War, have been sought. In response to this appeal the Society of Automotive Engineers and the National Automobile Chamber of Commerce have organized committees representing all branches of the automotive industry to consult with the War Department and study military requirements and the plans to meet them. These committees have recently met in Washington and New York, have visited Holabird and inspected a number of military types of vehicles in demonstrations of war time strategical and tactical requirements. Drawings and specifications are being mutely studied by both committees with a view to determining the extent to which coordinating military requirements with the policies and resources of the automotive industry is practicable.

Motor Transport Resources

With the combination of tactical and strategical mobility in view in vehicles procured for the Army in time of war, it is interesting to contemplate the country's resources from which such transportation may be obtained. As a background, we have the following commercial situation:

Commercial truck and bus producers range in character from two or three truck manufacturers, who design and manufacture their own vehicles and most of their own unit assemblies, to truck assemblers who assemble vehicles according to the user's requirements or their own design, utilizing generally in both cases unit assemblies manufactured and sold throughout the automotive industry by so-called parts manufacturers. The ratio of truck manufacturers to assemblers is about 1 to 20 in the United States. The largest and best known truck producers who manufacture, purchase nearly all of the unit assemblies with which they build up a vehicle around their own engines and other units covered by their own patent rights. Many parts manufacturers are as well known today in the automotive industry as the truck producers to whom they sell their products.

Parts manufacturers are recognized specialists in their lines. Their products are known to possess superior qualities. The skilled unit and parts manufacturers form the bed-rock of the automotive industry. From them directly, or purchasing through truck and bus manufacturers and assemblers, the large fleet operator of today can procure any type, model or size of truck his business requires. Through selection of unit assemblies he can dictate the performance and the quality of materials and ruggedness of design best suited to his service. By adhering to dimensional standards in all units that are used to construct or repair his vehicles, he can lay the foundation for maintenance and replacement economies that will prove a major factor in the success of his fleet operations. The coordination of the performance and maintenance requirements of the Army as a fleet operator with the automotive resources which are available are among the most important objectives sought in the very beginning of any war time production of motor vehicles for military purposes.

The manufacturing plants of unit assembly manufacturers can be expanded, and if necessary can change their tooling set-up to meet war time requirements much more easily and rapidly than can truck and bus manufacturers. The unit manufacturer has but one unit plant to expand, whereas the truck manufacturer has many departments of his greater plant, each manufacturing units required to build his special make of vehicle. These being already arranged as to production capacity, location and inter-plant transportation with relation to each other, cannot be expanded as a rule without encroaching upon adjacent departments thereby making it necessary to set up new plants requiring road or rail transportation and this causing delays and disproportionate costs of production.

In procuring motor vehicles, interchangeability of unit assemblies, provided for by specifying dimensional standards, is obviously the key to economical maintenance and to the continuation in use of serviceable vehicle units and parts, representing a material percentage of an original investment, long after vehicles which do not possess the interchangeability feature are scrapped. This road to successful motor transportation, with profitable operations to the user and to the producer alike, is wide open to all fleet operators including the Army. These advantages are recognized and plans are being made to develop them in connection with the procurement of experimental fleets so that the Army may avail itself of the best procurement, operation and maintenance practices that exist at the time when war breaks out. That a major war will sooner or later force the production of motor vehicles which meet military requirements, both as to performance and maintenance, is indicated by the history of military motor transport in the World War. In war time the advantages of combining strategical and tactical mobility in all vehicles intended to operate in the zone of combat, and the solution of the vehicle maintenance problem, which must be viewed as a military necessity, will be the principal motor transport considerations.

For those who are interested in this subject of standardization of military motor transport in which the use of dimensional standards is required of all who furnish war time motor vehicle equipment to the Army,

it would be well to study this problem as it was handled in the War Department during the Punitive Expedition and in the World War.

Brief History of Military Motor Transport Standardization and Procurement

(Quotations from America's Munitions—1917-1918)

Briefly, as far back as 1914 "the Society of Automobile Engineers, having learned from the experience of European nations then at war that motor transportation is one of the most vital factors in the success of any army, offered its services to our War Department for the purpose of making a complete survey of the automotive industry, in the hope that the interests of the industry and of the Army could be coordinated so that in an extreme emergency the industry might be able to provide the necessary motor equipment for the Army, and that the Army might be able to use such equipment in the most efficient manner."

Not until April 28, 1916, did the War Department ask the "Society's cooperation in issuing revised specifications for the purchase of 1½ and 3-ton Army trucks. In May of the same year, a committee consisting of engineers from five companies manufacturing trucks, from five companies assembling trucks, and an engineer from a truck company not making the types of trucks under consideration, was appointed to cooperate with Army officers in making plans to provide our troops with motor vehicles suitable to their needs." ***"This committee went over the Government specifications for the 1½ and 3-ton trucks, which had been proposed by the Army, and after a few changes had been made, the specifications were drawn up for what then seemed to be the ideal trucks for Army use in these two sizes."

"Trucks at this time were urgently needed for our forces along the Mexican border and for the Punitive Expedition entering Mexico." ** "Early in 1917, revised specification for Army trucks were issued as a result of the numerous conferences that had been held between representatives of the War Department and the automobile industry."

"In May standard specifications for the so-called class "A" (1½-ton to 2-ton) and the class "B" (3-ton to 5-ton) motor trucks were established," showing the fundamental requirements of motor trucks for the Army as they were then conceived.

"After deciding on the requisites of an Army truck, the matter of standardization began to receive definite attention, it being the belief of many of the Army officers that it would be entirely possible and practicable so to standardize Army vehicles that but one type of truck would be sufficient for each size, and it became quite evident if this ideal could be worked out, the maintenance of Army vehicles would be a simple matter. Without some standardization, the providing of the proper stock of spare parts became a problem of extreme difficulty."

Not until the early summer of 1917 was actual military automotive engineering systematically undertaken. At this time "an appropriation of $175,000 was set aside by the Quartermaster Department for the purpose of financing the cost of designing and drawing up specifications for a complete new vehicle, which would become a standardized truck for our military forces. On August 1, 1917, there were assembled in Washington fifty automotive engineers, who had been in touch with the truck needs of the Army, and these men, with the help of Army officers, began the task of designing a sample standardized truck, first centering their efforts on the 3-ton size, as this was at that time most urgently needed by the Army. On October 10 of this same year the engineers had finished designing the new type of truck and had completed the first two sample trucks of this type, afterwards known as the "Standardized B'." *** Not until April 1918, was the necessary military automotive engineering completed and actual production begun on the first 10,000 "Standard B" trucks. In the meantime the buying of motor equipment by five different supply agencies continued. "Each corps had its own ideas as to the type of truck required, and the sum of these ideas resulted in a decided lack of standardization for the Army as a whole, and no complete standardization for any corps as a unit." **"Over 200 different makes of motor vehicles were actually in use by the American Expeditionary Forces." **"The buying of motor equipment by so many different agencies of the Government was not only confusing to the manufacturer, who was selling to five different corps, but it also precluded any possibility of real standardization;" and with a view of eliminating these two evils, Special Order 91, W. D. 1918, and General Order 38, W. D. 1918, were issued. The first created a standardization board and the second consolidated the procurement of all motor vehicles in the Motor Transport Service, which service operated under the direction of the Quartermaster General."

"Under these orders the standardization board was charged with selecting and approving the proper types for the use of the Army, the board being composed of representatives from each of the various corps. In this manner the various ideas of the different corps were coordinated through the discussion of the board," and the final result was the selection of chassis, standardized for use. Four different makes of truck chassis of standard commercial design in four different sizes were adopted as standard, in addition to the Light and Heavy Aviation and Standardized B, and their production in large numbers was ordered. Standard A 1½-ton, and "4-wheel drive TT types, called the 'Militor,' this being a special truck tractor designed by the Ordnance Department," were also adopted as standard but never supplied to the Army. It was determined that "on this limited number of chassis could be mounted any bodies required by the Army."

"While the board was standardizing on the types of vehicles to be purchased in the future for the Army, the Motor Transport Service was being formed, and by June 1, 1918, the consolidation of procurement, inspection, production, maintenance, etc., was well under way."

"The Motor Transport Service found that it was impossible to purchase the trucks standardized by the motorization board in sufficient quantities to meet the overseas requirements. It was therefore decided, after the consent of the board had been received, that certain

other types of vehicles should be procured to fill the requirements of the Army until such time as the production of the standardized truck could be increased." Seven makes in five sizes were added.

The following abridged table, made up from a table appearing in pages 502-503 "America's Munitions—1917-18," shows how standardized motor transport was planned and procured for the Army. It also indicates that the War Department can procure from the automotive industry in time of war, just as it did in 1918, vehicles that meet military requirements. In this connection the greatly expanded industrial resources represented by parts manufacturers should be emphasized.

MOTOR TRUCK PRODUCTION 1917-1918

Vehicles Standardized for Overseas Shipment and Production by Several Manufacturers

NAME	*CLASS*	*CAPACITY*	*Number of Manufacturers to Whom Allocated for Production*	*Total Ordered to Nov. 1, 1918*	*Total Completed to Nov. 1 1918*	*Floated Overseas*
Four-wheel, two-wheel drive types:						
G. M. C. Standard Chassis	AA	1-ton	13 different Companies	13,011	5,553	4,001
Light Aviation	A	1½-2 ton	4 " "	3,900	3,210	1,829
Heavy Aviation	B	3-ton	5 " "	3,675	3,099	2,110
"Standard B"	B	3-ton	29 " "	43,005	9,452	7,655
Four-wheel, four-wheel drive types:						
Nash Quad's	TT	2-ton	4 " "	23,684	8,598	7,034
F. W. D.'s	TT	3-ton including winch	4 " "	20,973	7,756	4,748
TOTALS				108,248	37,668	27,377

In reviewing this brief history in the light of experience it should be noted that the causes of failure to provide the Army with satisfactory military types of vehicles required in its military operations were many; chief among these causes were lack of precedents in military motor transportation and failure to comprehend the motor transport problem, in which performance requirements, maintenance and procurement are inseparably bound together in one problem and one solution; failure to accomplish the military automotive engineering involving vehicle development, preparation of specifications and drawings, procurement of pilot model vehicles for engineering tests and pilot model fleets for extended military service tests. It is obvious that all such military automotive engineering should be completed, with a view to revision from time to time to keep up to date, long before war becomes imminent. Finally, peace-time training in the operation and maintenance of military fleets composed of military types of vehicles and the industrial planning required for their war time production are essential to adequate national defense.

Recent Developments

Because of his experience as G-4 of the First Army in France, the present Quartermaster General is in a peculiarly enlightened position to comprehend the relation that the anticipation of motor transport requirements bears to the success of military operations. Under his direction, the following developments have been recently accomplished:

The military automotive engineering (without which the various motor vehicle performance and maintenance requirements of the arms and services cannot be coordinated and interpreted into the motor transport fleet performance and maintenance requirements of the Army) has been brought upto date.

The further military automotive engineering (without which the Army's motor transport fleet performance and maintenance requirements cannot be interpreted for the automotive industry with a view to coordinating military requirements with commercial resources) has been carried to a point that would save the War Department many months of such work and hundreds of thousands of dollars were a war of major magnitude to break out tomorrow.

In this military automotive engineering the basic automotive engineering of commerce has been merely supplemented, not paralleled, just as it had to be in 1917-1918. Standard commercial articles of automotive manufacture have been utilized. Special design has been avoided. The designs of unit assemblies required to produce trucks of military types are strictly commercial, their arrangement in assembling trucks that meet military requirements of performance, sturdiness and interchangeability of unit assemblies is the only automotive engineering attempted.

The drawings and specifications describing military types of trucks from 1¼ to 10 tons military or cross-country capacity, or 2 to 15 tons commercial or smooth road capacity are all outlined and in the case of several types completed in detail.

Experimental models of military types of trucks exemplifying the performance requirements of strategical and tactical mobility combined, in other words trucks that combine "standard road performance with maximum cross-country ability" have been produced, and an experimental fleet of over 300 of these trucks of various types and capacities have been procured and issued to troops.

With this military automotive engineering completed and kept up-to-date from year to year, with changing military requirements on the one hand, and the progress of automotive improvements in vehicle and unit assembly design and construction on the other hand, there should be little doubt regarding the motor transport efficiency of the Army in the event of war. Potentially, so long as the automotive industry of the United

States retains its leadership, the United States Army can be assured of the most powerful military motor transport in the world, provided it procures motor vehicles that combine strategical and tactical mobility, that can be economically maintained, and that are commercially producible, and provided further it develops and practices military motor transportation.

As shown in this article, the standardized military motor equipment recently produced and issued in limited numbers to the Army, chiefly for tactical training, represents seventeen years of military motor transport experiences and development in all arms and services. In the most recent developments history has repeated itself.

In the discussions in the Quartermaster Technical Committee in September 1931, relative to recommending as standard the military types of vehicles experimentally developed, the action in 1918 of the standardization board, composed of representatives from each of the various corps of the Army, (created by Special Order No. 91, W. D. 1918), has been repeated. In the meeting of the Military Motor Transport Advisory Committee of the Society of Automotive Engineers, in the office of the Quartermaster General October 26, 1931, the memorable meeting of such engineers in the War Department on August 1, 1917, has been repeated.

The old solid tired 4 cylindered motor vehicles of limited performance, procured and issued to the Army in the earliest stages of truck transportation, will soon appear to the Army as antiquated and useless as wooden war ships to the Navy. Somewhat as the Navy separates its problems of ship construction and maintenance from the problems of Naval operations, the Army, as a result of its recent development, should be better able to separate its problems of motor vehicle procurement and maintenance from its problems of strategical and tactical motor transport operations.

General References for Collateral Reading

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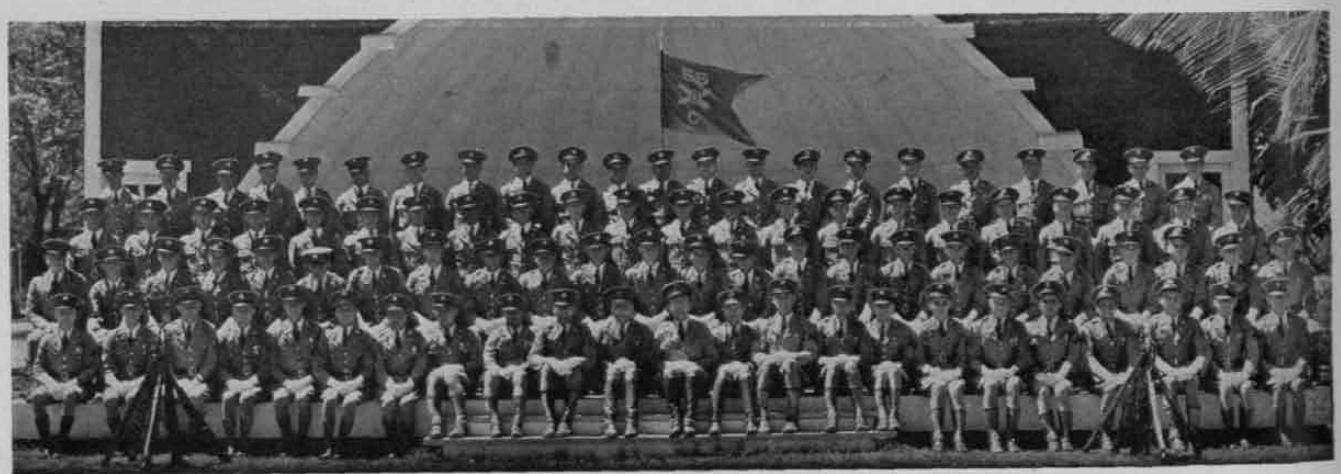


Battery C, 55th Coast Artillery (TD)

Winning the 1931 Knox Trophy with Battery C, 55th Coast Artillery (TD)

By 1st Lieutenant Frank C. McConnell, Coast Artillery Corps

1st Lt. Frank C. McConnell

NOTE: *"The two practices fired by Battery C, 55th Coast Artillery (TD), * * * are examples of high grade shooting. In the day practice there was one relatively minor material failure and one personnel error of 25 yards in range. One shot out of the 28 missed the broadside target in direction. The average spotting error was 51 yards. Notwithstanding these exceptions, the firing was uniformly accurate as is shown by the distribution of the salvo center of impacts and by the center of impact for the practice. It should also be noted that the developed armament probable error was 57 yards as compared with a tabular probable error of 68 yards.*

*The night practice of Battery C, 55th Coast Artillery (TD), is considered as being even better, in some respects, than the day practice for the same organization, although the score for the day practice was higher. * * * The outstanding characteristic of this practice is that in spite of the fact that it was fired at night, at a range comparable with that used in day practices, and under other disconcerting conditions, the entire battery functioned with machine like precision. It should also be noted that air spotting was used and the spotting error was only 33 yards.*

To summarize, Battery C fired two excellent practices during the same season. One of these practices was fired at night under difficult and annoying circumstances, yet no errors were made and an adjustment correction was applied correctly and without delay. The first practice indicated, and the second practice confirmed, the fact that Battery C, 55th Coast Artillery, had attained such a degree of skill and training in Coast Artillery firing as to merit the Knox Trophy".—Extracted from an indorsement by the Coast Artillery Board recommending Battery C for the Knox Trophy awarded by the Massachusetts Chapter, Sons of the American Revolution.

Considering a target practice season in retrospect a considerable time after its close individual events are likely to be merged into the resultant picture. That is the mental impression of the author in preparing this article. Our guides for the 1931 target practices were the various Training Regulations on the subject and the precepts of Gunnery as taught in the Battery Officers' Course, Coast Artillery School. They gave the desired results. Further elaboration will be merely a description of how these guides were used in the training of Battery C, 55th Coast Artillery, Fort Kamehameha, T. H., in firing 155 mm. G. P. F. guns.

Active preparation for the practices started with the close of the gunners' instruction period March 1, 1931. The day practice was scheduled to be fired on May 19 and the night practice on June 3. The two and one-half months of preparatory training gave ample time to try various men in each position of the range section and gun sections. This was done because 40 per cent of the battery had never been through a target practice. During the month of March artillery drill was held daily for one hour. The objective for the month was the final selection of a regular and an alternate man for each position of the range section and the key positions of the gun sections.

One of the first problems to be met was the one confronting all battery commanders on foreign service—that of personnel whose term of foreign service was due to expire before target practice. These men were all eliminated from the combat team at the start of active training. Each drill was analyzed to check personal errors. Men were switched to different positions accordingly. The range section, under 2nd Lieut. H. C. Parks, was given first preference of any men in the battery outside of the experienced gun commanders and gun pointers. The range officer was ably assisted by Sgt. G. E. Moultries, an experienced plotter, in developing this section. When a satisfactory range section had been selected, men were chosen for the key positions of each gun section, following the same method, under the direction of the battery executive, 2nd Lieut. J. T. Wrean, assisted by Sgt. Edd Smith. The latter has been with this organization for the past ten years, so his experience was valuable.

By the first of April the various sections were fairly well organized. From then until the target practices the same schedule was followed. One day each week a simulated service target practice was fired with subcaliber ammunition. All records were kept and the practice analyzed. Individuals responsible were shown their personnel errors and taught how to eliminate them. Three other artillery drills were held weekly but no firing was done. The objective of these drills was to develop team-work and speed, as well as the precision earlier emphasized. Particular attention was paid to developing a smooth service of the piece with each gun section.

Since orientation is paramount with a mobile battery, all orientation data was independently computed by the battery commander, range officer, and plotter. The results were carefully checked and strange as it may seem, they agreed. This was done early in the season, so that we had no worries of that nature just before our practices. Since we were sure of our orientation we made frequent prediction tests during each drill as a means for detecting personnel errors in range section. We continued these predictions tests right on up to our practice. We even made one test on each record course before we commenced firing.

Between our day practice on May 19 and our night practice on June 3, we added to our training schedule, as outlined above, by having three night drills with a towed target. That concluded our training so far

as the organization was concerned. To this we might add some detailed notes on our preparation.

All available previous records of firing with the guns assigned this battery were carefully studied, with a view to possible calibration corrections. As a result of this study a calibration correction of minus four mils was made on No. 4 gun. This correction was substantiated in both practices.

Since both practices were fired by Case III, airplane type telephone headset helmets were procured for all gun pointers and elevation setters. A regular display board was set up behind the center of the battery position. This system enabled the personnel concerned to hear the data sent from the plotting room and set it directly on their sights, using the display board only as a check.

The mobile T. I. system as issued was used throughout the season without a single falter. However, drill was perfected with an emergency system, using stopwatches in case the T. I. apparatus should fail. Stopwatches were kept running continuously in the plotting room and at the guns during all drills and firings, so that data was sent out and the guns fired without missing a bell in case the T. I. apparatus was stopped.

Since the normal systems of spotting for the battery were unilateral and air-plane, a combination spotting-board, fire-adjustment board, and percentage corrector was constructed. This enabled the operator to set the reported deviations from the spotter directly on his board and the necessary adjustment was automatically applied to the out-going elevation to the guns. This combined operation saved about fifteen seconds or the time of one salvo, in applying an adjustment, over having the boards separated.

All primers to be used for the target practices were weighed on apothecary scales and any as much as two grains under weight were rejected. The selected lot of primers were dried for several days by being placed in a wooden box containing a lighted electric lamp.

Particular care was given to emplacing the guns. They were fired from wooden platforms on a sandy beach. The trunnions were carefully leveled as the spades were set in the ground. Sand-bags were placed around the wheels, on top of the spades, and on the trails.

The guns moved an average of about one and one-half inches during both practices.

All the panoramic sights were sent to the Hawaiian Ordnance Depot and completely overhauled and adjusted prior to firing.

Last, but not least, we had not the slightest compunction about carrying our daily troubles and trials with personnel and materiel to our battalion commander, Major Fred M. Green, for assistance.

The following tabulations may give a clearer picture of the results obtained:

Day Practice—May 19 1931

Hits {Bow on—9 / Broadside—6} Time per salvo—15.8 sec.

Average Range—12108 yds. Score—191.1

Shot No.	R Dev. (C. I.)	Spot. Report (unilateral)	Spot. Error
R1	+108	+160	52
R2	+ 53	+ 60	7
R3	— 98	— 60	38
R4	— 23	—120	97
S1	— 35	0	35
S2	+ 24	+ 35	11
S3	+ 10	+ 30	20
S4	+ 32	— 15	47
S5	— 29	+ 15	44
S6	+ 61	— 40	101
S7	— 96	— 60	36
S8	— 33	+ 90	123

Night Practice—June 3, 1931

Hits {Bow-on—11 / Broadside—9} Time per salvo—15.7 sec.

Average Range—9038 yds. Score—138.6

Shot No.	R Dev. (C. I.)	Spot. Report (Air)	Spot. Error
R1	+ 4	Hit	4
R2	+ 53	+ 20	33
R3	+ 50	+ 10	40
R4	— 80	Lost	—
S1	+ 71	+ 80	9
S2	+130	+ 60	70
S3	+ 40	+ 50	10
S4	+ 28	+100	72
S5	+ 47	+ 10	37
S6	+ 17	— 10	27
S7	+ 62	+ 30	32
S8	+ 14	Lost	—

We started out with the Training Regulations as our guide. To the best of our ability we trained our battery in an orthodox manner as nearly as possible as prescribed in these publications. And with the able assistance of Lady Luck we received the expected results in our target practices.

Contrasts of 1931–Mobility or Stagnation*

By Captain B. H. Liddell Hart, British Army

THE Army exercises of 1931 were remarkable for two extreme contrasts. And were, in consequence, the most illuminating since the war. The first picture was seen in August, when the atmosphere of another August, seventeen years ago, was re-created at Aldershot by the mobilization of the Ist Division (less one infantry brigade) at war strength.

The primary idea underlying this mobilization was that of seeing what reductions could be made in the stores and equipment carried with units, as a means of improving the mobility of the division. But its immobility was the ultimate lesson of the mobilization.

It may be true that imagination and calculation could have provided an approximate answer on all save the most detailed questions. But as with a car, so with an army—the most thorough of makers' tests is not an adequate substitute for the service test which comes when a model is placed in the hands of the ordinary user. Moreover, the test mobilization had a psychological result too marked to be missed. I am not referring here to the spirit of the troops under trying conditions, and the striking way in which men of different units merged in composite battalions. But the test brought home to officers the unwieldy bulk and complexity of a division as at present constituted.

Four years of siege warfare, coupled with the natural growth of needs and invention, converted the soldier into a living Christmas tree, and the military unit into a superpantechnicon. After the war the trumpet-call of "back to open warfare" did not avail to reduce these immovable walls of Jericho. Something was done to lighten the load on the soldier and on the horse—by transferring it to his transport. But this meant increase of transport. Even if the individual soldier can march a little easier, his effective rate of movement is governed by the scale of his movement in mass—by the size of the column, the possibility of handling it, and its vulnerability to interference.

The problem has been partly obscured since the war by the skeleton size of units when taking part in peace time maneuvers, and the fractional proportion of transport therein employed. It needed a mobilization to lift the veil, and to focus attention on the urgent need for reducing mass to manageability. Much of the superfluous fat is undoubtedly caused by the military tendency to provide for every contingency. Possibilities too easily come to be regarded as probabilities, and luxuries as necessities. It is an old, old story—a case of fatty degeneration.

Thus did the armies of 18th Century Europe swell until dispersed by the ragged but mobile mobs of the French Revolution. Thus likewise, did the armies in the American Civil War grow stagnant from their own bulk until Sherman showed the way back to mobility by a ruthless scrapping of transport and equipment. It may not be possible for the modern British Army to contemplate such reliance on "living on the country," but something must be scrapped in the Sherman spirit if that army is ever to move. And it is interesting to note that this 1931 experiment seems to have had its germ in a proposal that the year's training should take the form of a "Sherman march." In a characteristically watered form that was the purpose expressed in the 1st Division "trek."

Preliminary analysis of the problem brought to light some curious facts. It was found that since pre-Boer war days units had been dragging round with them a fortnight's supply of various consumable stores. And, presumably through oversight, this burden on transport had continued during the static warfare of 1914-18, in spite of the ease with which replenishment could have been made by motor transport. Again, in the process of removing weight from the cavalryman, his emergency or "iron ration" was transferred to the transport, which was actually carrying his next day's ordinary rations! An infantry battalion, also, still carries with it twelve miles of telephone cable.

The post-war state of the division can, indeed, be summed up as a case for "slimming" treatment. Cure has, in part, been delayed because of tardiness in exploiting the increased mobility provided by motor vehicles. So long as the Army was dependent on horse transport a division was compelled to drag an endless tail of vehicles around with it, to meet not only its immediate necessities put possible contingencies. But the speed and range of motor transport make it possible to bring forward stores from rail-head as and when required.

Hence it is practicable to reduce the number of lorries (trucks) that actually accompany the division. And this the authorities have now done. They have also substituted 3-ton six-wheelers for light lorries in the divisional train. This substitution combined with the elimination of stores allowed the number of vans and lorries to be brought down from some seven hundred to about five hundred. The course of the "mobilized" exercise, although cut short by General Rain, seems to have satisfied most people that the reduced scale of the divisional transport was practicable.

In contrast, attention was forcibly focussed on the truth that the real movement problem, and the danger of congestion, lies within the fighting body of the division. And that it is due to a superabundance of cumbersome horse traction, if also to an overload of equipment. How many people realize that a division still includes some 5,500 horses and mules and some

* It is expected that the *Army Quarterly* (British) will publish concurrently this article written by an outstanding advocate of mechanization.

740 horse-drawn vehicles? The disadvantages of this incubus were vividly brought out during the exercise.

Previous to it, an astonishing misconception of its meaning became current, even among soldiers, and was due apparently to a misleading explanation being imparted to the press. For the test was spoken of as an attempt to solve the difficulties, especially the congestion, that had been introduced by mechanization! One even heard it said that the difficulty of moving a modern division was due to its mechanization. This naive comment ignored the fact that, apart from the rear services, only a few fragments of the division were as yet motorized. Among them was one motorized infantry brigade signal section, and one motorized field company of engineers, the latter a striking example of successfully applied mechanization. But how few were these "modernities!"

Thus when the mobilized division marched out from Aldershot the first real impression—it seemed a surprise to many spectators—was how little the division had changed since the war. One watched the same interminable chain of foot-slogging men, interspersed with horse-drawn limbers and carts. The most visible differences were supplementary without being novel—the addition of a brigade of light artillery and of a divisional cavalry regiment. These have contributed to increase the road space occupied by the division from some fifteen miles before the war to nearly twenty miles.

Thus it was natural that all observers should be struck by the immense length of the columns. Twelve years had passed and memories had faded since battalions half a mile long had been seen on the march. And half this space is occupied by horsed limbers, cookers and carts. If bombed from the air or fired on by tanks, the men in the column might scatter and re-form—with a loss of time. Horsed limbers cannot. A chain that has such rigid links is perilously inflexible under modern conditions. Even greater was the impression of cumbrous bulk made by horse-drawn divisional artillery, each battery of six guns, and each brigade stretching well over a mile. But they at least did not look so anachronistic as the field companies of engineers, marching on their feet—so as to be sure, as cynic or realist might say, of arriving late and tired at any emergency point where their services might be needed.

"So you've come to see the old-fashioned Army?" a staff acquaintance remarked to me. It seemed to me that an answer of symbolical fitness was, at that moment, supplied by the appearance of an ice-cream barrow bearing the legend "Stop me," which was being pushed by a boy, on foot, in front of the column. But the "gradualness" of military progress was to be even more vividly illustrated by a subsequent procession of the lumbering old horse-ambulances which constitute my first childhood recollection of the Boer War. I presume they had been unearthed from a military museum to take part in this 1931 mobilization.

Meantime, above the columns, serenely sailed flights of aircraft, taking photographs of the points where in war bombs would have been dropped. They had plenty to photograph. For the columns, each originally seven to eight miles long, soon began to stretch out—but not with elasticity. The steep gradients of the Hog's Back were the cause of "echoing" hitches which brought out the difficulties inherent in the mass of animal transport, even when free from the enemy's intervention.

But the delays gave one leisure to look overhead—and to think ahead. Then one's eyes came down to the ground—to the interminable columns with their mass of men and horse-drawn vehicles, slowly winding along the road. The sight gave one a shock when one thought of the development of new means of interference—not only air bombers, but tanks and motor guerrillas. How thoroughly did it so seem to the Chief of the Imperial General Staff in 1927, when he declared that "crowds of men are out of place on the battlefield" in the face of such weapons. "Think again of the result of the destruction of their communications and supplies!"

In the years since then we have seen infantry forces repeatedly paralyzed, even under peace conditions, by the mere presence of such menaces. To move at all they have to take infinite precautions. In war, what is now a snail's pace would become full-stop—and deadlock. And, while we have witnessed the growing moral and mobile domination of aircraft, tanks, and motor-cars, we have not seen the effect of another war-time check—mustard-gas. It is well to recall that the C. I. G. S. said, "I don't see how, in modern warfare, we shall be able to use enormous numbers of men and horses if mustard gas is employed to the extent that I imagine it will be."

The truth is that a large force of foot troops will not be able to arrive anywhere in the time available. Yet these crowds of men and horses still make up the bulk of the army, and have not been cut down to provide the money for less impotent types of force.

After the mobilization a failure to recognize the facts is unlikely to remain a check or excuse. For I have never heard such concordance in criticism as occurred among the soldiers who watched it. The call for reform and progress seemed as universal as it was urgent. The pity is that the awakening waited until the year when an economic crisis has not only made money tight, but curtailed the latitude in apportioning what there is.

Unfortunately, one now hears the argument that the military need to replace man-power by machine power must yield to the need of keeping soldiers in employment. The practical reply would seem to be that even the dole is but a fraction of what an infantry soldier costs the hard-pressed finances of the country. And all infantry beyond the proportion who can be provided with, and backed by, up-to-date armament are militarily superfluous. They are, indeed, merely a present charge and a potential pension increase of the national debt in case of war.

As for the proportion of infantry who remain, and are worth keeping, it is inconceivable that they will march on foot as a normal thing. Those who are used as guards and garrisons would be brought forward to

their posts by rail or 'bus. The "light infantry" required for mobile operations need special transport and training. I foresee such units being made up of a proportion of motor machine gunners in little armoured carriers, a larger proportion of skirmishers in "baby" cars and a reserve in six-wheeled lorries or 'busses.

The still prevailing practice of mixing motor vehicles and marching men in the same column obstructs mobility, increases wear and tear, and wastes petrol (gas)—with consequent waste of public money. And the present numerical strength of battalions is not attuned to the development of light machine guns and automatic rifles. Motorized battalions could, with advantage, be half the present strength in men.

As for the training of such modern infantrymen, the guerrilla exercises carried out by the Guards' Brigade and some of the London Territorials this year not only relieved a season that was rather drab tactically, but pointed the rational and natural way to develop a ruseful and resourceful type of men. Such exercises call on and develop the intelligence necessary to combat machine-gun nests. I have long argued that a course of guerrilla warfare would be the best means of teaching tactics. It was left for the Guards to prove it. Their schemes in the Vale of White Horse were designed to revive the characteristic nature of British warfare, and to cure the "tactical arthritis" which is a consequence of a too long and too slavish practice of continental methods.

These methods, for all their technical thoroughness, tend to mould commanders into cogs of the machine. The need today is to breed tacticians. While it is unlikely that any future Continental war will see "masses" of the 1914-1918 type functioning effectively, it is still less likely that, even if such warfare were possible, it would fit the military problems and possible expeditions which lie on our Army's horizon. In a "mass" army it suffices if brigade and battalion commanders are competent military foremen, but for the "British style" of warfare we want everyone of them to be capable of acting on his own—to be, if possible, a potential Wellington or Clive.

But the greatest contrast to the negative lessons of the 1st Division mobilization came through the positive experience of the "1st Brigade Royal Tank Corps." The formation and first trial of a complete brigade of tanks under Brigadier C. Broad provided the brightest spot of the military year. One can only hope that it is a first instalment of that progress forecast by the C. I. G. S. in 1927 when he spoke of creating "armoured divisions," and declared them to be the only means of making mobility possible on the battlefield, and "to revive the possibility of the art of generalship." With all the weight of his authority he then declared that the human race would not again stand such losses as accrued in the last war, and that civilization itself would go to pieces if a war was fought on similar lines.

Those who have long urged the formation of an all-armored force, freed of old-style impedimenta and given scope to practice mobile or, better still, "Mongol" tactics, had their long-awaited justification last September. The exercises proved the most significant experiment since the war; indeed, in all tactical experiment since Sir John Moore created the Light Brigade for the struggle against Napoleon. The Imber Area may take its place with Shorncliffe Camp as a landmark in the history of the British Army. Indeed, with all sobriety one can go further in suggestion. For just as the Imber plateau stretches wider and higher than the Shorncliffe plateau, so may the tactics tried there—in affecting the future of armies and of land warfare.

Armored mobility was at last applied in a true way—fitted to its nature. In previous years there has been a tendency to rely on armor to cover any frontal bludgeon stroke, as a guarantee against having to pay the price of one's folly. This year armor was simply utilized as an additional security to the value of speed—to the power, which a tank force possesses, of swiftly circling round any strongly held position and piercing its weakest spots. Nor was that all. For the key idea of the new tank tactics became that of "indirect approach." And this was not simple, but cunningly compound. The light tanks—small, nimble, and hard to hit—always sought to "draw" the enemy by approaching from an unexpected direction. And when their stings had drawn the enemy's muzzles in one direction, the medium tank punch would crash home from another direction.

These mixed tactics are helped by a mixed composition of tank units down to the company. The new tank brigade comprised one light tank battalion and three "mixed" battalions, each made up of three mixed companies and a section of close support tanks. For an innovation this year, which one has long advocated, was that the company should combine both medium and light tanks—a section of five medium, and one of seven light tanks.

If such a mixture has a naval aspect, suggesting a squadron of battleships with its attendant destroyers, it has a "Mongol" ancestry. The combination makes possible the distracting and paralyzing tactics by which Genghis Khan's incomparably mobile horsemen triumphed over the solid battle-arrays of medieval Asia and Europe.

Yet less imagination is needed to see a modern parallel than to conjure up the rest. Even though there were marked differences, there was a fundamental similarity between the maneuvers of this brigade of "landships" and those of a battle fleet at sea. At Imber we truly saw the first "fleet exercises" of the Royal Tank Corps.

The parallel became vivid not only in some of the formations which the tanks adopted, but also in the way they were controlled and maneuvered as a unity by wireless and flag signals. A new and simple two-letter code had been devised, and orders for maneuver were given by it either through the display of combinations of two flags, one above the other, or by wirelessing the two letters in Morse. These signals covered a remarkably comprehensive range of orders.

And they were supplemented by the radio telephony with which the tanks were fitted.

The tanks maneuvered either in close or open order. In close order there was 25 yards interval between the tanks. In open, or fighting, order the intervals between medium tanks were doubled, and one saw the light tanks of each company move out to "protection stations."

There was a peculiarly strong flavor of Mongol battle drill in two of the swift maneuvers that were made at "signal-notice." A particular pair of flags were shown which meant "single flank attack"; thereupon the medium section circled round to strike the enemy's flank, covered during its move by one light sub-section, while the rest of the light section pinned the enemy with fire from its original position. Another pair of flags meant "double flank attack"; this time the bulk of the light section would move off to strike the opposite flank to that which the medium section was attacking.

The brigade training opened with a series of five exercises, each of which was carried out by the different battalions in turn. The opening feature of each exercise was in itself so novel as to grip one's attention, for it revealed a new system of "leadership" that had been devised. The brigadier had as assistants, besides a brigade major and an orderly officer, three "field officers," who acted in a way similar to Napoleon's expert aides-de-camp—and were mounted in light tanks. During the immediate advance to the battlefield the brigadier went ahead accompanied by two of these field officers and by the battalion commanders—all in tanks. Behind came a second party of tanks containing two company commanders from each battalion. Third came the brigade mass, which was temporarily commanded by the remaining field officer.

When the brigadier had made his reconnaissance and issued his orders, indicating the "brigade center line of attack," the battalion commanders would track away in their tanks to reconnoiter and choose their own center lines. Meantime one of the field officers who accompanied the brigadier would drive back to take over the brigade mass and lead it forward, bringing it up at right angles to the chosen brigade center line. As the mass of tanks came up one saw the company commanders drive into position at the head of their companies and lead these along their respective lines.

The whole process went with a swing, and the tanks avoided any halt under fire. It was an extraordinary vision of the new warfare, if it also recalled the remote past, when knights in armor pranced and caracoled at the head of their mailed "battles." The likeness was increased by the parti-colored signal flags which fluttered from the lance-like masts of the commander's tanks. But it was far less obvious than the marshalling of medieval chivalry must have been. These modern mail-clad knights not only move faster and waste less time than their ancestors, but are now growing skilled in using ground as cover.

The first of the exercises was really a test of such "groundcraft" each battalion in turn moving in close order under cover of a ridge, and making changes of direction in order to avoid both impassable ground and hostile shell fire—the latter represented by blue screens and smoke puffs. Finally, the battalion had to cross the ridge in view of the enemy, changing its formation to reduce its vulnerability. Rapid execution of these various changes was the keynote of the exercise.

The second was a more advanced test, covering the deployment for battle. In the third we saw a normal type of maneuver attack—against the artillery area of an enemy force. For against an enemy in position his artillery is now taken as the natural target of a tank punch rather than his infantry, who being spread out along a front presumably dotted with anti-tank guns, form a relatively unprofitable object to strike. The guiding principle is to strike in against the rear of the artillery area, or the administrative area, after a quick move round the enemy's flank. Even if the guns are turned in time to meet the indirect approach of this menace, there is no guarantee that they will be able to stem the steel attack. For it is this grimly playful way of the nimble and relatively invisible light tanks to draw the enemy's fire just before the massive medium tanks debouch from a different direction and sweep down on the guns. From what I heard, artillery experts are of opinion that, having turned once, it would hardly be possible for the guns to make a fresh turn in time.

In the fourth exercise, the tanks were set a harder and more complex problem. It was assumed that the enemy had been able to spare enough anti-tank guns from his front to put a screen of them round his artillery area. The anti-tank machine-gun is certainly a more dangerous obstacle than the field-gun. It is easier to conceal; its fire is harder to spot and more easily switched in a new direction. There is, however, some compensation in the fact that its sting is less fatal. And the gun is hard to move—unless it be mounted in a tank. The best antidote certainly lies in the light tank. For this offers only a small target and it is far more agile than the anti-tank gun; its two-man crew enjoy the protection of armor, while the crew of the anti-tank gun are exposed.

On these considerations the new "anti-anti-tank-gun" tactics are based. A few scattered guns can easily be overrun by a tank force in its onward surge. If there is a thick screen of them they have to be tackled more warily. In country where cover is good and fields of fire limited the light tanks may be counted on to carry out the "sweeping" task, stealing upon the guns unseen, and smothering them with bursts of fire from various directions. But in open country, with its long fields of fire, a more methodical process may be necessary.

The key principle is to approach from an unexpected quarter, so that the anti-tank guns have to shift their position—and thus disclose themselves.

In the actual exercise witnessed, the enemy artillery area was covered by a five-mile semi-circle of anti-tank guns west of Imber. The light battalion of the tank brigade was assumed already to have cleared the north-

west fringe, on Summer Down, of this anti-tank screen. The leading mixed battalion had moved up, and was lying in wait behind the shelter of the ridge. Its commander, according to the new system, was on ahead in his tank, accompanying the brigadier.

He now received orders to attack and clear the south-western sector of the enemy's anti-tank screen, with the help of an additional light company. The way would then be open for the mass of the brigade to be launched into the enemy's artillery area from the rear.

At 2:07 P.M. the brigadier's tank had roared up. At 2:10 P.M. his orders had been issued, and a field officer was dashing back in a tank to fetch the leading battalion. Meantime the battalion commander surveyed the ground and decided on his plan.

The co-operating light company was to circle out to the south-west across the low spurs, draw the enemy's fire, and pelt him in return. The leading mixed company was to strike in from W. N. W. behind the ridge and sweep astride the back of the chain of guns. The second would follow it, but turn south down the first spur. The third company would in turn sweep down the next spur, while the second company was rallying ready to descend a farther spur.

At 2:15 P. M. these orders had been given. A few minutes later the battalion appeared in sight, deploying for action. At 2:26 P. M. the leading company had launched the attack. The close-support tanks followed on the heels of the mediums, and fired smoke-shell to "blanket" the more distant guns while the nearer ones were being dealt with. A fresh mixed company was then launched through at a fresh angle to smash the rear links in the anti-tank chain.

On such combination of tank-types and on instinctive co-operation between sub-units success would depend in war. That co-operation will be the fruit partly of trained initiative and partly of a battle-drill that revives the Mongol method.

In the fifth exercise the tanks were given the task of attacking a marching enemy column. As the last of the series, this was presumably regarded as the most advanced and difficult test of maneuver. It may have been the most difficult maneuver, but it was certainly not the hardest practical problem to solve—and would not be in war. One had to recall the recent march of the mobilized 1st Division near Aldershot, slowly coiling its immense length and swollen bulk along the road, to realize what a target is offered by a war-strength infantry division.

To-day the supposed infantry column was a comparatively small one, generously endowed for its size with anti-tank guns. It was marching south across the Plain from Bratton to Heytesbury. The tank brigade was coming from the east, and its advanced guard was checked by a screen of anti-tank guns, only 200 yards apart, which the marching column had put out along a ridge to cover its flank.

While the tank brigade mass halted behind the next ridge the brigadier drove forward in his tank to join the light battalion and reconnoiter the situation. In a few minutes he sent back the order, "Right encircle" to the field officer in charge of the brigade mass. He then turned northward himself with his tank party and headed for a patch of woodland known as Tinkers Firs. The brigade mass also changed direction and moved to the same hiding place, covered by a company detached from the light battalion. The original advance guard, staying where it was, now became a flank guard, and laid a smoke screen—"an artificial hill"—to cover the encircling maneuver.

Arrived at Tinkers Firs, the brigadier found he was on a line with the tail of the marching column at Bowls Barrow. Detaching one of his three mixed battalions to attack the screen of anti-tank guns, he promptly led the brigade mass in a swift circuit to the north round the enemy's tail, aiming to reach the high ground due west of it.

On reaching this high ground the brigadier turned his tank's bows to the east, to indicate the new direction, and gave the signal "Open order; attack" to his leading battalion. Thereby he launched it against what had been the far flank, and was still the unguarded flank, of the enemy, whose anti-tank weapons would be more than fully occupied in meeting their immediate assailants.

The enemy's aircraft may have given warning of the original approach in time to put out an anti-tank screen, and this had been assumed as able to hold up the tank advance guard. But having put out the anti-tank guns, the enemy could not easily shift them, and the separate attack launched against them was calculated to fix them beyond any possibility of such a shift.

First smothered with smoke and then flailed with bullets, it is unlikely that they would either be aware, or have a care, of the remote maneuver being carried out by the rest of the tank brigade. For it is one of the oldest experiences of war that men who are being fired at from close range have eyes only for their immediate assailants, and do not give a "tinker's damn" about what may be happening elsewhere.

Tank mobility can exploit this battle-psychology. And in any case infantry cannot change their dispositions as quickly as tanks can change their direction. The master-key with which the tankman may open any barred door is his 360 degree range of maneuver.

A blue and white flag above a forked red flag fluttered from the mast of the brigadier's tank—"Open order." The signal was repeated—"Attack." The leading tank battalion forthwith bore down on the enemy's defenseless western flank. Two companies ran along the edge of the marching column, firing into the mass of men, horses and wagons. It was easy to imagine the confusion, the panic, the stampede that would have occurred in real war.

The medium tanks may sometimes crash through the middle of the column, "pulping" it as did the whippets to the three German battalions they caught at Cachy in April, 1918. But one doubts whether such shock action could increase the chaos that would be caused by a driving storm of bullets at close range.

The light tanks in any case keep clear of the mêlée, "holding the ring," and being ready to deal with any anti-tank weapons which may emerge. But it is hardly

conceivable that even if any were at hand, they could be handled amid the confusion.

The speed with which this wide maneuver was carried out was most impressive. In the case of that executed by the 2nd Bn. R. T. C. the brigadier gave the order, "Right encircle," at 11:10 A. M. At 12:30 P. M. he gave the signal to close. Within one hour and twenty minutes the battalion had covered seven miles in its two bounds, delivered, and completed its attack. A case of "quick disposal," if of "unhappy dispatch"—for the enemy infantry.

After completing this series of exercises, three days were spent in exercise as a brigade. They began with brigade drill—one is tempted to call it drill by a brigade of machine-made Guards. If not always so symmetrical as on the Horse Guards Parade, it was far swifter—and hence more practical. We had the spectacle of one hundred and eighty tanks marching and countermarching, wheeling and deploying, as a single body—controlled by a single voice. The brigadier gave his successive orders by radio telephony from a tank that was sometimes, in the more open maneuvers, a mile or more distant from the recipients. Their execution, in alacrity and precision, certainly excelled the performance of infantry in open battle drill.

The next brigade exercise comprised a six mile advance across country in contact formation, with two battalions "up." After the first bound had been completed, and a light tank screen put out beyond, the reserve battalion was launched through at a different angle against a fresh objective.

In the third exercise the brigade "made rings round" an infantry column in a literal sense, pinning it from the north while they circled round and clove it from the south. Increase of tentacles obviously increases the chance of successful pinning, and the enemy's difficulty in parrying the eventual thrust. And the prevailing mist, wherein the tanks were often indistinguishable from bushes, would have put the infantry in an even more precarious situation. As the tanks emerged from the mist and swept forward the glint of the sun on the tracks made an impression for which one observer found apt words by quoting what was written of a charge of Numidian horse—"the sparkle of their spearpoints coming out of the dust."

The speed of the onsweep would have been still more impressive if armored machine-gun carriers were not still compelled to do duty as light tanks. Suited for working with infantry it was a strain on them not only to keep up but to keep ahead of this fast moving tank force in its rapid bounds across steep spurs and rain-sodden ground. Only a bare dozen of the modern Mark II light tanks were available this year, and they were used mainly as "mounts" for commanders and liaison officers. With their squat toad-like chassis surmounted by a high, narrow turret they seem excellently designed for stealing up behind a bush or crest, and "peeping" their turret machine-guns over it. To watch them sweep forward is to perceive the menace of their speed, agility and unobtrusiveness combined, to infantry and artillery. They are, in truth, an ominously looming cloud on the horizon of all old style forces.

But for that menace to be fulfilled these new and comparatively cheap machines must be provided in sufficient quantity to form a tactical cloud. In driblets they may be merely useful, whereas in a deluge they would be decisive. To provide the deluge we must, however, face the necessity of finding the money by substitution. A light tank with its crew of two men, has more fire-power, and far more effective striking power than an infantry section. Its annual cost would be less than half.

In quantity of such machines lies one means to discount the inevitable toll taken by anti-tank guns. The other means lies in the reborn Mongol tactics which were so well brought out in the exercises. It may be said that these exercises were set and selected by the Tank Corps. The answer is that they were set to test the tank units, and, as designed, were a harder test than these would be likely to meet on any battlefield of the present or near future.

At present anti-tank guns are mostly represented by green flags—which are cheap to provide and easy to wave—whereas an effective weapon, complete with tractor and ammunition trailer, is an expensive item, and far less agile than the light tank. Even if such weapons were manufactured, I cannot see how any infantry division could be provided with enough to form the immense circular screen that would be necessary for its protection. Taking the march of the mobilized 1st Division as an example, a screen at least thirty miles round would be required. This would have to be expanded considerably if the division had to march on a single road, if the columns became strung out, and still more if the screen were extended to embrace the routes of supply.

Now in the test attack on a marching column practised by the Tank Brigade, the enemy's screen was composed of anti-tank guns spaced at two hundred yards interval. On this basis no less than 270 anti-tank guns would be required, as a minimum, to be "in action" at any time, with at least as many on "wheels" to maintain the screen as it advanced and to provide for contingencies. Such figures give some idea of the almost insuperable difficulty of protecting a division on the march against tank attack. Moreover even on such a basis the screen would be but a fragile single line, that would stand little chance against a concentrated tank punch at any point. Tank mobility provides the means of striking within a few hours at any point on the circumference. It provides a 360 degree choice of the point of attack.

With the development of independent tank forces the old linear warfare is replaced by circular warfare. Thus, to sum up, the Tank Brigade, this year, proved capable of creating a new system of tactics suited to its mobility and promising an effective antidote to any immobile anti-tank agents. I have seen the realization of a dream and have few criticisms to offer. The tactics truly fulfilled the Mongol ideal. Perhaps in movement also, now that order has been obtained, it might

be possible to go further and develop "ordered disorder." Officers who flew over the brigade significantly said that from the air it made a very visible if fast-moving target so long as it kept in drill formations. But when the formation broke up as the attack progressed the tanks "simply disappeared" from observation. The moral would seem to be the cultivation of controlled irregularity in the approach as well as in the successive wasp-like attacks.

While "variability"—the power to vary the direction of attack—was the dominant feature of the exercises carried out by the tanks, their invisibility was scarcely less noteworthy. To think of Salisbury Plain is to conjure up a picture of country where tanks can move fast but can scarcely hide. The picture was contradicted by the reality. Even though one knew the exact, and small, area in which they were working, and was following them in a car, it was difficult to locate them. Time after time companies of tanks were swallowed up in some fold of the ground, to emerge suddenly close to their prey. While the noise of their tracks gave some warning of their stealthy approach, it is a deceptive noise to locate, and the presence of so large a number of tanks confuses the listener.

As for controllability, the progress achieved was remarkable when one considers that the new creation was only a few weeks old. And further training will, obviously, increase it. But the fact of supreme significance comes through comparison. For a tank brigade is the only formation that can, in the strict sense, be controlled and maneuvered on the battlefield. With an infantry formation, even a local tactical maneuver can scarcely be accomplished in the day. With a tank brigade a wide maneuver is a matter of hours only; and a local maneuver, of minutes.

To appreciate what this may mean, let us for once lift our thought onto a higher plane than the question of tank attack *versus* anti-tank defense. Let us, instead, consider the tank as essentially a means of moving fire power quickly to any spot, if also of bringing it closer to the target than can be risked by weapons which are handled by unprotected crews. For this is its fundamental value, and would remain, even if an omnipotent armor-piercing weapon was invented. An old-style unit cannot, as a rule, be expected to make more than one attack in a day's battle, and, once committed, cannot be shifted to a different sector. Thus it is practically limited to what one may call "one-point" use of its fire-power. In contrast, a tank unit is capable of a "several-point" use of its fire-power, without special strain or risk. The utility of a tank formation, such as a brigade, has a similar proportion in comparison with an old-style formation. And this sense of proportion ought, therefore, to govern any estimate of their respective economic values for military purposes.

The tank as a "fire-mover" gives a fresh meaning to Napoleon's acute dictum that force is mass multiplied by velocity. This is the true way to calculate force.

We must also remember that material effect is multiplied by moral effect. The fact that the tank can bring its fire so quickly to a spot, and from an unexpected direction, morally multiplies the value of its fire—even apart from any panic which its ugly appearance may cause. Hence the real force innate in tanks is the product of mass, velocity and surprise. They give a commander the chance of fulfilling in a way hitherto unconceived Forrest's famous yet simple recipe for success, that of "gittin' thar fustest with the mostest"—fire and fear.

The History of the United States—is the History of Its Armed Forces

Whether our peace sentimentalists like it or not, the history of the United States is the history of its armed forces. The Army and the Navy are knit into everything that has made the nation possible. The army created it and breathed life into the words of statesmen who conceived the United States as possible in theory. Without the army the theory might have been born, but it could not have lived.

Without armed force the nation, even if it had taken form and drawn its breath would have remained in its colonial domain. Emigration went West behind the army. The battle of the Thames in Canada made Ohio and Kentucky inhabitable. Tippecanoe cleared Indiana for settlement. The army took a quitclaim for Florida from the Seminoles. Texas and the South-west and California came in via the War Department. Hard bitten regiments pacified the Sioux, the Apaches, and other warlike tribes which barred the white man.

The colonies were made possible by their fighting men. The republic was created by them. The Union was saved by them. Its territory was rounded out, defined and maintained by them.

If a citizen of the United States wishes to regret everything that has happened in his country since 1775 and in fact wishes to regret his own presence in America he may deplore the force which controlled the event. He cannot deny its decisiveness.

—THE CHICAGO TRIBUNE

Remarks on R.O.T.C. Courses

By Major General Edward L. King, Assistant Chief of Staff, G-3, War Department General Staff

THE annual report of the Secretary of War for the year 1930 presents a picture of the condition of the R. O. T. C. which reflects credit upon all who are engaged in its activities. A large measure of this credit belongs rightfully to the heads of our universities and colleges who have been instrumental in making an assured success of this system. However, as pointed out in the Secretary's report, the fact that the R. O. T. C. system contains much to the advantage of the National Defense should not lead us to overlook the limitations which are inherent in this and all similar systems. In considering these limitations it is necessary to keep in mind the primary purpose of the endeavors, both of the institutions which maintain R. O. T. C. units and of the War Department. It is the primary mission of both to conduct the training of the R. O. T. C. students so that they will be qualified ultimately as commissioned officers in the Reserve.

The War Department is intensely concerned with insuring the fact that this mission of the R. O. T. C. is safeguarded at all times. However, it is realized that the success of this system depends, not so much upon an arbitrary set of rules and policies set up by the War Department as upon complete accord between the institutions and colleges of the land, and the officers of the War Department charged by the Secretary of War with formulating and supervising the policies for the conduct of the R. O. T. C. system. The G-3 division of the War Department General Staff which is charged with formulating policies for the R. O. T. C., is sincerely desirous of ascertaining and conforming to the desires of the institutions and colleges maintaining R. O. T. C. units. Naturally, in a system as large as this many divergent ideas are held by the individuals concerned with its operation, and only by a spirit of compromise and a determination to sacrifice individual ideas to the views of the majority, can the full possibilities of this asset to National Defense be developed.

In order to ascertain how successful the R. O. T. C. system has been up to the present time, the Bureau of Education and the Mississippi Agricultural and Mechanical College each recently furnished a questionnaire to former R. O. T. C. students. Many thousands of replies were received as a result of these surveys, and more than ninety per cent of these in each case indicated great satisfaction with the R. O. T. C. system, as it is conducted, and with its educational value.

The War Department also conducted a survey during the year 1930 in which the heads of institutions and others interested were urged to submit frank criticisms and suggestions for the improvement of the R. O. T. C. The great majority of the replies received by the War Department indicated that no material changes are considered necessary or desirable. Such divergence of opinion as was indicated in these replies was principally in regard to the educational value of the R. O. T. C. courses. Space will not permit the enumeration of all the points raised in these replies, but briefly, it may be said that they can be grouped roughly into two general classes—one in which the institutional heads believe that the educational features of the courses should be stressed to a greater extent and the other in which it is held that the military features are paramount to the educational. The replies of Dr. Bowman of the University of Pittsburgh and Dr. Huliheu of the University of Delaware, respectively, are typical of the views held by the two schools of thought on this subject.

Dr. Bowman of the University of Pittsburgh, a proponent of the necessity for greater stress on the educational features of the courses, said in his reply to the War Department:

"The scope of the present prescribed course is not commensurate with the educational qualifications of the R. O. T. C. students. Raise it by substituting informative military subjects commensurate with higher education in place of the present prescribed elementary subjects pertaining to particular branches of the military service."

On the other hand, Dr. Huliheu of the University of Delaware holds that the military features of the courses are the more important. He said in his reply:

"The fundamental purpose of R. O. T. C. training must be kept in view in considering it from the standpoint of education. Its purpose being primarily to create Reserve officers * * * the courses involved must be principally military. Any effort to make of it a direct preparation for the student's civil career would defeat its primary purpose."

Let us analyze these two conflicting views.

Briefly stated, the attitude of the institutions favoring greater stress on the educational features of the R. O. T. C. courses, of which Dr. Bowman's reply is typical, is that the educational aspect of the military objective should be improved. Basically, the governing idea which actuates this view results from an effort to compare the college courses in general with the R. O. T. C. courses. This comparison develops the fact that the *basic* R. O. T. C. course is of a much more elementary nature than the corresponding college course. However, the fact, which is frequently overlooked in this connection, is that no real comparison between college and R. O. T. C. courses can be made

for the reason that the objectives sought in each case are entirely different. In the first place, college work is based upon a twelve-year educational preparation, whereas there is no prior training whatever for the R. O. T. C. basic course. Naturally, therefore, this basic course must in many respects correspond to the courses in preparatory schools. Furthermore, college work is based on the assumption that it will of necessity be followed by an experience course subsequent to graduation, in which the graduate may learn to apply his knowledge, whereas the R. O. T. C. courses are based on the assumption that there can be, of necessity, no subsequent opportunity for the graduate to learn to apply his knowledge. In other words, the R. O. T. C. course must encompass in military education a field which in business and professional education is covered by three courses, namely, the preparatory, the college and the post graduate experience courses. When this fact is realized it will become readily apparent that the educational features of the R. O. T. C. course can not be made commensurate to any degree with the educational requirements of college work. However, that the R. O. T. C. system is a factor of value in the educational work of colleges appears to be indicated from the following statement of Dr. Lord, College of Business Administration, Boston University:

"The Vocational Department of the College of Business Administration assists graduates in securing positions, introducing them to probable employers. The report of that Department for June, 1930, shows that, of graduates selected by employers as first choice or actually offered positions, only ten per cent of the students who had not taken the Advanced R. O. T. C. Course were selected while over seventy-five per cent of the students who had taken the Advanced R. O. T. C. Course were on this selected list.

"This fact may be considered one indication of the value of the R. O. T. C. courses as a factor in education."

Dr. Hogan of Fordham University states:

"The present course is educational, as most of the subjects and instruction are useful in training a student's mind in logical and analytical reasoning."

It would appear logical then to assume that while the R. O. T. C. course is not comparable to the college course as regards advanced educational features, it supplements and furthers the educational progress of the college student.

Now let us look at the other view, that the military features of the R. O. T. C. courses should be paramount to the educational features. This view is based on the conception that, upon the outbreak of war, the Reserve officer must be competent to assume his duties without further training. To achieve this end, the proponents of this view hold that the principal effort of the R. O. T. C. system should be devoted to producing efficient Reserve officers. They realize that there will be no time and no personnel available for the further instruction of the R. O. T. C. graduate when an emergency arises.

It would appear, therefore, that one of the principal matters to be considered by both the institutional heads and the War Department is that of reconciling these two divergent views. This should not be a very difficult matter if the mission of the R. O. T. C. is remembered. The War Department and the faculty ideas of what constitutes the mission of the R. O. T. C. are identical in two respects. Both believe it to be necessary in the scheme of National Defense for the production of: first, a sufficient number of trained junior officers to meet the initial needs of our mobilization plan; second, a large reserve of partially trained, educated men, whose training might be quickly completed for duty as officers or who may render valuable service in noncommissioned grades in the organization and training of units in an emergency. From the viewpoint of the institutions alone the R. O. T. C. appears to be a means of discipline, control and character development considered necessary during the two years in which immaturity renders the student a considerable problem in psychology, not only to the institution but to himself, and, in addition, a means of imbuing the student with a sense of responsibility to the nation. It is agreed, however, that the mission of the R. O. T. C. involves three basic factors—first, that it is a means of discipline, control, and character development; second, that it is a means of imbuing the student with a sense of responsibility; and third, that it is an agency for the production of Reserve officers. To carry out this three-fold mission, both educational and military features must be included in the R. O. T. C. courses. As at present constituted, the R. O. T. C. courses appear to be producing satisfactory results, and before making any material change in these courses, careful consideration must be given to insure adherence to the *mission* of the *R. O. T. C.*

Dr. Crane of the University of Wyoming has submitted some excellent suggestions to the War Department for the improvement of the courses. He states:

"There could well be a revision and rearrangement of the theoretical courses, both basic and advanced, but as to a change in the contents of the military courses I am not prepared to make specific recommendations."

He further says that the Infantry program presents a scrappy appearance—a lot of parcels lacking integration, and recommends a more liberal grouping into fewer classifications, adaptable to college divisions of the calendar. He also suggests an orientation course.

The War Department is glad to receive these constructive criticisms, and thanks Dr. Crane and all others who submitted replies to the War Department survey for their interest. A new tentative program has been prepared by the War Department which it is hoped will carry out some of these excellent suggestions.

It is the policy of the War Department to give serious consideration to *every* constructive idea presented for the improvement of the R. O. T. C. Two suggestions for improvement recently submitted to the War Department are especially deserving of discussion. These were Dr. Crane's suggestions that the development of skill in mechanical action and in the operation of some of the weapons as now required in the R. O. T. C. is questionable, and Dr. Freeman's articles in regard to specialists.

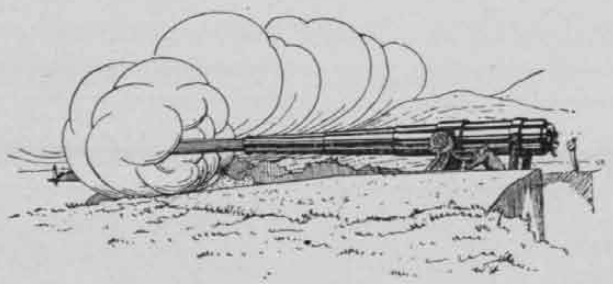
Let us first consider Dr. Crane's suggestion. Skill in mechanical action and in the operation of weapons are subjects fundamental to the enlisted man. In time of war, each junior Reserve officer will probably be given a group of civilians to train in all the details of soldiership, including the tactical and technical use of all the weapons and instruments in his unit. These junior Reserve officers are being trained in the R. O. T. C. units of the Nation today, and each must be so trained that, if necessity requires, he will be able to teach everything that each man in his platoon must know. It is for this reason that the War Department requires R. O. T. C. students to be instructed in mechanical action and in the operation of weapons. In this connection it may be stated that the weapons in the hands of the R. O. T. C. today are the same weapons as to type and model that are in use by the Regular Army, and are the ones which we would probably have to use at the outset of any emergency.

In Dr. Freeman's articles relative to the training of specialists, he expressed the belief that the Basic R. O. T. C. course is training as soldiers men who are being educated to render more valuable service as specialists, in which there existed a vast shortage in the World War. He probably did not realize that the War Department has developed an efficient classification system that is now prepared to meet mobilization needs for specialists of practically every type. Non-military educational and training activities are producing all the non-military specialists needed, and the R. O. T. C. is producing only sufficient military specialists to meet the initial needs of the Army in the event of war.

The War Department is always anxious to receive suggestions and criticisms from the universities and colleges which are cooperating so splendidly in putting over the R. O. T. C. policy of our Government. Those who actively participated in the preparation for and the conduct of our forces in the World War have a deep appreciation for the officer who is a man of action, as well as a student of his profession. In our deep desire to obtain for our Officers' Reserve educated men capable of leading in times of stress, we may be prone to lean a little more than is essential to practical, as contrasted to theoretical, instruction. However, our R. O. T. C. graduate will, through the medium of his general educational training, acquire that mental development which will enable him to arrive at sound solutions of the problems with which he will be confronted. The primary purpose of the R. O. T. C. is to teach the practical application of such reasoning to war conditions which demand rapid conclusions and immediate positive action. If our armies are to be led to success with the maximum effectiveness and the minimum loss, our leaders must be positive, forceful men of action as well as accurate, rapid thinkers. Balancing these considerations one against another, our courses should consist in the main of the practical application of the theory of military science and the leadership of men. These are considered vital elements in the training of combat officers.

In studying the material submitted in response to the War Department's request for constructive criticism of the conduct of the R. O. T. C., it was particularly gratifying to learn in what high esteem our officers are held by the personnel of these institutions. While the success of each unit depends largely upon the support it receives from institutional authorities, the degree of such support and the development of real and enduring efficiency depend upon the qualities of tact, efficiency and leadership of the Professor of Military Science and Tactics.

Again, I desire to reiterate that the War Department is glad to meet any suggestions relative to changes made necessary by local conditions provided the *mission* of *the R. O. T. C.* is safeguarded.



Improvements in the Quality of Smokeless Powder

*By R. G. Woodbridge,**

THE slogan "Good—They've Got to be Good" may be very appropriate when applied to a popular cigarette but if applied to smokeless powders for military purposes it would be more appropriate if worded "Good—They've Got to be Good After 10, 20 or More Years of Storage." The cigarette manufacturer hopes that his product will be used up quickly, while the manufacturer of smokeless powder for military use must build into his product decades of useful life. War reserves of smokeless powder must be made during peace times. Their manufacture cannot be postponed until the emergency arises.

The Pyro type of cannon powder was adopted by the United States Government about 1899 for both branches of the Service. The powder is made from nitrocellulose of 12.60 per cent nitrogen content, commonly called Pyro, by colloiding with a mixture of ether and ethyl alcohol. The term Pyro defines a nitrated cotton between 12.50—12.70 per cent nitrogen content with a solubility of at least 95 per cent in a mixture of two parts ether and one part ethyl alcohol by volume. In the latter part of 1908, there was added to the powder 0.4 per cent of diphenylamine as a stabilizer, which amount was increased to 0.5 per cent during the World War. The value of diphenylamine as a stabilizer resides in its ability to react with and render inert the decomposition products of the nitrocellulose, thus preventing them from increasing and accelerating the rate of decomposition of the powder.

The fact that the United States Government had about 1899 adopted the Pyro type of cannon powder for both branches of the Service and had adopted in 1909 the same type of powder for its caliber .30 Springfield rifle proved of inestimable value to the Allies. The duPont Company was the principal manufacturer of military powders for the United States Government. Its three plants at the outbreak of the war were all located in the state of New Jersey at Carney's Point, Parlin and Haskell, all close to the main offices of the Company in Wilmington. All three plants had had experience in the manufacture of the Pyro type of cannon powder from the earliest days of its adoption. Two of the plants, Carney's Point and Haskell, had manufactured the Pyro type of rifle powder for upwards of five years.

However, more important than the existence of manufacturing plants, engineering and chemical knowledge and trained personnel which made possible the tremendous and successful expansion in plant capacities, was the fact that (1) the Pyro or nitrocellulose type of powder was particularly suited for plant expansion on the one hand being exempt from many of the hazards and restrictions of large scale manufacture peculiar to nitroglycerin powders and (2) this type of powder required for its manufacture only those raw materials available in ample supply, or whose production could be readily expanded. For example:

Nitric Acid required nitrate of soda from Chile.
Sulphuric Acid required sulphur from Louisiana.
Cotton required linters and hull fibre from Southern States.
Alcohol required molasses from Cuba, Porto Rico or Southern States, or corn from Western States.
Ether required alcohol.
Diphenylamine required benzol from Pennsylvania and other states.
Steam required coal from several nearby states.

Since the World War the development of synthetic ammonia and the manufacture of nitric acid therefrom makes this country independent of nitrate of soda from Chile for the manufacture of smokeless powder.

From a raw materials point of view, the manufacture of the Pyro type of cannon and rifle powder required a very simple lineup of readily obtainable raw materials. There was almost no limit to the supply of the above raw materials in sufficient quantity, some as natural resources and others readily produced by expanding production facilities. Had the war continued into 1919, the supply of linters and hull fibre might have required supplementing by sufficient wood pulp to make up a slight deficit in the supply of short fibred cotton.

The du Pont Company manufactured during the World War from 1914 to 1918 inclusive, for the United States and the Allied governments, more than one billion pounds of Pyro cannon powder, more than 172,000,000 pounds of rifle powder about equally divided between the Pyro type and du Pont Improved Military Rifle Powder, the latter a progressive burning rifle powder of the surface impregnated type. In addition to the above, the du Pont Company produced millions of pounds of other propellent powders and explosives.

Many readers of the Coast Artillery Journal are familiar with the manufacture of smokeless powder. However, for the benefit of some who are not, there is given below a description of the manufacture of cannon powder of the type used by the United States Government.

*Chemical Director, Smokeless Powder Department, E. I. DU PONT DE NEMOURS & COMPANY.

Preparation of the Cotton—The basis of all smokeless powder, whether for military or sporting use, is cotton. After the cotton seeds have been ginned to remove the staple or long fibred cotton, there remains on the seeds about two hundred pounds of shorter fibred cotton, or lint, per ton of seed. The seeds are put through cutting or delinting machines which remove most of the lint in two cuts, a first cut lint which is used in mattresses and upholstery and a second cut lint used in smokeless powder and by other industries.

The linters are purified by cooking under pressure in a steel digester with dilute caustic soda solution in order to saponify the oils and waxes present and remove non-cellulose material. This is followed by a very mild bleaching treatment and thorough washings. The purified cotton is run through squeeze rolls to remove water and dried to a moisture content of less than 1% by being put through a textile drier.

Dehydrating Press

Block of nitrocellulose from which excess of alcohol has been pressed.

Nitrocellulose—By treating cellulosic material such as cotton or wood pulp with a mixture of nitric and sulfuric acids a series of compounds are produced which are broadly but incorrectly termed "nitrocellulose." They are really cellulose nitrates; that is, cellulose esters of nitric acid, as cellulose is a carbohydrate containing hydroxyl "OH" groups.

The term "guncotton" is frequently but incorrectly used to cover all the various kinds of nitrocellulose. Guncotton is now applied to nitrocellulose of high nitration, usually between 13 and 13.4% nitrogen content, which is only slightly soluble in a mixture of two parts of ether and one of ethyl alcohol. Nitrocelluloses ranging from about 10.8 to 12.8% nitrogen content which are completely soluble in an ether-alcohol mixture and other solvents are readily prepared.

The nitrocellulose used in the manufacture of smokeless powder for the United States is either of the type soluble in ether-alcohol with a nitrogen content of about 12.60%, commonly called Pyro, or a blend of Pyro and high nitrogen nitrocellulose of the "guncotton" type.

Cotton may be nitrated in a number of different ways. The more modern practice in this country is to nitrate charges of about 30 pounds for about 30 minutes in a mechanical agitator, using about 1500 pounds of mixed sulphuric and nitric acids to 30 pounds of cotton at a temperature of 30° to 35°C. After the nitration time is completed the nitrocellulose is run into a centrifugal wringer which revolves at high speed (11000 R. P. M.) and is wrung for several minutes in order to extract as much of the acid as possible. The nitrocellulose, retaining about a pound of acid for every pound of nitrocellulose is then dumped into a drowning basin containing a large quantity of cool water and is then dumped to the boiling tubs.

Stabilization of the Nitrocellulose—Nitrocellulose for military powders is given a boiling treatment in acidulated water for 45 or more hours in order to hydrolyze and break down the unstable esters, especially the sulphuric esters. The material is then transferred to beating engines where it is reduced to a finely divided condition by grinding under water, the acid set free being neutralized by the addition of sodium carbonate. The finely pulped nitrocellulose is then given a total of 12 hours alkaline and fresh water boiling treatments followed by ten cold water washings to remove all traces of impurities.

Dehydration of Nitrocellulose—The first process in the manufacture of smokeless powder is the removal of the water by means of alcohol.

A charge of wet nitrocellulose is dumped into an hydraulic press and compressed into a block by means of low pressure of about 250 pounds per square inch. An amount of alcohol slightly in excess of the dry weight of the nitrocellulose is pumped through a perforated screen in the head of the press, and, as it passes down through the nitrocellulose, displaces the water. After all the alcohol is pumped through the block, high pressure is applied and the excess of alcohol is pressed out, leaving a weight of alcohol equal to about one-third the weight of the nitrocellulose.

Mixing—The blocks of dehydrated nitrocellulose are then sent to a so-called block breaker which consists of a revolving screen of very heavy wire containing balls which break up the block of nitrocellulose into small pieces. The material then goes to the mixing machine which holds about 200 to 255 pounds of nitrocellulose estimated on the dry basis, and sufficient ether is added so that to every 100 pounds of nitrocellulose there are used about 33⅓ pounds of alcohol and 66⅔ pounds of ether. Diphenylamine, which is used as a stabilizer, is previously dissolved in the ether. Other ingredients are sometimes added at the mixer in

order to give the powder some special property. The mixer is provided with brine refrigeration to prevent loss of solvent. The mixing of the nitrocellulose requires about one hour, at the end of which time a mealy looking colloid is obtained.

Pressing—The colloid is then dumped into a preliminary block-forming press and at a pressure of about 3000 pounds is formed into large cylindrical blocks 12 inches in diameter and about 24 inches long. Two or three blocks constitute a charge for the finishing press where the colloid is subjected to a pressure of several tons per square inch and is pressed through dies and granulated on cutting machines into grains of various sizes, according to the caliber of gun. The powder grains for the larger guns have seven holes or perforations while those for the smaller guns may have only one.

Solvent Recovery and Drying—The powder grains are then transferred to the solvent recovery cars provided with warming and condensing coils where they receive a treatment of several days and a portion of the ether and alcohol is recovered.

Coming from the solvent recovery the powder still contains too great an amount of solvent for use, and this amount depends very largely upon the size of the powder grains, the larger calibers containing the larger amount of solvent.

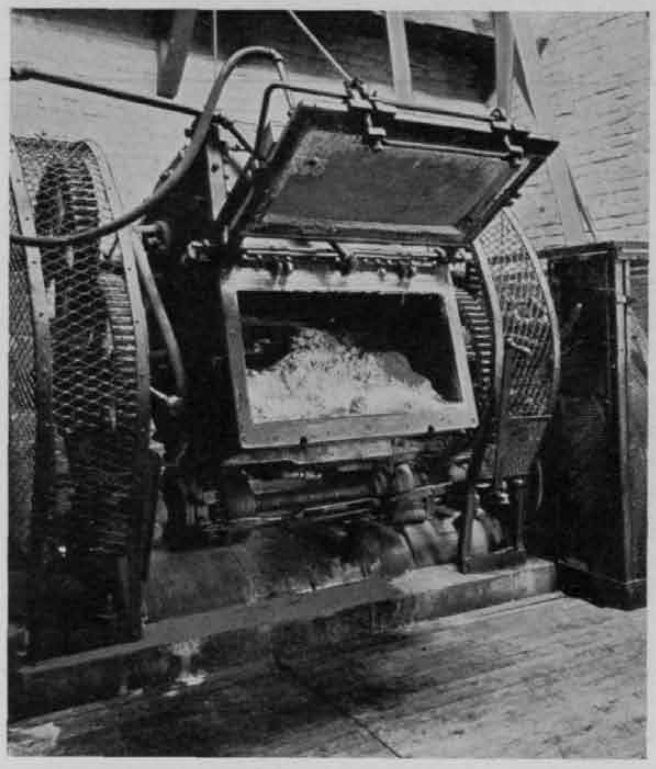
In order to reduce the amount of solvent to the desired point, the powder was formerly placed in dry houses where it was dried at a temperature not exceeding 55°C. This method of drying, commonly called air drying, usually required from 50 to 100 days.

Another method of drying more extensively used today is the so-called water drying treatment which reduces the time of drying to between 6 and 25 days. In this process powders, after removal from the solvent recovery, are placed in hot water at a temperature of about 55°C. After the powders have been in water for a sufficient length of time to reduce the residual solvent to the desired point, the water is drained off and the moisture removed, either by placing directly in an air dry house or by blowing warm air through and over the powder.

Blending and Packing—The powder is blended in lots up to 100,000 pounds in large towers where it is caused to flow from one bin to another. After blending, the powder is packed in zinc-lined boxes provided with tightly fitting covers. Samples of the powder are taken for chemical and ballistic tests. Smokeless powder is required to comply with severe specifications, therefore its manufacture requires technical skill of a high order.

In 1909 the du Pont Company constructed the first of several constant temperature magazines heated by hot water with automatic control of temperature at 30°C. for the observation of smokeless powder during storage. A seven-pound sample of every lot of smokeless powder made for the United States government since the introduction of diphenylamine, the latter part of 1908, has been stored in glass museum jars provided with ground glass stoppers. It was the original intention to make stability tests on all of these lots of powder every year but the rate of deterioriation was so slow that stability tests have been made at the end of every five years. However, a piece of indicator paper, either blue litmus or methyl violet paper is always kept in each jar above the powder. This paper is renewed from time to time. When active decomposition of the powder begins to take place the acid fumes soon fade out the indicator paper which is observed by the chemist inspecting the samples. When the paper fails in less than eight hours the powder sample is removed from the magazine and destroyed after making further tests of its stability for matter of record.

When a sample of powder has been removed from the magazine for failure in chemical stability, this removal is promptly called to the attention of the Ordnance Department of the U. S. Army or U. S. Navy as the case may be. It has been found that the storage of powder at 30°C. represents a more severe condition than that to which the powder is subjected to in service. The temperature of 30°C. is higher than the average service temperature and the storage in museum jars does not prevent slight loss in residual solvent as the ground glass stoppers are not hermetically tight like a powder box. The result is that the sample of powder stored at 30°C. usually fails in stability many months before the lot of powder in service. This gives the government advance notice of the deterioration of this lot of powder and supplements the thorough record that each branch of the Service possesses in regard to the stability of each lot of smokeless powder.



Smokeless Powder Mixer

Showing nitrocellulose plus other ingredients after colloiding with ether-alcohol mixture.

The addition of diphenylamine to Pyro powder in 1908 brought up the question of the storage life of powder containing 0.4% of this stabilizer. An attempt to forecast the probable life of the powder was made by determining the amount of diphenylamine used up, that is converted into nitro-derivatives of diphenylamine by the gradual decomposition of the powder at 30°C. Determinations made on a large number of cannon powders indicated that in the neighborhood of 0.02% of diphenylamine was consumed yearly. Assuming that the powder would undergo approximately the same rate of decomposition up to its removal from the magazine, there was indicated a storage life of 16 to 20 years at 30°C. This storage life has been actually attained and surpassed by many lots of air dried Pyro cannon powder.

At the outbreak of the World War the du Pont Company was called upon to supply large quantities of smokeless powder for quick delivery. There was not time enough to air dry this powder either at the usual temperature of 43°C. or at a higher temperature of about 55°C. which was recognized as entirely safe and which was adopted during the war for the larger cannon powders.

In order to expedite delivery the smaller cannon powders were water dried instead of being air dried after solvent recovery treatment, thereby reducing the time of the manufacture to about one-fourth of that of air dried powder, besides materially reducing the hazard of manufacture.

While the du Pont Company was aware that it was general European practice, even in peace times, to water dry nitrocellulose cannon powders, and had considerable information regarding the process, only small samples of Pyro cannon powder had been so treated up to the World War. These samples had been placed in a constant temperature magazine at 30°C. for observation of stability.

About one billion pounds of smokeless powder for cannon were water dried during the World War instead of being air dried. The water steeping process accomplished the rapid removal of solvent from the powder. While the finished powder showed evidence of precipitated nitrocellulose as might be expected from the action of the water on the ether-alcohol colloid, this had no apparent effect on the ballistics of the powder, the latter being determined largely by the nitrogen content, web thickness, residual solvent and moisture content. The storage life of water dried Pyro cannon powder made during the War has been found to be very much less than air dried powder of the same composition. This reduced chemical stability is attributed to the sensitiveness of the ether-alcohol Pyro type of colloid to the steeping treatment in hot water. On the other hand, a different type of powder, du Pont Improved Military Rifle, although made from the same raw materials and also water dried, showed chemical stability of a very high order.

Although Pyro cannon powder played a very important part in the World War and probably more of this type of cannon powder was used than of any other single type, the conclusion was reached that an improved powder was needed. At the request of and in co-operation with the Ordnance Department a program of research work was started in 1919 which resulted in 1923 in the development of an improved cannon powder possessing the following qualities:

1. Flashlessness in many of the smaller guns.
2. Approximately one-half as hygroscopic as Pyro cannon powder.
3. Improved chemical and ballistic stability.

The following paragraph quoted from an article by Brig. Gen. William H. Tschappat, Ordnance Department, U. S. Army, briefly summarizes the progress made in the application of the new propellant to various guns.

> "A program of development work started in 1919 resulted in the development of a flashless, non-hygroscopic (FNH) smokeless powder for the 75-mm. gun, Model 1897, which was subjected to service tests and finally approved as standard for manufacture in 1926. A powder of the same composition, in appropriate grain size, was also approved as standard for the 155-mm. G. P. F. gun. Although not flashless in this gun, the powder has the distinct advantage of being non-hygroscopic (NH). Satisfactory FNH powders of like composition have also been developed for the 75-mm. pack howitzer, the 75-mm. gun M1, the 2.95-inch mountain gun, and the 105-mm. howitzer. Those developed for the 3-inch antiaircraft guns, the 155 mm. howitzer, and the 6-inch guns, Models 1897-08 and Models 1900-03-05, are non-hygroscopic but not flashless. In 1929 the War Department approved the standardization of this type of improved powder for all calibers of weapons up to and including the 155-mm. gun. Tests covering a period of several years have confirmed the conclusions that this type of powder possesses the advantages of greater chemical stability and ballistic uniformity than service powder of the "pyro" type. A program has, therefore, been initiated for the development of NH powders for all calibers of railway and seacoast weapons. Within the past year entirely satisfactory proving ground results have been obtained with NH powders for the 240-mm. howitzer and the 12-inch gun, Model 1888-95, and progress has been made in the development of similar powder for the 12-inch mortar, Model 1912. It is planned to conduct actual service tests of the new powder in these weapons before the powder is approved as standard for manufacture."

DuPont "FNH" and "NH" powders are the nitrocellulose type, that is, they do not contain nitroglycerin. The volatile solvents, ether and alcohol, commonly present in nitrocellulose cannon powders in appreciable amounts as "residual solvent" are replaced by non-volatile and non-hygroscopic solvents for the nitrocellulose. Due to this fact, the danger that the powder during storage may lose volatile solvents and increase in pressure to a dangerous point has been completely removed.

The advantages of the new powders, are, briefly (1) Enhanced chemical stability and therefore greater

storage life; (2) materially reduced hygroscopicity and hence greater ballistic stability; (3) replacement of volatile solvents, ether and alcohol by non-volatile solvents resulting in greater chemical and ballistic stability during storage; and (4) flashlessness in many guns.

Muzzle flash is due to the ignition of the hot combustible gases, largely carbon monoxide and hydogen, from the combustion of the powder, at the muzzle of the gun when the hot gases come in contact with the oxygen of the air. Muzzle flash is thus a typical gas explosion, violent in character, lighting up the sky at night for miles. When muzzle flash is suppressed there remains only a small red glow of the hot gases at the muzzle of the gun, easily hidden and only visible in the immediate vicinity of the gun.

When flashless results are obtained there is given off a small amount of white to whitish gray smoke due largely to the potassium nitrate content of the black powder used in the primer and supplemental ignition pad.

If the marked improvement in chemical stability were the only feature of the new propellant, this achievement alone, irrespective of flashlessness and reduced hygroscopicity, would mark a decided improvement. While diphenylamine is an excellent stabilizer for smokeless powder, it is not a "cure all" for all the deficiencies of an ether-alcohol colloid of nitrocellulose. The improved propellant is inherently more stable than the former Pyro cannon powder.

It is well recognized that high temperature stability tests of short duration give little or no information in regard to the actual stability, that is, prospective storage life of smokeless powder. It is also well known that smokeless powder deteriorates more rapidly under the combined influence of heat and a moist atmosphere than of heat alone. Pyro cannon powder when subjected to a temperature of 50°C. and 100% humidity deteriorates so rapidly that the powder fumes in about 4 to 8 months. Du Pont "FNH" and "NH" powders when exposed to the same condition were still in excellent condition as regards stability after more than 4 years.

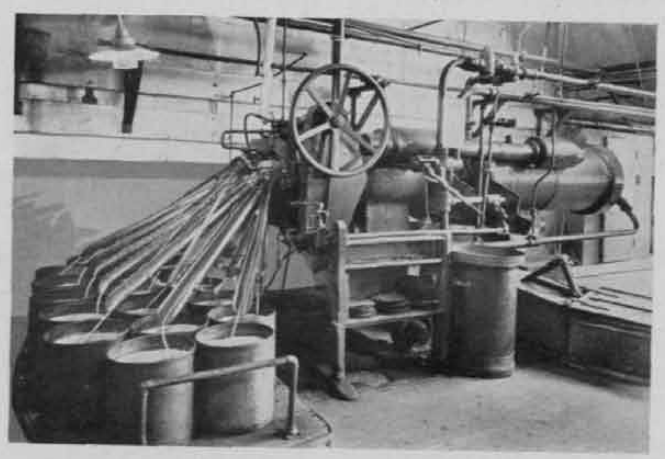
The Surveillance Test at 65.5°C., which is the official stability test of the U. S. Government, has long been recognized as a very satisfactory test as the temperature is not excessively high. Du Pont "FNH" and "NH" powders when subjected to this test gives results of about 1200 to 1400 days for the appearance of red fumes, or approximtely three times the resistance of Pyro cannon powder to this temperature.

Very few persons appreciate the enormous effect that the change in moisture content of the powder, due to its hygroscopicity may have on the velocity and pressure of the powder. In the case of the 75-mm. Field Gun, Model 1897 (French 75-mm.) this amounts to a change in velocity of about 6.6 feet per second and a change in pressure of about 462 pounds per square inch for each change of 0.10% of moisture for both du Pont "FNH" and Pyro cannon powders.

In order to prevent a change in the moisture content of smokeless powder, it is always stored in air-tight metal-lined boxes. Made up powder charges for the larger guns are stored in air-tight metal containers. It is known that these boxes and containers are not always air-tight. When not air-tight the powder will absorb moisture if the container is stored in a relatively moist atmosphere and lose moisture if stored in a relatively dry atmosphere.

Since the new powder is less than one-half as hygroscopic as Pyro cannon powder, it will show less than one-half the change in moisture content and less than one-half the change in velocity and pressure as Pyro cannon powder under the same conditions of storage.

More than eight years have now elapsed since the new powder was first introduced, during which there has been opportunity for very thorough tests. The results of these tests have shown the new propellant to be a worthy successor of Pyro cannon powder.



Finishing Press

Strings of smokeless powder being collected in buckets to be later cut into shorter pieces, i. e., grains of smokeless powder.

Dilemmas of the Far East

By Captain T. J. Betts, Coast Artillery Corps

THE Orient comes to the attention of the Western layman sporadically and spectacularly. Curiously enough, it is either front page news or not news at all. It is only on occasion that we read of it, but when we do, it is in terms of disasters and of international crises, the acts of God and the restraints of princes. Yet if we examine the forces at work in the Far East, we find them surprisingly consistent and continuous. Furthermore, while their effects come to our attention most often in the form of international events, it is worth while noting the extent to which they are national in character and represent the reactions of peoples to dilemmas that confront them.

I. JAPAN

(1) Westernize or die.

When Perry's black warship steamed away from Uraga in 1853, Japanese statesmen held no illusions as to their country's proximate destiny. For two generations they had seen the neighboring dynasty of China prostrate before western military force. They were certain that a like fate awaited Japan unless she substituted the chilled steel of the ironclad for the lacquered armor of the samurai. They perceived, dimly, perhaps, that occidental armed power was based on an industralized social order. That order they set about adopting without blinking its consequences, obvious or implicit. In blood and sweat, to the accompaniment of an infinity of local political complications and of national growing pains, they undertook the transformation of their isolated empire into a modern power. They succeeded. The Sino-Japanese and the Russo-Japanese wars served notice to this effect upon the world. Japan had westernized and she was very much alive.

(2) Emigration or industrialism.

Japan set her face to the west and grew strong. But like all fundamental changes in national philosophy, the implications of the process contained much that was unforeseen. The solution of the problem spawned new problems of its own. The most pressing of these was population. Order, sanitation and the strange fecundating power of industrialism sent the birth rate up, the death rate down. So far as can be told, up to 1846 the population of Japan was practically stabilized at 26 million. From that time forward the percentages of increase and the absolute increase were subject to a definite acceleration. In consequence the Japanese Empire today has a total population of 65 million and a net annual growth of 900,000. Before the birth of the twentieth century the economic skin of the country began to stretch to the limits of expansion. New hands demanded work. New mouths demanded food beyond the productive capacities of the archipelago.

The first remedy sought was the obvious one of emigration and colonization. In every trial the relief obtained has been slight and the numbers absorbed comparatively negligible. Legal bars to Japanese immigration were speedily erected in th United States, Canada, the Philippines, and Australia. The annexation of Formosa provided only a meagre outlet for settlers and traders. The acquisition of Korea opened up a valuable source of food supply, but the ability of the Korean to underlive the Japanese closed another door to emigration. China Proper, with its population at saturation point, had never offered an opportunity for physical colonization: and when the broad lands of South Manchuria were opened up, under Japanese hegemony, the Chinese swept in by millons where the Japanese entered by tens of thousands. Japan continued, and continues, to seek overseas outlets for her nationals, but soon came to the realization that other means were necessary to provide livelihood for her people and stability for the Empire.

Coincident with the breakdown of her emigration and colonization policies, there arose in Japan the concept of the industrialized nation. Deficient in raw materials, but possessed of a bountiful and disciplined labor supply, capable managerial skill and splendid technicians, the Island Empire was envisioned as a vast sea-girt factory, importing raw materials, exporting finished goods and living on the productive work of the manufacturing process.

(3) Raw materials of markets.

Embarked on the course of industrialism-for-existence, as differentiated from her previous stand of industrialism-for-defense, Japan immediately finds China erected into her most immediate problem and her most important neighbor. China is both a source of raw materials and a market for Japanese products. Her proximity to Japan gives her resources of coal, iron, foodstuffs and other agricultural products of double value to a country which is not self-contained economically. The primitive condition of her industries makes her the greatest potential market for the mass production to which Japan is committed.

From a strictly selfish and utilitarian viewpoint, the ideal China for Japan's purposes would be a weak, placid, law-abiding country, content to exchange the produce of her fields and the spoil of her mines for manufactured goods neatly stamped "Made in Japan". But this materialistic ideal is impossible of attainment. China is convulsed simultaneously by the death throes of an outworn social and governmental order and by the birth pains of a new nationalism. There are times when it seems to Japan that only her force can maintain the order which will permit the production of raw materials for her use. There are equally times when she sees the vital Chinese market jeopardized by her resort to that force.

Generally speaking the Japanese are inclined to rate their economic base in China above their market in that country. They feel that they have the whole world in which to sell their wares, while they can draw supplies from other regions only with great difficulty and expense. In consequence their tendency is strongly towards safeguarding their interests and investments in China to the greatest extent possible. It may be added that this tendency is abetted by a sensitive national character, a proud military tradition and the memory of concrete profits from wars.

On the other hand, the Japanese are realizing increasingly the extreme vulnerability of industrialized nations to economic attack. The sudden loss or derangement of any market is a serious shock to the whole structure of a highly coordinated country. China is not merely a market; it is their most important market, and they have already experienced the stunning impact of Chinese boycotts on their industrial fabric. The final result is expressed in a continual shifting of Japanese attitude toward China. Chinese unrest, weakness or aggression provide both causes and pretexts for strong intervention. The preservation of the Chinese market demands friendliness and conciliation. The needle of Japanese policy swings widely between these two poles and only the politically purblind can claim to detect any damping of its motion.

In dealing with this dual problem the Japanese have been alive to one practical, if rough solution. The center of gravity of their overseas production lies in the southern half of Manchuria. Their external markets are largely located in China Proper. Superficially it would seem possible to adopt a double-barreled policy, one of the hegemony and enforced order to the North, of conciliation and *laisser faire* in the South. Such a course has been pursued diligently; but as the years roll one, it works less and less certainly. Japan has never hesitated to show that Chinese government in Manchuria, in the last analysis, depends on her tolerance. But as hordes of Chinese stream into that area, at a rate in the neighborhood of a million a year, the country, paradoxically enough, becomes more Chinese than when the writ of the Manchu emperors ran there undisputed. While the Japanese hold on the machinery of finance, of transportation, of storage and of sales grows ever tighter in Manchuria, the repercussions of their activities reverberate louder and louder inside the Great Wall. Each additional yen that Japan invests in Manchuria makes her a little bit more determined that the structure she has built out of self denial and the blood of her soldiers shall endure. Yet that same yen spells a little wider opportunity for Chinese settlers and immigrants to root their own culture and beliefs deeper in the soil and to tighten the bonds between Manchuria and China Proper. Out of order in Manchuria maintained by the Japanese bayonet there springs increasing conflict between Japan and the whole of China. The dilemma of raw materials or markets remains unsolved.

II. CHINA

(1) External peace or internal war.

With civil wars, famines, floods, banditry and militant communism, China seems a land of disaster rather than dilemma. Yet a very vital one may be said almost to dominate her foreign relations. At first glance China would appear to need above all things a period of repose in which to lick her wounds and physic her internal ailments. No other country in the world apparently could better use foreign sympathy and assistance. But the fact remains that China has reached her present very tenuous state of unification by crystallizing nation-wide opposition to foreign influence. The revolutionary armies of the Kuomintang that swept from Canton to Peking in 1927-28 took as their watchwords Sun Yat-sen's Three People's Principles: "Nationalism, Democracy and Popular Welfare." But in practice the principle of Nationalism, dramatized as "Down with Imperialism!" was the rallying point; and the Chinese armies of the South routed the Chinese armies of the North under the slogan of "Down with the foreigners!" It may be said roughly that the Chinese nation was flogged into existence through the medium of the English whipping boy; for it was upon Great Britain that the nationalist agitation was primarily focused. Since that time, by adroit and enlightened dealing the British have largely extricated themselves from their trying position. But the Chinese leaders still appreciate the advantages, perhaps the necessity, of external centripetal forces to help in obtaining national cohesion. In consequence, while they have no illusions as to their ability to resist foreign forcible aggression by force, the potentialities of such action are not unwelcome. At present Japan is automatically the focus point on the Chinese political scene. But the fact must not be lost to mind that, notwithstanding the very real terror and hatred that have been aroused by her recent actions in Manchuria, those same actions have a very high political value to the rulers at Nanking. A foreign aggressor is a valuable asset to present day China.

(2) Chinese fear of Japan or Japanese fear of China.

Here at last is a dilemma that can be grasped safely by both horns. The two farthest eastern countries undoubtedly meet and recoil on a common denominator of fear. China's reasons are obvious. Despite her millions of soldiers she can offer no organized military resistance to Japan; and the latter country has never been slow to back up her claims with force of arms. It is true that Japanese invasions in the recent past have been forced to ebb back under the menace and application of economic weapons. But China, which has been conquered many times since B. C. 2000, despite all her ultimate survivals, has an innate fear of conquest.

The Japanese, on the other hand, have a deep-seated and instinctive fear of China. This uneasiness goes back much farther than the undoubtedly serious economic restraints inflicted on them by the Chinese since 1915. It is implicit, rather, in the stupendous mass of China which has overhung Japan since she began to have a history. A military and industrial people themselves, the Japanese perceive only too clearly the potentialities of a China organized for industry and

war. Furthermore the Japanese realize that their distinctive culture is largely Chinese in origin, and that that culture was forcibly implanted in their archipelago. It is easy for them to bridge the gap between an awe of their own revered institutions and an awe of the land from which the groundwork of their civilization came.

It is thus natural for both peoples to respond to an ancient atavism. It is no cause for wonder that the bristles on the necks of Chinese and Japanese alike tend instinctively to rise at serious thought of each other. It is as understandable as the conduct of any dog who, when his neighbor howls, distils out of it the cry of the wolf pack his ancesters stood off a century ago. But it does not tend to the tranquility of the world.

The foregoing is designedly incomplete. It takes no account of many vital things. It makes no attempt at the evaluation, for instance of the dilemmas of Russia in the Far East: the old national urge toward warm water versus internationalism, and the Five Year Plan versus the World Revolution. These questions obviously operate powerfully in the working out of destinies in the Orient. Only passing mention has been made of the kaleidoscopic internal policies and polities of both Japan and China. Yet it must be conceded that these are often the most important factors in determining immediate orders of events. But while the weight of these elements is admitted, it is believed that the true source of instability and antagonism in the Far East is found in the dilemmas just laid down. Their implications are obvious. The differences between China and Japan have been woven permanently into the fabric of each country. There is nothing superficial about them. In consequence no immediate solution, by compromise or by compulsion, is to be expected.

Training of the National Guard

How the Proposed Limitations in the Militia Bureau Budget Affect the Field Training and Armory Drill Pay of the National Guard

By Colonel W. H. Waldron, Executive Officer, Militia Bureau

FOR the past several years the amounts included in the Militia Bureau budget covering the projects of Field Training and Armory Drills of the National Guard have been based upon the records of old-time attendance of officers and enlisted men at these activities—times when unit and organization commanders had to exercise all of their ingenuity to make up a satisfactory attendance at the training camps and when unit commanders were at their wits-end to make the grade at armory drill to insure pay for the officers who turned out for it week after week.

Now, all of this has changed. The attendance in the past two years has been so high that the Militia Bureau has been put to it to provide the funds necessary to meet the payrolls of those who do attend. This has involved the process of going back to the Congress for deficiency appropriations to cover the deficits and any one who is familiar with such procedure will at once appreciate what is involved in it.

With the inception of the estimates for the fiscal year 1933, the Militia Bureau was again confronted with a limiting figure for the National Guard appropriations and as a consequence had to resort to the old idea of limiting the amounts for field training and armory drills to those sufficient to cover the projects on the old basis of attendance.

When the Bureau of the Budget got through with the estimates, it was found that $1,325,869.00 had been lopped off of the field training project and a saving clause had been inserted in the Act which provided:

> "That attendance at camps of instruction shall be so limited that the cost of such camps, together with other expenses under this item, can be met within the amounts made available in this Act for such camps."

The reduction in the project left only the sum of $7,803,654.00 for the field training of the National Guard. To provide for this training on the basis of last summer's attendance will require a total of $9,849,592.00. It is, therefore, apparent through the operation of a little subtraction that there will be a shortage of exactly $2,045,938.00 in this appropriation and the limiting clause in the Bill, if retained in the final enactment of the measure, will prevent any more than the amount appropriated from being spent.

In order that the officers and enlisted men of the National Guard may have first hand and accurate information regarding this vital subject, there is included in this article the official statement made by Major General George E. Leach, Chief of the Militia Bureau, before the appropriations committee of Congress at the Militia Bureau Hearings early in January.

Here General Leach had analyzed the situation in detail and presented conclusive arguments for including sufficient amounts in these projects to enable the National Guard to carry on the present basis of attendance, which it is confidently estimated will keep up during the fiscal year 1933 which begins on July 1, 1932.

Field Training

With respect to the funds for the field training of the National Guard General Leach said:

For the past two years the attendance at field training camps has been greater than ever before in the history of the National Guard. Last summer whole regiments showed up for training with only a few men missing from the ranks. From all over the land word comes to the Militia Bureau that the camps of 1931 were the best that have ever been experienced by the National Guard.

A total of 180,955 officers and enlisted men attended these camps and were given 15 days' excellent military training, based upon training programs and schedules which had been carefully prepared to the end that they would better fit the National Guard for the duties which would devolve upon it as one of the elements of the first-line of our National Defense in the event of an emergency.

I hand you a statement which shows the distribution of this camp attendance over the States and territories. It is confidently expected that approximately this same number of officers and enlisted men will report for field training next summer. This statement shows an attendance of 13,126 officers and 180,955 enlisted men.

Over a period of years it has been determined that the per capita costs of this field training runs in the neighborhood of $54.50. For the fiscal year 1933 it is estimated that it will be $54.43.

Based upon these calculations, the cost of the field training camps will be:

$$180{,}955 \times \$54.43 = \$9{,}849{,}592.00$$

For this item there is included in the Militia Bureau Budget before your committee the sum of $7,803,654.00, together with a saving clause as follows: *Provided, That attendance at camps of instruction shall be so limited that the cost of such camps together with other expenses under this item can be met within the amounts made available under this Act for such camps.*

In detail the situation is this:	
The amount required for the field training of 180,955 officers and enlisted men at a per capita cost of $54.43	$9,849,592.00
The amount included in the Militia Bureau Budget, 1933, is	7,803,654.00
The shortage is	$2,045,938.00

I do not feel that I would be doing my duty towards the National Defense and to the National Guard did I not point out to you the effect of this curtailment of funds and the limitations imposed by the language proposed to be included in the Act:

1. With the amount proposed to be made available by the Act, $7,803,654.00, a total of only 144,378 officers and enlisted men can be given field training. This is 36,577 officers and enlisted men less than the number who, it is estimated, will report for it. This is 20% of the total.

2. The military training of the National Guardsman is divided into two distinct categories—armory drill and field training. During the 48 armory drill periods held once a week throughout the year he is given theoretical and technical training designed to prepare him for the advanced military training which is afforded to him at the field training camps where he is given an opportunity to apply in a practical way the things he has learned on the armory drill floor and the schools conducted during armory drill periods. To deny this training to 36,577 officers and enlisted men who have prepared themselves to receive it is to forego just 20% of the advantages of the armory drill which has been carried on throughout the year, and to lessen our preparedness for National Defense to that same extent. From the viewpoint of the morale of the National Guard, it would in my opinion be disastrous.

3. Our National Guard camps are designed to take care of the field training of approximately 180,000 officers and enlisted men through the three months of the summer training period—June, July and August. If only 144,378 officers and enlisted men are to be given training during 1933 the camps will be run at only 80% of their capacity, which appears to me to be uneconomical and not to the best interests of the Government.

4. The relative rank, in grade, of the officers of the National Guard is based upon the amount of Federal service they render. A tour of duty at a field training camp counts for 15 days' Federal service, and officers who take it are so credited in the records of the Militia Bureau. To deny an officer this service at the field training camp, through no fault of his own, would be a grave injustice in that it would have the effect of reducing his Federal service to such an extent that he might well suffer the loss of several hundred files in relative rank in the National Guard. Such a procedure would be most destructive of the morale of officers—men upon whom the nation depends for the leadership of the citizen soldier in the event of an emergency.

5. It is estimated that the pay of the 36,577 officers and enlisted men denied the privilege of the field training camps will amount to approximately a million dollars. This money is paid to them on the last day of the camp. It is carried back to their home towns where it flows into channels of trade and serves to help relieve the economic depression. If this depression keeps up the way it is now, over the period of the training camps next summer, this training camp pay will prove a godsend to many a National Guardsman, and to the community in which he lives. A glance at the table which shows the distribution of the camp attendance will indicate that this factor is spread, like a blanket, over every state and territory of the Union. It reaches into 1,498 cities, towns and villages.

6. The basis of the successful operation of a military machine is team work. From the lowly squad to the mighty division it is the predominant factor. A majority of the organizations of the National Guard are scattered over the states at one and two unit stations. The only opportunity they have for training in organizational teamwork is when they go to the field training camps. To deny them this opportunity would be highly detrimental to the training and efficiency of this first line element of National Defense on which the nation relies for protection in the event of an emergency.

7. It is one thing to say that 36,577 officers and men shall be denied the privilege of attending the field training camps. It is another thing to say which of the 180,000 individuals shall be excluded. The officers and men have worked through the armory drill periods, one of the regards of which is the privilege of attending the field training camps. Many of the National Guardsmen give over the only vacations they have during the year to the National Guard camps. They expect to go and if they are denied the opportunity I can visualize a flood of protests pouring in on the members of Congress from all quarters.

8. Section 92 of the National Defense Act provides: *"Under such regulations as the Secretary of War may prescribe, each company, troop, battery and detachment in the National Guard shall * * * participate in encampments, maneuvers, or other exercises, including outdoor target practice at least 15 days in training each year, including target practice."*

This provision clearly contemplates that the entire authorized strength of the National Guard shall enjoy the benefits of the field training. To attempt to limit it in the manner proposed by the saving clause is in effect, the amending of the National Defense Act, a piece of basic legislation, by the insertion of a clause in an appropriation bill. It is my understanding that this procedure is not in accord with the legislative policy of the Congress.

If the limiting clause is permitted to remain in the appropriation bill, it will nullify the National Defense Act, in that it will without question fix the strength of the National Guard at approximately 150,000 instead of the strength of 190,000 which now prevails. To do so would have a far reaching effect which might ultimately result in the disintegration of the National Guard and constitute a breach of faith and contract

with the several states by the Federal Government. The several states accepted from the Federal Government the allotment of 1920 and succeeding allotments in good faith. Based upon those allotments the states have expended millions of dollars in erecting and equipping armories, providing field training and other facilities, and in addition they have in turn practically contracted with the local sub-divisions of the state government to maintain these organizations intact.

If the guard were to be reduced in strength from 190,000 to 150,000, it would eventually mean the disbandment of certain units, and the consequent closing of armories. Such procedure would be sharply resented by the states concerned and would unquestionably result in a sharp curtailment of the financial aid extended by the states. If this situation were to prevail, it is reasonable to assume that never again would the states respond to the appeal of the Federal Government, as provided in the National Defense Act, since such action by the Federal Government would be tantamount to a declaration that it has no respect for contracts.

It is difficult to contemplate just how far reaching a sharp reduction in strength would affect the National Guard at this time. If field training were to be curtailed by approximately 25%, it would mean that many officers who were denied field training would sever their connection with the service and hundreds of noncommissioned officers would likewise sever their connections, since under such conditions they would be denied all hope of advancement and little or no opportunity would be afforded them to achieve that degree of professional fitness which is essential for the well being of any military organization.

It is recommended that sufficient funds be included in the project for the field training of the National Guard to permit the attendance of 180,955 officers and enlisted men at a per capita cost of $54.43 which is $9,849,592.00, which means raising this item of the appropriation bill by a total of $2,045,938.00, and it is further recommended that the saving clause in the Bill be eliminated.

Armory Drill Pay

Based upon the present attendance at armory drills, there will also be a large deficit in this project for 1933, unless sufficient funds are appropriated for the purpose of meeting the payrolls.

Here again the Bureau of the Budget has inserted a saving clause in the appropriation bill which limits the drills to the amount included in the Bill.

General Leach also made an exhaustive presentation of this matter to the Appropriations Committee and produced conclusive arguments for having the necessary funds incorporated into the Bill. General Leach said:

For the past two years the attendance at armory drill periods has been the highest in the history of the National Guard. Hundreds of units form on armory drill floors week after week with from 90 to 100 per cent attendance, and this form of military training is far in advance of anything heretofore experienced by the National Guard.

This increased attendance is, of course, due to some extent to the economic situation, but that is not the sole cause. It is a fact that there has been a steady development in the National Guard through the intelligent activities of state authorities who have devoted their best efforts to that end; higher standards of training are being insisted on by all agencies in the chain of command; and based on these elements higher attendance at armory drills has been stressed and built up. It is also a fact that we are getting a higher type of personnel in the ranks of the National Guard. We are getting young men who are interested in this great citizen organization and who are willing to devote their time and efforts to it.

Then too, there is a tendency in times of economic depression for young men to remain in their home community, whereas in times of prosperity many roam from place to place because work is easy to secure. This has its effect on armory drill attendance, because there are fewer young men absent from their home towns at this time, and consequently a greater number who are members of the National Guard, turn out for drill with their units.

Unit commanders are alive to these conditions. The fact that there is an abundance of material has prompted them to eliminate the dead wood from the rolls of their units and to replace them with men who will and do turn out regularly for drill and training. This results in increased efficiency and morale.

As a result of these conditions we find the people of the country taking a keener interest in their National Guard. In these days of such wide-spread financial depression they realize what the National Guard armory drill pay roll means to the community and appreciate it.

It will be noted that the Militia Bureau budget provides the sum of $11,584,868.00 for armory drill pay and that the following saving clause has been inserted in the proposed language of the Bill: *Provided, That for the fiscal year 1933 armory drills shall be restricted to such number as can be provided without exceeding the amounts made available in this Act for such drills.*

Again, I do not feel that I would be doing my duty towards the National Defense and to the National Guard should I fail to point out to you the effect of this curtailment of funds and the limitations imposed by the language proposed to be included in the Act.

In detail the situation is this:

1. The actual attendance at armory drills for the months of July, August and September, the first quarter of this present fiscal year, averaged:
   - *a.* Officers and warrant officers, 12,655, which is 89% of the authorized strength.
   - *b.* Enlisted men, 144,453, which is 82% of the authorized strength.

2. If this strength percentage keeps up into 1933 and it is fair to assume that it will, the sum of $12,907,777.21 will be required to meet the rolls. This amount is distributed in the project as follows:

a. Administrative Pay	$ 682,740.00
b. Officers and warrant officers based on attendance of 89% (12,655)	3,809,187.75

c. Enlisted men based on an attendance of 82% (144,453)..	8,334,381.60
d. Flight Pay Air Corps	
Officers	69,577.21
Enlisted men	11,890.65
Total	$12,907,777.21
Amount included in Budget	11,584,868.00
Shortage	$1,322,909.21

3. The practical application of the saving clause quoted above resolves itself into a matter of curtailing armory drills—that is, cutting them down so as to come within the sum of money appropriated for the purpose. To this end the cost of one armory drill must be computed. In calculating this, the item of administrative pay must be deducted from the total cost because this is a constant factor which remains the same, no matter how many armory drills are held. This is stated below:

a. Total armory drill pay ..	$12,907,777.21
b. Administrative Pay	682,740.00
c. Balance armory drill pay	$12,226,037.21

This sum divided by 48 gives the sum of $254,688.27, the contemplated cost of one armory drill.

4. If the sum included in the Militia Bureau Budget for 1933 is maintained and the language of the appropriation bill is retained in its final passage it will be possible to hold only 42 armory drills during the fiscal year 1933 instead of the 48 contemplated by the National Defense Act.

This means the elimination of two drills in each of two quarters, and one drill in each of the remaining quarters of the fiscal year 1933.

The National Defense Act clearly specifies that the officers and enlisted men of the National Guard shall be given the opportunity to participate in 48 armory drill training periods during the year and to receive pay for such service at established rates. This training is provided for in Section 92 of the National Defense Act as follows:

> *"Sec. 92. Training of the National Guard. Under such regulations as the Secretary of War shall prescribe, each company, troop, battery, and detachment in the National Guard shall assemble for drill and instruction, including indoor target practice, not less than 48 times each year."*

A failure to provide the necessary funds for this pay and to include in the Appropriation Act a clause which necessitates cutting down these armory drills is in effect amending a basic law through language inserted in an Appropriation Bill. This procedure, so I understand, is not in accord with the legislative policy of the Congress.

There are more than 12,500 officers of all grades qualifying for armory drill pay for the 48 weeks of the year in which it is authorized under the law and regulations. These men are the leaders of the National Guard. They are the men upon whom the fathers and mothers of the youth of the nation depend to lead their sons in battle, that most hazardous of all human undertakings, in the event of a national emergency. Their opportunities for training in actual command, even with a full program is all too limited and any curtailment will serve to reduce their efficiency just so much. These officers appreciate their responsibilities. Individually they will carry on to the best of their ability regardless of whether they are paid for their services or not.

There are today some 144,000 young Americans turning out for armory drill once a week. They have voluntarily enlisted in the National Guard with the distinct understanding that they are to have four drills a month and that they are to be paid for them at established rates according to the grade they hold. Under normal conditions, from a financial view point, it would make little difference to the individual, if the armory drills were curtailed, for it would work no especial hardship on him—he has his regular job and armory drill pay is his pin money.

But today the situation presents an entirely different picture. Many of these young men are out of employment and this armory drill pay is a veritable godsend to them. To curtail the drills under these circumstances is not only to break faith with them, but it is to deprive them of the small amount of ready cash which now bulks so large in their budget and helps them in a material way to eke out an existence. This is the picture from the standpoint of the individual. There is another from the standpoint of the community, which I want to present for your consideration.

The average armory drill pay roll of a unit of the National Guard is approximately $300.00 per month. This money flows into local trade channels immediately upon its receipt each quarter. There it turns over and over again and is a considerable factor in relieving the stringent financial situation which exists in practically every community. In order that you may appreciate the wide scope of this factor, I point out to you that there are 3,225 of these units of the National Guard, distributed over 1,498 cities, towns and villages in the United States and Territories. The curtailment of armory drills reaches every one of them and you can readily appreciate how widespread and violent the reaction would be to a directive curtailing armory drills to the extent necessitated by the proposed item in the Appropriation Bill.

It is sincerely recommended that your committee include sufficient funds in the item Armory Drill Pay for holding the full 48 drills authorized by the National Defense Act with the National Guard at its present authorized strength, which means the raising of the amount proposed by the sum of $1,322,909.21. It is further recommended that the limiting clause pertaining to the item which tends to hamper the development of the National Guard, be eliminated.

Reducing Strength of National Guard

It has been suggested that the strength of the National Guard be reduced in order to keep within the limiting figure of the Armory Drill Pay in the Militia Bureau Budget. Such procedure involves a major operation which is more easily said than done.

The National Guard is an element of the first line of our national defense. The general mobilization plan contemplates its immediate employment in case of emergency, and it must be prepared to meet this responsibility. To this end the National Guard is organized into 18 Infantry divisions which are now reasonably complete in their essential elements; eight Cavalry brigades; a few coast defense organizations; and Corps, Army and General Headquarters Reserve. All of these elements have definitely assigned roles in the plans for National Defense. To accomplish a reduction by abolishing any of these units or organizations would negative much of the effort which has been put into their organization, equipping and training.

The units and organizations of the National Guard are organized in accordance with tables of organization which represent the best thought and study of our experience in the World War. Every unit has a place in its organization and a military function which they have been trained to perform. To abolish any of them at this time simply means that they would have to be recreated on mobilization with untrained officers and men who would not be able to carry on until they have had an opportunity to learn their job.

The abolishment of units or organizations would also mean the elimination of trained officers and noncommissioned officers—the foundation of our National Defense, which the nation can ill afford to lose.

In the process the Militia Bureau would have to insist that the essential elements of the combat divisions be saved as far as practicable. This would upset the present allocation of troops throughout the country and be manifestly unfair to those States who in good faith accepted non-divisional troops in their quota.

With so many factors against effecting a reduction in strength through the abolishment of units, the Militia Bureau could not concur in a resort to such a process.

This leaves only one other method available—that of reducing the strength of the present units of the National Guard.

If we are to retain units and organizations we must have officers to administer and train them. This means that the present officer corps of the National Guard must remain intact and that no officers can be eliminated. And in my opinion that is as it should be.

The officers of the National Guard have won their positions through competition and years of service, in many instances accompanied by personal sacrifice. It would be highly unfair and a grave injustice to these loyal defenders of the nation to simply declare their positions vacated and discharge them or transfer them to the National Guard Reserve.

Likewise, the body of loyal and efficient noncommissioned officers of the National Guard have won their chevrons through competition and years of service. They are the backbone of the National Guard, just as they are the backbone of any military force.

Therefore, in any adjustment effected through reducing the strength of units I would have to insist that the officer and noncommissioned officer personnel of the National Guard remain intact. I not only consider this to be for the best interest of the service and the nation, but to my mind it is a consideration that is due this loyal and self-sacrificing body of men, who have striven so heroically to make the National Guard what it is today—the finest body of citizen soldiery this nation or any other nation has ever possessed.

All of this then resolves itself into the matter of effecting the reduction required in the grade of private and in order to save the amount necessary this will require a 20% reduction in every unit of the National Guard.

The calculation of this is shown below:

Administrative Pay	$ 682,740.00
Officers' Pay	3,809,187.75
N. C. O. & Pvt. 1st Class	4,277,388.96
Flight Pay	81,467.86
Total Fixed Pay	$8,850,784.57
Amount in Budget	11,584,868.00
Total Fixed Pay	8,850,784.57
Balance available for Pay of Privates	$2,734,083.43

The balance of $2,734,083.43 divided by $48.00—the drill pay of one private for one year gives 59,960 privates who can attend the drills, and this fixes the Privates' strength of the National Guard for 1933, who may attend the armory drills and receive pay therefor.

I hand you a table which shows the present authorized strength of the National Guard which is now allocated to the States together with the actual strength. Column 4 shows the reduction in strength which will have to be effected between now and July 1st if only the amount now contained in the appropriation bill is appropriated for armory drill pay. You will note how this reduction is spread over all of the States on the basis of 20 per cent. This means that a National Guard unit now maintained at a strength of say 60 men must be reduced to 48 men.

In Conclusion

I have endeavored to show the members of the committee the dire effects of the failure to provide the funds necessary to carry on the field training and armory drills of the National Guard on the present basis. I have tried to give you an honest picture of the situation from the viewpoint of the communities in which National Guard units are stationed and from the standpoint of the individual citizen soldier.

I sincerely hope that you will see fit to recommend the provision of the funds which are necessary. It means increasing the two items over and above the amounts provided for in the Budget as follows:

Field Training	
Amount Necessary	$9,849,592.00
Amount in Budget	7,803,654.00
Additional Required ...	$2,045,938.00
Armory Drill Pay	
Amount Necessary	$12,907,777.21
Amount in Budget	11,584,868.00
Additional Required	$1,322,909.21

A Course in Public Speaking

By Captain P. W. Lewis, Coast Artillery Corps

THE art of Public Speaking, among many other arts, is one in which every Army officer is vitally interested. With a large percentage of Regular officers on civilian contact duty, with the Reserves and with the National Guard, the occasions upon which an officer is called upon to use this sort of public speaking are many and varied. Most of us, when we are first called upon to address an audience, do so with a mixed feeling of misgiving and shaking knees. To overcome these disturbing elements, the following discussion is submitted.

At the University of Michigan, a course in Public Speaking is given, as well as evening extension courses, to such organizations as the Society of Automotive Engineers, whose members are the executives and engineers of the automobile industry. This course is so applicable to officer's post schools, that it is presented here with the idea that some help may be given the officer on troop duty, which will be of benefit to him when the inevitable detail on detached duty comes along.

Public Speaking is the art of ordinary conversation with a large group of people. The same principles govern, as in ordinary private conversation. However, it is the responsibility of the speaker to hold the attention of his audience. If the audience starts to doze or otherwise loses interest, it is due to the lack of interest of the speaker, himself. Public speaking should be a development of extemporaneous speaking, which implies that the speaker has thoroughly mastered his subject and can speak with genuine enthusiasm.

The beauty of this course, as taught at the University, is that an experienced instructor is not necessary, and that the class is practically self-instructed. At the end of each talk by a student, the instructor asks the class for criticisms, and the success of the class depends upon the genuineness and the sincerity of these criticisms. After a few days of real criticism, the backward student soon forces himself to a real effort, and as a result his self-consciousness starts to disappear as he becomes absorbed in putting all his efforts into getting his talk across to his audience. When these criticisms are invited, there may be some members of the class who do not agree with the criticism. In this case, the instructor asks for a vote of the class by the simple method of raising the hand. His attitude is that a class of students represents a pretty accurate cross-section of a public audience and that an expression of the likes and dislikes of the entire class represents a truer expression of public opinion than merely the ideas of the instructor. The attitude of all concerned must be that of good sportsmanship.

Classes are usually limited to about fifteen students, and last about an hour. This is in order that all students may give a two or three minute talk at least every other day, and allows a few minutes for a criticism of each talk. The old adage, "you learn to do a thing by doing it" applies with great force to public speaking. The hardest part of a talk is the beginning and the ending and if these are mastered, the rest is comparatively simple. There is no need, in a course of this sort to give a long winded address. Public Speaking should be limited to talks of ten minutes' duration, except under exceptional circumstances.

There are two fundamental principles of public speaking. 1. You must speak loud enough to be heard by every member of the audience. You must speak loud enough so that every word is heard. How much interest could you show in a book if every few sentences were blurred or every third page was blank? The same applies to public speaking. Speaking loudly does not mean yelling or screaming. It means that the voice must be modulated to the needs of the particular auditorium and it also means the throwing of the voice from the base of the throat rather than from the roof of the mouth. What appears to be yelling from the platform may be scarcely audible from the rear of the auditorium.

2. The second principle is that you must appear to be vitally interested in your subject—but at the same time act naturally. Remember that public speaking has all the essentials of conversation. Use natural facial expression and easy gestures. Avoid bombastic gestures. However do not be mislead for what appears to be a bombastic gesture to you on the platform may appear to be perfectly natural to your audience. The simple raising of the hand, to the novice, feels as though he is violently waving it in the breeze. The criticism of the class will be your guide for this. Do not be afraid to over-do the gestures at first, for it is easier to quiet them than to increase them.

Nervousness on the platform is seldom communicated to the audience. The presence of platform fear tends to make the speaker rise to the occasion and put his talk across in admirable style. The use of facial expression or gestures, such as the raising of an eyebrow at the appropriate time, a smile now and then, an earnest expression, a worried expression is advisable—if appropriate. Never use too many hand and arm gestures, do not make them of too long duration and do not start them from an awkward position. For example, one student held both lower forearms horizontally in front of him and made all gestures from that position. It would have been much better to have started the gesture with the arms hanging naturally by the side. A repeated gesture soon tires your audience. Furthermore, if a gesture is repeated too often it is unduly emphasized and the audience soon becomes engrossed in watching your gesture and wonders how many more times it will be made. As a result it loses all interest in what you are saying.

If notes are used, make them large enough to see;

type them double-space so that they may be easily followed. Before beginning the talk have them in your hand or in a readily accessible place. Nothing is worse, after starting a talk, than to commence a complete inventory of all your pockets and person, with a worried expression on your face, wondering where the elusive notes will be found. If notes are used, it is better to use small cards; but if sheets of paper are used be sure that a stiff piece of cardboard is behind them. This will avoid the inevitable fluttering of the corners of the leaves. This fluttering will attract your attention which will cause more nervousness, with the final result that the paper will do a St. Vitus dance.

Memorize the subject matter—the salient points—of the talk but do not memorize the words. There are two exceptions to the above memory rule. 1. Memorize the first few sentences of the talk. Start it off with a bang. When you first rise to address an audience you will feel the maximum amount of nervousness, and if the introduction is memorized, this nervousness will be greatly overcome. 2. The other exception to the memory rule is in the conclusion of the talk. Nothing is worse than to hear a speaker gradually run out of "ammunition" for his talk, and stop it because "there isn't any more." The well known rule "Say what you have to say and sit down" particularly applies to the ending of the talk.

The following outline of a course is suggested for Post Schools.

1st period. An outline of the purposes of the course, similar to the foregoing remarks.

2d period. One minute talks by all members of the class. These talks may consist of an introduction of yourself, with a short resumè of your private history; your life, your hobbies, or any appropriate subject selected by the student.

3d period. Five minute talks by forewarned members of the class, with frequent interruptions by the instructor, or calls for class criticisms. A warning is given the speaker at the end of four minutes, and the talk must be brought to a logical conclusion at the end of five minutes. After that, a few minutes are allowed for a discussion by the class. Each member should be given ample advance notice before a talk is to be made. This is intended to be a class in Public Speaking, and is not a research course.

4th period. Same as preceding period.

5th period. Same.

6th period. Two students seated on the platform. One student gives a short introduction of the speaker. Written criticisms are given by the instructor, and no time is given for class criticisms. The warning is given at the end of four minutes and the final warning at the end of five minutes, at which time the speaker must bring his talk to a logical conclusion.

7th period. Same.

8th period. Five minute talks, with another student appointed, one for each speaker, to make notes on the talk and to give verbal criticisms to the class at the end of the talk.

9th period. Same.

10th period. One student is selected at random to give a two or three minute talk on any subject. Another student is selected at random to answer this talk, giving his views for or against the subject. This gives the student excellent practice in answering criticisms from a heckling audience or in giving extemporaneously an intelligible discourse on any topic of the day. A rather wide reading and knowledge of the topics of the day are necessary to carry this work to a successful conclusion. The entire class is forewarned at a preceding session of the procedure that is to be followed.

11th period. Same.

12th period. Ten minute talks with written criticisms given by three members of the class. A warning is given at the end of eight minutes, and another warning at the end of ten minutes.

13th period. Same.

14th period. Same.

15th period. Five minute talks with interruptions by the instructor and criticisms by the class.

16th period. Same, with the addition that the speaker takes his seat on the platform and rises, walking forward to the speaker's stand.

17th period. Same.

18th period. Ten minute talks, with criticisms after the conclusion of each talk. No interruptions in the talks are made.

19th period. Same.

20th period. One minute impromptu talks, conducted in a similar manner as for the 10th period.

21st period. Same.

This course of instruction can be modified in any way according to the circumstances and the outline above should be considered merely as a guide of the subject matter.

The experienced speaker comes forward on the platform in a deliberate manner, he does not hurry; he takes an appreciable time before starting to speak. (Count to five slowly). He employs a slow and rather judicious manner in his opening remarks. This has the effect of putting his audience at ease. There is a certain amount of movement and shifting in the seats and this slowness at the start allows everyone to get settled before the meat of the talk has gotten under way. The first words of the speaker are usually of the following order, "Mr. Chairman, ladies and gentlemen," or other appropriate titles.

Watch the reaction of your entire audience, one or two persons may show no interest in what you are saying but the rest of the audience may be absorbed in the talk. Do not let a few restless ones disturb you. If a noticeable proportion of the listeners show restlessness or inattention, there is something going awry with your talk. Your subject may have been poorly chosen or your manner of delivery may be sub-normal. It is a well known fact that the amount of enthusiasm shown by a speaker in a well chosen subject is proportionately reflected by his listeners.

Public Speaking is no more than *Personal Salesmanship*...You must sell yourself as well as your subject to the audience. Speak with authority. Tell a particular member of the audience an important statement. Look at each member of the audience, and above all, do not look over their heads. One of the particular

criticisms of members of a new class is that they will be conscious that the audience is in front of them but they will not actually *see* every member. Use *directness*...An excellent exercise for a student who does not use sufficient directness, is to require him to point to some member of the class and say, "Mr. Jones, (and repeat any emphatic statement)". Repeat this procedure until the proper emphasis and directness is shown.

Most novices are afraid to open the mouth sufficiently. It has been found good practice to rehearse in front of a mirror, making exaggerated facial expressions—particularly those of stretching the mouth. After exercising the facial muscles in this manner, an unconscious naturally pleasing facial expression will result while speaking. Many succeed in opening the mouth but at the same time neglect the important adjunct of opening the teeth. This results in the smothering of the expressions and the natural loss of interest by the audience. If the mouth and teeth are opened, a clearer enunciation will ensue.

The first fundamental principle of public speaking is that "*You Must Be Heard.*" This does not mean simply a loud voice, but it means proper enunciation, proper tone, proper pitch and proper articulation. Do not turn aside or talk to the ceiling or to the floor. A loss of some vital information to your audience will result.

Some critics do not recommend leaning on the speaker's stand or desk. However, if the speaker if of a stern and unbending type, or if the subject is of a stern nature, it will be found that a slight natural leaning will bring the speaker closer in spirit to his audience. Give your audience confidence in you as a guide to lead them into your subject. The most scholarly talk, full of valuable or vital information, may fall flat due to the fact that the speaker has not led his audience or has not shown dynamic enthusiasm in his delivery. We may overlook voice defects or odd gestures, but if the speaker shows interest and talks loud enough for every member of his audience to hear him, the talk will be a success.

The following actual criticisms used in a class are important and are given for their practical value in training a class of public speakers:

a. Return your gestures slowly. Do not adopt what is called the "polar bear" type of speaking; that is, a quick roll of the body and head in looking from one side of the audience to the other and back again. The audience breathes with the speaker. Do not make the sentences too long; this will exhaust the breath of your audience. Use natural pauses.

b. Always keep something in reserve. Do not let your audience get the idea that you have reached the climax and that you have little further to offer.

c. Be careful that there is not too much footwork on the platform. A little motion eases the audience but a pacing back and forth results in a restless audience. Vary the rate of speaking from time to time, and avoid monotony of any sort.

d. Plan the timing of your talk. If your talk lasts five minutes or ten minutes in the rehearsal, it usually lasts a minute or two more when delivered to an audience. Do not crowd too much information into a short time; the audience will not absorb much of a hurried delivery.

An extemporaneous talk is one which has been thoroughly prepared, just short of being completely memorized, which can be given at almost any time with little further preparation. An impromptu talk is one which is given with no preparation.

The following remarks pertain to a few "tricks of the trade."

a. An audience should be rather closely grouped. If they are widely scattered throughout the auditorium when the talk is started, they should be politely requested to move towards the front and closer together. They should be comfortable and should not be distracted during the talk. They should not face a bright light. They can then listen to the speaker with undivided attention.

b. The subject should be interesting and appropriate to the particular type of audience. You should appeal to them through their needs or through their welfare in certain types of talks. You must exercise continuous interest during the talk. Be dynamic in your attitude. The mind of the audience will start wool gathering, if you are not.

c. Use variety of any logical sort. A talk should be interspersed with a humorous vein every now and then. A little witticism or anecdote will revive an audience during a heavy subject.

All of the cautioning in the world will be of no avail unless it is accompanied by plenty of practice. Rehearse your talk many times at home. Look from one object in the room to another, as though you were looking at the individual members of your audience. After you are satisfied with your delivery, then rehearse in front of some one who has been invited to be your critic.

The Value of Personal Contact with Reserve Officers

(Observations of an enlisted assistant instructor)

By Staff Sergeant F. S. Falcon, Jr., D. E. M. L.

NEARLY five years ago it was the writer's good fortune to be assigned to duty as clerk for the Instructor (then known as Executive Officer) of Coast Artillery reserve units in Atlanta, Ga. At that time the office was located at Fort McPherson, which is approximately four miles from the business center of Atlanta. It was not very long, however, until the necessity of establishing the office in the business center of the city was seen; therefore, the Coast Artillery reserve office was moved in with the other Organized Reserve activities in Atlanta.

As the instructor of reserve regiments deals with a civilian component of the Army of the United States, it can be clearly seen that there is good reason for having his office located where it is easily accessible to a large number of reserve officers. When the office was located at Fort McPherson, probably not more than an average of five reserve officers a month called on the instructor for any purpose. It is not known how many officers the instructor called upon, but it is believed he visited hardly one-third as many as he did after the office was established in the city. But as soon as the reservists learned the instructor's office was located near their place of business, they began to drop into the office, and the instructor also found it more convenient to call on them during the day.

According to the provisions of existing regulations, the primary duty of the instructor is to give, by advice and assistance, the fullest aid in the theoretical and practical instruction and training of the organization to which he has been assigned. The reserve unit commander, however, is charged with the instruction and training of his command, and the instructor must encourage him to the fullest extent to exercise these functions. The instructor has other important duties, but the one with which this article deals is frequent personal contact with reserve officers of his unit with a view of increasing their interest and knowledge, ascertaining their individual qualifications, and determining their requirements to fit them for the performance of their duties.

As to the importance of personal contact, many instructors will differ widely. Some of them consider it highly important; others appear to be of the opinion that if a reserve officer wants information, let him obtain it through his own initiative and in enuity. The latter view is not the policy of the War Department, as the regulations and letters of instruction pertaining to reserve matters clearly indicate. As a result of this variation, the interest, or lack of it, that individuals have in their reserve affiliations, can be judged to a large extent by the attitude of their instructor; if he is interested in creating in them confidence in him and a state of enthusiasm, naturally they will take a great deal more of interest in their reserve commissions, as well as a personal interest in the instructor.

The regulations provide that the instructor will make at least one annual visit to localities where the reserve personnel under his jurisdiction may be met in personal conference, as well as visits that may be necessary to conduct conference schools and other training activities in connection with the unit. After it has been determined that a visit to a certain locality is essential in order to promote increased activity on the part of the reserve officers residing there, the instructor requests the Corps Area to issue the necessary orders. Orders will be issued if funds are available; but if no funds are available, the instructor will have to resort to correspondence, the secondary means of "contact" in order to *attempt* to stir up interest in the particular locality in question. Every qualified instructor knows, however, that one of his visits will instil in the reserve officers more interest than would a dozen or more letters. A large number of reserve officers ignore correspondence, especially mimeograph letters.

The instructor should make certain preparations in advance of the "contact" visit. He should have his enlisted assistant prepare a list of names, grades, addresses, and brief notes concerning the status of each reserve officer residing in the city or town to be visited. If it is possible, he should delegate to one or more of his active reserve officers residing in the locality the work of arranging the hour, date, and place of meeting that will be convenient to the majority of reserve officers there. If he can find no one in the locality who can make this arrangement, it will be necessary for him to do it himself by correspondence. In any event, the reserve officers should be invited to attend and urged to prepare as many questions as they can concerning their individual status or in connection with reserve matters. In most cases the instructor need not worry about the lack of questions, for he will be asked more of them than he will have time to answer, if he indicates a helpful attitude of mind.

Armed with the list of reserve officers, notes concerning the status of each, and various blank forms,

the instructor arrives at the rendezvous, prepared to withstand the barrage of questions shot at him in rapid succession from every angle. Some of the questions probably may seem pointless and even amusing to the instructor, but the reservists ask them with due seriousness. It is not unusual for Captain Donothing, for instance, to ask why the War Department does not promote him. A glance over the list shows that Captain Donothing has done nothing whatsoever in connection with his reserve commission for four or five years. It takes an instructor with a good deal of tact and with full knowledge of reserve regulations at his finger tips to explain the situation to this officer without arousing undue hostility. The instructor may think he merits little consideration but it is best not to tell him so. This one reserve officer may cause a great deal of antagonistic feeling among the others in the locality against the Reserve Corps; therefore, it is advisable not to be too blunt with him even if he isn't worth a whoop insofar as the Organized Reserve is concerned. Besides he may not have been previously impressed with the importance of promotion requirements.

Innumerable questions concerning promotion, reappointment, active duty training, and others on reserve matters will be answered by the instructor before the meeting has subsided to a more or less general confab. Then it is learned that nearly every one of the reserve officers believes in adequate preparedness, but unfortunately in many instances they are unable, due to business or other reasons, to devote very much time to inactive training activities, such as pursuing the Army Extension Courses, regular attendance at conference schools (if there is one available) and other reserve activities.

So, the instructor returns to his station, happy in the thought of having established personal contact with a number of reserve officers and stirred up in them enough interest to keep that locality alive for a while at least. He usually returns with notes and memoranda of matters to be taken up with higher headquarters; probably with several new applicants for commission in the Reserve Corps; and generally with enough work to keep the ordinary clerk busy for a week. If more funds are available, he should make similar trips to other localities; often he can visit several cities and towns on one trip.

His contact visits do not end there. Since his office is usually established in a locality where most of his reserve officers reside, he will keep busy trying to increase the interest of these reservists. As a part of his regular duties, the instructor probably is in charge of one or more local conference classes which meet regularly. He may also have regularly scheduled classes in other localities. Then there may be a weekly luncheon meeting of reserve officers. If the unit commander resides in the same locality where the instructor has his office, frequent visits are made with him; both attend luncheon together occasionally, and much of the reserve unit commander's work in connection with the training of his unit is discussed, plans and policies formulated and adopted—all taken care of by these informal conferences, when it would otherwise require much burdensome correspondence on the part of both the instructor and the unit commander. Anyway, correspondence is always tiresome to the average unit commander, the instructor, and, of course, the clerk. Although some correspondence is positively essential, human nature has endowed nearly all of us with a peculiar liking for "gabbing" and with a horror against writing letters. Some of you may disagree, but you will find that the majority will sit and talk for hours and enjoy it, whereas the same individuals will postpone from time to time the writing of a single letter. Consequently the instructor who is most liked by the greater number of reserve officers is one who is "gifted with gab"—that is, a good mixer. A few jokes thrown in from time to time makes an otherwise "dry" conference more stimulating, and these jokes have a tendency to inform the reserve officers that a regular army officer is human after all and that he is not one of these "hard boiled characters" made so famous by the World War. It must be remembered also that the instructor deals with civilians, many of them prominent in the affairs of the community or well known professionally, and that a spirit of cordiality and "at ease" is helpful to him in carrying out his mission even though they may not have the same knowledge he possesses concerning the "tactics and technique of the separate branches," "the estimate of the situation," or matters of like nature.

The instructor should realize that the younger men are mostly the ones who may soon lose interest in their reserve connections. It is not because they do not wish to participate in reserve activities, but usually due to the fact that nearly all of them are recent graduates from colleges or universities and are struggling to make an honest living. Their salaries are probably not commensurate with the high cost of living, and while they can easily lose their jobs, it is rather difficult for them to find another one. Therefore, they spend most of their leisure, if any, in preparation for better positions. It must not be thought that the older officers should be left in obscurity, for many of them will need attention from time to time. It is known, however, that the majority of these men are somewhat firmly established in business and they can afford to devote to reserve affairs more time than can the younger men, and at the same time not jeopardize their business or professional connections.

In the final analysis of personal contacts and conferences, and the results thereof, it will be found that it is easier to attain and maintain the interest of a large percentage of reserve officers residing in a small community, than it is to stimulate and uphold the interest of those residing in a large city. The reason for this may be attributed to the fact that in a large city there are many forms of entertainment, whereas in the smaller city there is apt not to be so much as to keep the reserve officer participating in them from one week to another.

The Foreign Military Press

Reviewed by Major Alexander L. P. Johnson

MEXICO—*Revista del Ejercito y la Marina*—October, 1931.

"The Next War," by Brig. Gen. Napoleon Cabrera.

The science and art of war experienced rapid development since the World War. Another conflict would imperil civilization. Notwithstanding, the predominant obsession of the world today is WAR. All great powers are preparing for the next conflict. The peace which followed the last holocaust is but an armistice while the combatants gird themselves for the next round. The League of Nations, disarmament conferences, anti-war pacts are mere Utopias. The first article of the Treaty of Paris is already a dead letter. Japan bluntly rebuffed all attempts of the League to intervene in the Manchurian imbroglio. "What Japan is doing today to the Chinese, the Yankees will be doing unto us tomorrow. Who can doubt that? ..... Alerta Mexicanos!"

It is indeed regrettable that General Cabrera's commendable patriotic appeal to his countrymen for greater preparedness for national defense should be actuated by a fear of American aggression. Nothing is more foreign to the American people than a desire to inflict the least injury upon their neighbors south of the Rio Grande. In the light of the general world situation the timeliness of General Cabrera's appeal is or should be patent to all who place national security above the bauble of pacifistic slogans. Even in more normal times a reasonably adequate, efficient and well-organized military establishment would unquestionably rebound to the benefit of the Mexican State and Nation.

The United States Army, ever ready to share its facilities with others, has time and again welcomed officers of the Mexican Army to its service schools and garrisons for professional training and experience. This, as well as contacts in the field of athletics and sports have well served to cement bonds of close friendship between the armed forces of the two republics. We hope that these pleasant contacts may multiply manifold in the future. It is likewise our most sincere hope and wish that the Mexican and American armies may never face each other as enemies, but should the occasion arise, that they may march side by side in the defense of their common heritage: Liberty and Independence.

URUGUAY—*Revista Militar y Naval.*—April-May, 1931.

"The Cavalry Division in the War of the Future," by Barrien-Balle.

The principal mission of cavalry, the author believes, will be the supplementing of air reconnaissance. It will verify information supplied by the aerial observer, and secure more specific detailed intelligence. The important function of cavalry to gain and maintain contact with the enemy will remain unchanged. The charge by large bodies of cavalry is a thing of the past. In the future, cavalry will act largely as infantry differing essentially in point of mobility. Cavalry divisions and corps will enable higher commanders to move more rapidly to, and throw into action at a critical point an "elite" force. For this reason, the author believes, cavalry combat training should conform more closely to that of infantry. To make for greater effectiveness, the author advocates a cavalry division of three brigades, two cyclist battalions, one motorized battalion, one regiment of light artillery (3 how. btries and 3 gun btries); one heavy artillery regiment (3 heavy how. btries and 2 btries of 10cm. guns). Two of the howitzer batteries and one 10cm. gun battery, the author believes, should be horse-drawn, the remainder motorized. The cavalry should also include one company of motorized engineers, one divisional bridge train, an observation squadron, a bombardment squadron, artillery observation planes, and one tank platoon. The entire personnel of the motorized artillery, in the author's opinion, should be mounted excepting the gunners who should ride on the limber. This would relieve them of the burden of caring for the horses and keep them fresh and in condition for action after a prolongued march.

AUSTRIA—*Oesterreichische Wehrzeitung*—October 23, 1931.

Military Information.

According to official figures submitted to the League of Nations, the French military establishment consists of 38,209 officers, and 763,352 men with the colors. The total available manpower is computed at four million men. France has 51,000 machine guns, 4,300 light field guns, 2,400 heavy guns, 3,500 tanks and 4,200 airplanes. The French navy is credited with a total tonnage of 628,603.

The League of Nations credits Poland with a standing army of 17,895 officers and 265,980 men. In addition there are 36,985 men in other militarized services. Other formations with military organization account for 102,946 additional personnel. Poland has 700 airplanes. The Polish government regards this force as inadequate for national defense in view of the political and geographical situation of the country, and it is expected that appropriate representations will be made before the disarmament conference.

Militarwissentschaftliche Mitteilungen—November-December, 1931.

With the current issue this distinguished bimonthly publication concludes the 62d year of its existence. In spite of the economic crisis the editors found the means to enlarge and otherwise improve this excellent journal. The volume for 1931 contains 1216 pages of text, 97 illustrations and 28 separate maps and charts. Its contents are valuable contributions to practically every phase of the art and science of war.

BELGIUM—*Bulletin Belge des Sciences Militaires.*—November, 1931.

"The Kellogg Pact," by C. D.

After a brief sketch of the history of the Kellogg Pact, the author cites M. de la Pradelle's comment to point out that this historic document is after all but a restatement of the views held by Grotius and the canonists before him, that while war is an attribute of sovereignty, to be justifiable it must have a legitimate cause, such as self-defense. The author notes, that the pact does not actually prohibit recourse to war except as "an instrument of national policy." Thus, in the case of an international dispute resort to arms to enforce the decision of an arbitral tribunal against a recalcitrant party would not be deemed a "resort to war as an instrument of national policy," but some sort of mandate to enforce the judgment rendered in the case. Under the Kellogg Pact war would still be possible in the following instances: 1. among non-signatories; 2. between a signatory and a non-signatory power; 3. civil war; 4. against a violator of the pact; and 5. in self-defense.

The failure of the pact to define what constitutes "aggression" and "legitimate self-defense," are serious deficiencies. The Anglo-American interpretation of self-defense is regarded as sufficiently elastic to permit almost any kind of war as long at it is camouflaged as a war of defense. The failure to prescribe a system of sanctions is a further source of weakness in the pact. Such is also the failure of the document to prescribe a definite procedure of arbitration.

The Kellogg Pact is essentially an act of good-will. It is but a step in the direction of eventual outlawry of war. It will not be effective, however, until individual states surrender their sovereign right to determine for themselves what constitutes aggression, and what is legitimate national defense. A system of sanctions is necessary to provide for some form of joint action against an aggressor nation. At the very least, signatory nations must pledge themselves not to render any kind of assistance to a nation which had transgressed against the terms of the pact.

GERMANY.—*Wissen und Wehr.*—September, 1931.

"Protection of the Civilian Population Against Aircraft," by Alfred Giesler.

The problem of protecting the civilian population against aircraft in war is receiving increasing attention in all countries. In some, the responsibility for providing proper safeguards is shouldered by the authorities; in others this important matter has been left more or less in the hands of private organizations.

France undertook the initial steps in 1923. Little was, however, accomplished until 1928, when the "Aviation Commission," under the chairmanship of Marshal Lyautey got hold of things. A complete defensive program had been mapped out which is to be completed by January 1, 1935. Parliament readily appropriated the necessary funds which, in 1930, amounted to 400 million francs exclusively for A. A.-defense purposes. Last February Marshal Pétain, by Presidential appointment, became the active head of the organization with the title of "Inspector General of the Territorial A. A.-defense." The defensive plan contemplates the organization of a series of observation belts echeloned at approximately 80 kilometers with listening posts at intervals of 10-13 kilometers. A thoroughly organized network of signal communications will permit the rapid transmission of the alarm. Furthermore, important war industries are to be decentralized. It has been decided to install near the coast, in subterranean bombproofs, oil tanks with a total capacity of two million tons of fuel oil to supply the French navy in an emergency.

Great Britain, thanks to her war experience with air raids, encountered less public and private apathy towards the development of an effective anti-aircraft defense. London is, of course, the nerve center of the United Kingdom; the south of England is second in importance. The capital of the British Empire is surrounded by three concentric observation belts with watch posts at 10-13 kilometer intervals. As in France, a thoroughly organized communications net serves to make the system effective. The south of England is divided into seven defensive zones, each with a separate message center. These are connected by means of special wires with the headquarters of the A. A.-defense installed in a bombproof in one of the suburbs of South London. It is contemplated to use subway tunnels as bombproofs to shelter the civil population in an emergency. In districts remote from the subway system, the construction of special bombproof shelters is planned. Children in all schools receive regular instruction in what they are to do in case of an aerial attack.

Italy organized a special Volunteer Militia of National Security (M. V. S. N.) for the anti-aircraft defense of the country. It is composed of youths of premilitary age. Older men, and those not physically fit for field service may also enlist. The "balilla" (fascist boy scouts) are required to train 9000 "avantguardists" for service with the A. A.-defense. Responsibility for the preparation and organization of the defensive plan and in all technical matters rests exclusively with the general staff. Observation posts have already been installed along the entire frontier at intervals of 8-10 kilometers. Each group of five or six posts is served by a special message center. For the time being the ordinary communications net serves these outposts. It is planned, however, to install a special A. A. signal system. As in France, important war industries have been transferred from western Lombardy to less exposed districts south of the Apennines.

The smaller countries of Europe are similarly active

in organizing. Austria and Hungary have particularly well organized A. A.-defense systems.

Poland and Russia, and some of the smaller Baltic countries have left the initiative in this important field of national defense to private endeavor. In Poland the "League for Anti-Aircraft and Anti-Gas Defense" receives the patronage of the government. Its appeal for public support is similar to that of the American Red Cross. Its work is still largely in the stage of propaganda. In Russia, the "Ossoaviachim" performs a similar function as the League in Poland. Subsidized by the Soviet government, "Ossoaviachim" has taken complete charge of the development of the air and chemical weapons as well as the defense against them. Instructional exercises and maneuvers are regularly conducted with the active cooperation of the Red Army, Navy, Red Cross, as well as the railroad system and fire departments. Last March, such a maneuver on quite a pretentious scale was conducted in the vicinity of Leningrad.

—*Militar-Wochenblatt*—November 11, 1931.

"Clausewitz," by Major General von Cochenhausen.

November 16 marked the centenary of the passing of one of Germany's outstanding military thinkers, General von Clausewitz. His great knowledge and studious habits, misunderstood by his contemporaries, made Clausewitz an unpopular figure in the Prussian army. Military men of his day regarded all intellectual endeavor out of the ordinary on the part of an army officer as something wholly superfluous, perhaps even deleterious to the army. They looked upon Clausewitz with contempt, and regarded him as a mere theorist. Frequent rebuffs from his superiors caused Clausewitz to leave the Prussian service. He entered the Russian army to serve in the campaign against Napoleon. His lack of knowledge of the Russian language was a serious handicap and prevented him from making his influence felt in the service of the Czar. In 1815 Clausewitz reentered the Prussian army. Fate was against him. He never was given the opportunity to apply his great knowledge and to display his skill on the field of battle. Although he filled the office of corps chief of staff in two armies, unfortunately for him, his corps were invariably relegated to some unimportant minor rôle. His failure to obtain professional recognition wounded him deeply. Retiring from active service, he devoted himself to his studies with even greater assiduity. During the years of peace following the Napoleonic wars Clausewitz produced his literary masterpiece, "On War." A classic in the field of military literature, it has made Clausewitz's name known to soldiers of every land and clime. His fame will endure as long as a knowledge of the art of war is indispensable to the nations of the world.

GREAT BRITAIN—*The Army Quarterly*—July, 1931.

"Reshuffling the Cards in China," by Brig. Gen. C. D. Bruce.

Reviewing briefly the history of recent civil wars in China, which according to the testimony of the famous Sun Tzu were just as common in the Celestial Kingdom in his own day, some 2000 years ago, as they have been since the dawn of the present century, the author sets forth a number of basic facts which, in his opinion, must be given full consideration in any estimate of the Chinese problem. These are, the immense size of the country, about 3,000,000 square miles; lack of transportation facilities; total railroad trackage about 7000 miles compared with nearly a quarter million miles in the United States of approximately the same territorial extent; the firm and widespread hold of Bolshevism upon the interior of the country; the precarious financial condition of the central government. Although these facts are not the sole obstacles in the way of pacification, they are, in the opinion of many well-informed authorities, well nigh insurmountable.

—*Journal of the Royal United Service Institution*,—May, 1931.

The Royal United Service Institution celebrated the hundredth anniversary of its existence and commemorated that event by issuing the May number of the Journal as a special Centenary number. Representative of all arms and services, the Royal United Service Institution, unique among military organizations, can boast of a record of signal achievements. The centenary number of the Journal is dedicated to a retropect and review of the events of a century in the growth and development of His Britannic Majesty's land, sea and air forces.

ITALY.—*Revista Militare Italiana*—June, 1931.

"Infantry Fire," by Lieutenant Colonel Hugo Sprega.

Analyzing the problem of infantry fire, the author lays down three basic principles for the effective employment of infantry fire: 1, delay in opening of fire as long as possible, closing in upon the enemy by rushes without firing; 2, use of infantry fire only when unable to advance otherwise, and then only within the following ranges: Infantry cannon and heavy M. G. 1000 m. or less; light M. G. within 500 m.; rifle-grenades between 20 and 200 m.; hand grenades between 20 and 40 meters. 3. no firing of any kind beyond actual necessity. Superiority of fire must be attained with a maximum of economy of ammunition. The infantry rifle is only complementary to the automatic weapons. In conjunction with these, the rifle may be used at ranges up to 400 m., otherwise not beyond 200 meters.

The mission of infantry is to take and hold the objective of an attack. The fire of supporting artillery is not altogether adequate. At the critical moment the infantryman must depend upon his own resources to drive home the assault. The author examines the different infantry weapons, and the method of training employed in their use. Some features of the training system he regards as obsolete. He advocates that training in rifle-marksmanship be made the principal object of the pre-military training made obligatory upon all youths by a recent statute. It would leave more time for instruction in the use and operation of other infantry weapons during the period of active military service. This training should conform to modern tactical requirements. The author proposes certain proficiency tests for individuals and units and he believes, that the efficiency of officers can be determined from the effectiveness of the instruction which they impart to their troops in this field.

Events Overseas

By Lieut. Col. Herman Beukema, Professor, U. S. Military Academy

The Basle Report

WITHOUT a restoration of confidence there can be no return to world economic stability; without a prompt readjustment of German reparations, based on a common accord of all the powers effected, there can be no confidence. Such, in sum, are the conclusions of the advisory experts of the Bank for International Settlements, published at Basle December 24. The committee did not limit its investigations to the reparations question, when it announced that the governments involved "will have to take account of many matters which can be solved only in conformity with economic realities." Prominent among these "many matters" is the linking of war debts to reparations, and the discovery that Germany's favorable trade balance in the past eighteen months is seriously menaced by foreign tariffs, exchange control measures, and other restrictions against the free interchange of goods. A plea, in closing, for the elimination of political considerations. In order that the problem may be settled "on its merits" emphasizes the fact that the question has been treated in this instance from the standpoint of economic realism.

The committee declared bluntly that Germany's resumption of conditional payments under the Young Plan at the expiration of the Hoover moratorium in July is impossible. By implication, the same conclusion appears as to the unconditional payments, although the terms of that Plan act as a bar to the committee's consideration of those payments. Moreover, no future date is set for the resumption of full payments.

Foreign analysis and interpretation of the report showed the interested capitals far apart, both as to present conclusions and as to modus operandi for the future. Berlin purported to see the Young Plan "torn up by its roots," while grieving over the absence of any recommendations for the final burial of reparations. But it chose to regard that long-standing objective as appreciably nearer attainment. Paris and London saw primarily the need of prompt action. On the call of Premier MacDonald a conference of interested Powers was called for January 20. The representatives will gather at Lausanne almost two years to a day after the assembly of experts whose deliberations led to the ultimate acceptance of the Young Plan.

The British Empire

United Kingdom. England enters the new year with greater hopes than were justified a twelve-month back. The retrenchment and taxation policies of the Nationalist Cabinet apparently indicate a balanced budget; the protective tariff gives the British producer an excellent opportunity to develop the home market; textile manufacturers are enjoying a greater activity than at any time since 1920; and stabilization of the pound at a depreciated level is at least in prospect. Parliament stands adjourned until February 2.

In his inaugural speech before Commons on November 3, Mr. MacDonald's conception of his duties under his "doctor's mandate" were announced. Briefly, he intends to keep the budget in balance, restore the balance of foreign trade, and resist price and currency inflation. His program includes a readjustment of war-debts and reparations, acceptance of the proposed Dominions economic conference at Ottawa next July, anti-dumping legislation pending passage of a protective tariff, and approval of the Hoover-Laval efforts to promote a Franco-German accord.

In spite of sniping from die-hards, the government has recorded impressive achievements between Parliament's opening and its Christmas recess.

On November sixteenth, Parliament passed an "Abnormal Imports Act" which gives the Board of Trade authority for six months to levy ad valorem import duties up to 100 per cent on manufactured goods from abroad, excluding the Dominions.

Dominions may export to England, duty free, goods of 25 per cent or more empire content. Application began November 25, with 50 per cent duties on imports, bulking annually $220,000,000. America is affected to the extent of about $12,000,000. The Continent suffers more heavily.

This act is skillfully drawn. While accomplishing its primary purpose, it avoids, the counter-vailing provisions of the American tariff, does the least possible injury to Britain's debtors, and maneuvers France into an indefensible position in tariff warfare. The friendly gesture to the Dominions, bolstered by a wheat import quota proposal to give them a 55 per cent monopoly, places Britain in an excellent position for the Ottawa conference.

Continental countries, and France in particular, have voiced no little irritation. At the same time, they have sought to make individual arrangements, but without success. France, Canada, and South Africa have made reprisals, using exchange disparity as an excuse.

Liquidation in substantial amount of the credits extended her by the Federal Reserve system last August has been accomplished in the face of a declining sterling value and a shrinking bank reserve.

Impetus given industry by currency depreciation, and the Chinese boycott of Japanese textiles has resulted in maintaining a steady decrease in unemployment figures at a season when the normal trend is otherwise. The elimination of about 70,000 married women from the benefit roster has diluted the real effect, but has not invalidated it. Textile mill owners, once again approaching full productive basis, retreated precipitately before labor resentment at their endeavor to abolish

the forty-eight hour week. Abandonment of the huge new £6,000,000 Cunarder, however, caused frank dismay. Three thousand men were thrown out of work, and a gallant effort to recapture the mythical "crown of the Atlantic" was nullified.

Junking of the R-100 closes the book on England's major lighter-than-air activities. Increased mobility, closer cooperation between tanks and other troops, and refinement of counter battery in meeting engagements has characterized recent military training.

India. Mr. MacDonald's statesmanship has always been placed in its best light by Indian affairs. Although the conference which adjourned December 1, was a failure, the Prime Minister found no difficulty in placing upon India the responsiility for such affairs, while at the same time having his Indian program acclaimed by an overwhelming vote in a Tory House of Commons.

Gandhi's return to India was the signal for a resumption of the civil disobedience campaign. As a matter of fact, violent disorders had broken out in many sections while he was still some distance at sea. Every element of discord,—Nationalist, Communist, and "Red Shirt"—was involved. But it was left to the eternal enmity existing between Moslem and Hindu to produce the most sanguinary troubles. For once the British Government in India was prepared to counter disorder with stern repression. Gandhi hastily asked for a conference with the viceroy, Lord Willingdon, as to the measures which the government would take. His oft-repeated declaration that "a million Indian lives is not too great a price to pay for liberty" left no further ground for compromise. Gandhi and the Nationalist leaders were clapped into jail, and everywhere, as the new year opened, the population and the government prepared for what threatens to become one of the most serious phases of India's struggle for independence.

R. B. Ransom, *Captain, Infantry.*

Western Europe

League of Nations. With China continuing to lodge protests and Japan steadily advancing its occupation of Manchuria, the League has passed its problem for the time being to a commission of investigation, headed by a British subject, Lord Lytton, and including Major General Frank McCoy (U. S.) All members of the commission have had more or less experience in the Orient. The many difficulties involved preclude the presentation of a report for many weeks. Positive action by the League during the period of investigation is not to be expected, barring unforseen developments between the two principals to the imbroglio.

For the present, then, the League will shift its major attention to a matter of wider international import, the long-heralded Disarmament Conference to be held at Geneva. Anticipated by international gestures of goodwill such as the one-year truce in naval construction, everything possible has been done to blunt the many acute angles facing the diplomats. But the angles remain. Shall the basic formula preface disarmament with security, as France insists, or is there sufficient safety in reversing the order of those elements? And what is to be the yardstick of defense—rifle or dollar? Then again, is a soldier on a reserve status to count as a defense unit, and if so, to what extent? Finally, what weight is to be given to a nation's potential war strength, measured in terms of population, industrial plant, wealth? It will require yet another "honest broker" to find a compromise which will resolve all these angles into a circle of harmony. France has already enunciated a solution in the creation of a super-international police, able and ready to act instantly against any aggressor state. In short, it is once again the League "with teeth," first advanced at the Versailles Peace Conference, and there emphatically rejected.

Organization of the Conference contemplates the naming of five commissions, plus a steering committee. The political issues involved are deemed of sufficient weight to be entrusted to the General Conference Committee, the most important of the commissions. The other four will be concerned with army, navy, aviation, and budgetary matters, respectively.

The League is planning to present to the world a new independent nation early in 1932. Irak, administered under British tutelage for ten years, is now thought to be capable of governing itself. Great Britain has asked to be discharged from its responsibilities under the League's mandate, and the Council's proclamation of independence for the Arab state is expected to follow in logical sequence.

France. The reaction of the French press to the stand taken by the American Congress in setting itself squarely against further reduction of the war debt has been characterized by greater acerbity than has appeared in many months. Several editors seize on the clause in the French accord which gives France the option of declaring at any time a three-year moratorium of her debt. Leon Bailby poses the question,—"If the settlements due next February on German private debts are not satisfactorily arranged, and if on June 1, 1932, Germany does not pick up the reparation payments due to us, have we not the right to notify America that we will declare a moratorium of our inter-allied debts?"

Further evidence that France is feeling more and more the world-wide depression was given in the publication of the trade figures for the first ten months of 1931, showing an import surplus of $413,000,000. That figure is materially higher than for the similar period of 1930. Unemployment totals, though appreciably below those of neighboring states, are mounting at an increasing rate. To meet the situation, Premier Laval has worked out a program for construction of public works, mechanization of agriculture, education, and sundry other purposes. Expenditures will approximate $120,000,000. Such measures do little to allay the resentment of the French electorate against the depression, and the party in power is being made the butt of wide-spread criticism. However, the approach of parliamentary elections works to prevent any effort to overthrow the Laval government.

Contracts have been signed for the construction of

four defensive works on the Italian frontier. They are to be located in the region of Menton, Sospel, in the valley of the Vesubie, and near Lantosque. The total cost will be approximately $2,500,000.

Spain. The President of republican Spain may declare war only in accordance with the rules and decisions of the League of Nations. Thus did the recently adopted Spanish Constitution limit the war-making powers of the President. In addition, armed conflict must be purely defensive, and all disputes which involve danger of war must first be submitted to the League for arbitration. No other nation has voluntarily so limited its war-making power.

Other novel features characterize the new constitution. There is to be one legislative chamber, or Cortes, of 440 members, to be elected by universal suffrage of all citizens over 23. A single term is limited to five years, but the Cortes may be dissolved earlier by the premier. Such action must be followed by the calling of a new election.

The president will serve for a six-year term and is ineligible for re-election. Indicative of the present attitude toward the church is the clause barring the priesthood from eligibility to this high office. The president will be elected by the members of the Cortes and an equal number of electors chosen by the people, a method which combines French and American procedure. His salary and allowances are 1,500,000 pesetas ($125,000 current exchange rates) annually, making him the best paid governmental executive in the world. The parliamentary system will be in effect, with the premier representing the majority party or coalition. He may be voted out of office at any time by the Chamber, a provision which may make his official life short-lived, as no party is likely to have a clean cut majority.

The age-old demand for Catalonian self-government is met by granting Catalonia and the Basque provinces certain autonomous powers within the republic. The government may nationalize property and essential industries if the need arises, a provision directed against vested religious orders. Religious freedom is achieved for the first time in Spanish history by abolishing the status of the Catholic church as a state church.

Niceto Alcala Zamora was elected first president and assumed office on December 11. He called on Manuel Anzana to form a cabinet, and a coalition government was formed which will rely for support on the Socialist, Radical Socialist, Republican, Action, Gallegan and Catalan parties. Opposition parties will include the Conservatives, Progressives, Federalists, Agrarians, and a number of smaller factions.

The first decrees signed by President Zamora after taking office was a tariff declaration under which fourteen classes of imports are affected. The duties on these articles are raised to unsurmountable heights, an action clearly reflective of the world-wide movement toward prohibitive trade barriers. Automobiles and telephone equipment are the American items of export hardest hit.

D. A. FAY, *1st Lieut., Inf.*

Central Europe

Germany. The German temperament is apparently adjusting itself to the nation's chronic disease,—trouble. A Continental cartoonist aptly expresses foreign opinion in picturing Chancellor Bruening and President Hindenburg sitting on the lid of a madly boiling kettle. To Bruening's query as to why the lid does not blow off, Hindenburg replies "Perhaps the kettle isn't boiling after all." However, difficulties are not wanting. The rising Hitler tide, the presidential election scheduled for April, the steady fall in tax receipts, the continued flight of capital, and growing unemployment combine to create doubts as to Germany's future. For the present German interest is focused on the remedies to be considered in the Lausanne conference on international debts.

The National Economic Council composed of leading industrialists, bankers, and representatives of labor, called by President Von Hindenburg to lead Germany out of her economic mire has failed to produce results. Whatever good might have come from it disappeared when representatives of labor deserted the conference, asserting that German labor would not accept any recommendations that the council might make.

Hitler has made a bid for popularity outside of Germany by announcing that, though reparations must be abolished, his party will respect the private debts which Germany owes. Meanwhile, Hitler continues his attack against the present German government. Emergency governmental decrees have deprived him of freedom of the press and radio, and Bruening threatens more drastic action if the belligerent Nazis contemplate the use of force. On November 15 in Hesse, Hitler scored his latest triumph by winning a majority of the seats in the Hessian Diet, thereby displacing a coalition of Socialists, Centrists, and Democrats who have controlled the Diet since 1919.

The latest crop of Bruening decrees are tantamount to economic martial law. In many respects they furnish a parallel to the state socialism of Soviet Russia. Such decrees, voluminous in quantity, cover a multitude of subjects ranging from the fixing of commodity prices and wages to the regulation of physician's fees. That they are accepted at all is due to the realization by the populace that a Hitler or a Communist government would march down the same road, and still further.

Italy. Hard-pressed to make national income balance the outgo, Italy still finds the funds for the development and strengthening of its defenses. The most forward-looking project of recent years, compulsory pre-military training of the nation's youth, involves a program of such courses for 1,200,000 youths in 1932. It will provide a great reservoir of personnel well-grounded in the fundamentals of discipline and simple military exercises, requiring comparatively little further training in the event of an emergency to prepare these boys for combat duty. Of interest, in view of the approaching Disarmament Conference, is the completion in organization of the "Wing of the Aegean Islands," stationed at Lero (Dodekanese). It comprises a sea-plane pursuit squadron, two sea-plane bombard-

ment squadrons, and one sea-plane reconnaissance squadron. Italy's total air-forces are stepped up for 1932 to a total of 22,126, an increase over the previous year of 161 officers and 84 men.

The seventh and last 10,000-ton cruiser authorized in the program, which was formulated after the Washington Disarmament Conference in 1921, is the cruiser Pola, recently launched at Leghorn.

Both the immediate and the more distant objectives of the recent visit of Dino Grandi to Washington remain obscure insofar as any statements are forthcoming from either Rome or Washington. Following hard on the heels of the Local mission's trip to our capital, it set tongues a-wagging on both sides of the Atlantic. Grandi vigorously denied any desire to ask a loan for Italy. In general terms he admitted that international peace and comity were uppermost in his mind. Whatever the mission and its results, Fascism gave its emissary royal welcome on his return to Rome.

Grandi's stand on three matters of international interest helps to clarify Italy's probable position in forthcoming conferences. In brief, as to treaty settlements, he declares that not only the "ideas," but the "interests hitherto predominant are now undergoing revision." Again, he places disarmament as the indispensable prelude to security. Finally, he insists that reparations and war debts are one and inseparable. Italy is thus diametrically opposed to France as to treaties and disarmament. On the question of war debts, she accepts the thesis adopted by France and refused by America.

O. L. Nelson, *1st Lieut., Infantry.*

The Balkans and the Near East

Yugo-Slav elections early in November are said to favor the government and its plan for a unified kingdom. At the same time, voting was light, and the opposition contends that the royal manifesto of September has been utterly ineffective in ending the dictatorship, which (they say) continues under constitutional forms. International significance is seen in the visit of King Alexander to Paris, made ostensibly for a medical consultation. The newspapers suggest that His Majesty seeks money as well as medicine, and that the visit may strengthen the association of France with the Little Entente Powers to maintain the post-bellum settlement.

At the same time, the association of Hungary with the Entente is hinted in a conference of Count Bethlen, former premier, with King Carol of Rumania.

Mr. Grandi's visit to the United States was made the occasion of a protest by Greek Americans against the Italian retention of the Dodecanese Islands, held by Turkey until 1912. Oppressive measures of Italization and the fortification of the islands is charged. Meanwhile, permission for expatriated Greeks to visit their old homes and the return of certain relics may indicate an easing of Greco-Turkish relations.

J. F. Fiske, *2d Lieut., Field Artillery.*

Eastern Europe

Russia. The Russian Bear hibernates. The reversion to instinct apparently promises a winter of relative quiet in the land of Soviets, the first since the Bolshevik revolution. Conditions which permit (or compel) hibernation inevitably raise the question as to what may be expected when the bear emerges. Will it come forth emaciated and weak, or, on the contrary, will its appearance display to the world a Russia better able to cope with the serious and growing difficulties which beset it? Typical of Russia, the signs point to both conclusions.

On the favorable side is a wheat harvest which in quantity, if not quality, falls little short of expectations. In line with Stalin's program for raising the standard of living, an increased proportion of the wheat is to be turned into domestic channels. The same policy will obtain in disposing of all classes of manufactured goods classed as immediate necessities. But we must turn to the diplomatic field to find the reasons for Moscow's greatest satisfaction. Rapprochement, in one form or another, has drawn her more closely to Italy and Germany on the one hand, to France and Poland, on the other. The Nazi press in Germany sees Russia, at no far distant time, holding the balance of power in Europe, and even now smoothing the diplomatic channels to that end.

The gloomy side of the picture is found in the major difficulties which are being met in financing the national industrial program: the lack of skilled workmen, excessive and rapid deterioration of tools and equipment; unfavorably distributed natural resources, coupled with a transportation system which persistently falls far short of meeting requirements.

Dismissing some of the doubts which have been voiced abroad, the Supreme Economic Council has announced the conclusion of the Five-Year Plan by the end of 1932. In that event, the original plan will have been anticipated by nine months. However, some of the doubts will not down. Russian figures indicate that the scheduled program of the past year fell seriously short of its goal in many important lines, notably mining, transportation, and production of steel and iron. Moreover, an adverse trade balance grew steadily worse in recent months. As a result foreign exporters grew so fearful of Moscow's ability to meet her obligations that they discounted their Russian paper by as much as 40 per cent. In brief Russian credit has gone from bad to worse. In the face of such obstacles, Moscow writes across the face of 1932 the inscription "Shturmovoi,—the year of storming over the top."

Of military interest is the attention given to aerial development. Russia now has 1654 military planes of all types, including 580 bombers, 550 observation, 447 pursuit, and 77 attack planes. There are in addition 250 commercial planes, easily convertible into bombers. Fourteen airplane factories are now in existence, boasting a peacetime capacity of 100 planes per month, a figure scheduled to be stepped up to 250 in time of war.

G. M. Badger, *1st Lieut., C. A. C.*

Editor's Note: *This is the last number in which this section will appear. We would like to hear from readers of the* Journal *as to its continuance.*

NATIONAL GUARD NOTES

Major General George Emerson Leach

Chief of the Militia Bureau.

AFTER twenty-six years of National Guard service, George Emerson Leach of Minnesota became Chief of the Militia Bureau on December 1, 1931, with the rank of major general. He succeeds William G. Everson, who resigned to become pastor of the First Baptist Church of Denver, Colorado. The Militia Bureau is the clearing house of the National Guard, administering the affairs of some 190,000 members of this great component of the Army, and allocating the expenditure of some $32,000,000 of federal funds annually.

General Leach was born at Cedar Rapids, Iowa, on July 14, 1876. He was educated in the public and high schools of Minneapolis, and also attended the University

Maj. Gen. George E. Leach.

of Minnesota. He served two terms as Mayor of Minneapolis, 1921-29. His military history follows:

2nd Lieutenant, First Minnesota Field Artillery, April 15, 1905; 1st Lieutenant, June 2, 1905; Captain, January 10, 1908; Major, May 10, 1913; reported for Mexican Border duty with the First Minnesota Field Artillery, June 30, 1916; promoted to Colonel, First Minnesota Field Artillery on August 17, 1916; mustered out of Mexican Border duty February 28, 1917; reported for World War duty June 24, 1917; drafted into the United States Army August 5, 1917 and commanded the 151st Field Artillery; honorably discharged, July 14, 1919; reappointed Colonel, First Field Artillery, Minnesota National Guard and federally recognized as such under the provisions of the National Defense Act effective November 18, 1919. The First Field Artillery regiment was redesignated the 151st Field Artillery, Minnesota National Guard, effective November 21, 1921; promoted and federally recognized as Brigadier General of the Line, 59th Field Artillery Brigade, Minnesota National Guard, effective July 28, 1924; appointed Colonel, Field Artillery Reserve April 9, 1921, and accepted April 27, 1921; appointed Brigadier General, Officers' Reserve Corps, effective December 24, 1924, which appointment was accepted February 13, 1925.

General Leach holds the Distinguished Service Cross, the Distinguished Service Medal, the French Croix de Guerre, the French Legion of Honor, and the State of Minnesota Military Medal "for exceptionally meritorious and distinguished service." He served throughout the World War with the famous Rainbow Division, in which organization he commanded the 151st Field Artillery.

National Guard Association Convention

MORE than 300 delegates representing some 41 of the States assembled at New Orleans on December 2nd for the annual convention of the National Guard Association, which proved to be the largest and most harmonious gathering ever experienced in the history of the organization.

Brigadier General Dudley J. Hard, Ohio National Guard, presided and Colonel Fred M. Waterbury, New York National Guard, was Secretary.

In his opening address General Hard reviewed the progress of the National Guard through the year and the part that the Association had played in it. He paid high compliment to the Militia Bureau, and particularly stressed the healthy spirit of cooperation which exists in the Bureau at all times. He also testified to the service of the body of loyal and hard working officers and enlisted men of the Regular Army on duty with the National Guard in the States.

Among the other convention speakers were Major General Frank R. McCoy, commanding the Fourth Corps Area; Colonel L. Kemper Williams, President of the Reserve Officers' Association; Brigadier General Andrew Moses, Assistant Chief of Staff G-1, who represented the War Department at the convention; Col-

onel Edgar A. Myer, who is in charge of the Mobilization Branch of the War Department General Staff; Colonel D. Wray DePrez, Indiana National Guard, who outlined the action taken by the National Guard organization committee; Brigadier General Jacob F. Wolters, Texas National Guard, who read a most interesting and instructive paper on the subject of the application of martial law, with which he has had much practical experience in the past year; and Colonel W. H. Waldron, Executive Officer of the Militia Bureau, who outlined the background for many of the important actions and decisions the Bureau has been called upon to make in the past year; the camp construction program involving the expenditure of the million dollar fund provided by Congress to relieve the unemployment situation, the increase in the National Guard which failed of accomplishment due to lack of funds, the reduction of the field training camp ration due to a reduction in the price of foodstuff, the state of the Militia Bureau budget for 1933 and other administrative measures of interest to the whole National Guard. Colonel Waldron complimented the National Guard authorities out in the States for their fine spirit of cooperation and thanked them for the loyal support which they have so universally extended to the Militia Bureau.

The pre-convention highlight was the induction of Major General George E. Leach of Minnesota as the new Chief of the Militia Bureau. He was sworn in by General Ellard A. Walsh, Adjutant General of Minnesota with appropriate ceremony in the Gold room of the Roosevelt Hotel at New Orleans.

The Resolutions Committee brought in 16 resolutions which were adopted on the floor of the convention. One of the outstanding of these recognized the constructive service of General MacArthur in behalf of the National Guard. Its terms are as follows:

Be it resolved that the National Guard Association in Convention assembled at New Orleans, Louisiana, this fourth day of December, 1931, is not unmindful of the splendid service being rendered by General MacArthur, Chief of Staff of the Army, and desires in this formal manner to acknowledge that service, and to make this expression of hearty appreciation of his efforts in behalf of the National Guard, and to assure the Chief of Staff that he will have the loyal support and cooperation of the National Guard in every effort he may make which has for its objective the maintenance of proper National Defense.

Other resolutions covered a wide range of subjects, chief among which was a call upon Congress to provide adequately for the field training and armory drill training of the National Guard to the end that those members who report for it may have a full fifteen days training at camp and 48 armory drill periods through the year.

Brigadier General Robert J. Travis, Georgia National Guard, was elected president of the Association for the ensuing year and Colonel Fred M. Waterbury was reelected as Secretary. The other officers elected were:

Major General Milton J. Forman, of Chicago, Ill., Honorary President; Brigadier General Claud G. Birkhead of Texas, Vice-President; Lieutenant Colonel Fred M. Waterbury, of New York, Secretary; Brigadier General Milton R. McLean, of Kansas, Treasurer.

The Executive Council, one member from each Corps Area, was elected as follows:

First Corps Area: Brigadier General Herbert T. Johnson, of Vermont; Second Corps Area: Colonel John M. Rogers, of New Jersey; Third Corps Area: Major General William G. Price, Jr., of Pennsylvania; Fourth Corps Area: Brigadier General Raymond H. Fleming, of Louisiana; Fifth Corps Area: Brigadier General C. C. Pierce, of West Virginia; Sixth Corps Area: Major General Guy M. Wilson, of Michigan; Seventh Corps Area: Brigadier General G. Angus Fraser, of North Dakota; Eighth Corps Area: Colonel Norman L. King, of New Mexico; Ninth Corps Area: Brigadier General M. G. McConnell, of Idaho.

It was decided that the 1932 convention is to be held in the Norfolk, Virginia, area. The exact place is to be decided upon by the executive council after conference with the National Guard authorities of the State of Virginia.

Immunization

OFFICERS and enlisted men of the National Guard must take the typhoid prophylaxis and be vaccinated against smallpox if they expect to enjoy the benefits of hospitalization or treatment at government expense, when suffering from these diseases contracted during the training camp period. This is the substance of a ruling made by the Comptroller General in his consideration of a case involving this matter.

A member of a National Guard unit contracted typhoid fever at a training camp and died as the result of the disease. The evidence was conclusive that he had not taken the typhoid prophylaxis, or at least it could not be shown that he had taken it. A bill for the funeral allowances was presented for settlement and it was disapproved. The expenses had to be paid from funds other than Federal and the review of the case brought forth the decision noted here.

Every unit commander should make it his personal business to see that every man of his company is protected from typhoid fever and smallpox and that such immunization is made of official record. There is a plenty of these diseases floating around. The reason that the National Guardsman rarely acquires them is that he is protected. When he does it is due, in more than 99 per cent of the cases to the fact that he has not taken the prophylaxis or has not been vaccinated.

Best Soldier Contest

THE Wisconsin *National Guard Review* has instituted a "Best Soldier" contest in the National Guard of the Badger state. They are inviting the members of units to vote on the subject, determine just who their outstanding member is and send the record and his picture to the *Review*.

As a guide to determining the Best Soldier the *Review* has set forth the qualities that should be considered in making the selection, as follows:

1. *Discipline.* This comes first, for without it any organization is a failure. The soldier must be willing to submit to discipline before he can discipline others.

2. *Soldierly appearance.* A soldier natty and careful relative to his appearance brings credit to himself and reflects it on his organization.

3. *Regular attendance.* Training is progressive, and when a man misses a drill his organization is that much weaker. A chain is no stronger than its weakest link.

4. *Marksmanship.* Ability to maneuver troops successfully to the front line is of little avail if they then fall down in hitting the mark. The soldier who can shoot accurately aids in obtaining fire superiority and also has more confidence in himself. Knowledge that he can get the other fellow before he gets him is a big asset "up there."

5. *General value to his organization.* Under this comes the soldier's continual habit of boosting his organization, not knocking, of being an aid to his fellow soldiers, supporting athletics and other company activities, whether he participates or not.

The *Review* contemplates publishing the list of Best Soldiers in the Wisconsin National Guard and where their pictures are available they will be included in the magazine.

Receiving Recruits

MANY organizations of the National Guard make an impressive ceremony of the occasions when recruits are inducted into units. At those times company commanders are faced with the problem of assembling and arranging material for short talks to the newly acquired members of the company, and some of them find this to be no small task.

With a view to placing the salient points for such a talk in the hands of company commanders, there are presented here some thoughts that may be used as a basis and modified to meet local conditions.

"You have enlisted for a term of service in the National Guard and are now a member of Company ——. Although you are young, you are a man in the eyes of your company commander and you will be considered and treated as such. As a member of this company you must shoulder a man's responsibilities, as well as those of a soldier in the Army of the United States.

"Let me point out to you some of these responsibilities. Here they are:

"The first is as to your personal appearance as a soldier. Your uniform makes you conspicuous wherever you may be, so when you appear in it you must be beyond criticism. Your uniform should be neatly pressed and free from spots. Your buttons and other brass ornaments must be bright, for there is no one thing that so sets off a military uniform. Your hair should be trimmed and you should be closely shaved. Your belt should be worn well up on the body and adjusted tightly enough to hold it there, and especially to prevent it from sagging on the left side. Carry yourself as a soldier—intelligently and alertly.

"The next point is your loyalty to your outfit. A soldier without loyalty is like an automobile without a motor. He will get nowhere. Loyalty is on the wane if the soldier allows remarks against the welfare of his organization to go uncontested. It is almost dead if he puts up a clever alibi in order to avoid his armory drill periods, an obligation that he has voluntarily taken upon himself.

"Everything possible is being done to make our armory drill periods interesting to you, to the end that they will be a profitable expenditure of your time and efforts. In order for you to get the best out of them you must be alive, alert, and interested. By so doing you make the drills a recreational period rather than a bore; the time passes quickly and there is no watching of the clock to see when the hour and a half will be up—and heaving a sigh of relief when the time to stop rolls around. These training periods, then, depend upon you. You will get out of them exactly what you put into them, no more and no less.

"In these days of high-pressure, the men who are not moving forward are moving backward. There is no such thing as standing still. If you want to be a non-commissioned officer in this outfit you will have to move forward, and right now is the time to begin. There are officers' insignia in the pockets of every one of you. It is for you to dig them out and have them placed on your shoulders. You can build your military careers on the solid rock foundation of success and go just as far as you will. The colonel of our regiment, and practically all of the officers, started at the same scratch at which you stand tonight. The course is open, you can make the race whatever you choose.

"We welcome you as members of Company———. We promise that we shall do our share to make your service with the company interesting and profitable to you. On your part we ask that you remember at all times that you are one of the custodians of the honor and spirit of this company. Give to it your loyalty and the best that you have in you. We will all profit by the experience.

Field Training Camps

PLANS have been made for the field training of the Coast Artillery organizations of the National Guard next summer, in accordance with the recommendations of the Adjutant Generals' of the states to which they are allocated.

While the arrangements must be regarded as tentative, they have been carefully worked out as to dates and these will prevail in most cases. The outfits will train at 19 separate stations, at camps beginning in June and extending through the summer into the later part of August. The details appear below.

Fort Williams, Maine—The 240th Coast Artillery, Maine National Guard, July 2 to 16.

Fort H. G. Wright, New York—The 245th Coast Artillery, New York National Guard, from July 2 to 16. The 243rd Coast Artillery Rhode Island National Guard, from July 16 to 30. The 241st Coast Artillery, Massachusetts National Guard from July 30 to August 13.

Fort Terry, New York—The 242nd, Coast Artillery,

Connecticut National Guard from July 31 to August 14

South Sandwich, Massachusetts—The 211th Coast Artillery, Antiaircraft Massachusetts National Guard, from July 16 to 30

Rye Beach, New Hampshire—The 197th Coast Artillery Antiaircraft, New Hampshire National Guard, from August 6 to 20

Fort Ontario, New York—The 212th Coast Artillery, Antiaircraft, New York National Guard, from June 26 to July 10 Headquarters and Headquarters Detachment, Coast Artillery Brigade and the 244th Coast Artillery, New York National Guard, July 24 to August 7.

Bethany Beach, Delaware—The 198th Coast Artillery, Antiaircraft, Delaware National Guard, July 30 to August 13.

Fort Hancock, New Jersey—Battery A, 261st Coast Artillery, Delaware National Guard, June 11 to 25.

Fort Monroe, Virginia—The 246th Coast Artillery, Virginia National Guard, from August 14 to 28.

Fort Story, Virginia—The 213th Coast Artillery, Antiaircraft, Pennsylvania National Guard, from August 7 to 21. The 260th Coast Artillery, Antiaircraft, District of Columbia National Guard, August 21 to September 4.

Fort Barrancas, Florida—The 203rd Coast Artillery Antiaircraft, Missouri National Guard, from July 17 to 31. The 206th Coast Artillery Antiaircraft, Arkansas National Guard, from August 14 to 30. This is tentative. Owing to lack of funds, it may be necessary for this regiment to train at Camp Pike.

Fort Moultrie, South Carolina—The 252nd Coast Artillery, North Carolina National Guard, from July 31 to August 14. The 264th Coast Artillery, Georgia National Guard, dates not yet determined. The 263rd Coast Artillery, South Carolina National Guard, from July 17 to 31.

Key West Barracks, Florida—The 265th Coast Artillery, Florida National Guard, August 7 to 21.

The time and place for the training of the 202nd Coast Artillery, Antiaircraft, Illinois National Guard has not yet been definitely determined. Several locations are under consideration, among these are Fort Barrancas, Florida, Camp Grayling, Michigan and Fort Ontario, New York.

Fort Worden, Washington—The 248th Coast Artillery, Washington National Guard, from June 11 to 25.

Camp McQuaide, California—The 250th Coast Artillery, California National Guard, from July 9 to 23.

Fort McArthur, California—The 251st Coast Artillery, California National Guard, August 6 to 20.

Fort Stevens, Oregon—The 249th Coast Artillery, Oregon National Guard, from June 14 to 28.

Training programs and schedules are in course of preparation for all of these camps and the highest attendance in the history of the National Guard is being planned for.

National Guard Organizations Rated "Excellent"

THE following batteries of Coast Artillery National Guard were rated "excellent" by the Chief of the Militia Bureau for the year 1931. The list shows a considerable change from that published last year. Standing is not altogether dependent upon target practice performance but this is a weighty factor in the rating system.

The Journal desires to congratulate Colonel E. C. Robertson and his regiment, the 200th Coast Artillery (AA) (Ark. N. G.), for its unchallenged position at the top. Colonel Robertson is a firm believer in making field training a period of intensive effort. This regiment devoted only four days of its training period to actual drill and target practice. A considerable part of the period was devoted to road marches and convoy work. Colonel Robertson does not favor the alternating system of training for National Guard. By alternating system is meant target practice one year and divisional training the next. He also favors associate training with units of the regular army.

Those regiments which did not obtain a high standing may find a little comfort and consolation in the last sentence of the preceding paragraph. The 69th C. A. (AA) was present at Fort Barrancas when the 206th fired and loaned the 206th its equipment. The 69th has the very latest guns and instruments which are much more accurate than the older equipment. On the other hand Colonel Robertson may come right back and say that the 206th was unfamiliar with the new equipment and that this disadvantage offset the advantage of its greater accuracy, so what have you. At any rate the JOURNAL salutes Colonel Robertson and the 206th for its fine record.

And it also wishes to salute Colonel C. L. D. Wells and the 243rd Coast Artillery (HD) (R.I.N.G.) standing just behind Colonel Robertson in second place. Isn't it second place? Well we'll call it second place until some of the percentage experts convince us otherwise. Here's the list. Figure it out for yourselves.

Btries C, D, E, F, G, and H, 206th C. A. (AA) (Ark. N. G.)
Btries A and E, 250th C. A. (TD) (Calif. N. G.)
Btry B, 251st C. A. (AA) (Calif. N. G.)
Btries A and E, 242nd C. A. (HD) (Conn. N. G.)
Btry A, 264th C. A. (HD) (Ga. N. G.)
Btries A and B, 211th C. A. (AA) (Mass. N. G.)
Btry M, 241st C. A. (HD) (Mass. N. G.)
Btries C, E and F, 203d C. A. (AA) (Mo. N. G.)
Btry F, 197th C. A. (AA) (N. H. N. G.)
Btries B, C and H, 212th C. A. (AA) (N. Y. N. G.)
Btries A and C, 244th C. A. (TD) (N. Y. N. G.)
Btries E and G, 245th C. A. (HD) (N. Y. N. G.)
Btry D, 249th C. A. (HD) (Ore. N. G.)
Btries B, C, D, and F, 243d C. A. (HD) (R. I. N. G.)
Btry A, 263d C. A. (HD) (S. C. N. G.)
Btry G, 246th C. A. (HD), (Va. N. G.)
Btry K, 248th C. A. (HD), (Wash. N. G.)

COAST ARTILLERY BOARD NOTES

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

Projects Completed During November-December, 1931

No. 681. Test of Fast Towing Target (Navy Design).—A target capable of being towed at a speed of twenty-five knots was tested and proved satisfactory. The Coast Artillery Board has had this project under consideration a long time. Numerous designs had been tested before the present model was used. This target was used during the firings held at Fort Story during the latter part of 1931. It was towed by the destroyer USS TARBELL for practices by the 3-inch Antiaircraft and 155-mm. G. P. F. guns at speeds of 15, 18, 20 and 25 knots. The target functioned satisfactorily. It is of very rugged construction. It is a very heavy target, so that is difficult to draw it upon shore. This, however, can be accomplished. Detailed drawings and list of materials used in construction of the target were furnished so that this target can be constructed locally in the various harbor defenses. It was recommended that this target be adopted as standard for use in all practices against water targets.

No. 853. Tangential Observation of Antiaircraft Machine Gun Tracers (Pape).—Recommended this method of observation be not tested by the Board.

No. 860. Test of Air Corps Machine Gun Pedestal Mount, Type A-3.—An Air Corps Machine Gun Pedestal Mount, Type A-3, was tested to determine whether or not it would be desirable to use this mounting or a similar one in trucks. The mount is designed for one .30 caliber machine gun. This mount possesses refinements that are unnecessary for the Coast Artillery. The Coast Artillery Board is of the opinion that, for the time being, the pedestal mounts now used with the machine guns of the mechanized forces should be continued in use and that effort be made to make the Tripod Mount M-1 more suitable for mounting on trucks.

No. 864. Organization and Functions of Fort Signal Stations.—The Coast Artillery Board made a study of the organization and functions of Fort Signal Stations and found that at present there are no two of these stations in the various harbor defenses that are exactly alike. In some harbor defenses such stations exist in name only; whereas, in others, they operate all the post signal activities, including radio and are also an adjunct of the Weather Bureau. In an attempt to prescribe what should be the proper functions of such stations the Coast Artillery Board decided that the radio station of the post should not be a part of the post signal stations. It is believed, however, that the post signal station should contain a small radio capable of communicating with commercial boats, small craft and towing vessels. Also, the post signal station should include the post meteorological station and tide station, although the latter activities need not be in the same building as the post signal station. These three activities should, however, be under the control of the Harbor Defense Artillery Engineer, as otherwise experience has shown that they are not properly supervised. In conformity, then, with the above the Coast Artillery Board believes that the proper functions of the fort signal stations should be the identification of all naval or commercial vessels entering or leaving the harbor. It should communicate with all such vessels as required. It should obtain and supply to all Coast Artillery troops meteorological and tide data needed for firing. During target practice it should handle communications with the towing vessel and during target practice, or in time of war, it should handle communications by radio and panel with planes observing for seacoast batteries.

Projects Under Consideration

No. 608. "Duco" Surfacing for Guns.—Under study.

No. 727. Standard Single Conductor Mine System.—A continuing project.

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

No. 814. Illuminating Device for 12-inch Barbette Carriage Model 1917.—Test at Fort Hancock completed. Awaiting report on results of test.

No. 815. Comments on Target Practice Reports, Fiscal Year 1931.—Comments submitted as reports are received.

No. 817. Time Interval Apparatus for Mobile Artillery (Wallace & Tiernon).—Preliminary report has been submitted. Project held open for further study and test.

No. 820. Confidential.

No. 827. Temperature Tests of Height Finders.—Test completed. Awaiting receipt of data from Aberdeen.

No. 829. Instruments for Training of Stereoscopic Observers.—Report (Proj. #829-A) submitted on test

of Interpupillary Distance Gage and Acuity Tester T1, in which the Board recommended that neither of these instruments be standardized and that no further purchases of these instruments be made. Project held open for test of Stereoscopic Trainer.

No. 863. Test of Army Hoisting Vessel, H-1.—Under test.

No. 865. Test of Buzzers, Type TG-5-T1.—Under test.

No. 866. Test of Field Service Folding Tables.—Under test.

No. 867. Test of Charging Slides for Browning Machine Gun, Caliber .50.—Under test.

No. 871. Azimuth Pointer for 12-inch B. C. M1917.—Test at Fort Hancock completed. Awaiting report on results of test.

No. 872. Service Test of Seacoast Data Transmission System T-7.—Test at Fort Hancock completed. Awaiting report on results of test.

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

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

No. 875. Automatic Sponging of Seacoast Cannon with Liquid Carbon Dioxide.—Under Study.

No. 877. Test of Electric Primer Testing Set.—Under test.

No. 878. Test of Telephone Set, Type EE-82, for use with Tractor Drawn Artillery.—Under test.

No. 879. Fire Control System for 155-mm. Guns.—Under study.

No. 880. Machine Gun Data Computor (Hohenthal.)—Under study.

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

No. 882. Service Test of Anti-Submarine Device.—Under test.

No. 883. Test of Continuous Fuze Setter T7.—Under test.

Errata

Our attention has been called to several errors (at least) in the November-December number of the JOURNAL.

The first pertains to the statement made in the editor's note on the title-page of the article, "The Lewis Universal Impact and Trial Shot Chart for Antiaircraft Artillery." It was an error to say that this method has been approved by the Chief of Coast Artillery. It has been approved by the Chief of Coast Artillery *for test by the Coast Artillery School.* It is anticipated that the method will be approved substantially as described in the article appearing in the JOURNAL. The charts are not available as this is written. Further information will be published concerning their distribution when received.

The second error was in the article on page 540 giving the allotment of Coast Artillery students for the War College as *seven.* This was changed after the JOURNAL went to press and should be *six.* However *seven* Coast Artillery officers were detailed for the 1932-33 course.

PROFESSIONAL NOTES

The Overlay Problem in Hawaiian Maneuvers

By Captain E. T. Conway, C. A. C.

THE Hawaiian Separate Coast Artillery Brigade participated in the Fall Maneuvers together with the Hawaiian Divsion, the Air Wing and the 14th Naval District Forces from October 26 to November 7. November 4, 5 and 6 were devoted to combined exercises. October 31, November 2 and 3 were devoted to Department Communication Problems, using overlays suggested by Colonel A. H. Sunderland, G. S. C., Chief of Staff of the Hawaiian Division (at that time Acting Chief of Staff of the Hawaiian Department). October 28, 29 and 30 were under the supervision of the Brigade Commander, Brig. Gen. William E. Cole.

During the latter period the seacoast personnel tried the overlay problem.

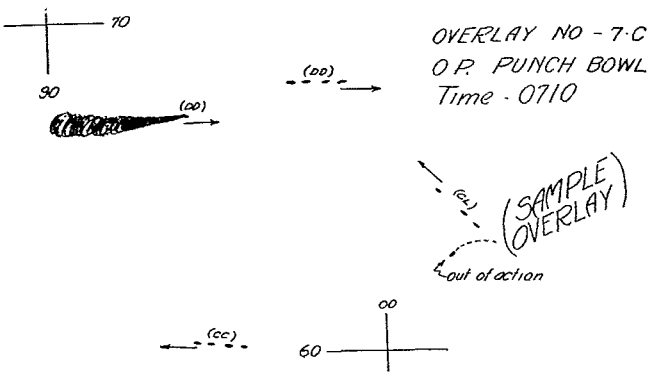
It is believed to be the first time that coast artillery problems have been presented in this manner. Although entailing considerable work at the outset, it is possible to work out innumerable situations, giving a picture of a complete naval maneuver, smoke screens, high speed cruisers, transports, beetle boats and so forth.

Time and space factors were considered in laying out the problem, thereafter a complete picture is taken via overlay, at stated intervals of time, ten or twenty minutes apart. These overlays or such parts of them as would be visable at that time were numbered and sent to all observation stations so sited that they would be able to see the action pictured.

In order to use these overlays, observers must be equipped with that portion of the topographic grid map which is visible from the station concerned. Each observer plots his own position on his chart with an azimuth circle marked in the same terms as his regular observing instrument at that point. At stations equipped with only an azimuth instrument, the observer estimates the range, using the grid squares. Stations equipped with a D. P. F should have a range scale pivoted at the position of the station for reading the range. Orientation of the overlays is indicated by grid intersections marked thereon, which will be placed over the corresponding intersections on the map. The intersections shown on the overlays are numbered in even thousands of yards.

The overlays are placed in envelopes marked for the time of opening. At the proper time, which may be any fixed number of hours earlier or later than actual time as desired to take advantage of daylight hours to work out phases attempted normally during hours of darkness, the observer opens the envelope and pins the overlays on a prepared chart, covering his field of fire. He telephones the data observed on the overlay to his battery commander, who starts it on its way through channels.

The overlay problem imposes adnormal conditions, such as the use of a chart at the O. P. and the use of all base-end stations as intelligence stations. There is no chance to tract a target on the plotting board, but



the outstanding advantage of this type of problem is the opportunity presented of keeping all hands occupied and of giving everyone a picture of the situation. In addition, it gives excellent training to operations and intelligence personnel in handling high speed targets and in following through on rapidly changing situations. A sample overlay situation is shown by the sketch.

Chitter Chatter

WE were sitting in the Club (the Colonel and we) along in the late afternoon. The Club is a restful place these days. It's a fine place to go when a little quiet is needed, when you feel like looking over the photographs of the old boys who once stalked through these rooms. Great old boys they were. It was generally worth while to listen to them. When they used to enter the Club second lieutenants arose and took seats (if there were any) back near the wall. They seemed just to merge with the pictures on the walls and thereafter participated in the conversation with about the same frequency. The Club is quieter these days. About this time in the afternoon the pack is in full hue and cry (if we recall our hunting) down at the Chamberlin. Now and then you can catch some old timer in the Club reading room, fumbling around over the magazines and making out that he is going to do some serious reading.

We happened to glance at the Colonel and caught him with a reminiscent and quizzical twinkle in his eye. We knew he didn't want to read. Even the Oozlefinch in his glass cage cocked a protruding eye at the Colonel, wondering what was coming.

But the Colonel is not always a self starter. When

he is in this mood it is well to lead off with some almost intelligent question. It's not hard to do. Even the dumbest egg hears people talking about things and can appear to be almost a professional artilleryman if he retains even a smattering of it, so we said:

"Colonel, what do you think about this painted bullet business for machine gun firing at towed sleeve targets? The Air Corps lads are pretty good about towing our targets but it gets their goat to have to drop the target for each course and pick up a new one. If we had painted bullets, so I'm told, we could fire at the same target for three or four courses and still be able to identify the hits on each course. I've heard that a New York National Guard outfit (the 212th, I think) tried this out and it worked pretty well. They used just plain lithographer's ink, in colors, mixed with linseed oil. They poured this mixture into troughs to a very shallow depth and then dipped the points of the bullets in it."

"Well," the colonel said, "it sounds like a promising idea and I agree that we ought to do everything we can to lessen the burden on the Air Corps. But I can think of a number of objections to it—the principal one being that it was not invented by the Ordnance and they will be sure to set up a howl. And they are right about it. They have all the facilities to test out these matters and conduct research by experts along technical lines. For all we know lithographer's ink may be the wrong stuff. Maybe it should be kalsomine. How do *we* know? Lithographer's ink sounds like messy stuff to me. The men must be a sight when they get through with a practice. And, anyway, I've never heard of any lithographer's ink in the table of allowance of target practice material and to get it in the Ordnance would have to approve it. What does this stuff do to the bores and mechanism."

"Well I didn't see the firing but some one said the ink improved the bores. With the linseed mixed with it the bullets slipped right through like grease through a goose."

"Oh, yeah? (The Colonel slips into the modern patois now and then. It is a little startling). Maybe so but I'd rather have it passed on by some one whose job it is to calculate erosion effects, etc. If the Ordnance approves and the troops like their painted bullets there is no reason I can see why they shouldn't have them."

This wasn't getting any where. The Colonel agreed too easily. So I said, "What about this here now newfangled Jackson camera for taking pictures of splashes? Don't you think this stuff is too expensive? We are getting money for material out of Congress just about as fast as you can get liquor out of a household still and heaven knows when we'll get enough to supply every harbor defense with these cameras."

"Well you certainly can't analyze a practice and get anything out of it unless your equipment is accurate. The new cameras *are* accurate. Furthermore they enable the deviation observers to identify each shot of a salvo. These 155 battery lads have been getting away with murder but you can't blame them. Its all down in the book and no one can think of any way to get around it."

"Pardon me, Colonel. Get around what?"

"Do you mean to tell me you don't know how deviations are determined when a four-gun salvo is fired by a 155 battery? They match the longest range deviation with the greatest deflection deviation and that fixes the splash. You can see that when they get down to the smallest deviations they are pretty sure to be hits. It isn't fair to single shot batteries but there seems to be nothing to be done about it. You can't make the tractor artillery fire single shots. It ain't natural for G. P. F.'s. But I guess we'll have to wait awhile before requiring the use of the Jackson Camera. To make a fair comparison of batteries we would have to use the same methods throughout. However there is no reason why the Jackson Cameras shouldn't be used at harbor defenses where they are available, just for the satisfaction of the battery commanders if nothing else."

This comparison talk reminded us of another subject which is always good for an argument so we said "What do you think of all this analysis and scoring any way? It seems to me they are runing it in the ground. It's gotten so that they take off two points if the battery commander's shoe lace is untied. Certainly they ought to make it a little simpler for the National Guard. These poor devils have only two weeks for a year's work and if they get a bad break and rotten weather like they did up at Fort Wright last summer all their field training amounts to is fidoodling around with a bunch of forms. Is this any occupation for a field soldier? You might just as well be in the Quartermaster Corps. You remember last summer a battle practice was scheduled up in Long Island Sound. Well, they didn't have it. They had some bum weather and when that cleared up they fired their battery practices and when they were finished they didn't have time to fire the battle practice because they had to prepare all the doggoned analysis. It's kinda hard on these lads. The Chief was up there and saw what happened and I'm prety sure he thinks this analysis business ought to be cut down, especially for the National Guard."

We ran down about this time so the Colonel said, "Hold on, young feller. You're makin a lot of statements I've heard before and I want to take a few exceptions while I can remember all the things you've mentioned. Any way you're just leading me on to make a lot of statements about the score which you'll probably publish in your bum magazine. I want you to understand this is not for publication and under that condition I don't mind making a few remarks.

"In this matter of a score for target practice you can argue until you are blue in the face and you won't get anywhere. I've been arguing about it for thirty years. Twenty years ago when I was a boy it was going hot and heavy. And you can't make me believe the Chief said we ought to cut out any essentials in target practice analysis or score. Didn't he say, rather, that the labor connected with it ought to be reduced? I'm sure he did.

"Now I'll give you my idea of a simple score. Construct, to any convenient scale, a rectangle the length of which is two range probable errors and the width two deflection probable errors. You can get the probable errors from the table in the training regulation. Let the center of the rectangle represent the target. Around this retangle construct three other rectangles whos lengths are 4, 6, and 8 range probable errors, respectively, and whose widths are 4, 6, and 8 deflection probable errors, respectively. The result will be sort of a rectangular bullseye effect similar to the target used for the rifle and that't just what it is. Plot the impacts, to the same scale ust as you do now. Then score the shots, depending on location, with some system such as 5 for the inner rectangle (bulleye), 4 for the next outside zone, 3 for the next, and 2 for the last. The score can then be computed like this:

$$\text{Score (per cent)} = \frac{20 \times \text{total hit score}}{\text{No. of shots fired}}$$

"Even *you* can see that a 'possible' is 100. I don't claim any originality for this idea. It's been proposed for years. If you don't like the weights assigned for each zone make them something else. You might say its all wrong to have a rectangular bullseye. It should be an ellipse. That's all right. Make it an ellispe. It will be a little more difficult to draw and it doesn't change the principle. It should take about five minutes for a battery comander to make this plot and I don't know how it can be made any simpler unless we just do away with any plot of impacts at all. When that day arrives we might just as well get a truck to haul the jrojectiles down to the dock and dump them overboard. With this plot I don't see what other graphical or tabular analysis you would need."

"But, Colonel, is that all the score you would have? How about 'time' and other components that now affect the score? You are not proposing to permit battery comamnders to take a week to fire one practice are you?"

"I am coming to that if you will give me a chance. The "C" component and the supporting documents should be kept in about their present form. The "K" factor would change from time to time. I think the present "K" factors are fairly reasonable.

"The score would be in two parts. The hit factor would yield, at the maximum, 100 per cent and you could throw in a time factor of, say, 20.

"This kind of score would be fair, too. The range probable error could be determined by examining the firing records of the battery over a period of three years. I don't think the probable errors for direction could be determined so well in this way. It might result in very narrow deflection zones but, if you wanted to, you could increase the dimensions of the rectangles laterally.

"One of the strongest points for a score like this is that the 'jugglers' would be out of luck. There is nothing that can be tampered with, assuming that the observers are honest and that can be assumed with certainty. You can juggle the present score. By manipulating personnel errors slightly, the "B" component can be boosted considerably. What do you think of it?"

"You flatter me, Colonel, with your confidnce in my intelligence, but it seems to me that this kind of target removes entirely the idea of shooting at a particular type of ship. You know we consider the capital ship as the natural target of a 14-inch gun, while a destroyer would be more of the type that is meat for a G. P. F. Your score doesn't take this into account."

"No it doesn't. But the idea of firing at a particular kind of ship is—well, it's just an idea. All that the men at the battery see is the same old pyramidal target. It doesn't look like a battleship to them. I believe that hits scored on a rectangle constructed as I have prescribed are just as good as a representation of the accuracy of a battery as our new fangled bow-on and broadside targets.

"If this score has any disadvantage it is the fact that in using it you lose the benefits of the present analysis. Why do we fire target practices any way?"

"Well, Colonel, it seems to me that the way things are going now we fire them to find out how many mistakes we made and how much can be hung on the battery commander not to mention Private Petrovich."

"That is a facetious view of it. We want to discover our errors so that we can do better next time. We can't discover our errors without some machinery to do it and that's where the analysis comes in. Shades of Onagarchus! What is the world coming to? Don't we have to find out what the DAPE is? It is a measure of what the gun can do in battle and when we find it if it happens to be adulterated with a few undiscovered personnel errors that is too bad but if we didn't have the DAPE we'd be working in the dark and never know what to expect. We could just go along blithely firing away and blaming the DAPE everytime a shot missed the target and hit the tug. No we should analyze and discover exactly what part of the deviation is due to armament and how much is due to an arm setter with the jitters.

"While the failure to determine the DAPE is a serious objection to the simple score which I have brought out and dusted off again I can suggest a partial remedy. We need more calibration firings. We could adopt the simplified score and periodicallyfire calibration shots to provide the data for obtaining the DAPE. Probably have to use target practice ammunition to do it. I don't know any other place to get it. It wouldn't be necessary to do this so often. Maybe every fourth year would be sufficient. The DAPE thus obtained, being based on a number of rounds deliberately fired, would probably be a better index of the accuracy of the gun than the one obtained incidental to a target practice.

"But getting back to this score again. The trouble is not so much with the score as with the common attitude towards target practice itself. A service practice should be the culmination of a period of careful training in every detail that enters into the firing of a seacoast or antiaircraft battery. The firing of a practice should be a privilege granted only to those batteries which have given ample evidence that it

would not be a waste of time and the government's money to let them do so.

"With the intense interest which this conception would inspire there would be no kicking about the labor involved in making an analysis of the practice. A real live-wire battery commander would want to know down to a gnat's hair just what happened during his shoot. If no analysis were prescribed that sort of a battery commander would devise one of his own.

"To look at some of the records of practice which are passed along to the higher offices you would think that a service target practice is just something to be gotten out of the way as early as possible. I know one battery (not a National Guard battery either) that was permitted to fire its service practice after just eight days of drill. It's my guess that there are many similar cases where the five days or more required to complete the report of a service practice is relatively large in comparison with the time spent in preliminary training and that is why the analysis is such a bugaboo.

"I'd like to suggest that the following requirements might be made before a battery is permitted to fire:

(1) 300 hours of drill at the guns.
(2) The satisfactory simulation of at least one practice, including analysis, under the immediate supervision of the battalion commander.
(3) The satisfactory firing and analysis of at least one sub-caliber practice using the same guns to be used for the service practice."

"That seems like a lot of home ram to me, Colonel, and there is other work to be done too."

"Well maybe so. I just mention that figure to emphasize the necessity for careful preparation.

"But let me get back to that DAPE."

"Pardon me, Colonel, but my head is about ready to burst now with the unaccustomed load which you have crammed into it. And besides I just heard the telephone ringing in the back room and I'll bet somebody is trying to get you home to supper."

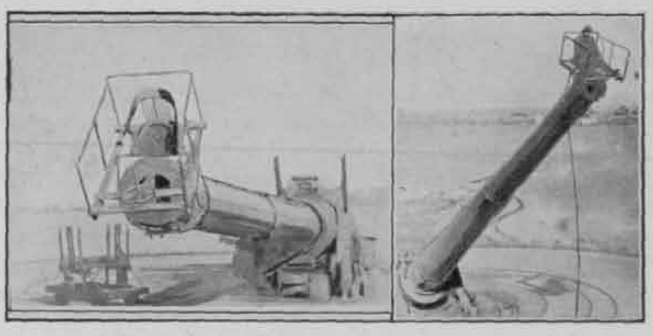
"Oh well, all right. I'd better be going but don't publish any of this in the JOURNAL."

Marking Range Discs of 16-Inch Guns

By Lieut. James F. Pichel, C. A. C.

The enclosed photographs show the apparatus which was recently used in "riding the muzzle" during the graduating of the range discs of the 16-inch B. C. guns, Model 1919 MII and MIII. As the man perched on the muzzle must refer to range tables for his elevations, must set and adjust the clinometer in the muzzle, and direct the elevating and depressing of the gun to center the bubble in the clinometer, he needs free use of both hands and a sure and steady support in order to accomplish accurate work. Also, he is suspended up in the air something like seventy feet part of the time—hence he needs something safe. During this time, also, it was raw and windy, and a canvas was placed over the seat to protect the operator from the cold. It should be noted that this seat, which was designed and built by Resident Ordnance Machinist C. A. Robblee, H. D. of Boston, Fort Banks, Mass., is pivoted so that it can be levelled as the gun is elevated, by means of the handwheel working on a threaded rod. This enables the operator to be in a position convenient to the clinometer at all times.

This apparatus seems unnecessarily substantial, but it required only about two days for construction. Its value was fully appreciated after the job of marking the range discs had been started—two sets were marked for each gun, one set being marked every degree and one every two hundred yards; marking these settings from seven degrees depression to sixty-five degrees elevation, and every two hundred yards up to about 45,000



yards, was a long and tedious job. Four long days were spent on the four range discs, Mr. Robblee spending three hours at one stretch, working on the clinometer settings up on the muzzle. Incidentally, a field telephone was used for communicating from the muzzle to the range disc, the operator at the clinometer and the man marking the range disc and directing the elevation handwheel both wearing head-sets. The weight of the apparatus and man on the muzzle was quite noticeable in elevating the gun by hand, and a dummy projectile was placed in the breech to partly offset this. Even then two men on the elevation handwheel had a hard job elevating the gun. After the range discs were marked by means of scratches with a stylus, they were sent to the Harbor Defenses of Portland, Maine, where they will be engraved during the winter by the resident ordnance machinist there.

The Reserve Officer in the Regular Unit

RESERVE officers of any particular combat arm may be assigned to the Arm at large or to Corps Areas for reassignment to units. The Arm and Service Assignment Group in the Coast Artillery until recently totaled some 300 officers. This number included the additional officers needed in the Chief's office, as instructors at the Coast Artillery School and to bring the overseas garrisons up to war strength. Under the present mobilization plan the Coast Artillery School does not remain under the control of the Chief of Coast Artillery after mobilization and reinforcement for foreign garrisons are to come from troops mobilized under the plan. Therefore all but 18 reserve officers have been transferred to the Corps Area Assignment Group. Those retained in the Arm and Service Assignment

Group will fill vacancies in the Chief's office, the Coast Artillery Board and the Submarine Mine Depot.

The officers assigned to corps areas, known as the Corps Area Assignment Group, are assigned to units either of the Regular Army or the Reserve. An additional group holding commissions both in the National Guard and Organized Reserve receive no reserve assignment but are assigned to National Guard units. They are available for call to active duty with the reserve under emergency conditions even though the National Guard unit to which they may be assigned is not called into federal service.

In the Corps Area Assignment group officers holding reserve commissions only are assigned either to Regular Army or Reserve units. The purpose of assignments to a Regular Army unit is to provide a means of quickly increasing a Regular Army unit to war strength. This should be a highly desirable assignment since it offers the inducement of an early call to active duty with a regiment already organized, possessing personnel and equipment to enter the combat zone in the shortest possible time. In some corps areas the officers assigned to Regular Army units have been selected from those showing the greatest activity and who have received additional training at the Coast Artillery School or who in every respect have exhibited evidences of qualification above the average. The Regular units to which these reserve officers are assigned are in most cases active i. e. having regular personnel assigned, fully equipped and actively engaged in such training as is usual in peace time. Some are entirely inactive; it is contemplated that these will have a commanding officer from the Regular Army and will be filled to war strength by other available officers in the event of mobilization. A few Regular units are on an inactive status but are commanded by a Regular officer who may be a P. M. S. and T. at an R. O. T. C. institution. In this case the graduates of the R. O. T. C. course will, if they reside in the locality, probably be assigned to what might be called the local Regular Army unit.

Theoretically, reserve officers assigned to Regular units should be more active and better trained than those assigned to Reserve units due to the fact that, being the first units in the zone of action, they will have less time to perfect their training after mobilization. Actually this is not the case. This is indicated by the records of extension course work and active duty training which is compiled in Corps Areas. In almost all cases the records show that Reserve officers assigned to Regular units have a smaller percentage of extension course enrollments, a smaller percentage completing courses, and a smaller percentage attending active duty training as compared to those assigned to Reserve units.

It may be of value to examine the causes for the failure of the Regular Army unit to produce the results obtained by Regular officers assigned to duty solely as unit instructors with the reserves. Theoretically the Regular unit Regimental Commander is the Unit Instructor of the Reserve officers assigned to his unit. It is obvious that the unit commander, with his multitudinous duties, cannot be expected to perform personally the duties of instructor. He will delegate these duties to an officer of his staff or to an officer specially selected to act as unit instructor for the reserve officers assigned to the regiment. It should be the responsibility of this officer to produce, at least, results commensurate with those obtained by the instructor on D. O. L.

There are some extenuating circumstances to be presented in defense of the reserve instruction given by the Regular Unit Commander. In the first place the reserve officers of the regiment may be widely scattered. The instructor never sees them and does not obtain the close personal contact which the D. O. L. instructor obtains in a city, for example. It may not be practicable for the reserve officers to assemble for conference or to visit the instructor's office seeking assistance or advice.

Whenever personal contact cannot be obtained the only substitute is correspondence. This should be initiated by the Regular unit and maintained throughout the year. Form letters are undesirable methods of communication but sometimes are necessary. The curse may be taken from them somewhat by the mailing of a periodical bulletin whose contents may cover a wide variety of subjects. It is not enough to put out one letter seeking applications for extension courses and resting on the oars for the balance of the year.

One of the insidious evils to fight in the Reserves is lack of interest. Interest, like loyalty, comes from the top and the Reserve officer cannot be expected to be interested if he feels his superiors and mentors are not interested in him. His interest should be inspired and maintained by keeping him informed of various matters with which he is concerned. He should receive the Regimental Training Program on the same distribution list as the Regular officers of the regiment. He should be informed when any unusual activity is taking place and invited to attend. In order that he may not feel like an orphan he should be urged to train with the regular unit at a time when he can obtain the greatest benefit and also be of assistance in providing additional commissioned personnel at a time of greatest need. Why shouldn't the reserve lieutenant take his active duty training at the time his battery is firing its target practice? He can learn more at this time than he can learn at three summer camp periods. If the unit is mobile it is required to make an annual march. At what time can the reserve officer learn more of road marches and convoys than at this time? If the unit is fixed, annual tactical exercises (perhaps joint exercises) will be held. This is an excellent time to learn just how a harbor defense unit goes about carrying out its mission.

Difficulties in obtaining personal contact between the regular unit and its reserve officers may be alleviated somewhat in their assignment. The Reserve officer residing in the vicinity should be assigned to the regular unit in close proximity and not to a reserve unit in a distant part of the Corps Area. In this situation he may visit the regiment on his own time, attend regimental dances, smokers, parties and participate in all its activities.

There is another handicap to which the Reserve officer assigned to a Regular Army unit is at times sub-

jected. This is the lack of familiarity, on the part of the Regular Army officers not on Detached Officers' List, with the pertinent regulations concerning the administration of Reserve officers. While the Regular Army officer would have no occasion to apply these regulations in the ordinary routine of troop duty, it is essential that at least one officer in each regiment to which Reserve officers are assigned be thoroughly familiar with every detail of their administration. The regulations concerning the administration of the officers' Reserve Corps were completely revised effective July 1, 1931. The revised regulations which govern appointment, reappointment, assignment, promotion, training, separation from the service, records and reports are now all contained in AR 140-5. One of the series from AR 140-22 to 140-39 gives the minimum qualifications for appointment and promotion for each of the Arms and Services. AR 350-3000 covers the Army Extension Courses. Thus for any Arm or Service the entire field is covered in three regulations. For the Coast Artillery these are AR 140-5, AR 140-27 and AR 350-3000. While the regimental commander may not have the time to personally familiarize himself with every detail, he should know the general principles which govern the Reserve Officers of his command, and he should designate one of his Regular Army officers to study and apply, in detail, the provisions of these regulations.

In spite of the handicaps set forth above it is believed that more efficient results can be obtained among the reserves assigned to Regular units than are obtained at present. The Reserve officer has been told that an assignment to a Regular unit is a feather in his cap, that he is receiving a preferred assignment. After he has been assigned for a period he may be convinced that it is a handicap. This attitude can be combatted and it is not necessary that it exist. It only requires some consideration of the problem and a realization on the part of the Regular instructor that it is an honest to goodness part of his job to stir around among the Reserve Orphans and gather them in to the fold. Do this or else let the reserve officer of the Regular Unit go back to the reserve unit where he will be of some importance in the scheme of things and be convinced that he is really a member of the outfit.

Training Films

THE COAST ARTILLERY JOURNAL has followed the development of training films by the office of the Chief Signal Officer with considerable interest. Lack of funds for the production of these films has been the principal handicap in this development. Notwithstanding the difficulties the Chief Signal Officer has always cooperated with the combat arms to the greatest extent possible.

Officers on duty with regular army units do not appreciate always the value of these training films to a great number of reserve officers, R.O.T.C. units, and, to a lesser extent, National Guard units who lack both the equipment and personnel to obtain practical instruction in tactics and technique. The training film expeditiously covers pages of text in the shortest possible time and enables the student to actually observe the operation itself instead of visualizing from a written page. With the development of sound training films their value will be immensely increased and new opportunities are opened for their use. By the use of sound even proper voice inflexions in the giving of commands may be acquired by the reserve officer without the need for the presence of an instructor.

Captain F. W. Hoorn, S.C., now in charge of this section of the office of the Chief Signal Officer, explains the status of sound training films:

"Some time ago the Chief Signal Officer initiated a program for producing training films with sound. Since that time the Army Pictorial Service has installed sound-recording equipment and has been engaged in the study of problems relating to promotion of this activity and the technique of producing sound pictures.

The first step involved the installation of a single recording channel in the projection room of the office of the Chief Signal Officer. This permits the recording of an explanatory lecture on positive stock, in approximate synchronism with the picture. The sound record thus made is then transferred to the positive print, by the same printer which transfers the picture from negative to positive. The result is a combined print containing both sound and scene, commonly known as the movietone print.

Reference was made above to approximate synchronism between sound and scene. This is in general satisfactory when the subject matter to be presented lends itself to the method of presentation wherein the screen presents a visual demonstration of the subject and the voice presents explanatory lecture, filling the gaps in the information transmitted. This method is ideally suited to the presentation of subjects involving materiel, diagrams, or any subjects in which human beings are not factors.

In presenting subjects of a tactical nature it may later prove desirable to provide facilities for exact synchronization of sound and picture so that when a verbal order is transmitted the speaker can be seen issuing it without loss of realism due to lack of coordination between the sound and the lip movements of the speaker. Other situations may occur also in which it would be desirable to convey information by means of the speech of participants in the action, as a relief from the necessity of listening continuously to the mysterious voice which knows all and explains all.

One of the difficulties in making adequate progress in the sound film program is the fact that both the supply and the demand must be created. Until portable sound projection equipments are available in adequate numbers, there will be small demand for sound training films, but a supply of film subjects must be built up before we can hope to acquire the projection equipments. This means that all concerned must be kept cognizant of the advantages of this method of instruction and the advisability of building up a sound film library as a supplement to the training literature library

In the meantime it appears desirable, in spite of the disadvantages of delivering any considerable amount of information by means of subtitles, to continue the

printing and distribution of the old silent films, and to make new films in silent version, as well as for sound, inasmuch as the demand for this type of film continues.

There will soon be available for distribution a sound film depicting ordnance displayed at Aberdeen Proving Ground on Ordnance Day, and TF-9, The Tactical Employment of a Battery of 155 mm Guns (Tractor Drawn). TF-46 and TF-47, Elements of Map Reading, are being revised and the scenario prepared for sound and silent versions. A Signal Corps scenario is in process of preparation, covering communication in the Infantry division. This film will not be completed until some time this year. A sound film for the Infantry was planned and ready for shooting when changes in the regulations made postponement seem advisable.

The steps are slow and laborious and all personnel engaged on training film work carry it on in addition to other duties. However, the project should be given all possible support inasmuch as the sound film is an excellent instructional medium, and a major war would instantly impose a demand for a large number of well prepared subjects.

Target Practice Formations for Antiaircraft Batteries

RECENTLY the subject "Target Practice Conditions versus Service Conditions" has been under discussion to a considerable extent. This subject is always under discussion but interest in it ebbs and flows with the publication of a new target practice regulation, with the target practice season, and the publication of Coast Artillery Memorandum No. 10.

The COAST ARTILLERY JOURNAL is very anxious to publish something to add to this discussion. Conversation has been rife but the pen has not been used so far. In considering the subject there are two lines of thought which may be followed depending upon the answer to the question: "What is the purpose of target practice?" Some officers maintain that a target practice should be conducted under actual service conditions and even go so far as to state that conditions simulating casualties to personnel and materiel should be inserted during the firing.

On the other hand many officers state that a target practice cannot possibly be fired under service conditions; that it is no more than the last step in progressive technical training; that the tactical features should be subservient to the technical.

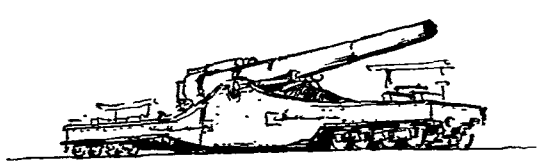
Recently a letter was received from a colonel of Coast Artillery asking for information concerning the formation adopted by antiaircraft gun batteries during target practice and service. The well known square formation for service with the director located in the center of the square is familiar to all. Why not use this formation at target practice? There is one sufficient objection to the square formation for target practice. It is prohibited by the War Department Circular stating that in time of peace no firing will be conducted over the heads of troops unless they are furnished with adequate protection. It is obvious that this regulation precludes the firing of antiaircraft batteries from the square formation.

The theory of the square formation is that there is no front to the battery. Since the targets may approach from any direction the battery should be able to meet the attack no matter what the direction of approach may be. The square formation adapts itself best to meet these conditions. Test firings have been conducted from this formation and the results obtained indicate that there is no appreciable difference so far as the operating personnel is concerned or in the accuracy of fire.

Perhaps one reason for the square formation, in addition to any connected with tactics, was in the use of the director. This instrument is the heart of the antiaircraft position finding system. With the earlier instruments it was not possible to make a parallax correction. Naturally it was desirable to place the director where the least dispersion would exist with reference to the guns which it served. The square formation, for this reason alone, would have been recommended.

The question of parallax correction for the director was studied at some length. At first it was believed that it was unnecessary and undesirable. Mechanically, the correction device was not easy to design and include in the instrument and it was believed that it would add some weight, which is an important consideration in a mobile unit.

There were other considerations favoring the use of a parallax correction. If a correction is not used the best location for the director is at the center of the battery formation. In this position the director operating personnel would be sure to receive a good share of the bombs and machine gun fire directed at the guns by hostile attack aviation. The use of gas by attack aviation is also a highly probable method of neutralizing antiaircraft fire. While there seems to be no effective method of reducing the vulnerability of the guns there appeared to be no good reason why the director and its operators should also be subject to fire intended for the guns. In the latest director manufactured by the Sperry Gyroscope Company the parallax correction mechanism has been included. Much credit for its development should go to 1st Lieut. G. W. Trichel, who was on duty with the Sperry Company at Brooklyn during its manufacture. In a test at Aberdeen the director furnished satisfactory data to the guns from a point 1200 feet from the battery.



COAST ARTILLERY ACTIVITIES

Office of Chief of Coast Artillery

Chief of Coast Artillery
MAJOR GENERAL JOHN W. GULICK

Executive
COLONEL W. F. HASE

Personnel Section
MAJOR G. F. MOORE
MAJOR S. S. GIFFIN

Materiel and Finance Section
MAJOR R. E. HAINES
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Organization and Training Section
MAJOR J. B. CRAWFORD
CAPTAIN J. H. WILSON

Plans and Projects Section
MAJOR G. R. MEYER
MAJOR R. V. CRAMER

The Coast Artillery School

THE holiday season for the student officers came with the usual welcome. Classes were discontinued on December 23d, and not resumed until January 4th. In the interim recreation became the order of the day.

Several dances and numerous parties were held during the holiday period. Use of the beach club has been discontinued for the winter and the old Casemate Club will be used until warm weather returns. In the meantime, further improvements at the beach club are under way.

As has been their custom, General and Mrs. Embick received the officers and ladies of the Garrison at their quarters on New Year's Day.

It will not be long before the Fort Monroe golf course will be transformed from an ardent hope and long cherished dream into a pleasant reality. Colonel Ohnstad hopes to have six holes in satisfactory condition for play by June. An enormous amount of work has been done in building fairways and greens, grading, clearing the forests, reclamation, and applying top soil. When the project is completed, Fort Monroe will not only have an excellent golf course, but the famous "neck" up the beach will have been cleared of mosquito swamps and transformed into a beautiful park.

Jumping has been discontinued for all equitation classes. The change has been received with mingled feelings of regret and relief. Enthusiastic feminine crowds no longer line the fences of the "bull pen," hoping that nothing exciting will happen and yet hoping it will.

The Advanced Engineering and Gunnery students and several instructors will depart on their annual inspection trip February 7th and will return about February 15th. Those to make the trip are as follows:

Instructors:

Department of Engineering—Major C. W. Bundy, Lt. L. D. Flory.

Department of Artillery—Captain B. L. Milburn, Captain L. L. Davis.

Students:

Advanced Engineering—Captain D. W. Hickey, Jr., Captain J. T. deCamp.

Advanced Gunnery—Lt. M. A. Hatch, Lt. R. W. Crichlow, Jr., Lt. W. L. Richardson.

The School was honored on January 4th with a visit from the Chief of Coast Artillery. General Gulick addressed the officers in the School auditorium in the morning and a reception was held in his honor at the Casemate Club in the afternoon.

The New Fort Monroe Bachelor Officers' Quarters.

The most important improvement at Fort Monroe in several years has just been completed. The new Bachelor Officers' quarters have been turned over by the contractor and will soon be ready for occupancy. The construction crews have been working on night shifts for some time in order to hasten the completion of the project. As soon as the furnishings are secured and installed, the bachelors will be moving from the Sherwood Inn, never to enjoy its atmosphere again.

The old Sherwood has lived a long and useful life. It has been indelibly linked with the history of Fort Monroe and its passing (it undoubtedly will be torn down, unless it falls before the opportunity arrives) will bring back memories, vived memories, memories that will live though the *corpus delecti* has been removed. The nucleus of the present Sherwood, according to the "History of Fort Monroe" by Major Arthur, consisted of a cottage erected under authority of the War Department in 1843, by Dr. Archer, who was the post sutler at the time. In 1887 the building, under a new owner, was expanded to the capacity of

a hotel. By 1889 it had been further expanded to a capacity of 175 guests. In December, 1896, the top three stories were destroyed by fire but were soon rebuilt. The property was purchased by the Government in June, 1918, at a cost of $109,930.00 and has since been used for the accommodation of officers and their families.

The new Bachelor Officers' quarters, to be known as Randolph Hall, is modern in every respect. It is located east of the road on the "fill" just south of the Mill Creek bridge and guard house. The building was originally designed to have a north wing and a south wing but the latter wing is not to be constructed at this time. The present building was erected at a cost of $119,527.00 and contains 34 rooms. The south wing will probably be constructed next year at an additional cost of about $40,000.00. It will contain 9 light housekeeping or bachelor apartments.

The building presents a most attractive exterior and interior appearance. The exterior walls are of orange brick, corresponding to that used for the new apartments. A large, tile floored, screened porch extends across the front of the building. The building is of three stories, in addition to the basement. The first floor contains the kitchen, dining room, lobby, offices, etc., all living quarters for guests are on the second and third floors (See floor plans). The room arrangement is flexible, while the type arrangement is two rooms with a bath between, most of the rooms are interconnected, so that suites of from two to four rooms may be used if desirable. Each room will contain a wash bowl or sink, a private telephone and an outlet for radio aerial and ground wires. It is proposed to install, in a few rooms, a small cabinet containing an electric range and a small refrigerator, thus permitting light housekeeping. The basement contains large storerooms of ample capacity. The roof is of slate. Door and window frames are of steel. Electric fixtures are modern and attractive. The building has an electric passenger elevator. Completely new kitchen equipment will be installed. The kitchen ranges will burn oil; other equipment will be steam operated. The building is heated by hot water, with circulating pumps and thermostatic control to insure even temperature. Coal will be used as fuel, the boilers being equipped with automatic stokers.

New Bachelor Officers' Quarters, Fort Monroe, Va.

It is planned to have Elvira Barbour, who has catered at the officers' club so satisfactory for many years and who is well known throughout the service, operate the mess. Rates by the month, week, or day will be reasonable.

Brigadier General Henry J. Hatch

ALTHOUGH the publication of obituaries is not a part of the editorial policy of the COAST ARTILLERY JOURNAL the sudden death of an artillery officer of the professional standing of Henry J. Hatch requires an acknowledgement and appreciation of his services to the Coast Artillery in these pages.

Possessed of a brilliant and logical mind, backed by a courage which would never permit him to retire from a position which he believed sound, he stamped his influence on the policies and tactical principles of the Coast Artillery for a period of thirty years. Nearly all his service was with the Coast Artillery and continued to be even after recognition came to him by his advancement to the grade of general officer.

Many officers who did not hold with General Hatch in some of his pronouncements lived to be finally convinced that the principles he advocated were correct. More important, he had the rare faculty of balancing the theoretical with the practical. He blended the desirable characteristics of the "desk" soldier and student with the rough and ready attributes of the "field" soldier.

The position attained by General Hatch as an artilleryman is of the highest order. He will be long remembered by those who knew him and his name will endure and become traditionally famous along with the other well known and famous artillerymen who have passed before.

The Song of the Vagabond

IT is a fact that antiaircraft regiments are Gypsy Regiments. No doubt they participate in more maneuvers and make more marches than some of the much older elements of our Army who have for a century boasted on the large part of each year spent on the road or in the field. The 69th Coast Artillery (AA), the youngest aitiaircraft regiment in the Coast Artillery, has a record to which the officers and the men point with pride.

During the preceding calendar year, elements of the 69th Coast Artillery (AA), with permanent station at Fort McClellan, Alabama, were temporarily stationed at six stations: Battery "A" at Maxwell Field, Alabama, March 4th to 26th, 1931; the Regiment, less 1st Platoon, Battery "E" and Headquarters Battery, at Fort Benning, Georgia, April 2nd to May 12th, 1931; detachment of one officer and twenty-five enlisted men (Batteries "A" "B," and "E") at Fort Crockett, Texas, June 30th to July 20th, 1931; Battery "B," 2 officers and 38 enlisted men attached at Fort Barrancas, Florida, July 21st to September 10th, 1931; Battery "A," 19 enlisted men attached, at Fort Humphreys, Virginia, August 14th, to October 12th, 1931; and the First Platoon, Battery "E" (with Mechanized Force)

at Fort Eustis, Virginia, November 15, 1930 to November 2, 1931. The 69th Coast Artillery (AA), was represented in two maneuvers (the Fourth Corps Area Maneuver at Fort Benning, Georgia, and the Antiaircraft Exercises and Tests at Fort Humphreys, Virginia). The Regiment helped organize and train four Organized Reserve Camps: Three camps at Fort Barrancas, Florida, the first and second camps each consisting of three regiments of Coast Artillery Reserve and the other camp consisting of the Arkansas National Guard; one camp at Fort Crockett, Texas, consisting of a large number of the officers of the 40th Antiaircraft Brigade.

Elements of the Regiment marched by motor transportation 5242.2 miles, averaging 134.4 miles per day and spending 39 days on the road. These marches were made over all types of roads varying from the best concrete roads to very muddy roads. In addition, a detachment of the Regiment spent 5 days on the train going to and coming from Fort Crockett, Texas. The distance covered by rail being 1512 miles. Officers and men of the 69th Coast Artillery in its numerous marches entered nine States in the Southern part of the United States. The Regiment had one or more organizations living away from its home station at other stations or in the field for 163 days, not including the days spent on the road or the absence of the First Platoon, Battery "E" which was at Fort Eustis, Virginia, with the Mechanized Force, throughout the calendar year up to November 2nd. To summarize, detachments of the 69th Coast Artillery (AA) travelled over 6754.2 miles in nine States and spent, 202 days away from their home station in 1931.

At the writing of this account, January 11, 1932, the 69th Coast Artillery is well on its way to exceed during the current calender year the number of miles covered and the number of days spent in the field or away from its home station. On January 2nd, Battery "A" left by motor transportation for Tampa and Miami, Florida, a distance of over a thousand miles. Battery "A" is not expected to return to Fort McClellan until the last of the month. The Regiment in addition to the summer training which it carried on last summer, and for which more instructors are requested for the coming season, is scheduled to participate in two big maneuvers, The Fourth Corps Area Maneuver in April at Fort Benning, Georgia, and the Antiaircraft Maneuver in September at Camp Knox, Kentucky.

Submarine Target Practice, Deck Guns

By 1st Lieut. G. F. Heaney, Jr., C.A.C.

AT the invitation of the commanding officer of Submarine Division 9 of the Asiatic squadron, Lieutenant Gilbert and myself attended the short range practice of that division. We reached the tender, USS Beaver, lying off Hornos Point, some eight miles from Corregidor, at about 5 P. M. the day before the practice. All the submarines were alongside, and their officers were on the Beaver. The submarine officers always eat and sleep on the tender when their boats are lying alongside, as the quarters on the subs are very uncomfortable. Due to lack of rooms aboard the tender, the submarine officers bunk in canvas cots on the deck.

The officers of the submarine service pride themselves on theirs being a "non-reg service." A spirit of camaraderie is more noticeable there than on the battleships. There is no room on these tiny boats for white-uniformed dignity on the bridge, or for three or four messes for the different grades of officers.

The short-range practice was explained to us as a combination practice for training officers and gun-pointers, equivalent to our officers' adjustment problems and subcaliber firings. The entire series is fired in one run over the course.

After supper, the Ordnance Officers of the six submarines began preparing their ammunition for the next day's firing. Details were sent aboard the tender to carry the ammunition to the subs. The ammunition for the 4-inch guns carried by these subs is fixed, and comes in metal tanks very similar in appearance to the powder can for our six-inch gun.

The ammunition, as soon as received, was taken out of the cans and tried for fit in the gun. The noses were painted with an identifying color, red, yellow, green, white or black, before being returned to the can. A daub of the same color was placed on the outside of the cans, which were then stacked on deck. Since the boat does not submerge prior to short-range practice, the ammunition was left on deck all night.

After the ammunition was ready, the officers took us around their boats. The following observations might be of interest to artillerymen:

The submarines of this "S" class carry four torpedo tubes and one 4-inch gun. The gun is mounted on the deck forward of the conning tower. It is made completely waterproof for submergence by covers fitted over the breech mechanism, the muzzle, and the sights. The gun has three sights,—one for elevation, one for direction, and one "cheek sight" for the safety officer. There seem to be more working parts than on our guns of similar type. The gears are much larger and heavier; the breech-block seems to be smoother and quieter. Each pointer has a double handwheel so that he can use two hands, getting a much smoother motion of the gun. The increased weight and ruggedness noted in this gun seem to be characteristic of all Navy guns. They seem to prefer smoothness of action and ease of manipulation in the Navy, whereas we work toward economy and reduction of number of working parts.

The gun is fired by a foot-pedal. The pointer keeps both hands on the double handwheel; with his foot on the pedal he can fire instantly when his sight crosses the target as the ship rolls.

The submarines are equipped with excellent radio sets, which can talk from China to Frisco. For surface work they use an antenna stretched fore and aft from the mast head; submerged, they use a loop antenna. Incidentally, the radio room, a small two-by-four hole in the side of the control room, is known in the service as the "radio shack."

There is much more room inside a sub than is popularly supposed. The only man who is really cramped

is the helmsman. Whether on the bridge or in the conning tower, his station is always straddling a hatch through which people are constantly passing. The rest of the officers and crew have plenty of room.

The subs are commanded by senior lieutenants, of nine or ten years' service. At present there are five officers assigned to the boats, which is greater than the war complement. The extra officers are assigned in order to keep more officers in training while so many submarines are kept inactive as an economy measure.

We spent the night in the familiar gold-medal cots on the deck of the tender. The familiar regulations of the army transports requiring quiet between taps and reveille are not in force in the submarine service; a most unholy din kept up all night. It had been announced that the first boat would leave for the firing range at 5:30 A. M. The bos'n's mates therefore started around the ship at about 3:30, squeaking on their pipes and bawling, "Up all hammocks! Rise up and lash up!" This kept up constantly until about six o'clock. During this time, none of the officers stirred. At about 6:30, one or two of the junior officers appeared on deck, so the rest of us gradually arose. After a leisurely breakfast, we drifted aboard the first ship to fire, which finally got under way some two hours behind schedule.

With the brass hats of the squadron aboard, the submarine moved out to the start of the course. The officers sprawled over the bridge; the gun crew took life easy on the forward deck. No one seemed to be worried about anything,—a contrast with the usual excitement and bustle that precede one of our practices.

When all was ready, the word was passed, "Smoking lamp is out," and then we moved along over the course, firing six test shots. The boats of this division had all new guns, and were permitted to fire these test shots before proceeding to record fire.

The crowded quarters on a submarine seems to be an advantage in some ways; for one thing it eliminates the running around which we have in connection with our small gun firing. Each man stands in place, and the ammunition is passed along by the "bucket brigade" method. This small space, however, makes the loader's job very hard. The breech of the gun comes within two feet of the rail when firing broadside; the loader must lean over the rail with an 83-pound cartridge in order to insert it in the gun. A rope net is spread outboard on outriggers to catch the empties.

We moved from one boat to another until all had fired their test shots. Then we boarded the first ship again for the record firing.

A week later, a group of officers from Corregidor visited the same submarine division for a submerged run. We went aboard the Beaver early in the morning, had breakfast, and then boarded the subs. Most of the boats went out and took their dive without incident. The boat I was on, the S-40, was less fortunate. We went out to a clear part of the China Sea, laid a safe course, and the skipper gave the command, "Rig for diving!" The gun had already been secured; all movable parts like field glasses, charts, and flags were passed below. We all went below to the control room, where everyone promptly stripped to undershirts. When the tiny signal lamps indicating whether hatches and vents were open or closed, all showed "green," the diving officer ordered the valves opened in the main ballast tanks. The ship began to sink, but by the stern instead of by the head. Soon we had a pronounced slope, and the bow was lifted so high that the bow tank would not fill. We made two attempts to dive, but the same thing happened each time. The officers decided that there was probably a leak in the after tank. The Army officers in the other subs were watching us through their periscopes, and enjoying the spectacle hugely.

Finally the captain took the boat into Mariveles Harbor and made a "trim dive," going straight down with no way on the ship. The ship sank in a few seconds. Looking out the small ports in the conning tower, we could see nothing but the sunlight glinting on the brass parts of the gun on the deck. In deeper water, where the water is not so muddy, one can usually see much farther. We stayed down for some fifteen minutes, which was not long enough for the ship to get uncomfortably hot. Everything was very quiet and orderly, the only noise being the hiss of escaping air as the various valves were operated. The diving officer stood by the depth gauges, and gave orders to operate various valves to trim ship. One officer stood at the periscope and scanned the sea in all directions. One sailor operated the valves and pumps, another operated the electric motors, another stood at the steering gear. Most of the crew took naps on the deck of the battery room.

When the order to surface was given, the ship rose rapidly, bobbing up like a cork. After the air pressure had been equalized, and the water had run off the top of the hatches, we opened the hatches and went on deck. Everything had dried off quickly, and there was no sign that the entire ship had been submerged so recently.

The submarine long-range practice was fired the following week, but I was unable to attend it. The following description was given me by the submarine officers.

The ship starts submerged. The signal being given to start taking time, the ship quickly surfaces, fires her shots, and prepares to dive again. Formerly the ship was required to actually dive after firing; beginning with this year she is required to make all preparations for a dive, but does not actually submerge. It was found that submarine guns were wearing out very rapidly, and the reason was thought to be the sudden cooling of the gun by diving after firing.

To save time, the custom is to get the ship at high speed submerged, and then pump the tanks as much as possible, so that the ship is at neutral buoyancy, and is held down more by her horizontal rudders, or "fins," than by her ballast. Then, when the signal is given to take time, the boat will rise very quickly by the rudders.

I was told that the record time for this practice is about three minutes. In that space of time, the boat rose to the surface, fired, secured everything and dove. Of course, many safety precautions were not observed;

the ship was diving while the gun crew were still fastening the muzzle and breech covers. The last man on deck was standing in water to his waist, and just barely beat the sea over the rail of the bridge and down the conning tower hatch. These time-saving but dangerous tricks are no longer permitted.

Entitled to Wear the "E"

THE following batteries of the Coast Artillery Corps have been rated "excellent" for the training year ending June 30, 1931, and are entitled to wear the distinctive "E" on the sleeves of the uniform.

Battery	*Regiment*	*Battery Commander*	*Station*
H	2d	Capt. H. B. Bliss	Ft. Sherman, C. Z.
A	4th	Capt. D. B. Greenwood	Ft. Amador, C. Z.
G	4th	Capt. J. T. Campbell	Ft Amador, C Z.
A	6th	Capt. W. L. McMorris	Ft. Winfield Scott, Cal.
G	11th	Capt. E. R. Reynolds	Ft. H. G. Wright, N. Y.
A	12th	Lt. W. B. Merritt	Ft. Monroe, Va.
G	14th	Capt. D. Ausmus	Ft. Worden, Wash.
A	15th	Capt. B. W. Wortman	Ft. Kamehameha, T. H.
A	51st	Capt. W. W. Irvine	Ft. Monroe, Va.
A	55th	Lt. C. H. Shabacker	Ft. Kamehameha, T. H.
B	55th	Capt. P. S. Lowe	Ft. Kamehameha, T. H.
C	55th	Lt. F. C. McConnell	Ft. Kamehameha, T. H.
D	55th	Capt. O. D. McNeeley	Ft. Ruger, T. H.
E	55th	Capt. J. A. Ryan	Ft. Ruger, T. H.
F	55th	1st Lieut. R. Amoroso	Ft. Ruger, T. H.
B	59th	Capt. S. McCullough	Ft. Hughes, P. I.
F	59th	Capt. E. G. Cowan	Ft. Mills, P. I.
G	59th	Capt. W. D. Evans	Ft. Hughes, P. I.
A	60th	Capt. R. W. Argo	Ft. Mills, P. I.
D	60th	Capt. G. C. McFarland	Ft. Mills, P. I.
A	62d	Capt. A. M. Jackson	Ft. Totten, N. Y.
A	63d	Capt. A. L. Parmelee	Ft. MacArthur, Cal.
B	63d	Capt. C. S. Harris	Ft. MacArthur, Cal.
E	63d	Capt. D. J. Rutherford	Ft. MacArthur, Cal.
A	64th	Capt. J. D. Brown	Ft. Shafter, T. H.
E	64th	Capt R. E. DeMerritt	Ft. Shafter, T. H.
F	64th	Capt. J. B. Jacobs	Ft. Shafter, T. H.
G	64th	Lt. J. A. Weeks	Ft. Shafter, T. H.
I	64th	Capt. A. W. Waldron	Ft. Shafter, T. H.
K	64th	Capt. R. T. Barrett	Ft. Shafter, T. H.
L	64th	Capt. L. H. Thompson	Ft. Shafter, T. H.
A	65th	Capt. J. C. Bates	Ft. Amador, C. Z.
B	65th	Capt. R. J. VanBuskirk	Ft. Amador, C. Z.
F	65th	Capt. R. N. Mackin, Jr.	Ft. Amador, C. Z.
A	69th	Lt. J. L. Goff	Ft. McClellan, Ala.
E	69th	Capt. D. M. Griggs	Ft. McClellan, Ala.
B	91st	Capt. E. W. Miller	Ft. Mills, P. I.
C	91st	Capt. H. P. Hennessy	Ft. Mills, P. I.
G	91st	Capt. J. R. Lowder	Ft. Mills, P. I.
A	92d	Lt. J. S. Henn	Ft. Mills, P. I.
B	92d	Capt. K. Rowntree / Capt. G. W. Brent	Ft. Mills, P. I.
C	92d	Capt. L. C. Dennis	Ft. Mills, P. I.

Coast Artillery Triumphs in Hawaii

EACH year the Department Commander, Hawaiian Department, rates the regiments of all arms of his command in accordance with their proficiency in the use of their primary weapon. For the year ending November 8, 1931, the cup was won by the 64th Coast Artillery (AA), Colonel B. H. L. Williams, commanding. This regiment has acquired a reputation for efficiency which is attracting wide attention.

The score of the 64th was the highest of any in the department. We are unable to determine whether the 64th rates above the infantry and field artillery regiments. If scores are comparable this is the case. Information desired.

Relay

WE were about to announce the promotion of Colonel Robert S. Abernethy to the grade of brigadier general when the Senate Committee on Military Affairs pressed the buzzer and recalled the confirmation. Reason: Promotion confirmed too far in advance of the vacancy. Six promotions in the grade of general officer, including Colonel Abernethys, were affected.

Colonel Abernethy is one of our best known artillerymen. The JOURNAL congratulates him on his near promotion. There is no reason to presume it will not be actual a little later in the summer.

Coast Artillery Reserve Second Corps Area

By Colonel F. W. Stopford, CAC (DOL), Executive

THE troop schools for reserve regiments in the Metropolitan area are progressing according to schedule on the third Monday of each month, and are being well attended. The classes and conferences are being held, as formerly, at the Engineering Societies Building at 29 West 39th Street. Classes are being conducted for field officers and for captains, first lieutenants, second lieutenants and enlisted personnel in both antiaircraft and seacoast subjects, with a view to helping students prepare themselves for promotion. This plan of instruction appears to meet with general approval. The evening work is divided as follows: 7:30 p. m.—General Conference; 7:50 p. m.—Regimental Meetings; 8:20 to 10:00 p. m.—School Work. Prior to the conferences outlined above, each regiment holds a get together dinner at some nearby restaurant. An instructor and an alternate instructor is detailed for each of the eight classes held. Instructors are detailed for the year.

Lieutenant Colonel Joseph W. Barker has recently joined the 530th Coast Artillery (AA) and now commands the regiment. Colonel Barker is Dean of Engineering at Columbia University.

The 533rd Coast Artillery (AA), Colonel F. R. Stoddard commanding, was in full force at the Troop School meeting, December 21, 1931. A survey of the records of this regiment, has revealed the interesting fact that no less than twenty-one officers on the eligible list have had World War Service, or approximately 80 per cent. It is believed few reserve regiments can boast of as great a percentage of veterans. This regiment is bending every effort to hold its officers of war service and to insure their retaining their commission on the eligible lst.

The 607th Coast Artillery (TD), Colonel Robert S. Allyn commanding, has been conducting weekly conferences each Monday at 39 Whitehall Street. Two classes are being held. In addition the regiment is holding pistol practice each Tuesday evening at the armory of the 244th Coast Artillery, New York National Guard. From ten to fifteen officers are taking this instruction.

Lieutenant Colonel George W. Johnson has been assigned to command the 619th Coast Artillery. Lieu-

tenant Colonel Johnson had previously been assigned to the 621st Coast Artillery.

The following recommendations have been made to Corps Area Headquarters for training during the coming summer:

Training CMTC.

539th CA(AA), July 31-Aug. 13, 1932, Ft. Hancock, N. J.	20 officers
533rd CA(AA), Aug. 9th-Aug. 22, 1932, Ft. Hancock, N. J.	20 officers
602d CA(Ry), Aug. 19th-Sept. 1, 1932, Ft. Hancock, N. J.	20 officers
Total	60 officers

Artillery Training.

607th CA(TD), July 3-16, 1932, Ft. Hancock, N. J.	14 officers
620th CA(HD), July 3-16, 1932, Ft. Hancock, N. J.	10 officers
514th CA(AA), July 17-30, 1932, Ft. Tilden, N. Y.	17 officers
522nd CA(AA), July 17-30, 1932, Ft. Tilden, N. Y.	15 officers
530th CA(AA), July 17-30, 1932, Ft. Tilden, N. Y.	14 officers
Total	70 officers
Grand Total	130 officers

There has been great activity in extension school work throughout the district, there being about twice the number of enrollments as there were last year. The record as of December 1, 1931 is given below. This does not include work done by the 513th Coast Artillery, 514th Coast Artillery and 522d Coast Artillery in conjunction with Infantry Extension School classes held in Schenectady, N. Y.

Organization	Enrollments	Completion	Hours Credit
502	33	3	74
513	34	8	75
514	125	60	814
521	59	8	142
522	64	15	303
530	30	5	96
533	36	3	56
539	29	2	50
602	48	9	96
607	90	29	358
619	35	5	55
620	33	4	72
621	55	5	106
908	33	5	93
909	45	5	71
910	21	3	78
Civ.	53	13	156
CMTC	73	20	171
OR	29	6	128

Upstate New York Coast Artillery Reserves

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

513th Coast Artillery (AA), Colonel John P. Young, (Ithaca) Commanding. 514th Coast Artillery (AA), Major N. E. Devereux, Jr., (Utica) Commanding. 522nd Coast Artillery (AA), Lt. Col. F. W. Gilchrist, (Kenmore) Commanding.

The 513th Regiment, scattered all over the state, with very few members located where they can attend meetings, is plugging away at the extension courses. The work of those enrolled indicates that future months will add materially to the regimental record as subcourses now underway are completed.

The 522nd Regiment is experiencing its most successful year. Between October 8 and December 11, 1931, Regimental Troop School meetings were held in Buffalo and Rochester each month with total attendance of seventy-four. The average attendance per month amounted to 63 per cent of the regimental membership living within reach of meeting places. This is especially gratifying in view of the fact that the unit instructor is stationed 200 miles from the center of the regimental area and could be present at the opening meetings only.

Reserve activities in Schenectady are far ahead of all previous records. In addition to the monthly troop school meetings, the regiment holds troop school once a week with courses preparing for appointment, for promotion to first lieutenant, and for promotion to captain. Between October 15 and December 18, 1931, the 514th conducted twelve troop school meetings in Schenectady with a total attendance of two hundred and forty.

The unit instructor has also joined forces with Major James N. Peale, Infantry (DOL), 389th Infantry, who is the senior unit instructor in the city, for another entirely different series of weekly meetings. In these meetings, extension school subcources common to the infantry, coast artillery, and several other branches of the service are covered. Finally, in addition to these various schools, small bore target practice is conducted twice a month. The Coast Artillery unit instructor participates in the management of these general activities, and Coast Artillery reserve officers are encouraged in every way to attend. The response has been gratifying and the Coast Artillery has been represented in proportion to its strength, which of course is small in comparison with the Infantry and some other branches. An appreciable number of Coast Artillery reserve officers regularly attend two meetings a week and some have attended three and even four meetings in a single week. Thus in addition to the Coast Artillery activities previously described, the Unit Instructor and the members of the Regiment actively participated in twelve other Reserve meetings at which the attendance totalled six hundred and sixteen.

621st Coast Artillery, Wilmington, Delaware

Major W. M. Cravens, C.A.C. (DOL) Unit Instructor.

On Tuesday evening, October 27, the regiment held its annual regimental dinner at the Wilmington Country Club. Colonel A. E. Tanner, regimental commander, presided with Captain E. E. Berl, regimental adjutant acting as toastmaster. The principal speaker, Brigadier General Jefferson R. Kean, Medical Corps,

Ret., spoke on the original organization of the Medical Reserve Corps. Other speakers were Colonel Bell, Major W. M. Cravens, Captain F. W. Cook and Captain J. G. Keily. Four guests and thirty members of the regiment attended.

On November 3, the regiment settled down to its regular routine of troop school conferences, at the State Armory, 10th and Du Pont Streets, on the first, third and fourth Tuesdays of each month and the Reserve Officers' Association meetings, at the University Club, 1301 Market Street, on the second Tuesday of each month. This routine has been carried through to date.

The regiment is conducting three (3) troop schools as follows:

a. Subcourse 30-4 with seven students enrolled.

b. Subcourse 30-5 with sixteen students enrolled.

c. Subcourse 40-3 with seven students enrolled.

From a total school enrollment of thirty students, there has been an average weekly attendance of twenty students or two-thirds the enrollment.

In the meetings of the Reserve Officers' Association, attending members of the regiment have had the benefit of lectures as follows:

a. Survey of the Nicaraguan Canal by Lieutenant T. L. Mulligan, C.E., Fort Du Pont, Delaware.

b. Chemical Warfare by Major Edward Montgomery, C.W.S., Technical Director Edgewood Arsenal.

During this period Lieutenant Colonel G. W. Johnston has been relieved from assignment to the regiment. Major R. B. Kelton has been appointed regimental executive officer and Captain Ross D. Pillsbury has been advanced to command the 1st Battalion.

Philadelphia Chapter, U. S. C. A. A.

THE Philadelphia Chapter of the United States Coast Artillery Association claims to be the oldest in existence, antedating the formation of the Association itself. At a recent election Captain Victor Gondos, Jr., 510th C. A. (AA) was elected president of the chapter. Captain Gondos has been long a faithful participant in all Coast Artillery activities in and near Philadelphia and his election to the presidency of the Chapter is a well deserved recognition of his valuable services.

This chapter is extremely active and during the winter has carried on, in addition to its regularly scheduled instruction, a series of talks on subjects appropriate to Coast Artillery officers prepared by members of the chapter. Lieutenant John R. Richards, 603d C. A. (Ry) gave a talk of December 18 on "Map Reading and Sketching." On January 8, Captain Crandall Z. Rosecrans, 603d C. A. (Ry) gave a talk on the "Dardanelles Campaign" which was greatly enjoyed by a record turn out. These talks are not only the source of valuable knowledge for the listeners but are prepared in an interesting manner. The meetings are usually attended by a number of civilians guests of the Chapter.

Harbor Defenses of Pensacola

THE end of summer did not mean the end of training, working and planning for the personnel of the Harbor Defenses of Pensacola, under the command of Colonel Francis H. Lincoln. The much advertised Florida climate makes it possible to continue outdoor work throughout the winter. Though some may shiver and shake in the early morning; "Squads Right" or "Squads Left" is executed just the same and artillery drill does not lag.

Upon the conclusion of the various summer camps, a few days were allowed to catch a breath and then the two line batteries plunged into antiaircraft training. After several weeks of preliminary training, record practices were fired with both machine guns and antiaircraft 3-inch guns. All thoughts then turned to seacoast training, which will be climaxed by the record firings early in the spring.

The usual post fatigue, of course, never ceases. The major labor project for the past year has been the completion of the railroad system on Santa Rosa Island. Many miles of track have been laid and in most instances relayed. The result is that now a network of lines connects the several batteries and the docks. Quite an imposing gasoline motored locomotive pulls or pushes the flat cars up and down the Island on schedule. The old timers, who remember the long walks or bumpy cramped rides to their batteries, vote the new " A D C" the greatest single improvement effected in many years in the Harbor Defenses of Pensacola.

The completion of the A. D. C. Railroad removes the last disadvantage of Fort Barrancas as a training center. We do not wish to sell any real estate so we will not dwell on our climate but merely list it as one advantage. The availability of various types of armament, the field of fire habitually clear of shipping and the presence of ample and comfortable barracks, dining rooms and kitchens, no doubt influenced the Corps Area to select Fort Barrancas as its Coast Artillery training center. Soldiers must have their recreation and here they are able to swim or fish only a few minutes walk from the barracks. Baseball diamonds and tennis courts are provided for the athletes. Knowledge of the advantages of this post for training is not confined to the Fourth Corps Area for plans are now being completed to have the Coast Artillery units of the Illinois, Arkansas and Missouri National Guards train here next summer.

Do not get the idea from what has gone before that the personnel of this post is overworked. We have plenty of time to play and enjoy the recreational facilities already mentioned. We are pretty well satisfied and are looking forward to spending the new year right here.

The West Point Chapter U. S. Coast Artillery Association

THE West Point Chapter of the United States Coast Artillery Association held its first meeting of the new year on January 12.

Major P. S. Wood, until recently a student at the Ecole de Guerre, gave an interesting talk on his observations of the French. He pointed out the essential differences in the method by which French officers were selected to attend service schools as well as variations in the method of instruction, including a discussion of the advantages and disadvantages of the French methods.

1st Lt. Raymond Stone, Jr., described in a humorous vein how "The 61st Went Up the Bay" by barge from Fort Monroe to Aberdeen in the fall of 1929.

The meeting was well attended, all but four of the local Coast Artillery officers being present.

The next meeting will be held on February 9, 1932.

Battery C. 55th Coast Artillery (TD) Wins the Knox Trophy

BECAUSE Hawaii is a long way from Boston, Lieut. F. C. McConnell who commanded Battery C when it won the Knox Trophy was unable to be present and personally receive the trophy.

It was presented at the 41st annual dinner of the Massachusetts Chapter, Society of the Sons of the Revolution which was held at the Hotel Somerset in Boston on the evening of January 18. Many notables were present. Major General John W. Gulick, Chief of Coast Artillery, was one of the honored guests.

Brigadier General Daniel H. Needham, Commanding the 51st F.A. Brigade (Mass. N.G.), made the presentation on behalf of the Society while Brigadier General Alston Hamilton received the trophy for Lieut. McConnell, unable to be present.

It is almost superfluous to explain to the readers of the JOURNAL that this trophy is awarded annually by the Society of the American Revolution to the regular army Coast Artillery battery which exhibits the highest excellence in artillery firing. By consent of the Society the conditions under which the trophy was awarded were broadened so that it could be won by an antiaircraft machine gun battery, a searchlight battery, or a mine battery. So far it has been awarded to the following:

Organization	*Battery Commander*	*Year*
68th Co. 143d Co.	Capt. H. J. Hatch	1913
5th Co.	Capt. S. G. Shartle	1914
122d Co.	2d Lt. F. A. Englehart	1915
1st Co.	Capt. M. H. Thompson	1916
6th Co.	Capt. L. B. Chambers	1917
Btry. E, 52d	Capt. D. B. Greenwood	1926
Btry. C, 65th	Capt. B. L. Milburn	1927
Btry. E, 63d	Capt. W. H. Sweet	1928
Btry. I, 4th	Capt. B. Bowering	1930*
Btry. C, 55th	1st Lt. F. C. McConnell	1931

**Note: Beginning with this year the target practice year was made to correspond with the fiscal year.*

There are a number of Knox Trophies awarded annually by this Society but regular Coast Artillery batteries are eligible to compete for only one of them. The trophy is named for General Henry Knox, Chief of Artillery in the Continental Army under Washington. The Artillery arm of the service received its first really important increase when it acquired a considerable number of cannon from Fort Ticonderoga after its capture from the British. General Knox put them to good use against their former owners.

A Knox Trophy also was awarded by the Society to Battery M, 241st C.A. (HD) (Mass. N.G.), Captain A. A. Whalley, commanding, and was received for him by 1st Lieut. Ernest B. Fantom.

Illinois Chapter, U.S. C.A.A.

ALL three components of the Coast Artillery in the State of Illinois, represented by the 61st Coast Artillery (AA), Fort Sheridan, the 202nd Coast Artillery (AA), Illinois National Guard, Chicago, and the 526th, 531st, 532d, 949th and 950th Coast Artillery (AA), cooperated whole-heartedly in the organization of the Illinois Chapter of the U.S.C.A.A., effected at a meeting at the Hotel Sovereign on January 28 at which Colonel Charles C. Dawes, 202d C.A. (AA), presided. The following officers were elected:

President: Colonel Charles C. Dawes, 202d C.A. (AA), Ill. N.G.

1st Vice Pres.: Lieut. Col. Joseph A. Green, 61st C.A. (AA).

2nd Vice Pres.: Colonel Howard W. Hodgkins, 531st C.A. (AA).

Secretary: Major Charles J. Herzer, C.A.C.

The officers of the 531st C.A. (AA), presented a saber to Colonel H. W. Hodgkins, the occasion being his recent promotion. Following the meeting Colonel Dawes and the officers of the 202d C.A. (AA) entertained the entire group at their Armory.

To Be Educated

The following are to be Chemical Warfared at Edgewood Arsenal, Maryland, during the course beginning February 7 and ending about April 29: Major A. D. Chipman, Major A. E. Potts, Captain Creighton Kerr, 1st Lt. John L. Goff.

The next Naval War College course will include the names of Major C. H. Tensey, Major F. E. Gross.

Both officers are now attending the Army War College.

The War College list recently published contains the names of the Coast Artillery officers listed below who will attend the course during the year 1932-33. This list is always a source of disappointment to many officers who have applied for the course and who hope to see their names when it appears. The JOURNAL sympathizes with them and congratulates those who have been more fortunate.

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

COAST ARTILLERY ORDERS

Colonel William R. Doores, instructor, Org. Res. Erie, Pa., to home and await retirement January 9.

Colonel George H. McManus retired with rank of brigadier general, Dec. 31.

Colonel Granville Sevier, Omaha, Nebraska, to home and await retirement, Jan. 2.

Lt. Col. Earl Biscoe, student Army War College to War Department General Staff, Washington, August 15.

Lt. Col. William T. Carpenter, 62d, Ft. Totten, to War Department General Staff, Washington, Aug. 4.

Lt. Col. Clarence B. Ross, from office Assistant Secretary of War, Washington, to Philippines sailing New York, April 29.

Lt. Col. William E. Shedd, jr. from detail in General Staff Corps and from War Department General Staff, Washington, to Hawaii, sailing New York June 18.

Lt. Col. Philip H. Worcester from Philippines to instructor, Army War College, August 15.

Major James H. Cunningham, student, Army War College to War Department General Staff, August 15.

Major Henry C. Davis jr., Ord. Dept., Ft. Benning transferred to Coast Artillery Corps and to 14th Ft. Worden sailing New York, Dec. 5.

Major Frederick A. Holmer, 52d, Ft. Hancock to Philippines sailing New York April 29.

Major Fred M. Green, 62d, Ft. Totten, to instructor, Mass. Natl. Guard, Boston, Feb. 14.

Major Earl R. Reynolds, 11th Ft. H. G. Wright, orders to Panama revoked.

Major John P. Smith, student Naval War College, Newport, R. I. to War Department General Staff, Washington, Aug. 17.

Major Rodney H. Smith (G. S. C.) promoted lieutenant colonel, Dec. 12.

Major Thomas A. Terry, student Army War College to War Department General Staff, Washington, June 30.

Major Claude M. Thiele, student Army War College to War Department General Staff, Washington, June 30.

Captain Adam J. Bennett, 52d, Ft. Hancock to Philippines, sailing New York, Jan. 13.

Captain George W. Brent from Philippines to 13th, Ft. Barrancas.

Captain James T. Campbell, 51st, Ft. Monroe, to instructor, C. A. School.

Captain Leon C. Dennis, 6th, Ft. Winfield Scott, to 12th, Ft. Monroe, sailing San Francisco, Jan. 27.

Captain Gustaf H. Ericson from Philippines to 6th Ft. Winfield Scott.

Captain Harry W. Lins, 13th, Ft. Barrancas to Philippines, sailing New York, Jan. 13.

Captain Watson L. McMorris, 6th, Ft. Winfield Scott to Philippines, sailing San Francisco, Feb. 4.

Captain Archibald L. Parmelee, 63d, Ft. MacArthur to Philippines, sailing San Francisco, May 21.

Captain Wade W. Rhein, previous orders revoked. Relieved 6th Ft. Winfield Scott to 13th Key West Barracks, sailing San Francisco, Jan. 16.

Captain George T. Rice, 13th, Key West Barracks, to 52d, Ft. Hancock.

Captain Caesar R. Roberts sailing New York for Philippines, Dec. 5 instead of January 13.

Captain James O. Smithley, 11th, Ft. H. G. Wright to Philippines sailing New York April 29.

1st Lt. Harry S. Aldrich from language student, Peiping, China, to 62d Ft. MacArthur sailing Chinwangtao, June 27.

1st Lt. Arnold D. Amoroso promoted captain November 1.

1st Lt. Clarence O. Bell promoted captain November 1.

1st Lt. Howard E. C. Breitung, 6th Ft. Winfield Scott, to Hawaii, sailing San Francisco, April 5.

1st Lt. Howard E. C. Breitung, 6th, Ft. Winfield Scott, to Hawaii, sailing San Francisco, April 5.

1st Lt. Robert C. Broadhurst, 61st, Ft. Sheridan, detailed in Finance Dept., and to Ft. Sam Houston, January 31. Promoted 1st Lt. November 13.

1st Lt. John R. Burnett 12th Ft. Monroe to Philippines sailing New York April 29.

1st Lt. Alan F. Cameron promoted captain November 1.

1st Lt. Martin C. Casey, retired, Nov. 30.

1st Lt. Frederick R. Chamberlain, jr., promoted captain, Nov. 15.

1st Lt. Pierre B. Denson from Hawaii to 12th, Ft. Monroe.

1st Lt. Edward Arthur Dolph resignation accepted Nov. 2.

1st Lt. Karl C. Frank to sail from San Francisco for Panama April 4 instead of February 26.

1st Lt. Paul A. Harris, 8th, Ft. Preble, orders to Alabama revoked.

1st Lt. John S. Henn from Philippines, to 52nd, Ft. Monroe.

1st Lt. Walker W. Holler, transferred to Ordnance Department, Dec. 22.

1st Lt. William E. House, transferred to Ordnance Department, Dec. 22.

1st Lt. Ephraim J. Jolls promoted captain November 1.

1st Lt. Edward A. Kleinman from Philippines, to 51st, Ft. Monroe.

1st Lt. William S. Lawton 61st Ft. Sheridan to Philippines sailing New York April 29.

1st Lt. Walter L. McCormick promoted captain November 1.

1st Lt. Charles M. Myers, promoted captain Nov. 13.

1st Lt. George F. Nichols 11th Ft. H. G. Wright to Philippines sailing New York April 29.

1st Lt. Cyrus Q. Shelton promoted captain, Nov. 13.

1st Lt. James H. Smith promoted captain November 1.

1st Lt. Harold W. Smith, 6th Ft. Winfield Scott, to Philippines sailing San Francisco, May 25.

1st Lt. Harold T. Turnbull 62d, Ft. Totten to Philippines sailing New York April 29.

1st Lt. Fred B. Waters promoted captain November 10.

1st Lt. Kenneth E. Webber, transferred to Finance Department, Dec. 22.

1st Lt. Leon A. White promoted captain, November 1.

1st Lt. Henry K. Williams, jr., from recruiting, Buffalo, N. Y., to Hawaii sailing New York, March 10.

2nd Lt. Arthur H. Bender, from Hawaii, to 12th, Ft. Monroe.

2nd Lt. Frederick T. Berg relieved from detail in Air Corps, Ft. Sam Houston to Philippines, sailing New York, April 29.

2nd Lt. Frank A. Bogart 13th, Ft. Barrancas, to Philippines sailing New York April 29.

2nd Lt. Charles C. Cloud, jr. 63d, Ft. MacArthur to Philippines sailing San Francisco, May 25.

2nd Lt. Frank P. Corbin, jr., 12th Ft. Monroe, to Philippines, sailing New York, April 29.

2nd Lt. Chester J. Diestel relieved from detail in Air Corps, Ft. Sam Houston, to Philippines sailing San Francisco, May 25.

2nd Lt. Charles B. Duff, 69th, Ft. McClellan to Philippines sailing New York April 29.

2nd Lt. William E. House (O. D.) promoted first lieutenant November 1.

2nd Lt. Howard W. Hunter, 62d, Ft. Totten to Panama sailing New York Jan. 7.

2nd Lt. Clifton L. MacLachlen, 6th, Ft. Winfield Scott, to Philippines, sailing San Francisco, May 21.

2nd Lt. Peter Schmick, 6th, Ft. Winfield Scott, to Philippines sailing San Francisco, May 25.

2nd Lt. Richard S. Spangler, 13th, Ft. Barrancas, to Philippines, sailing New York Jan. 13.

2nd Lt. Holger N. Toftoy promoted first lieutenant Nov. 25.

2nd Lt. Harry F. Townsend from Philippines, to 52d, Ft. Monroe.

Master Sgt. Albert E. Robinson, 5th, Ft. Hamilton, retired, Nov. 30.

Master Sgt. Watson W. Wetherbie, 52d, Ft. Hancock, retired, Dec. 31.

1st Sgt. Joseph A. Barito, 9th, Ft. Banks retired Nov. 30.

1st Sgt. James T. Geringer, 2d Ft. Sherman, retired October 31.

1st Sgt. John P. McShera, 65th, Ft. Randolph, retired, Dec. 1.

1st Sgt. Edward Plitt, 6th, Baker retired, Nov. 30.

1st Sgt. Fred R. Rice, 65th, Ft. Amador, retired, Nov. 30.

1st Sgt. Andrew Shultz, 6th, Ft. Winfield Scott, retired, Nov. 30.

1st Sgt. Charles T. Smith, 6th, Ft. Winfield Scott, retired, Dec. 31.

1st Sgt. Adam H. Wannamaker 14th, Ft. Worden, retired, Jan. 31.

1st Sgt. Sam Wolf, 59th, Ft. Mills, retired, Nov. 30.

Tech. Sgt. John J. Roy, 13th, Ft. Barrancas, Dec. 31.

Sgt. Augustus Hebel, 62d, Ft. Totten, retired, Nov. 30.

BOOK REVIEWS

LEONARD WOOD. BY HERMAN HAGEDORN. Two volumes. 960 pages. Harper and Brothers. $10.

Mr. Hagedorn has written a great book about a great man, a book of peculiar interest to the Army about one of its most remarkable characters, Leonard Wood! —Captain-Doctor promoted General—who made good at every job to which he was assigned and who at the same time ran contrary to all "adopted policies" and brought down upon himself, at one time or another, the bitter animosity of all of his superiors, up to and including the President of the United States.

Mr. Hagedorn had access to General Wood's diary, the records of his voluminous personal correspondence, and manuscripts furnished by those most intimately associated with him throughout his long career. An exhaustive search was made of contemporaneous newspapers and magazines, of public records and of private correspondence between third parties in which General Wood was mentioned.

The author brings into sharp contrast two opposite types, Pershing, who always concerned himself with his own affairs, and Wood, who never freed himself from concern about the affairs of others—that is to say, who was a reformer. He portrays Pershing as a man who followed the strict line of the duty assigned to him, and Wood as a man who was restive when things went wrong and who tried to remedy them whether they pertained to himself, to his subordinates, or to his superiors. He indicates that, in the last analysis, one got the breaks and the other did not—that Baker, a civilian and a pacifist, selected Pershing to command the armies of the United States; that Penrose, a machine politician, prevented Wood from becoming President of the United States

It seems a pity that he should have attacked the reputation of so many other eminent Americans in defending the reputation of General Wood. He assumes that General Wood was always right and that the others were always wrong. As a matter of fact, some of the things for which General Wood contended have subsequently proven to be fallacious. It could hardly be otherwise. To err is human, and above all things General Wood was intensely human.

He points out the mutual admiration between Wood and Pershing but impugns Pershing's motives and leaves the reader in doubt as to who was responsible for Wood's not going to France—Pershing, March, Baker, or Wilson. He shows that Wood's strongest Army allies, before and after the war, were Pershing's intimate staff officers during the war, but he does not reconcile these differences. The truth is that while a man cannot ride two horses at the same time, he can ride first one and then the other without disparagement to either.

He has shown that General Wood was the storm center of controversy but has failed to show that General

Wood. himself, was rarely a party to this controversy. He has shown that many men hated Wood but has not shown that Wood hated no man. To his intimates General Wood's most striking characteristics was his kindly, genial disposition. Whatever he may have written in his diary, neither he nor Mrs. Wood ever expressed an unfavorable opinion of anyone. Sometimes, with a little smile, he gave vent to some mild satire or cynicism, but as a matter of fact, General Wood loved his enemies and often spoke of them in affectionate terms. He admired a bold antagonist, gloated over him when he had him down, and then felt sorry for him.

The author has not given all his attention, of course, to General Wood the soldier. About one third of the text is devoted to his experience and his accomplishments as Governor-General in Cuba and in the Phillippines—accomplishments which among high government officials were more appreciated in the West Indies, in Europe and in Asia than in the United States.

Mr. Hagedorn has accomplished a great work, but we are too close to it. In time to come it will be a valuable contribution to American history.

JOHNSON HAGOOD
Major General, U. S. Army.

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BOLIVAR CONDUCTOR DE TROPAS (Bolivar Leader of Troops) by Brigadier-General Eleazar Lopez Contreras. 215 pages. Editorial "Elite," Caracas, Venezuela, 1931.

General Contreras of Venezuela, distinguished soldier and military historian, presents an interesting analytical study of Simon Bolivar's campaigns from 1813 to 1821 for the liberation of Venezuela and Colombia. This volume is the first part of a comprehensive historical work which will, when completed, also include a study of the campaigns of the great Liberator for the freedom and independence of Ecuador, Peru and Bolivia.

The present volume traces seven distinct campaigns. The first of these covers the operations from Tachira to the capture by the Patriots of Caracas and the capitulation of the Spanish garrison under Fierro. Bolivar conducted this campaign with such consummate skill and rapidity, that it is justly designated as "An Admirable Campaign." The succeeding chapters follow the fortunes of war of the great Liberator in different parts of Venezuela and Colombia, and conclude with the brilliant victory in the second battle of Carabobo, which finally secured independence for Venezuela and Colombia. Although not a soldier by profession and training, the conduct of these operations bears testimony to the prodigious mind, sterling character and iron-will of the great leader whom we honor as the "Washington of South America."

Written in terse, yet fluent, readable literary style, the author treats his subject from a purely military point of view. He thoroughly orients his reader as to the general and special situations which form the background of each campaign. Sixteen maps and sketches assist the reader in following the operations. Numer-

ous illustrations enhance the interest of the text. The author's critique and apt comments at the conclusion of each chapter are particularly valuable to the student of military history and the art of war. Part II of this valuable and instructive study is still in preparation.

General Contreras deserves great credit for his scholarly presentation of an interesting, instructive and inspiring subject. His excellent work is a fitting tribute to the great liberator on the centenary of his passing.

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THE UNITED STATES AND DISARMAMENT, by Benjamin H. Williams; 361 pages. Whittlesey House, New York, 1931. (Price $3.00).

The author attempts to analyze the issues between the so-called sea-power theory of history, and the methods of pacific commerce, mutual confidence and cooperative diplomacy. He believes that the United States has a great economic interest in the maintenance of peaceful conditions throughout the world. Disregarding the facts of our history, the author avers that "before the war we Americans had been a non-militaristic nation, proud of our pacific intentions, and of the sharp contrast which distinguished us from the armed nations of Europe". In the author's opinion our navy before the World War endangered no one and caused little apprehension abroad; the army was and still is too small to be a factor in the world's military competition. He laments the fact, therefore, that during and after the war "we were swept forward by new impulses until, in the words of President Hoover, we possessed 'the largest military budget of any nation in the world' ". Thus, the author concludes, we have taken the place of pre-war Germany as the greatest spender for prospective wars.

The author marshals his facts and figures and construes and interprets them to sustain his brief in favor of a pacifistic solution of his thesis. Like all pacifists, he places a mess of potage and the precious skin of the individual above national security, self-preservation and self-perpetuation.

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THAT NEXT WAR? by Major K. A. Bratt of the Swedish Army. Published by Harcourt, Brace and Company, New York, 1931. 264 pages. $2.50.

Major Bratt divides his book into three definite parts: Part I deals with the modern war society; Part II discusses very thoroughly six dangerous points; Part III presents the struggles against the next war.

In the first part of his book the author gives a short history of the background of war and his reasons for writing the book. According to him the great shadow of war is still hanging over the world, and he gives the reasons why. The maintenance of armaments breeds fear and distrust, which in turn turns into hate and war—and yet he does not advocate that the peace-loving nations disarm! The air arm has revolutionized warfare, and in the next war entire peoples are going to be annihilated. The strategical plans for this

annihilation are already prepared and resting in the secret vaults of every General Staff!

Part Two describes very thoroughly how and why present-day Europe is a dynamite magazine. The old problem of the Balkans has been transferred to the whole of Europe, due mainly to the oppressed minorities. Russia with its Communism and Italy with its Fascism are doing their share to stir up the general uneasiness. The present French "security" is dangerous to the rest of the world. The struggle of the Asiatics to throw off the over-lordship of the European may result in serious consequences unless handled most diplomatically. The secret and unremitting fight of the steel manufacturers and munition firms against the movements for peace, in the author's opinion, are largely responsible for keeping the war spirit alive. The struggle for oil, and above all the close alliance between the military forces and the forces of reaction, exert a tremendous power for evil. The various American patriotic societies come in for severe criticism, and it may interest many officers to learn that the "Army and Navy Journal," the "Quartermaster Review," "The Reserve Officer," and the "Army and Navy Register," together with the speeches of Admiral Plunket, are strong factors in making the United States so militaristic. It was our business interests that compelled the United States to enter the World War, because the Allies had borrowed so much money from us that it was finally necessary to guarantee their success. Even the pacifists are partly to blame because they are so impracticable.

In the final part of the book there is a thorough discussion of how to have peace. The pros and cons of various methods are gone into in great detail. The general conclusion is reached that there are two kinds of Capital—one kind for war and the other for peace. The "peace" Capital must unite with the world labor movement, and that union will be the strongest guarantee for peace. Also, there must be some kind of a world super-power, with an international army and navy to enforce its authority. The United States must come into this world organization, of course, to make it effective. Finally, if all else fails to stop the next war, then those people who are responsible for the movement of the wheels of industry must stop all work, and thereby compel the military forces to stop the war due to lack of war materiel. The revolt of the "crossed arms versus the crossed bayonets."

The book has won the enthusiastic approval of Dr. Nicholas Murray Butler and Mr. Wickham Steed. It is easy to understand their intense approval, because Major Bratt, in the opinion of the reviewer, has practically based his whole thesis on the premise that every general staff in the world today intends to use the entire air force of its particular country, not to fight the enemy armed forces, but to annihilate the civilian population. The book is well worth reading by every Army Officer because it is highly provocative, and whether one agrees with it or not, there is much food for serious thought in it.