

# **THE FIELD ARTILLERY JOURNAL**

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**THE UNITED STATES FIELD ARTILLERY ASSOCIATION  
WASHINGTON, D. C.**

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MAJOR-GENERAL WM. J. SNOW  
FIRST CHIEF OF FIELD ARTILLERY  
FEBRUARY 10, 1918—DECEMBER 19, 1927.

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## TO GENERAL SNOW

THE Field Artillery salutes you, and yields with sincerest disappointment and regret to your retirement.

It was you who on February 10, 1918, became our first Chief. You took us when we were in a condition bordering upon demoralization, with fear of Field Artillery failure haunting us; you took us when there were in the Field Artillery only 275 officers and 5253 enlisted men of more than one year and ten months' service; you took us some nine months after our Government had declared war and when the chaos of insurmountable difficulties, and the discouragement of uncoördinated and seemingly unavailing effort, had settled upon us; you took us when the Field Artillery School had but recently been reestablished by you, and when we were without properly directed training policies, without proper distribution of trained personnel, without equipment, and without matériel.

It was you who, in those trying days, with great vision and judgment slowly but certainly brought order and concerted effort out of that chaos; it was you who promptly reorganized and enlarged the Field Artillery School to a production capacity of 200 officer graduates per week; it was you who established brigade firing centers with ultimate capacity of 18 brigades in training under experienced instructors and under carefully coördinated schedules covering a training period of about twelve weeks; it was you who established the Central Officers Training School, with over 13,000 officer candidates in training; it was you who established the two Field Artillery Replacement Depots with capacity of over 3000 officers and 50,000 enlisted men, and which furnished overseas replacements of 4855 officers and 32,104 men; it was you who established throughout the Field Artillery a system of training and coördination calculated, in the shortest possible space of time, to indoctrinate our greatly increased and increasing personnel with sound field artillery principles; it was you who established schools of instruction for our specialists; it was you who worked ceaselessly and tirelessly to speed up production of guns and accessories to the end that we should be properly armed and equipped before going

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into combat; and it was you who inspired us to give, and to do, our best.

Though you were denied the more conspicuous and glamorous duty of leading us in battle, a duty in which you would have excelled, it was you, Sir, who put the Field Artillery of the United States Army into the World War at a strength of 22,393 officers and 439,760 men, and who brought it through that struggle with credit to the traditions of our Arm and our Country.

Your devotion to the ideals of the Army, your love of the Field Artillery, and your years of tireless labor to serve the interests and welfare of both, have been an inspiration to us and have set a standard for us to emulate.

We are proud of your accomplishments and your devoted service; we are a better Field Artillery because of your leadership, your sound judgment, your encouragement, your constructive criticisms, your generous praise of our efforts, and your loyalty to us who had the privilege to serve you. We honor you, we respect you, we love you; we regretfully yield you as Our Chief.

# THE ANNUAL REPORT OF THE CHIEF OF FIELD ARTILLERY FOR 1926-1927

## IN TWO PARTS—PART II

### SECTION IV

#### MISCELLANEOUS

##### 12. MOTOR UPKEEP

*a.* Field Artillery motorized organizations are sadly handicapped by the shortage of five-passenger cars. In practically all motorized units, allowances are so reduced that only one such car is authorized. As a result, when there is any shortage in the inadequate authorization, the organization has great difficulty in performing its routine drill and training.

*b.* Considerable thought and study has been devoted to devising some practicable means of determining when motor vehicles, particularly tractors, should economically be scrapped. It is suspected that, in the past, these vehicles have frequently been retained in service after such retention has become unduly costly. This office inaugurated a system of accounts which has been kept experimentally for several years in two organizations and which, it is hoped, will eventually lead to a more economical use of motor vehicles by the Field Artillery. The statistics so far compiled show that the operation of old and obsolete motor equipment, principally tractors, is one of the most expensive luxuries the War Department indulges in. Yet, there are no funds for the purchase of modern equipment.

##### 13. GASOLINE

While it will be necessary to curtail the training of motor units for the fiscal year 1928 to conform to the appropriation for gasoline for 105 hours training, the General Directive for the War Department Program for the fiscal year 1929 authorized estimates to be submitted on the basis of 150 hours training. If the estimates can be retained in the budget without cut, the increase will be of inestimable value in the training of motor units. During the past fiscal year 1927, training had to be curtailed.

##### 14. SURPLUS PROPERTY FROM MUSCLE SHOALS

Last September a detachment of Field Artillery was sent from Fort Bragg, North Carolina, to Muscle Shoals, Alabama, to salvage surplus property. Practically 140 car loads of miscellaneous building materials were obtained and shipped to Fort Bragg where it is

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being used in the maintenance of that post. This property has been of great value in making habitable the extremely poor quarters at Fort Bragg.

### SECTION V

#### MATÉRIEL AND EQUIPMENT

15. Before discussing the progress made during the past year in Matériel and Equipment, I wish to emphasize the fact that I do not contemplate asking for any expensive, wholesale re-armament of the Field Artillery. The impracticability of such re-armament is fully appreciated. But continuous experimental and development work is essential to progress. No work confronting the Chief of Field Artillery is of greater importance.

#### 16. TECHNICAL DEVELOPMENTS, ORDNANCE

*a. Cannon and Carriages.*—(1) Characteristics of cannon, standard and experimental, are contained in the two-page chart attached to this report and marked Exhibit "A".\*

(2) *Light Gun.*—(a) *75-mm. Gun, Model 1923.*—This split-trail matériel has been adopted as to type as standard for future manufacture. However, some development work on details, and investigation of manufacturing processes remains to be done. Three additional units of this matériel have been manufactured which, with the pilot unit, will constitute a battery which will be put in continued test by routine use in a battery of school troops at the Field Artillery School. One of the most recent units has been sent to the Field Artillery Board for test to determine the satisfactoriness of certain modifications made as a result of test of the pilot. An experimental elevating mechanism and sighting system similar to that in the 75-mm., Model 1925, will be tested out in this unit. Upon completion of test, this unit and the pilot unit will be sent on to complete the battery in the hands of the Field Artillery School.

This battery will be provided with ammunition by furnishing sufficient special cartridge cases, a resizing outfit, primers and powder charges, but using standard shell and shrapnel. This is for reasons of economy. In addition a limited amount of experimental ammunition designed for the gun will be furnished so that the true powers of the weapon can be demonstrated.

(b) *75-mm. Gun, Model 1925.*—Test of the pilot unit of this box-trail matériel by the Field Artillery Board has just been completed. It was found to have satisfactory mobility, stability, and sturdiness. In view of the general satisfactoriness of the split-trail design (75-mm. Gun, Model 1923), no further development of the box-trail type will be undertaken at the present time.

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\* Omitted.

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(3) *Pack Howitzer, 75-mm., Model 1923-E.*—There are four units of this matériel. Unit Number 1, the pilot; Unit Number 2, which is practically the same as Unit Number 1, except that certain welded construction was replaced by integral forging; Units Number 3 and 4, in which are incorporated changes, which essentially affect the details of the pack loads, and not the characteristics of the assembled piece. These changes are based on recommendations of the Pack Artillery Board as a result of its experience in the test of the pilot about two years ago.

A battery equipped with the four units of this matériel made a 500-mile road test by marching from Fort McIntosh to Camp Stanley, Texas, participating in the Second Division maneuvers at that place, and returning to Fort McIntosh, the middle of June, 1927.

Final report of test has not been received. Preliminary report indicates that this matériel packs as well if not better than the old Vickers-Maxim. For this reason, and because of the remarkable power of this weapon, there is little question it will soon be adopted as standard as to type. It is a remarkable weapon.

(4) *Light Howitzer.*—(a) *105-mm. Howitzer, Model 1925.*—This model is still undergoing test by the Field Artillery Board. The test of this box-trail model has been delayed in order that it may be given a comparative test with Models T-1 and T-2, split-trail, which will soon be available.

(b) *105-mm. Howitzer, Model T-1.*—Two units of this split-trail model have been completed and are now undergoing proving ground test. These will shortly be available for service test by the Field Artillery Board.

(c) *105-mm. Howitzer, Model T-2.*—Two units of this split-trail model are now under manufacture. These will differ from the Model T-1, in that a recoil pit of only seven inches depth is necessary for high-angle firing (elevation more than 40°) as opposed to the sixteen-inch pit required by the Model T-1. The general characteristics of the two models are similar.

(d) The models named above represent the culmination of efforts for the development of a light howitzer since the war. I confidently expect that service test will indicate the suitability of one of these models for adoption as a standard type. The importance of a light howitzer in our divisional armament is so great that, as soon as a standard is adopted, a number of units for limited re-armament should be promptly constructed.

(e) With the exception of the Pack Howitzer, previously mentioned, there is no more important Field Artillery Ordnance now under development than this 105-mm. Howitzer. As to the Pack Howitzer, our present one now in use is one of the most obsolete



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weapons in the hands of troops anywhere in the civilized world. As to the 105-Howitzer, the United States and France are the only two great nations unprovided with such a weapon—and France has adopted it in principle.

(5) *Medium Gun, 4.7-inch, Model 1921-E.*—A pilot of the Model 1921 matériel was tested over a year ago, but the construction of another experimental model made of steels more readily available, is necessary. On account of the impossibility of emergency production, this model will be no longer considered.

(6) *Medium Howitzer.*—(a) *155-mm. Howitzer, Model 1920.*—This model remains in the hands of the Field Artillery Board. This is the first model Howitzer manufactured since the war and has proven extremely useful, as it has developed clearly desirable features to be incorporated in this matériel of which we had no previous knowledge. It is probable that this matériel will be of no future use except for comparative tests.

(b) *155-mm. Howitzer, Model T-1.*—This model is now under construction and should be ready for service test by the Field Artillery Board in the spring of 1928. In this model are embodied characteristics recommended by the Field Artillery Board as a result of the test of the 155-mm. Howitzer, Model 1920. It has the same ballistic characteristics as that model, and although somewhat lighter will weigh about the same in firing position and limbered. It will be constructed to be carried in one load. This construction is better tactically and is economical of personnel and road space as compared with the Model 1920 carried in two loads, and the limbered load bears a better relation to heavy commercial tractors than the two loads of the Model 1920 bear to medium commercial tractors.

(7) *155-mm. Gun—8-inch Howitzer Carriage, Model 1920.*—This matériel has been tested by the Field Artillery Board and certain minor defects developed which are being corrected by incorporated changes in matériel at Fort Bragg, North Carolina. The most serious defect of matériel is that the carriage load is too heavy to be sufficiently mobile with standard commercial heavy tractors. Correction of this defect involves redesign and a new model. The importance of this development merits the provision of funds for redesign and construction of another unit.

b. *Automotive Matériel.*—(1) *Motor Carriages.*—The two 155-mm. Gun—8-inch Howitzer Motor Carriages referred to in my last Annual Report, were recently sent to the Field Artillery Board for service test, one as a motor-carriage mounting 155-mm. Gun, Model 1920, or 8-inch Howitzer, Model 1920, and the other, stripped, as a heavy tractor. Tests are now in progress.

(2) *Tractors.*—(a) *Caterpillar, Two-ton.*—As stated in my

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last Annual Report, this tractor has been adopted as standard. The two batteries of these tractors which were at Fort Benning, Georgia, have been sent to Fort Sill due to the recent conversion of the Eighty-third Field Artillery at Fort Benning from tractor-drawn to horse-drawn. School troops at Fort Sill, Oklahoma, will continue the experimental use of these tractors.

(b) *Caterpillar 30*.—This standard medium tractor continues under test by the Field Artillery Board.

(c) *Caterpillar 60*.—This standard heavy tractor continues under test by the Field Artillery Board.

(d) *Fordson Tractor*.—This tractor with the Full Crawler Adapter and with the Hadfield-Penfield Adapter continues under test by the Field Artillery Board.

(e) *Corps Tractor*.—The test of this tractor has been completed by the Field Artillery Board. It is a noteworthy achievement of the Ordnance Department and shows that the comparatively recently formed Automotive Division of that Department has attained a high quality of accomplishment. The Field Artillery Board, on account of the excellence of this tractor, recommended continued development. However, I have withheld approval of this recommendation as it is my policy to limit tractor development to the exploitation of the commercial field.

(f) *McCormick-Deering Tractor*.—A McCormick-Deering 10–20 tractor, made by the International Harvester Company, is under test by the Field Artillery Board. This is a light four-wheeled tractor, a little heavier than the Fordson. Test of this tractor with commercial track-laying adapters has been suspended pending seasoning of the adapters in commercial use.

(g) *Cletrac 30*.—This track-laying caterpillar, of medium weight (7000 to 7500 pounds), having shown good results in the commercial world, is being tested at Aberdeen Proving Ground.

(h) *Lighting Equipment for Tractors*.—A night lighting equipment made up at Aberdeen Proving Ground and consisting of a headlight with an assortment of colored lens and bulbs was tested by the Field Artillery Board. The tests were not conclusive due to the fact that night aerial observation could not be employed because of the lack of facilities at Fort Bragg for night flying. Tests have been postponed until night flying equipment is installed by the Air Corps at Fort Bragg.

(3) *Cross-country Cars*.—(a) *Ford*.—The Ford cross-country car has been adopted as a standard type.

(b) *Chevrolet*.—One Chevrolet cross-country car is under test by the Field Artillery Board and, although the test has not been completed, indications are that this car will prove eminently satisfactory.

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(c) I have recommended extensive issue of cross-country cars in order to substantiate the opinion, based on the results of test of a few vehicles, that the cross-country car will replace all passenger-carrying vehicles in field artillery with resulting advantages in operation, training, maintenance, and supply.

(4) *Cross-country Trucks.*—Upon the recommendation of the Chief of Field Artillery, the Ordnance Department has instituted the design of a cross-country light truck engineered from Ford and Chevrolet light trucks along lines similar to those of the cross-country car. Such a vehicle offers promise of great utility for use in carrying personnel and equipment in motorized units.

c. *Ammunition.*—(1) *Fuzes.*—(a) The Field Artillery Board has tested three hundred rounds of 75-mm. E-1 shell equipped with the E-13 (combination superquick and short delay) fuze in the pilots M-1923 and M-1925-E 75-mm. Guns. They were found satisfactory as to range, accuracy (except for an apparent discrepancy at short range to be further investigated), fragmentation, ease of handling, stability in transportation, and functioning of the superquick element of the fuze. The percentage of malfunctions obtained with the delay setting of the fuze, although lower than previously obtained with this fuze, was still too high for effective fire and ammunition carefully manufactured in small lots.

(b) One of the most difficult problems of development for Field Artillery with which the Ordnance Department has been faced is the development of a combination superquick and short delay fuze. Every effort is being made to solve this problem and it is now being undertaken along two separate lines: First, the continuation of the ideal, the E-13 (combination superquick and short delay) fuze, and second, the modification of the present standard Mark III (superquick) fuze. The contemplated modification of the Mark III fuze calls for the addition of a setback sleeve to replace the tinfoil cover, thus removing the great objection to the Mark III fuze, which is the danger of prematures due to the safety spiral becoming misplaced in handling, the addition of an inertia plunger which will cause this fuze to function at low angles of impact, improvements of the ballistics of this fuze which will permit its use with reduced charges and possibly improved loading of the detonator.

(c) In order to establish the characteristics for a time fuze for shell, the Field Artillery Board will be furnished in the near future with eight hundred and fifty rounds of 75-mm. anti-aircraft shell equipped with the twenty-one-second combination time and percussion fuze for test to determine the effect and suitability of time shell for this caliber. They will also be furnished with one hundred and fifty rounds of 155-mm. gun shell equipped with the Waltham

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mechanical time fuze to test the possibilities of time-fuzed shell for High-burst Ranging.

(2) *Projectiles.*—(a) *Shell-Shrapnel Test.*—The shell-shrapnel test has been continued with improved methods under the Field Artillery Board in the past year, but further tests at short ranges (Ricochet range) on varying soil and on the comparative time, accuracy and simplicity of adjustment with the two projectiles are necessary. Much information has been obtained on the proper burst interval and height of burst of shrapnel. Much has been learned on the most effective methods of attacking various targets.

(b) The Pack Artillery Board has just completed the firing tests of the battery of 75-mm. Pack Howitzers, Model 1923, and in this test they fired four hundred and eighty rounds of 75-mm. Pack Howitzers E-1 shell equipped with the AB-3 fuze. Final reports of this test have not been received, but preliminary reports indicate no serious difficulty with this ammunition.

d. *Propellants.*—(1) Flashless non-hygroscopic smokeless powder has been adopted as standard for the 75-mm. guns and although not entirely flashless in other calibers, powder of similar chemical compression has been developed for larger calibers which has the great advantage of being non-hygroscopic and smokeless.

(2) A project, now in the hands of the Ordnance Department, which gives promise of far-reaching results for field artillery ammunition, is one for developing propellants for zoned weapons to improve the accuracy in the lower zones. This is being developed now in the 155-mm. howitzer, Model 1918, and will apply to all zoned weapons. The Ordnance Department is to be congratulated on this development of which the results obtained thus far point to a reduction of the probable error in the first five zones from thirty to sixty per cent., which will result in a saving of millions of rounds of ammunition in any major emergency and increasing the effectiveness of the weapon by a similar amount.

e. *Ammunition Carriers.*—(1) *Pack Artillery.*—Four expendable five-round ammunition boxes, designed for being packed on mules, are now under test by the Pack Artillery Board.

(2) *105-mm. Howitzer.*—Improved designs of two-round and four-round boxes have been tested by the Field Artillery Board and found satisfactory from the point of view of strength, and ease of removing ammunition from boxes. Both the two-round and four-round boxes were found to be heavier than desirable for this caliber of ammunition. The four-round box is more economical than the two-round box as far as cost, weight and space are concerned, but in the present design, due to the weight, the two-round box only was capable of being satisfactorily handled. Further tests of these

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boxes will be made and a lighter container for this ammunition will be investigated.

*f. Miscellaneous.*—(1) *Sub-caliber.*—(a) As a result of test, by a Board of Field Artillery officers in the Hawaiian Department, of sub-caliber equipment for 155-mm. Howitzer, Model 1918, it has been recommended that the caliber .30 rifle, mounted in the tube, and caliber .30 gallery practice ammunition, be adopted as the standard sub-caliber equipment for this matériel pending the satisfactory development of 37-mm. sub-caliber equipment.

(b) The present issue caliber .30 sub-caliber tubes for the 75-mm. gun have not been satisfactory and the Ordnance Department has developed an improvement on this sub-caliber equipment now being tested by the Field Artillery Board, which promises to eliminate the defects in this equipment.

(2) *75-mm. Caisson, Model 1918.*—The present standard 75-mm. gun caisson, Model 1918, is not suitable for carrying the Mark IV, 75-mm. shell, which is the standard for manufacture for the 75-mm. guns, Model 1897, Model 1916, and Model 1917. This is due to the fact that the Mark IV shell, due to its D shape, does not fit into the semi-cylindrical connecting pieces between the vertical diaphragms. Two Model 1918 caissons, modified to make them suitable for carrying the Mark IV shell in addition to the Mark I shell and shrapnel, were tested by the Field Artillery Board in 1925. In these caissons, the connecting pieces between the intermediate and rear diaphragms were tubular while the connecting pieces between the front and intermediate diaphragms were similar to the present—that is, cut on top. Trouble resulted from the connecting pieces between the front and intermediate diaphragms, and the Field Artillery Board is now testing caissons in which the connecting pieces are tubular throughout.

(3) *Cargo Carts.*—Cargo carts were designed and built to fulfill the specific need of an ammunition carrier for the 105-mm. howitzer ammunition. However, they are also being considered as general cross-country cargo carriers. The cargo cart T-1, which is a two-wheel cart built on the chassis of a 75-mm. caisson limber, Model 1918, was tested by the Field Artillery Board and found satisfactory as a general cargo vehicle for field artillery, both in horse and tractor draft. Definite recommendations for utilization of this vehicle as an ammunition carrier for the 75-mm. gun and 105-mm. howitzer is dependent on the outcome of extensive tests in comparison with conventional caisson type vehicles. Conventional caissons and limbers as well as cargo carts are to be built for test in conjunction with the battery of 75-mm. guns, Model 1923, and the battery of 105-mm. howitzers, T-1 and T-2. The cargo cart, T-2 (fifth wheel or wagon type), has not as yet been

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tested by the Field Artillery Board. This type will also be considered in the solution of the problem.

(4) *Panoramic Sight Mounting, 75-mm. Gun.*—The pilot panoramic sight mounting, Type DD, for the 75-mm. gun, Model 1897 (French), was found satisfactory in test by the Field Artillery Board, and the equipping of eighteen batteries of 75-mm. guns, Model 1897, serving under varied conditions of terrain and service, has been recommended for extensive service test. The importance of the test merits prompt approval of this recommendation.

The panoramic sight is incomparably more effective and efficient than the French sight now on all of our 75-mm. guns, particularly for the open warfare contemplated by United States traditions. But the use of this sight depends entirely upon our ability to develop a satisfactory sight mounting.

(5) (a) *Caisson Mount for Machine Gun.*—The Ordnance Department is designing a caisson mount for anti-aircraft machine guns to meet the following requirements:

Can be quickly attached to or detached from any caisson.

Will allow the machine gun to be fired in any direction and at any altitude by a gunner seated on the caisson.

In traveling position, no element of the machine gun or its mount to be more than approximately six feet six inches above the level of the ground.

(b) Pending the completion of this development, the Field Artillery Board has improvised a method of mounting the anti-aircraft tripod, Model 1918, by attaching with turnbuckles two legs of the tripod to the caisson foot board and one leg to the middle rail of the caisson frame.

(c) The question of defense of pack artillery against low-flying aircraft is under study by the Pack Artillery Board. Two pack machine gun outfits, adapted to carry the anti-aircraft, .30-caliber machine gun mount, Model 1918, have been furnished the Board for test.

(6) *Reels.*—(a) A project has been established with the Ordnance Department for modifying sufficient Battery Reels, Model 1917, to equip several 75-mm. batteries serving under varying conditions of terrain and service. These modifications were worked out and tested by the Field Artillery Board. Brackets are to be installed on the ends of the chest, mounting an axle on which may be mounted issue spools from which wire may be laid but not picked up, thus overcoming partially the serious inadequacy of the standard reel.

(b) A project for the improvement of reel, Model 1909, and cart, Model 1908, along lines similar to the improvements of the

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Battery Reel noted above is being worked on by the Field Artillery Board.

(7) *Rates of Fire*.—The Ordnance Department is conducting a study involving considerable firing and careful measurements, of the heating effect on matériels resulting from various rates of fire, of the erosive effects resulting from these varying bore temperatures, and of the resulting effect on the life and accuracy of weapons. This study will require considerable time for its completion. The results will be of great value to field artillery in substantiating the rates of fire empirically laid down in Training Regulations as a result of war experience or in permitting an increase in these rates.

(8) *Limber Pole Support*.—The pole-supporting mechanism incorporated in the limber, Model 1918, is not susceptible of ready adjustment in the field. The Ordnance Department has under development an improved mechanism for future manufacture. An improvised method of adjustment involving only simple changes was worked out in the Eighty-second Field Artillery and is being studied with a view to adoption as standard and modifying limbers in issue.

(9) *Pyroxylin Finishes*.—Experiments are being conducted by the Ordnance Department to determine the suitability of pyroxylin finishes for artillery matériels. One battery of the Sixth Field Artillery has had its vehicles and carriages refinished with this material. While it will be some time before sufficient data is available to base definite conclusions relative to new materials which have never been painted, experience to date indicates, in so far as concerns matériels in the hands of troops which are painted with ordinary paint, that refinishing with pyroxylin finishes is not economical as to material or labor. However, these finishes are undergoing continual improvement and the investigation should continue.

(10) *Equipment Tables*.—(a) Much work has been done toward the preparation of Equipment Tables for Field Artillery units. These tables, which will be complete in themselves without reference to other publications, will be accurate lists of personal and organizational equipment prepared in convenient form for use in the requisition, issue and checking of equipment. When printed, approved and issued, they will replace the numerous War Department and Supply Branch Circulars for use in Field Artillery organizations. The War Strength Tables will be a most valuable aid in any emergency mobilization.

(b) This work is now being concentrated on War Strength Tables for Divisional organizations, to be followed by war strength tables for other organizations and peace strength tables. This work has required a very thorough study of the equipment and carrying space now authorized war strength units.

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(c) The Field Artillery Board has tested war strength units of Divisional Artillery with the result that valuable recommendations have been made tending to reduce the total impedimenta now carried into the field by these units.

(d) The Equipment Tables for the Brigade of Light Field Artillery (Infantry Division) War Strength are nearing completion and will be submitted at an early date for approval by the Supply Branches and the Chief of Staff.

### 18. TECHNICAL DEVELOPMENTS, SIGNAL CORPS

a. *Telephone.*—(1) *Reel Cart.*—This development is of the greatest importance and highest priority of any non-radio project for field artillery. This development has been under way for years. It should be pushed.

(2) *Hand-Set for Use with Gas Mask.*—The adoption of the diaphragm type of gas mask has entailed the development of a telephone hand-set with a sufficiently long shank between ear and mouth pieces so that the transmitter may be held in front of the diaphragm of the gas mask while still retaining the ear piece at the ear. This development is progressing.

(3) *Monocord Switchboard Assemblies.*—Pilots of a 4-line assembly proved satisfactory in preliminary test by the Field Artillery Board and some 12-line and 6-line monocord switchboard assemblies are being made up for more extensive test.

(4) *Pack Reels.*—Three experimental pack artillery reels have been sent to the Pack Artillery Board and two to the Twenty-fourth Field Artillery (Pack) Philippine Islands for test. These reels are based on a design gotten up and tested by the Pack Artillery Board.

(5) *Field Wire.*—The development of field wire including a light wire for use in forward areas, which has been on an inactive status since the war, has been placed on an active status.

(6) *Breast Reels.*—The standard breast reel carries an inadequate payload of wire. An improved reel is under development.

b. *Radio.*—(1) *General.*—(a) The recommendations of the Radio Board Report, rendered to the War Department last year, have not as yet received War Department approval. However, development of radio equipment is proceeding along the lines indicated in this Report. Work being done would not be a complete loss in case the Report is not finally approved, but there would be a severe setback if any radical change in kilocyclic bands were necessary.

(b) The Signal Corps is to be congratulated on the thorough work of the highest quality represented by this Report of the Radio Board. This Report makes most satisfactory provision for radio communication for Field Artillery.



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(2) *Development*—(a) *The "161" Set.*—This set may be called the field artillery set. It is to be a light portable continuous wave telegraph, loop antenna set, current for transmitting to be provided by a hand generator which can be operated by one man. The transmitting range is five miles. The transmitting part of the set provides for two removable coils "A" and "B," giving operation over two distinct though adjacent kilocyclic bands. The receiving part of the set is being designed to receive over the kilocyclic band which includes both of the transmitting kilocyclic bands "A" and "B." The "161" set will be normally used by Division Artillery and in the battalion fire control nets of 75-mm. G.H.Q. Reserve Artillery in the kilocyclic band pertaining to, and with, the "A" coil. It will be normally used by Corps Artillery, by G.H.Q. Reserve Artillery (other than in the fire control nets of G.H.Q. 75-mm. units) in the kilocyclic band pertaining to, and with, the "B" coil. However, the number of nets available within the kilocyclic bands "A" and "B," and the capability of the set for operating in either of these bands, will permit of radio intercommunication between field artillery units no matter what reasonable redistribution and assignment is made of G.H.Q. Reserve or Corps Field Artillery units to lower units.

(b) *The "C" Set.*—A set known as the "C" set with a transmitting range of fifteen miles is being developed for use in higher headquarters. It is intended to use this set between G.H.Q. and Corps Artillery Brigade and Regimental Headquarters, and in Observation Battalions.

(c) *Set for Communication with Aircraft.*—A short wave set is being developed to replace the S.C.R. 109-A. This is to be a telephone-telegraph set with a telegraph range of forty miles and a telephone range of fifteen miles.

(d) *Pack Artillery Set.*—The Pack Artillery, under the recommendation of the Radio Board Report, is to be provided with an S.C.R.-131 set (this is the Infantry set similar to the "161" but operating over a different kilocyclic band) with suitable containers to permit packing. Since the radio sets being developed for Cavalry will operate over a kilocyclic band overlapping that of the "131" set, Pack Artillery equipped with the "131" set will be able to work with either Infantry or Cavalry, a very desirable if not necessary requirement. For communication with aircraft, the Pack Artillery will utilize pack sets mentioned above as being developed for Cavalry. The kilocyclic band of these Cavalry sets overlaps that of the set intended to be carried on observation aircraft.

(e) *Sound Ranging by Radio.*—A kilocyclic band has been reserved, under the Report of the Radio Board, for use in radio communication between microphones and recording apparatus.

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*c. Projector.*—The requirements for a projector for Field Artillery have been drawn up by the Field Artillery School and Field Artillery Board, and a development to meet these requirements has been recommended to the Signal Corps.

### 19. TECHNICAL DEVELOPMENTS, QUARTERMASTER

*a. Trucks.*—(1) *Coleman.*—In the spring of last year, the purchase for test by the Field Artillery Board of two heavy Coleman 4-wheel drive trucks was authorized. These trucks were delivered to the Field Artillery Board early in 1927. Report of test has not been received but indications are that they will be satisfactory for use in heavy artillery units and Corps and Army Ammunition Trains.

(2) *F.W.D.*—The F.W.D. Company has modified the standard F.W.D. truck by substituting certain new and improved assemblies. This truck is being tested by the Field Artillery Board. Report of test has not been received. Indications to date are that it is greatly superior to the standard F.W.D.

*b. Rolling Kitchen.*—An experimental limbered rolling kitchen was tested by the Field Artillery Board and found unsatisfactory in that it was too heavy to be sufficiently mobile. This weight is due to the inclusion of certain features which while in themselves desirable, are not worth the weight involved. I have recommended development of a lighter kitchen.

*c. Pack Saddle.*—Further test of the Phillips Pack Saddle by the Pack Artillery Board is planned during the coming year.

*d. McClellan Saddle.*—The Field Artillery Board has tested McClellan Saddles modified by the addition of skirts and the substitution of a web girth for quarter straps and cincha. These saddles with minor additional modifications were satisfactory under test and the Chief of Field Artillery has recommended extensive test when funds shall become available. At present the field artillery is equipped with two types of saddles, one for the harness and one for the individually mounted men. In connection with the modified McClellan saddle project, the question of adopting one type only will be investigated.

### 20. CORPS OF ENGINEERS

*a. Firing by Aërial Photographs.*—The Corps of Engineers has during the year coöperated to the fullest extent in the development of artillery fire by means of aërial photographs which is a continuing study under the Field Artillery Board.

*b. Mechanical Production of Contoured Maps from Aërial Photographs.*—Such a machine has been developed in Germany and is under investigation by the Engineer Corps. Due to the lack of

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suitable maps of the United States, such a machine is of great interest to the Field Artillery as that arm can develop its highest effectiveness only if good maps are available.

*c. Vertical Searchlight Beams for Triangulation.*—The use of vertical searchlight beams for topographical purposes is being developed by the Corps of Engineers. This development is of the utmost importance to the Field Artillery and deserves exploitation. It is hoped that this development will soon reach such a stage that the Field Artillery can actively join in it.

### 21. AIR CORPS

The Air Corps has during the year, as in the past, coöperated to the fullest extent in the development of artillery firing by means of aerial photographs which, as noted above, is under continuing study by the Field Artillery Board.

### 22. CHEMICAL WARFARE SERVICE

*a. Gas Masks.*—Forty diaphragm type gas masks which are now standard were issued to the Field Artillery School for demonstration purposes and test and forty to the Field Artillery Board for extended test. The pilot model of this mask was tested three years ago by the Field Artillery Board and was recommended as standard at that time. Report of the Field Artillery School substantiates previous reports on the suitability of this mask. Test by the Field Artillery Board is not yet completed.

*b. Development Program.*—No other Chemical Warfare Service matériel was tested by the Field Artillery Board during the year. The year, however, has seen marked progress from the Field Artillery viewpoint in that the Field Artillery chemical warfare problem has received careful study by the Chemical Warfare Service and a most satisfactory development program has been drawn up.

### 23. WORK OF THE FIELD ARTILLERY BOARD

The Field Artillery Board has, during the year, made most satisfactory progress both in the preparation of Training Regulations and in conducting the various tests noted throughout this report as well as in conducting tests other than those pertaining strictly to new matériel. Perhaps the most important of these latter tests are those as to the effect of fire. These tests were started several years ago and have since continued and will continue for several years to come. Their object is the determination of ammunition expenditures to accomplish various battle missions. During the last year, the following final reports of tests were submitted:

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75-mm. Gun, Model 1925-E.

Type E Panoramic Sight Mounting for 75-mm. Gun, Model 1897.

Type "DD" Panoramic Sight Mounting, for 75-mm. Gun, Model 1897.

Carrying Case for Panels.

155-mm. Gun—8-inch Howitzer, Model 1920.

Cargo Carts, T-1.

Holding-up Straps and Loin Extension Straps.

F.N.H. Powder for 155-mm. Howitzer.

Harness Repair Links.

Pouches for carrying Signal Corps Knives and Pliers.

Wire-laying Tractor.

Modifications of Forge Limbers, Blacksmith's Tools and Tool Roll,  
and Chief Mechanic's Chest, Roll and Tools.

Carpenter Chest and Tool Roll.

Ford Cross-country Car (Final Report).

Modified McClellan Saddles.

Terminal Strips.

4-line Switchboard Assemblies.

Otis King Calculator (Slide Rule).

Watches.

50-gallon Gas Tank for 5-ton Tractor.

Indian Prince Motorcycle.

Best 60 Tractor.

Corps Tractor.

Lighting Equipment for Tractor.

The following progress reports were submitted:

105-mm. Ammunition Boxes.

Study of Effect of Fire.

Equipment Tables Study.

### 24. SUMMARY

In general, satisfactory progress was made during the past year, in the development of matériel and equipment. Some disappointments are inevitable in all development work. The helpful attitude of the Supply Branches is most encouraging; without it, progress would be difficult if not impossible.

## SECTION VI

### ORGANIZATION

### 25. CHANGES IN ORGANIZATION OF UNITS

*a. First Battalion, Fourth Field Artillery.*—The First Battalion, Fourth Field Artillery, which is the Field Artillery component of

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the Panama Garrison, was converted during the past year from a Pack Battalion armed with the 2.95-inch mountain howitzer to a Portée Battalion armed with the 75-mm. gun. This conversion was accomplished in conformity with the recommendation of the Commanding General, Panama Department. I acquiesced in his recommendation as this Battalion having a special mission I thought it wise that it be organized in accordance with the wishes of the officer who is responsible for its employment. The conversion of this battalion makes the Fourth Field Artillery a mixed regiment, the Second Battalion, which is stationed at Camp Stanley, Texas, being a Pack Battalion.

*b. First Battalion, Eighty-third Field Artillery.*—This Battalion, which is the only active part of its regiment, is stationed at Fort Benning, Georgia, as School Troops for the Infantry School. When a Battalion of field artillery was first sent to the Infantry School for station, I was desirous that it be a normal battalion of Division Artillery—that is, Light Field Artillery, Horse-drawn. On account of inadequate facilities for stabling animals, I deferred to the Chief of Infantry's desire that the Battalion at Fort Benning should be Tractor-drawn as a temporary expedient until stables could be provided. All demonstrations and problems at the Infantry School call for the employment of Division Artillery, and the fact that the only Field Artillery at Fort Benning was tractor-drawn has been unsatisfactory to all concerned. Accordingly, during the past year, this battalion was converted to a horse-drawn unit so that the Infantry School is now properly provided with field artillery troops. However, a horse-drawn battalion requires more men than a tractor-drawn battalion, and the strength of this unit, which is still that of a tractor-drawn battalion, should be increased at the first opportunity.

### 26. SHORTAGE OF MEN IN THE FIELD ARTILLERY UNITS

In my last Annual Report, I called attention to the fact that when existing Tables of Organization were prepared it was realized that organizations must be made as small as possible on account of the limited allotment of Enlisted Men to the Field Artillery arm. Since the approval of these Tables of Organization, the Army, and incidentally the Field Artillery, has on several occasions been reduced in strength. I wish again to invite attention to this condition in the Field Artillery units. A substantial increase in the strength of the field artillery arm is urgently needed in order that all units may be brought up to the strength provided in approved Tables of Organization. This strength is the minimum strength at which field artillery units can be properly maintained, trained and be efficient.

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### 27. SHORTAGE OF FIELD ARTILLERY ORGANIZATIONS IN THE ARMY

We entered the World War with a poorly balanced regular army. Up to that time no attempt had been made to provide an adequate amount of field artillery to support the Infantry of the Army. It was difficult at that time to secure increases for any arm of the service because since such increases brought promotion to the officers of the increased arm only, recommendations for increase were inevitably regarded with suspicion by all persons not in the arm affected. During the war, the necessity for a well-balanced army was thoroughly recognized by every one, and I and all other officers of Field Artillery confidently expected that in the future our arm would be maintained at its proper proportional strength. The passage of legislation making promotion in the army by a Single List has removed the principal obstacle which prior to the war made difficult the increase of a single arm. In my opinion, there is no reason today for an ill-balanced regular army. Yet, that is what we have. The increase of the Field Artillery to proper strength, based on Infantry and Cavalry strength, is important and merits the attention of the War Department.

## SECTION VII

### 28. WAR PLANS AND ORGANIZATION

Since my last Annual Report, the Field Artillery Annex to the War Department General Mobilization Plan has been revised and made to accord with changes in the War Department General Mobilization Plan and its appendices. My office has collaborated with the several General Staff Sections in the development of several Special Mobilization Plans and further revision of the General Mobilization Plan. Studies have been made with a view to determining how best to utilize the field artillery that actually exists in case of a major emergency. Recommendations relative to changes which are desirable from a field artillery point of view also have been submitted.

## SECTION VIII

### MORALE

### 29. HOUSING

In my last Annual Report, I commented at some length on a number of factors which affect morale adversely and make the maintenance of the morale in the Regular Army a difficult problem. Among the factors named was the housing situation. While no adequate relief has been experienced from the conditions of which I complained, an actual beginning of construction has been made at two Field Artillery posts which while small is at least reassuring.

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### 30. PROMOTION

At the date of my last Annual Report, many officers were anxious on account of legislation then proposed with a view to providing a more regular and rapid flow of promotion. Many officers apprehended that the proposed legislation, of the contents of which they were not well informed, would affect their future adversely. The action of the War Department during the past year in convening Boards all over the country to study the promotion situation has done much to reassure officers, and it is believed that less anxiety is felt on this subject at the close of the fiscal year 1927 than was the case at the close of the fiscal year 1926.

### 31. MORALE OF THE ARMY

In spite of the many factors which adversely affect morale in the United States Army at the present time, the morale of the Field Artillery is high. It is a source of great satisfaction to me to observe the splendid spirit of all Field Artillery organizations. The fact that morale has been kept high under adverse conditions is a tribute to the inherent leadership of the officers of the United States Army.

WM. J. SNOW,  
*Major-General,*  
*Chief of Field Artillery.*

### ADDENDUM

September 29, 1927.

The foregoing report covers the fiscal year ending June 30th last. Since that date, I have appeared before an Army Retiring Board, and my retirement from active service will consequently soon occur. In view of this fact, I deem it essential to invite attention to my last annual report, containing a number of recommendations not as yet acted on. Such recommendations were not repeated in the present report, as I had expected to follow them up in person, with a view to securing action. This procedure now being impossible, there is left to me only the present hope that the previous report be carefully reviewed, for it contains much that is of importance to the welfare of the field artillery.

As this is my final annual report as Chief of Field Artillery, I feel that I could not give up my office with a clear conscience, without expressing my appreciation of the devotion and loyalty the officers of this arm have always shown toward their Chief. No Chief in the War Department has ever been more faithfully served by the officers of his arm than have I. And I am not egotistical enough to consider this a personal tribute to me, but rather it has been a uniform manifestation of the fine spirit of the officers themselves,

## ANNUAL REPORT OF THE CHIEF OF FIELD ARTILLERY

of their confidence in the Office of their Chief, of their sense of obligation to their arm and of their faith in the justice with which the work has been carried on. It has been a privilege to me to be the Chief of such a fine body of officers for nearly ten years, and I hereby express my gratitude for their loyalty, devotion, and hard work.

I also desire to thank the other Chiefs of Branches, Departments and Corps, in the War Department, for their coöperation with the Field Artillery during the time I have been Chief. This spirit on their part has contributed no small part toward the development of the Field Artillery.

WM. J. SNOW,  
*Major-General,*  
*Chief of Field Artillery.*

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## CATHERINE, THE CANNON

A cannon of the fifteenth century in the Museum of the Invalides, Paris, bears the inscription: "My name is Catherine: I punish injustice."

THE gunners in an olden war  
Their cannon gaily christened.  
They called her "Catherine"—no more.  
She spoke and foemen listened.  
Oh, she was prone to pick a fight,  
And hearing her voice boomin'  
They'd grumble far into the night,  
"How very like a woman!"

The cannon claimed to punish wrong  
Both in and out of season,  
You could not argue with her long;  
She knew not how to reason.  
And when with counter-battery  
The foe replied with violence,  
They learned that such a gun as she  
They just plain couldn't silence.

So should a conflict come again,  
We'll name our guns for ladies,  
And let them talk with might and main  
And raise all kinds of Hades.  
Each cannoneer by shell appalled,  
Will yet shout, "None will find me  
Deserting lest my gun be called  
"The Girl I Left Behind Me.""

FAIRFAX DOWNEY.

# **LIAISON BETWEEN INFANTRY AND FIELD ARTILLERY WITHIN A DIVISION— METHODS IN USE TO DATE AND DEVELOPMENTS PENDING**

BY MAJOR C. M. BUSBEE, F.A.

(A Lecture delivered before National Guard and Reserve Officers at St. Louis, Mo.,  
November 7, 1927.)

## LIAISON

The word *liaison*, borrowed from the French, may be defined as "linking up" or "connection with" when applied in a military sense. The lecture tonight deals with this liaison within an infantry division, particularly with respect to the agencies and means employed by field artillery units to obtain information from and transmit information to the various infantry units which they are directly supporting. To support successfully other arms, the field artillery must have continuous knowledge of the situation and the needs of the supported troops. To obtain this information, it must keep in close touch with the commander of the supported troops, either by the various means of signal communication, by the actual presence of artillery officers at the command post of supported troops, or by both. Since the difficulties of maintaining liaison increase as we go down the chain of command, I will first discuss the liaison between higher units of the division, and then go into more detail with respect to liaison between field artillery battalions and assault infantry battalions, to which the artillery is furnishing direct support. This latter is probably one of the most important and less satisfactorily solved problems with which we are confronted in combat today.

## LIAISON BETWEEN HIGHER ECHELONS

Liaison or communication between the higher echelons of the infantry and artillery units within a division presents no serious difficulties, for an effort is usually made to locate command posts of supported and supporting units in as close proximity as the requirements of proper command and control allow. We find the command post of the field artillery brigade habitually placed with or very near to the command post of the division. Similarly, the command posts of artillery regiments are usually located near those of the infantry brigades, to which they are to furnish direct support. This ideal is sought for also by the commanders of the battalions of light artillery furnishing direct support to infantry

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regiments, but, in this case, often the requirements of command, control, and fire direction may dictate to the battalion commander to locate his command post in the neighborhood of the batteries, and not at a possibly distant spot where the command post of the supported infantry regiment is to be located. In other words, fire direction of a battalion of field artillery takes precedent over the requirements of liaison with the supported infantry.

We can readily see how simplified the liaison problem becomes when the command post of supported infantry and supporting artillery are installed close to each other. The two commanders and their staffs can work together, or by personal visits or telephone conversation over rarely interrupted lines, can keep each other fully informed of the situation and make immediate requests for fire. Panel stations are set up and radio receiving sets can function freely with small chance of interruption by enemy fire, and therefore communication with and from friendly observation planes is likely to be more consistently maintained.

Arrangements for liaison between infantry and field artillery are made before contact is made with the enemy. An artillery liaison detachment marches habitually with the support of the advance guard of a force on the march. When a force develops, the infantry and supporting artillery commanders should make preliminary arrangements for liaison when the units arrive in their assembly areas. When a force is in bivouac or in position with an outpost as a covering force and with no artillery assigned in direct support of that outpost, arrangements should be made for liaison between the field artillery and the outpost troops.

### THE LIAISON SECTION (BATTALION)

Perhaps our most important and most difficult phase of liaison is that between the battalion of field artillery and the assault or front-line infantry battalion or battalions. To effect this, artillery liaison details are sent to the supported infantry. These details report to the infantry regimental commander and are assigned usually by him to particular assault battalions. These details grow to be very close to the infantry since they ordinarily remain with them for some time. They should therefore have the full confidence of the infantry in order that the necessary teamwork between the two arms may be secured. They inform the artillery of the infantry situation and *vice versa*; they strive for the speedy attack by the artillery of targets of opportunity and of targets that are troublesome to the infantry. In a moving or complicated situation they must keep their unit particularly informed as to the location of the friendly and hostile infantry in order that the artillery does not shoot up their own troops. It is, therefore, the duty of the infantry

## LIAISON BETWEEN INFANTRY AND FIELD ARTILLERY

to help keep up this flow of information by constantly apprising the liaison detail of the situation on its front.

The liaison section of the headquarters of a battalion of field artillery (75-mm.) is at present constituted as follows:

- 1 lieutenant (liaison officer)
- 1 scout sergeant
- 1 scout corporal (No. 3)
- 3 scouts (Nos. 1-2-3)
- 2 privates (telephone operators 4 and 8)
- 1 private (line guard No. 4)
- 1 motorcycle messenger (No. 2)
- A total of 1 officer and 9 enlisted men.

When the battalion goes into action in direct support of a specific infantry unit, which we find ordinarily is the case, it is the duty of the above detail to establish liaison without delay with the front line elements and the command post of the infantry unit. The personnel indicated above will possibly be adequate in a stabilized situation, when only one battalion of the supported infantry regiment is in front line. In such a situation, the command posts of the infantry regiment and artillery battalion would probably be located near each other, so that the small section of the liaison detail, usually required to be with the infantry regiment, could be dispensed with. If the command posts are at separate locations, then this small section would be needed at the command post of the infantry regiment, and would reduce the available number of men for liaison with the front line infantry battalion. In situations where the artillery battalion must maintain liaison with two infantry battalions in the front line and also with the command post of the infantry regiment, we find that the allotted liaison section is entirely inadequate both in strength and equipment. The simplest solution in this case is to borrow the liaison section of the regiment if possible, which should bring with it the necessary telephones, reels, and signal lamps. Another, and probably the most frequent solution, however, is to organize an additional liaison section from the personnel around battalion headquarters. In certain situations it will not be entirely necessary to have liaison groups with each of two assault battalions of a regiment when on the offensive. For, with two battalions in assault, there will usually be some scheme of maneuver and the needs of one or the other battalion can best be recognized either by having a liaison detail accompany the battalion making the main blow of the regiment, or by obtaining from the regimental commander the general picture of the situation more accurately than it could be obtained from the two or more separated liaison groups. By limiting the telephone net around

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battalion headquarters, the following personnel can be made available for liaison duty:

- 1 lieutenant (intelligence officer)
- 1 range finder corporal
- 1 instrument corporal No. 2.
- 3 telephone operators (Nos. 5-6-7)
- 1 instrument operator
- 1 line guard
- 1 motorcycle messenger.

This arrangement must be only temporary for no replacements would be left for any of the operators, and the service would be crippled in all means of communication. If such a situation extends beyond a short period, as it apparently would, replacements would have to be drawn from the batteries, the regiment, or some other source.

It is not a remote possibility that a liaison detail would be required for a third battalion of infantry in the front line. Members of the wire section of the battalion detail would have to be used in this case, and consequently battalion communications would be completely paralyzed. This emphasizes the fact, however, that the training of all members of the battalion detail should be such as to cover all possible duties which they may be called upon to perform. In such a situation, the best solution is, probably, to send the liaison detail with the battalion making the main effort of the regiment, and have the lieutenant liaison officer remain with the infantry regimental commander, where he would be more in touch with the regimental situation as a whole and would be able to judge better which battalion was in the greatest need of artillery support.

The foregoing discussion indicates the inadequacy of the present liaison section and the equipment allotted to the battalion for communication. All present discussions, recommendations, and experiments, tend to prove that efficient liaison cannot be maintained between the artillery and supported infantry with the personnel and equipment prescribed in the *Tables of Organization*, except in the very unusual situation of stabilized warfare over an extended period of time.

Recent recommendations from various qualified sources, with respect to the improvement of the liaison problem, have invariably included an increase in personnel and in the number of reel carts allotted an artillery battalion. The recommendations for an increase in personnel have varied from *one* additional liaison section per battalion to an increase in the battalion headquarters battery from its present strength of fifty-one enlisted men to one hundred fifty enlisted men. There are many considerations, however, which

## LIAISON BETWEEN INFANTRY AND FIELD ARTILLERY

preclude at present any material increase in personnel. Among these are the limitation on the strength of the infantry division to 20,000 men and the undesirability of upsetting present tables of road spaces, loading, entraining, supply, etc., based on a division of that strength. And it is also difficult to find any additional men, with the present authorized strength of field artillery units, for liaison duty, whose services are not absolutely essential elsewhere.

The recommendations for an increase of artillery reels have been made in various numbers up to six per battalion headquarters. One reel cart is admittedly insufficient to lay the necessary wire, and probably an additional one will be allotted soon even to peace-time organizations.

An additional consideration is the number of casualties which will probably be incurred by the liaison personnel. Experience in the World War shows that the expected percentage of such casualties is quite high, particularly with respect to line guards. One battalion is known to have lost twenty-six men during a period of two days in attempting to keep its telephone lines, principally the liaison line, in operation. Another had six liaison officers successively become casualties during a period of a little over one week. And *trained* replacements are exceedingly difficult to obtain. It is a mistaken idea to send the poorest and least efficient lieutenant in the battalion on liaison duty with the supported infantry believing that he can best be spared. On the other hand, one of the best officers should be selected for this duty, preferably an officer of more rank. The second in command in the battalion, whose advice would probably receive closer attention from the infantry, would not be an unsuited officer for liaison duty. If liaison, during an operation, has broken down or has been consistently poor, the artillery commander should send forward his most capable assistant, preferably his battalion executive, to restore it. The arrival and assistance of this officer would assist in giving confidence to the infantry in its supporting artillery.

When liaison becomes difficult or practically impossible to maintain between the artillery and the supported infantry, it will then be necessary to attach accompanying guns or batteries to infantry units. This was frequently done during the World War, but the losses incurred in personnel and animals was, in most cases, disproportionate to the results obtained.

The trend at present is towards "bigger and better" battalion details, primarily for liaison purposes. Experimental details with increased liaison sections have been organized at the Field Artillery School at Fort Sill, and have functioned much more successfully during field exercises. Liaison, remember, is an absolute responsibility of the Field Artillery.



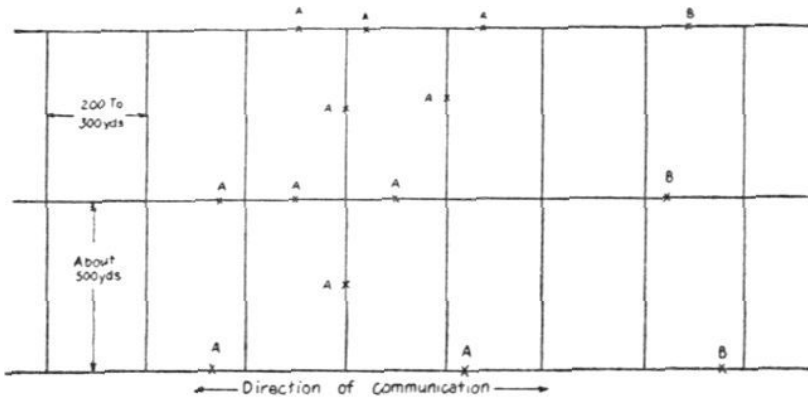
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### PRESENT MEANS OF COMMUNICATION FOR LIAISON PURPOSES

Field artillery habitually maintains its own means of communication with supported troops, using the communication established by the supported troops only in an emergency. Ordinarily the battalion is the lowest light artillery unit to establish communication with supported infantry, though batteries may do so in some situations, as in the case of a single battery with an advance guard.

Prior to the departure of the liaison section for the command post of the front line infantry unit, the liaison officer and the communication officer of the artillery battalion should work out a plan of signal communications for the liaison section. No scheme of liaison can be expected to work initially unless it is well planned in advance. Points to be considered are: can a telephone line be run, or used; if run, where shall the line be taken to; select a tentative axis of advance, visual signaling stations, relay points for messengers, agree on rocket signals for lifting fire, etc. Plans should be made to employ all means of signal communication, each of which, in use at present, will be discussed in turn.

*Telephone.*—In general, there is no need to run wire lines to liaison sections until the artillery battalion has taken its position to support the



TELEPHONE "LADDER"

BREAKS AT "A" DO NOT INTERRUPT COMMUNICATION, BREAKS LOCATED AS AT "B" DO INTERRUPT COMMUNICATION.

infantry. When that time arrives, telephone communication to the liaison section should be established and thereafter maintained. The authorized one linesman with the liaison section will be insufficient in most situations to keep the wire line in operation due to breaks caused by shell fire and other causes. In open country where the line will receive much shelling, many additional linesmen will be required. Every effort should be made to lay the wire where it will be protected by the terrain or trenches. If the situation is somewhat stabilized, it may be practicable to run parallel

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circuits a hundred yards or so apart and ladder them at intervals of one or two hundred yards.

Where it is possible, the liaison wire circuit should be laid initially to the command post of the front line infantry battalion by means of the reel cart and there connected to the telephone carried by the liaison section. When this is not feasible, the wire should be laid to a designated point as far forward as possible, and the end of the line plainly tagged. In either case the line is extended forward by the liaison section using breast reels carried by them. A pack reel, carried by a pack animal, is being developed and experimented with and should help greatly in solving the problem of extending the wire line forward. When the liaison line has been extended to the limit of the available wire carried by the liaison section, the end then becomes a *wire head* with communication between the wire head and the liaison section maintained with messengers. Should opportunity arise the reel cart will later extend the line.

Telephone communication is the most desirable means of communication. It can be maintained even in sectors where shelling is very heavy, if men can be spared and expended in its maintenance. Maintenance is easier through wooded areas due to protection from enemy observation, as linemen can move about more freely. Each linesman should be provided with a telephone and test clips, and should be stationed at protected places along the line. But unless a battalion is prepared to provide such maintenance, it will be better not to rely on telephone communication, but to expend its efforts in maintaining communication by other means.

*Messenger.*—Three types of messengers will ordinarily be available for the liaison section. The motorcycle man regularly detailed with the section can make better time than the others and will probably be most frequently used to carry emergency messages. In rapidly moving situations, horses located in the vicinity of the infantry battalion command post would be available for messengers, but are somewhat slower than motorcycle messengers except on very difficult, roadless terrain. Dismounted messengers are used as far to the rear as the wirehead, but for communication further to the rear they would be used almost solely as a last resort to get a message through.

*Visual.*—Visual signaling is seldom employed for sending long messages. Its principal use is for sending prearranged signals, code groups, or brief messages from front to rear, which would include the normal messages sent by liaison groups to the artillery units to which they pertain. It is particularly important for duplicating important telephone lines, usually in more or less stabilized situations. A visual station includes the location of both lamp and

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flags; the one more appropriate to the occasion being used. Semaphore signals by means of flags are used whenever practicable, the lamps being used to transmit messages in rainy weather and at night, or when distances are too great for the use of semaphore. It is important that the location of the base station be selected and announced to the liaison detail for the lamps are quite directional and in order that messages sent by them may be picked up, they must be pointed approximately towards the base station.

*Pyrotechnics.*—Pyrotechnic signals are not usually fired by field artillery units but constant observation must be maintained in order to see rockets sent up by the infantry. If rockets are carried by the liaison detachment, the infantry rocket signals should be repeated. The significance of each rocket is normally announced in division plans of signal communication, but other meanings should be agreed upon by the artillery and infantry commanders concerned. They are a most important means for signaling when fire is to be lifted or lengthened, and are frequently used by assault infantry units for liaison purposes.

*Panels.*—Panels, placed near the battalion radio station, are used to communicate with airplanes from the ground when two-way radio communication fails. As aerial observation is an important means of assisting infantry-artillery liaison, panel men should be properly trained to insure this means of communication.

*Radio.*—The radio equipment of a battalion of field artillery, as allowed at present, consists of two sets only. One of these requires a fixed antenna and operates in the regimental radio net and for communication with airplanes. The other is a short wave length radio set and works in the infantry net. The infantry battalion is equipped with a similar short wave set which works in the infantry net and with the artillery battalion.

It appears that radio, both telephone and telegraph, offers possibilities for the easiest solution of the liaison problem. The short wave length set (telegraph), referred to above, is being continually experimented with during problems and exercises in liaison. If successful, all of our problems might vanish. However, it has not yet reached the point where it can be relied on at all times and under *all* conditions. A decided increase in radio equipment has been recommended and will probably be allowed soon. The time appears to be not very far distant when quick and reliable communication can be easily established from sheltered locations between the assaulting infantry and its supporting artillery.

### POSSIBILITIES OF AIRPLANES FOR INFANTRY-ARTILLERY LIAISON

The division air service of an infantry division, during combat, executes "battle reconnaissance," which is a convenient phrase to

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describe the various missions carried out. It includes the *liaison*, *contact*, and *artillery* missions.

*The Liaison Mission.*—The difficulty that the commanders of large units have in learning the exact position of their troops in battle is well known. This is due both to the difficulty that the troops have in determining their location, where good landmarks are often lacking and other needs press, and to the great difficulty of transmitting the information when obtained. The airplane offers a means of overcoming both difficulties. It is the mission of the liaison airplane to keep commanders informed, not only of the position of friendly troops, but also of their needs as expressed by pre-arranged signals. The airplane is marked with distinctive division insignia and flies at a low altitude, which enables the troops to identify it, and enables the observer to distinguish friend from foe. The observer follows the progress of the assaulting units, the supports, and the reserves, and sends the information obtained to the command post by radio code messages at fixed intervals. The front line is sometimes "staked out" by a display of panels by the troops. This may be done either at a pre-arranged time or place, or on orders from headquarters.

*The Contact Mission.*—The contact mission is concerned only with observation of the advance hostile elements. Frequently it may be advantageously carried out by the airplane executing the liaison mission. The contact mission is for the purpose of directly assisting the infantry units engaged with the enemy. It reports directly to these units such information as the location of weak or strong places in the enemy lines, location of machine guns, trench mortars and one pounders, movements of local reserves, etc.

*Artillery Missions.*—Observation airplanes, assigned to artillery missions and operating under the direction of the artillery commander, are, in a way, performing liaison duties, principally for the purpose of adjusting artillery fire and reporting counter-attacks. Continued progress is being made in this field and we may possibly expect, as the radio telephone nears perfection, to have battery commanders adjusting their fire from the air, as passengers in airplanes. This will tend to furnish closer support to the infantry, for, a battery commander, observing targets which are holding up the progress of the infantry, would be enabled to bring quicker and more effective fire to bear upon those targets.

*Communication with Airplanes.*—The airplane communicates with ground troops by means of radio, both telephone and telegraph, dropped messages, and pyrotechnics fired from Very pistols. The latter are difficult to see during daylight and should be used mostly at night. Ground troops communicate with airplanes by means of radio, panels, pick ups, flares, and chance means. Of

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these, the two methods, radio telephone and pick ups are probably least developed and are capable of much further development. When radio telephony is perfected, the communication problem of from air to ground and *vice versa* should be solved. The pick up provides a way to deliver a written message to the plane while it is still in the air. By means of a grappling hook or similar device, a message held in a string between two uprights is secured by the observer. This method is of doubtful use with assault battalions as the plane must descend very low and would probably be subjected to intense machine gun fire.

*Possibilities.*—The future of liaison work between airplanes and both infantry and artillery depends a great deal upon the development of the radio telephone and the perfection of anti-aircraft weapons. When the former becomes always reliable then communication will be easy, although messages must probably be sent in code. But also as anti-aircraft guns and machine guns increase in efficiency, then the airplanes must fly at a greater altitude, which will limit their observation of ground troops, prevent the identification of friendly troops, and make it exceedingly difficult to locate hostile artillery, machine guns and other weapons.

Airplane photography, however, has even greater possibilities, due to the rapid development of exposures now possible and the fact that photographs may be taken at a great height and in clear detail. Developments and experiments along this line seem to be in order in connection with the liaison problem.

### SUGGESTIONS FOR CONSIDERATION

Experiment along several lines can profitably be made in the hope of improving the existing methods of liaison within an infantry division, particularly when on the offensive. I suggest:

The development of an armored, tractor-mounted *accompanying gun* of approximately 3-inch caliber. Or the adoption of a pack howitzer as an accompanying gun.

The adoption of an infantry howitzer with curved fire and a short range of about 3000 yards that could fire from behind cover and would be an integral part of the infantry battalion. The adoption of such a gun has been made, but it is not yet in production for issue to the service.

By frequent field exercises held by infantry and artillery, in which liaison is emphasized, to teach both how to use the means of liaison now provided.

The perfection of wireless telephony, followed by the development of a small, compact wireless telephone set that would enable artillery commanders, particularly battery commanders, to advance

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close in rear of the assault infantry and yet remain in close touch with their units.

The use of oblique airplane photographs, furnished to both the infantry and field artillery, for designating the location of hostile troops and weapons, and points upon which fire is desired by the infantry.

The assignment of more airplanes to assist in maintaining liaison between infantry and field artillery.

### CONCLUSION

In conclusion, I would like to repeat and emphasize again the importance of liaison in insuring tactical success. The liaison between our infantry and field artillery during the World War often failed to function satisfactorily, due mostly to inexperience and lack of training, but since that time it has been given constant attention and great improvement has taken place. Our methods of liaison today are still imperfect. Liaison is one of the most important problems confronting us, and is worthy of much study and thought. The better the infantry and field artillery understand each other, the powers and limitations, and the methods of combat of each of these important branches of the service, the more they work together for a common goal, and the greater the number of exercises they engage in in common, then the better liaison will be between these intimately connected branches. One arm never wins a battle in modern warfare. It is the combined effort of all that secures victory.

# FIELD ARTILLERY: PAST, PRESENT, AND FUTURE

BY GENERAL HERR OF THE FRENCH ARMY

FIFTH INSTALLMENT

(This treatise by General Frederick Georges Herr, published in French by Berger-Levault, Paris, is believed to be an outstanding book on the subject of field artillery. In the belief that heretofore there has not been an opportunity to read this in English, it is hoped that its publication in serial form, beginning in the May-June, 1927, JOURNAL, will be the means of acquainting more of our officers with this excellent work. During the World War, General Herr was successively the commander of an artillery brigade, an infantry division, an army corps and of an army detachment. He then became Inspector General of the French Artillery.—EDITOR.)

## CHAPTER II. CONTINUED THE FIELD ARTILLERY DURING THE WAR

### V. OPEN WARFARE ONCE MORE (1918)

#### B. THE FRENCH OFFENSIVE

*Preparation for the Offensive Campaign.*—When General Foch became Commander-in-Chief of the Allied Armies in April, 1918, he immediately gave consideration to the matter of passing to the offensive as soon as possible. However, at that time, the enemy was clearly superior from the three standpoints of effectives, matériel and lateral railroad lines for strategic maneuver. Moreover, the enemy had the initiative in operations and temporarily imposed his will on us.

All that we could do was to prepare ourselves so as to be ready to reverse the rôles as soon as the time for so doing should arrive—that is to say, when the enemy had come to the end of his effort. While waiting, the measures previously taken continued to produce results and the hour approached when we would have superiority in matériel. The incessant influx of the Americans\* constituted a practically inexhaustible reserve of men, and slowly gave us superiority in effectives.

While parrying the enemy's blows, the French High Command did not lose sight of the necessity for building up its reserves, and of reorganizing its large units and of perfecting the equipment of the different arms. The scope of this book does not include a discussion of the improvements in infantry armament, or of light tanks which were to have such weight against an enemy lacking analogous matériel, or of the creation of the Aerial Division and the development of our aviation, which commenced to dominate that of our adversary. However, we will discuss somewhat at length the situation of our field artillery whose tactical, technical and matériel superiority was manifest, and which was to play a preponderant rôle in the coming fighting.

*Situation of the French Field Artillery, on July 1, 1918.*—This situation, resulting from the work in accordance with the various programs modified as had been necessary, may be summed up as follows:

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\* From May 1st the Americans debarked an average of 250,000 men per month.

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Light field artillery. This consisted of:

The division horse-drawn regiments (105 regiments, 3780 cannon);

The horse artillery battalions of the cavalry divisions (6 battalions, 72 cannon);

27 portée regiments in the R.G.A. (972 cannon).

The armies had, accordingly, a total of 4824 75-mm. guns. There were still to be formed:

13 portée regiments;

2 horse-drawn regiments of 6 batteries each for the cavalry corps.\*

Heavy field artillery. It will be recalled that the Program of May 30, 1916, contemplated the assignment of 2 battalions of 155-mm. howitzers to each division and the assignment of 4 gun battalions, 2 of 105-mm. and 2 of 155-mm. to each army corps. The tractor-drawn heavy field artillery was to constitute a reserve under the Commander-in-Chief.

When the R.G.A. was formed, 30 regiments of the 300 series had been created by splitting up the regiments in the 100 series. Each of these 30 regiments was to consist, in theory, of 3 battalions, 1 of 155-mm. guns and 2 of 155-mm. howitzers. The inclusion of these regiments in the R.G.A. was to be only a temporary measure, and upon completion of the program all horse-drawn heavy artillery was to be re-assigned, the howitzer battalions to divisions, the gun battalions to army corps.

During the defensive campaign in the early part of 1918, this scheme was seen to be impracticable. For one thing, the necessity of supplying the American Artillery with its matériel, coupled with a shortage in production, prevented the complete realization of the program. Furthermore, the attack of March 21st clearly showed that it was absolutely necessary to keep the heavy horse-drawn artillery in the general reserves. These two factors led the High Command, in April, 1918, to limit the assignment of heavy artillery to Army Corps and divisions, to those quantities actually existent in those organizations and to retain the 30 regiments of the 300 series in the R.G.A. However, these regiments were re-equipped with homogeneous armament as follows:

5 regiments of 105-mm. guns, of 3 battalions each, numbered beginning with 450.

10 regiments of 155-mm. guns, Schneider, Model 1917, of 3 battalions each, numbered in the 400 series.

15 regiments of 155-mm. howitzers of 4 battalions each, numbered in the 300 series.

This re-organization involved the tractor-drawn regiments whose 12 batteries, instead of forming 6 battalions of 2 batteries each, henceforth formed 4 battalions of 3 batteries each† as follows:

10 gun regiments, of 2 or 3 battalions of 155-mm. G.P.F., and 2 or 1 battalions of 145-mm. guns, numbered beginning with 80.

10 howitzer regiments, of 2 or 3 battalions of 220-mm. howitzers and 2 or 1 battalions of 280-mm. howitzers, numbered beginning with 280.

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\* These two regiments were formed in September and October. As for the 13 portée regiments still lacking, we succeeded in forming only 7 before the war was over, this due to the lack of automotive matériel.

† The battalion headquarters made available by this consolidation of tractor-drawn regiments were utilized in the portée regiments which were being formed.



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On July 1, 1918, the heavy field artillery was as follows:

1. Horse-drawn heavy field artillery:

(a) Howitzers:

One battalion of 155-mm. howitzers per division (105 battalions, 1260 cannon);

Fifteen regiments of 155-mm. howitzers in the R.G.A. (60 battalions, 720 cannon).

Actually, there were still a dozen divisions to be provided with these howitzer battalions. The organization of these was not completed until August 15th. All the division battalions were armed with modern matériel, but this was far from being true of the regiments of the R.G.A.

(b) Guns:

1 regiment per Army Corps	}	1 or 2 battalions of 105-mm. (45 battalions, 450 cannon);
		1 battalion of 155-mm. (30 battalions, 360 cannon);
5 regiments of 105-mm. guns, of 3 battalions each (180 guns)	}	in the R.G.A.
10 regiments of 155-mm. guns, of 3 battalions each (360 guns).		

All these regiments were to be provided with modern matériels. However, there was still much to be done before this would be accomplished. There were still 12 105-mm. battalions armed with 120-mm. guns, Model 1878, and all the Army Corps 155-mm. gun regiments were still armed with old model cannon. Some still had temporarily, 155-mm. guns, Schneider, Model 1917, but their cannon were to be transferred to the gun regiments of the R.G.A., some to replace used 145-mm. guns and some to be used instead of the 155-mm. G.P.F.'s., the manufacture of which was inadequate to simultaneously meet the requirements of the R.G.A. and of the American gun regiments.\*

2. Tractor-drawn heavy field artillery. (Second Division of the R.G.A.):

(a) Howitzers:

Ten regiments of 4 battalions each (81 batteries or 324 220-mm. howitzers, 39 batteries or 117 280-mm. howitzers).

(b) Guns:

Ten regiments of 4 battalions each (480 145-mm. or 155-mm. G.P.F. guns).

A rather large number of batteries (about a third) were still armed with old model matériels. The requirements of the defensive battle had slowed up the alterations in progress and had even led to arming some of the howitzer battalions with 155-mm. guns, Model 1877, instead of with 220-mm. howitzers.

The 145-mm. gun wore out very rapidly. By July 1st, it was recognized that it would be necessary to eliminate this armament from a considerable number of batteries and replace it with the 155-mm. Schneider gun, Model 1917. As for the 155-mm. G.P.F., the arming

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\* Moreover, the 155-mm. Schneider gun, Model 1917, had proved to be a little heavy for horse traction. The Armament Department had been asked to build a lighter matériel with a range of only 13 to 14 kilometers. The manufacture of the 155-mm. gun, Model 1877-1914, which met these requirements could not, for technical reasons, be resumed and the Department designed a new matériel, easy to manufacture, called the 155-mm. gun, Schneider, Model 1918. However, the delivery of these matériels did not begin until June, 1919.

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of the American Army Corps would absorb most of the manufacturing output and it would be barely possible to maintain existing organizations armed with this matériel.

Finally it should be noted that it was planned to ultimately form a tractor-drawn regiment of 194-mm. G.P.F.'s and a few battalions of 280-mm. howitzers and 194-mm. G.P.F.'s on caterpillar mounts. Actually these units did not exist before the end of the war.

Adding all the above, gives a total of 4361 heavy field artillery cannon.

Fortress Artillery. To the above mobile pieces should be added the 1423 matériels of the sector artillery of fortress artillery, which were all old models, which brings the total available heavy cannon to 5784.

On July 1, 1918, the fortress artillery was being reorganized into 13 regiments of 3 to 4 battalions of 4 batteries each. However, this re-organization did not modify the number of matériels served by this subdivision of the arm.

Trench Artillery. There were to be retained as trench artillery only the four regiments of the R.G.A. comprising altogether 160 batteries (40 58-mm. No. 2, 40 240-mm. L., 80 150-mm. Model T). The army corps trench mortar batteries were to be eliminated so as, with 13 anti-tank batteries, to allow the forming of five new 75-mm. portée regiments.\*

High Power Heavy Artillery. The A.L.G.P. program of 1917 contemplated increasing the A.L.G.P. without a large consumption of steel, so that the quantity of this metal necessary for the other subdivisions of the arm would be available. For this reason it was especially provided that the increase in railroad artillery would be accomplished by the utilization of existing Coast Artillery matériels.

The program of 1918 included in addition, 100 220-mm. tractor-drawn guns, and a few very long range matériels.

By July 1, 1918, the 1st Division (A.L.G.P.) and the 3rd Division (Naval Gunners) of the R.G.A. manned 327 matériels (of which 36 were mobile 16-cm. guns and a few were naval guns. Not included are about 300 19-cm. and 24-cm., Model 1916 and 1917, guns whose use was contemplated for replacements or for sector batteries). The increase in A.L.G.P. had been especially in matériels of wide traverse and long range, and future efforts were to be along the same lines. None of the 220-mm. guns had been as yet delivered.

Ammunition. The defensive battle had used up a great deal of ammunition. Between March 20th and July 10th, the reserve stocks at the disposal of the Commander-in-Chief were depleted, as shown in the following table:

STOCKS AT THE DISPOSAL OF THE COMMANDER-IN-CHIEF

	March 20th	April 1st	May 1st	June 1st	July 1st	July 10th
75 (in lots)† .....	3,644	3,341	2,469	1,973	1,566	1,587
105 } in thousands of	725	594	205	176	132	103
155 } rounds	3,427	3,220	3,109	2,959	2,503	2,585

\* It was possible to form two of these new portée regiments but the supply of automotive matériel was inadequate to permit the formation of the other three, which were temporarily organized as sector artillery with a view of taking the place in quiet sectors, of as many horse-drawn or portée regiments, liberating the latter for general use.

† A "lot" of 75 ammunition was about 6000 rounds.—EDITOR.

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In view of the production figured on by the Armament Department, and under the assumption that expenditures from July, 1918, to February, 1919, would equal those of the first six months of 1918, the High Command estimated as follows:

75-mm.—On July 1st there were 1566 lots (about 9,000,000 rounds) in the Commander-in-Chief's reserve and it was hoped to have double that figure by February 1, 1919.

105-mm.—The reserves of 105-mm. ammunition were in a precarious condition. On July 10th there were only one-seventh of what there had been in March, and they kept on diminishing until July 20th, when there remained only 17,000 rounds in reserve. For this reason the re-arming of the remaining 120-mm. gun battalions with 105-mm. guns had to be postponed, for there would have been no ammunition for them. However, plans contemplated having a stock of 1,500,000 rounds by February, 1919.

155-mm.—The stocks of this caliber underwent the least variation of any during the defensive battle. On July 1st there remained 2,500,000 rounds and it was hoped to have 3,500,000 by February, 1919.

Deliveries of mustard gas shells had started in May, 1918. Manufacture was still slow but it was hoped that by February, 1919, a daily production of 40 tons of mustard gas would be reached.

Smoke shell reserves were not over 500,000 rounds. These shells were to be very much in demand during the offensive campaign.

These estimates of the High Command were, it is seen, very optimistic. They justified the formulation of the most ambitious plans.\*

Tactical and technical instruction. The spring defensive battles had a most fortunate influence on field artillery training. The field artillery was forced to get out of its gun pits and to maneuver in the open and it became flexible and acquired maneuvering ability. Firing methods, continuing the evolution commenced in the preceding year, were perfected and were perfectly adapted to firing without adjustment, to the opening of surprise fire, and to the rapid and correct management of the trajectory. Officers added to the intensive instruction received at the schools of fire, the experience acquired in the difficult school of the retreat.

To sum up, by July 1, 1918, the French field artillery had been given a rational organization; it was equipped with a large proportion of modern, rapid fire, long range matériels; its tactical and technical training had reached a high degree of perfection. It was ready for the offensive battle.

This long exposé doubtless seems dry. However, it is necessary, if

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\* Events did not justify these hopes. During the offensive campaign ammunition expenditures exceeded all estimates while production was not what had been hoped for. The production of propellant powder and shell filler explosive was considerably less than requirements, which were 800 tons of shell filler explosive and 570 tons of propellant powder per day while daily production never exceeded 600 tons of explosive and 400 tons of powder. Furthermore, the requirements of steel for the manufacture of shell only, rose to 100,000 tons per month which was nearly half of our total resources. Accordingly when the war ended the situation was very serious. On November 11, 1918, reserve stocks at the disposal of the Commander-in-Chief amounted to only 420 lots of 75-mm. (about 2,500,000 rounds), 853,000 rounds of 105-mm. and 926,000 rounds of 155-mm. It is true that there were several million shells of various calibers abandoned either on the battlefield or in army depots, but a rapid salvage of these was impossible.

The aid furnished by American industry would have reestablished the situation in 1919.

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the progress made since 1914 is to be appreciated, and the status of our field artillery understood at the time when its matériel had, broadly speaking, attained its maximum development. Finally the exposé is necessary to understand the leading rôle which the field artillery, having become an incomparably powerful and flexible maneuvering instrument, was to play in the glorious offensive campaign which finished the war.

As we remarked in describing the events of 1917, the Allied Command had estimated, in April, 1917, that the apogee of its personnel effectives had been reached. It decided to wage a *battle with its personnel effectives*. Only transitory tactical results were obtained at the cost of very bloody losses. In July, 1918, the Allied effectives, even counting the early American divisions, were still inferior to the German effectives. On the other hand, the Allied armies were at *their apogee in matériel*, and the superiority of this matériel over the adversary's, already quite marked, was to be more and more pronounced as the usury of the enemy's matériel progressed. The *battle of matériel* which was about to be waged, led to final success.

*Allied Offensive Plans.*—On June 15th, which date marked the final stopping of the second German offensive between the Oise and Montdidier, some forty odd German divisions were coupé up in the Château-Thierry pocket. The single line of railroad, Guignicourt—Missy-sur-Aisne—Fere-en-Tardenois, was available for their supply. This line ran about 20 kilometers from the front in the region of Soissons and about 25 kilometers from the front in the region of Fismes. Any French advance towards Soissons or Fismes would bring this railroad under the fire of our long-range cannon, and consequently would be an extremely dangerous menace to the Germans.

Accordingly, in the second week of June, the Commander-in-Chief of the Allied Armies, directed that offensive operations be studied; in the direction of Fismes, by the V Army; on the south bank of the Aisne, by the X Army. It was to the latter army that the greatest number of personnel and matériel effectives were assigned because it was its action which would have the most fruitful consequences.

On July 12th, a definite plan of attack was determined upon. The objective of the offensive was the reduction of the Château-Thierry pocket to be accomplished "by two lateral thrusts towards the plateaux situated north of Fere-en-Tardenois; the minimum results expected were the prevention of the enemy's unhindered use of the communications network around Soissons and the improvement of the line of our front between Reims and the Marne by disengaging Reims." To this end, the X and VI Armies were to break the enemy's front along the Ourcq, the V Army was to break it south of the Vesle, and the exploitation of these ruptures was to be pushed with the greatest vigor so as to join up the three armies in the region of Fere-en-Tardenois. July 18th was set as the date for the operation.

At one time during the German offensive of July 15th, it was feared that this project would have to be postponed; however, at noon of that date, the decision to execute it was made.

*The Château-Thierry-Soissons Offensive (July 18th–August 5th).*—The X Army attacked along a front of 18 kilometers with 18 divisions,

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375 tanks and 40 air squadrons. The attack was supported by 470 batteries comprising:

864 75-mm. guns,  
691 heavy cannon,  
18 A.L.G.P. cannon.

This gave a density (not counting 147 trench mortars) of:

One 75-mm. gun per 20 meters front,  
One heavy cannon per 25 meters front.

The most minute precautions were taken to preserve secrecy; staffs of lower units were informed only three days in advance and the troops only the night before.

On July 18th, at 4:30 A.M., without a cannon shot other than those of the habitual sector activities having been fired, the entire mass of field artillery from the Aisne to the Marne, suddenly opened fire.

In the X Army, the infantry and tanks immediately started off behind a rolling barrage. There was no artillery preparation.

In the VI Army, the attack units overran and mopped up the enemy outpost position, while the field artillery put down a preparation for an hour and a half on the battle position. The advance was resumed at 6 A.M.

There was little reaction from the enemy, who was surprised throughout. By the night of the next day, the first enemy positions, having a front of over 50 kilometers and a depth to 10 kilometers, from the Aisne to the Marne, had been taken, and the booty amounted to 17,000 prisoners and 400 cannon.

On the 19th and 20th of July, the French V Army west of Reims and the IX Army south of the Marne, successfully attacked, in their turn.

This defeat and the menace to his communications were too serious for the enemy to longer maintain his enterprises against Reims and the Marne. He yielded to the blow, withdrew his advanced elements and evacuated the south bank of the Marne.

On the 24th, the three French Armies, which had joined up north of the Marne, delivered a vigorous blow in the direction of Fere-en-Tardenois. Success was obtained in the following days. On August 2nd, the French found nothing before them; the enemy had decided to withdraw behind the Vesle and reorganize there. The X Army entered Soissons and on August 5th our troops were along the Aisne and the Vesle. It was necessary to halt in order to prepare for forcing a crossing of the river. Accordingly the fighting in this region ceased. The Second Battle of the Marne was won.

*The Memorandum of July 24th, 1918.*—On July 24th, while the battle raged, the Field Marshal, Commander-in-Chief of the Allied Armies, gathered together at his Headquarters, the Commander-in-Chiefs of the French, British and American Armies and set forth to them his plan of action, which was drawn up in the form of a memorandum.

Because of the great number of divisions which the enemy had been forced to engage between the Aisne and the Marne, the Allied Armies, for the first time, had superiority in the number of reserves. In addition we had superiority in matériel. "The Allied Armies are at the turning of the road. The time has come to abandon the defensive attitude

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until now imposed by numerical inferiority, and to pass to the offensive."

It was not yet the time for a general offensive, but it was necessary to strike with strong blows, in separate surprise attacks, following each other as rapidly as possible, with the object of disorganizing the enemy.

The program of contemplated operations aimed at recovering freedom in the strategical and economical domain. To this end, it was necessary to disengage the important railroad lines which the enemy still interrupted; the lateral line Paris-Avicourt, in the two localities of Château-Thierry and Saint-Mihiel; the Paris-Boulogne line in the region of Amiens. Following this it was necessary to regain the mineral centers indispensable to the industrial life of the country (the Bruay and Bethune basins). The first operations accordingly were for the purpose of reducing the pockets in our front between Compeigne and Reims, between Verdun and Toul, between Amiens and the Oisne, and on the Lys.

If the above were accomplished before the season was too advanced, there was "planned for the end of the summer or for early fall, an important offensive, of such character as to increase our advantage and leave the enemy no respite." In this way the Allies would keep the initiative in operations, which would allow undertaking the decisive offensive early in 1919.

However, events were going to move faster than the High Command estimated.

*The Disengagement of Amiens (August 8th-15th).*—The reduction of the Château-Thierry pocket was completed by August 5th. Immediately thereafter the Allies undertook the disengagement of Amiens.

The morning of August 8th, the British IV Army and the French I Army attacked simultaneously. The French I Army attacked along a front of 35 kilometers with 15 divisions, supported by:

- 780 75-mm. guns,
- 836 heavy cannon (including 56 A.L.G.P. cannon), or:
- One 75-mm. gun per 45 meters front,
- One heavy cannon per 42 meters front.

The British IV Army launched its attack at 4:30 A.M. without artillery preparation, and overthrew the enemy.

The left corps of the I Army (31st Corps) had an artillery preparation of 45 minutes; it attacked at 5:05 A.M., and advanced rapidly. On its right, the 9th Corps prolonged its preparation for four hours and attacked at 8:20 A.M. At first it had no other success than in getting a few battalions across the Avre. Still farther to the right, the 10th Corps had no greater success. On the extreme right, the 35th Corps limited itself to participating in the preparation, without, however, revealing any of its new batteries. It did not attack as yet. The artilleries of the two corps on the north were for the most part passed to the two corps on the south, as soon as the two corps on the north had succeeded in crossing the Avre.

On the morning of the 9th, the attacks were resumed north of Montdidier and met with success. At 4 P.M., without intensifying its preparation, which had been in progress since the previous evening, the 35th Corps, in its turn, attacked and rapidly covered ground east of Montdidier. The enemy abandoned the town during the night.

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By the 10th, the enemy had recoiled an average of fifteen kilometers. On the 11th, he was back in his old lines of 1916, where from that time on he proffered a more serious resistance, in spite of the intervention of the French III Army in the Petite Suisse, north of Matz, on the 11th.

However, the field of battle rapidly enlarged to the south and to the north.

*The General Advance on the Hindenburg Position (August 18th–September 4th).*—The field of battle was enlarged to the south by the entry into action of the French X Army, which attacked on August 18th between the Oise and the Aisne along a fifteen-kilometer front, supported by:

828 75-mm. guns,  
742 heavy cannon, or:  
One 75-mm. gun per 18 meters front,  
One heavy cannon per 20 meters front.

In a few days this army drove the enemy back into the low Coucy Forest. By September 3rd, it had secured a large bridgehead over the Ailette and was in contact with the Hindenburg position.

During this same period, the fighting was extended to the north by the offensive of the British Army, which attacking on both sides of Arras, reduced the Bapaume salient and overran the Hindenburg position around Quéant (September 3rd).

Following this, the Allies saw their adversaries spontaneously withdraw or give way to slight pressure all along the front from Ypres to Reims. The enemy abandoned what he had gained in the spring, and established himself in the Siegfried position. Starting September 4th, the French I Army and the British Armies continually advanced on this position, whose outposts they reached on September 10th. Between the 10th and 22nd of September they methodically overran the enemy outposts and placed themselves in assaulting distance of their objective.

*The Allied Plan of August 30th.*—The importance of the results which had been obtained and the usury and the disorganization of the enemy at the end of August, permitted the Allied High Command to hope for more rapid and full success than it had counted on in the Memorandum of July 24th. The operations in progress could enter into their decisive phase. The battle was to be extended from the Scarpe to the Meuse, with the main effort on the two flanks, as follows:

On the left by the British Armies and the left of the French forces, in the general direction of Cambrai and Saint-Quentin; on the right, by the American Army and the right of the French forces, in the direction of Sedan and Mézières.

The French forces in the center, which were going to play only a secondary rôle, were to be rapidly diminished so as to reënforce the two flanks. They were to lose especially, a large proportion of their general reserve artillery, 12 portée regiments, 4 tractor-drawn heavy regiments and 9 horse-drawn heavy regiments.

The battle was to be extended on the extreme left to the North Sea; the Belgian Army, supported by French and British contingents, was to attack in the direction of Brussels and push towards the frontier of Holland. It was a general offensive, with concentric attacks.

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However, before all this, in order to complete the program of the disengaging actions set forth in the Memorandum of July 24th, the American Army was to execute a preliminary operation, with the object of reducing the Saint-Mihiel salient.

The American attack was launched on September 12th and surprised the enemy while he was engaged in preparations for withdrawal. The enemy was thrown back into the Michel position (September 15th) after having lost 16,000 prisoners and 400 cannon.

*The Battle of Champagne (September 26th–October 12th).*—The general offensive was begun September 26th by the French IV Army and the American I Army.

The French IV Army attacked between Reims and the Argonne along a twenty-five kilometer front, supported by:

1332 75-mm. guns,  
1126 heavy cannon,  
80 A.L.G.P. cannon; or  
One 75-mm. gun per 18 meters front,  
One heavy cannon per 20 meters front.

The enemy had evacuated his first position, as we had done on July 15th, and the first day the IV Army made a general advance of from five to six kilometers.

The American I Army attacked at the same time east of the Argonne, where it carried the strong Montfaucon position.

*The Battle of Cambrésis (September 27th).*—On the next day, September 27th, commenced the action, participated in by three British Armies and the French I Army, against the Hindenburg line, between Cambrai and Saint-Quentin.

*The Battle of Flanders (September 28th).*—Finally, on the 28th, the Flanders offensive was launched in the direction of Brussels.

And on the 29th, "the greatest battle in History" raged along the entire front from the Sea to the Meuse, engaged in, on the side of the Allies by twelve armies. By the first part of October, important results had been obtained, and the objectives assigned to the Allied Armies: Mézières, Sedan and Damvillers on the right, Avesnes and Mons in the center, Brussels and the Holland frontier on the left, foretold the coming liberation of France and Belgium.

In Lorraine a maneuver of exploitation could rapidly reach distant objectives in rear of the mass of the enemy's forces and force him into a gigantic capitulation. Preparations for a great offensive with this object were being made and the offensive was to be launched on November 14th, when, on November 11th, the armistice halted operations.

### LESSONS

The offensive campaign in the latter part of 1918 brought out no new lessons. It simply confirmed the correctness of the principles which the High Commands of all the belligerent armies had deduced from the long preceding experience. We have already noted, in passing, these various principles, as we have seen them deduced from facts. There remains to rapidly present a résumé.



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*Principles of Offensive Battle.*—Just as the Germans acted in their spring campaign, so did the Allied Armies operate when, in their turn, they took the offensive. All their attacks were characterized by the attempt to realize the following three conditions:

Surprise,  
Violence,  
Exploitation in depth.

Let us sum up briefly the part the artillery has in the solution of the problem thus presented.

1. *Surprise.*—Surprise consists of two things: first, there is strategical surprise, then tactical surprise.

(a) Strategical surprise: Strategical surprise requires absolute secrecy in such measures as are taken long beforehand to get ready for the attack. Relative to field artillery, it is first necessary that all required installations be made without the enemy learning of them. Then the concentration of matériel in the attack sector must be accomplished with the utmost discretion. It is incontestable that rapidity of execution is, from this latter viewpoint, one of the best guarantees of success. Accordingly the field artillery must be very flexible, very mobile, capable of rapidly making long marches. It will thus be able to take part, at short intervals, in widely separated operations. Horse-drawn artillery has severe limitations in this respect. It must be transported over great distances, by railroad, and thus is the slave of the trace of railroad lines and their capacity. Only artillery with motor traction possesses the strategical mobility adequate for rapid long distance movement in a country with developed highways. Accordingly, while local artillery reserves can be of the horse-drawn type, the great general reserves must necessarily have mechanical traction.

The tractor-drawn heavy field artillery (2nd Division of the R.G.A.) and the portée light artillery (5th Division of the R.G.A.), demonstrated the truth of these assertions by the services they rendered during 1918. The era of our offensive opened at the moment when both were about to attain the apogee of their organization. Their strategical mobility allowed of the intensive use of their matériels in the series of battering ram blows with which the French High Command so rapidly and completely disorganized German resistance. We have already seen that on June 10th, 26 of the existing 29 portée regiments were in the battle. After that date the portée artillery knew no rest; it was at all the affairs. As for the tractor-drawn heavy artillery, it was not spared as is shown by a few examples as follows:

For the attack of July 18th, the X and VI Armies had 46 out of the 111 tractor-drawn battalions then at the front, or about 42 per cent.; on August 8th, the I Army alone had 24 tractor-drawn battalions (76 guns, 112 howitzers); on September 26th, the IV Army used 37 tractor-drawn battalions (140 guns, 192 howitzers); on October 20th, the tractor-drawn heavy artillery was almost entirely assigned to the two flank armies, which were to have the principal rôle. On the left, the I Army had 182 tractor-drawn cannon. On the right, the IV Army had 284 tractor-drawn cannon and the II Army 128, and in addition there were 108 tractor-drawn cannon in the reserve of the Group of Armies. The remainder was with the Center Group of Armies, 38 cannon with the X Army, 98 cannon with the V Army. In the reserve of General Headquarters, there were only one tractor-drawn battalion

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of guns and two battalions of howitzers. All the tractor-drawn artillery was thus in the battle, and it was assigned amongst the armies in accordance with the mission of each army.

(b) Tactical surprise: Tactical surprise is obtained by reducing the length of the artillery preparation, or better still by not having one. In the course of our study we have seen how the German artillery, favored by the number of its cannon and by their rapidity of fire, was the first to reduce the duration of the preparation. By 1918, the French artillery had finally acquired the characteristics which not only permitted it to do as well, but even to do much better. The preparation of the VI Army on July 18th lasted only an hour and a half, that of the I Army on August 8th, forty-five minutes, and the I Army attacked on July 18th without any artillery preparation. In each case, secrecy was assured by prohibiting newly arriving batteries from firing a single cannon shot before the beginning of the preparation, if there were one, or before the hour of attack if there was none. Thus, there was no preliminary adjustment, and there was no observation or control of fire possible because of darkness or morning mist, smoke and dust. Thus the fires were executed simply with data obtained by careful calculation, in which all the conditions of the moment were considered.

At the last moment, the meteorological stations accurately gave the value of atmospheric factors, the temperature, pressure, direction and speed of the wind. All cannon had been carefully calibrated. The lots of powder had been calibrated in the rear a few days before the attack.\* Thanks to all this, the suddenly delivered surprise fires descended precisely on their unsuspecting targets. After the advance which followed each of our victories, the executants could go and see for themselves on the ground itself, the results obtained. Every time, they had the great satisfaction of seeing that they had done an excellent job. The targets were clearly bracketed and the proportion of rounds on the target was very high.

2. *Violence.*—The field artillery had acquired unequalled power by reason of: first, rapidity of fire, which allowed of a mass of projectiles being fired in a limited time; second, increased range, which permitted massive and unexpected concentrations to be put down on any part of the battlefield; third, numerous matériels, which allowed of using the various types in the manner best suited to their characteristics. This power, suddenly applied, was of irresistible violence.

One may be tempted to think that rapidity of fire can take the place of great numbers of matériels and allow of fulfilling the necessary missions with fewer matériels. However experience has demonstrated that, no matter how rapid firing artillery matériels may be, the rate of fire will always be inadequate to put over in a short enough time, the tonnage of ammunition necessary for the accomplishment of missions. The density of fire desired at the point of fall, has as a corollary the requirement that a corresponding quantity of matériels be accumulated at the point of departure.

Field artillery has certain effect only when employed in mass. We have seen what densities of artillery were necessary to obtain success in 1918. It is true that these densities were less than those which obtained in our limited objective attacks in the latter part of 1917. However, we must not lose sight of the fact that these latter operations were of a

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\* For the attack on September 26th, this was done by the Center of Artillery Studies at the Saint-Jean-sur-Moivre target range.

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very special nature, due, as we noted in passing, to the particular conditions obtaining at the time. The densities used in 1917 had insured obtaining certain success with the minimum loss, using troops whose morale was shaken, and insured the reestablishment of good morale throughout our forces. Furthermore, it should be noted that, in all of our 1918 attacks in which we were confronted by a strongly organized front, notably north of the Aisne on August 18th and in the Champagne on September 26th, the density of matériels deployed was necessarily great. It was only possible to be victorious with a lesser density, when the front had not been stabilized long and was poorly organized, as between the Aisne and the Marne on July 18th, or on the Avre on August 8th.

It is obvious that it is impracticable to include in the organization of large combatant units (divisions, army corps) all the field artillery which is necessary in great battles. These units should have included in their organization only a sufficient quantity of artillery to enable them to accomplish current missions of average fighting. However, there must be available a reservoir of forces to serve the High Command in critical periods. This reservoir is the General Reserve of Field Artillery, the necessity for which need not be further demonstrated. The R.G.A. should contain all types of matériels which exist in organic artilleries so that these latter may be reënforced when required. In addition there should be special matériels suitable for all exceptional missions which the field artillery may be called on to fulfill.

What we have just said relative to deployment densities applies likewise to ammunition expenditure. The violence desired depends on this. We have cited the expenditures which pertained in some of the battles of previous years. The IV Army's offensive on September 26, 1918, against a particularly well-organized front, which had long been stabilized, required a tremendous expenditure of ammunition, this in spite of the assistance of tanks and in spite of the increase of power resulting from surprise. On September 26th, there were fired:

1,315,000 rounds of 75-mm. ammunition.

360,000 rounds of large caliber.

The initial tonnage of ammunition which had to be supplied exceeded 50,000 tons. One hundred and sixty-six trains of 300-ton capacity were required to transport this to the front. Yet this initial tonnage includes neither trench artillery projectiles, nor the munitions of the 1st Division of the R.G.A., which supplied itself, nor the amounts required to fill caissons and ammunition vehicles just prior to the attack, nor, finally, the reserves which the Army had to have in its depots for use on the following days. The supply services seem to have accomplished their maximum effort in ammunition supply during the period July 10th to 20th, 1918, when preparations had to be simultaneously made for the Champagne defensive battle and the coming Tardenois\* offensive. In these ten days there were brought up a total of:

668 lots of 75-mm. ammunition (4 million rounds),

226,000 rounds of 105-mm. ammunition,

1,060,000 rounds of 155-mm. ammunition.

This represents a daily traffic of 60 trains of 35 cars each. In spite

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\* *I.e., Soissons.*—EDITOR.

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of a daily production of 190,000 rounds of 75-mm. ammunition (32 lots) and of 50,000 rounds of large caliber, the ammunition expenditure during the offensive campaign was such that the reserves of the Commander-in-Chief underwent rapid depletion as is shown in the following table:

	July 10th	Aug. 1st	Sept. 1st	Oct. 1st	Nov. 1st	Nov. 11th
75 (in lots) .....	1,587	1,068	1,309	511	466	420
105 } in 1000's of	103	22	454	632	776	853
155 } rounds	2,585	2,330	2,306	1,472	1,190	946

Depth. Only exploitation in depth can reap all the profit of which an initial success contains the seed. However, it is today a universally admitted axiom that infantry cannot operate without constant artillery support. When this support fails, even when its efficiency lessens, the slightest material obstacle defended by a few machine guns can stop the infantry's advance and immediately paralyze any continued exploitation. Accordingly it follows that the results to be obtained by every successful offensive depend directly on the continuity of artillery support. Artillery support is a function, first of long range of matériels, second of their battlefield or tactical mobility. Long range allows the artillery to accompany the infantry with fire for a long time without having to change position and reduces to a minimum the number of changes of position, during which the matériel is only a useless encumbrance. However, no matter what their range, the time always comes when the cannon must move to the front. It is then necessary that the matériel have as perfect tactical mobility as possible in order that the critical period of changing position, and its dangers, may be lessened.

Throughout the war all belligerents strove for these two desiderata of range and mobility. We did not satisfactorily fulfill them. While the Germans succeeded in increasing the range of certain of their cannon by 50 per cent. (for example, the 10-cm. coast gun whose range was increased from 15 to 22-km. and the 17-mm. coast gun whose range was increased from 16 to 24-km.), we only succeeded in the most favorable case (the 155-mm. gun) of obtaining an increase in range of 27 per cent. Likewise the tactical mobility of our matériels was deficient in the shell-cratered terrain which resulted from tremendous artillery preparations.\*

### MEASURES WHICH SHOULD BE TAKEN TO CORRECT DEFICIENCIES

The experience of four years of war has clearly established what the characteristics of modern field artillery should be. These characteristics are: power, range, rapidity of fire, aptitude for surprise, mobility, easy and abundant ammunition supply, and finally great numbers.

During the course of this study we have seen how the French field artillery developed in accord with circumstances, by adapting its firing technique and its tactics to battle requirements, and by modifying its matériels to make them more nearly the ideal type recognized as necessary.

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\* It must not be forgotten that the problem of tactical mobility is greatly complicated by the question of the transport of sufficient quantities of ammunition. It is of no use to rapidly push forward matériels which cannot be provided with the necessary ammunition.

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It cannot be denied that such considerable progress was made in all these things as to almost represent a complete revolution. However, it also cannot be denied that there are still deficiencies and that there remains much to be done. This is not because the High Command did not see the several necessities and take the proper steps, but because improvements in field artillery cannot be made overnight and because the accomplishment of these improvements is influenced by too many contingencies. Industry requires powerful means and must have a long time for manufacture. Manufacturing plants must be prepared, machines installed, adequate skilled artisans recruited, raw materials provided, and then nothing must be permitted to interrupt or even hinder manufacture. However, it is quite certain that French industry during the war did not always work under conditions which were favorable to maximum production.

Accordingly it is not at all surprising that, in spite of the prodigious energy expended on it, the program of May 30, 1916, was not finished by November, 1918. Furthermore, in the late summer of 1918, an era of increasing difficulties began which became menacing. Resources in men and horses were diminishing, motors were wanting, the supply of raw materials was inadequate, and matériel was wearing out faster than it could be repaired or replaced. The field artillery had reached its apogee and from there on could only decline.\*

It is now in time of peace, that we must profit by the experience so dearly acquired. We can, and we should, tranquilly and quietly study these complex problems, arrive at a logical solution, and proceed with the required manufacture.

The accomplishing of all this is precisely the objective which the re-organization now in progress in the field artillery should have.

### CHAPTER III

#### THE FRENCH FIELD ARTILLERY AT THE TIME OF THE ARMISTICE

We outlined in Chapter I, the organization and tactical doctrine of the French field artillery on the eve of the war.

We followed in Chapter II, the successive developments and increases of the arm during the war, as well as the evolution of its tactical doctrine, and we outlined the reasons for these changes.

It now may be interesting to draw up the final balance sheet as it stood at the time of the armistice and to present a summary of the field artillery as it then existed.

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\* We have already seen that the infantry divisions never got two battalions of 155-mm. howitzers, that all army corps did not get their 105-mm. gun battalion, and that it was possible to form only 34 of the 40 portée regiments which had been planned for. Due to the shortage of horses, divisional 75-mm. batteries were reduced from 4 to 3 guns. However, it was in heavy, high velocity, guns that the decline was so rapid as to be especially noticeable. By March, 1918, 160 tubes had been built for the 20 battalions of 145-mm. guns contemplated in the program. By the time of the armistice our losses in tubes of this caliber had risen by wearing out, destruction, or capture, to 202, and it had been possible to replace only 85. Accordingly there was a shortage of 117 tubes. The 40 battalions of 155-mm. G.P.F. could not be formed. The maximum of 30 battalions (235 tubes) was reached in September. Two hundred and twelve tubes had been worn out, of which 201 were replaced. In November, therefore, there were only 224 tubes in service, and the 2nd Division of the R.G.A. had been informed that henceforth it would receive no spare tubes.

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## I. ORGANIZATION

On November 2, 1918, the field artillery was divided into two great categories:  
The organic artillery of large units;  
The non-organic artillery, under the direct orders of the Commander-in-Chief.

### A. THE ORGANIC ARTILLERY OF LARGE UNITS

This artillery comprised:

For each infantry division:

One division artillery headquarters;

One regiment of 75-mm. guns;

One battalion of 155-mm. howitzers, Schneider;\*

One division ammunition train, consisting of one animal-drawn infantry ammunition section, one animal-drawn artillery ammunition section, and one truck artillery ammunition section;

One mobile repair shop.

For each army corps:

One army corps artillery headquarters;

One or two battalions of 105-mm. guns (according to whether the army corps had organically two or four divisions);†

One battalion of 155-mm. guns, Model 1877.‡

One army corps ammunition train, consisting of one truck transport section (the equivalent of one and a half ammunition sections), and one repair shop.

For each cavalry division:

One horse battalion of three batteries.

For each cavalry corps:

One cavalry corps artillery headquarters;

One regiment of 75-mm. guns of two battalions;

One three-battery battalion of 105-mm. guns.

For each army:

One army artillery headquarters;

One great ammunition train, providing spare parts and charged with ammunition supply;

One repair train, charged with the repair of artillery matériel.

The groups of armies had no organic artillery.

### B. THE NON-ORGANIC ARTILLERY UNDER THE COMMANDER-IN-CHIEF

1. The great part of this artillery was in the R.G.A., commanded by a general officer, and under the direct control of the Commander-in-Chief,

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\*The Program of May 30, 1916, called for two battalions of 155-mm. howitzers; it was never possible to form them.

† There were still 12 battalions of 120-mm. guns to be transformed into 105-mm. gun battalions.

‡ The 155-mm. gun battalions were to be armed with modern matériel. At the beginning of the year a few only had been equipped with 155-mm. guns, Schneider, Model 1917. However, in August, this matériel was taken away and given to the R.G.A. regiments to take the place of 145-mm. guns which were wearing out.

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through the intermediary of a major general, who was Inspector General of the Artillery.\*

The R.G.A. consisted of 6 divisions:

1st Division: The A.L.G.P., comprising 7 regiments of matériel and 1 regiment of ammunition units and labor units;

2nd Division: The tractor-drawn heavy artillery; 10 gun regiments and 10 howitzer regiments;

3rd Division: The naval gunners;

4th Division: The trench artillery (4 regiments) and the fortress artillery (13 regiments);

5th Division: The 75-mm. portée artillery: 34 regiments;

6th Division: The horse-drawn heavy artillery: 15 gun regiments (5 of 105-mm. guns, 10 of 155-mm. guns), 15 regiments of 155-mm. howitzers;†

2. The tank guns commanded by a general officer. This organization is today much more logically assigned to the infantry; it is mentioned here, only for the sake of completeness.

3. The anti-aircraft artillery (A.A.A.), consisting of 6 regiments.

4. The anti-tank artillery (D.C.T.), attached for purpose of record, to the 176th regiment of trench artillery.

5. The Artillery Information Service (S.R.A.), 1 regiment comprising 41 sound-ranging sections (S.R.S.) and 42 flash-ranging sections (S.R.O.T.).

6. The Artillery Organization Centers (C.O.A.) whose mission was raising new regiments or transforming the armament of old regiments to new armament. There were 8 of these: One for the light artillery, 2 for tractor-drawn heavy artillery, 2 for horse-drawn heavy artillery, 1 for trench artillery, 1 for the A.L.G.P., 1 for the A.A.A.

### C. COMPOSITION OF THE VARIOUS UNITS

1. Light Artillery.—There were 151 regiments of light artillery (141 from the home forces, 9 colonial, 1 from Africa). These regiments were of three types:

(a) One hundred and twelve horse-drawn divisional regiments, of 3 battalions of 3 batteries of 4 guns each, or a total of 4032 guns.

(b) Two horse-drawn regiments of the cavalry corps, of 2 battalions of 3 batteries of 4 guns each, or a total of 48 guns.

(c) Thirty-seven portée regiments of 3 battalions of 3 batteries of 4 guns each (5th Division of the R.G.A.)‡ or a total of 1332 guns.

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\* When the R.G.A. was created, it was commanded by the I.G.A., himself. However, it was soon apparent that the functions of inspector of the artillery as a whole, and those of directly commanding a fraction of this artillery, were incompatible. Accordingly, on August 20, 1918, a Command for the R.G.A. was reestablished, as had formerly existed.

† On September 11, 1918, the horse-drawn heavy regiments were withdrawn from the 2nd Division of the R.G.A. and from that time constituted a new Division of that reserve, the 6th.

‡ Of these regiments 32 were armed with the 75; the other 5 with the 76-mm. (the 75-mm. re-bored so as to fire Russian ammunition). Of these 37 regiments, there were 3 which had been organized from cadres accruing from the dissolution of the army corps trench artillery batteries. These 3 regiments had not as yet received their automotive equipment, and were temporarily being used as sector regiments.

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(d) Six horse battalions of the cavalry divisions, of 3 batteries of 4 guns each, or a total of 72 guns.

Total number of 75-mm. guns in service—5484 guns.

2. Mountain Artillery.—There were 3 regiments of 65-mm. mountain artillery (2 from the home forces, 1 colonial).

Total number of 65-mm. mountain guns—96 guns.

3. Trench Artillery.—The A.T. consisted of 4 regiments of 2 groupings of 5 battalions of 4 batteries each, serving a total of:

480 58-mm., No. 2;  
960 150-mm., Model 1917;  
240 240-mm.

4. Fortress Artillery.—The fortress artillery was still undergoing reorganization. It was to comprise:

(a) Thirteen regiments (11 from the home forces, of 4 battalions of 4 batteries each, 2 colonial of 3 battalions of 4 batteries each), serving a total of 800 pieces;

(b) The independent ammunition companies for ammunition depots;

(c) Two 60-cm. railroad regiments; 40 operating batteries, 31 construction batteries.

5. Horse-drawn Heavy Artillery.—This was comprised of:

(a) Thirty army corps regiments, each consisting of 1 or 2 battalions of 105-mm. guns of 3 batteries each, and 1 battalion of 155-mm. guns, Model 1877, serving a total of 900 guns. For purposes of record, there were attached to these regiments the divisional 155-mm. howitzer battalions, to the number of 105, serving a total of 1260 pieces;

(b) Fifteen regiments of 155-mm. howitzers in the R.G.A., each with 3 battalions of 3 batteries, and 2 truck transport sections, serving a total of 540 pieces;

(c) Ten regiments of 155-mm. guns, Schneider, in the R.G.A., each with 3 battalions of 3 batteries, and 1 truck transport section, serving a total of 360 guns;

(d) Five regiments of 105-mm. guns in the R.G.A., each with 3 battalions of 3 batteries, and 1 truck transport section, serving a total of 180 guns.

6. Tractor-drawn Heavy Artillery.—The A.L.T. was being reorganized (from regiments with 6 battalions of 2 batteries into regiments with 4 battalions of 3 batteries). It consisted of:

(a) Ten gun regiments serving a total of 480 pieces;

(b) Ten howitzer regiments, serving a total of 480 pieces;

(c) Ten companies of caterpillar carriers.

Each gun and howitzer regiment had 2 ammunition transport sections.

7. High Power Heavy Artillery (A.L.G.P.).—This consisted of 8 regiments of variable composition:

One construction regiment of 34 batteries, for the construction of standard guage railway (C.V.N.);



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1 regiment of 240-mm. tractor-drawn, serving	75 pieces
1 howitzer and mortar regiment, serving	88 pieces
1 regiment of A.L.V.F., all-round fire, serving	42 pieces
4 regiments of A.L.V.F., firing from epis, serving	506 pieces
Total A.L.G.P.,	711 pieces

8. Naval Gunners.—These elements served 4 battalions of 16-cm. guns on mobile mounts with 4 batteries of 2 pieces in each battalion and also 2 independent batteries, and 1 battalion of pinnace guns (1 24-cm. battery and 2 19-cm. batteries) or a total of 39 pieces.

9. Anti-aircraft Artillery.—The A.A.A. was being reorganized; it was to be formed into 6 regiments. On November 11, 1918, it consisted of:

- 1 regiment of 100 semi-fixed platoons of 75-mm. guns under the Armies of the North and of the Northeast, and 1 regiment of 19 semi-fixed platoons of 105-mm., serving a total of about 200 pieces.
- 24 battalions of 75-mm. auto-cannon, each of 3 platoons, or a total of 144 pieces.
- 10 platoons of 75-mm. on trailers, or a total of 60 pieces.
- 20 searchlight companies.

(For the sake of completeness, it is noted that there were 2 regiments composed of the A.A.A. units of the G.M.P.\* and of the provinces.)

10. The Anti-tank Artillery (D.C.T.) consisted of batteries with 3 or 4 platoons of 3 or 4 guns each; this artillery was being eliminated.

A summation of all the artillery pieces in service at the front at the time of the armistice gives the following figures:

75-mm. field guns .....	5484
65-mm. mountain guns .....	96
Heavy field cannon .....	5000
A.L.G.P. and C.M. cannon .....	740
Anti-aircraft cannon .....	404
Tank guns                    }	} noted only.
Trench artillery	

### D. FIELD ARTILLERY EFFECTIVES

To serve all these cannon, there were a total of 26,000 officers and 1,093,000 enlisted men, of whom 770,000 were present for duty with the armies (after deduction of all absentees for various causes—leave, furlough, wounded, sick, etc.).

These *combat effectives* represent 38 per cent. of the total combat effectives of the armies.

The number of cannon in service compared to the infantry strength, gives a proportion of 13 cannon per 1000 infantry.

In order to visualize the expansion of the field artillery since 1914, it may be interesting to recall what the figures were at the beginning of the war. France entered the campaign with:

\* The Guard of the Municipality of Paris.—EDITOR.

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75-mm. field guns .....	3840
65-mm. mountain guns .....	120
Heavy field cannon .....	308
A.A.A. auto-cannon .....	1
A.L.G.P. ....	None
Tank guns .....	None
Trench artillery .....	None

The field artillery combatant personnel effectives amounted at that time to 11,000 officers and 420,000 enlisted men, which was only 20 per cent. of the total combat effectives. The number of cannon did not exceed 4 per 1000 infantry.

To sum up, between 1914 and 1918, the combat effectives of field artillery more than doubled and the number of cannon in service was nearly tripled.

### E. FIELD ARTILLERY COMMANDS AND HEADQUARTERS

One of the greatest progressive measures of the war was the organization of the various field artillery commands, in which provision was made so that the functions of direct command of artillery troops were exercised by separate and distinct headquarters from those charged with tactical and technical supervision; the various echelons of command were provided with staffs and with means for liaison, communication and command. Thus we find:

In the infantry division, a colonel commanding the division artillery, with a staff of 5 officers, some clerks, telephone men, and radio specialists. The division regiment is commanded by a lieutenant colonel; the ammunition train, by a major.

In the army corps, a brigadier general commanding the army corps artillery, with a staff of 5 officers, an Artillery Information Service, and a small headquarters enlisted personnel; the corps heavy artillery is commanded by a colonel; the army corps artillery ammunition train, by a lieutenant colonel.

In the army, a general commanding the army artillery, with a numerous staff of officers including specialists of the various subdivisions of the arm, a representative of the R.G.A., an Artillery Information Service, and enlisted personnel; a colonel commands the army ammunition train.

Then, there is the Inspector General of Field Artillery of the Armies and of the Zone of the Interior, who is a major general on the staff of the Commander-in-Chief, and whose functions are the supervision of the tactical and technical training of the arm, and of its employment in battle. He also handles matters relative to field artillery of the armies with the supply departments in the Zone of the Interior. He controls that instrument of strategic maneuver, the General Reserve of Field Artillery, the Central Field Artillery Board, and the Center of Artillery Studies whose mission is the instruction of commanders in artillery matters.

### II. MATÉRIEL

During the war, it was not only in quantity that the field artillery changed, but also, and to still more advantage, its quality was greatly improved.

We entered the war with a field artillery almost exclusively armed

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with light matériels; the few heavy field pieces were of obsolescent design, short range, and were slow firing.

At the time of the armistice there were about as many heavy cannon as there were light.

Although a certain number of old model matériels were still in service, as for example the 75-mm. gun, Model 1897, and the 155-mm. gun, Model 1877, we had at least found means to get better service from them. At the beginning of the war, the 75-mm. gun could, as a rule, not fire over 5500 meters, the limiting range of its sights. At the end of the war, by increasing the pressures in the recoil mechanism, and by using shell with better ballistic shape, the maximum range of this gun had increased to over 10,000 meters. Similarly, the maximum range of the 155-mm. gun, Model 1877, which at the beginning of the war was 9800 meters, had been increased, when the war ended, to 12,800 meters.

Almost all of the old model heavy cannon were replaced by modern matériels characterized by long range and rapid fire.

The 155-mm. howitzer, Model 1904 or Model 1912, firing to a range of only 6000 meters, gave place to the 155-mm. howitzer, Model 1917, Schneider, whose maximum range was nearly 12,000 meters, or double that of the old one.

The 220-mm. de Bange howitzer, with a range of 7 kilometers, was replaced by the 280-mm. Schneider howitzer, with a range of 11 kilometers.

The increase in the range of our guns was still greater than the increase in the range of our howitzers. We were not able to completely eliminate the 155-mm. gun, Model 1877, but we have seen that its range was increased, and in addition to this weapon, we had in the R.G.A.:

The 155-mm. gun, Model 1877/1914, with a maximum range of 13,500 meters.

The 155-mm. gun, Model 1917, with a maximum range of 16,000 meters.

The 155-mm. gun, G.P.F., with a maximum range of 18,800 meters.

The 145-mm. gun, Model 1916, with a maximum range of 17,800 meters.

Guns with still greater range had been ordered. The 194-mm. G.P.F., which was to fire to a range of 20 kilometers, and the 220-mm. gun, which was to have a maximum range of 22 kilometers.

In the R.G.A. was a whole series of A.L.G.P. cannon, certain ones of which (the 285-mm. and the 305-mm.) had maximum ranges of over 27 kilometers and one of which (the 340-mm.) even had a maximum range of 37 kilometers.

Rapidity of fire had been greatly increased. Whereas the old model heavy cannon could fire at the most one round in two minutes, the modern matériels could nearly all be fired at the rate of two rounds per minute. The capacity for fire had been almost quadrupled.

Unfortunately, most of our matériels still had the extremely regrettable defect of limited traverse which did not generally exceed 10 degrees. Among the heavy cannon, only the 155-mm. G.P.F. had a good field of fire (60 degrees); in the A.L.G.P., one type had a field of fire of 360 degrees. However, the High Command was giving attention to the question. The various civil and military manufacturing establishments had entered into competition, and some interesting solutions

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for the increase of the lateral fields of fire of our matériels had already been worked out.

### III. EMPLOYMENT

The principles of employment of the arm in 1914 were discussed in Chapter I. We will review them briefly.

Relative to technique:

Fire had to be adjusted round by round by direct observation, which precluded long-range fire and surprise fire; as a consequence, little attention was paid to scientific preparation of fire, which was not indispensable for firing on visible targets, and we were not equipped to make such scientific preparation;

It was not considered possible to destroy protected targets; moreover, the 75-mm. gun which constituted almost all of our field artillery, obviously did not have the power adequate for such destruction; accordingly only neutralization was contemplated, and it was believed that this could be obtained by very limited ammunition expenditures, fired in short and violent bursts, separated by long silences.

Relative to tactics:

It was conceived that a preliminary artillery duel would not give decisive results, and accordingly was not desirable. In any event such a duel should not, under any pretext, constitute a separate phase of the battle;

The field artillery was not to prepare the infantry attack, but was to limit itself to supporting this attack;

The rapid-fire 75-mm. gun was adequate to meet all battlefield requirements; a numerous and powerful heavy artillery was not needed;

The individual power of the 75-mm. gun was sufficient in most cases. Up to a certain point, concentration of fire surely increased fire effectiveness, but in most cases concentrations were useless—furthermore, they were difficult to obtain with a matériel of such limited range and with one which could deliver effective fire only after adjustment with direct observation;

The short range of the matériel required that it work in small groups which acted almost entirely independent of each other;

The means of communication at the disposal of the Command were so precarious that control of the artillery was lost soon after it entered into action. Accordingly, it was necessary to decentralize the tactical direction of fire, and mass employment was impossible.

War experience rapidly changed these ideas, as we have seen in Chapter II, and at the time of the armistice the employment of the arm was based on the following principles:

Relative to technique:

The field artillery was more and more using scientific preparation of fire, in which it was attempted to eliminate by careful calculation, all variations due to the conditions of the moment. The army meteorological sections furnished the necessary atmospheric data. Cannon were calibrated so as to compensate for the effects of wear in the tube and to render all cannon comparable in their firing characteristics. All powder charges were carefully calibrated and then allotted. Mechanical contrivances such as graphs, scales and Baldenweck mechanical computers, facilitated calculations. Range tables were revised so as to be

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more complete and accurate. Suitable surveying instruments allowed of accurately locating batteries and targets on the map. Thanks to all these improvements, the field artillery could deliver immediately effective fire with little dispersion, without having to make a preliminary adjustment;

Nevertheless, direct observation remained the sole guarantee against errors in measurement of conditions of the moment, inaccurate instruments and faulty calculation. Accordingly although an experienced battery commander with a good battery could fire without observation under favorable circumstances, nevertheless he should always attempt to assure that verification of the accuracy of his fire which is given by direct observation only. Considerable effort had been made to organize a good observation service. Powerful and certain means of communication had been provided so that observation stations could be as far from the battery positions or command posts as was desired. Accurate observation instruments and scientific methods of observation had been provided. Units had been organized whose function was to observe. These functioned directly under the Command (flash-ranging sections, sound-ranging sections—S.R.O.T. and S.R.S.);

There was an increased number of improved observation balloons, whose ceiling had been raised, and whose stability in their beds during high winds had been increased. Above all, airplane observation had been remarkably improved. More and better ships were available, and they could communicate with the batteries by radio and the batteries could communicate with the airplanes by means of panels. A new method of adjustment by the observation of the mean point of impact of a group of rounds, had been adopted, and gave satisfactory results. A balloon and airplane observers' school had been established at Sézanne to furnish the armies with trained observers.

Relative to tactics:

The field artillery had learned that it could have serious effect only when employed in mass. The single projectile was useless except in the case of a lucky shot, which could not be made the basis for the calculations of the Command. Neither did just a few projectiles have any appreciable effect. Only a massive avalanche had certain effect which could be calculated on in advance and could, accordingly, serve as a basis for the decisions and plans of the commander;

From the morale standpoint, as well as from the standpoint of matériel effect, time played a capital rôle. The avalanche of projectiles should descend on the objective in the minimum of time;

However much matériel may be improved, a great number of cannon are necessary if the necessary number of rounds are to be fired within proper time limits. Important missions imperatively demand mass employment of artillery;

In order to avoid disorder, in order to obtain the best and most economical utilization in mass employment of artillery, it is necessary that all the artillery be united under a single chief, the commander of the large unit, who should permit the detachment of a few elements to subordinate units only in case of absolute necessity for a specific mission and for a limited time;

The guiding principle in the employment of the arm is therefore centralization. Certainly there are times when more or less complete decentralization of command is imposed by circumstances. However, this decentralization must be regarded as a transitory phase, as a necessary

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evil, and every effort should be made to rapidly return to centralization;

Increased rapidity of fire, range, lateral field of fire, and the possibility of firing without previous adjustment, has increased the flexibility of the arm to an unanticipated degree. Today the field artillery, like the other arms and for the same reasons, can conform to the principle of concentration of effort, which consists for the artillery in successively attacking, with the maximum of means, the various objectives assigned to it by the Command. Instead of dispersing its action in all the minor episodes of the fighting, the field artillery attempts concentrated, brutal and sudden action; in preference to any other mode of employment, the field artillery works in well-organized groups for mass production of fire;

In order to best facilitate the task of the infantry, the field artillery operates in constant close liaison with that arm. When confronted by enemy fire power, the infantry can execute its *maneuver by movement* only if the field artillery adequately prepares, proceeds and continually accompanies the infantry movement with a *maneuver by fire*. It is this maneuver by fire which assures the advance of the infantry, which regulates the phases of its advance, and which determines and limits the depth of this advance. Since a deep exploitation by the infantry is essential for any decisive and lasting success, the field artillery strives to the limit for action in depth. It attains this depth of action through the range of its cannon, by their echelonment in depth, through flexibility in maneuver, and by the tactical mobility of its matériels.

Relative to strategy:

The field artillery had become an incomparably powerful and flexible instrument of maneuver in the hands of the High Command. Mechanical traction had given it strategic mobility with a wide radius of action. The ability to fire without preliminary adjustment had eliminated the principal source of indiscretion in the functioning of the arm. The field artillery had thus acquired the capacity for acting quickly and secretly, that is to say, it had become able to act by surprise;

The principle of having a general field artillery reserve had incalculable strategic consequences. Thanks to the application of this principle, the High Command had the means to rapidly bar the road to an enemy offensive, no matter how powerful that offensive might be. The High Command could always concentrate, at the desired point and time, the artillery mass necessary to assure the success of its own offensives. In a word, the High Command had always the means for retaining the initiative in operations, or for regaining it, if temporarily lost. It was with these means that in the spring of 1918 we saw the French High Command reconstitute a line of light artillery, utilizing its portée 75-mm. regiments, to rapidly bolster up the divisions and corps which had been thrown, without their own organic artillery, into a front already or about to be broken. We then saw the Command quickly support this light artillery with its reserve horse- and tractor-drawn heavy regiments. Later on, the Commander-in-Chief reënforced the X Army, then the I, then the X once more, and finally the IV, by rapid lateral movement of these same artillery units. He thus succeeded, due to the rapidity of displacement of his reserve automotive artillery, in delivering frightful offensives quickly following each other, at widely separated parts of the front. The uninterrupted succession of these

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offensives disconcerted and disabled the enemy, and by preventing him from reconstituting his reserves, helped to wear him out.

### CHAPTER IV

#### THE EVOLUTION OF THE GERMAN FIELD ARTILLERY DURING THE WAR

The curtain should not be drawn over this brief historical glimpse of the evolution of French field artillery during the war, without saying at least a few words about the changes which took place in the same period in the German Field Artillery.

The tactical side of the question has been adequately discussed in the preceding pages, and will not be reviewed. It suffices to say that tactical doctrines had an exactly similar evolution on both sides of the trenches, and that a suitable new method instituted by one of the adversaries, was soon adopted by the other.

We will, however, elaborate a little on the organizational changes which were made.

It will be recalled that the situation of the German field artillery at the beginning of the war was as follows:

Each infantry division had divisional artillery composed of two regiments of 6 batteries each of 6 cannon, light guns or light howitzers, except the reserve divisions, which had but one regiment.

Each army corps had one battalion of 4 batteries of four 150-mm. howitzers.

There was a real general field artillery reserve, in which were included 21-cm. mortars, 150-mm. howitzers, 10-cm. guns, 13-cm. guns, and A.L.G.P. matériels.

In these organizations the Germans had a total of:

5500 light cannon, 77-mm. guns and 105-mm. howitzers;

2000 heavy field artillery cannon.

Towards the end of 1914, the Germans reduced their light batteries from 6 to 4 pieces, in order to get the matériel necessary to equip newly formed divisions.

In 1916, they standardized the quantity of artillery in all divisions which, from that time on, had the same amount as ours, or one regiment of 3 battalions of 3 batteries of 4 cannon each. At the same time they started to form a general reserve of light artillery composed of independent regiments. It should be noted that they did not give the army corps any organic light field artillery, nor did they later do this.

By the end of 1916, the organic army corps heavy field artillery had disappeared. All this artillery passed to the R.G.A.

By the end of 1917, a reaction set in. The organization of the divisions which took part in the Riga offensive, and that of the divisions which participated in the great 1918 offensives, included an organic battalion comprised of 2 batteries of four 15-cm. howitzers and 1 battery of four 10-cm. guns. These allowances were soon doubled. However, it is not absolutely certain that these were organic units as it is possible they were merely assigned temporarily from the R.G.A.

By reason of the inclusion of the above quantities of artillery in the division and army corps organizations, the R.G.A. diminished in importance, but it nevertheless still contained 60 per cent. of the heavy guns and howitzers, the army corps having 6 per cent. and the divisions

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34 per cent. The general artillery reserve contained, in the spring of 1918, 27 per cent. of the light field artillery.

After July 15, 1918, the Germans were compelled to break up a certain number of their infantry divisions, and the artillery thus made available was placed in the R.G.A., which at the end of the war had 31 per cent. of all light field artillery.

On November 11, 1918, the situation was as follows:

243 Division Artilleries, comprising:	}	1 light regiment of 36 cannon, 8748 pieces
		1 heavy battalion of 12 cannon, 2700 pieces
30 Army Corps Heavy Artilleries, comprising:	}	2 heavy battalions each of 8 cannon, 480 pieces
The R.G.A., comprising:	}	Light field artillery reserve, 3200 pieces
		Heavy field artillery reserve, 4480 pieces
		A.L.G.P., 200 pieces
Total:		11,948 light pieces, 7860 heavy pieces.

The reader has seen the point of departure, the road followed, the efforts made, and the results obtained by the field artillery during the long four years of war, which were so rich in lessons of every kind.

He can now judge the evolution gone through and appreciate the progress made.

He can also note the deficiencies which still exist and measure the task which remains if these are to be corrected.

He can easily follow us in the succeeding chapters, in which we are going to try to present a solution of the difficult problem of the armament and organization of modern field artillery.

*(To be continued.)*



# MILITARY COURTESY

(Extract from a Lecture delivered at Camp Knox)

BY LIEUTENANT-COLONEL G. A. TAYLOR, F.A.

SINCE the World War, we have heard much of military courtesy. In all probability this subject is wider known by the citizens of this country than was the case before the War. Flags do not pass by unsaluted to the extent that they did before the War. However, are those of us who are concerned with the observance of Military Courtesy any more punctilious than was the custom before the War? The French, with their innate courtesy and care for details, have had a beneficial influence.

When I was a boy in the early eighties, the veterans of the Civil War were men in the prime of life, the majority of them not yet beginning to show the ravages of time. They were scrupulous in addressing each other by their titles, and the military salute was much in vogue. Those in political power were military men. Presence at the Battle of Gettysburg counted for a lot in an election and was almost an "open sesame" to political preferment. General Burnside was Governor and then Senator from Rhode Island. These men had seen men blown to pieces in action, and starve in prisons, but phosgene and mustard gas had not yet taken a good deal of the oldtime glamour out of War. Be that as it may, Military Courtesy is not a thing of the past, but the rules are better worked out and defined than ever before, since our experiences with the warriors of Europe.

The British honor the holders of their highest award for bravery with "The Guard Turn Out, V. C.," be he a battery cook or a Colonel.

Just a word about correcting others. Do not be too precipitate nor overzealous. I recall once when a parade was passing, shortly after the War, I saw a soldier who apparently was taking no notice of the passing flags except to stand at attention. He had an overseas cap on and I was about to "bawl him out proper," but something made me slow up a bit. His right arm was gone just below the shoulder, and with his remaining hand he was supporting himself with a cane, and doing the best he could to show the respect he was proud to. I just asked him in what "show" he had been wounded.

I recall one or two incidents in France, which were firmly impressed upon my mind. The regiment which I had the honor of commanding, finished the War in the Sommedieue Sector near

## MILITARY COURTESY

Verdun. After the Armistice numbers of Russian prisoners came straggling in from the German prison camps. They saluted us punctiliously. The conduct of their own officers at the Masurian Lakes is a matter of history, but the old order of things was crumbling, and it was not for us to criticize. I recall one little chap stubbing along down the Grande Trancheé de Calonne, with a salute as stiff as Coldstreamer. He was proud to be able to salute someone again, and his salute got the best we had in return. We also filled their bellies with American beef. They were glad to work in our kitchens, and "no K.P." was certainly appreciated by my industrious young Missourians. However the finest example of military courtesy which I now recall, and one which I shall never forget, as long as I have the breath of life, occurred one day just outside the Citadel of Verdun.

A King and a Field Marshal were visiting the city made famous by "*ils ne passeront pas*," "they shall not pass." At that time I wore "eagle birds," and was through an accident of fate the senior American officer between Paris and Coblenz, in charge of the cemeteries of the Argonne. As the Royal party emerged in their car from the Citadel, Major Mann, my executive, and I were standing by the road, where it seemed they must pass. We froze up to an "old-fashioned number five," with slight French modifications. The car, however, did not come by the road where we were standing in readiness, but detoured around some 60 yards away, by the other road. Marshal Petain's keen eye caught sight of us two lone Americans, and possibly he nudged Alfonso. At any rate the King of Spain and the Saviour of Verdun handed us as gracious an acknowledgment as one could desire. I cherish the memory of that salute as some do their orders of the White Eagle.

Another picture that comes to my mind is that of the Sixth Battalion of the Durham Light Infantry, at evening "Stand-to," singing with one voice:

"Abide with me: fast falls the eventide;"

Their officer commanding, Colonel Lionel Bradford, V. C., liked to have them do it, so they did. For him "the darkness deepened" on the field of battle, and he "went West" as a brigadier before he was thirty.

They tell a good story of him in the Durhams. Officers coming back from "Blighty" had been annoyed by a "dugout" major at a certain rest camp, who was military, but not any too courteous. So General Bradford, V.C., returning from receiving the Victoria Cross from the hand of the King, buttoned up his Burberry coat, and received the line that the aforesaid major generally handed to young captains for the good of their souls. Then he removed his trench coat, introduced himself, and put the major through a very

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thorough course in saluting and other refinements. Needless to say the officers of the Durhams were subjected to no further annoyance.

In conclusion let me express the opinion that I gleaned from that War of Wars, that Military Courtesy is the oil which makes the military machine move without wearing out the bearings. Let us take a page from the book of the French and the British, and be really courteous one toward another. Remember this, as the French used to say, "For four years we make ze War," and their courtesy was still unruffled. How much of a part this same unflinching courtesy played in the ultimate success of the Allied Cause, who can say? I have my own ideas on the subject. This is the thought that I will leave to you. Think it over.

# REGIMENTAL NOTES

FIRST FIELD ARTILLERY

FORT SILL, OKLAHOMA

Lieutenant-Colonel George P. Tyner, *Commanding*

## *Roster of Officers*

Lieutenant-Colonel James P. Barney

### MAJORS

Pelham D. Glassford  
Leroy P. Collins  
Charles P. George  
Philip Hayes  
Samuel R. Hopkins  
Dean Hudnutt

### CAPTAINS

Harold H. Ristine  
William J. Schaal, Jr.  
Wilbur G. Dockum  
Edward F. Hart  
William H. E. Holmes  
Richard A. Gordon  
Louis J. Fortier  
Norman J. McMahon  
William H. Colbern  
Frank C. Mellon  
Elmer S. Van Benschoten  
Leo L. Partlow  
John E. Ray  
Maylon E. Scott  
Severn T. Wallis  
Jesse B. Matlack  
Henry C. Demuth  
Rannald T. Adams

### FIRST LIEUTENANTS

Arthur E. Fox  
Ernest C. Norman

William W. Dixon  
John G. Brackenridge  
Chester E. Sargent  
Warren Hayford, III  
James P. Boland  
Thomas F. Hickey  
Ralph D. Sproull  
Robert O. Montgomery  
Jesmond D. Balmer  
Thomas M. Tiernan  
Murray C. Wilson  
Arthur P. Moore  
John C. Grable  
Joseph A. Sullivan  
Edward M. Taylor  
Robert B. Hood  
Maurice K. Kurtz  
Godfrey D. Adamson  
William I. Brady  
Stephen Y. McGiffert  
Lemuel Mathewson

### SECOND LIEUTENANTS

William J. Eyerly  
Walton G. Procter  
Daniel F. Healy, Jr.  
John P. Maher, Jr.  
Frank S. Kirkpatrick  
George E. Wrockloff  
Peter Sather, Jr.

FOR more than ten years the First Field Artillery has been stationed at the Field Artillery School, Fort Sill, Oklahoma, as part of the School Troops Division, the other elements being, the 1st Battalion, 18th Field Artillery, 1st Battalion, 38th Infantry and a Detachment of the 12th Observation Squadron A.C.

The principal mission of the regiment is to furnish troops to the several departments of the Field Artillery School, for utilization in demonstrations, tactical problems, field exercises, gunnery and other types of instruction. The units of the regiment are called upon for a great variety of functions, and both officers and men must be maintained at a high state of efficiency at all times. The 1st Battalion, which is motorized, fires not only the 3" gun, which is its normal equipment, but is called upon also for target practice and other instruction with the 155-mm. howitzers, the 155-mm. guns, the 4.7" guns, the 240-mm. howitzer and the 9.2" howitzer.

## THE FIELD ARTILLERY JOURNAL

Fortunately the Ordnance Department at Fort Sill assists in the care and maintenance of the large caliber matériel, and the 10-ton tractors required for their transportation.

The 2nd Battalion is horse-drawn, and shares with the 1st Battalion of the 18th Field Artillery the demands of the Field Artillery School for horse-drawn units, employed for instruction in draft, harness adjustment, mounted drill, firing with the French 75's, tactical problems and field exercises. One of the batteries of this battalion is equipped with the new split-trail 75-mm. gun, model of 1923.

The Headquarters Battery is called upon for a large amount of experimental work in connection with the organization and operation of the regimental and battalion details, both motorized and horse-drawn, and takes a prominent part in all practical exercises in which the regiment or battalion is involved.

Officers on duty with the regiment have an unusual opportunity to witness, or take part in a wide variety of field artillery work, including a large amount of firing of guns of all calibers. Contact with the School is stimulating and keeps officers abreast of the latest developments in tactics and technique, as well as important experimental work in progress of development. Preparations are being made by this regiment for particularly interesting experiments in the transportation of both the motorized and horse-drawn battalions on trucks and trailers (portée). An interesting account of the initial experiment with a portée battery on a march of 1457 miles is published in THE FIELD ARTILLERY JOURNAL for November-December, 1927.

Fort Sill, as a station, offers many advantages. It is situated in the foothills of the Wichita Mountains, the most beautiful spot in the State of Oklahoma. The climate is agreeable and the large reservation is a veritable paradise for those interested in riding, polo, and fox hunting. In addition, there is an excellent nine-hole golf course, many tennis courts, two hand-ball courts, and a large swimming pool. The officers' club is one of the most popular and attractive at any Army Post.

The reservation includes 52,000 acres with an adjoining forest reserve of 60,000 acres. There is good fishing, and efforts are being made to increase the number of quail and other game. Duck hunting is unusually good.

The 2nd Battalion is quartered in concrete barracks, with modern gun sheds and stables. The 1st Battalion and Headquarters Battery occupy cantonment quarters in Post Field, in which the officers and troops have taken so great an interest that the quarters of this battalion constitute one of the most attractive communities in the garrison.

## REGIMENTAL NOTES

The work is strenuous, but the effort is worth while, and the regiment takes pride in its ability to "carry on" in such a wide variety of rôles.

### SECOND FIELD ARTILLERY BATTALION CAMP GATUN, CANAL ZONE

Major John M. Eager, *Commanding*

#### *Roster of Officers*

Major Hamilton E. Maguire

#### CAPTAINS

John Van D. Hume  
Stuart McLeod  
Arthur L. Warren  
John C. Johnston  
Erle D. Ferguson  
Armand S. Miller

#### FIRST LIEUTENANTS

Jonathan Hunt  
William C. Huggins  
Louis B. Ely

James B. Clearwater  
Robert C. Hendley  
George E. Mitchell, Jr.  
Donald Q. Harris  
Daniel P. Poteet  
John M. Whistler

#### SECOND LIEUTENANTS

George D. Crosby  
Edward L. Andrews  
James G. Anding  
Malin Craig, Jr.  
Henry F. Garcia  
George H. McManus, Jr.

During the past year the battalion of field artillery stationed in the Panama Canal Department has undergone many changes. On January 1, 1927, it was the 1st Battalion, 4th Field Artillery, pack artillery, with one battery (B) experimentally organized as a portée battery, and was stationed at Fort Wm. D. Davis, Canal Zone. Five days later the entire battalion became portée, while on September 1st its designation was changed to the 2nd Field Artillery Battalion and on December 16th a part of the post of Fort Davis became the separate command of Camp Gatun, its main garrison being the field artillery.

Battery "B" had been motorized during the preceding year and had proved that portée artillery was well adapted to the necessities of service in defense of the Canal. On January 6th the remainder of the battalion also was motorized, the animals going to various other organizations. Several of the mules had been in the 4th Field Artillery for over twenty years and their departure caused much sadness among the "old timers." Only a part of the motor equipment was received at this time and "A" and "C" batteries for some time operated with but five trucks and a single tractor. The work of motorization went on very rapidly and the battalion was able to present a creditable performance at a formal review on January 17th, only eleven days after the initial motor equipment arrived.

The months of February and March were occupied with the annual maneuvers, the battalion moving to the Pacific Side of the Isthmus on March 1st. After some years experience in loading mules no difficulties were experienced in transporting motor vehicles on flat cars. The 1927 maneuvers were both interesting and instructive

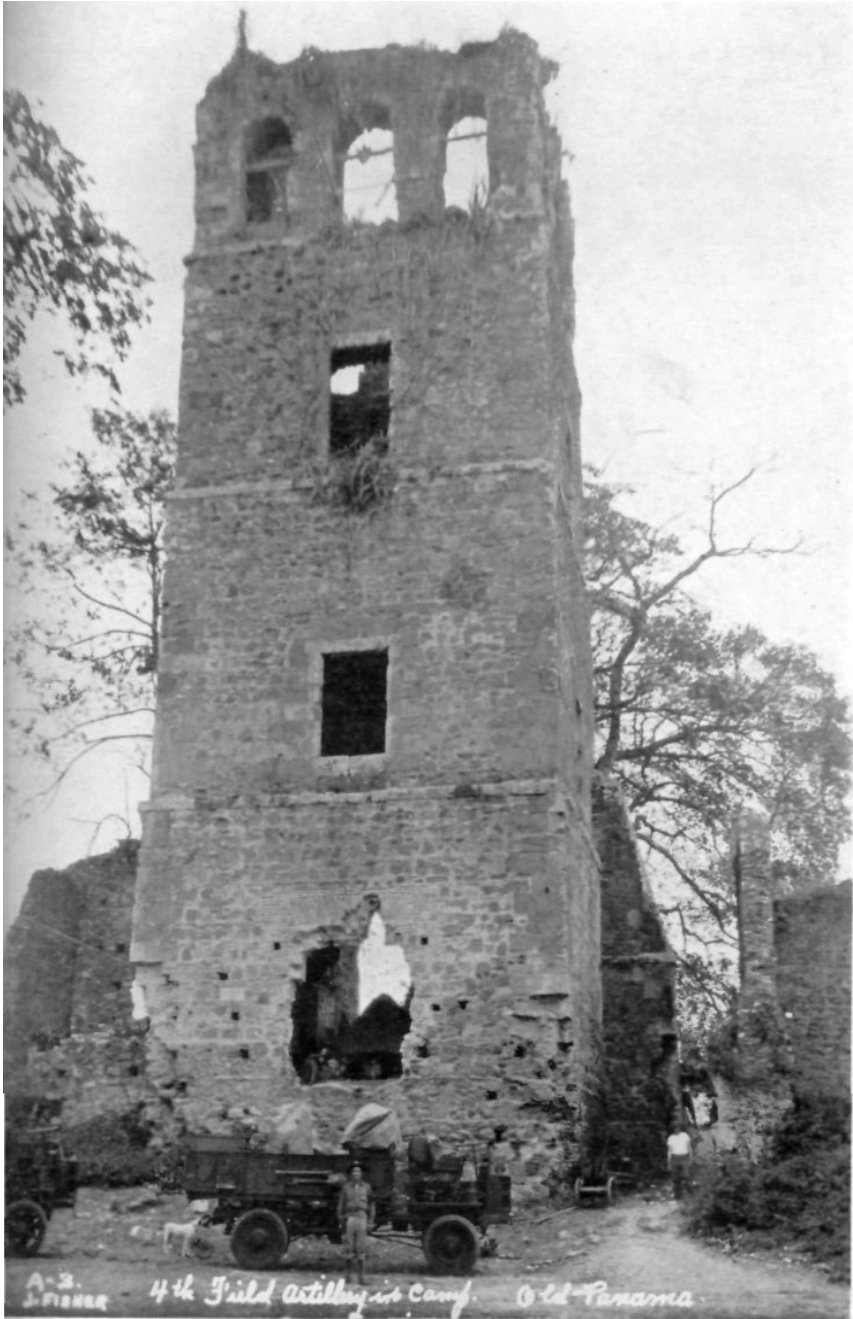
## THE FIELD ARTILLERY JOURNAL

and included a march of the entire Panama Canal Division from Empire, Canal Zone, to La Chorrera, Republic of Panama. Aside from the normal benefits accruing to an organization from such activities, these maneuvers were particularly useful in that they converted the men and officers to the idea that portée artillery was valuable and capable. The placing of a battery of guns on top of a very steep mountain on which mules had fallen over backward the preceding year was worth a great deal as a raiser of morale. Men who had been with the mules for years had, up to that time, expressed considerable doubt as to just what tractors could do in the jungle. The last doubts were removed by this feat and from that time on, all members of the battalion were enthusiastic portée artillerymen.

The formal maneuvers ended on March 14th and from that time until April 7th the battalion held its annual target practice, made a number of practice marches, and conducted an extensive reconnaissance of the country on the Pacific side of the Isthmus. The field of reconnaissance was vastly extended over that of former years by the possession of light motor vehicles. All of the officers and certain selected noncommissioned officers were made familiar with the terrain for fifty miles in each direction from the Pacific entrance of the Canal. The service practice with the American 75's which had replaced the famous old 2.95's was very satisfactory and included considerable firing with aerial observation, a most important method on account of local conditions.

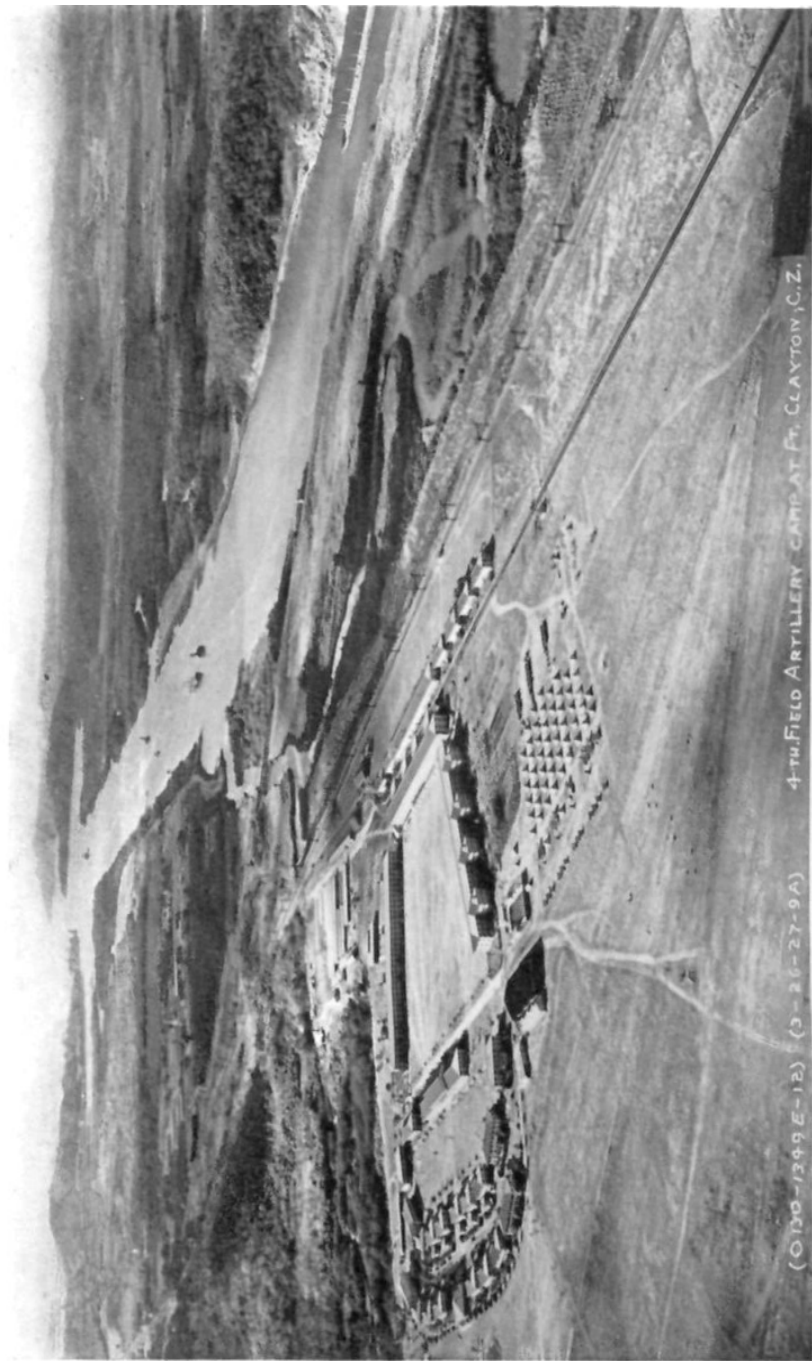
The weeks in the field terminated with a review by the Secretary of War and with the annual section contest for the Department Commander's Trophy which was won for the second time in succession by the 4th Section of Battery "A" under Sergeant John Buckwalter, a survivor of Captain Marston's Trans-Isthmian march in 1923. It will be recalled that Battery "A," 4th Field Artillery, remains the only full combatant organization that ever made a march across the Isthmus of Panama.

Returning to their normal station on April 7th the battalion commenced another year of training to culminate in the 1928 maneuvers. There was much to be done. The remainder of the motor equipment began to arrive from the United States and soon each battery had its full complement. It may be of interest to detail the equipment furnished each gun battery—6 American 75's, organized as a 4-gun firing battery and a 2-gun beach defense platoon; 9 Class B Standard Trucks; 6 trailers and 5-ton tractors; one motorcycle; a White reconnaissance car; 6 caissons; a water trailer; and a rolling kitchen. Each firing battery has five officers and 120 men. During the summer provisional training regulations were



BATTERY B, 4TH F. A., NOW 2ND F. A. BATTALION, WAS ENCAMPED AT OLD PANAMA DURING MARCH, 1927, AROUND THE RUINS OF THE SPANISH CATHEDRAL, BURNT BY MORGAN'S BUCCANEERS IN 1671





(O 100-1349 E-12) (3-21-27-9A) 4TH FIELD ARTILLERY CAMP AT FT. CLAYTON, C.Z.

AIRPLANE PHOTO OF CAMP OF THE 1<sup>ST</sup> BATTALION, 4TH F. A., NOW 2<sup>ND</sup> F. A. BATTALION, DURING VISIT TO THE PACIFIC SIDE DURING DRY SEASON OF 1927. WHEN THEY WERE THE GUESTS OF THE 3<sup>RD</sup> INFANTRY. THE PACIFIC OCEAN, ENTRANCE TO THE CANAL AND PART OF THE MIRAFLORES LOCKS CAN BE CLEARLY SEEN IN THE DISTANCE FROM LEFT TO RIGHT ARE PANAMA CITY, ANCON HILL, QUARRY HEIGHTS, BALBOA AND BRUJA POINT ACROSS THE CANAL.

## REGIMENTAL NOTES

prepared and the work of entrucking and detrucking was standardized and made more precise.

The year has been a tremendously interesting and valuable one and, after a year's experience with their new equipment, the entire battalion feels confident that they will make a creditable performance in the new maneuvers which will soon begin.

The important subject of athletics received much attention. The absence of outside amusements which are available in the United States make athletics of major importance in Panama. The battalion made a creditable showing in baseball, basketball, and boxing, and all men received instruction in swimming. The morale of the battalion is very high and an exceedingly gratifying reënlistment rate was attained.

The number of men qualified as gunners was higher than last year's excellent showing. Much regret was felt that the 1927 Knox Trophy Contest contained no provision for the entrance of a portée battery, especially since Battery "C" had been the winner of the 1926 Trophy.

Service in the 2nd Field Artillery Battalion is very interesting and very valuable. This organization has at least as much work with other arms of the service, except cavalry, as any other in our service and the location naturally enhances the interest in the work. Obviously troops in the Canal Zone should be highly trained at all times. There is, accordingly, no cessation of interest in the training and the task of visualizing and simulating the attack of an enemy is much easier than it is elsewhere. Very cordial relations exist with both the Navy and the other branches of the Army.

As the year draws to a close the entire battalion is on its toes and resolved to live up to its new motto, "*The Second First.*"

THIRD FIELD ARTILLERY (Less 1st and 2nd Bn's.)

FORT MCINTOSH, TEXAS

Colonel Robert C. Foy, *Commanding*

### *Roster of Officers*

CAPTAINS	FIRST LIEUTENANT
John C. Adams	Harry L. Watts, Jr.
Claude G. Benham	SECOND LIEUTENANTS
John W. Russey	Charles E. Hart
John R. Young	Albert N. Stubblebine, Jr.

Pursuant to instructions contained in letter from the War Department, dated August 15, 1927, subject "Constitution, Reconstitution or Redesignation of Certain Units of the Regular Army, and the Reorganization of Regular Army Divisions," the Regimental Headquarters and Band, Headquarters Battery and the Service Battery,

## THE FIELD ARTILLERY JOURNAL

Fourth Field Artillery were on October 24, 1927, redesignated the Regimental Headquarters and Band, the Headquarters Battery and the Service Battery, Third Field Artillery, and assigned to the 5th Division.

The change involved considerable work in transferring all pack equipment of these organizations to the Fourth Field Artillery Battalion and in the re-equipping them for horse-drawn artillery. So far no indication has been received as to when these units of the Third Field Artillery will be moved to join the rest of the regiment.

The annual target practice was held during the month of November, 1927. The officers of the Third Field Artillery at this station were attached to the Fourth Field Artillery Battalion for the practice.

Gunners' examination was held during the month of December, 1927, 2.95-inch matériel being borrowed from the Fourth Field Artillery Battalion.

### FIRST BATTALION, THIRD FIELD ARTILLERY

FORT BENJAMIN HARRISON, IND.

Lieutenant-Colonel George R. Greene, *Commanding*

#### *Roster of Officers*

CAPTAINS	
Stacy Knopf	Foster J. Tate
Mark A. Dawson	Carl E. Berg
William S. Evans	Richard Sears
Everett M. Graves	
Melvin L. McCreary	
FIRST LIEUTENANTS	
Harvey J. Thornton	James R. Lindsay, Jr.
Roy A. Carter	Percy W. Thompson
Arthur L. Shreve	Charles C. Wiselogel
	John O. Taylor
	Albert Lang
	Stewart F. Yeo

### SECOND BATTALION, THIRD FIELD ARTILLERY

FORT SHERIDAN, ILLINOIS

Major Francis A. Doniat, *Commanding*

#### *Roster of Officers*

CAPTAINS	
Orville M. Moore	James E. Bush
Joseph A. Sheridan	Auguste R. Taylor
George J. Downing	William S. Wood
Arthur B. Wade	Alfred Vepsala*
FIRST LIEUTENANTS	
John H. Lewis, Jr.*	Robert M. Cannon
Richard H. Slider	James R. Wheaton
Herbert E. Baker	Robert C. Ross
	Kenneth P. McNaughton

\* Not yet joined.

The designation of this battalion was changed from the 1st Battalion, 14th Field Artillery, to 2nd Battalion, 3rd Field Artillery, during the past summer.

The permanent stations of this battalion are:

Battalion (less Battery "F"), Fort Sheridan, Illinois.

Battery "F," Jefferson Barracks, Missouri.

## REGIMENTAL NOTES

The whole battalion was concentrated at Camp McCoy, Sparta, Wisconsin, from May 27th till August 16th.

During the first five weeks there the battalion was fairly free from outside tasks and did its service firing and tactical work.

The Corps Area Commander then held his tactical inspection, and after that, all activities of the battalion were devoted to performing the training and administrative work for the other components of the Army. These included:

- 206 Students for C.M.T.C. Camp
- 11 Regiments of Reserve Officers (F.A.)
- 19 Organizations (Misc.)
- 90 Students for R.O.T.C. Camp.

In our move to Sparta, Wisconsin, the battalion was concentrated at Fort Sheridan and marched up there complete. Battery "F," of course, had by far the hardest trip as very little money was available for its transportation. It marched 90 miles from Jefferson Barracks to Centralia, Illinois; from there it moved by rail to Chicago; at Chicago it detrained and marched 35 miles to Fort Sheridan.

On the return march from camp, Battery "F," Captain G. J. Downing, Commanding, marched all the way back to Jefferson Barracks, 500 miles.

The Battalion (less Battery "F") marched 514 miles in going to and from camp. Battery "F" marched approximately 900 miles, and in addition, had the experience of entraining and detraining its animals and matériel and moving part of the journey to camp by rail.

The most interesting part of the work of this battalion is the summer work. Camp McCoy (formerly Camp Sparta) has a very good range and splendid terrain for tactical work. Our permanent stations are pleasant places to live at, but are small posts for Field Artillery; surrounding country is all solidly built up, and roads are congested with automobiles.

FOURTH FIELD ARTILLERY BATTALION

FORT MCINTOSH, TEXAS

Lieutenant-Colonel William F. Morrison, *Commanding*

### *Roster of Officers*

#### CAPTAINS

G. L. Danforth  
J. H. Keatinge  
L. V. Warner

#### FIRST LIEUTENANTS

V. L. Knadler  
J. E. Slack

R. R. Raymond, Jr.  
J. M. Works

#### SECOND LIEUTENANTS

S. S. Koszewski  
D. G. Erskine  
W. T. Sexton  
F. Marcinski  
W. M. Creasy, Jr.

## THE FIELD ARTILLERY JOURNAL

On October 24th the old Fourth Field Artillery passed out of existence as a regiment and the new Fourth Field Artillery made its bow to the Army as a separate battalion.

For several years the First Battalion of the regiment had been detached on duty in Panama and, as there was no prospect of the whole organization ever being reunited, the final separation and redesignation of the units were considered desirable. In addition the battalion in Panama had ceased to be pack artillery, having been re-armed and equipped as portée. Under the new order the First Battalion has become the Second Field Artillery Battalion, the Second Battalion the Fourth Field Artillery Battalion, while the Headquarters Battery and part of the Service Battery have been made the corresponding units of the reconstituted Third.

In the reorganization the following officers were lost to the Third: Colonel R. C. Foy; Captains J. C. Adams, C. G. Benham, J. R. Young, J. W. Russey; First Lieutenant H. L. Watts, Jr.; Second Lieutenants, A. N. Stubblebine, Jr., C. E. Hart.

So far no indication has been received as to when the units of the Third Field Artillery will be moved to join the rest of their regiment.

As the only other pack artillery left in the Army is the Twenty-fourth in the Philippines, the onerous task of keeping alive and advancing the knowledge of this arm in the United States has fallen to our single battalion.

With the development of the new 75-mm. pack gun the pack artillery has definitely emerged from the dark ages, to which so many artillery officers have assigned it, and in the future bids fair to be a highly useful and powerful arm. At the present time Battery "B" is armed with the new gun which our late Chief considered the most remarkable ordnance development since the World War.

The next most important test being carried on is that with the Phillips Pack, which it is believed will soon replace the old aparejo, that black and unfathomable mystery to the untutored. This experimental work has fallen to Battery "C" and soon will be extended to Battery "B" in conjunction with work on the new guns.

Various lesser items of pack equipment are also undergoing test throughout the battalion.

Outside the work of the Pack Artillery Board we are fortunate to have only our own training to carry on. During the first part of the year we held gunner's examination and prepared for the annual maneuvers. From April 20th to May 24th the unit marched to Camp Stanley, where it participated in the Second Division maneuvers, and returned again to settle down to our detached existence. Battery "B," however, remained at Stanley about three

## REGIMENTAL NOTES

weeks to complete tests with the new gun. They returned to McIntosh, having marched 500 miles. Our target practice was spread over June, July and November when the various batteries marched out to the range, not far from Laredo, and camped for periods of several days while the officers struggled for solutions. The rest of the year's schedule included pistol practice during October and gunner's examination again in December so as to postpone as long as possible the plunge into the new and terrifying intricacies of T.R. 430-175.

For the Knox Trophy test, Battery "B" was selected, but so far nothing further than hopes as to the final result has been forthcoming.

During 1928 we expect to demonstrate that our battalion can successfully carry on the ancient traditions of the old regiment. As we are considerably under strength in officers, we hope to see many new officers among us and to teach them to thrill at the mystery of the pack, the song of the jackass and the charm peculiar to the Rio Grande.

### FIFTH FIELD ARTILLERY

### FORT BRAGG, NORTH CAROLINA

Colonel Thomas E. Merrill, *Commanding*

#### *Roster of Officers*

Lieutenant-Colonel Creed F. Cox  
Major George H. Paine  
Major Joseph A. Rogers

#### CAPTAINS

Ralph L. Joyner  
Alfred M. Goldman  
William F. Kernan  
John C. Butner, Jr.  
David Loring, Jr.  
Melville S. Creusere  
Paul C. Boylan  
Henry C. Harrison, Jr.

#### FIRST LIEUTENANTS

Gerald A. O'Rouark  
Hiram W. Tarkington  
Raymond T. J. Higgins

Clinton S. Berrien  
Emett A. Niblack  
Franklin H. Canlett  
James Y. LeGette  
Michael V. Gannon  
John R. Culleton  
Cornelius Garrison  
Mortimer F. Wakefield  
Edward C. Englehardt  
William E. Waters  
Edwards M. Quigley

#### SECOND LIEUTENANTS

Richard W. Mayo  
Samuel P. Collins  
John F. Fiske  
Charles A. Sheldon

The Fifth Field Artillery, whose motto is "Faithful and True," has completed another year of service, and has the satisfaction of looking back over the program of details and training with the assurance of tasks well done. It is with a feeling of pride that the regiment points briefly to the accomplishments attained during the past year. Situated at Fort Bragg, North Carolina, in a climate admirably adapted to all the year training, the Fifth Field Artillery has enjoyed a service varied enough to stimulate and maintain the interest of its personnel throughout the year. Being a motorized regiment and equipped with the 155-mm. G.P.F. and the 240-mm. howitzers, it has been assigned to the mission of training appropriate

## THE FIELD ARTILLERY JOURNAL

units of Organized Reserves, in addition to maintaining its own standing of proficiency. During the summer just past, we had the good fortune to be associated in this way with the 560th, 562nd, 576th, 577th Field Artillery and the 534th C.A.C. (Anti-aircraft) Organized Reserves for two weeks each, during which time the contact gained in this way went far toward a closer welding of cordial relationship between these components of our service.

Service practice for the regiment of necessity had to be sandwiched in between other missions and details, but went off on schedule with the highest degree of interest and training. Service practice was carried on with 3-inch matériel, 240-mm. howitzer and 155-mm. G.P.F.'s.

Battery "C," under command of Captain M. S. Creusere, was selected to represent the regiment in the Knox Trophy competition, and while they did not finally annex the trophy they had the satisfaction of taking second place in the post contest, and we believe they are entitled to hearty congratulations for the showing made.

Following closely upon the Knox Trophy competition, the entire personnel of the regiment was utilized in carrying out an important test for the Field Artillery Board. This test consisted of organizing at war strength two batteries, one 155-mm. G.P.F. and one 240-mm. howitzer, and equipping them with all equipment called for by war strength tables of equipment. Batteries "A" and "D" were selected to form the nuclei of the war strength batteries and were brought to strength by attachment of additional men. As mentioned above, it required the entire regiment and a few men from other units on the post. The two batteries were formed into a provisional battalion and engaged in a field exercise of one week's duration conducted by the Field Artillery Board. The exercise included firing and difficult tactical situations designed to test both men and equipment to the maximum. In this the Board was ably assisted by the weather, which on one night simulated war conditions perfectly. During the war strength test the opportunity was offered to demonstrate the mobility of the matériel. On the last day out the 240-mm. Howitzer Battery was taken out of position, marched 13 miles and was emplaced in another position ready for firing with all the four pieces between the hours of 5:00 A.M. and 6:00 P.M. The 155-mm. G.P.F. Battery completed the same movement between the hours of 5:30 A.M. and 4:00 P.M. The test was witnessed by representatives of the Chief of Field Artillery, the Quartermaster General, the Chief of Ordnance and other officers interested. The test proved of great value in ascertaining the adequacy of present tables of organization and equipment, and of equal value to the regiment in giving officers and men a chance to function at full strength. The greatest possible interest was taken by all

## REGIMENTAL NOTES

concerned, and the regiment was highly commended for its indefatigable spirit, loyalty and perseverance.

After spending a severe week in the field with the war strength equipment test, the day following the regiment's return to barracks, brigade called for a tactical inspection, whereupon the regiment took the field for another day and acquitted itself splendidly by meeting cheerfully and with dispatch all demands made upon it.

Battery "D" continues to test special tractors and equipment for the Field Artillery Board. In addition to the battery's normal equipment, it has one McCormick-Deering Tractor and one Fordson; each equipped with full crawler. The McCormick-Deering is utilized to pull a two-axle load and the Fordson utilized for a one-axle load. One other Fordson equipped with the Hadfield-Penfield (half crawler) adapter is being tested. Seven hundred miles of service is required for the completion of these tests.

Among other tests being conducted by organizations of the regiment is a test of two improved F.W.D. Trucks, one equipped with pneumatic tires and the other with solid tires, and two 5-ton Coleman Trucks, equipped with pneumatic tires. Service Battery is conducting these tests for the Field Artillery Board and is subjecting these trucks to the most rigid requirements of service to determine their suitability for various military uses.

During the latter part of December the regiment took part in the tests conducted on the Swift Island bridge over the Pee Dee River near Albemarle, North Carolina. This concrete bridge, over a thousand feet long, had been rendered useless owing to a power project in the vicinity. It was turned over to the War Department for testing the effectiveness of bombardment both from the air and from large caliber artillery and for demolition tests by the engineers. Battery "B" camped near the bridge and furnished camp and mess facilities for visitors and casual officers. Battery "C" emplaced one 240-mm. howitzer and on December 24th bombarded the bridge. The trip to the bridge furnished an interesting problem. The four sections of the guns were drawn by four Militor trucks, and the ten-ton tractor necessary for emplacing the gun was loaded in a ten-ton trailer and drawn by a Militor truck. The road was extremely slippery and caused many difficulties. Among others the breaking of the above-mentioned ten-ton trailer, necessitating the tractor making fifty of the one hundred miles under its own power.

The problem of firing on the bridge was also an interesting one. To avoid firing over habitations and to prevent ricochets, a position had to be selected at a very short range and the gun elevated to about 59 degrees, where the drift became a troubling factor. The observation post was within the danger zone close to the target. Time prevented firing more than fifteen rounds, but of these, eight



## THE FIELD ARTILLERY JOURNAL

direct hits were obtained, and an examination of the bridge showed that the damage done was unexpectedly large. It indicates that had time permitted the bridge could have been destroyed in an afternoon.

A remarkable performance was put up by Battery "C" on its return from the Pee Dee River camp. The battery left camp at 9:00 A.M. Thursday, December 29th, and arrived at Fort Bragg at 10:30 P.M. the same date, thereby covering the hundred mile march without mechanical trouble of any kind, in thirteen hours and thirty minutes. A still more remarkable performance was established by one of Battery "C's" tractors which left the camp at 9:00 A.M., December 29th, pulling a double load, and arrived at Fort Bragg at 9:00 A.M. on December 30th, completing the hundred mile trip in twenty-four hours and establishing a mark to shoot at for all ten-ton tractors of the same model. This continuous march was made possible by dispatching from Fort Bragg, N. C., upon the arrival of the truck column above mentioned, relief to the tractor driver and assistant tractor driver.

The athletic career of the regiment during the past year in spite of the various handicaps imposed in the way of fatigue and training and tests, was, from the regimental point of view, highly satisfactory. Headquarters Battery and Combat Train Second Battalion of the regiment took first honors in basketball within the regiment for the fourth consecutive time, and the regimental team made a strong bid for post honors.

The regimental baseball team under the guidance of Lieutenant C. W. Cowles, and ably assisted by First Sergeant Jacobs of Service Battery, evolved a splendid team that finished as runner up to the post champions. Although we have lost a number of our ball players by discharge, we have high hopes for the coming season. Football was not a factor in post athletics during the past season, but the regiment had the honor of placing on the all-army team at Fort Benning, Ga., the only field artilleryman as a regular player, in the person of Corporal Combs, Headquarters Battery and Combat Train Second Battalion.

Soccer was introduced to the regiment last fall and received an enthusiastic reception, Battery "A" winning the regimental championship. Still more interest is expected in this sport for the following season.

A number of changes have taken place in the commissioned personnel of the regiment during the past year. The following officers were ordered to other stations for duty: Majors James H. Van Horn, Joe R. Brabson; Captains Charles Porterfield, Jr., Joseph A. Sheridan, Warren D. Davis; First Lieutenants John Gross, Richard C. Partridge, Lauren B. Hitchcock; Second Lieutenants, William H. Drummond, Charles W. Cowles, William D. Paschall, Raymond

## REGIMENTAL NOTES

K. Quekemeyer. Lieutenant-Colonel George P. Hawes, Jr., was retired on September 10, 1927, and the regiment wishes him continued success for all time.

The new arrivals with the regiment include: Lieutenant-Colonel Creed F. Cox; Major Joseph A. Rogers; Captains Ralph A. Joyner, John C. Butner, Jr.; First Lieutenants Hiram W. Tarkington, Raymond T. J. Higgins, Emmett A. Niblack, Michael V. Gannon, William E. Waters; Second Lieutenants Richard W. Mayo, Samuel P. Collins, John F. Fiske, Charles A. Sheldon.

### SIXTH FIELD ARTILLERY

### FORT HOYLE, MARYLAND

Colonel Harry G. Bishop, *Commanding*

#### *Roster of Officers*

Major Edward W. Wildrick  
Major William F. Sharp  
Major Frank Thorp, Jr.

#### CAPTAINS

William J. Jones  
Oscar L. Gruhn  
John A. Stewart  
William Michener  
Gennad A. Greaves  
William M. Wiener  
William H. Quarterman, Jr.  
William A. Ray  
George H. Stuts

#### FIRST LIEUTENANTS

Leo T. McMahan  
Arthur E. King  
Hamilton F. Searight  
John M. Lentz  
Thomas F. Keefe  
Anthony C. McAuliffe  
Charles N. McFarland

Hugh F. Conrey  
George D. Vanture  
Homer W. Kiefer  
George A. A. Jones

#### SECOND LIEUTENANTS

William L. Coughlin  
James J. Deery  
Arthur Bliss  
Ralph M. Osborne  
William A. Walker  
John E. Perman  
Frederick J. Brown  
Fox B. Conner  
Thomas M. Watlington, Jr.  
Benjamin Whitehouse  
Charles R. Hutchison  
Bertram A. Holtzworth  
Daniel P. Miller  
John M. Sterling  
Herbert B. Kirkpatrick  
Willis W. Whelchel

Fort Hoyle, the home station of the 1st Field Artillery Brigade Headquarters, 1st Ammunition Train and 6th Field Artillery is located on the upper end of Chesapeake Bay about 24 miles north of Baltimore, Maryland, a short distance off the Baltimore-Philadelphia pike.

The Post is situated on a long peninsula projecting out into the Bay, between the Bush and Gunpowder Rivers. The peninsula includes about 20 square miles and is shared by the artillery Post of Fort Hoyle and the Edgewood Arsenal of the Chemical Warfare Service. This large area has varied terrain, including heavy woods and open spaces. The permanent buildings and well-kept grounds of Fort Hoyle and Edgewood Arsenal show a development that contrasts with the natural conditions on the outer part of the peninsula where the artillery firing range and chemical warfare proving grounds are located.

The village of Edgewood on the Pennsylvania lines is the railroad

## THE FIELD ARTILLERY JOURNAL

point which serves the garrison, and the station is just outside of the military reservation gate. No military Post in the country has a more advantageous or more beautiful site than Fort Hoyle.

The Sixth (Horse) Regiment of United States Field Artillery was organized at Fort Riley, Kansas, by General Orders No. 118, War Department, Washington, D. C., May 31, 1907, from the 2nd, 7th, 20th, 21st, 22nd, and 25th Batteries, U. S. Field Artillery. Captain William J. Snow was the first Regimental Adjutant. After twenty years' active service, the Regiment gave at the Officers' Club, Fort Hoyle, Maryland, a reception and dance in honor of Major General William J. Snow, Chief of Field Artillery, whose retirement from active service was to take place on December 19, 1927.

Immediately after the holidays of Christmas and New Year's, 1926, the regiment, in command of Lieutenant-Colonel Augustine McIntyre, resumed its schools for officers and men. This instruction, in addition to the usual garrison duties, continued until the end of April. Two Field Artillery Reserve Officers were attached to the regiment and received fifteen days' active training in February.

During the month of May several mounted inspections and reviews were held, in which the entire regiment participated. On May 24th, nine officers and forty-six enlisted men, comprising the Communication Details from the Headquarters Battery, 1st Field Artillery Brigade and the Regimental Headquarters Battery, 6th Field Artillery, proceeded by motor trucks to Camp Dix, New Jersey, to take part in the Headquarters Communications Maneuvers of the First Division, held at that station from May 24th to June 3rd. On May 31st, the regiment celebrated its twentieth birthday. The entire day was declared a holiday and, after an appropriate address by Lieutenant-Colonel Augustine McIntyre, regimental commander, field and track events were held.

In June the regiment participated in a test mobilization conducted under direction of the Corps Area Commander. In this month also, the regiment made preparations for the Citizens' Military Training Camps and for the training of reserve officers of the 310th and 311th Regiments of Field Artillery. Three Field Artillery Reserve Officers were attached to the regiment and received fifteen days' active training during June.

July saw the coming of seven hundred and nine C.M.T.C. Field Artillery trainees. The C.M.T.C. of 1927 held at Fort Hoyle was the first to be held at the home station of the regiment, previous ones having been held at Camp Welsh, Montauk, Long Island, New York, and at Camp Meade, Maryland. Approximately two hundred reserve officers of the 310th and 311th Regiments of Field Artillery, Sanitary Corps and Chaplains' Reserve, reported for active training.

## REGIMENTAL NOTES

On August 6th, the C.M.T.C. personnel departed for their homes. The reserve officers of the 310th and 311th Regiments of Field Artillery also left during this month, after which forty reserve officers of the 314th Field Artillery, Veterinary Corps, Medical Corps and Chaplains' Reserve, arrived for fourteen days' active training. On August 11th, Colonel Harry G. Bishop arrived from Fort Sam Houston, Texas, and assumed command of the regiment. Lieutenant-Colonel Augustine McIntyre having been relieved from command and assigned to the Hawaiian Department, departed on leave of absence.

On September 6th, Battery "B" departed for Fort McHenry, Baltimore, Md., to participate in the convention of the Atlantic Deeper Waterways Association, held on September 10th, 11th, and 12th. The Battery returned on September 14th.

On October 4th the 1st Battalion, consisting of twelve officers and three hundred and thirty enlisted men, departed for Aberdeen Proving Grounds, Maryland, to participate in the 9th Annual Demonstration of the Army Ordnance Association held on October 6th, returning to its home station on October 7th. The annual tactical inspection by the Corps Area Commander commenced with a trip by the entire regiment to Camp Meade, Maryland, on October 24th, at which station field problems, a review and inspection by the Corps Area Commander were held. The regiment returned to Fort Hoyle on October 28th.

In November the regiment commenced the annual service practice firing, record pistol firing and machine gun firing, the 1st and 2nd Battalions alternating on firing days. During this month word was received from the Corps Area Commander that one battalion of the regiment, less one gun battery, would be motorized. For this purpose the regimental commander designated the 1st Battalion. In January, 1928, the officer and enlisted personnel of the Headquarters Battery and Combat Train, 1st Battalion, and Batteries "A" and "B," are to proceed to Camp Holabird, Maryland, where they will undergo three months of intensive training and instruction in motors.

Service practice was completed by both battalions on December 22nd. On December 16th, the Fort Hoyle Dramatic Club, composed of the officers and ladies of the garrison, presented a three act comedy entitled, "The Man from Mexico." Under the able direction of Captain Ray C. Montgomery, the play was staged in the Post theater before an attendance approximately three times greater than was anticipated. The Dramatic Club presents at least four plays each year.

## THE FIELD ARTILLERY JOURNAL

SEVENTH FIELD ARTILLERY (Less 2nd Bat.)

FORT ETHAN ALLEN, VERMONT

Colonel Frank H. Hopkins, *Commanding*

### *Roster of Officers*

Major Raymond E. Lee

CAPTAINS

Charles S. Ferrin

Augustus M. Gurney

William Mayer

Henry B. Dawson

Howard E. Camp

Frank G. Rogers

Joseph W. Loef\*

FIRST LIEUTENANTS

John H. Corridon

John B. Lord

Edward H. Metzger

\* Not yet joined

Lonnie O. Field\*

Richard C. Singer

Park B. Herrick

SECOND LIEUTENANTS

John F. Williams

Robert C. Lawes

James T. Loomie

Eleazar Parmly, 3d

William R. Forbes

Conrad G. Follansbee

Edward G. Farrand

Mark K. Lewis

James F. Collins

Lewis H. Ham

Due to the long winter months, the practical outdoor training of the Headquarters and 1st Battalion of the Seventh Field Artillery is limited to the months of May and June, September and October—the civilian components claiming July and August for their camps.

We are particularly blessed with an excellent artillery range, newly acquired, nesting at the base of the Green Mountains, fourteen miles from the Post. Late in May the Battalion Headquarters Battery moved to the range and serviced its semi-permanent installations, living under canvas. One of these headquarters batteries remains at the range until September, furnishing range guards and safety officers, running the communications net and observation posts, and destroying duds. On May 23rd six officers of the regiment and the communication section of Headquarters Battery traveled to Camp Dix, N. J., and participated in the communications exercises and maneuvers of the 1st Division. This detail returned June 5th.

June found the gun batteries hiking out to the range to do their own firing. Each outfit camped for a week or ten days, fired, perfected itself in reconnaissance and occupation of position and returned to garrison to be replaced by another battery.

July was devoted to the training of the C.M.T.C. and R.O.T.C., both units being encamped at the Fort until the last part of their periods when they hiked to the range for their service firing. All batteries were utilized in the training of these students. On July 5th Colonel Hopkins arrived and assumed command, relieving Lieutenant-Colonel Birnie, who was assigned to General Staff duty.

On the 21st the first war clouds appeared on the horizon of peaceful Vermont in the shape of the machine gun companies of the 5th and 13th Infantries and a platoon of the 9th Tank Company, all of which hiked overland; the units of the 5th from Portland, Me., the

## REGIMENTAL NOTES

others from Boston, Mass. A machine gun school was organized at the range, selected artillerymen being attached for instruction. During this period Major Lee took over the 1st Battalion from Major Talbot, who left for the War College.

August found the machine guns spitting death and desolation over the artillery range and the Field Artillery Organized Reserve regiments of New England receiving their summer training at the Post.

September is cool and bracing; ideal weather for a war. The field maneuvers of the 18th Infantry Brigade, reënforced by the artillery battalion and the cavalry squadron from the Post, occupied the first half of the month. Encamped on the range for the first week, practically every phase of offensive and defensive combat, including night problems, was executed by these troops. The maneuvers closed with a 90-mile march of the brigade to Rutland, at which place, on the 15th, the various components separated, to return to their respective home stations by marching.

The rest of the month was devoted to finishing up the regular artillery service practice on the range.

With a strenuous summer behind, October offered a haven of relative peace and quiet, and was spent in the performance of the usual garrison duties and small arms record practice. Animals had a chance to rest and fill out bellies that had been well worked off. Everyone prepared to hibernate for the winter.

And then a stroke from the blue: The Vermont Floods. From November 4th until December 3rd, the artillery took the field again. With the cavalry, it furnished relief trains of supplies, its troops guarded a dozen towns and cities including the State Capitol, and established traffic control posts over the crippled lines of communication. Its officers supervised relief activities. Officer and man, horse and mule bent all their energies to assisting the stricken countryside.

The lighter side of life has not been neglected during the year. Nineteen twenty-seven has witnessed a keener interest and larger participation in athletics than the Seventh and Fort Ethan Allen have known in many years. In addition to the inter-organization leagues in basketball and baseball, the battalion, under the active direction of its commanding officer, organized battery teams in soccer and volley ball which were ardently supported in a hotly contested struggle for championship banners.

A boxing club was organized and fight cards between soldiers and soldiers and the best talent in northern New England and Canada filled the riding hall to capacity every Friday night, a majority of the spectators being civilians. Sergeant Neilson, Battery "C,"

## THE FIELD ARTILLERY JOURNAL

proved himself of champion caliber by not only winning the Post Championship with ease but by defeating every civilian heavyweight in sight, including the veteran champion of Canada.

A Post football team was organized early in the fall, was ably coached by Lieutenants Herrick and Lewis and finished the season undefeated; playing such teams as the University of Vermont Frosh (unbeaten for three years), Plattsburg Barracks and the 2nd Battalion's team at Madison Barracks. This winter, intra-mural indoor baseball and bowling are meeting with enthusiastic success. And, as is to be expected in this climate, outdoor sports such as skating (an excellent rink and Post hockey team), skjöring, and tobogganing on a half-mile slide are very popular during the winter months.

Polo, both outdoor and indoor, claims its place in the sun. The Post indoor team, composed of Captain Ferrin, Lieutenant Sargent and Johnson was very successful last winter and early spring. A tournament with Norwich was won without the loss of a game. The 112th Field Artillery was beaten here. A team sent to play the Hartford Cavalry at Hartford, lost two games. In March the Post team won the Class C, New England championship at Hartford, but was unfortunately unable to enter the semi-finals. A trip to West Point resulted in victory for the kaydets.

In outdoor polo, a team made up of Major Talbot, Lieutenants Corridon, Sargent and Johnson met defeat at the hands of the Montreal Hunt Club, but a tournament with Madison Barracks this autumn resulted in a clean sweep of four victories for the Post team. This was composed of Captains Ferrin and Winchester, Lieutenants Corridon, Williams, Johnson, Forbes and Dewey. Lieutenant Johnson played all games, the others alternating on chukkers. Semiweekly games have been held all year in which every officer wishing to play has been given ample opportunity to do so. The result has been a great interest on the part of all officers and a marked improvement in the ability of junior officers, in particular, during the year.

In the social life of the garrison the artillery has been active. The Mounted Service Club has provided for officers and families and many visitors, entertainment through the medium of hops, bridges, polo teas, and informal garrison parties both on and off the Post that have left nothing to be desired. With a well-balanced life of work and play, with cordial relations between civilians and the Army, with a personnel maintained at practically authorized strength and with comfortable and attractive quarters, service with the Seventh Field Artillery at Fort Ethan Allen during 1927 has been as pleasant and as varied as one could wish.

The Corps Area Commander states in his report on the 1927 combined maneuvers, "Seventh Regiment of Field Artillery (less

## REGIMENTAL NOTES

2nd Bat.): efficient. Discipline and appearance—excellent. This regiment has improved greatly in the last year and is now a first class regiment of Field Artillery with a high esprit de corps and morale. The 1st Battalion is an exceedingly efficient battalion of Field Artillery. Ready for immediate Field Service."

*Ca va sans dire!*

SECOND BATTALION, SEVENTH FIELD ARTILLERY

MADISON BARRACKS, N. Y.

Lieutenant-Colonel Frank S. Bowen, *Commanding*

### *Roster of Officers*

Major Sylvester D. Downs, Jr.

CAPTAINS

Stanley Bacon  
Lester J. Whitlock  
Parker G. Tenney  
Arthur M. Sheets  
Leon E. Savage

FIRST LIEUTENANTS

George B. McReynolds  
Stephen E. Bullock

Albert J. Hastings

George DeGraaf

James A. Samouce

Raymond T. Tompkins

SECOND LIEUTENANTS

Joris B. Rasbach

Alfred B. Devereaux

Harry C. Larter, Jr.

John Meade

The Second Battalion of the Seventh Field Artillery, stationed at Madison Barracks, New York, conducted its normal training during the first three months of the year. The gunners' examination, completed on April 30th, resulted in qualification of fifty-five per cent. of the total strength of the battalion. Outdoor work became possible about the first of April, and from this time the training was intensive.

On May 26th the battalion left for Pine Camp, New York, for a period of field training and target practice which ended with the tactical inspection by the Division Commander on July 11th. The battalion was found to be in excellent condition as to training and preparedness for field service.

The Headquarters organization and Battery "F" remained at Pine Camp for training of units of the Officers' Reserve Corps, Batteries "D" and "E" returning to Madison Barracks. These latter organizations coöperated in the training of the Cornell Unit, R.O.T.C., commanded by Major Paul V. Kane, and the Princeton Unit, commanded by Major Edwin R. Van Deusen. Following the R.O.T.C. camp, these same batteries trained two provisional batteries of the C.M.T.C. students. Field training and target practice for R.O.T.C. and C.M.T.C. was held at the end of each period at Pine Camp.

Headquarters Battery, commanded by First Lieutenant James A. Samouce, and Battery "F," commanded by Captain Parker G. Tenney, spent the entire summer at Pine Camp engaged in the training



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of officers of various Reserve Units. The 306th Field Artillery, 570th Field Artillery, 175th Field Artillery Brigade, 323rd Ammunition Train, 472nd Field Artillery, 304th Field Artillery, 302nd Ammunition Train, 367th Field Artillery, 307th Field Artillery, 471st Field Artillery, and 481st Field Artillery, sent officers to Pine Camp for active duty during this period.

At the end of the summer training season we started preparations, looking towards the annual hibernation. Various schools, gunners' instruction and care of animals became the routine.

The loss to the Post early in the year of Brigadier General Frank Parker, who was transferred to duty in Washington as Assistant Chief of Staff, G-3, threatened for awhile to diminish our prospects of a successful polo season. However we rallied round the capable leadership of Major Sylvester D. Downs, Jr., our new Battalion Commander, and Captain Arthur M. Sheets, and early developed a well rounded team, which came out in the lead in a tournament which included the Cornell Unit, R.O.T.C., the Princeton Unit, R.O.T.C., and the 51st Cavalry Brigade.

An entirely successful horse show at the Post in early September, and participation in the horse show of the Jefferson County Agricultural Association added interest to an otherwise active social year.

### EIGHTH FIELD ARTILLERY

### SCHOFIELD BARRACKS, HAWAII

#### Colonel Henry B. Farrar, *Commanding*

#### *Roster of Officers*

Lieutenant-Colonel Benjamin F. Miller  
Major Carl A. Baehr  
Major William A. Raborg

#### CAPTAINS

Lawrence H. Hanley  
Arthur V. Gair  
Cyrel Bassich  
Oliver F. Porter  
Wesley C. Brigham  
Oscar N. Schjerven  
Edgar A. O'Hair  
George R. Hayman  
Garth B. Haddock  
Laurence A. Kurtz  
Michael C. Shea

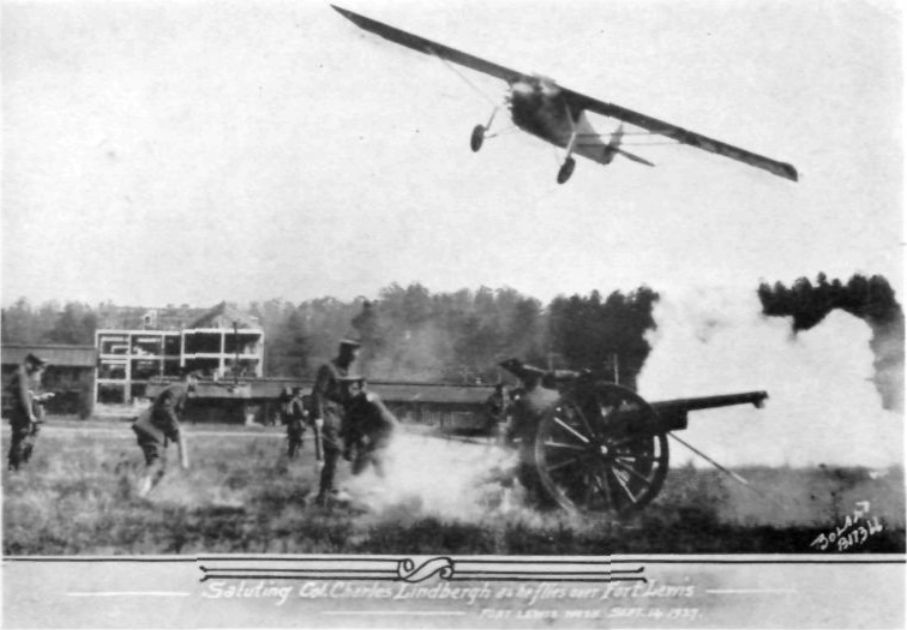
#### FIRST LIEUTENANTS

Frank E. Kauffman  
Charles R. Forrest  
John J. Turner  
Stephen E. Stancisko  
William H. Jaeger  
Edward Henderdeen  
Francis G. McGill  
George R. Scithers  
Alfred Vepsala

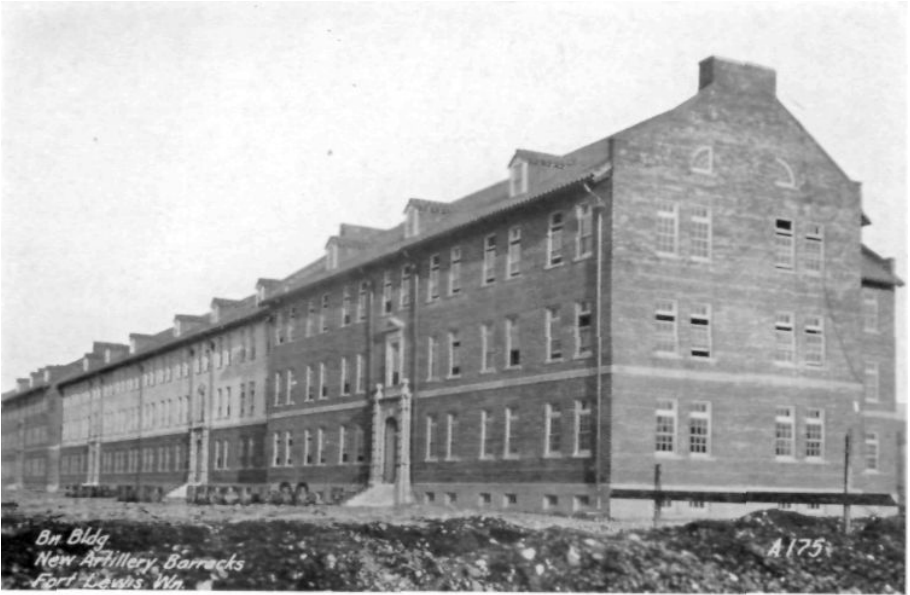
Burton L. Pearce  
Alfred E. Kastner  
Stephen C. Lombard  
Alfred L. Price  
Herbert W. Kruger  
Paul L. Martin

#### SECOND LIEUTENANTS

Charles B. Magruder  
John J. Binns  
Rochester F. McEldowney  
Philip H. Enslow  
Francis T. Dodd  
Kenneth L. Johnson  
Leslie L. Hittle  
Ernest T. Owen  
Amel T. Leonard  
Marcus B. Stokes, Jr.  
Bernard Luebbermann  
Oliver M. Barton  
James W. Clyburn  
Kenneth N. Decker  
Joseph Massaro  
William L. Richie  
Charles P. Nicholas  
George P. Harrison  
Chester E. Margrove



BATTERY OF THE 10TH FIELD ARTILLERY ON THE ROAD



NEW 10TH FIELD ARTILLERY BARRACKS

## REGIMENTAL NOTES

TENTH FIELD ARTILLERY

FORT LEWIS, WASHINGTON

Colonel Philip R. Ward, *Commanding*

### *Roster of Officers*

Lieut. Colonel Francis W. Clark  
Major George S. Gay  
Major Joseph Andrews

#### CAPTAINS

Thomas T. Handy  
David W. Craig  
Wallace W. Crawford  
Kenneth Rowntree  
Marcus A. S. Ming  
Albert C. Searle  
Arthur O. Walsh  
Howard W. Turner  
Myron W. Tupper  
Joseph S. Robinson\*  
Joseph R. Bibb  
William H. Brady

#### FIRST LIEUTENANTS

Frederic A. Metcalf  
Bryan L. Davis  
Francis H. Vanderwerker  
Harold C. Raymond  
Henry B. P. Boody  
Edward J. Roxbury

\* Not yet joined.

Charles W. Hensey  
Charles D. Calley  
Michael G. Smith  
Edward O. Hopkins  
Robert T. Strode  
Eugene M. Link  
Floyd R. Brisack\*

#### SECOND LIEUTENANTS

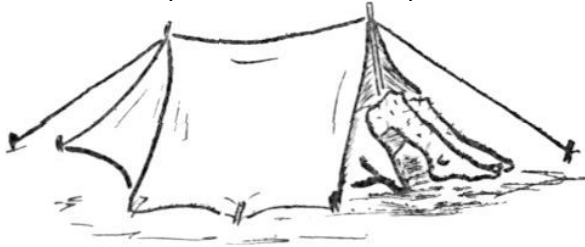
William A. D. Thomas  
Francis A. Carrecht\*  
Harlie H. Parks  
Earl J. Murphy  
Walter C. Stanton  
Charles A. Meny  
Irvin Schindler  
Franklin C. Nielsen  
Charles W. Stratten  
Thomas K. McManus  
Forester H. Sinclair  
Charlie Wesner  
John M. Burdge, Jr.

#### CHAPLAIN (CAPTAIN)

Cornelius A. Maher

### THE PAST YEAR IN RETROSPECT

*January-February.*—A few recruits—the usual garrison schools—matriculation in the art of pick and shovel manipulation rather heavy.



*March.*—Instruction in the art of Castramentation—pup tents must have been invented by the Scots, they're used to bare knees.

*April.*—Supported Richard Barthlemess in the filming of the "Patent Leather Kid"—very few of us were approached with contracts for a future career—Artillerymen not so "senic" as doughboys. Ground broken for new barracks to be completed by November—no more sleeping under umbrellas.

*May.*—Corps Area Tactical Inspection—Artillery too technical—Looney—(firing demonstration problem) 2400—*short.*

## THE FIELD ARTILLERY JOURNAL

1st G—Blank, blank—over if I ever saw one.

Looney—Yes sir, yes sir—change that to *over*—2800.

2d G—Very good, very good, but your shots are all bursting on impact. Raise your corrector, way up, we want to see if the fuses are working.



Both G's—Not so bad, Not so bad.

*June-July.*—Regiment divided impartially among National Guard, C.M.T.C., R.O.T.C., Organized Reserves and others wishing souvenirs.

*August.*—Polo team to Vancouver, B. C., and Vancouver Barracks for polo tournaments—manicuring the parade for the rest of us. Lieutenant Hensy invents an instrument to take the place of Battery Commander at the firing point—object to make Artillery less technical.

*September.*—Regiment down to a good sized pick and shovel detail—Batteries "C" and "F" made inactive. Salute to Colonel Lindbergh. Battery "D" to the Western Washington Fair at Puyallup, they fired demonstration problems and hit the target every time. Regiment takes the field for a week—heavy fighting—2d Battalion as rear echelon too weak to fight—1st Battalion routed by hornets—moral victory nevertheless, regiment can take the field on short notice.

*October.*—General Alexander retires—Post reconstituted as a Division post—Division Staff arrives in force—no more cobwebs on the mimeographs. Two more inventors discovered—Captain Rowntree invents a new method of firing subcaliber and Lieutenant Smith invents an apparatus for washing small babies without drowning them.

*November.*—Service practice—still shooting at the same old clump of trees—no one has hit them as yet, but that is because Artillery is so very technical. The head man says *up 5, up 10*, just like poker. One officer firing said *right 5*, and they had to stop firing while a man went out in front and moved the little red stake about a yard—said he guessed that would be about 5. No barracks yet, guess the old umbrella will have to do another year.



*December.*—Rain—snow—ice—mud. Some of the men still

## REGIMENTAL NOTES

think we are going to get new barracks—others believe in Santa Claus. However to quote from "The Baedeker of the Army," "Camp Lewis, so far as its location is concerned, is the nearest to being an ideal Army post of any continental post. The quarters are poor; it is far from a city; it is hard to keep in repair"—etc., read the book, then on your next vacation see it for yourself.



# FOREIGN MILITARY JOURNALS A CURRENT RÉSUMÉ

FRANCE

"Revue d'Artillerie," June, 1927

Colonel Valarche's excellent study, "**Le Combat de Guise**," is completed in this number with a discussion of General Lanrezac's orders and the action of his 5th Army on August 30, 1914.

The attacks against the flank of the German II Army on the 28th and 29th had left Lanrezac's army in a dangerous position behind the Oise owing to the continued retreat of the English on the immediate left and of Manoury's 6th Army on the extreme left. Its left flank would have been entirely exposed to the operations of the German cavalry if it had been compelled to remain along the Oise on the 30th.

In this situation, General Lanrezac telephoned to G.H.Q. during the night of the 29th asking whether the 5th Army was to remain in the region of Guise-St. Quentin on the 30th. Orders for a withdrawal on the 30th had been issued by G.H.Q. at 10 P.M. on the 29th, but they were not received by the 5th Army until 7 A.M. on the 30th.

Meanwhile at 11 P.M., General Lanrezac had sent out his orders for the 30th directing an attack by his right and center to throw back the enemy units that had crossed the Oise. This attack was progressing favorably when the belated orders were received for a withdrawal behind the Sevre, "the movement to begin before dawn." The bridges over the Oise at La Fere, Coudren and Chauny were to be blown up. General Lanrezac immediately (7.30 A.M. to 8.30 A.M.) sent out telephone orders to his Corps for their withdrawal.

The retreat was made without incident as the Germans failed to perceive that it was in progress until well along in the afternoon. However, for the troops, ignorant of the whole situation, the orders to withdraw received in the midst of an advance, were disheartening. Along the road from Sons to Erlon, the ditches filled with stragglers and the appearance of groups of pillagers indicated the extent of the demoralization. At this time, the firm hand of Joffre, manifested by his celebrated orders of August 31st and September 1st and 2nd, reconstituted the command where needed and soon restored discipline.

Contrary to the feeling of the troops that the counterstrike at Guise had ended in defeat, the actual results of the attack were

## FOREIGN MILITARY JOURNALS

far different. Surprised by this blow against his uncovered flank, von Bulow in a panic called for help from the German center. But von Haussen, 50 kilometers away, could give him no hope of support. Thus von Bulow, in an agony of doubt throughout the 29th, resolved that he would not again be separated so far from the German center.

On the 30th, he regained confidence and proclaimed a victory, but he had not forgotten his fear of the day before. He closed in on von Haussen (III Army), moving on Epernay instead of following the direct line to Paris, and he requested von Kluck to conform. Von Kluck complied and took a line of direction east of, instead of his former one west of Paris, thus leaving Manoury's army on his right flank. By this change the German enveloping wing was enveloped.

The counterstroke at Guise laid the way for the victory at the Marne.

In his "**Modern Fortifications**," Lieutenant-General von Schwarz, formerly of the Russian Imperial Army and now professor at the War College of the Argentine Republic, gives diagrams and details of a project for the permanent fortification of a zone under modern conditions. He discards all ideas of raised works, reinforced concrete, or armored turrets and declares for a system of underground shelters entirely, protected from aerial observation by extensive planting.

Tactically, the defense must be based on the following principles:

(a) Extremely powerful concentrations of artillery fire available at all times.

(b) An alert and readily maneuverable garrison.

The first condition requires a strong and very mobile reserve of artillery; the second, a system of construction and armament that will leave the greater part of the garrison free to launch counterattacks supported effectively by fire from the various works.

The author proposes to hold a front of 16,400 meters with each division of three regiments (7000 men), each unit from company to division, placing one-third of its strength in support or reserve. A depth of 4600 meters is covered by fire lines of mutually supporting wired-in works, consisting of a central dug-out with galleries opening toward the front, rear, and sides (such galleries need not be actually opened until mobilization). In the openings are to be placed the weapons of the defense (machine guns, auto rifles, trench mortars). Automatic weapons entirely replace the old rifle. The unit group occupies 200 meters of front and depth and is placed at 150-200 meters from its neighbors. The first line is composed of



## THE FIELD ARTILLERY JOURNAL

wire enclosed strong points comprising three such groups connected by galleries, each strong point being garrisoned by 76 men, of whom four are officers.

The lines in rear are composed of similar but larger works more widely spaced and garrisoned by the support companies and the battalion, regimental, and divisional reserves.

In a division, two-thirds of the force (4230 men with 9 machine gun companies) remain free for counter-attacks; in a corps of three divisions, three-quarters (14,688 men and 27 machine gun companies) can be used for maneuver.

The author concludes with a discussion of the employment of fortifications in the defense of a frontier. He visualizes the creation of fortified lines either covering certain chosen regions of the frontier, supported by a second line of fortified places, or completely enclosing the region.

Major Duhourcau's article, "**Instruction in Firing for Heavy Guns,**" stresses his contention that such instruction must be conducted in a very different manner from that employed in the light artillery. The difference in the tactical use of the two weapons and in the conditions under which fire is delivered, necessitate a corresponding difference in training. In the one case, precision is predominant; in the other, rapidity. "Of what use is it for a heavy gun battery commander to be a virtuoso at firing from the hip if he has no means of observing his fire?" However, all officers of artillery must be trained in rapid methods of fire and for this reason, a certain amount of firing with the 75 or the 105 should be given in the heavy artillery.

The instruction outlined contemplates garrison courses as follows:

1. Preparation of Fire. (a) Topography.—A course in the use of precise surveying instruments and in precision methods of laying. It must convince the student that for heavy artillery any reasonable delay in seeking precision is time gained in effectiveness of fire. It must familiarize him with the use of the transit and train him to calculate deflections and distances instead of measuring them graphically. The course will be most profitable when the terrain used is surveyed with a like degree of precision in order to properly check results.

(b) Ballistics.—A course to obtain familiarity with the tables and speed and accuracy in their use.

(c) Meteorology.—This course should impress officers with the necessity of making corrections of the moment and enable them to apply the data rapidly. It must also teach the estimation of such data.

## FOREIGN MILITARY JOURNALS

2. Adjustment of Fire.—(a) Transport of Fire.—The use of auxiliary and witness targets and, particularly, of high-burst ranging. Also the inverse transport of fire, *i.e.*, the deduction of the firing data for any battery of a battalion from the adjusted data of the directing battery or piece.

(b) Adjustment by Aerial Observation.

3. Communications.—A comprehensive course should be given in this subject with particular stress on radio communication.

Service firing must supplement the garrison courses. The program of fire should give an important place to problems to check the accurate preparation of fire, to high-burst adjustments, and to other direct and indirect transports of fire. Rapid methods of fire should be included, using the 75, if possible.

The method presented by Major Maisons, in his "**Adjustment by Unilateral Observation**," gives a simultaneous adjustment in range and direction in cases where the slope of the terrain is practically uniform in the vicinity of the target and when the positions of the target, the guns, and the observer can be plotted on a fire control map.

The observer centers the optical axis of his instrument on the base of the target and measures the observed deviations vertically and horizontally, using the horizontal and vertical cross-hairs as axes of measurement.

The battery commander plots the shots according to the rectangular coördinates reported and then refers them to the traces of two vertical planes, one containing the line gun-target and the other perpendicular to it. Knowing the angle  $i$ , the site  $s$  of the O.P. as seen from the target, the distance observer-target  $r$ , and having one point common to the traces of these planes already plotted on the chart, *i.e.*, the target's position at the intersection of the rectangular axes, we may obtain the rectangular coördinates of another point on each of the traces by means of the formulas given below.

Any convenient point  $M$  on the map line gun-target is chosen and its distance from and height with respect to the target measured. These quantities are denoted by  $l$  and  $h$ . Similarly a point  $T$  is chosen on the map line through the target perpendicular to the gun-target line and its height and distance measured, giving us  $h'$  and  $l'$ .

The coördinates of  $M$  are determined as follows:

$$x = \frac{l \sin i}{r}$$
$$y = \frac{l}{r} (h \cos s + l \cos i \sin s)$$

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$i$  is positive if the battery is on the left, negative in the opposite case.  
 $l$  is positive if  $M$  is beyond the target, negative if on this side.  
 $h$  is positive or negative according to whether  $M$  is above or below the target.

Similarly for  $T$ :

$$x' = \frac{l' \cos i}{r}$$
$$y' = \frac{l}{r} (h' \cos s - l' \sin i \sin s).$$

Plotting these points and drawing the traces on the chart, we may measure the actual deviations and determine the corrections to be made at the guns.

Students of the history of artillery will find much of interest in Lieutenant-Colonel Appfel's article, "**Artillery According to Rabelois.**"

### **"Revue d'Artillerie," July, 1927**

In "**The Artillery Armament of the Infantry Division,**" Lieutenant-Colonel Buchalet declares himself in favor of the light howitzer as the weapon for divisional artillery. In this he will find many supporters among our own officers.

The principal objections encountered are stated to be: limited range, insufficient rate of fire, the need of a heavier weapon for destructions, insufficient output of ammunition during zone fire, ability of the 75-mm. to cover the usual terrain encountered, the greater moral effect of the 75 owing to its greater velocity, and the favorable comparison of the 75 with similar foreign weapons.

These objections are answered in detail:

1. A range of ten kilometers is sufficient for a divisional weapon, assuming that the Corps is to carry out counterbattery missions. The principal targets for divisional artillery are the combatant forces of the enemy, his infantry, machine guns, and artillery. These will be found within three kilometers of the front lines. O.P.'s, C.P.'s, reserves, and dumps will rarely be more than six kilometers back. Also supporting fire can not be delivered safely or effectively at more than 6000 meters. Finally, a gun that fires at fourteen kilometers will very probably be employed at that range, with a consequent disappearance of all liaison.

2. As to speed of fire, the light howitzer (85-mm.) can easily sustain a rate of 6 to 8 rounds a minute. Neither the method of loading shell in war-time factories nor the quality of metal then

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obtainable will allow the 75 to be fired with the crew in their normal positions. Firing with the lanyard from cover, a speed of more than 8 rounds is impossible. Hence, the 85-mm. howitzer is equally effective in this respect.

3. Destruction missions should not be imposed on the divisional artillery. It has its work cut out in providing the direct support required by the infantry. Hence its weight must not be increased, thereby decreasing its mobility, in order to provide power for missions that should properly be disposed of by corps artillery, either attached or in support.

4. The 105-mm. howitzer can fire 100 rounds per hour. This is the same output prescribed in our regulations for the 75 with normal charge. A lighter howitzer, 95 or 85-mm., such as the present Schneider 85, can sustain an output of 150 to 200 rounds an hour. Considering equal weights of ammunition carried in the caissons, the 85 howitzer has no dead weight of cartridge case to transport and obtains over the 75 the advantage of an 18-pound shell containing 2.64 pounds of explosive in place of half as much in the 75 shell. Hence, for zone fire, the light howitzer will be in every respect superior to the 75.

5. In varied terrain, the 75-mm. will often encounter slopes which it can reach only by placing the guns farther in rear, thus increasing the already formidable difficulties of liaison and decreasing the density of fire by reason of the greater dispersion. The howitzer avoids this without the necessity for using reduced charges or plaquettes.

6. The moral effect of a high velocity weapon is not negligible but it is only secured at relatively short ranges, and against it may be cited the moral effect of a projectile containing two or three times more explosive.

7. General Herr in his work on artillery states that at long ranges high velocity weapons are needed to secure penetration, as the velocity is the controlling factor in the expression  $\frac{1}{2} MV^2$  which measures the striking force of the projectile. He loses sight of the fact that, irrespective of the initial velocity, the remaining velocity soon reaches a value of approximately 300 meters, and remains at this apparently normal velocity for travel in air. To expect high remaining velocities at long range from high initial velocities is an illusion. The increase of striking force must be sought in an increase of the mass of the projectile.

Our enemies of the future will not have failed to develop their artillery beyond our present 75. Under the various conditions

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cited, it is believed that the divisional artillery should consist of 72 howitzers with the following characteristics:

Caliber .....	85-mm.
Range .....	10-km.
Elevation .....	5° to 40°
Traverse .....	22½° at least on each side of the center
Weight in firing position .....	About 2840 lbs.
Weight limbered .....	About 3960 lbs.
Weight of shell .....	About 20 lbs.
Weight of explosive .....	2.64 lbs.

The author believes that the solution of the accompanying gun problem will lie in making mobile the trench artillery type of weapon such as the 6-inch Stokes mortar.

In his article "**The Inverse Transport of Fire,**" Major Camps gives the details of a rapid method for determining the data for one battery from the data already determined for the directing piece of another. The method applies if the distance between directing pieces is not more than 1/10 of the range and the difference in site is not more than 1/5 of that of the target. It can be expected to prove accurate within two probable errors.

The article "**The 85-mm. Schneider Howitzer,**" by Major Pot, gives a description of a weapon which presents many interesting developments. Its characteristics are as follows:

Length .....	34.8 calibers
Weight in firing position .....	4334 lbs.
Weight limbered:	
Horse-drawn .....	5126 lbs.
Tractor-drawn .....	5082 lbs.
Field of fire:	
In elevation .....	6° to 65°
In azimuth .....	54°

The piece is constructed to fire two projectiles, hence has two forcing cones; the first cone, of normal dimensions in the usual position at the entrance to the bore; the second, a larger cone in rear. The long-range projectile with normal rotating band seats in the forward cone, thus leaving sufficient space in rear for the longer powder charge. The usual projectile, for ordinary ranges, has a thicker band and seats in the rear cone, giving a diminished powder space. The following data are given:

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	Heavy Shell	Normal Shell	Shrapnel
Weight, pounds .....	22	19.36	22
Explosive in shell, pounds ...	1.76	2.86	
Maximum range, meters .....	14,000-15,000	9,000	11,000
Muzzle velocity, meters per second .....	635-675	635	635

A removable lining for the tube enables the piece to be relined quickly in the field without special tools. This lining of elastic steel, 1-cm. thick, is placed in the bore with a clearance of about 1/10-mm. It expands at the moment of firing but soon afterwards regains its normal dimensions. The use of auto fretting gives it the same resistance as that of an ordinary tube.

The carriage is of the split-trail type. It is provided with ball-bearing spring operated hubs which allow the axle to revolve independently of the wheel under the stress of firing, thus avoiding the necessity for immobilizing the wheel at the instant of discharge.

The recoil system, of the hydropneumatic type, provides automatically for a reduced length of recoil in the high-angle firing position, in this way obviating the need for ditching. A muzzle brake cuts down the resistance required from the liquid by about 25 per cent.

The trail is pintled to the limber through a universal joint. The limber is made to be drawn by horses or tractor.

Tests in which nearly 1800 rounds were fired have been very favorable. The gun lining held perfectly. A slight swelling was observed, but not enough to hinder the dismounting of the lining or even the remounting. The forward forcing cone showed no signs of undue wear and the passage of the projectile through two successive cones gave rise to no accident. In no case was there a premature functioning of the fuse.

Captain Leonard, in "**The Mobility and Fire of Motorized Heavy Guns in Morocco,**" gives an account of the operations of a battalion of 155-mm. guns in the summer campaign against the Riffians in 1926. The battalion had been tried previously in November, 1925, but with no success owing to the rains which converted every brook into a formidable obstacle. In the summer, on the contrary, the dry stream beds often gave the best routes of advance.

The operations were carried out in mountainous country, over narrow trails with many stream crossings over which the guns often had to be hauled by block and tackle. One battery supported six different divisions in forty-four days. The guns traveled 1500 kilometers, of which more than half was over rough trails. Displacements of 60 and 115 kilometers were made in one day's march over bad roads. Owing to hot weather, the trucks used for hauling

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overheated badly. The chief difficulty experienced with the pieces was in keeping the recuperators adjusted during the rapid changes of temperature encountered.

The batteries were used for long-range destruction fires on villages, for covering the march of divisions, and for airplane adjusted fire on enemy columns. In general, the maximum ranges, some even as great as 18 to 25 kilometers were used. The maximum range table range is 21,300 meters but the atmospheric conditions encountered allowed fire at greater ranges.

Captain Brun offers "**A Simplification of the Tangent Reticule Method for High-burst Ranging,**" which does away with the use of logarithms or graphic tables.

### **"Revue Militaire Française," September-October, 1927**

Commandant Janssen, in this article "**Horse and Motor,**" analyzes the respective advantages and disadvantages of the horse and the motor. He considers the problem from both a strategical and tactical point of view.

The last war was one of rapid strategy but slow tactics. Rapid concentrations behind the line (in the strategical zone) were favored by good railroad systems supplemented by an ever-increasing number of trucks. On the other hand, the increasing fire power in the battle or tactical zone obliged troops to move slowly and cautiously.

During the last war a certain defect was apparent in the organization of troop movement or, to express it more explicitly, in the movement of troops from the strategical to the tactical zone. Large bodies of foot troops were moved by truck, but the horses necessary to haul their rolling kitchens and machine guns did not go with them. Frequently the infantry had to do for days without their rolling kitchens, and had to carry machine guns and ammunition for several kilometers from the detrucking points to the line. Some provision must be made for the transportation of machine guns, other infantry accompanying weapons and rolling kitchens, after the troops are unloaded from the trucks. During the 1926 maneuvers, it was found very practical to transport ninety horses for each infantry regiment. This gave the regiment one horse for each infantry cart and two horses for each rolling kitchen.

Commandant Janssen concludes that the motor should replace the horse in the strategical zone, where men, matériel and even horses can be moved by truck.

Passing to the tactical zone he favors the retention of the horse for many uses of the infantry division. He sees many advantages

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in the use of the horse with light artillery. Although the tractor presents a much smaller target than does an artillery team, a piece of artillery drawn by six horses can go into position with half of its tractive power knocked out, whereas a direct hit on a motor immobilizes it. Even though gas may not harm a motor, future electrical radiations may stop it. In the front lines, unless a tractor or an automobile is armored, it can no more circulate than can a horse. For passing over obstacles requiring a short burst of energy, the artillery team is superior to the present-day tractor. The motor, however, is more effective when prolonged effort is required. France has a large number of horses and at the outbreak of war all resources must be used. A requisition of motors will not give types that can be used in all kinds of terrain in the tactical or battle zone. Commandant Janssen therefore concludes that in the tactical zone the horse is still the principal resource of tractive power in France.

In conclusion, Commandant Janssen enumerates the various considerations which should regulate the extension of motorization in the Army:

(1) Utilize more completely the commercial types of cars for purposes of liaison, transportation of personnel, and supply trains.

(2) The Army should construct and store in time of peace only such motor matériel as tanks, armored cars, and tractors used by heavy artillery. These types of motors cannot be furnished by requisition in time of war and are indispensable at the outbreak of war.

(3) Study and perfect the special types of motor vehicles that are capable of moving over any type of terrain, that can be used for purposes of reconnaissance and for hauling of artillery and ammunition.

These considerations still make the horse indispensable at the outbreak of the war in the tactical zone. As the war progresses and as the proper types of motors are perfected, the horse may be gradually replaced.

**"Qualities of a Chief,"** by Colonel Lucas, begins in the October number. Colonel Lucas enumerates the essential qualities of a good officer. The reader is undoubtedly familiar with the importance of these qualities and listing them here may seem like the repetition of so many platitudes. However, their importance is frequently forgotten in our own service as well as in France, and a review of them should not be without profit.

Colonel Lucas emphasizes the point that certain qualities are more essential to the higher commander who is concerned with the conception of operations and the plan of battle, while others are



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more necessary to the subordinate commander whose rôle is one of execution.

These qualities may be divided into three groups: (1) intellectual, (2) professional, and (3) moral.

In general, intellectual qualities serve to conceive a plan of action, professional qualities to prepare a plan, and moral qualities to execute and act.

Intellectual qualities are those of the mind, and consist principally in imagination and judgment. Imagination is that faculty which permits a commander to picture events in advance, to foresee the most probable eventualities of the coming battle. However, imagination must be completed by judgment. Having judgment, one sees things as they are and not as he would like them to be. Judgment applies not only to things but also to men. To know how to judge men, to know their qualities and their faults is indispensable to a commander in order that he may make the best use of their individual aptitudes.

The professional qualities consist principally in a wide military education, a knowledge of the art of command, and professional honesty. An officer must have professional education and knowledge in order to possess the "sense of possibilities." In other words, he must be in touch with his command, its problems and its possibilities. This is a quality the importance of which is frequently overlooked. Professional honesty or loyalty is one of the fundamental qualities. It is at times forgotten by weak characters who from fear of reproach hide or misrepresent the truth. The confidence of a chief in his subordinates is a quality of command which is often neglected by higher commanders. This lack of confidence of the superior retards the development of the subordinate's personality and initiative, and ends in arousing in him an indifferent attitude and a distaste for the service.

Moral qualities are really virtues. They are revealed in what is called "character" and find their greatest application in execution and conduct of battle. Character is the virtue that in daily life as well as in critical moments raises the chief in the estimation of his subordinates. The traits of character are willpower, sense of duty, honor, love of responsibility, dignity of private life, generosity, and friendliness.

Captain Andrieux writes of "**The Suppression of Military Crimes and Misdemeanors in the Roman Armies.**" From this study Captain Andrieux draws certain conclusions and lessons which he applies in analyzing modern military justice.

The Romans admitted the principal that certain military crimes and misdemeanors should be classed apart from civil crimes. They

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realized that soldiers should be judged by special judges and that these judges should themselves be soldiers. However, the Roman system of military justice was too arbitrary. An officer who charged a man with wrongdoing, judged the man, condemned him, and frequently had him executed on the spot. Modern legislation of course does not permit the commander who initiates charges to act as a judge.

In concluding his article, Captain Andrieux adds that Military regulations cannot assure discipline. Regulations are perhaps necessary for the poorer type of soldier but for the others it is their commanding officer, who, by his prestige, his example, and his sense of justice, preserves order and discipline.

The following articles are concluded in the September and October numbers:

"On the Right of the 5th French Army in August, 1914."

"Concerning a Recent Mission of the Chambers of Commerce of Algeria to the Niger."

Other articles are:

"Douaumont During the German Occupation."

"Serb Victories in 1914"; and

"Maneuver of Destruction."

# CURRENT FIELD ARTILLERY NOTES

## **Knox Trophy, 1927**

THE Chief of Field Artillery has announced that Battery "B," 82nd Field Artillery, Fort Bliss, Texas, commanded by Captain John M. Reynolds, is the winner for the year 1927, of the Knox Trophy, donated by the Society of the Sons of the Revolution of the Commonwealth of Massachusetts to that battery of Field Artillery, which shall have the highest rating as judged on "firing efficiency, mobility, communications, and interior economy."

The Knox Trophy becomes the permanent possession of the battery winning it, a separate Trophy being awarded each year. The award is made in Boston, Mass., at the annual dinner of the donors and of late years except in the case of the 1925 award which went to Battery "A," 8th Field Artillery, Schofield Barracks, Hawaii, the battery commander has been ordered to Boston to receive the award of the Trophy.

This year there were four Knox trophies awarded in addition to that for the Field Artillery, these being contested for by units of the Coast Artillery Corps, the Massachusetts National Guard Field Artillery, the Massachusetts National Guard Coast Artillery, and battleships of the Navy, respectively. The 1927 Coast Artillery competition was the first held for the Knox Trophy in that arm since the World War.

Originally given for excellence in gunnery, the Chief of Field Artillery broadened the scope of the competition in this branch, with the result that the winning of the Knox Trophy is now by far the greatest honor that may be obtained by a Field Artillery battery. It is understood to be a source of gratification to the donors, that the winning of their Trophy has become synonymous with the attainment of the highest efficiency in Field Artillery essentials.

The batteries selected to represent the commands of which they were a part and to take the final test were:

Ft. Ethan Allen, Vt.: (1st Corps Area) Btry "B," 7th F. A., 75-mm. Horse-drawn; Captain C. S. Ferrin.

Madison Barracks, N. Y.: (2nd Corps Area) Btry "F," 7th F. A., 75-mm. Horse-drawn; Captain Parker G. Tenny.

Fort Hoyle, Md.: (3rd Corps Area) Btry "E," 6th F. A., 75-mm. Horse-drawn; Captain William Michner.

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Fort Myer, Va.: (Dist. of Washington) Btry "B," 16th F. A., 75-mm. Horse-drawn; Captain Robert W. Hasbrouck.

Fort Bragg, N. C.: (4th Corps Area) Btry "B," 17th F. A., 155-mm. How., Tractor-drawn; Captain James C. Patterson.

Fort Benjamin Harrison, Ind.: (5th Corps Area) Btry "C," 3rd F. A., 75-mm. Horse-drawn; Captain Melvin L. McCreary.

Camp McCoy, Wis.: (6th Corps Area) Btry "E," 18th F. A. (formerly Btry "B," 9th F. A.), 75-mm. Horse-drawn; Captain Guy H. Doshier.

Fort Sill, Okla.: (Field Artillery School) Btry "E," 1st F. A., 75-mm. Horse-drawn; Captain J. B. Matlack.

Fort Sam Houston, Texas: (8th Corps Area) Btry "D," 15th F. A., 75-mm. Horse-drawn; Captain Edwin A. Henn.

Fort Bliss, Texas: (8th Corps Area) Btry "B," 82nd F. A., 75-mm. Horse; Captain John M. Reynolds.

Fort McIntosh, Texas: (8th Corps Area) Btry "E," 4th F. A., Bn., 2.95-inch Pack; Captain John H. Keatinge.

Fort D. A. Russell, Wyo.: (9th Corps Area) Btry "C," 76th F. A., 75-mm. Horse-drawn; Captain Frank G. Chaddock.

Presidio of Monterey, Calif.: (9th Corps Area) Btry "E," 76th F. A., 75-mm. Horse-drawn; Captain Sumner M. Smith.

Schofield Barracks, Hawaii: (Hawaiian Dept.) Btry "F," 11th F. A., 155-mm. How., Tractor-drawn; Captain Wesley C. Brigham.

The fourteen scores considered in making the award were as follows:

Firing Efficiency	Mobility	Communications	Interior Economy	Total
100	97	90	100	387
92	93	96	100	381
100	100	92	87	379
85	100	89	100	374
84	94	100	95	373
84	100	63	100	347
66	96	75	100	337
55	98	82	100	335
67	100	66	100	333
57	94	76	100	327
82	96	46	100	324
80	83	74	83	320
50	94	50	100	294
64	98	14	99	275
Average. 76	96	72	97	342

A study of the above figures shows that the batteries which stood at or near the top were consistently good in all subjects. The averages indicate that good marks were more difficult to obtain in Firing and in Communications than in Mobility and Interior Economy.

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In the following tables are given the number of batteries competing and the total deductions made. In the columns, the figure in parenthesis indicates the number of batteries given deductions for the cause stated, and the number preceding the parenthesis is the aggregate deductions made for this cause. For example, in "Firing Efficiency, 75-mm. and 2.95-inch Pack," all deductions made against the twelve batteries entered in this particular test are shown. In the third problem, six batteries were given deductions aggregating 75 points due to "overtime for problem."

### A. FIRING EFFICIENCY—75-MM. AND 2.95-INCH PACK. (12 BATTERIES)

	Deduction Values	(1)	(2)	(3)
		Axial Time 3 min. Value 33	Advanced Time 6 min. Value 33	Advanced Time 10 min. Value 34
Deductions				
Failure to obtain correct range bracket .....	8	8 (1)	8 (1)	
Failure to obtain correct distribution on target (each gun) .....	2	2 (1)	10 (3)	6 (2)
Failure to obtain correct corrector.....	4	4 (1)	4 (1)	
Failure to select proper projectile .....	5			
Failure to select proper fuze.....	2		2 (1)	
Failure to select proper method of adjustment.....	2			
Each error in sequence of commands .....	1	1 (1)	4 (3)	4 (4)
Each error in setting or laying in excess of those allowed in Gunners' Examination.....	5	10 (2)	25 (4)	15 (1)
Each error in command other than sequence (each (includes jumping bracket, failure to make changes in data obviously required, etc.) .....	2	6 (3)	8 (4)	10 (5)
Each setting or laying within the accuracy of Gunners' Examination but not exactly accurate .....	1	8 (3)		1 (1)
Each 30 seconds overtime for problem.....	1	9 (3)	31 (5)	75 (6)
Initial credit .....	100			

The average scores of the twelve 75-mm. and 2.95-inch batteries in the firing problems were as follows:

1st Problem—Axial, shrapnel .....	Per cent. 87.9
2nd Problem—Advanced, shrapnel or shell .....	76.7
3rd Problem—Advanced, shell .....	68.5
Average total .....	77.6

The following table indicates the deductions made in Firing Efficiency for the two 155-mm. howitzer batteries that participated in the test:

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### FIRING EFFICIENCY—155-MM. HOWITZER (2 BATTERIES)

	Deduction Values	1	2
		Advanced Time 15 min. Value 50	Advanced Time 20 min. Value 50
Deductions			
Failure to obtain correct range bracket (1st problem) .....	12		
Failure to obtain correct distribution on target (each gun) (1st problem).....	3		
For each probable error, or major part, in excess of one probable error in range that center of impact of the 6 shots from each gun is from its target (2nd problem only).....	2		6 (1)
Same as above, for <i>deflection</i> .....	2		
Failure to select proper fuze.....	3		
Failure to select proper method of adjustment .....	5		
Each error in sequence of commands .....	1		
Each error in setting or laying in excess of those allowed in Gunners' Examination.....	7	7 (1)	
Each error in commands other than sequence (includes jumping bracket, failure to make changes in data obviously required, etc.) .....	3		6 (2)
Each setting or laying within the accuracy of Gunners' Examination but not exactly accurate.....	2		
Each 30 seconds overtime for problem.....	1		63 (1)
Initial credit.....	100		

The two following tables indicate the scoring on the Mobility test:

#### B. MOBILITY—155-H. BATTERIES (TRACTOR-DRAWN) (2 BATTERIES)

	Deduction Value	Deduction Score
For each 2 minute delay in starting march.....	5	
For each tractor cranked or coupled prior to 30 minutes before starting time .....	3	
For each 2 minutes overtime for march .....	5	
For each 2 minute excess in time for any halt .....	3	
For each unauthorized halt of the column except to change gears.....	10	
For each enlisted man leaving the marching column without proper authority .....	2	
For each vehicle not parked on right of road at halt .....	2	
For each individual loitering on left of road at halt .....	2	
For each tractor falling out of column .....	3	9 (2)
For each other motor vehicle falling out of column except for tire failure .....	3	3 (1)
For each article of equipment dropped on the march or left behind at a halt.....	1	
For each vehicle not taken on the march which could have been taken with the personnel available .....	3	

NOTE: A *fall out* is defined as any stopping except at authorized halts or when the battery is halted to change gears; having a vehicle in rear pass any other; extending distance from preceding carriage in excess of 25 yards (except that this last provision does not apply to Dodge cars or motorcycles).

Initial credit..... 100

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### MOBILITY—75-MM. BATTERIES (HORSE-DRAWN) (12 BATTERIES)

	Deduction Value	Deduction Score
For each 2 minute delay in starting march.....	5	
For each horse saddled or harnessed prior to 30 minutes before starting time .....	1	
For each 2 minutes overtime for march .....	5	
For each saddle or collar puff, or spot where sensitive tissue is exposed due to saddle, collar or harness; except, where injury is attributable to bite or kick received within 48 hours of starting time .....	2	12 (3)
For each lead pair left unheld or improperly held during halts .....	2	
For each instance in which limber (or pole) prop is not properly employed at a regular halt to relieve weight from necks of wheelers .....	1	
For each animal or vehicle not taken on the march which could have been taken with the personnel available .....	1	
For each enlisted man who leaves the marching column without proper authority .....	2	2 (1)
For each carriage not parked on right of road at halt.....	2	
For each animal not properly inspected and cared for during halts.....	1	15 (3)
For each animal lame at completion of march.....	1	
For each carriage falling out of column.....	3	6 (2)
For each tent not pitched, or improperly pitched, in camp .....	2	10 (3)
For faulty general arrangement of camp.....	5	

NOTE: A *fall out* is defined as any stopping except at authorized halts; having a carriage in rear pass another; extending distance from preceding carriage in excess of 25 yards except that a halt of a carriage due to an accident to an animal (such as picking up a nail or rock) will not be penalized.

Initial credit..... 100

### C. COMMUNICATIONS (14 BATTERIES)

NOTE: The Board will inform the Battery Commander of the various details of the communications test, sufficiently in advance for him to make suitable arrangements and designations of personnel to take the tests, but will not permit coaching or practicing.

(1) *Telephone*.—Time allowed, 9 minutes.

	Deduction Value	Deduction Score
Each 30 seconds, or major part thereof, in excess of allowed time.....	1	88 (6)
Each error in word which precludes proper understanding of the message.....	5	15 (3)
Each error of digit or incorrect word in message received.....	2	18 (6)
Failure of any telephone to operate immediately when tested on the line .....	5	
Initial credit.....		50

(2) *Visual Signaling*.—Projector. Time allowed, 4 minutes.

	Deduction Value	Deduction Score
For each 30 seconds overtime.....	1	29 (8)
For each incorrect letter or digit.....	1	58 (7)
Initial credit.....		15

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(3) *Range Finding*.—Time allowed for each range, 1 minute.

	Deduction Value	Deduction Score	
		1st	2nd
For each 1 per cent. error in range in excess of 5 per cent. of the range.....	1	29 (5)	27 (7)
For each 10 seconds overtime.....	1	1 (1)	

Initial credit..... 15

(4) *Computation of Firing Data*.—Time allowed for each problem, 3 minutes.

	Deduction Value	Deduction Score	
		1st	2nd
For each 15 seconds overtime.....	1	14 (3)	6 (2)
For deflection error between 10 and 15 mils.....	1	1 (1)	1 (1)
For deflection error between 15 and 30 mils.....	3	9 (3)	9 (3)
For deflection error between 30 and 50 mils.....	6		18 (3)
For deflection error more than 50 mils.....	8	40 (5)	24 (3)
For site error between 1 and 2 mils.....	1	1 (1)	1 (1)
For site error between 2 and 7 mils.....	3	12 (4)	6 (2)
For site error between 7 and 12 mils.....	6		
For site error more than 12 mils.....	8	8 (1)	8 (1)

Initial credit..... 20

In the Communications test the averages of the four parts were as follows:

Per cent.

Telephone .....	80.8
Visual Signaling .....	73.4
Range Finder .....	73.8
Firing Data .....	49.7

As heretofore, the test in Firing Data had the lowest average.

D. Under Interior Economy, the following table is self-explanatory:

Desertions		Discharge by Purchase		Re-enlisted Men		Gunners	
Average in Command	In Test Battery	Average in Command	In Test Battery	Average in Command	In Test Battery	Average in Command	In Test Battery
10	12	6.66	6	24.33	25	35	40
17.5	15	6.66	8	25.8	26	26.1	21
17	20	3	4	22	28	20	28
1.33	3	6.33	9	20	17	60	68
8.66	6	6	7	27.3	27	33.3	35
6.8	6	2	3	35.5	40	62.5	67
10	3	8	4	24	25	35	45
11	15	12	4	27	31	21	36
16	21	3	6	33	32	15	16
23	19	10	10	19	19	57	66
13.3	16	5	4	15.6	15	30.3	45
11	6	9	8	21	16	66	52
17.66	10	11	10	3.3	7	73.6	88
2.3	1	12.6	12	37	40	23.6	26
Average 11.8	10.9	7.9	6.8	23.9	24.9	39.9	45.2



## THE FIELD ARTILLERY JOURNAL

The above figures are very interesting and may be summarized as follows:

### Desertions:

	Greatest number	Least number
Average in command .....	23	1.33
In test battery .....	21	1
Discharge by Purchase:		
Average in command .....	12.6	2
In test battery .....	12	3
Re-enlisted Men:		
Average in command .....	37	3.3
In test battery .....	40	7
Gunners:		
Average in command .....	73.6	15
In test battery .....	88	16

It will be noted that, under all sub-heads, the test batteries are a trifle better on the average, than the average of all batteries in the command.

The conditions of the Knox Trophy Test were materially changed, and broadened in scope, in 1924. Since that year the winning organizations have been:

1924—Btry "D," 7th F. A. (75-mm. French, Horse-drawn), Captain James M. Crane.

1925—Btry "A," 8th F. A. (75-mm. British, Motorized), 1st Lieut. Ernest A. Bixby.

1926—Btry "C," 4th F. A. (2.95-inch Pack), Capt. John D. Key.

1927—Btry "B," 82nd F. A. (75-mm. French, Horse), Capt. John M. Reynolds.

The test for the calendar year 1928 will be similar to that for 1927, changes being introduced to require general training in preparation, and to meet constructive suggestions made by rating boards. The battery to represent any command must be selected in accordance with a system which will insure that the battery will be truly representative. Initiative as to the method of selection is left to local field artillery commanders, but unless excused because of exceptional conditions, the test battery must complete its test so that the report of same may be mailed in time to reach the Office of the Chief of Field Artillery on or before November 20th. The test may be held at any time after the receipt of the yearly instructions.

For the year 1928, a separate battery will not be authorized each for the 2nd Battalion, 3rd Field Artillery, and the 2nd Battalion, 18th Field Artillery. Instead a test battery will be chosen from

## CURRENT FIELD ARTILLERY NOTES

the field artillery units conducting summer training at Camp McCoy, Wisconsin, local commanders cooperating in selecting the test battery. Otherwise a test battery will be chosen as heretofore to represent each field artillery command of size not less than a complete battalion stationed together.

### **Knox Medal**

The winner of the Knox Medal, 1927, is Corporal John P. Olszewski, Headquarters Battery and Combat Train, 1st Battalion, 10th Field Artillery, Fort Lewis, Washington. The Knox Medal is awarded annually to an enlisted man for excellence as a student at the Field Artillery School.

### **Air Corps Increment at Expense of Other Branches**

In order to provide the first increment of personnel for the Air Corps' Five-year Program, which consists of 115 sergeants, 118 corporals and 1015 privates, the War Department has found it necessary to reduce the other branches of the Army on a pro-rata basis. The reduction affects all branches of the service except the Medical Department, the strength of which is computed on a percentage basis, and the Signal Corps, which at present has a shortage of personnel.

Each branch bears its share of reduction according to the following table:

Branch	Sergeants	Corporals	Privates	Total
Infantry .....	53	54	467	574
Cavalry .....	14	15	125	154
Field Artillery .....	20	21	179	220
Coast Artillery Corps .....	9	9	76	94
Engineers .....	5	5	47	57
Quartermaster Corps .....	10	10	87	107
Ordnance .....	3	3	26	32
Finance Department .....	1	..	4	5
Chemical Warfare Service .....	..	1	4	5
Total .....	115	118	1,015	1,248

The foregoing reductions will be made by increasing the number of sergeants, corporals and privates allotted to the Air Corps by General Orders No. 7, War Department, 926, by the numbers indicated in the above table and by corresponding reduction in the number allotted to the other branches by the same order. They will be made effective April 1, 1928, in order to allow sufficient time to collect the necessary vacancies in the branches concerned, particularly in the grades of sergeant and corporal.

According to the Tables of Organization, a total of 16,769 men

## THE FIELD ARTILLERY JOURNAL

are required for *existing* units. Existing units include the 5th Field Artillery which already has one battalion and part of its Headquarters Battery inactive, the 17th Field Artillery which has one battalion and part of its Service Battery and Band inactive, and both the 16th Field Artillery and 18th Field Artillery with their Headquarters, Headquarters Batteries, Service Batteries and Bands inactive.

By General Orders No. 7, War Department 1926, the enlisted strength allotted to the Field Artillery was 15,880 men. The present cut to provide the Air Corps increase, reduces the strength allotted the Field Artillery to 15,660 enlisted men or 1109 less than required for existing units.

Should the remaining four increments of the Air Corps be made at the expense of the other branches in the same proportion, the Field Artillery would have only approximately 14,776 enlisted men—this number being 1993 less than that required for existing units. This shortage of 1993 enlisted men is greater than the minimum peace strength of seventeen gun batteries.

### **A Battery of New 75-mm. Guns to 1st Field Artillery**

Battery "E" of the 1st Field Artillery has been issued four 75-mm. Model MI (1923) guns for purposes of testing both their firing and tactical qualities. The preliminary tests of this gun, recently listed as standard, have been most satisfactory.

The new gun has many features which are thought to be of great improvement over the old model. It will be some time, however, before a positive deduction upon its tactical ability may be published.

It has an extreme traverse of 800 mils as compared with 106 mils in the old model; an angle of elevation of -5 to +45 degrees; a modified Puteaux recoil mechanism with larger oil chamber, a total length of recoil of 46 inches, a split trail, and a vertical wedge type of breech block but not semi-automatic as in the 1916 American 75-mm.

The muzzle velocity is increased to 2175 feet per second and the rifling twist is 1 turn in 20 calibers. The range is about 15,000 yards with a supercharge, and about 11,000 with the normal charge.

The trunnions are slightly ahead of the breech block, giving a muzzle preponderance which is overcome by a set of equalization springs and cylinders, following the German construction.

It has the American panoramic sight.

The cartridge case is longer than that of the French model but the projectile is the same, having both bowtail and normal base.

## CURRENT FIELD ARTILLERY NOTES

### **Partial Motorization of the 6th Field Artillery**

Preparatory to being motorized, the First Battalion, Sixth Field Artillery, less Battery "C," went on January 16, 1928, to Camp Holabird for temporary station.

The better training facilities for a motorized organization and the adequate shelter for motor equipment at Camp Holabird make desirable the temporary change of station. The Quartermaster Motor Transport School, with extensive repair shops, is located at Camp Holabird, which installation and equipment will enable the battalion to conduct its preparatory training to good advantage.

The battery officers, chiefs of section, first sergeants and about 125 drivers are receiving a course of instruction which takes half of each day. Three officers and the remainder of the men are spending their entire time in motor schools. These courses will be completed about April 10th, after which the battalion will go to Aberdeen for two months' work with tractors.

This battalion after being motorized, will form part of the mechanized force which will assemble at Camp Meade, Maryland, in July of this year for the extensive tests and experiments below mentioned.

### **Experimental Mechanized Force of Combined Arms**

The War Department has directed that an experimental mechanized force, consisting of many branches of the service, be assembled at Camp Meade, Maryland, during the summer of 1928. This force will be under the command of the Commanding General, Third Corps Area, who by practical tests in tactical and strategical employments will experiment with its organization and equipment with a view to developing correct doctrines with respect to the motorization and mechanization of appropriate units of the Army.

As far as practicable, this force will be equipped with motor vehicles of the latest approved design. Its operations will include work over terrain sufficiently varied and difficult, and under such conditions of weather, as will determine the powers and limitations of motor vehicles as compared with animal-drawn transportation under similar conditions.

This mechanized force will be composed of the following units:

One battalion, Thirty-fourth Infantry, Fort Eustis, Virginia.

Second Platoon, Fourth Tank Company, Camp Meade, Maryland.

Second Battalion, Sixth Field Artillery (less one battery), Fort Hoyle, Maryland.

One battery, Sixty-first Coast Artillery (Anti-Aircraft), Fort Monroe, Virginia.

## THE FIELD ARTILLERY JOURNAL

One company, First Engineers, Fort Dupont, Delaware.

First Signal Company, Fort Monmouth, New Jersey.

Medical Detachment, Carlisle Barracks, Pennsylvania.

First Ammunition Train (motor elements), Fort Hoyle, Maryland.

In addition to the foregoing units, the Sixteenth Tank Battalion (light), the Seventeenth Tank Battalion (heavy), Camp Meade, Maryland, and one observation squadron, Air Corps, Mitchel Field, Long Island, New York, will be made available to the commander of the force at such time as required by him. One troop of the Third Cavalry, Fort Myer, Virginia, will be trained in the use of mechanical equipment and will operate with the mechanized force as directed by the Commanding General, Third Corps Area.

In preparation for the tests and experiments, selected officers and enlisted men of all the units of the composite force will be sent to Camp Holabird for courses at the motor transport schools at that station, also motor schools will be established at the stations of the troops to make up the force. The required motor equipment will be issued about March 1, 1928, when all units composing the force will be relieved from their normal training and permitted to concentrate on development into mechanized and motorized units. The mechanized force will be concentrated after July 1, 1928, at Camp Meade, Maryland, for the tactical operations and strategical marches.

In connection with these latter features of the experiments, manufacturers of motor vehicles susceptible to military employment will be invited to submit their latest model equipment for test by the mechanized force with a view to determination as to the most suitable types for Army use. Chiefs of supply branches of the army have been instructed to intensify their study and subsequent development of all types of motor vehicles suitable for the use of a force of this kind.

### **Artillery of War Strength Cavalry Division Doubled**

The War Department has authorized an increase in the strength of the artillery of the cavalry division (war strength) from one battalion (horse) to one regiment (horse).

A recent reorganization of the cavalry regiments considerably increased their numerical strength and added to each a machine gun troop. This necessitates a relative increase in the artillery fire power of the cavalry division. There are additional reasons which make such an increase desirable. Usually, the cavalry division marches in two columns, each of which should be accompanied by a

## CURRENT FIELD ARTILLERY NOTES

battalion of artillery. Very often a brigade is detached on an independent mission, the accomplishment of which necessitates the fire support of not less than a battalion of artillery. As a cavalry division normally is not part of a corps, it cannot look to corps artillery for additional artillery support, as can infantry divisions. This makes it the more desirable for the cavalry division to have with it at all times such artillery as will be needed ordinarily.

While the additional artillery will increase the road space occupied by the cavalry division, it is thought that compensation for this disadvantage will be more than offset by the additional fire power.

### National Guard Field Artillery Firing Areas

In answer to inquiry, the War Department has compiled a list which shows that National Guard Field Artillery units utilized 17 different target ranges throughout the United States for their firing practice. The following table shows the area of each federally owned reservation used by National Guard Field Artillery units and the State designation of troops which usually have their field training thereat:

<i>Name and Location</i>	<i>Acreage</i>	<i>States Attending</i>
Camp Devens, Ayre, Massachusetts .....	4,672	Maine, Massachusetts
Pine Camp, Watertown, New York .....	10,308	New Jersey, New York
Tobyhanna Military Reservation, Tobyhanna, Pennsylvania ....	21,100	Connecticut, Maryland, Virginia
Fort Bragg, North Carolina .....	120,477	North Carolina
Camp Jackson, Columbia, North Carolina .....	20,834	Florida, Georgia, North Carolina, South Carolina, Tennessee
Camp Knox, West Point, Kentucky .....	30,074	Tennessee, Indiana, Kentucky, Ohio, Illinois
Camp McCoy, Sparta, Wisconsin .....	14,027	Illinois, Wisconsin, Iowa, Minnesota
Fort Sill, Oklahoma .....	51,292	Arkansas, Minnesota, Oklahoma
Fort Bliss, Texas .....	5,798	New Mexico
Fort Lewis, Washington .....	62,423	Washington
Fort Riley, Kansas .....	19,447	Iowa, Kansas, Missouri
Boise Barracks, Idaho .....	7,036	Idaho
Fort Huachuca, Arizona .....	44,800	Arizona

In the above table no distinction is made between the artillery ranges and the reservations on which they are located. The areas indicated are those of the entire reservation or camp.

In the case of State owned camps, the artillery ranges are also located on the camp sites and data as to areas of the portions used for fire are not available. There appears below, however, a table showing camps owned by States, either in whole or in part, and used by National Guard Field Artillery:

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<i>State</i>	<i>Name or Location of Camp</i>	<i>Area</i>
Colorado	Golden	900
Maine	Camp Keyes	84
Michigan,	Camp Grayling	13,760
Pennsylvania	Mt. Gretna	2,807
Texas	Palacios	26,200
Louisiana } Mississippi }	Camp Beauregard, La.	8,840
Utah	Jordan Narrows	18,700
California	San Louis Obispo	1,980

### **Field Artillery Board Notes**

The last four months have been characterized by field work rather than by the writing of reports. Three tests have been completed and the reports forwarded. These are:

The modified caisson to carry Mark IV shell.

Stirrup strap loops.

Oil screw fillers.

Eight others have been completed and the reports on them are under preparation now. These include:

Study on effect of fire.

Caterpillar 30 tractors (5-ton).

T-29 tractors.

155-mm. gun—8-inch howitzer motor carriage.

Test of parallel sheaf.

Aiming circle, M-1918.

Coleman trucks.

F.W.D. trucks, modified.

During September and October, the Board conducted two maneuvers to test the equipment of the heavier units. The first of these was with a 155-mm. gun battery and a 240-mm. howitzer battery; the second was with the regimental headquarters battery, one battalion headquarters battery, a battalion combat train and the supply battery of the 155-mm. howitzer regiment. As described in previous notes, these maneuvers were made with war strength units fully equipped as now prescribed. Their purpose was to determine the efficiency of that equipment. For instance, it has been found that some items are still carried which are obsolete, others need modification, etc. Another object was the determination of where all the equipment is to be carried so as to render its availability as great as possible, and prevent overloading of vehicles. These maneuvers have resulted in the accumulation of a great deal of valuable information which is being tabulated and studied. A vivid impression was received from all these exercises of the great quantity of equipment now authorized for all units.

A new test of interest to the service is the portée test of the 155-mm. Schneider howitzer. The feasibility of the scheme was



ON THE LEFT - A HIGHWAY 4-TON TRAILER STUCK IN THE MUD, PAY LOAD 2900 POUNDS. AT THE REAR, COUPLED TO THE TRACTOR, IS AN ATHLETIC TRAILER





75-MM. PACK HOWITZER M 1 RECENTLY LISTED AS STANDARD

## CURRENT FIELD ARTILLERY NOTES

given its first test when the howitzers were taken to the Pee Dee River to shoot at the bridge being destroyed there. An extract of the report of this trip follows these notes. The work on the test, however, has just started, and no conclusions have been reached as yet. However, the new Coleman trucks undoubtedly will prove of great value for this type of organization.

The question of trailers is directly connected with the portée test. Unless proper and efficient trailers can be found or designed, portée units will be badly handicapped. At present, three types of trailers are being tested, *i.e.*:

The Athey trailer, a cross-country trailer with caterpillar tracks. It has proved very good for this purpose, but its use on roads is limited by the slow speed at which it must travel.

The Warner trailer (7-ton). This is very heavy and its pay load is small in comparison with its weight. The small wheels with which it is equipped are not suitable for cross-country work.

The Highway trailer (4-ton). Its defects are similar to those of the Warner. The tests of these trailers are not completed and will not be for some time.

While the tests of the Coleman and modified F.W.D. trucks are not completed, a first progress report is being prepared. This report will show that these trucks represent a great advance in truck transportation, and have altered to a considerable extent wartime ideas of what trucks can do. They will be recommended as suitable as cargo trucks for Corps and Army artillery, ammunition trains, etc. In addition, their drawbar pull makes them satisfactory for trailing loads. Most of their future tests will be along this latter line.

Other trucks being tested are the three-quarter ton Fords (old style) and Chevrolets. Ton and half Coleman's and F.W.D.'s are on the way to the Board for a comparative test with the former. As stated before, these are being tried out in place of the White Observation cars, G.M.C.'s, etc.

Of tractors, Fordsons with full-crawler and half-crawler adapters are under test now. The full-crawler has proved the more satisfactory to date. In addition the McCormick-Deering is being tried out.

Three models of the 105-mm. howitzer have arrived and their test started with the new year. They are: the M-1925 (box-trail), T-1 and T-2 (both split trail). A short résumé of the status of all the new model guns will probably be of interest.

The M-1923-E, 75-mm. gun, split trail has been adopted as standard, and is now known as the M-1.

The 4.7-inch gun, M-1920-E, was adopted as standard, but because it was manufactured of special steels, a new model of commercial steels is now being constructed.

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The M-1920, 155-mm. howitzer was reported as unsatisfactory. The new model is now under test at Aberdeen and will be sent to the Board probably this spring.

The 155-mm. gun—8-inch howitzer carriage, M-1920 is to be redesigned and a new model constructed.

The new 75-mm. pack howitzer has been adopted as standard.

As for modifications of the present 75-mm. matériel, M-1897, the handspike has proved useful, but the utility of the float is doubtful. A report on these two features is under preparation. In addition, a traveling lock is being tried out.

Other items of possible interest are:

The tables of equipment for divisional field artillery units are being rechecked in the Office of the Chief of Field Artillery. As the money appropriated for the printing of these tables expires on June 30th, it is reasonable to expect that the new tables will be out shortly thereafter.

A test of time shell, 75-mm. and 155-mm., is under progress. The 75-mm. shell is an antiaircraft shell equipped with 21 sec. combination fuze. The 155-mm. shell is equipped with the Waltham mechanical fuze.

A test of the four different methods of obtaining a parallel sheaf has completed the first stage. Further firing is recommended to clear up some points. To date the order of merit of the methods is:

1. Distant aiming point.
2. High burst.
3. Aiming circle.
4. Reciprocal laying.

The report on this is being put in final form and will be forwarded about January 30th.

The Training Regulation section reports that its various documents are located as follows:

430-165—"Dismounted Drills and Ceremonies," in the Office of the Chief of Field Artillery for review and being tested by the Hawaii Division.

430-76—"The Tractor Driver," has just returned and is undergoing further revision.

430-170—"The Examination of Gunners," has been printed as is probably known by everyone.

430-70—"The Firing Battery." A rough draft of this was forwarded in December.

430-90—"Field Artillery Communications," was forwarded September 20, 1927, and is being reviewed by the Field Artillery School.

## CURRENT FIELD ARTILLERY NOTES

The outline of the Field Artillery Field Manual was forwarded January 20th and orders have been received that it is to be completed in the calendar year, 1928.

### **Extract from the Report of the Pee Dee River Portée Trip**

*Matériel:* One 155-mm. section, consisting of 1 Coleman truck carrying a 5-ton tractor and trailing the 155-mm. Schneider howitzer on a modified 3" F.G. trailer; limber pintled to trailer. One F.W.D. modified (solid tires) loaded with 30 rounds of ammunition; 2 Chevrolet trucks with personnel—11 men and drivers, also 1 F.W.D. modified (pneumatic tires), carrying a 2½-ton cargo load and trailing a Schneider 155-mm. howitzer. One section of 240-mm. howitzer matériel, consisting of 4 Militor trucks carrying ammunition and cargo loads and trailing the 4 gun loads, plus 1 Militor with cargo load, trailing a 10-ton tractor on a 10-ton Ordnance trailer.

*Weather:* Cold and rainy.

*Roads:* Hard surface to Troy then about 23 miles of sand clay roads to destination. Condition—wet with clay portion very slippery in places.

*Grades:* A few 4° and 5° grades.

Ninety-two miles to Troy made in 8 hours running time (9 hours elapsed time) or 11 + m.p.h. average. From there on constant delays due to vehicles ahead blocking the road. Completed the 114 miles in 15½ hours counting all delays.

*F.W.D.:* Maximum, 10 m.p.h. on good going.

Eighty-two miles to Biscoe accomplished in 10¾ hours, or 8 m.p.h. Completed the 114 miles in 18 hours or 6 + miles per hour.

The 240-mm. section started at 4.30 A.M. They camped for the night about 12 miles beyond Pinehurst, arriving at this point about 6.30 P.M., having traveled 60 miles. They were delayed an hour by an accident.

Their rate of travel was 4 + miles per hour. They resumed the march at 6.30 A.M. the following day and reached camp about 3 P.M., averaging 5 + miles per hour.

*Observations:* The Coleman truck carries the 5-ton tractor and trails the howitzer nicely at 20–22 m.p.h. At 25 m.p.h., trailer load whips. The Coleman negotiated slippery clay stretches without difficulty. Dropped through road surface for 1½ feet on a spongy stretch, but pulled out OK in "low low," 135 to 1, gear ratio aided by the large pneumatic tires.

Tractor appears to be the best load for the truck and can be loaded very quickly. The howitzer is high enough on the trailer but rides well; on the truck, it is thought to be entirely too high and takes too long to load. The pneumatic tires assure traction on the wet clay stretches.

# THE UNITED STATES FIELD ARTILLERY ASSOCIATION

## Annual Meeting

PURSUANT to the call of the Executive Council, the sixteenth annual meeting of the Association was held at the Army and Navy Club in Washington at 4.45 P.M., December 17, 1927. In the absence of the President, the chair was occupied by Colonel Leroy W. Herron, the senior member of the Executive Council present.

The Secretary-Treasurer read the call for the meeting, stating that it had been sent by mail to all active members of the Association, as required by the Constitution. He reported that a quorum for the transaction of business was present, in person or by written proxy.

On motion, the minutes of the last meeting were approved as published in THE FIELD ARTILLERY JOURNAL.

The Secretary-Treasurer read his annual report and presented his financial statements, which are annexed and form a part of these minutes.

The chair announced the appointment of Major E. J. Dawley and Major E. C. W. Davis as a committee to audit the Treasurer's financial statements. The committee reported that the duty had been performed and the statements found to be correct. A motion was adopted accepting the report of the committee.

The chair announced that the terms of office of eight members of the Executive Council had expired, these being as follows: Four from the Regular Army—Major General William J. Snow, Colonel Daniel W. Hand, Lieutenant-Colonel George P. Tyner and Major George R. Allin; two from the National Guard—Brigadier-General Churchill Mehard and Lieutenant-Colonel J. Craig McLanahan; and two from the Reserve Corps—Colonels Leroy W. Herron and Robert L. Bacon.

Elections were as follows:

*From the Regular Army:* Colonel Harry G. Bishop, Colonel Andrew Moses, Colonel Fred T. Austin, Major Donald C. Cubbison.

*From the National Guard:* Colonel Samuel G. Barnard, Colonel Ernest R. Redmond.

*From the Reserve Corps:* Colonel Leroy W. Herron, Colonel Robert L. Bacon.

A motion was adopted directing the Executive Council to prepare suitable resolutions expressive of the sentiments of the Association on the retirement of General Snow, President of the Association.

## UNITED STATES FIELD ARTILLERY ASSOCIATION

There followed an informal discussion of the affairs of the Association and the policies of THE FIELD ARTILLERY JOURNAL, after which the meeting adjourned.

### ANNUAL REPORT OF THE SECRETARY-TREASURER

The finances of the Association during the past year have continued to gain, as shown by the following:

Assets—December 1, 1926		
Cash on hand .....	\$4,821.51	
Securities on hand .....	17,600.00	\$22,421.51
<hr/>		
Assets—November 30, 1927		
Cash on hand .....	\$3,655.39	
Securities on hand .....	19,990.00	\$23,645.39
		<hr/>
		\$1,223.88

A detailed statement of the receipts and expenditures during the last fiscal year is as follows:

#### *RECEIPTS*

Cash on hand—December 1, 1926 .....	\$4,821.51	
Membership dues .....	6,186.94	
Advertising .....	3,070.96	
Interest on securities .....	1,311.78	
Sale of books .....	660.26	
Miscellaneous receipts .....	47.70	
Securities matured .....	8,000.00	\$24,099.15
		<hr/>

#### *EXPENDITURES*

Printing and mailing THE FIELD ARTILLERY JOURNAL .....	\$7,214.68	
Miscellaneous printing .....	146.49	
Postage .....	242.90	
Services .....	647.25	
Office supplies .....	114.65	
Books .....	570.54	
Telephone and telegraph .....	79.45	
Authors, translators, draftsman and photographers .....	494.00	
Rent .....	360.00	
Securities purchased .....	10,490.00	
Miscellaneous expense .....	83.80	
Cash on hand—November 30, 1927 .....	3,655.39	\$24,099.15
		<hr/>

It will be noted that on November 30, 1926, securities on hand totaled \$17,600. During the current year securities to the value of \$2,490 were purchased in excess of the reinvestment of funds derived from matured securities. The total now carried, however, is \$19,990, since a Rising Manufacturing Corporation \$100 bond, given several years ago in part payment of an advertisement, is of doubtful value and has been charged off. This bond therefore now appears on the list of securities without valuation.

Our chief item of expense, the publishing of the JOURNAL, as shown by the average cost per issue, has varied little during the last few years. While there has been a slight falling off in membership dues, there has been during the last year a larger gain in advertising

## THE FIELD ARTILLERY JOURNAL

returns. The receipts this year from interest on securities are greater than since 1924, when interest rates were materially higher.

There are three ways in which members may materially advance the interests of the Association:

1. By submitting articles on Field Artillery activities of interest or of professional value to readers of the JOURNAL. Also by sending the Council, or the editor, constructive criticism as to the types of articles desired.

2. By bringing the JOURNAL to the attention of those who are interested in Field Artillery matters. Due to the large percentage of Regular Field Artillery officers who are now members, the greatest field for an increase of membership is in the National Guard and the Reserve Corps.

3. Whenever proper, patronize the concerns who are advertising in the JOURNAL and let them know that their advertisements have been seen. There should be, to members, a greater appeal in JOURNAL advertisements, than from those in other mediums, since in addition to obtaining publicity, these concerns are decreasing the financial burdens which would otherwise fall upon our members.

A gratifying number of unsolicited letters have been received from our advertisers commenting favorably on the results obtained from their JOURNAL advertisements.

HARLEIGH PARKHURST,  
*Major, Field Artillery,*  
*Secretary-Treasurer.*

At a subsequent meeting of the Executive Council, Major-General Fred T. Austin was unanimously elected President of the Association.

Resolutions were adopted as follows:

### RESOLUTIONS

WHEREAS, Major General William J. Snow, Chief of Field Artillery, United States Army, conceived the idea of the organization of the Field Artillery Association and the publication of THE FIELD ARTILLERY JOURNAL, and was the actual organizer in 1910 of that Association; and,

WHEREAS, Major General William J. Snow, then Captain, Field Artillery, was the first Secretary of the Field Artillery Association and the first Editor of THE FIELD ARTILLERY JOURNAL and, as such, initiated the publication of the JOURNAL and maintained the same during a period when the resources of the Association made the publication of the JOURNAL a matter of great difficulty and involving on his part the most devoted service to the Field Artillery Arm; and,

WHEREAS, Major General William J. Snow, then Major, Field

## UNITED STATES FIELD ARTILLERY ASSOCIATION

Artillery, was the first Field Artillery officer on duty in the division of Militia Affairs of the War Department, and as such was individually responsible for the renaissance of the Field Artillery of the National Guard so that he may properly be called the father of the National Guard Field Artillery; and,

WHEREAS, in 1917, upon the entry of the United States into the World War, the Field Artillery School had been closed for some years and the War Department found itself without the means of training the vast number of individuals who must become officers of Field Artillery, Major General William J. Snow, then Colonel, Field Artillery, reorganized and reestablished the Field Artillery School—giving it the impetus which made it become one of the most efficient army activities during the World War and, in no small degree, contributing to the remarkable achievement of the Field Artillery Arm during that war; and,

WHEREAS, Major General William J. Snow, then Brigadier General, National Army, was on February 10, 1918, appointed Chief of Field Artillery—being the first Chief of Field Artillery of the United States, in that capacity initiated and executed all those measures which permitted the rapid expansion of the Field Artillery Arm, and which made of it an efficient element of the Armies of the United States, largely contributing to the success of those Armies; and,

WHEREAS, Major General William J. Snow has been President of the Field Artillery Association since July, 1918, and has during that period evinced the greatest interest in the Field Artillery Association and THE FIELD ARTILLERY JOURNAL, and has contributed of his time, energy, and accomplishments so that during the period of his Presidency, the Field Artillery Association has become financially sound and THE FIELD ARTILLERY JOURNAL has become a military magazine of recognized standing; and,

WHEREAS, Major General William J. Snow, Chief of Field Artillery, United States Army, on December 19, 1927, was on his own request retired from active service on account of disabilities incurred in line of duty, and relinquished the Presidency of this Association,

*Now, Therefore, be It Resolved,* That the Field Artillery Association congratulate Major General William J. Snow, its retiring President, upon the magnificent accomplishments of his professional career which have been briefly indicated in the preceding paragraphs;

*Be It Further Resolved,* That the individual members of the Field Artillery Association do hereby express to Major General William J. Snow their personal and professional appreciation of all that he has done for their Arm and, incidentally, themselves;

*Be It Further Resolved,* That the members of the Field Artillery Association, in regular meeting assembled, hereby express to Major



## THE FIELD ARTILLERY JOURNAL

General William J. Snow, Chief of Field Artillery, the appreciation of the Association for his years of devotion and indefatigable labor which has made this Association and its JOURNAL the successful institutions they are today;

*Be It Further Resolved*, That these resolutions be spread upon the minutes of the Field Artillery Association and published in THE FIELD ARTILLERY JOURNAL; and that an engrossed copy of the same, signed by the officers and members of the Executive Council of the Association, be furnished General Snow.

WASHINGTON, D. C.

December 20, 1927.