THE FIELD ARTILLERY JOURNAL

JANUARY-FEBRUARY, 1934

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EDITED BY
DEAN HUDNUTT
MAJOR, FIELD ARTILLERY, UNITED STATES ARMY

Patron Saint of Artillery

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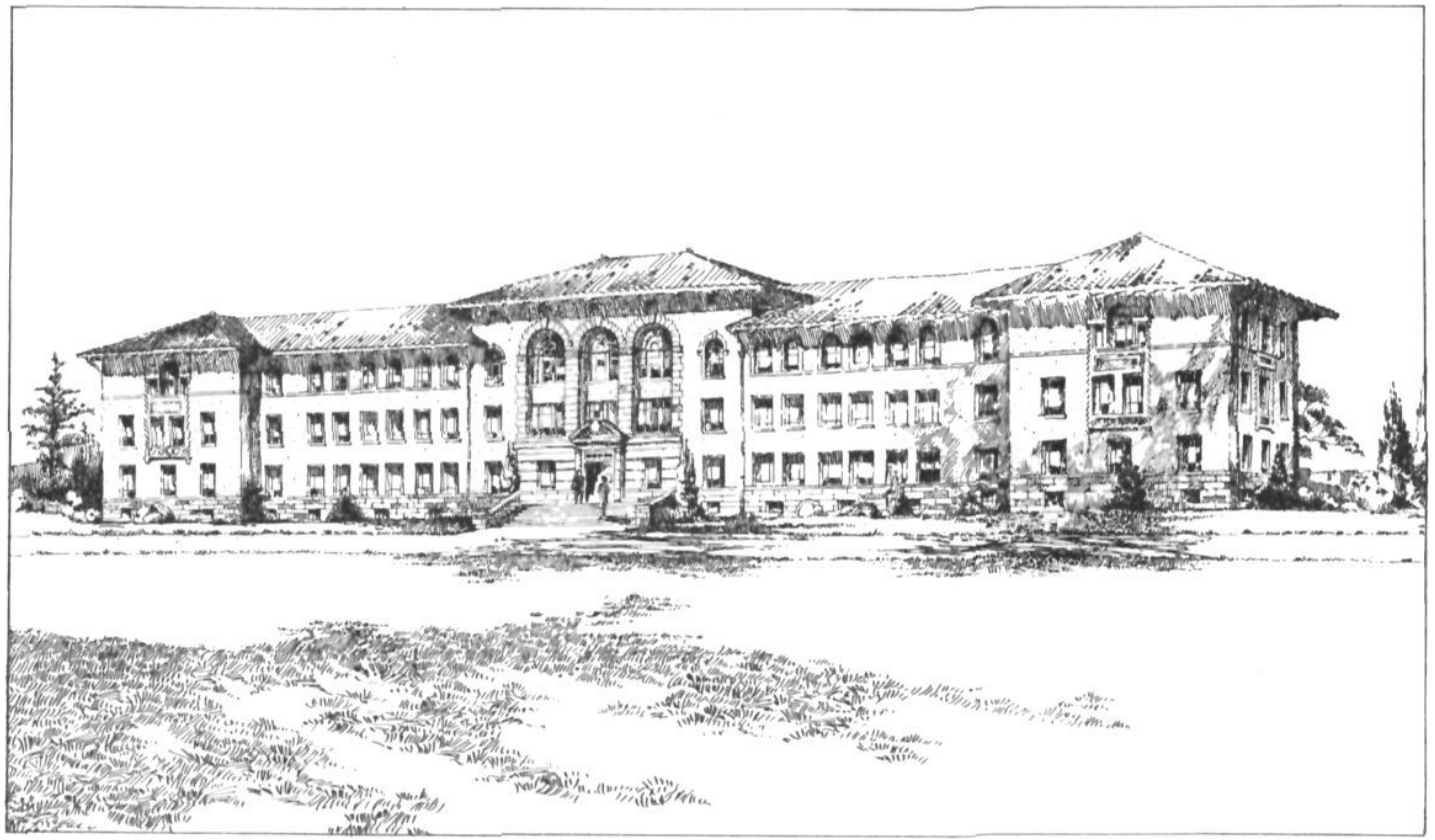


NEW ADMINISTRATION BUILDING, FORT SILL

THE FIELD ARTILLERY JOURNAL

VOLUME XXIV JANUARY-FEBRUARY, 1934 NUMBER 1

NEW CONSTRUCTION AT FORT SILL

BY MAJOR EDWIN P. PARKER, JR., Field Artillery

DUE to the uncertainty which existed in the past as to the permanent location of the Field Artillery School, construction at Fort Sill, previous to 1933, was practically at a standstill and repairs had been kept at an absolute minimum for many years. There was no permanent construction of any importance on the post from the time of the building of the barracks and quarters for one regiment of Field Artillery in 1910 and 1911 until 1933, with the exception of seven bungalows.

These bungalows were constructed as battery officers' quarters in 1928, as the result of a small appropriation by Congress. They were located on Upton Road, facing south, two to the west of the present Officers' Club and four to the east thereof. As the amount of funds appropriated for officers' quarters at this time was so limited, and the need for a large number of officers' sets so great, these small and comparatively inexpensive bungalows were constructed rather than two-story single sets of quarters of the type being constructed today.

The need for sufficient permanent quarters for officers and permanent barracks for enlisted men to provide for all of the military personnel at Fort Sill has been sorely felt for a long time. In the fall of 1929, the School, in reporting on this matter, stated that 1,362 enlisted men were housed in temporary quarters. These men composed the 1st Battalion, 38th Infantry; 1st Battalion, 1st Field Artillery; Headquarters Battery, 1st Field Artillery; 88th Observation Squadron; 1st Balloon Company, the Colored Detachment and the Medical Detachment. In addition to the organizations enumerated above, the Headquarters Battery, Combat Train and Service Platoon, 18th Field Artillery, and the Headquarters Detachment and Combat Train, 2nd Battalion, 1st Field Artillery had no permanent quarters of their own, but were scattered throughout the post, quartered with other organizations. Furthermore, 103 officers of the permanent garrison,

three warrant officers and forty-three married non-commissioned officers of the first three grades were living in temporary quarters, while one hundred and twelve student officers taking the nine months' courses and thirty-four National Guard and Reserve Officers had to live off of the reservation.

In anticipation of Fort Sill being made the permanent location of the Field Artillery School, and funds being provided for construction thereat, necessary steps were taken to secure a definite and comprehensive plan for future construction. In 1930 a board of officers was appointed at Fort Sill to determine the buildings needed to provide for the Field Artillery School, their location and priority of construction.

In part of its preliminary report, dated November 14, 1930, the Board stated: "3. In arriving at priorities for buildings it is thought advisable to take care of the School Troops now located in temporary buildings in Post Field first. These buildings are all of war-time construction and are in such a condition that it is deemed inadvisable to prolong their use beyond the earliest time when new buildings can be had to house this personnel. The Post Field buildings are most unsightly and the foundations are practically rotted away, also the roofs are gone to a point where it will be necessary to replace a large percentage of them within the next year and a half unless they can be vacated."

"4. The priorities, after the first, have been established with the idea of taking care of the student personnel now on a commutation status and, further, to provide for the hospital and other personnel housing, and school activities, as temporary buildings now in use reach a state when their use is no longer possible due to deterioration or for other reasons."

The following extracts from the report of the above-mentioned Board, approved by the Commandant on December 18, 1930, are deemed of particular interest in connection with the building program:

"2. The matter of locating buildings for various purposes has been given considerable thought and consideration and the areas most suitable for location of these buildings have been selected with a view to convenience, general adaptability as regards present roads, water and sewer systems and other utilities necessary

to the buildings themselves and the area in general. The matter of placing buildings with a view to getting proper facings for weather conditions has been given much consideration and it is believed that the plotting as shown on maps furnished herewith is in accordance with good practice."

"3. It appears to the Board that it would be desirable to have the plans of quarters for officers and non-commissioned officers so arranged that the rooms may be reversed, that is, sleeping porches should be, in all cases, on the south or south-east side of the house; this on account of the prevailing winds during the entire spring, summer and fall seasons of the year."

* * * * *

"(1) In locating officers and non-commissioned officers quarters it has been thought proper that the area selected for these quarters be as near the organization or activity to which the officer or non-commissioned officer belongs as is consistent with the ground space available."

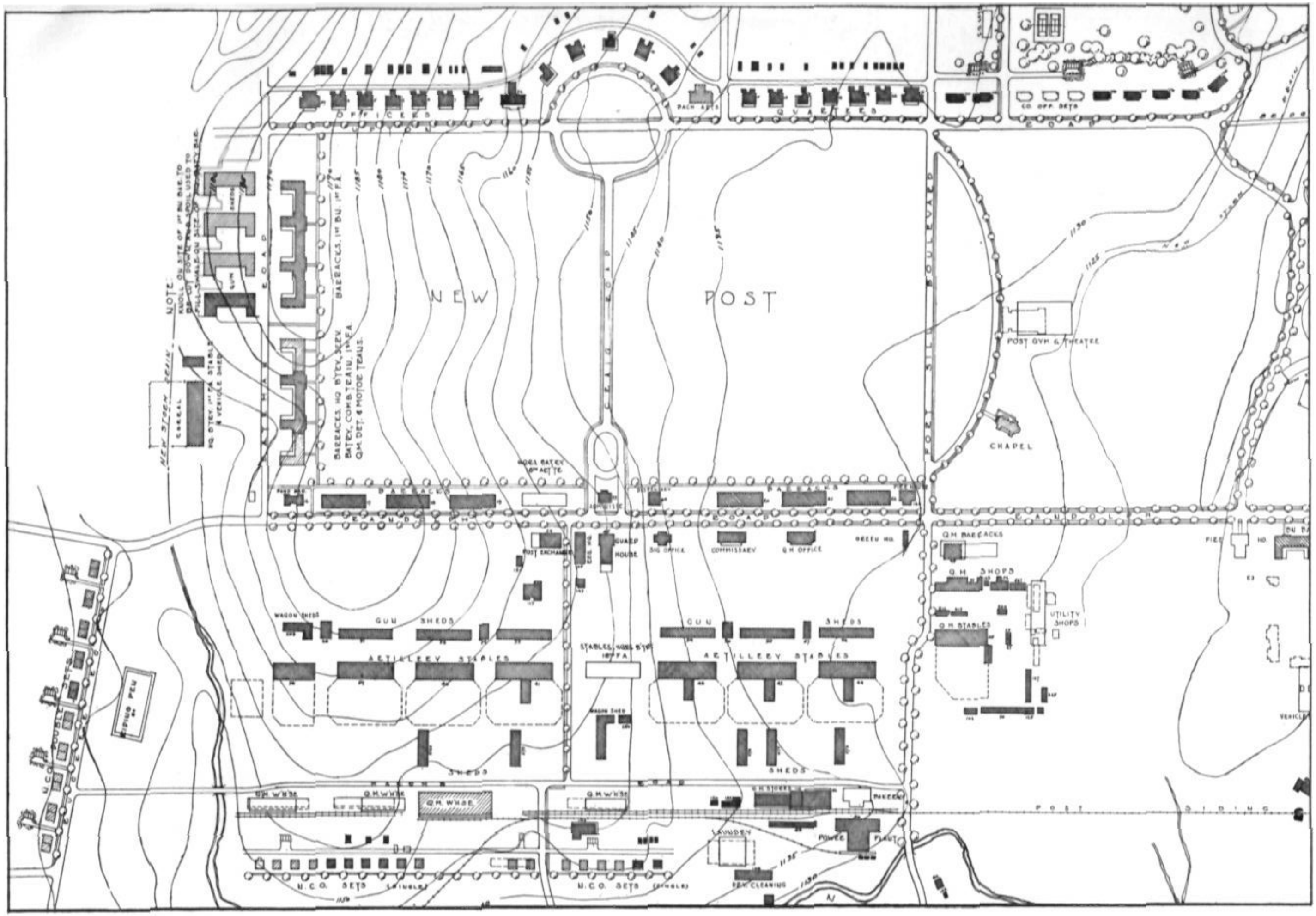
"(2) An effort has been made to keep what is classed as the Academic Division in one area of the garrison."

The plans recommended by the Board of Officers at Fort Sill, which provided for the estimated total expenditure of $9,399,-400.00, was approved by the Chief of Field Artillery and was forwarded to the Adjutant General on December 22, 1930. Under date of February 10, 1931, the Adjutant General approved the plan "as a general program to be followed in the development of that school under the Army Housing Program."

The above mentioned plan, with various modifications, has been used as the basis for requests for funds for construction, and is being followed today in the new construction at Fort Sill.

As the result of considerable effort on the part of the War Department, aided by the people of Oklahoma, a limited amount was appropriated by Congress in 1932 for new construction at Fort Sill. In accordance with the approved plan, described above, it was decided to use these funds to provide permanent quarters for the troops living in temporary buildings in Post Field. The buildings projected were: one battalion barracks (four companies) for the Infantry; one battalion barracks (four batteries) for the 1st Field Artillery; two section (two batteries) of another

POST
OLD
OLD STONE BARRACKS
ACADEMIC CENTER
HORSE SHOW RING
ATHLETIC FIELD
CEMETERY
HODES PARK


NEW POST
OFFICERS QUARTERS
CO. OFF. SETS
BACH. APTS.
BARRACKS, 1st BN. 1st F.A.
BARRACKS, HQ BTRY, SERV. BTRY, COMB. TRAIN. 1st F.A. Q.M. DET. & MOTOR TRANS.
BARRACKS
HQ BTRY 1st FA STABLE & VEHICLE SHED
CORRAL
NEW STORM DRAIN
POST GYM & THEATRE
CHAPEL
GUARD HOUSE
POST EXCHANGE
SIG. OFFICE
COMMISSARY
Q.M. OFFICE
Q.M. BARRACKS
Q.M. SHOPS
UTILITY SHOPS
Q.M. STABLES
WAGON SHEDS
GUN SHEDS
ARTILLERY STABLES
STABLES, HDQS. B'T'Y. 1st F.A.
WAGON SHED
SHEDS
Q.M. WH'SE.
Q.M. STORES
BAKERY
LAUNDRY
POWER PLANT
POST SIDING
N.C.O. SETS (SINGLE)
RIDING PEN
VEHICLE

battalion barracks for the 1st Field Artillery; five company officers' sets; ten non-commissioned officers' sets; one gun-shed; one stable and one vehicle shed.

The new Field Artillery barracks were located on the west end of the parade ground in the New Post, the buildings facing east. In the rear of these were placed the stables and the vehicle shed for the Headquarters Battery, 1st Field Artillery and the gun-shed for one of the gun batteries of the 1st Battalion, 1st Field Artillery. The Infantry battalion barracks was placed on the south side of the main road between the New Post and the Old Post, opposite the Post baseball diamond. The officers' quarters were located in the Academic Area, east of the present Post Headquarters building and the non-commissioned officers' quarters, five two-families buildings, in the western section of the New Post, along Rucker Road (the road running north and south through the Quartermaster gasoline station).

In 1932, at the time funds were allowed for this construction in Fort Sill, money was appropriated also to build permanent buildings for the Air Corps personnel in Post Field. These funds provided for a barracks, nine officers' quarters and ten noncommissioned officers' quarters.

The bids were let and construction commenced on the above mentioned buildings in the fall of 1932 and early in 1933. Progress on this construction was satisfactory and some of these buildings would have been occupied in August 1933, except for the act of the President last spring in impounding all unobligated government construction funds. This caused the loss of all funds for the utilities for these buildings, i. e., water, gas, electricity and sewers. As a result, the officers and non-commissioned officers quarters, although finished except for utilities, remained vacant for several months, awaiting funds.

The much needed utilities funds were provided in September last by the Public Works Administration. Hence, many of the new buildings mentioned above have been used already and the last of them should be occupied within a short time.

At the time of the drawing up of the plan of new construction for Fort Sill, the most that was anticipated in the way of construction funds was a yearly appropriation for a very limited amount of construction for the post. Both the Office of the

Chief of Field Artillery and the Field Artillery School were working along these lines when the Public Works Administration was authorized. This changed the complexion of things. The Chief of Field Artillery decided to try to obtain sufficient funds from this Administration to complete the building program for Fort Sill. Therefore in May, 1933, the School was requested to submit estimates for building projects under the Public Works Program. These estimates, with several modifications, were used as a basis by the War Department for its request of the Public Works Administration for construction funds for Fort Sill.

From June until September, 1933, at which time Public Works funds were allotted, the Field Artillery School, the Office of the Chief of Field Artillery and the Construction Division of the Quartermaster General's Office spent much time and effort in revising the layout plan for Fort Sill and in preparing sketches and plans for the buildings projected.

On September 21, 1933, the War Department announced the funds allotted by the Public Works Administration for Fort Sill. This allotment, totalling $4,392,000, provided for the following:

Barracks

Conversion of stone barracks, Old Post, to permit their use for other purposes

Non-commissioned officers' quarters

5 double sets (10 families)

10 single sets

Officers' quarters

18 Field officers sets

42 Company officers' sets

18 Apartment Buildings (4 families each)

3 Apartment Buildings, bachelor (1 of 9 sets, 2 of 20 sets)

Nurses quarters

Officers' Mess

Gun Sheds

2 for 1st Battalion, 1st Field Artillery

Veterinary Hospital

Administration Building

Quartermaster Warehouse

Ordnance Warehouse
Magazines
Chapel
Telephone Construction
Reconditioning of roads and buildings

Post Field

Balloon hangar and paved aprons therefor
Dispensary and fire station
Gasoline storage systems
Paint and oil storage
Garage
Grading landing field and building area

In addition to the above listed projects, funds were included to provide for the completion of the buildings constructed, including necessary utilities.

With reference to the item of barracks, it is contemplated to complete the second of the four-unit barracks in the New Post; to provide a three-unit barracks for the School Detachment (White), the Ammunition Train and the Ordnance Troops; a separate barracks for the School Detachment (Colored); a separate barracks for the Medical Detachment; and, should funds permit, a single unit barracks for one organization of the 18th Field Artillery.

These funds will provide the primary need of Fort Sill, namely, permanent quarters for all enlisted men and officers on the post, including enlisted men and officers of the Regular Army in attendance as students at the School. As will be seen from the list above, besides the primary needs of the Post, many other needs will be supplied. However, the very important needs of a suitable instructional plant for the Field Artillery School and an addition to the Post Hospital have been omitted.

At the present writing, the only facilities for instruction which will be provided in permanent buildings will be in the Administration Building. This building, in addition to providing for Post Headquarters activities, will furnish offices for the Assistant Commandant and instructors, an auditorium, a limited number of class-rooms and the library. Unfortunately funds were not provided for a materiel building, animal transport building, riding

hall or school stables. Furthermore, the amount allotted for the administraiton building was only about one-third of the amount needed, thus preventing all of the class-room work and other school activities from being housed in this building.

In carrying out the desire to follow the approved layout plan for Fort Sill and to build it for the future, a considerable amount of extra work is being placed on the officers and men of the Post and the work of the School is being handicapped temporarily. This is caused by the necessity to demolish many temporary buildings, move some and re-erect others. However, Civil Works Administration funds, recently allotted to Fort Sill, will help this work considerably.

All buildings in the present Academic Area, except for the present Academic Building, will be demolished in order to make room for officers' quarters. The old school stables will be torn down, and on their site will rise a handsome administration building, facing to the west.

Many of the activities of the Academic Division, which will not be housed either in the new Administration Building or the present Academic Building, probably will either be housed in temporary buildings in the area south of the riding hall or in the four old stone barracks in the Old Post, all of which will be vacated and remodeled, as new barracks are being constructed for the troops now quartered therein. Among the temporary buildings to be erected are school stables and a garage for the Ammunition Train and Academic Division motor vehicles. An old ordnance building in the vicinity of the school riding pens is being remodeled to provide for some of the Materiel Department activities.

It is believed that a few details of some of the new buildings will be of interest to the readers of THE FIELD ARTILLERY JOURNAL. The Officers' Mess, which will be located among the trees north of the Horse Show grounds, will be an excellent addition to the Post and a great aid to the social activities there. It will include a lounge, grill, kitchen, card room, loggia, large ball room, five guest rooms with baths, barber shop, a locker room in the basement, and servants' quarters in a separate building.

Each set of field officers' quarters will have on the first floor, besides a living room, dining room and kitchen, a solarium and

maid's room and bath. On the second floor there will be four bed-rooms, two baths and a sleeping porch.

The company officers' quarters will have three bed-rooms, a dressing room, and two baths, a porch upstairs and down, and, on the first floor, in addition to the usual living room, dining room and kitchen, a maid's room and bath.

The apartments in the four-family apartment buildings in the Academic Area will have six rooms (including three bed-rooms), one bath and a porch.

The non-commissioned officers' quarters will consist of a living room, breakfast room, a kitchen, three bed-rooms, one bath and a porch.

The new barrack buildings will be modern in every respect. Upon entering them the impression is received that they are more like a club than a barracks. Among the many fine features which attract attention are the fine mess hall with cafeteria equipment, the kitchen with complete and most modern equipment, the large cold storage room with electrical refrigeration, the ice water drinking fountains in the halls, and the large porches.

Great care has been used in trying to have all of the new buildings harmonize with each other architecturally. The Spanish type of architecture, as represented by most of the buildings in the New Post, has been used as the guide. All of the new structures, with one exception, will be of stucco on hollow tile, with tile roofs. The one exception is the nine-set bachelor building which is to be located in the New Post on Upton Road, just east of the semi-circle on which the Commandant now resides. As the present corresponding bachelor building, located just west of this semi-circle, is a brick structure, this new building also will be of brick.

Although several important construction needs of Fort Sill were omitted in the allotment of funds to the Army by the Public Works Administration last September, the Field Artillery has not given up hopes of completing the plant of the Field Artillery School in the near future. It is anticipated that the next Congress may appropriate additional funds for Public Works Projects, in which case every effort will be made to secure the additional funds needed to make the Field Artillery School a finished project insofar as buildings are concerned.

THE ANNUAL REPORT OF THE CHIEF OF FIELD ARTILLERY—1933

SECTION I—PERSONNEL

Regular Army

Commissioned Personnel: Strength Report as of June 30, 1933

	Cols.	Lt. Cols.	Majs.	Capts.	1st Lts.	2nd Lts.	Total
Commissioned in arm	46	76	229	404	505	313	1573
Authorized strength	68	75	235	532	377	212	1499
Difference	–22	+1	–6	–128	+128	+101	+74
Detailed to other arms and services	1	2	2	9	11	25	50
Detailed from other arms and services				*2	*5		*7
Available for assignment	45	74	227	397	499	288	1530

*Officers, Philippine Scouts.

The gains and losses during the fiscal year ending June 30, 1933:

GAINS

From the U. S. M. A., Class 1933	72
By transfers from other arms	6
Total gains	78

LOSSES

Retired	11
Resigned	2
Died	4
Transferred to:	
Air Corps	9
Adjutant General's Department	1
Coast Artillery Corps	1
Judge Advocate General's Department	1
Quartermaster Corps	4
Total losses	33
Net gain	45

Distribution of officers as of June 30, 1933:

TABLE A

	Cols.	Lt. Cols.	Majs.	Capts.	1st Lts.	2nd Lts.	Total
Graduates, U. S. M. A., 1933, unassigned						72	72
With Field Artillery Units	11	21	50	227	326	180	815
With other Field Artillery activities	16	26	135	139	109	30	455
With other Arms; General Staff; Services; Departments; Bureaus	8	15	20	10	11	25	89
With activities other than the foregoing	10	14	23	28	63	6	144
Awaiting retirement	1		1	2	1		5

In so far as permitted by the requirements of law and regulations pertaining to foreign service, service schools, other details,

"command duty" and "duty with troops," assignments of officers to regular troops are made with the view of placing especially qualified officers in the command of certain specific organizations, of effecting a rotation in command duty, and of assuring a minimum of four years' consecutive duty with troops for newly commissioned second lieutenants.

Enlisted Men: Distribution

TABLE B

	Allotted Strength Auth. 6/30/32	Actual strength as of Sept.30 1932	Dec. 31 1932	Mar. 31 1933	June 30 1933
Field Artillery Units	15,539	13,870	14,368	15,044	14,919
Field Artillery School Detachment	318	327	328	325	321
Office Chief of Field Artillery	27	27	26	24	23
Total	15,884	14,224	14,722	15,393	15,263

National Guard

The policy of assigning well qualified officers for detail as instructors with the National Guard has been continued.

The status of National Guard personnel, holding Reserve commissions, is shown below:

National Guard officers with Reserve commissions as of June 30, 1932		2,290
Gains	409	
Losses	175	
Net Gain		234
National Guard enlisted men holding Reserve commissions as of June 30, 1933		174
Total strength as of June 30, 1933		2,698

Officers' Reserve Corps

Distribution of Field Artillery Reserve Officers as of June 30, 1933:

TABLE C

Assignment Jurisdiction	Cols.	Lt. Cols.	Majs.	Capts.	1st Lts.	2nd Lts.	Total
Corps Area	80	160	449	1046	2211	5911	9857
Chief of Field Artillery	2	2	7	5	4	56	76
The Adjutant General	2	4	3	0	0	0	9
Available for active training	84	166	459	1051	2215	5967	9942
Restricted appointments	12	17	65	301	492	1995	2882
Commissioned in Reserve Corps only	96	183	524	1352	2707	7962	12824
N. G. Officers with Reserve Commissions	46	57	125	684	727	885	2524
N. G. Enlisted Men with Reserve Commissions	0	0	0	0	4	170	174
Total holding Reserve Commissions	142	240	649	2036	3438	9017	15522

Reserve Commissions Only:

	Gains	Losses	Net
Regular Acceptances	385		+385
R. O. T. C.	1114		+1114
Transfers—to and from Field Artillery	104	41	+63
Died		27	–27
Discharged		354	–354
Declined Reappointment		22	–22
Resigned		30	–30
Totals	1603	474	+1129
Strength as of June 30, 1932			11695
Strength as of June 30, 1933			12824

The following figures give the total officer requirements of all Field Artillery units contemplated by the Four Army Plan, present strength as of June 30, 1933, and resultant shortages:

	Required	Strength as of 6/30/33	Shortage
Regular Army	8398	1573	6825
National Guard	5221	*2888	2333
Organized Reserves	18633	12824	5809
Totals	32252	17285	14967

*2524 of the 2888 hold commissions in both National Guard and Officers' Reserve Corps.

This shortage necessitates that continued effort be made to build up the Field Artillery Reserve Section. It is essential, however, that this be done in a way that will not undermine qualification standards.

Reserve Officers, Field Artillery Section, in Arm and Service Assignment Group:

	Cols.	Lt. Cols.	Majs.	Capts.	1st Lts.	2nd Lts.	Total
Office Chief of F. A.	2	2	7	4	1	0	16
Sound Ranging	0	0	0	0	0	36	36
Residing abroad	0	0	0	1	3	20	24
Totals	2	2	7	5	4	56	76

SECTION II—INTELLIGENCE

General: During the past year, the reports from our military attachés in foreign countries have been studied for matters of Field Artillery interest. Foreign artillery journals and other military journals are carefully read. Any information on development in matériel, training, or organization is brought to the attention of the proper personnel of this office, to the Field Artillery Board, or disseminated to the officers of the arm as may seem appropriate.

Field Artillery information of general interest to the public is prepared in the form of press releases and submitted to the Public

Relations Branch, General Staff, for distribution to the press.

Excellent liaison is maintained with the G-2 Section of the War Department General Staff and with the Historical Section of the Army War College, both of which have cooperated most cordially in providing information of a Field Artillery nature when requested to do so.

In this connection, it may be remarked that development at present is abreast of that of all of the principal nations.

SECTION III—TRAINING

Regular Army. During the past year, this office has inaugurated a plan whereby the Service Practice Reports of field artillery organizations for each six months' period are carefully analyzed for the purpose of determining the main errors committed and the progress of the various organizations towards a satisfactory standard of efficiency. The results of these analyses are promulgated to the service through The Adjutant General. As a direct consequence of this method, there has already become apparent a general stimulation of interest and increased efficiency, both in the conduct of fire and in its direction, so far as ammunition allowances permit.

The use of new radio equipment has been stressed, and shows great promise of increased efficiency for field artillery use, especially in liaison work.

In connection with liaison, progress has been made in the methods of reporting and designating targets on which fire is needed. Special attention is being paid to adjusting or observing fire on such targets by liaison officers, particularly with radio communication and without maps.

The methods of concentrating a battalion on a target, using air observation or observation by a liaison officer, has developed so that the concentration may be effected promptly, using as a basis the adjustment of only one battery.

A graphical method has been developed for handling the tedious problems of distribution when shifting fire with staggered positions of the guns, materially simplifying this matter.

The following training regulations have been revised and issued to the service during the past year:

TR 430-15, Service of the Piece, 75mm Gun, M1897
TR 430-25, Service of the Piece, 75mm Gun, M1917
TR 430-65, Service of the Piece, 155mm Howitzer, M1917 and M1918.

Tentative TR 430-130, The Sound and Flash Battalion, Tentative Training Regulations for the Service of the Piece, 75mm Gun, M1897, Truck-drawn, and Tentative Regulations for Maneuvers, Marches and Inspections, 75mm Gun, M1897, Batteries, Truck-drawn, have been published and issued.

Progress has been made on the project for instructional films. It is expected that the films "Conduct of Fire" and "Reconnaissance and Occupation of Position by Battery" will soon be completed. The script for the film, "Preparation of Fire," has been submitted for approval.

During the past year, 10 field artillery officers were graduated from the Army War College and 19 from the Command and General Staff School. In addition, field artillery officers were in attendance at special service schools as follows:

School	*Number*
Cavalry School	2
Infantry School	2
Signal School	2
Air Corps Tactical School	2
Chemical Warfare School	12
Army Industrial College	2
Tank School	0
Italian Cavalry School	1
Polish Cavalry School	1
Quartermaster Motor Transport School	2

Under the provisions of the National Defense Act, field artillery officers completed courses, applicable to the military service, at the civilian educational institutions indicated below:

Purdue University (Communication Engineering)	2
University of Pennsylvania (Sound Ranging)	1

These special courses are provided for field artillery officers, in order to give to the arm trained specialists for use in considering

technical questions in the Office of the Chief of Field Artillery, on the Field Artillery Board, and as instructors at the Field Artillery School.

The Knox Trophy, awarded annually by the Sons of the Revolution, in the Commonwealth of Massachusetts, for that field artillery battery of the Regular Army which shall have obtained the highest rating in a general efficiency test prescribed by this office, was won this year by Battery "B", 11th Field Artillery, Schofield Barracks, H. T. This battery was commanded, at the time of the test, by Captain William R. Philp, Field Artillery.

The Knox Medal, awarded annually by the same society for excellency at the Field Artillery School, was won this year by Sergeant Clarence Scott, 1st Field Artillery, Fort Sill, Oklahoma.

The Field Artillery School. All of the prescribed courses of instruction have been conducted according to the approved programs, with the exception that those in progress on May 22, 1933, were terminated on that date in accordance with War Department instructions.

The tables below show the number of students who pursued the various courses at the Field Artillery School during the school year, 1932-33:

OFFICERS

Course	Duration		Students			
	Months	Hours	Graduated	Failed	Relieved	Total
Advanced Course	8 1/3	1366	48	0	2	50
Battery Officers' Course	8 1/3	1344	48	1	0	49
Advanced Course in Horsemanship	8 1/3	1343	6	0	0	6
Advanced Course in Motors	8 1/3	1235	7	0	0	7
Refresher Course	1	150	1	0	0	1
N. G. and Reserve Battery Officers' Course (Fall)	3	487	22	1	1	24
N. G. & Res. B. O. Course (Spring)	3	504	43	1	0	44
N. G. & Res. Field Officers' Course	1½	240	10	0	0	10
Totals			185	3	3	191

ENLISTED SPECIALISTS

Course	Duration		Students			
	Months	Hours	Graduated	Failed	Relieved	Total
Horseshoers' (Fall)	4	680	9	0	0	9
Motor Mechanics' (Fall)	4	680	6	0	1	7
Saddlers' (Fall)	4	680	6	0	0	6
Communication, Regular Army and National Guard (Spring)	3 2/3	656	56	1	6	63
Battery Mechanics' (Spring)	3 2/3	564	9	0	0	9
Saddlers' (Spring)	3 2/3	659	4	0	0	4
Totals			90	1	7	98

Instruction at the Field Artillery School is almost wholly practical—the School Troops being used to the maximum in this connection. It is the one place where officers are assured of commanding troops under some semblance of proper field conditions in the solution of tactical problems. The instruction at the School has been most beneficial in increasing the efficiency of the Field Artillery as a whole. This is due, in no small part, to the excellent instructional staff at the School.

National Guard. By means of contact with the National Guard Bureau, this office was enabled to assist materially in the drawing up of the plans for the motorization of certain National Guard Field Artillery organizations. The training of these truck-drawn organizations is being facilitated as a result of the prompt writing and issuing of tentative training regulations for truck-drawn artillery. This office assisted the National Guard Bureau in drawing up a memorandum on training field artillery officers of the National Guard.

Officers Reserve Corps. Special training in sound ranging was given to selected groups of Reserve Officers of the Field Artillery Arms and Services Assignment Group—the outcome of which will be the distribution to many field artillery reserve units of officers equipped to carry on and instruct in sound ranging.

Reserve Officers' Training Corps. A new program of instruction has been issued. It is better adapted for the use of the units than that previously used, and should result in more efficient training.

Extension Courses. Seven subcourses and four text books have been revised for 1933-34 and two new text books published, effecting a decided improvement in the Field Artillery Extension Courses.

SECTION IV—MATÉRIEL AND EQUIPMENT

General. Notable progress has been made in two lines during the past year: (1) The employment of commercial trucks as towing and cargo trucks in artillery units, replacing the horse and the tractor; and (2) The development of a training device for Field Artillery firing known as the Field Artillery Trainer.

It becomes more nearly certain that commercial motor vehicles will satisfy most of the requirements in artillery transport. This

development has given a decided impetus to gun carriage development. It has had its effect upon communications development since radio seems to be the only means for control of high speed columns. It is having its effect upon fire-control and ammunition development, in order to fire at high speed targets. Changes in organization and in methods of tactical handling will follow as the new matériel is developed and service tested.

With the ammunition allowance per battery officer, during the current year, only half of what it was before the War and, with the prospect of little or no ammunition in the coming year for field artillery training, it became a vital matter to devise some means for keeping the art of field artillery firing alive. This was accomplished in the design, development, and advancement to limited procurement in the past year of the Field Artillery Trainer. This is a miniature gun on which the regular panoramic sight and gunner's quadrant are used for laying. This gun fires one inch steel ball bearing with a .22 caliber blank cartridge as propellant. Four of these guns, constituting a battery, provide a highly realistic firing practice on a reduced scale of 1/100 and at the negligible cost of the blank cartridges fired. They also provide a means for execution of battalion fire direction that would be prohibitive in cost under peace-time conditions if real ammunition were used.

Weapons and Mounts

Cavalry Division Artillery—The pilot 75mm howitzer mounted on a pneumatic tired, split-trail carriage has been tested by the Field Artillery Board and found highly satisfactory. It is planned to test a battery of these howitzers during the year 1933-34, both animal-drawn and motor-drawn, for support of cavalry. This weapon is receiving serious consideration as an infantry division weapon.

Infantry Division Artillery—The pilot split-trail carriage for the 75mm gun, M1897, designed for high-speed towing and permitting 90° traverse, 45° elevation without a recoil pit and other desirable features, has been tested at the Proving Ground and appears to be generally satisfactory. It is to be sent to The Field Artillery Board for test in the near future. This mount is intended,

primarily, to modernize our present light guns—permiting high speed towing; increase of crank traverse, thus facilitating fire at high speed targets, and fire at long ranges without time-consuming preparation of a recoil pit.

This year has seen the culmination of a series of attempts to provide adapters for the 75mm gun, M1897, which will permit a quick and inexpensive substitution of pneumatic tires and high speed bearings for the old wooden wheels. Two designs have been advanced to a limited procurement status, and, in order to meet the needs for test in the truck-drawn battalion, one of these types has been produced in considerable quantity. While this adapter permits high speed towing, it has none of the other advantages of the modernized carriage referred to in the paragraph above.

Modification of the 75mm gun, M1917 (British), for high speed towing has been accomplished in a similar manner by substitution of pneumatic tired automobile wheels for steel-tired wooden ones. A battery of these is being produced for extended test.

A pilot carriage for the 75mm gun, M1, was built and found not wholly satisfactory as a high speed modern light gun carriage. A battery, eliminating the unsatisfactory features found in the pilot, is now almost completed.

The battery of 75mm guns, T2E1, known as the "All-Purpose," which permit all-round terrestrial and anti-aircraft fire, should be completed and ready for test by the Field Artillery in about two months.

Due to reductions in allotments, the manufacture of a pilot 105mm howitzer, incorporating high speed and other desirable features, had to be eliminated from the program for Fiscal Year 1934.

Corps Artillery—The attempts to utilize the present 155mm howitzer carriages, M1918, for high speed towing by improvement of the wheel bearings have not been satisfactory so far, due to the inability of the war-time solid rubber tires to stand up at speeds of twenty miles an hour. It will probably be necessary to go to a more expensive modification, involving use of pneumatic-tired or new solid rubber-tired wheels. The elimination of the

limber by placing a lunette on the end of the trail of this howitzer has been tried out by the Ordnance Department and looks promising. A carriage with this modification was sent to the Field Artillery Board early in July.

Due to reduction in allotments, the manufacture of a new pilot 155mm howitzer had to be eliminated from the program for the Fiscal Year 1934.

Heavy Artillery—Modification of the 155mm gun, M1918 (GPF), for towing at 20 miles per hour has been accomplished and tested in a battery at Fort Bragg. Due to insufficient closures, the sand worked in and damaged the bearings seriously. Efforts are being made to correct this defect.

The pilot 155mm gun-8″ howitzer carriage, T2, has been tested and found highly satisfactory by the Field Artillery Board. Due to fiscal reductions, the battery of these contemplated in Fiscal Year 1934 had to be eliminated.

Miscellaneous Mounts and Weapons—The 75mm truck mount, T6, was tested and found undesirable as a standard mount for field artillery.

Representatives of the several arms met at Aberdeen Proving Ground with members of the Ordnance Department, tested out various anti-aircraft machine gun mounts and agreed upon plans for continuing this important development.

Ammunition—Substantial progress has been made during the past year in the service test of ammunition. The following items of ammunition were tested with the results indicated:

Item	*Result of Test*
H.E. Shell (15-lb.) for 75mm Pack Howitzer	Recommended for standardization.
H.E. Shell for 75mm Gun. M1	Test not completed. Awaiting delivery of battery of new guns.
Shrapnel for 75mm Gun, M1	Partial test indicates this ammunition is satisfactory. Further test awaiting delivery of battery of new guns.

Drill cartridge for 75mm guns, Models 1897, 1916, 1917	Adopted as standard. Will be issued to the service presently.
H.E. Shell for 105mm Howitzer	Not wholly satisfactory for adoption. Minor defects being corrected and further test will be made in the near future.
Shrapnel for 105mm Howitzer	Adopted as standard.
Special propelling powder for charges 1-5, incl., for 155mm howitzer	Adopted as standard. These charges give a marked improvement in accuracy.
Propelling charges with increments to eliminate flash, 155mm gun	Unsatisfactory for adoption. Further development in progress.
T1E2 fuze for 75mm and 155mm guns. A modified Mk III fuze	Adopted as standard to replace the Mk III fuze in ammunition of World War type.
H.E. Shell for new 155mm Gun	Unsatisfactory for standardization. Further development in progress.
H.E. Shell and Shrapnel for 4.7″ Gun—old type	Tests to develop new methods and technique of gunnery are not yet completed.

The new 15 pound H.E. Shell for 75mm weapons is now available for test. The service test of this projectile in 75mm weapons of all types should be completed during February, 1934. Proving ground tests indicate that the ballistic qualities of this shell are excellent.

H.E. Shell for the new 8-inch howitzer is about ready for service test.

Considerable progress has been made in the development of time fuzes for high explosive shell of all calibers, but the ultimate solution of the problem is not yet in sight. Effort is being directed towards the development of a combination time-super-quick

fuze of the powder train type and a mechanical time fuze having a maximum time of burning adequate for long range weapons. As a preliminary phase of this development, time shell equipped with present standard fuzes have been developed for all calibers to include the 155mm gun. Ammunition of this type is now available for test in the 75mm gun, and service test lots for other calibers are expected to be available in the near future.

Experimentation has been continued by the Chemical Warfare Service with the purpose of developing improved non-toxic fillers for chemical shell.

Signal Equipment

Radio—Reports reaching this office, relative to new types of radio sets issued to the service a little more than a year ago, indicate that this equipment is proving to be a big improvement over previous types of radio equipment, and that increased dependence is being placed on radio communication. It has developed, however, that these sets are defective in some technical details and action is being taken to eliminate these defects.

The new radio set for ground-air use, to replace the SCR-109A set, is ready for service test. This set also is being considered for use in moving vehicles to communicate between ground units for purposes of march control.

Service test has been completed of the light weight, ultra-high frequency radio set. The results of this test indicate that this type of radio equipment has a most promising field of application to this arm. Some minor modifications of the service test equipment were found necessary, in order to increase the reliable range of the set. New sets with these modifications have been developed and are ready for service test.

Radio pack equipment is now available for issue to all active units.

Telephone—Service tests of the new field telephone, type EE-8, were completed and this telephone has been adopted as standard. A limited number of the new telephones will be issued to field artillery units in the near future.

Telephone Switchboard—Several new types of switchboard, including a cordless type, were submitted to the using service Boards for preliminary examination to determine the type desired

for further development. The improved monocord type was accepted and this type will be furnished for service test.

Wire Laying Equipment—A hand wire laying device has been adopted as standard.

Wire pack equipment is now available for issue to all active units.

A motor-driven reel, for laying and recovering wire from any suitable cargo vehicle, has been tested by the Field Artillery Board and recommended for adoption. A two-horse wire reel has been developed and is now under test by the Field Artillery Board.

Signal Lamp Equipment—Service test has been completed of a new signal lamp, type EE-84-T1. This lamp was found to require some modifications, which are now being made. Test will be continued with the modified lamp.

Sound and Flash Ranging Equipment—Difficulty has been experienced in the development of sound ranging microphones, which will give satisfactory results, particularly at long ranges. Development continues on this project.

Tests are in progress to determine the meteorological data and equipment required for sound ranging purposes.

A new flash ranging switchboard has been developed and is now under service test.

Sound and flash ranging trucks have been developed and are undergoing service test.

Fire Control Equipment

A new aiming circle has been developed and tested by the Field Artillery Board. It was found unsatisfactory. A modified instrument will be ready for test in the near future.

A night lighting system for fire control instruments was developed by the Ordnance Department and tested by the Field Artillery Board. It was found unsuitable. Three different types of equipment for this purpose are now being procured for further test.

A new instrument pack is being developed and is expected to be available for test in the near future.

Tests have been made of a simplified fire director to determine its applicability to the division artillery for fire at fleeting targets

from defiladed positions. The particular instrument tested was not satisfactory, but information obtained from the test resulted in the determination of definite characteristics of equipment required for this purpose.

A simple transmission system has been developed for transmitting data electrically from a director or observing instrument to mechanical pointers at, or on, the gun. This system will be tested with the new high speed carriage for the French 75mm gun.

A simplified antiaircraft director with transmission system and observation post instruments has been procured for test with the battery of all-around fire guns mentioned above.

A sound ranging plotting board has been developed, tested, and recommended for adoption as standard. A flash ranging plotting board also has been developed and is under service test.

Motor Transportation

This development has been most active during the past year.

The light truck-drawn battery was tested at Forts Bragg, Humphreys, Meade, Ethan Allen, Sam Houston and Sill, in both strategic and tactical maneuvers, during the past year and has shown up remarkably well in 8,000 miles of travel under varied conditions of weather and terrain. Before making a decision as to the extent to which light trucks should replace animals, it has been decided to extend this test to that of a battalion at Fort Sill. The additional vehicles for this unit are being procured at this time. This type of transport has rendered the portée equipment of GHQ reserve light artillery obsolete and shows promise of replacing animals to a large extent in other units.

There are to be tested in this battalion three types of light trucks as prime movers: The four-wheel two-wheel-drive trucks in the original battery; the six-wheel four-wheel-drive trucks in another battery, and the six-wheel two-wheel-(middle axle)-drive truck in a third battery.

In using these light trucks as cross-country towing vehicles, there are many features that require study and development, in order to get adequate efficiency. Such features include auxiliary transmissions and traction devices.

A half-track truck has been tested and found highly efficient, except for excessive wear of the track in sand. Additional vehicles

of this type are to be tested in the near future as prime movers for artillery with mechanized cavalry. These are to be commercial trucks with the half-track feature incorporated in them.

A light tractor capable of 20 to 25 miles an hour is to be tested in the near future. This is also of commercial manufacture.

The following light truck-drawn batteries are being provided in June and July, 1933, for test:

105mm howitzer battery, using light six-wheel, four-wheel-drive trucks as prime movers.

75mm gun, M1, battery, using four-wheel, four-wheel-drive trucks as prime movers and

75mm gun T1E2 (All Purpose) battery, using six-wheel, six-wheel-drive trucks as prime movers.

Investigation has shown that, with suitable traction devices, the modernized Class "B" trucks have possibilities for use as prime movers for 155mm howitzers.

A General Motors Company truck is being sent to the Field Artillery Board for a similar purpose.

It is planned to organize, in the near future, a truck-drawn 155mm howitzer battery in which the above types of trucks and the various 3-5 ton trucks of the Quartermaster Corps Experimental Fleet may be given a sufficiently extended test to determine their possibilities.

Test of a battery of 155mm guns, using 10-ton Sterling trucks for gun-towing, was held during the past year. The trucks were found sufficiently satisfactory to advance this test to one of extended service in Battery "C," 5th Field Artillery. The difficulties experienced with wheel bearings in the 155mm guns has delayed this further test.

A commercial heavy half-track tractor-truck has been given some preliminary tests by the Ordnance Department and showed surprising cross-country ability with the 155mm gun as well as good performance on highways.

Miscellaneous Equipment:

A carrying case for the 24″ × 31″ plane table and associated items of equipment has been developed and is ready for test.

Tests of several different types of gas masks have been completed.

Continued development of light weight mask was recommended.

Development of a satisfactory method for the de-mustardizing of artillery matériel and of other equipment in the field, by battery personnel, is being carried on by the Chemical Warfare Service with prospects of a solution in the next fiscal year.

Equipment of Regular Army Field Artillery:

Due to shortage of funds, there was no inspection of Regular Army Field Artillery units made by the Chief of Field Artillery in the past year. According to reports, it appears that:

The animal transport is generally serviceable for garrison duty, although the average age of animals is high. An indication of their unserviceability for field duty is the fact that a number of animal deaths occurred in a march from Fort Benjamin Harrison, Indiana to Fort Knox, Kentucky last spring.

Equipment of the three 155mm howitzer regiments in the United States, the 5th, 9th, and 17th Field Artillery, with new tractors has been completed by the Ordnance Department during the past year, replacing those of wartime manufacture.

The 1st Battalion, 6th Field Artillery was equipped throughout with light trucks during June, 1933, replacing trucks of wartime manufacture, and converting it from a portée to a truck-drawn unit.

The remaining motorized units are still short nearly 70% of their authorized allowance of wheeled motor vehicles and, accordingly, unable to conduct maneuvers without resorting to one of two expedients:—reducing their mobility by executing reconnaissance on foot, or use of privately owned automobiles of officers and enlisted men—an expedient that should be prohibited.

Tables of Basic Allowances for all Field Artillery Troops were revised during the past year and issued to the service.

SECTION V—WAR PLANS AND ORGANIZATION

War Plans:

A detailed study for the Four Army Plan, and its effect upon the Field Artillery, has been in process since the receipt of the Plan.

Training schedules for the 75mm horse-drawn regiment, for a period of sixteen weeks, including recruit, battery, battalion and regimental training, have been prepared and submitted to the War Department for approval. These schedules are to be used as a guide for Reserve Artillery organizations in case of a mobilization and as an annex to the General Mobilization Plan.

A study of the subject of Motorization of Field Artillery has been in process throughout the year.

Organization:

No new tables of organization have been prepared.

No changes in organization have occurred during the past year.

All grades and ratings reserved for allotment to the Field Artillery by G. O. No. 1, War Department, dated January 24, 1931, and those allotted through the absorption of two Field Artillery bands in the Hawaiian Department, have been allotted to organizations.

H. G. BISHOP,
Major General, U. S. Army,
Chief of Field Artillery.

SOME DIFFICULTIES IN SUPPORTING AN INFANTRY DIVISION

BY BRIGADIER GENERAL LUCIEN G. BERRY, RETIRED
Formerly Commanding 60th F. A. Brigade

IN the September-October, 1933, number of THE FIELD ARTILLERY JOURNAL appears a continuation of the articles of Colonel Conrad H. Lanza, F.A., which is entitled "Supporting an Infantry Division." It relates to the action of the 35th Division on September 29, 1918. Colonel Lanza has shown so much research in these studies that his work will be of permanent historical value, if errors and omissions of important facts are corrected.

The first broad fact to be gathered from this article is that on this date the infantry units of the division had lost their organization. The reasons why should be stated. One was that combined with their own efforts and the crushing fire of the divisional artillery, the Division had practically destroyed the two German Guard Divisions opposed to it. But in so doing it had lost one general officer. General Nuttman, and many field officers through casualties. Other reasons were that defects in supply and equipment had produced their results. A fresh meat ration, requiring cooking, had been issued. My own officers of the divisional artillery, got one warm meal a day to their men, but the infantry soldiers had had little or nothing to eat for a couple of days. A further reason which might seem small, but of overwhelming importance as it turned out, was the fact that the Divisional Signal Battalion had been equipped for the battle with bell wire for their communication lines. This was a small copper wire covered with paraffined cotton. The same type of wire had been issued originally to the divisional artillery, but my efficient signal officer. Lieutenant Floyd, had found that it was not sufficiently insulated to withstand the climate. Through the division signal officer I insisted on receiving proper wire. My lines were frequently cut and repaired, but at practically all times I could talk with any part of my command. The Division Signal Battalion had very efficient personnel but the lines which it laid with this bell wire might last for a few minutes and then go out. Generally speaking there was no communication with the infantry

regiments. I was never able to talk with my liaison officers and their important part both in facilitating the infantry advance and in counterbattery was omitted.

Without rapid and efficient communication an organization as large as a division will go to pieces. The system prescribed was a good one, but the bell wire was so weak a link in the chain that it nullified all communication. Later my command supported the 81st Division in its advance and extended the artillery communication net to include the liaison officers. While our lines were used for other than artillery purposes, they greatly facilitated our work both in supporting the infantry and in counterbattery. The 81st Division did not lose its organization.

Another fact of importance should be stated for a fair unbiased historical account. There was an observing party for the Corps Artillery on this front but the observer was neither on this nor any other day connected with a gun. Consequently the commanders of the Corps and Army Artillery, whose duties were particularly counterbattery, contented themselves with a wild guess as to the areas which they should shoot up. They had no touch with the front. They guessed wrong and shot up not only the 35th Division, but the adjacent part of the 91st Division. The hostile artillery showed no effect of their fire. I believe that Colonel Lanza's article is in error in stating the position of the guns of General Aultman's Brigade of the Army Artillery. I believe they were in their original position on this date, south of Boureuilles, otherwise I might have heard and stopped their firing. On this date for the first time since the campaign opened I received a report that the infantry was suffering from the fire of their own artillery. A check up of our own guns showed no possibility of their being at fault. I suspected some of the attached French artillery and assigned them another mission. But the French artillerymen showed themselves to be good gunners throughout my experience with them. When I later learned that the same thing had been reported in the adjacent part of the 91st Division, the French artillery was acquitted. The 91st Division had stopped the fire of all their own guns, but the complaints still continued. While map firing presents a way of laying the guns, the selection of the area to be shot up, which may contain friend or foe or neither, by the mere guess of an officer

not in touch with the front is a dangerous procedure. I have no doubt now that guns of the Army Artillery were responsible.

The above present some of the reasons not only for the disorganized state of the infantry units, but also for the difficulty in reorganizing them.

There are some errors in the article with respect to the attached French artillery. Of the 317th Regiment (155mm howitzers) I had only one battalion, which reported on September 29th, short of ammunition. As the situation then stood I held them in reserve with orders to replenish their ammunition as soon as possible. One battalion of the 219th Regiment had moved forward on the 28th and had been assigned a position east of Charpentry. But considering that position too advanced, it had moved on the night 28-29 September to a position west of Cheppy where it was joined by the other two battalions of the regiment. This was a 75mm portee regiment, and it was actively engaged throughout the day. The 451st Regiment (105mm guns) had joined on September 28th, in response to my request for counterbattery guns. On September 27th this work had to be done by guns of the 129th F.A., and all of these guns were needed for work with the infantry.

The engineers had been slow in repairing the roads so much so that my original advance on September 26th had been held up by impassible roads. But it was reported to me on the afternoon of the 27th that the roads were passible.

The 451st had been able to report and it was supplied with ammunition. The commanding officer of the regiment. Lieutenant Colonel Chaplin, was most zealous and the regiment rendered distinguished service on September 29th.

I went into action on September 29th with 84 75mm guns, 24 155mm howitzers and 24 105mm guns.

The tactical situation was that while the German forces on this front had been defeated, our advance had brought to the considerable German forces in the Argonne Forest a menace which their commanders could see as well as our own. Evidently they decided to put forth every effort to stop us. Our posiiton was favorable for such an effort. We had advanced into a salient, where a concentration of artillery fire from right, left and front was possible. We received such fire. I propose to enumerate

some of the positions which were located and the means taken to reply.

Before doing so one thing should be said as to conclusions which might be drawn from the firing records. On September 28th the Corps Commander issued an order forbidding the divisional artillery to fire on targets outside of its zone of action. Unforunately this order was distributed as a matter of routine. The terrain of the 28th Division on our left was very difficult and its artillery had not advanced from its original position of September 26th. Although counterbattery was their work, the Corps and Army Artillery had shown no activity. The danger to the command from the heavy enfilading fire from our left was evident to all. Owing to the above order my officers asked my permission before opening fire on targets in this vicinity. As I always gave permission the order lasted about a day and was then considered dead. But an examination of the official firing records may not show the exact target fired at on this day. While on the records, the article comments on a rolling barrage fired at two shots per minute. All rolling barrages, including this one, were fired at six shots per minute. The following morning I fired a standing barrage at two shots per minute. The two may have been confused in the records.

When the subject of counterbattery is touched it opens up a beautiful field to the critic. It is very difficult and in most cases the best that can be done is to neutralize hostile fire. Map firing, whereby a commander selects by pure guess an area which may contain friend or foe or nothing, is not the solution. The important thing is to locate the target. In this effort the first to act should be the liaison officer with a prompt report of the kind and direction of fire. The next ones are the observers who can see in that direction. If told where to look I found that they could pick up an amazingly small amount of haze or vapor. A plotting board in a central place is a necessary adjunct. While a hostile battery is firing it presents practically the only opportunity for an aviator to locate it. The aviators should be busy then. They should know how to read the terrain. The French had prepared a confidential map of this area which was about 50 per cent correct in locating the German batteries as of the date of issue. Of course it did not cover roving guns or any batteries

that had changed position. Having been unable to use my liaison officers, owing to a failure of divisional communication, it was necessary to spread out a wide net of observers. We first connected the artillery net with the 28th Division Headquarters, with the idea of borrowing their assistance. But on calling them on the morning of September 29th, they were busy, and it was decided to send an observer from the 130th F.A. into their territory.

I wish to enumerate some of the actual things which happened on this day along this line. Early in the morning of September 29th I received a telephone message from the French O.P. on the Mamelon Blanc locating a hostile battery then in action to the west of Apremont. This O.P. was far to the rear, but the observers knew the ground and had accurate instruments. So I connected them with the C.O. 451st French Artillery with orders for him to fire on this battery. Just to the north of Apremont along the Aire River an observer of the 129th F.A. saw an active German battalion. This was put out by observed fire from Major Miles' battalion of that regiment aided by a cross fire from the 130th F.A.

Prior to this operation the Germans had constructed a high skeleton tower on the hill behind Chatel Chehery to observe the ground behind the former French lines. This tower then in active use was shot down on September 27th by Major Rumsey's battalion of the 128th F.A. But the fact that the tower had been there indicated that this was an artillery center. The country around was cut up into ravines, and positive information was hard to get. Lieutenant Colonel Chaplin brought me a "just issued" confidential French map showing a battery position to the north of the village. I had him fire on that position as well as some others that seemed possible locations. That location seemed to have a charmed life, for later when I called for an aerial reconnaissance of the place, the Germans brought the two planes down. I spent a lot of ammunition on that place.

To the east of the Aire River, not far from Fléville, an observer from the 129th F.A. picked up a hostile artillery location, which they fired on.

I received valuable information from the air for the first time. Our airmen were great bluffers. On the preceding day they had

sent me by wireless a message locating a hostile battery, which when carefully plotted was off the map. Either the observer could not read the terrain or was putting up a bluff. A plane had called for artillery fire with the idea of observing and regulating the fire. This call was responded to with the proper signals. An observing plane unaccompanied by fighting planes was out of place in that vicinity. They seemed to know that and as soon as they had sent the signal. I saw the plane going south at high speed. I recognized it at the time as a bluff. On the 29th all of the German batteries were in action and therefore the conditions for observation from the air were favorable. An aviator brought me a map on which hostile locations to our front and right and left were marked. He reported the position at Apremont which our observers had just located. He also reported a battalion south of the road leading east from Exermont in the edge of the zone of action of the 91st Division. The battalion shot up the vicinity of my C.P. By watching the fire of this battalion I was able to verify its location. The map was therefore accepted as correct, and action was taken accordingly. I gave Lieutenant Colonel Chaplin the credit for putting out the last described battalion.

I observed at the same time fire coming from German 155mm high power guns. This is a very powerful and accurate gun, with always a deadly effect on the infantry morale. By carefully measuring the angle of fall and the direction, as the shots came through the smoke of previously exploded shells and by consulting the map and range table, they appeared to come from the direction of Romagne. By consulting the confidential map, it appeared that such a battery was located there. As these heavy guns occupied nearly permanent emplacements, the location was assumed to be correct. For this reason Captain Watzek of my staff went to the 91st Division with a request that they arrange to silence this fire. He found some confusion there. On his return I gave the Corps Artillery the location and asked the proper action from that or the adjoining Corps. It may seem that I was putting too much reliance on such measurements, but I had used them before successfully.

This rather detailed account is given to indicate the tactical situation of the command. A supreme effort was made by my

command to meet it. An effort to advance with disorganized parts of the command had happened to coincide with an attack by fresh troops of the enemy. We had located and held down the fire of six artillery positions, and were doing something to two more. As soon as our own and the hostile troops could be definitely located, we stopped the enemy from further advance.

On the afternoon of that day Captain Henry M. Brown of the Ammunition Train telephoned me from the ammunition depot. He said that a French General from Paris was there and had closed the depot for issues to the Americans. He brought him to the telephone to talk to me about it. By appealing to his patriotism and explaining the seriousness of the present situation, he was persuaded to disobey his orders and open the depot. I felt sure that he would not have taken such important action without notifying the higher American authorities. Later I found that he had visited General Pershing's headquarters and announced what he proposed to do.

Figure over this as you will it appears certain that the conviction was abroad in Paris that they had lost the war. The action of the 35th Division in wiping out a Guard Division commanded by one of the Emperor's sons was a decisive fact which finally convinced the Germans that they had lost the war. The Crown Prince and Von Ludendorf both say so in their books. It all happened this same day, September 29th. The German application to President Wilson for an Armistice, which he refused to grant and which became known about October 2nd, changed the attitude of the French. It may be truly said therefore that the 35th Division played a decisive part in the history of the world.

It has been attacked by military politicians overseas and by local politicians at home, but history should tell the truth.

THE RAVAGES OF TIME

BY COLONEL C. D. HERRON, FIELD ARTILLERY, EXECUTIVE FOR RESERVE AFFAIRS

(Extract from an address at the 1933 Annual Convention of the Reserve Officers' Association of America)

WE all grow old—some gracefully and some not. But the manner of growing old is another story! It is true that old age is relative. Youth is one thing to the baseball player and another to the grounds-keeper. It is well to consider what it means to the officer whose heart's desire is to command troops in war. Over us all, nearly half a generation has passed since that chill November morning when the brief but decisive American intervention ended. Since then, fifteen winters and fourteen summers have drawn upon our vitality and slowed our step. None have escaped the arrows of Time.

Of all the combat officers known to me, who in that War reached the front line and lasted until November the eleventh, the oldest was fifty-two. Undoubtedly there were some who were older, but in the main, their elders had either achieved promotion or had been moved to places not so arduous. The further reductions in age that three years of war would have made for us were indicated by General Pershing in 1917 when he said that there were then "very few British or French division commanders over forty-five, or brigadiers over forty." Which is to say that their juniors, the regimental officers, were under forty.

If fifty-two be the upper age limit set by the God of War for a mere summer's campaign, many of us, like the great commander, Moses, before the promised land, are surely doomed to bitter disappointment when war comes. Theirs is the prospect of bringing to the very threshold of war trained youth and then standing aside in its favor.

It may be surmised, but it is only a surmise, that when war comes, those Colonels of the Regular Army rated "Superior" and not more than sixty years of age will receive promotion. Those with lesser ratings will not do so well. However, all over fifty might as well recognize the fact that unless they prove to be Pershings or Hindenburgs, their enjoyment of such promotion will be fleeting. Father Time and Father Mars constitute an irresistible team and to them gray hairs are anathema.

But Colonels are not the sole recipients of Father Time's unwelcome attentions. His impartial eye also takes in the juniors. When the Armistice so rudely interrupted his winnowing, a few, but not many company officers above thirty were to be found on the front line. And some Majors over forty. But, by and large, their elders, like the Colonels above fifty-two, had gone. The spirit was willing, but the flesh was weak.

For combat troops, there is for every rank an age above which it is futile for the individual to attempt or the Government to permit front line duty. And the more junior the officer, the greater his need for youth. The Regular officer can expect immediate promotion of one grade on the outbreak of war, largely into the nine Regular divisions, but he cannot expect front line service unless his age fits his rank. The Reserve officer, on the other hand, holds in peace the grade he will hold in war until battle casualties produce promotion for all.

It is all very well for gray-beards to frisk merrily about and sound the loud bazoo concerning their youthful vigor, but they deceive themselves only. We are no better men than were those whose 1918 ages were what ours now are and we serve our own best interests when we dispassionately contemplate the facts. Congress can decree that we remain on the active list until we are sixty-four, but no law can make us fit to take the field at that age.

THE EFFECT OF ARTILLERY FIRE

BY MAJOR GEORGE D. WAHL, FIELD ARTILLERY

FOREWORD

The accompanying article was delivered in the form of a lecture to the students of the Advanced Class at the Field Artillery School. The purpose of the article is to bring to the attention of the officers of the Field Artillery the pressing need of historical research for the improvement of artillery technique, not only in the tactical application of artillery fire, but also in the handling of artillery in situations as they actually occur in battle as contrasted with the carefully censored ones which are presented in the class room. The historical examples and many passages from the accompanying article were extracted from a lecture delivered by General Faugeron of the French Army to the officers of the garrison of Nancy. The arrangement and deductions are the author's own work. The author makes no claims for originality. His sole purpose is to attract attention to the need for historical research.

IN HIS book on "The Principles of War," Marshal Foch quotes General de Peucker as follows: "The more an army lacks war experience, the more it needs to make use of the history of war for its instruction. Although the history of war is no substitute for actual experience, it can be a foundation for such experience. In peace time, it becomes the true method of learning war and of determining the invariable principles of the art of war."

This quotation is particularly applicable to the subject of artillery fires. We can deduce many pertinent facts from experiments on the proving grounds conducted with inanimate targets, but these results must be accepted with caution. Silhouette targets receive our fire with stoical calm. They do not maneuver and take shelter. Neither are they capable of feeling fear. Their morale is always of the best. The results of the proving ground experiments must be modified to conform to the lessons of military history if even approximately accurate conclusions are to be reached.

Unfortunately, the study of military history is not looked upon with favor in this country. It is read too often as one would read an account of a football game—to find out just what "Willie" did—rather than as a serious study to determine wherein the combatants' technique was good or faulty and whether or not the problems which arose would have been solved successfully by our methods or, if not, what modifications would be advisable. We have too many artillerymen in our service who, their memories still fresh with their brief war experiences, are perfectly satisfied when they receive the accurate coordinates of a target. They feel no pressing need to know its size, characteristics or comparative

vulnerability to our fire. Too often we find the same number of batteries used to neutralize an enemy deployed on a 600 yard front and on a platoon marching down a road. In other instances, we find the same number of rounds used on an enemy target in the open and one sheltered by trenches. We have no uniform conception of the effect produced by various projectiles on varying types of targets. Likewise, we have few carefully thought out methods of execution of fires to produce what might well be referred to as standard results.

It is quite fitting, therefore, that we examine a few examples drawn from real life in commencing a study of tactical fires in order that we may appreciate the purpose underlying the technique which will be developed. The artilleryman on the battlefield is like a big game hunter. No big game hunt was ever conducted successfully without a clear understanding of the habits of the prospective quarry. With this in mind then, let us turn back a few pages of history and see what effect projectiles have had on animate and material targets and see if we can not deduce something of value to us for future reference.

Destruction is the most severe of all artillery effects. In a lecture to the officers of the Nancy garrison, General Faugeron declared cryptically, "Artillery destroys everything—and destroys nothing." Here are some examples he used:

During the action of the Army of Alsace which preceded its occupation of Mulhouse in August, 1914, the 3d Battalion, 5th Artillery (French) took under fire a German artillery battalion near Brunstatt. A civilian witness states that the French fire demolished the materiel, killed almost all the cannoneers and later, turning to the limbers, killed a great number of horses.

Also in August, 1914, but near Sedan, Captain Bigot, commanding the 5th Battery, 35th Artillery, observed several German batteries on the road. These were taken under fire and immobilized one after the other in a few minutes.

In both these instances, the target was exposed to direct observation of the attacking unit. They both occurred during the opening engagements of the war. Let us see what occurred later on when the war had developed better technique.

At Verdun, during the year-long battle of 1916, German artillery

fire destroyed about 600 guns and 900 gun carriages manned by the French.

On the German side, a battery of two 150's in the Bois de Montricelle, 1,500 meters west of Hautecourt in the Woevre, had fifteen pieces destroyed in their emplacements between May and November, 1916. The 7th Battery, 10th Regiment of Foot Artillery, lost twenty-five pieces during the same period in a position on the east edge of the Bois du Grand Cognon southeast of Aboucourt.

This looks like results! However, from 1914 to 1918, the artillery strength on both sides of the line continued to increase!* Thus, we arrive at the general's reason for adding to his statement regarding the destructiveness of artillery that it really destroyed nothing. In other words, if we do destroy something necessary to the enemy, he will promptly replace it or find a substitute. No "destruction," therefore, can be regarded as permanent. The length of time the "destruction" will remain depends on the facility with which the enemy's supply organizations can make good the damage.

For example, in March, 1916, a battalion of two 155 de Bange gun batteries under Major Bourboulon was subjected to a very destructive fire while in position in the Bois Borru west of Verdun. All eight gun carriages were destroyed. Thirty-six hours later the same pieces on repaired carriages reopened fire.

At Verdun at 8:00 P. M. on a November evening in 1917, in front of hill 344, the 3d African Battalion had its twelve pieces put out of action by a long and violent concentration of German artillery fire of all calibers. At 7:00 A. M. the next day the battalion resumed its mission, the pieces having been replaced overnight.

In 1917, north of Rheims, where the French were preparing for an offensive, the artillery was used to cut wire. Every morning it could be seen that the Germans had closed the gaps made the previous day with chevaux de frise.

However, destruction does have an effect, at least temporarily. This can be shown by the results obtained by counterbattery on

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*Toward the end of 1918 the German artillery began to decrease because of pieces captured by the Allies in the final advances of the war.

German batteries at Verdun during the days preceding the attacks of October 24 and December 15, 1916.

On each occasion these fires began four days before the attack. For the most part, they were executed by 155mm guns. However, a certain number of batteries of 120mm guns, 220's, 270's and 280's participated. In the October attack some pieces of high power heavy artillery (240's) were used, while in December some of 19 and 32 centimeters were brought into action.

Each battery to be destroyed was attacked with: 400 155mm shells, or 150 220mm shells, or 80 270mm shells, or 60 280mm shells.

The results obtained were as follows:

From October 20 to 22, 100 batteries were fired upon preliminary to the first attack.

As eight of these batteries had been inactive for several days previous, no conclusions can be drawn concerning them.

Of the remaining 92, 27 (or 29%) did not fire again at all. Eleven (or 12%) were observed in action the day following the fire for destruction or the day after that, but after being fired on again on the 24th, gave no sign of activity on that day. The remaining 54 (59%) reappeared and showed activity on the 24th in spite of counterbattery fires on that date.

For the attack in December, 72 batteries were attacked. However, as 3 had previously not been active and 6 others were situated so far forward that it can be claimed reasonably that their inactivity was due to the infantry advance, no conclusions can be drawn from them. Of the remaining 63, 24 (38%) did not reappear before or during the attack. Thirty-nine (62%) showed activity on December 15 in spite of neutralization fires on that date.

It must be mentioned, however, that some of the batteries apparently completely silenced probably were displaced and reappeared on the day of attack in new positions. On the other hand, many of the batteries which did show activity, showed a smaller number of pieces than on preceding days. Thus, the number of pieces destroyed in batteries which remained more or less active can be balanced off approximately against the batteries regarded as destroyed but which actually were displaced.

From the above, it may be deduced that only about 40% of the

fires for destruction produced tangible effects on the day when these effects were desired.

If more time had elapsed between the fires and the day of the attack, it must be admitted that the Germans would have replaced their losses. Thus we can deduce one principle from these examples. Destruction is difficult to execute and can not be regarded as permanent. In order to be effective it must be executed as short a time previous to the hour when needed as possible in order to guard against replacements or, if the effect must endure for a considerable time, it must be maintained, i. e., the enemy must be prevented from repairing the damage.

No conclusions should be drawn from these examples regarding the necessary ammunition expenditures in executing counterbattery. In 1916, battery positions were elaborately protected. Batteries remained in the same emplacements for months and even years. In attacking one of these, it was necessary first of all to destroy the emplacement before the gun itself could be reached. This condition may never occur again.

So much for materiel targets. Let us see what effect can be expected against infantry.

After the Marne, near Sommesous in September and at Aveluy in October, entire platoons of infantry were found in their trenches, maintaining in death their combat formations.

In April, 1917, at Mont Spin near Fort Brimont at Verdun, a German battalion was observed marching to counter-attack. A heavy artillery concentration of all calibers. 75mm to 220mm, was placed on it suddenly. It vanished so rapidly and completely that prisoners taken shortly thereafter from the battalion which succeeded it stated that they did not know or understand what could have become of the other battalion.

On May 20, 1917, a 400mm shell penetrated the ventilating shaft of the Cornillet tunnel. It demolished a room, killing two German battalion commanders and 60 soldiers who were awaiting the signal to counter-attack. The bombardment continued and caused the collapse of the interior of the tunnel, blocking the exits. Not a single man of the two reserve battalions sheltered there could intervene when the French attack arrived.

These look like results, but there is another side to this picture also.

On February 21, 1916, a heavy concentration of all calibers was placed by the German Artillery on the Bois des Caures, defended by only 1,200 men. When the German infantry approached the woods after ten hours of hellish bombardment, they were fully convinced that they would encounter no resistance. They were not long in realizing their error and losses soon were so heavy they were forced to fall back. The bombardment was then renewed and lasted all night and the following morning. In spite of this, several hours of desperate combat were required to capture the French positions. On the evening of February 22d, only 117 men of the original 1,200 "Chasseurs de Driant" answered roll call. During the period described above about 300,000 shells of all calibers fell on the Bois des Caures.

It must be remembered that the odds were 8 to 1 in favor of the Germans in infantry alone. The defense would have been incapable of showing such vigor if the casualties from artillery fire had been appreciable. These losses, therefore, must have formed a small part of the total casualties (90% +).

A more definite figure can be deduced from the experiences of the 3d Battalion, 146th Infantry (French), at Douaumont, in February, 1916.

On February 26th, the operations included eight hours of heavy bombardment, a bayonet fight and two more hours of bombardment less intense than before. Out of 900 men, 26 were killed, 92 wounded and 5 missing—a loss of 13¾%.

On the 27th, another all day bombardment. Losses, 14 men—less than 2%.

On the 28th, a four hour bombardment followed by a German attack which broke down under the 75mm barrage. Losses, 39 men—4%.

These losses differ greatly from the proving ground percentages determined by means of silhouettes. Note also that on the day it had to meet a bombardment only, the losses were insignificant.

We can discount the destructions obtained in the early days of the war because we can not determine the contributing circumstances. The destruction of the Cornillet tunnel was a happy accident which can not be counted upon at any time. The Mont Spin battalion was not destroyed. The men merely scattered

over the country, took shelter in holes, ditches, etc., and were out of sight when the relieving unit arrived. By the next day, possibly, it had reassembled. However, the morale effect of a sudden, heavy artillery concentration should be noted. The other two examples are more normal. From them we can deduce the principle that infantry properly disposed and protected can not be destroyed by artillery fire alone, but requires the combined and synchronized action of infantry and artillery fire to drive it from its positions.

If artillery can not destroy what then can it do? Let us continue our study and see what we can find.

In his book "Battle Studies," Ardant du Picq writes: "We must learn to beware mathematics and material dynamics as applied to things in battle; to beware the illusions of target ranges and maneuver grounds where experiments are made with calm, composed, unfatigued, attentive and obedient soldiers, in a word, with men who are intelligent and docile instruments as contrasted with the nervous, impressionable, emotional, troubled, distracted, over-excited, mobile beings, escaping from their own self-control, who, from the leader down to the private, make up the combatants (except for the strong—but they are few).

"The Combatant, considered as a reasoning being, an impassive entity, functioning in the combinations of the battlefield, is not a real man, but is the man of theoretical speculations. The real man is of flesh and bone; he is body and soul; and no matter how brave his soul, it cannot master the body to the extent of preventing revolt of flesh and trouble of spirit when facing destruction."

"The art of war undergoes many changes in the course of scientific and industrial progress, etc. But one thing does not change—the human heart. In the final analysis, combat is a matter of morale. In all the modifications made in an army—in organization, discipline, tactics—the result of all these modifications on the human heart at a given moment, at the supreme moment of battle, is always the essential question."

The Marshal of Saxony agrees with Ardant du Picq. He states. "The human heart is the starting point of all warlike things; in order to understand this, the heart must be studied."

Thus, regardless of the progress of science, or the arms placed

at his disposal, the man on the battlefield still fights with his heart. When we have broken the will to win in the hearts of our enemy, the rest will be easy. The problem presented to us as artillerymen thus resolves itself into one of producing a moral rather than a physical destruction. In the words of Voltaire, "It is not so much the number of dead that wins battles as the fear put into the living."

A good example of this is an event which occurred on August 27, 1914, south of Frenois near Sedan. A group of German riflemen had debouched from some woods. They were observed from the OP of a 75mm battalion in position some 5,000 meters away. The battalion commander directed the fire of one of his batteries on this target. The battery fired for effect, using shrapnel. The first rounds struck squarely in the middle of the target. The bursts were of good height and men were seen to fall. One man, no doubt their officer, raised his arm and signalled "Forward." Under the salvos which continued to fall, the riflemen took up the doubletime and disappeared in a fold of ground while the ensuing salvos fell harmlessly.

Some moments later, more Germans appeared at the same place, undoubtedly in support of the others. The battalion commander, taking advantage of the previous fire, ordered the battery to reduce its range 200 meters. The bursts were clearly short and no one fell. But as if by common agreement, the German unit in complete unison rushed back full speed into the woods.

Now why? The answer probably lies in the fact that they had seen the casualties produced in the unit next ahead and did not have the courage to face the threat of death which the bursts kicking up the dust before them implied.

Thus, we have a new thought. Artillery fire carries the threat of destruction. The more apparent the threat, the better will be the neutralizing effect. However, in dealing with this so called neutralizing effect we must evaluate the troops we are to neutralize. We can examine another example to show this.

General Faugeron cites the 3d Battalion of the 146th Infantry, which entered the line near the Bois des Caures about February 25, 1916. The fighting was quite severe at the time. The battalion commander assembled his troops and in true French style addressed them about as follows:

"We are about to get the worst shelling we have ever seen, under which no infantry up to now has been able to hold. Well, we shall! And when the enemy advances to occupy the terrain which he believes swept of every defender capable of resistance we shall charge him with the bayonet."

These were good troops and had implicit confidence in their leader. On that very evening, after eight hours of bombardment by heavy calibers, the three companies of that heroic unit rushed an entire German brigade advancing to the assault, stopped it, repulsed it and pursued it for some hundred meters.

These men had confidence in their leader. Nothing had happened to shake this confidence. Their leader had foreseen accurately what was to happen. Undoubtedly, they were frightened under the rain of shells. Possibly each thought that all except the few they could see were wiped out. However, when the fire lifted and their commander ordered them out, morale raised a bit—at least the commander had survived! As other groups appeared, morale rose further—things were not so bad as they had seemed. When the charge was ordered, morale reached the boiling point! They were going according to plan! Nothing could stop them!

What can we learn from this? To understand this example, we must think back a bit. Every improvement in arms always has been met by a corresponding defense against the increased destructive effect. Under artillery fire, infantry quickly deploys and seeks shelter in holes, behind banks, etc., until the fire lifts. A man lying prone in a very shallow pit or fold in the ground is protected from the fragments from bursting shells. Only direct hits become really effective. If no enemy is near, the men can even hold their heads down. If necessary, one from each group can be detailed as sentry to watch for signals or give warning of approach by the enemy. Thus, the battlefield looks deserted.

Steady artillery fire defeats its own purpose. A man can get so numb and no more. Once the infantry has taken cover, casualties are few.

Suppose for example the fire had been delivered in heavy bursts. The complete silence between bursts is harder to bear than shells because one is worried about what is coming next. Each successive burst causes a renewal of the shock. During the

quiet periods, men come out of their holes and move about. Some are caught outside by the renewed fire and are hit. These casualties make the men cautious about getting up for fear of being fooled. When the assault is finally launched, many men really have been fooled and are still in their holes unable to use their arms!

Artillery fire does have a neutralizing effect, as discussed before. In a unit which has been subjected to heavy fire, each man feels sure that he is the only survivor and his will to fight is correspondingly reduced. However, the neutralizing effect wears off quickly. I want to recall the example of the 3d Battalion, 146th Infantry, at Douaumont in February, 1916. After eight hours of bombardment they met the enemy in a bayonet fight and repulsed his attack. The Germans left their trenches when the fire was raised. In the time it took them to come the 400 or 500 yards between the trenches, the French had recovered their morale and were ready. The length of time neutralization will endure depends entirely on the quality of the troops involved. The better the troops, the quicker will they recover their combat efficiency.

This fact was clearly realized by the infantry toward the end of the war. They pressed right up to the friendly fire and even took casualties from it to avoid the greater ones certain to come if the enemy could reestablish his machine guns. From this we learn that artillery fire which has been raised too soon loses much of its value.

General Faugeron answers our question as to what can artillery do in battle by summarizing the task of the artillery as follows:

First: To neutralize the enemy.

Second: To keep him neutralized during the entire duration of the fire.

Third: To make the neutralization persist for a certain time beyond the cessation of fire in order that the infantry, when the occasion demands, may be able to reach the position before the enemy can fight.

The examples we have quoted above concern fires of relatively short duration. What is the effect of artillery fire continued over a considerable period? Here is an example.

In March, 1916, near Cumieres, the French infantry saw with

surprise a group of Germans, led by their non-commissioned officer, come over to the French lines to surrender. Constantly shaken, cut off from all communication to the rear by ceaseless fire, without rations or sleep, they had lost every instinct except that of self-preservation. They were coming to a place where they knew they could at least eat, drink and sleep if they could not be merry! From this we might infer that artillery fire can even make prisoners. General Faugeron expressed the lesson this way: "On infantry in action, the influence of the devastating effects of fire is felt primarily as a result of former fires." In other words, artillery effects are cumulative.

From the above we can deduce the fact that infantry, which detrains only to be met by an air attack, marches to the front over routes interdicted by long range artillery fire, receives in its assembly positions a vigorous counterpreparation, advances to its assault positions through a well planned series of defensive concentrations, will not make much of an assault when it encounters a series of well planned machine gun fires on final protective lines, the gaps in which are covered by adequate artillery barrages. Confirmation of this hypothesis may be found in the German attack of the 15th of July, 1918, in the Champagne.

The effect of friendly artillery fire on the morale of the supported troops must not be neglected. To the average infantry soldier, familiar with small caliber weapons, the larger artillery pieces are terrible and awe inspiring. When our shells whistle over his head to burst far within the enemy lines, he visualizes each burst as devastating whole units in spite of the small losses he has seen in his own unit caused by the enemy's bombardment. Imagination is truly a wonderful as well as a dangerous thing! The time often comes when infantry morale is shaken. They want help. They ask for fire yet can not tell us what to hit. Obviously such fire is wasted in a way. However, the uplifting effect on our troops is worth it. If it is only a thousandth part of what is requested my advice is fire! However, when time offers the opportunity, explain to the infantry the need for economy in ammunition so that next time a similar situation may be avoided.

Let us now summarize what we have shown by the above illustrations:

1. Destruction fires take much ammunition, are hard to effect

and can not be regarded as permanent. The length of time any destruction will endure will depend on the facility with which the enemy supply services can repair the damage or furnish a substitute. Thus, destruction fires are kept to a minimum and must either be executed at the time desired or the effect must be maintained over the period required by the situation.

2. The fighting spirit of the troops is still the biggest factor in battle, as it has been all through the ages. When the enemy's will to win has been broken, the victory is gained. Thus, artillery fire has its greatest effect in the fear it puts in the living rather than in the number it kills. It must carry the threat of imminent destruction to be effective. Every effort must be made to make fire as effective as possible in order that this threat may be the more apparent.

3. Infantry can shelter itself from artillery fire, so fires prolonged beyond the time it takes them to seek cover have little effect. Thus, violent concentrations at irregular or unexpected times (surprise fires) produce the best morale and physical effects. If the infantry has substantial shelter, shells of sufficient caliber to destroy them must be included in order that the threat conveyed may be effective.

4. The best effect is obtained when the enemy troops can witness the devastating effect of the fire. Thus, fires which are effective against the enemy leading elements affect those in rear. Every effort must be made to secure effective fire on the enemy's foremost units.

5. Artillery fire has a cumulative effect. Thus, fires on enemy reserves must be so delivered that they arrive at the point where the decision is to be sought with their nerves shaken and their fighting spirit impaired.

6. An unexpected artillery concentration of great density has a great demoralizing effect on enemy troops. Thus, every facility of fire direction must be used to produce mass effects. Where possible, the morale effect should be increased by using projectiles which detonate sharply with an ample smoke cloud to produce the illusion of having completely destroyed everything in the vicinity. Large caliber shells are desirable. A combination of large shells and the smaller calibers produces not only volume but considerable destruction.

In conclusion, we may well quote General Guibert, who wrote in 1773 as follows:

"Except for feigned attacks and for strategical reasons, every cannonade whose sole object is the chance killing of some few men at a heavy cost in ammunition is miserable and ridiculous.

"If one knows how to employ artillery, one accomplishes not the small task of disabling a gun or killing a few men at a given point, but an important mission, a decisive mission, which should be to cover, to sweep with fire, the terrain occupied by the enemy, and, above all, the ground over which he would like to advance to attack. Executed thus, artillery fire is truly formidable."

From this we can see that the lessons we have deduced from the World War are as old as war itself.

DECISION OF EXECUTIVE COUNCIL

In order to start a drive for new members it was directed that from this date until April 30, 1934, any regimental or separate battalion commander of any Field Artillery unit of the Regular Army, National Guard or Reserve Corps who will secure ten or more *new* members to the Association, for each of these new members, the membership dues will be $2.00 for the first year. For full particulars see page 71.

MARIGNANO—THE FIRST ARTILLERY BATTLE

BY FLETCHER PRATT

ALL roads lead to Rome; except in military history, where every line of study brings one, sooner or later, to the battle of Marignano. For this combat, in every sense, marked an end and a beginning. It was the last battle of the pre-mechanical age—in it, for the last time, infantry armed with the long spear, fighting in close order and depending on shock action, which had ruled every battlefield from Marathon down, appeared on the field unsupported. In it also, the armored medieval horseman gained his last victory.

But if it was the last of the ancient battles it was not less the first of modern battles. Field fortifications sprang up for the first time since the days of Constantius Chlorus and remained a permanent feature of warfare. For the first time tactical evolution in pursuit of more than local objectives was attempted; and for the first time infantry, cavalry and artillery were maneuvered and fought as parts of one indivisible whole, and artillery fire decided the issue by preparing the way for the shock-action of the mobile arms.

Add to this that it was the fiercest battle in history, "a battle of giants," old Marshal Trivulzio, who had seen forty-eight stricken fields, called it, "all the rest were child's play compared to it." It lasted for twenty-eight hours without intermission and the losses reached the murderous figure of fifty per cent of those engaged on one side and twenty-five per cent of those engaged on the other.

Francis I, King of France, had invaded Italy, in alliance with the Venetian republic. He had swung south of Milan, which was against him, and lay between that city and Lodi on September 12, 1515, when he heard that a big Swiss army had joined the Milanese opposed to him. He turned to face Milan and the Swiss. His allies the Venetians lay at Lodi, back to back with him, holding the army of the Papal states in check.

For a day this position remained unaltered. Alviano, the Venetian commander, came over to Francis' headquarters on the afternoon of the 13th for a conference. While he was there the news came in that the Swiss were moving out of Milan to the attack.

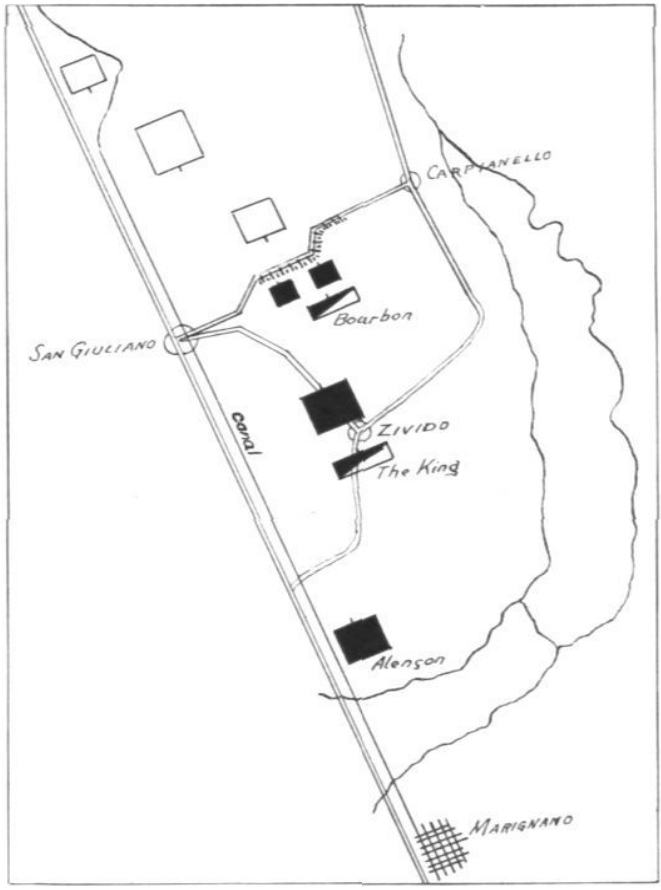
Alviano rode off at once, with the intention of disengaging a part of his forces from the grip of the Papal army if possible, while the French moved up about three miles northwest of Marignano and took up a defensive position.

They had about 20,000 lansquenets, who were heavy infantry, armed with a short pike, a sword, and an arquebus; about 5,000 heavy cavalry; some 9,000 "gendarmerie," who were arquebus men, and between 60 and 70 pieces of artillery. These guns were rather a job lot, varying between 4 and 22 feet in length and between 400 and 7,000 pounds in weight, quite inaccurate at any range over 500 yards, and firing all classes of shot. Not a powerful force by any modern standard, but one of the best then in existence.

Against them were moving some 25,000 Swiss infantry, armed with long pike and short sword, heavily armored and possessed of the well-justified reputation of being the best soldiers in Europe. The Swiss do not seem to have had more than 20 guns and only 200 cavalry. They despised both these arms and with reason: for some centuries their pikemen had been capable of beating any force in the world.

The country where these armies were to meet is a flat plain, much cut up by small streams, canals, vineyards and walled roads. One of these streams crosses the main road and the canal parallel to it from Milan to Lodi, just north of Marignano, then bends north paralleling road and canal. King Francis took up his position in the tongue of land thus formed, along a road that runs laterally from canal to stream between the villages of San Giuliano and Carpianello.

As the custom then was, he formed his army in three sections, the Constable Bourbon commanding the foremost, which was also the right wing, and took up its position along the lateral road between the villages. In the time between the movement and the arrival of the Swiss this position was fortified as much as possible by adding stones to the walls and digging an emergency ditch along the front of the division. Bourbon had part of the lansquenets, about half the cavalry, and all the artillery, which was under the command of the Grand Master, Galiot de Genouilhac. A fortunate salient angle of the road permitted the latter to bring a cross-fire to bear on any frontal attack: a wide flank movement was rendered



impossible by the stream, and any narrow flanking attack could be taken in reverse by the cavalry.

The only vulnerable point, in fact, was the left flank; and the position had been chosen precisely with the idea of turning the attack in this direction. (Compare Austerlitz.) For, echeloned behind the Constable's division, invisible among the vineyards and gardens, was the King in person, with the greater part of the lansquenets, the gendarmerie and the rest of the cavalry; and echeloned behind him again, in reserve, was the Duc d'Alencon, with the rest of the gendarmerie. The idea was to crowd the Swiss attack leftward, decimate it as it moved down the long funnel provided for it, and throw it into the canal.

The Swiss had no unified command, but they were well led. Arnold Winkelried, later to become famous as the patriot of the Tyrol, was then in command of the Milanese troops; Galeazzo Visconti had a division and Rudolph Rahn of Zurich another. They were formed in three sections also, with the largest of the three in the center. They apparently expected to find the French in a single long line; at all events, they echeloned out their three divisions into an oblique order to the right. Their battle-plan was exactly the complement of the French king's; namely, to shear through his right wing with the densely-arrayed corps on their extreme left, holding the French center in play with their own, and the French left with their artillery. If the movement succeeded they would turn the French back into the canal.

The two armies came into sight toward sundown. In view of the lateness of the hour and the possibility that such an attack would induce the ardent young French king to put in and weary all his reserves, Visconti wished to make only a holding attack that evening. He was overruled by the Swiss leaders, who pointed out that their own dense formation was better than anything the French had for night fighting, and that the Venetians might be on hand by morning.

As the Swiss advance-guard approached the road, the fire from Galiot de Genouilhac's well-served guns became hotter and hotter, and a corps of French infantry stormed out from the walls to take the attackers in flank. The Swiss halted, formed to the flank without hesitation, dispersed and killed most of the flanking corps, then did a right wheel and charged right across the ditch, over the wall, and in among the French guns. There was a savage infantry fight for about an hour; arquebus and sword against pike. But the Swiss discipline and experience told, and the French formations began to break up. Bourbon put in his cavalry in a series of furious frontal charges, meanwhile drawing off his foot and striving to reorganize the position.

He succeeded in bringing the attack to a standstill, but could not keep it there. The Swiss main guard came up on his left. The French infantry, already badly hammered, could not make head against this double attack and the cavalry was worn to tatters. Some of the guns were lost, and the degeneration of the French

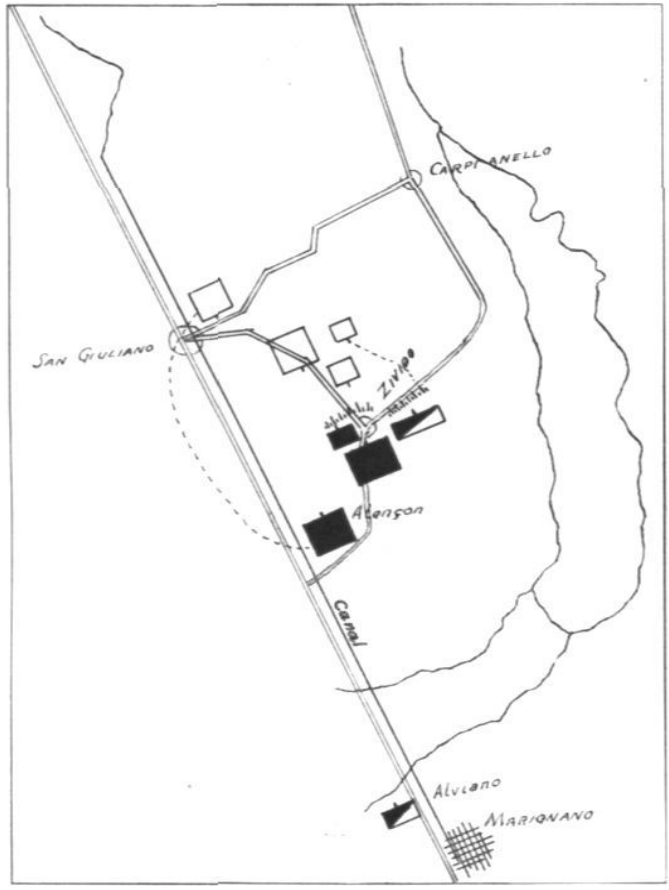
line began to spread toward the right. It looked as though the Swiss plan were about to succeed.

But at this moment, Francis, who had realized that his enveloping movement had gone awry, arrived with the French main body, took in the situation at once, and with extraordinary presence of mind, ordered Galiot de Genouilhac to organize a new position along a second lateral road, pivoting on the village of Zivido. Then he sent his infantry in on the Swiss main body, and swinging to the right, led his cavalry in a charge between this division and Bourbon's shattered corps to rescue the precious guns.

The hardest fighting of the battle took place here; the Swiss were still fresh, the French with the King were the flower of the national chivalry. Under their pressure the Swiss swung back toward San Giulano; then, as they were facing cavalry without infantry supports, rallied among the houses and came on again, gathering up the remnants of their own left wing into a single deep, heavy mass, that bore the whole French army back on Zivido.

It had now grown dark, but the moon had risen to shed a vague light on the struggle. It was difficult to tell friend from foe, but the retreating French rallied to the sound of their guns, which Bourbon and Galiot de Genouilhac had made the keystone of the new position—a convex curve of them in front of the village, a line of them along the second road, where the wall had been reinforced with palisades. The French cavalry was extricated and sent to rest up for the renewal of the fighting that would evidently take place in the morning. The third Swiss corps had now come up, and instead of holding its direction, joined the other two in a concentric attack on Zivido, the key of the position. With them came the Swiss artillery, replying to the French. The lansquenets had to stand a good deal of pressure at this point, but Francis, walking along his lines, judged they could bear it, and stoutly refused to call up Alencon's reserve, with which he meant to strike for victory in the morning.

Toward two o'clock the infantry fight died down, but the guns kept at it all night. Throughout the dark the great horns of Uri and Unterwalden sounded weirdly from the Swiss camp, where they were being blown as rallying points for stragglers, and were answered from the other side, where Francis, now on horseback and lance in hand, rode through his whole army, marshalling them



for the morning. He had reversed his original plan; Alencon was now to deliver the decisive thrust on his left, while the guns drew the Swiss toward the center and the cavalry kept the right from being outflanked.

The Swiss had also changed their plan. At a midnight council they decided on a mere holding attack in the center, with a double turning maneuver—one division across the canal and through San Giulano against Alencon's flank, another against the walled road and the French right.

At daybreak both artillery services redoubled their fire and the Swiss formed in the center as though to press their attack, the French to repel it. The execution in the tightly-massed formations was terrible, but the lansquenets stood it as gallantly as the Swiss,

and yielded no foot of ground. On the French right the Swiss flanking corps was in turn outflanked by the French cavalry and driven in toward the guns, against which the Swiss stormed, confident they could carry this position as well as the one of the day before. The attackers here were picked men, chosen for the purpose, but "the artillery plowed whole lanes into their ranks into which the French knights plunged with heads down and horses at the gallop" says the chronicler. The Swiss could not stand it; nobody could; they broke, and the whole flanking corps was wiped out to the last man. Francis indefatigably reformed his cavalry and charged down into the left of the Swiss center.

Meanwhile, the other Swiss flanking corps, concealed among the walls and houses, got across the canal, and attacked Alencon's corps. The struggle here was desperate. The French were more numerous, the Swiss better organized and having the advantage of surprise. While the issue still hung in the balance, swaying this way and that, there was a sudden cloud of dust from the south, a shout of "San Marco!" and into the flank of the Swiss rode Alviano and the Venetian light lancers, the advance-guard of the two corps he had succeeded in disengaging from the attention of the Papal troops at Lodi.

His arrival put the capstone on the structure. The Swiss flankers, already with all they could handle, went to pieces instantly. After a brief pause for reorganization Alviano moved forward and delivered his death-thrust on the Swiss center, which was attacked at the same moment on the other flank by the King and the French chivalry. What was left of the Swiss formed a rear-guard and retired on Milan, pursued by what was left of the French horse. The Swiss left 12,500 men on the field, the French more than 8,000.

Perhaps the most astonishing feature of this extraordinary battle is its completely modern character. Bodies of men were assigned their objectives and passed altogether out of control of the higher command (the force that attacked Alencon, for example, might have been used to fend off Francis' charge if the Swiss command could have so used it); and cavalry, infantry and artillery maneuvered together in a fashion that was not seen again for a hundred years. The effects of fire action, shock action and holding action were illustrated in a text-book fashion that is so timeless in its

excellence that the same tactic could be applied to modern conditions tomorrow.

In fact, the tactics were perfectly extraordinary throughout the battle. If the first French combination went amiss, it was because the Swiss met it with a piece of tactics quite as ingenious and in the hands of better-trained soldiers. The soundness of Francis' dispositions is attested by the fact that even when they broke down on the first day, he suffered no defeat, and even when they failed to bear full fruit on the early part of the next day the pressure on the Swiss was so well applied that the victory was won anyway.

The Swiss tactics were equally good; it was in the composition of their army that they failed. Had they possessed anything with which to stop the French cavalry or anything to counter the firepower of the guns which took so much of the steam out of their charges, they must have won. But it was reserved for another century and the genius of Gustavus Adolphus to discover how to halt a cavalry charge as well as to erect into a system the combination of the three arms.

THE CRITIQUE OF PROBLEMS AT SERVICE PRACTICE

BY LIEUTENANT C. B. MAGRUDER, FIELD ARTILLERY
Instructor, Department of Gunnery, Fort Sill, Oklahoma

THREE of the fundamental principles of pedagogy are, first, that the average mind can absorb only a few ideas at a time, second, that man learns best by his own mistakes and, third, that no degree of concentration can be expected from a casual observer.

A certain amount of planning is necessary if the officer conducting a service practice is to avoid violating the above principles. This is especially true because the natural inclination seems to be to review the problem shot by shot and point out errors in chronological order. Such a procedure clearly violates the first principle. There are so many minor errors in almost every problem that, if all are mentioned, some major error will fail to make its proper impression. It violates the second principle because only the officer firing has an opportunity to make a mistake. It violates the third principle because no one at the firing point, except the officer firing and the officer who is to give the critique, has any active interest in the problem.

The method of handling a critique, given below, has been developed in an effort to conform with the principles stated in the first paragraph.

As a necessary preliminary to the critique, all officers at the firing point, except the officer firing, are required to keep sensing pads. On these pads each officer observing enters the commands and sensings of the officer firing. If the observer disagrees with a sensing made or a command given, he draws a ring around it and writes his own sensing or command in the column headed "Remarks." If the officer firing omits some sensing or command, the observer draws a square to indicate the place of omission and enters the proper sensing or command under "Remarks." Below is an example of an observer's sensing pad at the completion of an axial percussion bracket problem.

NOTE: Those items which would be enclosed in a ring are shown herein enclosed in a bracket [ ].

INITIAL DATA: [Compass 423], on No. 2 Cl 4, Site +10, Shell Mk. I, Fuze Long, No. 2, 1 Round,

Commands	*Range*	*Sensings*				*Remarks*
	3400				[?]	Compass 420 –
[R 60]	3400				–	R 50
L 15	3800				–	Very close
	BR [3800]	–	?	–	□	4000 –
	[4200]	+	?	?	?	4000
	4000	+	[?]	+	?	+
[On No. 2 Open 3]						On No. 2 Open 9
Btry. 1 Rd. Zone	4000-3800					

The critique itself should conform with the following outline:

1. Describe the target, mission and means of accomplishing the mission.
2. Summarize the results obtained.
3. Cover the reasons why results obtained were good or bad. (During this part of the critique ask officers observing the problem to give the commands they would have given or sensings they would have made at appropriate points in the problem.)

Thus the critique of the problem illustrated would be:

"The target, machine guns in the vicinity of a bush, to be neutralized, indicated a bracket adjustment with H.E. shell, fuze long, or shrapnel to obtain rapidly a 200 yard bracket and a 100 yard sheaf.

"A 200 yard bracket was obtained, but the sheaf for effect was narrow. The time for adjustment, 6 minutes and 37 seconds, was slow."

Instructor: "Lt. Smith, what command for deflection difference would you have given before starting fire for effect?"

Lt. Smith: "On number 2 open 9."

Instructor: "That would have given too wide a sheaf. A 100 yard sheaf at 4000 measures 25 mils. In the last salvo for adjustment the sheaf measured 5 mils. Open 7 was therefore indicated.

"The range bracket obtained was excellent because the sheaf was converged to fit the adjusting point, making it possible to sense three shorts at 3800 and two overs at 4000.

"Lt. Jones, after the third shot, which was fired at 3800 and sensed 'short,' what command would you have given?"

Lt. Jones: "Battery right, 4000."

Instructor: "Correct. That shot, fired at 3800, was very close

to the target. The officer firing obviously realized this and fired a salvo at 3800, expecting it to be mixed or bracketing.

"This was not bad procedure. However, although 3800 proved short, it was nevertheless close, and a 400 yard range jump showed poor judgment.

"Better procedure, as indicated by Lt. Jones, would have been to follow the first short at 3800 with 'Battery right, 4000' and verify 3800 by starting fire for effect at that range. The failure to do this, together with the slow time for sensing and command, resulted in the excessive time for adjustment."

This critique conforms with the first principle because only two errors, both of major importance, were brought out in the critique. Several minor points, incorrect unit of announcement of compass, excessive deflection shift, and failure to make three possible sensings, are not mentioned as they had little bearing on effect and speed. The critique conforms with the second principle because, as each major error is brought out, the observers who do not have the error indicated realize that they would have made the same mistake. It conforms with the third principle because all the observers, knowing that any of them may be called on during the critique, generally take a good deal of care and interest in noting the errors and being prepared to give them during the critique.

THE UNITED STATES FIELD ARTILLERY ASSOCIATION

IN accordance with the call of the Executive Council, the twenty-third annual meeting of the U. S. Field Artillery Association was held at the Army and Navy Club in Washington at 4:30 p.m., on December 14, 1933, with Major General Harry G. Bishop, President of the Association, in the chair. The Secretary-Treasurer read the call for the meeting, which he stated had been sent my mail to every active member of the Association. He reported that a quorum for the transaction of business was present in person or by written proxy.

The Secretary-Treasurer presented and read his annual report and financial statements, which are appended hereto, and made a part of these minutes.

The President announced that he had appointed a committee consisting of Lieutenant Colonel Frank K. Ross, F. A. and Major J. M. Swing, F. A. to audit the financial statements of the Treasurer. The Secretary then read the report of the committee which stated that the auditing had been performed and the financial statements had been found to be correct. A motion was then made and seconded and adopted approving the report of the committee.

The chair stated that there were eight vacancies in the Executive Council; four to be filled from the Regular Army, two from the National Guard and two from the Reserve Corps. The vacancies were caused by the expiration of the terms of office of Major General Harry G. Bishop, U. S. Army; Brigadier General Allison Owen, Louisiana National Guard; Colonel Charles D. Herron, U. S. Army; Colonel Augustine McIntyre, U. S. Army; Colonel Leroy W. Herron. Reserve Corps; Colonel Paul V. McNutt, Reserve Corps, and Lieutenant Colonel Robert M. Danford. U. S. Army.

The following officers were elected to fill the vacancies, the Secretary being directed to cast the unanimous ballot for them: Major General Harry G. Bishop, U. S. Army; Brigadier General Herbert R. Dean, Rhode Island National Guard; Colonel Charles D. Herron, U. S. Army: Colonel Augustine McIntyre, U. S. Army: Colonel Stephen Elliott, Pennsylvania National Guard; Colonel Leroy W. Herron, Reserve Corps; Lieutenant Colonel

Robert M. Danford, U. S. Army; Lieutenant Colonel David A. Reed, Reserve Corps.*

In view of the profit made during the past year, the cash on hand and the probable market value of the securities held by the Association, a motion was carried to refer to the Executive Council the question of a possible reduction in the price of the annual dues to the Association and the subscription to the FIELD ARTILLERY JOURNAL. It was believed that by reducing the above items from $3.00 per year to $2.00 or $1.50, a greater number of Artillery officers of the Regular Army, National Guard and Officer's Reserve Corps would be able to join the Association and that the mission of disseminating professional knowledge would be advanced.

To the Executive Council was also referred the question of a "get-together" lunch for all Field Artillery officers in and about Washington—these lunches to be held quarterly or monthly as the Council may determine. The Executive Council was also to consider the question of having a Field Artillery dinner at the next annual meeting.

A vote of confidence in the Executive Council to consider the above question was passed.

A vote of confidence in the Secretary-Treasurer in consideration of the favorable financial report, was passed.

ANNUAL REPORT OF THE SECRETARY-TREASURER

For year ending November 30, 1933.

Assets—November 30, 1932:		
Balance, checking account.....	$ 2,833.09	
Savings account	3,152.47	
Securities on hand.....	23,000.00	$28,985.56
Assets—November 30, 1933:		
Balance, checking account.....	$ 3,739.23	
Savings account	3,247.64	
Securities on hand.....	23,000.00	$29,986.87
		$ 1,001.31

*A letter has since been received from Lieutenant Colonel David A. Reed stating his inability to serve as a member of the Executive Council. This vacancy will therefore be filled by the Executive Council at its next meeting.

A detailed statement of the receipts and expenditures during the last fiscal year is as follows:

RECEIPTS

Membership dues and subscriptions	$ 6,353.25	
Interest on checking account	18.73	
Interest on securities	596.25	
Interest on savings account	95.17	
Books, magazines and binders	1,217.51	
Miscellaneous	168.49	
	8,449.40	
Cash on hand November 30, 1932	5,985.56	$14,434.96

EXPENDITURES

Printing and mailing Field Artillery Journal	$ 2,718.18	
Office supplies	135.92	
Postage, express and telegrams	205.99	
Rent and telephone	438.31	
Services	1,571.50	
Authors, engravers, photographers	769.23	
Books, magazines and binders	1,139.13	
Insurance	11.00	
Trophy	20.00	
Donations	7.00	
Miscellaneous: copyright, refund, collection charges, etc.	431.83	
	7,448.09	
Cash on hand November 30, 1933	6,986.87	$14,434.96
Total receipts for year ending November 30, 1933 were		8,449.40
Total expenditures for year ending November 30, 1933 were		7,448.09
Or a gain of		1,001.31

Outstanding obligations and amounts receivable are approximately the same as on November 30, 1932. The only outstanding obligation of any importance is the printer's bill for the November-December 1933 number of the JOURNAL which has not been received. The same obligation was also outstanding on November 30, 1932. Considerable amounts are receivable consisting of dues to the Association.

Due to the additional pay cut and the continuation of the pay freeze, membership in the Association has decreased during the past year. While there has been an increase in the Regular Army members the greater part of the losses have occurred in the National Guard and Reserves. Out of approximately 1,500 Field Artillery officers of the Regular Army, 1,069 are members of the Association. Many others have indicated that they will join when the pay cuts are abolished. The total paying dues and subscriptions has decreased from 2,246 to 2,140, or a loss of 106.

Of the $23,000 in securities $13,500 or approximately 59% are not paying interest at the present time—an additional $3,000 worth of securities having defaulted in interest payment in whole or in part during the past year.

However, in spite of the adverse circumstances cited above the Association can report a gain of $1,001.31. This is largely due to the saving effected in the cost of printing the JOURNAL in its present form. The savings to be effected during the coming year in the printing bill should be even greater as the cost of the November-December 1932 JOURNAL printed in the old form, is included in this statement.

The importance to the Association of increasing its membership among Field Artillerymen of the Regular Army. National Guard and Organized Reserve is obvious. Field Artillery officers on duty with the National Guard, Reserve and R. O. T. C. units are in position to be of immense assistance to the Association in increasing its membership. The more members we get the better we are accomplishing our mission of disseminating professional knowledge. The help of our present members in interesting prospective members is most important. A few personal words will do more than many letters from the Secretary.

DEAN HUDNUTT,
Major, Field Artillery, U. S. Army
Secretary-Treasurer

After an informal discussion of the affairs of the Association and the policies of the FIELD ARTILLERY JOURNAL the meeting adjourned at 5:55 p.m.

Memorandum of Executive Council Meeting January 4, 1934

At a meeting of the Executive Council of the U. S. Field Artillery Association held this date Lieutenant Colonel Ralph C. Bishop, Reserve Corps, was elected to fill the vacancy in the Executive Council caused by the inability of Lieutenant Colonel David A. Reed, Reserve Corps, to serve on the Executive Council. Under the provision of Section 4, Article VI, of the constitution of the U. S. Field Artillery Association the term of office for Lieutenant Colonel Bishop will extend to the next annual meeting of the Association.

Memorandum of Executive Council Meeting January 8, 1934

Statement Prepared by Secretary-Treasury-Editor for Executive Council Meeting

At the annual meeting of the U. S. Field Artillery Association held December 14, 1933, there was referred to the Executive Council the matter of reducing the price of membership in the Association and the subscription to THE FIELD ARTILLERY JOURNAL from $3.00 yearly to some lower figure such as $2.00 or $1.50. This was based on the fact that we showed a profit of $1,001 during the past year and the fact that we had accumulated a reserve represented by securities, the par value of which was $23,000. The present value of those $23,000 in securities is $10,035.

Based on a study of the number of paid subscriptions during the last four years the Association has been able to collect on an average of $2.77 out of every $3.00 due the Association on the circulation list. This represents approximately 90%. Assume for the purpose of this study that the membership and subscription rates are reduced to $2.00, that our membership list remains the same and that the income from securities, savings account and sales of books and magazines are the same as in the past year. We would then find as follows: a circulation of 2,140 at $2.00 each would be $4,280, of which 90% is collectable.

or—Expect to collect	$3,852.00
Interest on securities	546.25
Interest on savings account	100.00
Book and Magazine sales	1,200.00
Total	$5,698.25

or—approximately $5,700.00.

Assuming that our expenses are going to be the same as last year, our expenditures would then amount to approximately $7,450.00, or there would be a deficit for next year of over $1,750. In order to cover this deficit by increasing our memberships it would be necessary to secure some 1,250 new members, computed on the basis of $2.00 each, 90% collectable, and including the additional cost of 1,250 extra copies of the JOURNAL at $6.77 per hundred and based on six issues per year.

I have recently obtained from the National Guard Bureau the names of all National Guard officers. There are 2,761 on this list. Deducting the 590 National Guard and Reserve officers who are already members of the Association, this leaves an approximate list of 2,171 prospective members. Circularization carried on by the Field Artillery Association with those Field Artillery officers of the Regular Army who were not members of the Association showed a net result of approximately 7%. The same statement holds true for the Cavalry Association who circularized the Cavalry officers of the Regular Army who were not already members of their Association.

For the purpose of comparison there is shown below the rates of other service journals:

Cavalry Journal—$3.00
Infantry Journal—$3.00 (subscription, $4.00)
Coast Artillery Journal—$3.00 (subscription, $4.00)
Army Ordnance—$4.50
Quartermaster Review—$2.50 (subscription, $3.50)
Military Engineer—$4.50
Naval Institute Proceedings—$3.00 (subscription, $5.00)

The rate of THE FIELD ARTILLERY JOURNAL is $3.00. It is believed not to be excessive in comparison with the above figures.

After a discussion of the above study it was decided that the

annual dues of the Association and the subscription rate of the JOURNAL remain as at present, viz., $3.00.

In order to interest the newly appointed Field Artillery officers in the Field Artillery Association it was directed:

a. That, commencing in July, 1934, each graduate of the United States Military Academy assigned to the Field Artillery shall receive the JOURNAL for one year as a gift from the Association.
b. That, commencing in July, 1934, each graduate of a Field Artillery R. O. T. C. unit, commissioned in the Field Artillery Section of the Officers' Reserve Corps shall receive one copy of the JOURNAL as a gift from the Association.
c. In order to start a drive for new members it was directed that from this date until April 30, 1934, any regimental or separate battalion commander of any Field Artillery unit of the Regular Army, National Guard or Reserve Corps who will secure ten or more *new* members to the Association, for each of these new members, the membership dues will be $2.00 for the first year.

The Executive Council directed the Secretary-Treasurer-Editor to continue the operation of the JOURNAL in such a manner that expenses and receipts would be approximately equal, utilizing part of the reserve if necessary to carry out the program outlined above.

Concerning the "get together" lunch discussed at the Annual Meeting it was decided to hold an occasional lunch at such time and place as designated by the President of the Association and that announcements would be sent to all Field Artillery Officers, Regular Army, National Guard and Reserve Corps in the District of Columbia.

Concerning the proposal of having a dinner at the next Annual Meeting it was decided to consider the question at some future Executive Council meeting.

The meeting adjourned at 4:00 p. m.

NEW ENGLAND OFFICERS OBSERVE SAINT BARBARA'S DAY

BY MAJOR VERGIL D. REED, 388th Field Artillery

A LARGE number of New England's Field Artillery Officers mobilized at the University Club in Boston, Monday afternoon, December 4th, for a conference on Field Artillery subjects, followed by a most hearty dinner.

The first speaker for the conference was Lieutenant Colonel Emanuel E. Lombard of the French Army, who is now senior French Military Attaché in Washington, During the World War he was senior French instructor at Camp du Valdahon, where he assisted in training many American artillery officers. The second speaker was Lieutenant Colonel Arthur E. Wilbourn, 3rd United States Cavalry, senior instructor in Cavalry tactics at Fort Leavenworth.

Colonel Lombard spoke on the subject "The Divisional Artillery in the First Phase of a War." He particularly stressed the importance of the Battalion Commander in any future employment of the Divisional Artillery, saying that in his estimation entirely too much responsibility and detail was put upon the Battery Commander during the World War while the Battalion Commander had too limited a scope of activity for his unit as a whole. He believes that the fighting unit should be considered the battalion instead of the battery. According to Colonel Lombard, in the past there has been too little direct control over all of the guns of the battalion in action, thus limiting flexibility and the ability to control the concentrated fire power of all of the guns of the battalion. Many more responsibilities will fall upon the shoulders of the Battalion Commander in the future than have in the past.

Colonel Wilbourn took as his subject "The Artillery Requirements of a Cavalry Division." He was very emphatic in stating that in his opinion the Cavalry Division was being robbed of its mobility by being overburdened with heavy equipment. He stated that the purposes for which the Army Commander needed the Cavalry were: Reconnaissance, Covering Operations. Participation in Battle and Exploitation.

Quoting from Colonel Wilbourn's speech. "We find that in

each of them, mobility and fire power are always essential and eternally in conflict. . . . . In the very nature of things, then, those troops possessing in the highest degree the ability to move *rapidly* and *secretly* over extended distances across country should be the ones selected to either attack or defend a flank. And that is to say that good cavalry always has a place in these operations. How then will fare our present cumbersome, overgunned, and overmachined columns in flank operations of the future? . . . ." As for guns and trucks and tanks, "certainly they are nice things to have in large numbers upon occasions, but can't the Army, on these occasions, supply these, too, from its porteé or other regiments? I think that, organically, one battalion of horse artillery is sufficient for the Cavalry Division. I think we have been too hasty in adding all of these units."

Mess call was sounded at eight o'clock with Lieutenant Colonel Richard C. Burleson, Senior Instructor of the First Corps Area, as Toastmaster.

This conference and dinner sponsored by the Field Artillery Reserve Officers of the First Corps Area was extremely well attended and was both enjoyable and instructive. It is intended to make this an annual affair.

Patron Saint of Artillery

THE SHADOW LINE METHOD OF LAYING FIELD ARTILLERY

BY MAJOR ERWIN H. FALK, 185th Field Artillery, Iowa National Guard

AT PRESENT there are in general use three methods of rapid laying of guns, exclusive of accurate map methods, (1) use of a common aiming point, (2) using the B.C. telescope as an aiming point, and, (3) laying by compass.

The first two methods require that the gun position be visible from the observation post.

Modern improved methods of enemy observation and airplane attack now emphasize the necessity of concealing our battery positions. Formerly the matter of defilade of the position so as to protect personnel was considered of primary importance, but the development of air observation now demands concealment as one of the most important factors of security. But a battery concealed from the enemy is usually also concealed from the battery commander's observation post.

If the battery commander cannot see his guns, or at least a point close to the position, he cannot use either of the first two methods enumerated above. So we have left only the compass method of laying for direction.

I believe all artillery officers are familiar with the difficulties of the compass. Local attraction, caused by trivial objects such as the bridge or rim of spectacles, a whistle in the shirt pocket, or the proximity of guns, tractors, etc., has no doubt ruined more than one firing problem. And the more serious troubles of metallic ground deposits sometimes render the use of the compass impossible.

This latter difficulty was encountered by us at Camp Ripley during our camp in 1932. Our reconnaissance had discovered an excellent gun position from every tactical standpoint, but we could not use it because the compass was unreliable, the observation post was not visible, and there was no time for running a traverse. This condition brought on the idea of working out a new method which we have developed and experimented with, and named the SHADOW LINE.

A few problems were fired in 1932 with this method, and satisfactory results obtained. In 1933 we fired practically all of our

problems with it, and found the method to be simpler and more practicable than any of the usual methods. The results in 1933 were remarkably accurate under difficult conditions, and I feel that the result of our experiments should be passed on for further testing and, possibly, adoption.

I have described the Shadow Line to a number of Regular Army artillery officers, as well as instructors, all of whom were favorably impressed. The only comment was, "Why didn't somebody think of it a long time ago?" Neither I nor any of the officers to whom I have spoken had ever heard of such a method, and I believe it is entirely new.

We had the pleasure of having Major Ralph A. Lancaster, Assistant Adjutant General of Iowa, witness the entire procedure of using the shadow line method during one of our problems in 1933. The Major will corroborate that our set-up was difficult. The guns were about a thousand yards to our right rear, and not visible, and the angle at the target "T" was about 500 mils. After obtaining the correct range, a three mil shift of the guns produced a deflection bracket, thereby establishing the fact that the initial laying of the guns was practically perfect. This problem was also witnessed by Colonel Ward and two Regular Army artillery officers who were stationed with the Civilian Conservation Corps.

Subsequent firing from other positions, just as difficult, were repetitions of this remarkable accuracy.

The shadow line method is based on the theory that the sun's rays are parallel at two points, such as the observation post and the battery gun position. To apply this theory, we use the shadow cast by a cord held vertically by a plumb bob, or other weight. The cord at the observation post casts a shadow line which is parallel to the shadow line cast simultaneously at the gun position. The two lines are established on the ground by use of stakes, or referred to any distant point with the proper angular correction.

Only a few minutes are required for the operation, and, once established, the apparatus is removed and the staked line used as long as the position is occupied. The equipment which we devised involves no expense to the Government, with the exception of a wire bracket which can be "home-made," or produced for a fraction of a cent. The cord and the plumb bob are now articles of

issue, as well as the regular engineer's kit and plane table. The bracket is carried in the present kit, thereby involving no changes or additional weight.

I would like to suggest a change in the worm gear of the B.C. telescope and the aiming circle so as to permit at least a 60-degree tilt, thus allowing a direct sight on the sun, moon, or stars. Such direct sighting would greatly simplify the establishment of the line, and eliminate the possibility of error due to a swaying cord on a windy day. It would also make possible the establishment of a line at night by sighting on the moon or a star, as well as using the sun on days when the sun appears dimly through the clouds or fog but does not cast a shadow. These changes are desirable but not absolutely necessary, since we can use the apparatus as described below.

Following is a description of the apparatus and its use:

EQUIPMENT

A stiff wire bracket, about 3/16 inch thickness, formed in the shape of an inverted L, or gallows, with the upright member about 8 inches high and the arm about 4 inches long. A niche is formed at the outer end of the arm and the base of the stem is formed into a U shape.

A plumb bob, fitted with a cord about 20 inches long and looped at the other end.

A plane table, which is now regular issue to the battery.

All of this equipment must be doubled so that operations can be performed simultaneously at the O.P. and at the gun position.

PROCEDURE

Set up the plane table and place a blank piece of paper thereon. It is not necessary to level the table. Loosen the thumb screw on the corner of the table towards the sun and slip the U on the base of the wire bracket under the screw. Hang the loop of the cord in the niche of the bracket arm, then turn the bracket so that the suspended cord will just clear the edge of the table. Tighten the screw. Now turn the table so that the shadow of the cord will fall across the blank paper, and tighten the adjusting screw underneath the table. The apparatus is ready to mark the line.

A similar apparatus has been set up at the gun position.

Now, either at a prearranged time on synchronized watches, or by signal over the telephone if communication is available, the

shadow lines on the tables are marked simultaneously. These lines are parallel, but must be established on the ground.

Place an alidade or triangular ruler on the line and sight over it, placing a stake in the ground on the prolongated line. Place another stake directly underneath the plumb bob. These stakes represent the shadow line, and angular measurements are made from the target to the line, in a clockwise direction.

At the O.P., from which the horizon is usually visible, it is advisable to select any distant distinctive object, and measure the angle from the line to the object. This object may then be used as a measuring point instead of the staked line, with the proper angular correction. The advantage of using a distant point is that the instrument can then be set up conveniently in the vicinity, without lining up on the stakes.

The use of the shadow line at the gun positions is the same as the use of an orienting line, and is described in regulations.

In case of a partially cloudy day it may not be possible to mark the two lines at the same moment. In this case, the line should be marked as nearly as possible to the appointed time, and notation made of the difference in minutes. Then, after the line has

been established, set up an instrument over the stake marking the plumb bob, and set off an angle in the proper direction equal to 4 mils for each minute of difference. The amount of four mils is approximate, and should be determined by experimentation, and may vary for different time of the day. The staked line should then be re-established.

If our instruments were changed to allow a 60 degree or more tilt, the above operation would be greatly reduced. The table, cord, etc., would be eliminated. We would merely set up the instrument, level it, and take a sight on the sun at the appointed time with a zero reading. Then bring down the head of the instrument and place a stake in line with the cross hair. Or, move the upper motion and take a reading on a distant object. This reading would be the angular correction for the shadow line. This operation would require but a few seconds' time.

I can see only two objections to the shadow line method. First, that the cord is apt to sway on a windy day. This can be overcome to a great extent by shielding the cord. It would be overcome entirely if an instrument could be used as explained above. Secondly, a rainy day precludes all shadows or sighting. But such days are in the great minority, and if they do occur at the time when a position is occupied, we still have the compass method. It must be remembered, however, that a rainy day does not prevent firing if the line has been established on a previous day.

Calculation of data is very much simplified when using the shadow line. Only one offset is taken into consideration. Compass calculation, on the other hand, involves the correction of error due to the vagaries of each instrument, termed the "declination constant," which must be determined for each locality, and which is often confusing for the newer officers. The shadow line involves no such correction.

A compass is easily rendered useless from rough handling and must be frequently tested and adjusted. The shadow line apparatus is shock proof. Should it be lost entirely, including the sketching kit, a make-shift apparatus can easily be constructed by suspending a rock from a pole. Substitution for a lost or destroyed compass, on the other hand, is, of course, impossible.

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Major C. Bassich, Beloit, Wis.
Captain C. A. Beaucond, Santa Barbara, Calif.
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Captain L. A. DesPland, Jr., Marion Institute, Marion, Ala.
1st Lt. E. A. Elwood, Joplin, Mo.
1st Lt. W. J. Epes, Oakland, Calif.
Captain E. A. Erickson, Walla Walla, Wash.
Captain P. C. Fleming, Montgomery, Ala.
Captain G. B. Haddock, Salt Lake City, Utah
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Captain F. H. Hollingsworth, Gary, Ind.
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1st Lt. E. L. Johnson, N. Y. Military Academy, Cornwall, N. Y.
1st Lt. E. V. Kerr, Fishburne M. A., Waynesboro, Va.
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1st Lt. C. B. Leinbach, Detroit, Mich.
1st Lt. L. L. Lesser, New Bedford, Mass.
Lt. Col. B. Lyerly, Chattanooga, Tenn.
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Major G. W. Sliney, Los Angeles, Calif.
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Major J. S. Wood, Culver Military Academy, Culver, Ind.
Major W. W. Woodbridge, Leavenworth, Kans.

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2d Lt. C. D. Campbell, Jr., AC.
2d Lt. D. M. Cairns, AC.
2d Lt. G. D. Carver, AC.
2d Lt. A. J. Cooper, Jr., AC.
2d Lt. J. L. Cowhey, AC.
2d Lt. D. N. Crickette, AC.
2d Lt. G. P. Disoway, AC.
2d Lt. W. Y. Frentzel, AC.
2d Lt. H. H. Geoffrey, AC.
2d Lt. W. S. Graham, AC.
2d Lt. E. J. Hale, AC.
2d Lt. T. B. Hall, AC.
2d Lt. F. Hill, AC.
2d Lt. L. B. Hillsinger, AC.
2d Lt. F. L. Howard, AC.
2d Lt. W. R. Huber, AC.
Captain A. R. Ginsburgh, JAGD.
1st Lt. F. H. Vanderwerker, JAGD.
1st Lt. A. P. Barnes, QMC.
1st Lt. C. S. Berrien, QMC.
1st Lt. A. Bratton, QMC.
Captain H. R. Evans, QMC.
Captain H. Feldman, QMC.
Major G. S. Gay, QMC.
2d Lt. J. E. Gill, QMC.
Captain G. A. Greaves, QMC.
2d Lt. J. F. Greco, QMC.
Major A. S. Harrington, QMC.
2d Lt. L. T. Heath, QMC.
2d Lt. T. R. J. Hickey, QMC.
Captain W. Hitzfelt, QMC.
1st Lt. H. L. Ingham, QMC.

2d Lt. W. E. Hall, AC.
2d Lt. H. P. Hughes, AC.
2d Lt. F. P. Hunter, AC.
2d Lt. L. B. Kelley, AC.
2d Lt. D. H. Kennedy, AC.
2d Lt. C. Longley, Jr., AC.
2d Lt. L. A. Mason, AC.
2d Lt. J. P. McConnell, AC.
2d Lt. C. K. McClelland, AC.
2d Lt. R. J. Meyer, AC.
2d Lt. T. S. Moorman, AC.
2d Lt. C. W. Phillips, AC.
2d Lt. P. H. Pope, AC.
2d Lt. E. G. Simensen, AC.
2d Lt. J. H. Skinner, AC.
2d Lt. F. G. Smith, AC.
2d Lt. V. C. Smith, AC.
2d Lt. R. J. Stecker, AC.
2d Lt. M. F. Summerfelt, AC.
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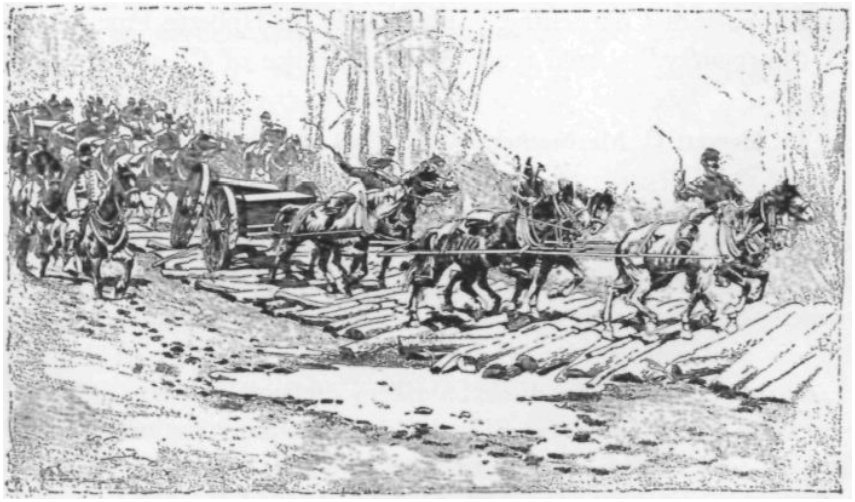
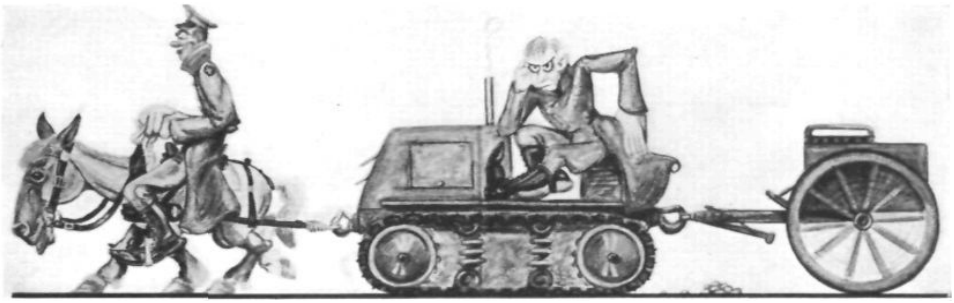
2d Lt. J. H. Hinrichs, OD.
2d Lt. W. J. Latimer, Jr., OD.
1st Lt. H. J. D. Meyer, OD.
2d Lt. J. S. Neary, OD.
2d Lt. N. E. Poinier, OD.
2d Lt. E. C. Reber, OD.
Captain W. Mayer, CWS.



FIELD ARTILLERY NOTES



MECHANIZED FIELD ARTILLERY AS VISUALIZED BY SERGEANT WILLIAM VARNISH, 124TH FIELD ARTILLERY, ILLINOIS NATIONAL GUARD. THIS CONCEPTION WILL STRIKE A RESPONSIVE CHORD IN THE HEARTS OF MANY "OLD TIMERS."

Erratum

On page 405, September-October, 1933, number of the JOURNAL, in the article entitled "Supporting an Infantry Division," by Colonel Conrad H. Lanza, Field Artillery, appears a remark concerning the 35th Division as follows: "The command post was at Baulny; that of its 60th Field Artillery Brigade at la Hobette Fme., south of Charpentry." The words "la Hobette Fme., south of Charpentry," should read "south entrance of Cheppy."

1st Lt. Everett C. Meriwether, F. A., Dies at Fort Sill

First Lieutenant Everett C. Meriwether, F. A., 32 years old, Fayetteville, Arkansas, aide to Brig. Gen. William M. Cruickshank, died at Fort Sill on December 7, 1933, from non-epedemic menengitis. He was appointed to the military academy from Illinois and was graduated in the class of June 12, 1923. He was a graduate of the Field Artillery School, Battery Officers' course, in 1928, from the Signal School, communications course, in 1929, and held the degree of M.S. & E.E., Purdue University, 1930. Funeral services were held from the Old Post Chapel. He was buried in Arlington National Cemetery, Washington. D. C.

Resumption of Service Practice

The provisions of a recent letter from The Adjutant General, as amended by the 2d Indorsement thereto, permits *all* Regular Army Field Artillery organizations to expend, during the period July 1—December 31, 1934, one-half their normal annual allowances as authorized in AR 775-10. The purpose of this half-yearly allowance is to permit *all* to resume service practice on the date specified without jeopardizing the adoption of the calendar year as the basis for ammunition allowances. Theoretically effective July 1, 1934, in actuality the first full year's allowance on this basis will become available on January 1, 1935.

The Field Artillery will welcome the opportunity to resume service practice after the lapse of a year. It is confidently expected that good use will be made of the ammunition provided.

National Guard and Reserve Officers' Graduation

Twenty-one selected National Guard and Reserve Field Artillery officers completed the three months' special fall class at the Field Artillery School. The graduation exercises were held Saturday, December 16th. Seventeen states had representatives in this class.

Brigadier General William M. Cruickshank, Commandant of the Field Artillery School, presented the diplomas to the members of the graduating class; Colors, standards and guidons of the organizations of the post were massed at the platform; and the First Field Artillery Band furnished the music for the ceremonies which were staged at the Officers' Club.

Because of economy moves, this will be the only National Guard and Reserve officers' class at the school this year. In the past there has been a spring course for battery officers and there has also been a shorter course for field officers, but both have been dropped for the current year.

The following completed the course:

Bachman, Roy D., 1st Lt., FA-Res., 212 Franklin St., Tampa, Fla.

Cavanaugh, John R., 1st Lt., Hq. 1st Bn., 104th FA, NYNG, 241 Robinson St., Binghamton, N. Y.

Cummings, William G., Capt., Hq. Btry. & C. T., 1st Bn., 101st FA, Mass. N. G., 10 Chamber St., Charleston, Mass.

Dawson, Robert H., 2d Lt., Btry. A, 114th FA, Miss. N. G., 608 S. Broadway St., Greenville, Mississippi.

Driscoll, William H., 1st Lt., FA-Res., Box 356, Eureka, Utah.

Forde, Albert Lloyd, 2nd Lt., FA-Res., 1632 N. Weber St., Colorado Springs, Colo.

Foster, Edward T., 2nd Lt., FA-Res., 2617 Chicago St., Omaha, Nebraska.

Gilbertson, Ralph O., 1st Lt., FA-Res., 6654 Northwest Highway, Chicago, Illinois.

Herbold, Henry P., 1st Lt., Btry. D, 160th FA, N. Y. N. G., 553 Ellicott St., Buffalo, N. Y.

Holmes, Robert H., Jr., 1st Lt., Btry. F, 114th FA, Miss N. G., c/o Holmes Motor Co., Biloxi, Mississippi.

Jenkinson, Lawrence W., Capt., Btry. D, 135th FA, Ohio N. G., 434 South Kenilworth Ave., Lima, Ohio.

Kelly, Joseph E., 1st Lt., Hq. 151st FA, Minn. N. G., 432 University Ave., N. E., Minneapolis, Minn.

Lewis, James T., Jr., 1st Lt., FA-Res., Room 1172, 50 Church St., New York, N. Y.

Miller, Ernest H., 1st Lt., FA-Res., 1373 Cypress St., Louisville, Ky.

Nickell, Joe, Capt., 1st Bn., 161st FA, Kansas N. G., 2415 California Ave., Topeka, Kansas.

Reed, Elbert G., Capt., Btry. F, 160th FA, Okla. N. G., Ada, Oklahoma.

Schmidt, Hermann O., 2d Lt., Btry. D, 110th FA, Md. N. G., Pikesville, Md.

Skelton, Doyle C., 1st Lt., Btry. D, 139th FA, Indiana N. G., 528 N. Main St., Princeton. Ind.

Tweedy, William H., 2d Lt., Btry. B, 142d FA, Arkansas N. G., P. O. Box 143, University Station, Fayetteville, Arkansas.

Whipple, Clarence E., Capt., Btry. D, 107th FA, Pa. N. G., 350 Pennsylvania Ave., Williamsport, Pennsylvania.

Wilkenloh, Charles E., 2d Lt., Btry F, 258th F. A., N. Y. N. G., 6583 West 188th St., New York, N. Y.

Army Motorization Plan

Under the provisions of the National Industrial Recovery Act of 1933, the Public Works Administration allotted $10,000,000 to

the War Department for Army motorization. This authorization included cars, motorcycles, light and medium cargo trucks, tractors, cargo trailers, special Signal and Engineer vehicles, servicing and maintenance vehicles, cross-country passenger vehicles, scout cars, prime movers, traction devices, pintles, adapters for 75mm guns. A general motorization of the Army will result from the supply of these vehicles.

The vehicles enumerated below will provide the following:

Field Artillery, Regular Army

a. Provides truck tractive power and 75mm carriages modified for high speed hauling for the following units:
   (1) All Field Artillery in the Hawaiian and Philippine Islands.
   (2) One-half the 75mm artillery of the 1st, 2d, 3d and 4th Divisions.
   (3) One-half the remaining divisional 75mm gun artillery in the United States.
   (4) One battalion of 75mm guns for the Mechanized Cavalry Brigade.
   (5) All medium and heavy field artillery units.
b. Motorizes the field trains of all units, including horse-drawn, horse and pack artillery units.
c. Provides authorized reconnaissance vehicles for all units.
d. Provides authorized motor equipment for one ammunition train.

TENTATIVE ASSIGNMENT OF VEHICLES

Unit	*No. of Vehicles*
Headquarters and Headquarters Battery, 1st Field Artillery Brigade	8
Headquarters and Headquarters Battery, 2nd Field Artillery Brigade	11
Headquarters and Headquarters Battery, 3rd Field Artillery Brigade	11
Headquarters and Headquarters Battery, 6th Field Artillery Brigade	11
Headquarters and Headquarters Battery, 11th Field Artillery Brigade	6

Headquarters and Headquarters Battery, 13th Field Artillery Brigade	11
1st Field Artillery	77
2nd Field Artillery	10
3rd Field Artillery	10
4th Field Artillery	10
5th Field Artillery	52
7th Field Artillery	40
8th Field Artillery	156
9th Field Artillery	58
10th Field Artillery	142
11th Field Artillery	90
12th Field Artillery	32
13th Field Artillery	156
14th Field Artillery	20
15th Field Artillery	139
16th Field Artillery	10
17th Field Artillery	85
18th Field Artillery	32
19th Field Artillery	139
24th Field Artillery	156
25th Field Artillery	142
36th Field Artillery	33
76th Field Artillery	32
80th Field Artillery	44
82nd Field Artillery	32
83rd Field Artillery	20
2nd Ammunition Train	36

VEHICLES AND EQUIPMENT PROVIDED

Type	*Number*
Car, 5-passenger, 2-ton, sedan	10
Truck, pick-up body (1½-ton)	239
Truck, reconnaissance, 8-passenger	493
Truck, light (LC) (1½-ton), 4 × 2	495
Truck, light (HC) (1½-ton), 4 × 2	230
Truck, light (LC) (1½-ton), 4 × 4	254
Truck, light (HC), (2-ton), 6 × 6	84
Truck, half-track, T-3	6

Traction device, pair	1,583
Adapters, for 75mm gun carriage	144
Total	1,811

Field Artillery, National Guard

Motorizes all 75mm field artillery units of the National Guard to the extent at present authorized, and in addition furnishes one truck, reconnaissance, 8 passenger, and two trucks, light (LC) (1½-ton), 4 × 2, for each firing battery.

TENTATIVE ASSIGNMENT OF VEHICLES

Unit	*No. of Vehicles*
118th Field Artillery	60
105th Field Artillery	60
110th Field Artillery	60
54th F. A. B. Hq. Battery	3
111th Field Artillery	60
53rd F. A. B. Hq. Battery	3
107th Field Artillery	60
109th Field Artillery	60
62nd F. A. B. Hq. Battery	3
134th Field Artillery	60
135th Field Artillery	60
63rd F. A. B. Hq. Battery	3
138th Field Artillery	60
139th Field Artillery	60
57th F. A. B. Hq. Battery	3
120th Field Artillery	60
66th F. A. B. Hq. Battery	3
146th Field Artillery	60
148th Field Artillery	60
128th Field Artillery	60
147th Field Artillery	60
69th F. A. B. Hq. Battery	3
58th F. A. B. Hq. Battery	3
122nd Field Artillery	60
124th Field Artillery	60
112th Field Artillery	60
156th Field Artillery	60

141st Separate Battalion	27
132nd Field Artillery	18
101st Field Artillery	18
102nd Field Artillery	18
103rd Field Artillery	18
104th Field Artillery	18
117th Field Artillery	18
116th Field Artillery	18
115th Field Artillery	18
119th Field Artillery	18
130th Field Artillery	18
161st Field Artillery	18
125th Field Artillery	18
151st Field Artillery	18
158th Field Artillery	18
168th Field Artillery	18
160th Field Artillery	18
131st Field Artillery	18
132nd Field Artillery	18
143rd Field Artillery	18
145th Field Artillery	18

VEHICLES AND EQUIPMENT PROVIDED

Type	*Number*
Truck, reconnaissance, 8-passenger	439
Truck, light (LC) (1½-ton), 4 × 2	1,112
Pintle	(1,112)
Traction device	(234)
Adapters for 75mm gun	(468)
Total	1,551

Knox Trophy Omitted

The award of the Knox Trophy to the outstanding battery of Field Artillery will not be made this year, due to the inability of regular Field Artillery organizations to partake in the test on account of lack of ammunition and the demands made on the personnel for Civilian Conservation Corps duty.

Winner of the Knox Medal

The Knox Medal, awarded annually by the Society of the Sons of the Revolution in the Commonwealth of Massachusetts, for excellence as an enlisted student at the Field Artillery School in 1933, was won by Corporal Woodrow W. Anderson, Headquarters Battery and Combat Train, 1st Battalion, 18th Field Artillery.

Corporal Anderson is serving in his first enlistment having enlisted at Oklahoma City, Oklahoma, on December 12, 1931. He was born on October 8, 1911, at Crosses, Arkansas, at which place his parents now reside.

Corporal Anderson is a high school graduate and is qualified as an Expert Gunner. He is also a graduate of the Field Artillery School Communications Course, Fort Sill, Oklahoma, 1933.

Corporal Anderson has been outstanding in athletics, being a member of the Battalion Football Squad in 1932 and 1933, playing first string position at left end. He was also a member of the Battalion Basketball Squad in 1933 which won the Fort Sill Basketball Championship. In baseball he served on the pitchers' mound for his battery team.

At the present time Corporal Anderson is a member of the Radio Detail in Headquarters Battery and Combat Train, 1st Battalion, 18th Field Artillery at Fort Sill, Oklahoma.

R. O. T. C. and C. M. T. C. Winners Visit Washington

Announcement was recently made by the Civilian Military Education Fund of the names of the eighteen C. M. T. C. and R. O. T. C. students selected for the 1933 award of an educational trip to Washington, D. C. All sections of the United States were represented. The winners, each of whom on a competitive basis was adjudged outstanding in military efficiency by their respective Corps Area Commanders, represent sixteen colleges and universities.

The winners were:

C. M. T. C.

Francis H. Lessard, Brockton, Mass., Infantry
Bruce H. Sullivan, Albany, N. Y., Infantry
V. Stuart Deitrick, Jr., Parksley, Va., Coast Artillery
Kenneth B. Collins, Fort Myers, Fla., Coast Artillery
George Siculan, Martins Ferry, Ohio, Infantry
David A. Winship, Oak Park, Ill., Field Artillery
Wilmar C. Jarmuth, Vermilion, S. D., Infantry
Bufford M. Howard, Ada, Okla., Field Artillery
Stanley Bixel, Tacoma, Wash., Infantry

R. O. T. C.

Thomas J. Johnson, Hartford, Conn., Infantry
Irving Blume, New York, N. Y., Infantry
Leon D. Simmons, Richmond, Va., Coast Artillery
Oma R. Bates, Gloster, Miss., Infantry
John L. Schaffner, Lafayette, Ind., Field Artillery
James McClure Turner, Hammond, Ind., Infantry
George R. Parks, Columbia, Mo., Field Artillery
Earl Sneed, Jr., Norman, Okla., Field Artillery
James G. Frazer, Seattle, Wash., Coast Artillery

Featuring their visit was the presentation to each of the Pershing medal for "Distinguished Attainment in Military Education." General John J. Pershing personally presented the award. The U. S. Naval Academy played host on December 1st at Annapolis. While in Washington, they resided at the Army and Navy Club. The trip, an annual affair, is offered as a training incentive for achievement in military education.

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ORGANIZED JUNE 7, 1910

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EDITED BY

DEAN HUDNUTT
Major, Field Artillery, U. S. Army

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