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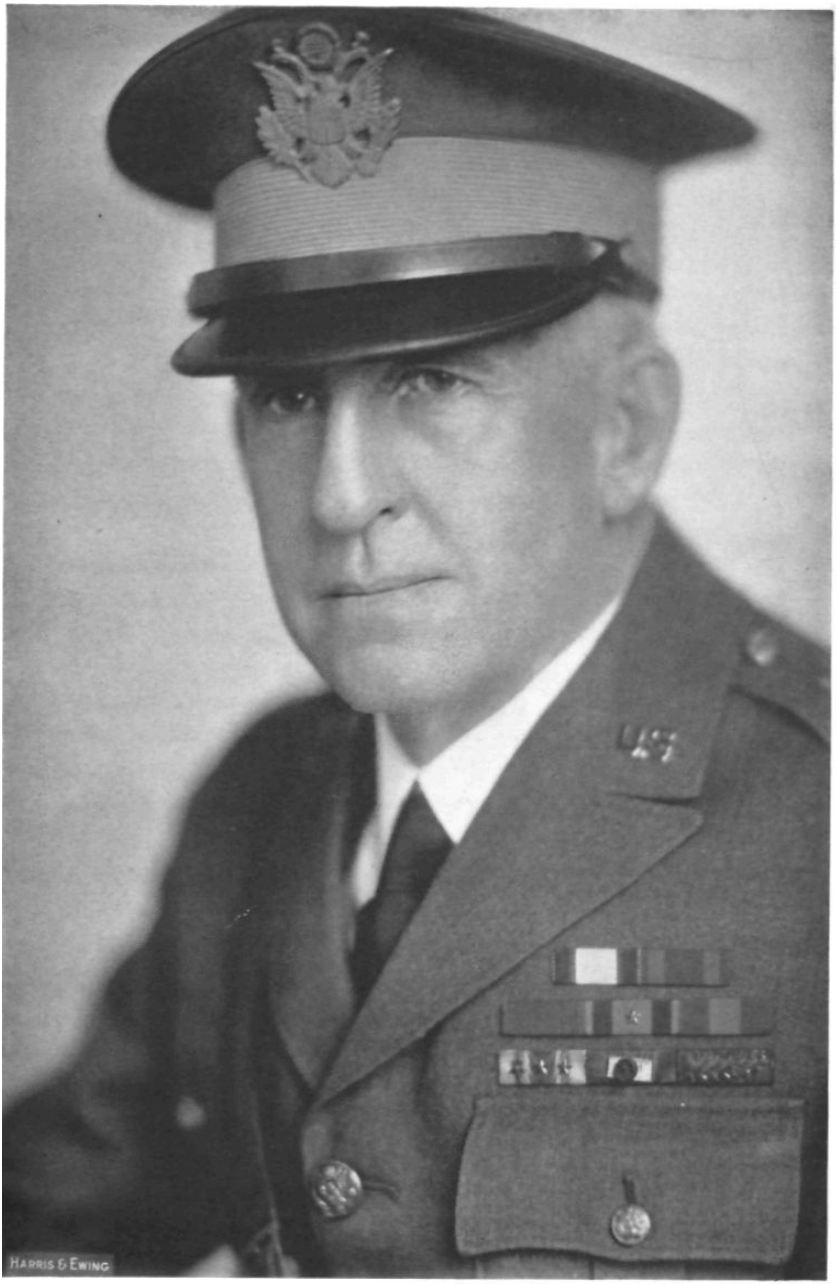

MAJOR GENERAL WILLIAM S. McNAIR

THE FIELD ARTILLERY JOURNAL

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MAJOR GENERAL WILLIAM S. McNAIR

THE Field Artillery bows to the inevitable passage of time and regretfully observes the retirement of one of its most efficient, esteemed, and honored officers.

Upon graduation from West Point in the Class of 1890, William S. McNair was assigned to and served with the 5th and 3d Artillery at Washington Barracks, Fort McHenry, and Fort Barrancas. After graduation from the Artillery School in 1896, he served at the Presidio of San Francisco until 1900, at which time he was sent to China with the Boxer Relief Expedition. Late that same year, he was returned to Manila, where, in April, 1902, as a captain, he was assigned to the command of the 25th Battery of Field Artillery. As commanding officer of this unit against the Moros in the Mindanao Campaign of 1902 and 1903, he was cited for gallantry in action. Bringing this battery back to Fort Riley, Kansas, for station in 1903, he commanded it until 1907. This was during the time that it and the other field artillery batteries, at that post, were being used to develop the drill regulations and tactics of modern quick firing field artillery with which our field artillery, at that time, was being re-armed.

On separation of the Coast and Field Artillery in 1907, he was assigned to the 6th Field Artillery at Fort Riley, where, in 1910, he was promoted to the grade of Major. Until 1913 and for the five years preceding, he was a member of the Field Artillery Board, which, during the period cited, performed pioneer work of inestimable value to the Field Artillery.

After graduation from the Army War College in 1914, he was returned to the 6th Field Artillery, where he served with it on the Mexican Border until November, 1914, at which time he was detailed with the Inspector General's Department in Washington. In 1916, he was appointed a Brigadier General in the New York National Guard and commanded the Field Artillery Brigade of that state during its period of Federal Service on the Mexican Border. In February, 1917, he was assigned to command the 6th

Field Artillery, which regiment he reorganized and took to France as a part of the 1st Division. Upon landing in France, he found himself promoted to the grade of Brigadier General and assigned to the 151st Field Artillery Brigade back in the States. After a short tour of duty in command of the 1st Field Artillery Brigade, and as an observer on the French and British fronts, he embarked on the Transport *Antilles* to join his command. Four days out from France, this transport was torpedoed, and, almost by accident, he was picked up more dead than alive after an exposure of six hours in the icy water. Just two months later found him on duty with his brigade at Camp Devens, Massachusetts. He took this Brigade to France in July, 1918, where, one month later, he was made a Major General and assigned to duty with the Army Artillery, First Army. He was present as an observer during the reduction of the St. Mihiel salient, and later participated in the Meuse-Argonne Offensive. He was Chief of Artillery, First Corps, from October 25 to November 19, after which date, he was Chief of Army Artillery, First Army.

On return to the United States in April, 1919, he successively commanded Camp Taylor, Camp Knox, and Camp Bragg.

In 1920, on return to the grade of Colonel, he was detailed as a member of the General Staff Corps with station, first at Washington, D. C., and then at Quarry Heights, Canal Zone, as Chief of Staff, Panama Canal Department. In 1924, on relief from duty with the General Staff, he became Executive, Field Artillery Group, Organized Reserves in New York City, where he remained until assigned to command the 6th Field Artillery at Fort Hoyle in December, 1928. Two years later, he was promoted to the permanent grade of Brigadier General and assigned to command the 4th Coast Artillery District with station at Fort McPherson, Georgia. He was on this duty at the time of his retirement, October 1, 1932, as a Major General.

It is difficult to speak of General McNair in terms that do not seem extravagant. He possessed, in marked degree, those virtues that leave a lasting impress for good on the service. His example of uncompromising honor, strict integrity, and unswerving devotion to duty constituted a worthy tribute to the spirit of his Alma Mater, and served as a beacon light to guide those of the younger

generation, who were so fortunate as to serve with and under him, and who, as a consequence, always bestowed upon him their confidence, loyalty, respect, and their wish to emulate him. But fine character was not the only quality that made him valuable to the service. Sound, sane judgment; good common sense; cool, quiet temperament; clear headed ideas of justice and the fitness of things; superlative efficiency in the professional requirements of his arm; and the courage of his convictions were also among his many valuable soldierly qualities, while his delightful personality, his delicious sense of humor, and his human touch, made him one of whom it was said "He was beloved by his officers and men." General McNair was the "leader," rather than the "driver" type of officer. His control was of the kind that made subordinates "drive" themselves in their respect and esteem for him and in their consequent desire to give him the best that they had.

General McNair, the Field Artillery salutes you, and stands at attention as you depart from us. It loves you and it is proud of you. It expresses the hope that there remain to you many many years in which to enjoy with your family the satisfaction of a professional career that has been a credit to yourself, a credit to the Army, and a credit to your Country.

THE ANNUAL REPORT OF THE CHIEF OF FIELD ARTILLERY—1932

SECTION I—PERSONNEL

Regular Army
Commissioned Personnel: Strength Report as of June 30, 1932

	Cols.	Lt. Cols.	Majs.	Capts.	1st Lts.	2nd Lts.	Total
Commissioned in arm	44	67	227	418	484	288	1528
Authorized strength	68	75	235	532	377	212	1499
Difference	–24	–8	–8	–114	+107	+76	+29
Detailed to other arms and services		2	1	5	12	18	38
Detailed from other arms and services				*2	*5		*7
Available for assignment	44	65	226	415	477	270	1497

*Officers, Philippine Scouts.

The gains and losses during the fiscal year ending June 30, 1932:

GAINS

From the U. S. M. A., Class 1932	55
By transfers from other arms	7
Total gains	62

LOSSES

Promoted to Brigadier General	1
Retired	12
Resigned	8
Died	5
Transferred to:	
Air Corps	16
Coast Artillery Corps	1
Finance Department	1
Quartermaster Corps	1
Ordnance Department	1
Total losses	46
Net gain	16

The distribution of officers on June 30, 1932, is shown in Table A:

TABLE A

	Cols.	Lt. Cols.	Majs.	Capts.	1st Lts.	2nd Lts.	Total
Duty with F. A. organizations, R. A.	16	18	43	215	282	177	751
Office Chief of F. A.	1	2	6	4			13
Field Artillery Board	1	1	5	1			8
Liaison Officers			1		1		2
F. A. S., Staff and Faculty		2	16	11	10		39
F. A. Instrs., Other Spec. Serv. Schools			3				3
School duty, arm, students			2	42	42	31	117
C&GSS., Staff and Faculty		2	7		1		10
C&GSS, Students			5	31			36
A. W. C., Staff and Faculty	1	3	3				7
A. W. C., Students		2	8				10
A. I. C., Students			1	1			2
N. W. C., Students			1				1
Oriental Language Students				1	2		3
U. S. M. A. Detachment				1	5		6
U. S. M. A., Staff and Faculty, etc.			1	4	30	3	38
R. O. T. C.	1	5	22	37	49		114
Organized Reserves	12	10	31	26	19		98
National Guard	2	3	43	33	9		90
Genl. Staff, War Department		4	8				12
General Staff, Troops	5	5	7				17
Duty with Gen. Staff Troops	1		1				2
Corps Area Staff		2	3				5
Office, Asst. Sec. of War			1	1			2
Office, Chief of Staff	1						1
Military Attachés	1	1	5	1			8
Public Relations Brch., W. D.				1			1
Detailed to Air Corps					1	12	13
Detailed to A. G. D.				1			1
Detailed to Finance Dept.					1		1
Detailed to Ins. Gen's. Dept.	2	3	3				8
Detailed to J. A. G's. Dept.				1	1		2
Detailed to Ordnance Dept.					3	4	7
Detailed to Q. M. C.		2	1	3	6	2	14
Aides				2	20	4	26
American Battle Mon. Com.					1		1
Disciplinary Barracks		1		1	1		3
Recruiting				1	3		4
Pub. Bldgs. & Grounds, D. C.				1			1
War Mothers' Pilgrimage					2		2
General Depot		1					1
U. S. M. A. Graduates, 1932, Unassigned						55	55
Totals	44	67	227	420	489	288	1535

NOTE: This table shows the status of officers under orders on June 30, 1932. Many of these orders are not effective until September, 1932, and a few not until later in the year.

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 personnel: The situation, with respect to enlisted personnel, is shown in Table B:

TABLE B

ORGANIZATIONS	Allotted Strength	Actual strength as of Sept. 30 1931	Dec. 31 1931	Mar. 31 1932	June 30 1932
1st F. A. Brig. Hq. & Hq. Btry.	34	27	28	29	31
2nd F. A. Brig. Hq. & Hq. Btry.	34	31	35	33	32
3rd F. A. Brig. Hq. & Hq. Btry.	5	5	5	5	5
13th F. A. Brig. Hq. & Hq. Btry.	45	44	40	40	38
3rd Ammunition Train	64	60	60	60	62
Btry. A. 1st Observation Bn.	108	103	105	103	102
1st Field Artillery	1000	990	1013	985	951
2nd Field Artillery, 1st Bn.	511	558	557	473	549
3rd Field Artillery, 1st Bn.	464	439	429	437	458
3rd Field Artillery, 2nd Bn.	333	344	340	336	342
3rd Field Artillery Band	28				
4th Field Artillery, 2nd Bn.	339	309	325	311	316
5th Field Artillery	742				
5th Field Artillery (less Band)		637			
5th Field Artillery Band		25			
5th Field Artillery (less 2d Bn.)			224	275	290
5th Field Artillery, 2nd Bn.			354	350	350
6th Field Artillery	773	714	729	688	648
7th Field Artillery (less 2nd Bn.)	570	542	557	539	524
7th Field Artillery, 2nd Bn.	465	465	430	398	375
9th Field Artillery, 1st Bn.	326	312	298	285	288
10th Field Artillery	773	737	722	662	655
12th Field Artillery	745	699	685	639	609
15th Field Artillery, 2d Bn.	333	312	306	297	289
16th Field Artillery, 1st Bn.	464	427	417	438	431
16th Field Artillery, 2nd Bn.	333	298	313	309	310
17th Field Artillery (less 3d Bn.)	764	728	725	720	702
17th Field Artillery, 3rd Bn.	326	311	331	291	281
18th Field Artillery, 1st Bn.	464	461	472	443	430
18th Field Artillery, 2nd Bn.	464	451	490	450	431
24th Field Artillery (P. S.)	1003	977	989	988	924
76th Field Artillery (less 2nd Bn.)	412	388	401	381	363
76th Field Artillery, 2nd Bn.	333	306	299	298	281
82nd Field Artillery, 1st Bn.	520	470	464	427	426
83rd Field Artillery, 1st Bn.	333	330	329	323	323
F. A. S. Detachment	318	312	319	320	324
Detachment, Office Chief of F. A.	27	25	25	26	26
11th Field Artillery Brigade	2431	2422	2419	2396	2225
Totals	15884	15259	15235	14755	14449

National Guard

Well qualified officers have been selected for detail as instructors with the National Guard.

The status of National Guard Personnel holding Reserve Commissions is shown below:

National Guard officers with Reserve Commissions as of June 30, 1391 2224

GAINS

Regular acceptances 381

LOSSES		
Discharged	315	
Net Gain		66
Total strength as of June 30, 1932 (National Guard Officers)		2290
National Guard enlisted men, holding Reserve Commissions as of June 30, 1932		125
Total strength as of June 30, 1932		2415

Officers' Reserve Corps

Table C shows the distribution of Field Artillery Reserve Officers:

TABLE C

Distribution of Field Artillery Reserve Officers as of June 30, 1932:

Assignment Jurisdiction	Cols.	Lt. Cols.	Majs.	Capts.	1st Lts.	2nd Lts.	Total
Corps Area	88	166	417	1015	1996	5221	8903
Chief of Field Artillery	2	2	9	10	7	91	121
The Adjutant General	2	4	3				9
Available for active training	92	172	409	1025	2003	5312	9033
Restricted Appointments	9	20	72	303	462	1796	2662
Com. in Reserve Corps only	101	192	501	1328	2465	7108	11695
N. G. Officers with Res. Com.	43	56	127	655	702	707	2290
N. G. Enlisted Men with Reserve Commissions					2	123	125
Total holding Res. Com.	144	248	628	1983	3169	7938	14110

Reserve Commissions, only—During the year, the Field Artillery Section of the Officers' Reserve Corps, Reserve Commissions, *only*, changed as follows:

	Gains	Losses	Net Gain
Regular acceptances	282		+282
From R. O. T. C.	871		+871
Transferred (to and from Field Artillery)	52	61	–9
Died		27	–27
Discharged		341	–341
Declined Reappointment		62	–62
Resigned		29	–29
Totals	1205	520	+685

Strength as of June 30, 1931 11,010

Strength as of June 30, 1932 11,695

The following figures show the total officer requirements of all Field Artillery troops contemplated by War Department General Mobilization Plans of 1928, present strength as of June 30, 1932, and resultant shortages.

These figures do not include officers for the Zone of the Interior, the Initial Replacement Pool, and 1st Field Artillery and Field Artillery School Detachment, Fort Sill, Oklahoma.

	Required	Strength as of June 30, 1932	Shortage
Regular Army	4878	1528	3350
National Guard	4978	2899	2079
Organized Reserves	15770	11695	4075
Totals	25626	16122	9504

This shortage necessitates that continued effort be made to build up the Field Artillery Reserve Section.

During this year, all officers in excess of those required for the Office of the Chief of Field Artillery during a major emergency, those residing in foreign countries and a group taking Sound Ranging instruction, have been transferred to the Corps Area Assignment Group, leaving our Arm and Service Assignment Group distributed as follows:

	Cols.	Lt. Cols.	Majs.	Capts.	1st Lts.	2nd Lts.	Total
Office, Chief of Field Artillery	2	2	8	6	2		20
Sound Ranging						57	57
Residing abroad			1	4	5	34	44
Totals	2	2	9	10	7	91	121

SECTION II—INTELLIGENCE

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.

Information concerning foreign Field Artillery activities is included in the semi-annual progress reports of this office.

Pertinent data, furnished by the several sections of this office, is put into proper shape for the INFORMATION BULLETIN, a publication which is sent to the officers of the arm, Regular Army, National Guard, and Reserves, in order to disseminate to them information of a purely Field Artillery nature which would not otherwise reach them in War Department publications or correspondence.

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.

SECTION III—TRAINING

Regular Army—Field Artillery troops are reported to have met all demands made upon them in the training of civilian components.

New service practice reports, Forms 820 and 820A, indicate that service practice has been carefully planned and carried out. The maximum training is derived from the use of service as well as sub-caliber ammunition.

New radio equipment, recently issued to the Field Artillery, has made the communication system of the Field Artillery more reliable. It assures better and quicker support for the unit supported.

Field Artillery troops have again demonstrated their ability to keep up with other troops on the march under all conditions of terrain and weather.

The training literature of the Field Artillery has been completely brought up to date. The Field Artillery Field Manual, in two volumes, has been printed and distributed to the service. All training regulations on the service of the piece have been coordinated, rewritten, approved, and submitted to The Adjutant General for printing and distribution. A new training regulation on gunners' examination, recently distributed to the service, has greatly improved this examination, making it a real adjunct to training. Marked progress has been made in the Extension Courses of the Field Artillery School, which are very popular and useful. They are fulfilling their purpose.

During the past year, 9 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	6
Army Industrial College	1
Tank School	1

Italian Cavalry School	1
Polish Cavalry School.....	1

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
Purdue University (Automotive Engineering)	1
University of Pennsylvania (Sound Ranging)	1

In addition, one field artillery officer attended Purdue University for automotive engineering, but failed to complete the course, due to sickness, and one officer is attending Oxford University, England (Rhodes Scholarship).

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 D, 3d Field Artillery, at Fort Sheridan, Illinois. This battery was commanded at the time of the test by Captain Ernest T. Hayes, Field Artillery, and was successful over 17 competing batteries from all over the United States, as well as over other batteries in Hawaii and the Panama Canal Zone. The Knox Medal, awarded annually by the same society for excellency at the Field Artillery School, was won this year by Sergeant Clifton J. Pierce, 2d Battalion, 3d Field Artillery, Fort Sheridan, Illinois.

The Field Artillery School—During the school year, there were no major changes or alterations in the instructional plant proper.

All of the prescribed courses of instruction have been conducted according to the approved programs, except the Refresher Course. During the past year, other important interests prevented ordering any officers to the School for a Refresher Course.

The tables below show the number of students who followed the various courses at the Field Artillery School during the school year, 1931-32:

OFFICERS

COURSE	Duration Months	Duration Hours	Graduated	Failed	Students Relieved	Total
Advanced Course	9	1333	50	0	0	50
Battery Officers' Course	9	1320	49	0	1	50
Adv. Course in Horsemanship	9	1382½	5	1	0	6
Adv. Course in Motors	9	1300	6	0	0	6
N. G. & Res. B. O. Course (F)	3	481	35	2	0	37
N. G. & Res. B. O. Course (S)	3	500	23	1	1	25
N. G. & Res. F. O. Course	1½	236	7	0	0	7
Totals			175	4	2	181

ENLISTED SPECIALISTS

COURSE	Duration Months	Duration Hours	Graduated	Failed	Students Relieved	Total
Horseshoers (Fall)	4	680	8	0	0	8
Motor Mechanics (Fall)	4	680	4	0	0	4
Saddlers (Fall)	4	680	9	0	0	9
Communication, RA & NG (S)	4	728	69	1	0	70
Battery Mechanics (Spring)	4	730	11	0	0	11
Saddlers (Spring)	4	680	1	2	0	3
Horseshoers (Spring)	4	680	3	0	1	4
Totals			105	3	1	109

The students have displayed an especially fine spirit, and have responded to instruction in a manner which left nothing to be desired. Their conduct has been exemplary. The average number of officers on sick report has been the lowest noted in recent years.

The 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—No contact was had with the National Guard, except such as was brought about by the attendance of officers and enlisted men of the National Guard at courses at the Field Artillery School and by personal visits between officers in this office and those in the Office of the Chief of the Militia Bureau.

Officers' Reserve Corps—Special training in sound ranging was given to selected groups of Reserve Officers of the Field Artillery Branch 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. No other training contact with this corps was had by this office, except through the attendance of Reserve Officers as students at the Field Artillery School.

Reserve Officers' Training Corps—The state of training and efficiency of these units continue to be uniformly excellent. The results obtained are most gratifying.

The new program of instruction, now being prepared for issue, is much better adapted for the use of the units than the present one. This should result in more efficient training.

Extension Courses—Twelve subcourses have been revised for 1932-33 and four new text books published, effecting a decided improvement in the Field Artillery Extension Courses.

SECTION IV—MATERIEL AND EQUIPMENT

Weapons and Mounts

Small Arms for Anti-Aircraft Protection—An Air Corps type machine gun mount has been tested by the Field Artillery Board and found unsuitable for field artillery use. A very promising two-man mount has been developed by the Board and is now being tested. The Ordnance Department has, under development, two types of .30 caliber mounts which are to be manufactured and tested in the near future.

War experience and extended service tests indicate that field artillery troops must be armed to a limited extent with automatic rifles, in addition to machine guns, for local defense, principally of columns, against aerial attack. The rifle used for this purpose should be the same as that adopted for the infantry. Pending development by the infantry of a suitable rifle and final decision in this matter, recommendation has been made to continue the use of the Browning automatic rifle.

Infantry Accompanying Gun—The objectives of an accompanying gun for infantry support by the field artillery are many and varied, but may be grouped into two general classes—stationary and fleeting, an important example of which are machine gun nests and tanks. Objectives of the first class demand curved fire, the other class requires flat trajectory fire.

Unfortunately, the art and science of ballistics and gun construction have not yet reached the stage of development where these conflicting fire characteristics can be combined successfully in a single weapon, although this problem continues to be under study.

It is, therefore, necessary that, until this problem is solved, efforts be directed toward procuring a satisfactory weapon for each of these two fire missions and determining a satisfactory organization for their use.

To this end, the 81mm Stokes-Brandt mortar has been tested and its standardization as an accompanying gun for field artillery use recommended.

A test of the 37mm gun for flat trajectory purposes has been completed, except for armor piercing tests. The results of the test of this weapon, so far as conducted, have warranted the recommendations for the formation of a battery of the above two weapons for extended service test as accompanying artillery.

Pack and Cavalry Division Artillery—All active pack artillery units have now been equipped with the new 75mm howitzer, M1.

Extended service tests of the 75mm gun in the horse artillery have resulted in the conclusion that this gun has too much weight behind the team to keep up with horsed cavalry under some service conditions. Therefore, a pilot high-speed, split-trail carriage for the 75mm howitzer for use with horsed cavalry is under construction at Rock Island Arsenal and should be ready for test in August.

Infantry Division Artillery—A battery of all-around and aerial fire 75mm guns, T2E1, with three-trail, high-speed carriages, together with the necessary fire control equipment for aerial and ground fire, is under construction and should be completed early in 1933.

A battery of 75mm field guns, M1, is to be manufactured in the latter part of the Fiscal Year 1933. There will be incorporated in this battery minor improvements of the weapon suggested as the result of extended service tests.

The large stock of 75mm French guns, now in reserve and whose use would be required in the early stages of a major mobilization, has necessitated efforts to modernize their carriages.

Two methods have been evolved—the first, which is purely a makeshift and to be used only to the necessary extent in case time is an essential factor, consists in replacing the present wooden wheels with light commercial pneumatic tired truck wheels and providing a firing base for use in action. This enables the gun to be transported at high speed on its own running gear, but does not increase its crank traverse field of fire.

A truck-drawn battery of these guns, designated as 75mm gun carriages, M1897, M-1E3, equipped with pneumatic tires and trail hand spikes, is now being tested by the Field Artillery Board. A pilot carriage similar to the above is being manufactured for the 75mm gun, M1917 (British) of which there is an appreciable number in reserve.

The second method, which is more expensive and would require more time for the transformation, consists in a design, now under way, of an entirely new under-carriage with split-trail and new running gear, giving the gun not only the desirable high speed, but a crank traverse of 75°.

A pilot carriage with modern improvements is contemplated for the 105mm howitzer, M2, in the Fiscal Year 1934.

Corps Artillery—The 155mm howitzer, T1, has been tested by the Field Artillery Board and the construction of a new pilot recommended. This is contemplated in the Fiscal Year 1934.

A study is being made to increase the speed capabilities of the present M1918 howitzer.

Heavy Artillery—The new 155mm gun-8 inch howitzer carriage, T2, is receiving extensive tests at Aberdeen Proving Grounds. The manufacture of a battery of these carriages is contemplated in the Fiscal Year 1934.

Improved bearings have been provided for one 155mm gun carriage M1918, which appear to permit a satisfactory rate of speed. A full battery will be so equipped and an extended service test conducted. A similar project is under way for the 240mm howitzer matériel.

Supporting Artillery for Mechanized Cavalry—The directive of the Chief of Staff relating to mechanized cavalry states: "Field Artillery must be prepared to support such a force with units especially organized and equipped to accompany it."

Supporting artillery, in its operation, is of two classes: first, that which supports by fire without changing position, except by relatively long bounds; and second, that artillery which actually accompanies the assaulting troops, halting as may be necessary to deliver bursts of fire, but keeping in actual physical contact with the assault wave.

Existing portée and truck-drawn field artillery is filling the requirements of experimentation in the first-class of supporting artillery.

Experimentation and development are required for the second-class, but ideas on the types of fire missions required for this class are not as yet fully crystallized.

Such accompanying artillery should be mounted on self-propelled vehicles whose mobility is equal to that of the cavalry vehicles which it is to accompany.

The additional characteristics of such a prime mover depend upon the weapon, or weapons, selected, which in turn depend upon the fire missions which are still open to evaluation.

Possible fire missions are visualized sufficiently and enough is known of the characteristics of the 75mm pack howitzer and the 81mm Stokes-Brandt mortar to warrant concurrent experimentation of these weapons for these purposes, and action to that end has been initiated.

Miscellaneous Mounts and Weapons—The 75mm truck mount, T6, has been tested at Aberdeen Proving Ground and is ready to be delivered to the Field Artillery Board for service test. An improvized mount of this type, constructed by the Commanding General, 1st Cavalry Division, General Short, upon the suggestion of the Chief of Field Artillery, has received a limited test in the Cavalry Division with satisfactory results.

Mortars of calibers larger than 81mm are being investigated.

Ballistic tests and the development of ammunition for the 90mm gun-howitzer continue.

Ammunition

Both H. E. shell and shrapnel ammunition have been standardized for the 75mm howitzer.

The combination super-quick and delay fuze, M39 (formerly designated T2E1), has been adopted as standard.

Service tests of the following ammunition have been carried on during the past year:

H. E. shell and practice shell for the 81mm Stokes-Brandt mortar.

Shrapnel for the 75mm gun, M1.

H. E. shell and shrapnel for the 105mm howitzer.

Special powder charges for the 155mm howitzer, M1918.

Propelling charges with flashless increments for the 155mm gun, M1918.

T1E2 point detonating fuze.

The test of the ammunition for the 81mm Stokes-Brandt mortar was completed and the ammunition was recommended for adoption as standard.

Test of the H. E. shell for the 105mm howitzer is nearing completion. It is expected that the remaining tests will be completed during the Fiscal Year 1933.

A new 15-pound H. E. shell for the 75mm gun, M1, is being furnished the Field Artillery Board for test. Preliminary firing tests indicate that this projectile can be fired in 75mm guns, Models 1897, 1916, and 1917, with a maximum range of approximately 13,500 yards. Extensive tests of this projectile will be made with a view to its adoption for all 75mm weapons.

High explosive shell for the new 155mm gun has been furnished the Field Artillery Board for test when the weapon becomes available.

The development of a combination time and super-quick fuze for field artillery shell continues as an active project of the Ordnance Department. Pending the completion of this development, which may require considerable time, H. E. shell equipped with existing powder train fuzes with increased time of burning will be furnished the Field Artillery Board for test. It is expected that such a time shell for the 75mm gun will be available in the early part of the Fiscal Year 1933.

Experiments are in progress for the development of an improved smoke agent for field artillery shell.

Animal Transportation

As the result of test of field ambulances and an experimental mountain wagon, the use of the former has been recommended in horse and horse-drawn units for the transportation of command post and signal equipment. The pneumatic tired ammunition wagons now being developed may replace this type of vehicle.

Several types of cargo carts have been tested and found unsuitable. Commerical trailers of several types are now being purchased for test by the Field Artillery for possible use for cargo purposes and for the transportation of ammunition in both motor and horse-drawn units.

The development of reel carts and rolling kitchens has been somewhat slow. However, such development is in progress with indications of early results.

In order to reduce the amount of leather required for the procurement of necessary harness in an emergency, the Quartermaster Corps has developed a webbing type of harness, reinforced with leather, for both artillery and ambulance harness. A McClellan saddle and other items of horse equipment have also been developed in which webbing reinforced with leather is used wherever possible. Ambulance harness of this type has been tested by the Field Artillery Board and its adoption as substitute standard recommended. Halters, bridles, and saddle bags of this type have also been tested and found to be satisfactory substitutes for the corresponding leather items.

Test of the new officers' field saddle has been completed. The saddle was found unsatisfactory and recommendations have been made as to modifications to be incorporated in experimental types for further test.

A limited number of McClellan saddles, modified in accordance with recommendations of the Chief of Field Artillery, are being manufactured for extended service test.

A Whippey training saddle is now under test.

Motor Transportation

Due to the continuous and rapid improvement in motor transport and lack of funds for test purposes, this subject is still somewhat unsettled. In an attempt to clarify the situation, and as the

result of service tests, the Chief of Field Artillery has made several recommendations, which can be summarized as follows:

Truck-drawn transport is satisfactory for medium and heavy artillery and for G. H. Q. reserve light artillery (excluding pack artillery), providing the most mobile of the trucks available are used.

Front-wheel-drive, in addition to rear-wheel-drive, is highly desirable, if not essential, in this class of transport.

Recommendations have been made to equip single batteries of all classes of medium and heavy artillery with suitable motor transport for extended service test.

Motor transport for division light artillery now appears practicable. The required type of vehicles has not yet been determined. A half-track, low-powered tractor, a light commercial two-wheel-drive truck, a light Q. M. C. four-wheel-drive truck and several low speed tractors have been tested. A high speed tractor, a six-wheel-drive light truck, and a higher powered half-track tractor remain to be tested.

The service test of the light truck-drawn battery is now under way. By the close of the Fiscal Year 1933, the determination of suitable types of motor equipment to meet all requirements of the Field Artillery should be approaching a solution.

Fire Control Equipment

New and improved aiming circles have been sent to the Field Artillery Board for test. A new sitogoniometer is under development.

Continued effort is being made to devise means and light inexpensive apparatus whereby the division artillery may attack fleeting targets by indirect fire. To this end, a 37mm gun director, modified for use with the 75mm gun for ground fire, and a direction controller for similar use are being sent to the Field Artillery Board for test. The direction controller is an attachment to the standard BC telescope by which the laying for direction of guns attacking a fleeting target may be accomplished, leaving the battery commander free to devote all his attention to securing the range bracket and firing for effect.

A simplified anti-aircraft director, T8, together with a newly developed transmission system and other observation post instruments,

will be furnished with the all-around fire battery mentioned above. A special trailer will be used to transport these instruments.

Signal Equipment

Radio Equipment—Issue of new radio sets has been made to all active units. These sets replace all old equipment, except the ground-air set, SCR-109A. It is expected that with this new equipment, a much wider use of radio will be practicable than heretofore.

Two types of radio pack have been developed and recommended for standardization.

The development of a new set for ground-air use is in progress and should be completed during the Fiscal Year 1933. The Field Artillery Board now has under test a light weight, ultra-high frequency, radio telephone set for liaison and intra-battery communication. Very promising results have been obtained in the tests thus far made.

Telephones—A new field telephone, Type EE8T2, has been developed and is now under service test. This telephone embodies a number of improvements over the present telephone, Type EE5.

Telegraph Set—A telegraph set, Type TG5T1 with simplex equipment for use on existing telephone lines, has been tested by the Field Artillery Board and adopted as an agency of signal communication in battalion and higher headquarters.

Telephone Switchboard—Development of an improved monocord switchboard has been continued and should be completed during the Fiscal Year 1933.

Wire Laying Equipment—A hand wire laying device has been tested and recommended for adoption.

Two types of wire pack have been developed and recommended for standardization.

Development of a new reel cart and a wire laying truck should be completed in the Fiscal Year 1933.

Signal Lamp Equipment—A new signal lamp, Type EE84T1, has been developed by the Signal Corps and is now under service test. There is also under test a signal lamp developed at the Field Artillery School.

Sound and Flash Ranging Equipment—A new sound ranging

switchboard has been developed and is now under test. If this switchboard proves satisfactory, it is hoped that the major items of sound ranging equipment can be standardized.

A new flash ranging switchboard is being developed.

A sound ranging central truck and a flash ranging central truck are being developed and are expected to be ready for service test in about three months.

Miscellaneous Equipment

Carrying cases for the 18″×24″ plane table and its tripod have been tested and recommended for standardization. A project is under way to provide similar carrying cases for the 24″×31″ plane table and tripod.

Laced boots have recently been authorized for issue to all enlisted men of the Field Artillery.

Recent tests by the Field Artillery Board of electrical horse-clipping machines indicate the pronounced superiority of this type of horse clipper over the hand driven type. On account of the large stocks of the latter type now on hand, procurement of electrical machines is not possible at the present time.

An experimental instrument pack was tested by the Field Artillery Board and a new pack with modifications recommended by the Board has been built for further test.

Revision of Tables of Basic Allowances

To provide for many changes in items of equipment and in the basis of issue of such items, and to further simplify and reduce the various sections of the Table of Basic Allowances for Field Artillery, this document has been revised, coordinated with the supply services and is now awaiting the approval of the War Department for its publication.

SECTION V—ORGANIZATION

Tables of Organization—Tables of Organization for all Field Artillery elements in the Infantry Division were approved by the War Department on September 2, 1931.

Tables of Organization for the Sound and Flash Battalion, Field Artillery (Observation Battalion) have been revised and will be submitted when Part III, Staff Officers' Field Manual, is next revised.

New Tables of Organization No. 550 to 556, Regiment 75mm Gun, Tractor-drawn, G. H. Q. Reserve, quite similar to the tentative Table of Organization now in use by the 24th Field Artillery, Philippine Division, have been completed and submitted to the War Department.

These tables were prepared to fill the increasing need for a suitable organization for motorized light field artillery in view of the trend toward the motorization of division field artillery and the requirement in certain war plans, that some regiments, now horse-drawn, be mobilized as motorized.

Tables of Organization No. 533 to 539, Regiment 75mm Howitzer Pack, have been revised, because of the new howitzer, which is packed in six loads instead of the four prescribed in the old tables. Certain desirable features concerning communication and transportation were also incorporated in the revision.

Changes in Organization—No changes in organization have occurred during the past year, other than those necessary to conform to the approved revised tables of organization mentioned above.

Battery "A," 6th Field Artillery, was detached from the Mechanized Force and returned to its regiment at Fort Hoyle.

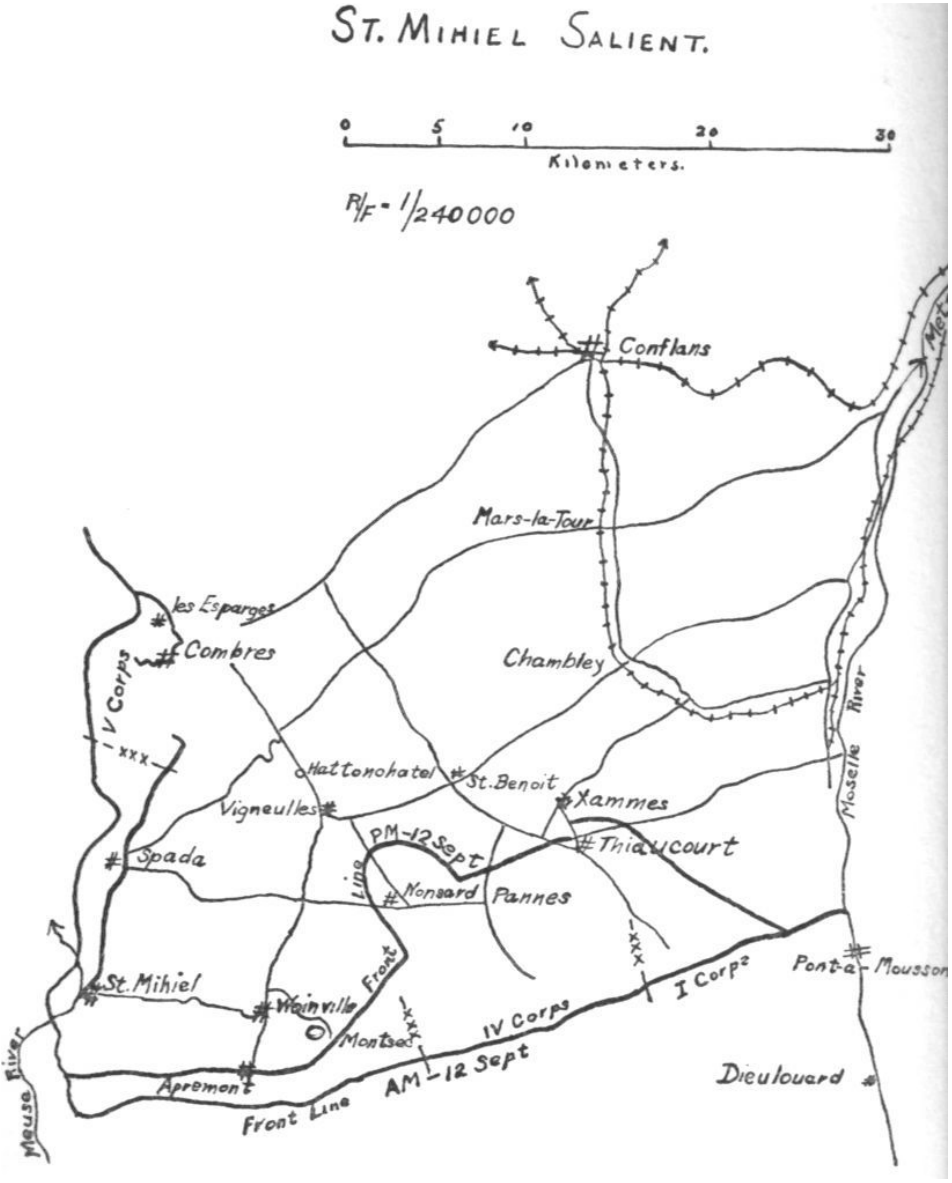
The results of limited experiments with trucks as prime movers for Field Artillery have been so encouraging that tentative tables for this type of organization are now being tried out.

SECTION VI—GENERAL

Co-operation of Arms and Services

In the large amount of development work, which has been initiated and carried on during the year, I wish to make of record the fact that the Ordnance Department, Quartermaster Corps, the Signal and Engineer Corps have rendered invaluable assistance by their most enthusiastic and efficient cooperation. In their contact with this arm, they have complied in every respect with the principle of ascertaining and fulfilling the needs of the using service.

H. G. BISHOP,
Major General, U. S. Army,
Chief of Field Artillery.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St. Benoit
Xammes
Vigneulles
Thiaucourt
PM-12 Sept
Line
Spada
Nonsard
Pannes
St. Mihiel
Wainville
Front
XXX
Montsec
IV Corps
I Corps
Pont-a-Mousson
Meuse River
Apremont
AM-12 Sept
Front Line
Dieulouard
Moselle River

WHAT THE ARTILLERY ACCOMPLISHED AT ST. MIHIEL

BY COLONEL CONRAD H. LANZA, F. A.

I. THE GENERAL EFFECT

THE first announcement by the Germans of an impending attack on the St. Mihiel salient, was on August 20th, 1918. This stated that an American army was forming opposite the salient. Minor operations were forecast for August, and an attack in September. From that date, the Germans watched our operations closely. They noted increasing activity within our lines, and reported to higher authority that an attack was coming, and that their forces were insufficient to maintain themselves. No reenforcements being available, they were authorized to withdraw from the salient to a new position across its base.

On September 10th, the Germans believed that a heavy attack would occur shortly on the south side of the salient, accompanied by a diversion on the west side in the vicinity of Combres. They judged September 15th as the probable date of the attack. As it would take about four days to evacuate the salient in an orderly manner, the movement to the rear was ordered to commence on the following day, September 11th. Previously some stores and matériel had been moved back.

On the night of September 11th-12th, German troop movements were scheduled to start at 10:00 P. M. and to be completed by 4:00 A. M. prior to daylight. Command posts, to include those of some divisions, a part of the artillery, and a part of the infantry, were included in the movement. When our artillery preparation started at 1:00 A. M., the troops were caught while on the march.

The roads leading out of the salient, especially cross roads, road junctions, and towns, were from the beginning under a constant severe bombardment, which caused confusion among the columns, to such an extent that many men fled, seeking refuge from our accurate artillery fire, to hide in dug-outs, or other sheltered places. Most of these men never returned to their posts, and later became part of 16,000 prisoners captured by us. The same results were obtained in towns, not on lines of any marches, where the heavy shelling of our artillery caused complete demoralization

of enemy defending troops. Command posts, still on the march, had not become established in their new positions, and were unable to secure information as to the situation, or to intelligently issue orders.

By 2.00 A. M. the effects of our artillery fire was felt through the zone of attack, from the Meuse valley clear across to the heights of Combres, and Les Eparges. It paralyzed circulation, and so cut telephone lines that at this hour, lines of communication were nowhere functioning.

Between 3.00 A. M. and 4.00 A. M., the intensity of our artillery fire was reported as diminished opposite our west front.* On the other hand, the Germans reported that on the south front, there was no diminution of fire, which at this hour was falling with particular severity on front line trenches. Gas was reported in a number of places, and served to still further delay messages, which had by now almost ceased.

At 5.00 A. M. our infantry jumped off in a fog on the south front, following a 75mm rolling barrage. Everywhere they advanced without difficulty. The tanks failed to advance, due either to not reaching the line of departure in time, or to inability to keep pace with the infantry, or partly to difficulties of the terrain. The infantry consequently found itself before solid belts of wire, in those parts of the front where the cutting was to have been done by the tanks. Unexpectedly the enemy was found unable to defend the wire. The infantry trampled it down with their feet, pulled the stakes out with their hands, or cut the wire with their wire-cutters. The use of the engineers, of Bangalore torpedoes, and other devices, which had been prepared, and which had caused endless worry, were unnecessary.

Our infantry reported the rolling barrage as very efficient, and attributed to it their success in so easily crossing the belts of wire which had been so much dreaded. But the German reports state that it was the artillery preparation which demoralized their men; no German report indicates any loss of fighting power from the rolling barrage. Our infantry observed the barrage, steadily advancing before them, and the unexpected failure of the enemy to offer serious resistance, led them to couple the two events together,

*There was no intention on our part to have this occur.—CHL.

and to assume that success was due to the impressive wall of fire in front of them. This is an excellent illustration of the moral value of a rolling barrage. The barrage had other uses; its smoke partially concealed what was in rear of it; it marked the line to be occupied; and it indicated that comrades to the right and left were up on the same line.

At 7.00 A. M. the Germans noted very severe artillery fire on the west front. Here our infantry were scheduled to assault at 8.00 A. M., preceded by a seven hours' artillery preparation, the increased length of the preparation being balanced by a density of guns on this front, of about 39 per cent of that on the south front. At 7.20 A. M., the Germans reported very vigorous artillery fire on their trenches on the west.

Up to this time the morning had been foggy and misty, preventing any observation by either side, but it now began to clear, giving occasional views. At 7.35 A. M., the Germans had a balloon in the air. From this it was noted that our artillery fire lay on the zone which included most of their artillery. The balloon located three of our batteries firing from near the east exit of Rambucourt, the only identification they seem to have made on this day out of 650 batteries firing against them. The wind was so high that only general observations were practicable from the balloon. At 7.40 A. M., Montsec, the highest, and most important German observation post, overlooking the entire south front, reported a moderate gas bombardment, which did not, however, prevent the apparent use of this OP, to regulate the fire of batteries in the vicinity.

At 8.10 A. M., the Germans noted an increase of fire on the south front. Heavy fire on rear areas and lines of communication still continued, and rendered the securing of information difficult. Reports now commenced to come in from observation posts in church steeples, Montsec, and other places, which though delayed in transit by our steady fire, began to give some idea to the German command of the zone of attack, and the progress being made against them. At 8.37 A. M., it was reported that our artillery fire was not so serious around the tip of the salient, indicating minor operations in this area. At 8.45 A. M., another report stated that our artillery fire was most severe in, and about, Thiau-court,

Pannes and Xammes, key points on the south front, indicating the main attack as here. Reports from the west front, reporting no attack until 8.00 A. M., indicated that here the attack would not be so severe. These reports enabled the Germans by 9.00 A. M. to determine the general nature of our attack.

At 9.40 A. M., the Germans noted that our artillery fire was lying on a line through St. Benoit. This was the limit of our attack, beyond which, excepting interdiction fire, our artillery preparation did not go, disclosing to the enemy at this hour our objective. At 10.30 A. M., our infantry on the south, after having had a short rest, started the final advance, supported by some 75mm batteries which had followed our infantry in time to fire from advanced positions. Soon after the attack came to an end, and our artillery fire was reduced.

The operations on our west front advanced our lines about two kilometers, but the advance of the main attack had been so great, entirely in accordance with the schedule, that the Germans hastened to leave St. Mihiel, and by morning of the day following, had succeeded in withdrawing the greater part of their undispersed men from the salient. They lost about 16,000 prisoners; and 443 pieces of artillery were captured by us. Our own total losses were about 13,700. The Germans reported severe losses in killed and wounded from our artillery fire; their losses from infantry fire were not reported as severe.

COMMENTS. (1) The artillery preparation on the west front of seven hours, did not secure results comparable to our preparation on the south front of four hours. Assuming the same rates of fire on both fronts, on which we have however no accurate data, the shells fired per unit of front on the west was 68 per cent of that on the south front, and per unit of time 39 per cent. Success of neutralization fire varies with its intensity. The fire on the west lacked this necessary intensity, which could not be made up by prolonging the fire to seven hours.

(2) Montsec, the highest ground on the south, and outside the west boundary of our attack, afforded in clear weather a complete view of the south front. A special group of guns had been given the mission of neutralizing and blinding this hill. This was not accomplished. The responsible artillery officer explained that

a high west wind, insufficient density of projectiles, and lack of adjustment caused failure. There was little need to fire on Montsec until visibility made observation possible. The hill then became the most prominent object in view. Adjustment should have been simple. As the ammunition supplied was ample, the density of projectiles fired was discretionary with the officer directing the fire. The probable reason for not obtaining the desired effect, was the use of 75mm smoke shell. Had 155mm smoke been provided in reasonable quantities, there should have been no difficulty in blinding this observation post, notwithstanding the west wind.

(3) Our available artillery had been, as far as possible, concentrated on the south front, in accordance with the tactical principle, to be as strong as possible at the decisive point. On this front all plans progressed during the battle exactly as planned, and the success here obtained insured the fall of the entire St. Mihiel salient. This was the mission of the artillery, and of the army.

II. COUNTERBATTERY

The artillery preparation at St. Mihiel included counterbattery upon every hostile battery, known or suspected. Lists of enemy batteries were distributed by the Artillery Information Service, showing caliber, and the location by coordinates. Requisitions were submitted for enormous amounts of ammunition thought necessary. Next after wire cutting, nothing so much worried the First Army as counterbattery. One corps chief of artillery gave formal notice that he would not be responsible for failure to neutralize the enemy artillery, due to non-receipt of all the ammunition he had asked for.

The enemy had a number of concrete emplacements for heavy batteries. The army artillery was requested, and agreed, to undertake counterbattery of many of these. After the battle, the concrete emplacements were found empty of guns, evidently having been used solely as billets, and for storage purposes. The emplacements had been built at a date when the Allies had but little heavy artillery, and the concrete was then an excellent protection to the German gunners. By 1918, the Allies had plenty of heavy artillery, and the concrete emplacements, impossible to hide,

became death traps; their use had ceased before St. Mihiel was fought. We had not known this.

German artillery trusted to field fortification, camouflage, and defilade for battle protection. Their locations became in part known to us from sound ranging, air photographs, statements of prisoners, and captured documents. After the battle we examined the reported positions of the enemy artillery, to determine whether our counterbattery service was proceeding on correct principles. The average center of impact was found to vary from 25 to 50 meters, from where it should have been. Considering that our fire was at night, without adjustment, this error was satisfactory, and within the requirements for good neutralizing fire.

Sound ranging reports were found to have been our most accurate source of information. At the plotted locations, there was evidence that at least one gun had fired from there at some time. The St. Mihiel sector had been quiescent for so long, that the Sound Ranging Service had had ample time to establish suitable base lines. It was a particularly favorable opportunity for them, but they are entitled to credit for the results they obtained.

Information from air photographs did not give as great an accuracy as had been expected. This was due to having accepted suspicious spots in photographs as a battery, without sufficient investigation with other information, such as comparison and study of topographical maps. One position plotted as on top of Montsec. This was a highly improbable place, as the summit was narrow, access thereto difficult, and so elevated as to have made it impossible for a battery to have been there without our observation posts having seen it. Ground examination indicated no battery had ever been there. Another position was found to be a small piece of land in the middle of a lake; another was a watering place for animals, etc. Such reported positions may have shown as spots in an air photograph, and sometimes as several spots suggesting a battery. Before accepting such positions, verification should have been sought.

Another error was found to have resulted from reporting as a hostile battery, places from which a gun had occasionally fired. As daily firing was habitually by single guns, from temporary positions, which changed constantly, the total number of positions fired from in the course of months was greatly in excess of the

number of batteries that the enemy had. Yet all these places were listed as batteries. After the battle many positions were found unoccupied.

These errors of ours were due to insufficient training of staff details. Fortunately they had no serious consequences, because:

a. The enemy artillery had only about 20% of the strength of ours.

b. A portion of the enemy artillery was caught by our artillery preparation while changing position, and was unable to be thereafter effectively used.

c. A portion of the enemy artillery had been correctly located, and was neutralized by our fire.

d. The severity of our artillery preparation, resulted in such cutting of telephone wires, that by 2.00 A. M., one hour after fire had opened, the enemy was unable to direct fire, and seldom able to conduct fire.

e. A foggy and misty morning made it impossible to observe until 7.00 A. M. or later, and then only intermittently.

f. After 7.00 A. M. the wind was so high that balloons could ascend only for short periods, and could locate targets only indefinitely.

g. At 7.00 A. M. our infantry was already entering some battery positions.

The result was that the enemy artillery failed to inflict serious losses on our infantry, or to delay the progress of the battle as planned by us.

COMMENTS: The French Artillery Information Service was accustomed to not only list reported enemy batteries, but to discuss their positions with regard to the enemy's tactics and probable mission, and as to suitability from an artillery viewpoint. These critical examinations eliminated many reported hostile positions, as impossible ones, or as probable temporary positions for individual guns. The absence of similar critical studies on our part, resulted in an exaggeration of the enemy artillery strength, and in much useless firing at areas, subsequently found to be empty.

III. INTERDICTION FIRE

Part of the artillery preparation consisted in interdiction fire, intended to derange enemy plans for reenforcements and supplies, and in his maintaining his lines of communication. Within the zone of attack, the success attained was all that could have been hoped for. We have already spoken of the paralysis of traffic caused by our fire, and how it interfered with the enemy's conducting the battle. The greatest success, and the most complete stoppage of circulation, was in the narrow Moselle valley, and on roads leading out of it towards the west. Here the terrain made

detours impracticable, and as we maintained constant fire on numerous points along each road, it was difficult to move without losses and delays.

The next best result was along the main road through the center of the St. Mihiel salient. This road, from Wonville to Vigneulles, about 10 kilometers, was continuously under severe fire. Detours by use of forest roads were possible, but before this could be arranged, we had disrupted the enemy columns with heavy losses and complete demoralization. After 11.30 A. M., September 12th, although we continued our interdiction fire all that day and the following night, the Germans were able to withdraw from the salient by using secondary roads. Here we had only partial success.

Beyond the zone of attack, interdiction fire was limited to selected points of prime strategical or tactical value. This fire was conducted by heavy artillery. Excellent results were obtained at Chambley, an important railhead, and base opposite our I Corps. Fire was with a 340mm gun, of the 77th French Artillery, at a range of about 24,000 meters, and completely demolished the entire establishment.

One of the places selected for distant interdiction fire was Metz, large city, important railroad center and base. The only troops in reserve the Germans had at the beginning of the battle were in Metz. If traffic through this city could be interdicted, it might delay the eventual arrival of reenforcements, and would almost certainly disarrange the supply services. It was also believed that there would be a moral effect from such an important city being brought under our fire—depressing to the enemy, and encouraging to our forces. The problem seemed worthy of solution, and General Pershing directed it be attempted.

There was one gun available for this task. This was a 340mm gun, mounted in a turret, near Dieulouard, in the Moselle valley, 28,000 to 29,000 meters from Metz. The turret was so constructed that the gun could fire only on the railroad junctions near the south exit of Metz. The gun was manned by the 53rd Coast Artillery, assigned to the Eighth French Army, on the right of our First Army. The Eighth French Army was to cooperate in the attack on St. Mihiel, by participating in the artillery preparation,

and a request was made that they undertake interdiction fire on Metz.

This brought up an interesting point of modern war. It appeared that this 340mm gun had been installed and ready to fire for about a year, but had never done so. It had been mounted in order to retaliate for the fire of a German gun on Nancy, which had caused considerable damage in that town, and was very annoying. A short time before the gun at Dieulouard was ready to fire, the French caused to be printed in the press an announcement that they had such a gun, which on and after a certain date would fire on Metz every time the Germans fired on Nancy, but that if fire on the latter town was stopped, the fire on Metz would not take place. Newspapers containing this announcement were circulated in Switzerland, where the German Intelligence service would read it. On the date indicated, the German fire on Nancy ceased, and had now been discontinued about a year.

The Eighth French Army objected to firing on Metz, on the ground that the gun had accomplished its mission without firing. They considered that there was a gentleman's agreement with the Germans, as to mutual abstention from firing on Metz and on Nancy, and that it would not be ethical to break this agreement without giving a reasonable notice of an intention to do so. They refused to allow the gun to fire.

The dispute was carried by General Pershing up to Marshal Foch, the Allied Commander-in-Chief, who decided the matter by approving General Pershing's recommendations. The approval was not received until the day after the battle of St. Mihiel. Promptly the 340mm gun opened fire toward Metz; and the Germans immediately recommenced their fire on Nancy.

As to the results of our fire on Metz. German reports fail to mention it. Our own reports show that down to the Armistice, railroad traffic through Metz was not interrupted. An investigation by the author, after the Armistice, failed to discover any signs of this fire, or any one in Metz who was aware that a large gun had been firing at them. The fire appears to have been a complete failure. On the other hand, the resumed German fire on Nancy, damaged property, and caused some loss of life. Not serious from a military point of view, this fire was a nuisance.

Another town fired on was Mars-la-Tour. This was a rail head and a corps headquarters. Another 340mm gun, of the 77th French Artillery, was detailed for this mission. The range was about 30,000 meters, the direction of fire nearly perpendicular to the railroad.

After the Armistice the author investigated this fire. Reconnaissance failed to discover evidence of a gun having fired on this town. After inquiry, a French gentleman was located, who was about to give a luncheon party to his son, a French officer, who had not seen his family since the Germans had occupied Mars-la-Tour in August, 1914. An invitation to the luncheon afforded an opportunity to obtain the desired information. The host's house turned out to have been the former billet of the German corps commander. The host reported that when our attack opened at 1.00 A. M., the Germans were taken completely by surprise, not having expected an attack on that date. Telephone lines went out quickly, and the corps commander was unable to obtain advices as to how the battle was progressing. Not having any reserves, orders were issued to evacuate the civilian population to Metz, as the extent of our artillery preparation indicated that American troops would be in Mars-la-Tour that same day.

The French gentleman stated that none of our interdiction fire touched the town, but that some large gun had landed projectiles approximately 1500 meters north (50 mils left) of the town, and that one shell had landed on the railroad and had cut the track. He remembered this well, because, as a result, he had had to walk all the way to Metz, and all the way back again, three days later. The track was subsequently repaired. With this information the group of shell holes was located, the place where the one hit was obtained being identified. In view of the long range, even one hit on the target on the morning of the battle was creditable, and it was all that was necessary.

The same 340mm gun which fired on Mars-la-Tour, also fired on Conflans-en-Jarnisy. This was a most important railroad junction, on the main line of a railroad supplying all the German armies in east France. The target was the junction itself, with the adjacent yards and station. The gun was on a prolongation of the railroad, so located in order to increase the probability of hits for range. Fire was adjusted at an approximate range of

28,000 meters, by the Sound Ranging Service. Twelve rounds were fired. The SRS reported seven hits, one on the station, and six in the yards.

Our Intelligence Service, which regularly reported the number of German railroad trains passing through Conflans, never indicated any interruption of service. Reconnaissance after the Armistice, failed to discover any damage to the railroad from artillery fire. Upon inquiry, the French mayor of Conflans reported that he was present on September 12th, and had noted the fire. The first, or one of the first, shells hit a house on the main street. This shot was nearly correct for deflection, and about 500 meters short for range. The house was demolished, but, as no one was in it, there were no casualties.

After this shot, the deflection appears to have been shifted to the south, and the range shortened (corrections in the wrong sense, both for deflection and for range). The remaining shells fell in an orchard, shown to the author, the center of the shot group, being about 1050 meters short, and 400 meters south (about 1 1/3 mils right) of the target. The orchard was not materially damaged, the shells having fallen in open spaces.

Both at Conflans and at Mars-la-Tour, the French inhabitants reported that our interdiction fire had a moral effect upon the enemy, causing a cessation of work and the evacuation of some supplies and services.

In all our interdiction fire was successful. Only at Metz and at Conflans did it fail to accomplish all that was expected.

IV. CALLS FOR ARTILLERY FIRE

St. Mihiel was the greatest battle fought by the United States prior to September 12th, 1918. All the corps, and the army, had made preparations in advance, for rapidly furnishing fire on targets which might be designated during the battle by the infantry, the air forces, or by observation posts. It was expected that there would be a large number of calls from these sources. The army artillery announced that it would be ready to support calls arriving in excess of the ability of the corps to handle. Artillery units were ordered to supply immediate fire to calls from the infantry, and advised to ask questions later as to the need for such compliance.

According to the records, during the battle, the infantry and the air forces reported no targets. Observation posts reported only two targets. One at 3.23 A. M., stated that flashes of two hostile batteries were observed, but without giving any coordinates; and the other at 7.35 A. M., stating that batteries in rear of Montsec were active. As these batteries were defiladed from view, no adjustments could be made on these reports.

Late in the afternoon of September 12th, long after the attack was over, urgent calls arrived at Army headquarters, asking the army artillery to help break up a counter-attack opposite the right of the I Corps. The army refused. Its reason was based on:

a. The location of the counter-attack plotted on the map, as woods on a forward slope. Troops could not enter these woods without being visible from our lines, and no report to that effect had been received.

b. A counter-attack at the place indicated would, if successful, afford the enemy only a minor tactical advantage and would in no way change the general situation.

c. The best place for the enemy to counter-attack would have been on the left (not right) of our main (south) attack, in order to keep open the road to St. Mihiel.

d. It was known that the enemy had had but two battalions available for counter-attack, and it was improbable that he would employ them at a place offering no particular advantage.

In view of the above considerations, the I Corps was notified that no artillery fire would be directed on the supposed location of the counter-attack, other than what might be necessary to sustain, or impede, patrol or reconnaissance operations. There was, of course, no counter-attack here or elsewhere.

COMMENTS: Calls for artillery fire, after a battle is engaged are few, and these few are not to be blindly complied with. At St. Mihiel there were no real calls. The artillery fired according to a plan, in the same way that the infantry followed a plan for their advance. Both plans worked perfectly, and neither needed any modifications during the battle.

V. BATTERIES, GUNS AND AMMUNITION

The number of batteries and guns, and the amount of ammunition used to win the battle of St. Mihiel were:

	BATTERIES		AMMUNITION		
			Provided	Expended	
Caliber	Batteries	Guns	Rounds	Total	Per gun
75mm	291	1164	1,918,600	429,000	368
105mm	30	120	71,000	41,500	346
120mm	8	32	71,100	33,500	1031
155mm how.	173	700	954,000	267,000	411
155mm GPF			55,500	20,600	
16cm M	5	10	2,000	1,000	100
19cm G	6	24		Not ascertained	
8″ how.	12	48	20,500	7,000	146
220mm how.	6	24	32,300	5,600	155
220mm M.	3	12			
240mm TR.	2	6			
240mm St. C.	14	42	4,000	2,200	39
24cm G.	2	8			
9.2″ how.	4	16	9,500	700	44
270mm	8	32	2,500	1,600	50
280mm	6	22	800	100	5
293mm	2	6	900	100	16
305mm	2	4		Not ascertained	
32cm	5	12		Not ascertained	
340mm	4	4		Not ascertained	
400mm	2	4		Not ascertained	
90mm foot art.		69	88,000	14,000	203
95mm foot art.		66	31,500	9,600	145
120mm foot art.	37	126		Not ascertained	
145mm foot art.		8	2,000	300	37
155mm foot art.		24		Not ascertained	
58mm TM.	16	192	17,000	1,000	5
150mm TM.	3½	30	4,500	3,000	100
240mm TM.	12½	74	6,500	1,000	13
6″ Newton TM.	8	96		Not ascertained	
Various AAC	5*	35		Not ascertained	
TOTALS	667	3010	3,310,400	842,500	280

There were 26 different calibers in use, of 49 different models, firing 74 kinds of ammunition. The average number of guns per battery was 4.50.

The total number of batteries was equivalent to 111 regiments of Field Artillery, organized on American standards, or at least 36 to 37 brigades. The infantry on September 12th had in line:

	Divisions	Brigades	Regiments	Battalions
South, main attack	6 U.S.	12	24	84**
West, secondary attack	2 U.S.	4	8	28**
	1 Fr.	1	3	9
Center, holding attack	3 Fr.	3	9	27
Totals	12 U.S. & Fr.	20	44	148

*1 U. S. battery of 2 guns, and 9 sections and 12 platoons of French AAC.

** Includes machine gun battalions.

The strength of the artillery in regiments of 6 batteries was 2½ times that of infantry regiments. As the returns for the St. Mihiel period are mostly missing, the personnel present in the artillery and infantry can not be ascertained. If troops had their authorized strength, the artillery outnumbered the infantry about 20%.

On the south front, the infantry divisions in line had, including machine gun battalions, 84 battalions of infantry. In support the artillery had 2031 guns, or 24.2 guns for roughly each 1000 infantry. One regiment of artillery for each battalion of infantry; one brigade of artillery for each regiment of infantry; this gives an idea of the ratio of infantry to artillery in modern warfare.

The ammunition used was much below the first estimates of 12 to 13 days' fire, and considerably less than the amount supplied. Still there was ample ammunition. All of it was from French sources.

The 75mm guns used slightly over one day's fire. Most of this was expended in the rolling barrage. The guns which individually fired more than any others were the French 120mm. These were mobile, easy to handle, and fired a shell sufficiently large to give good neutralization effect, which the 75mm guns did not do. There was great demand for the 120mm guns; unfortunately few were available.

The main part of the artillery preparation fell on the 155mm guns and howitzers, for neutralization, counterbattery and interdiction within the attack zone. In these missions the foot* artillery contributed its part by covering those targets which were within their range. Guns larger than 155mm, and less than 300mm were for counterbattery, especially against concrete emplacements, and against nests of batteries where a hit within a considerable area was bound to produce effect. Some of these large pieces fired only a few rounds. For example, the 293mm guns fired about 16 rounds each, or approximately one round each 15 minutes during the four hour artillery preparation. The 293s were coast artillery guns, mounted on huge carriages, difficult to

*French artillery, without transportation, and consequently not available for maneuvering. It was moved into line and furnished with supplies and ammunition by borrowing transportation from other artillery.

conceal, and requiring three days to install. Had the German concrete battery emplacements been occupied, these big guns might have caused heavy damage. As it was their presence caused the enemy to remove his batteries to positions protected only by concealment. So they served a purpose.

Guns of over 300mm were for long range interdiction fire. As the life of these guns was small, and there were not too many of them, they had to be reserved for this mission.

COMMENTS: The quantity of artillery employed at St. Mihiel may seem excessive. But on the west front there were not enough guns to carry the infantry forward to their objectives. On the south front there was sufficient artillery. It was the insistence of General Pershing to have this artillery, and to wait until he got it, and to his decision, on the advice of his chief of artillery, Major General E. F. McGlachlin, to use it in a suitable artillery preparation, that is due the substantial results obtained at St. Mihiel.

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*Five batteries of 16cm guns at St. Mibiel were furnished by the French Navy.

FRENCH ARTILLERY DOCTRINE

(Fourth Installment)

(The following is a digest by Major John S. Wood, F. A., of the course in artillery given at the Ecole de Guerre under the direction of Colonel de la Porte du Theil. Major Wood was a student there in 1929-1931.—EDITOR.)

PART II

ARTILLERY IN THE OFFENSIVE

SECTION II—MOVEMENT OF MATERIEL

IN attacks delivered by large units, the movement of materiel is of particular importance on account of the large tonnages to be handled on relatively narrow fronts.

The frontage of the attacks depends on the amount of artillery available and is often much narrower than the front of contact. Also, a simultaneous attack along the entire front selected is not always possible with the limited number of guns at hand. Successive efforts are usually necessary, separated by time intervals whose lengths vary according to the time required by the artillery to shift its fire or to change position.

The artillery must have road space for its movements, but it is only one of many clients and the staff of a large unit must strictly regulate the circulation of all concerned. Nevertheless, artillery tonnages are so great that the time required for the emplacement of guns and ammunition is usually the governing factor in determining the day on which an attack will commence.

DEPLOYMENT

In the offensive the artillery must be pushed as far forward as possible in order to avoid frequent displacements. Also, for convenience and simplicity in employment, groupments in direct support should be emplaced as nearly as possible along the axis of attack of the supported units. In this way telephone lines between artillery and infantry are more easily installed and maintained, and visual signaling is rendered less uncertain. Moreover, the problems of fire are simplified and lifts of fire ahead of advancing infantry are made safer when range changes only can be used, uncomplicated by the necessity for accompanying shifts in deflection.

Attacking artillery does not ordinarily have to remain for long periods in the same positions, and, if it has taken the necessary precautions to insure secrecy, the enemy will have available neither the time nor the guns required for effective counterbattery. The utmost boldness is permissible in the selection of positions. Defilade will still be necessary, but greatly reduced masks become acceptable. Emplacement of the 75 in the front lines is prevented, of course, by its flat trajectory which is even flatter than the machine gun trajectory up to 1,000 meters.

The position of batteries is usually revealed to the enemy by their fire or by photographs. Adjustment fire before the attack may be prohibited, but only at the price of reduced accuracy and increased ammunition expenditures. Ordinarily, a certain amount of firing has been done along the front each day prior to the attack, and the necessary adjustments may be made without disturbing this daily regime.

Photographs indicate paths and ammunition dumps, particularly. These indications can be avoided only by the strictest camouflage discipline, for it will rarely be possible to bring in all reinforcing artillery during the last night. Considerable work must be done on the battery positions, not to mention the matter of ammunition supply which usually requires more than one night. The emplacement of materiel must be handled similarly in order to avoid blocking the roads for the infantry columns on the final night or so before the attack.

DISPLACEMENT

Artillery is useless during displacement. Hence the regulations prescribe that displacements during combat must be made on the order of higher commanders, according to prepared plans. This prescription must be taken, of course, in a large sense—artillery commanders of all grades have the strict duty not only of seeking out and preparing the next positions but of occupying them when necessary, without waiting for orders from a commander far removed from the local scene of action. This should be indicated in the orders for the attack. For example, the orders for an advance indicate zones of successive displacement to be occupied on the initiative of local artillery commanders in support of the infantry.

The decision of the higher commander as to displacement is based on consideration of the effective ranges and the conditions of observation. Artillery can fire without observation, but it cannot be certain of its fire. Beyond 5,000 meters, direct observation becomes uncertain. At the longer ranges, recourse may be had to airplane observation and high burst ranging, both excellent but not always available. Also, as the range of an objective increases, the difficulty of knowing just when to take it under fire becomes greater. It may be concluded that fire at extreme gun ranges is a matter of effectively covering deep zones, which requires concentrations of materiel, delays, and conditions of liaison incompatible with the ordinary attack missions of light artillery.

As a general rule, supporting fire cannot be relied on beyond 5,000 meters (6,000 meters exceptionally). *This condition governs the time set for commencing the first displacement*.

Displacements of this sort require from two to four hours, depending on the state of the roads and the lengths of artillery columns. However, it is not always necessary to halt the attack for a corresponding period.

In an advance against deeply organized defenses, the whole of the artillery must continue in support of the successive bounds until the entire zone is crossed. Part of the 75s and certain rearmost batteries of heavier artillery must be displaced to support the new bounds more effectively. Ammunition must be supplied and new plans of fire arranged. In other words, what amounts to a new attack is required, with the advantage of being able to begin the preparation at once with the artillery left in position.

On the other hand, when the advance beyond the first objective is over unorganized terrain, a part of the artillery may limber and move forward, the remainder continuing in position to fire on call from the infantry. The heavy artillery is regrouped, following in rear, but with reconnaissance parties pushed forward to prepare its prompt entry into action.

Between these two extremes, many combinations are possible.

The halts in an advance over open terrain are shorter but none the less necessary, if the infantry is to be constantly supported. In an advance of this sort—an approach march—the infantry bounds are marked ordinarily by successive crests. For each bound, one echelon of the light artillery is in position behind the

preceding objective attained by the infantry, while the other echelon has limbered and is moving up from the rear. It does not pass the echelon in position, however, until the infantry has completed the bound, for the fire of all the artillery may be required in order to attain the objective. It then moves on forward and goes into position to support the following bound. Meanwhile, the infantry must halt until the artillery is in position. The halt is not less than an hour, ordinarily, even though the artillery reconnaissance has been pushed well forward. The time is not lost, however, for when contact is imminent an infantry commander does not move forward without making preliminary reconnaissance and formulating a plan of action to include his supporting artillery.

Thus, the advance proceeds from one visible horizon to the next, with halts on each objective until the resistance encountered requires combined mass action of the entire artillery.

ENGAGEMENT

Theoretically, a battery can fire up to the limit of its range throughout a sector of 60°. Its effectiveness, however, is not actually the same in every direction within the sector. Artillery once engaged to cover particular zones cannot be shifted to others without certain delays. These factors must be considered in the commander's plan of attack.

If all the artillery is to be engaged at the outset, the commander must decide on his maneuver *a priori*, and adhere to it. If the decision is to be reserved pending further developments of combat, a considerable part of the artillery must be held limbered for subsequent action.

The French combat regulations read as follows regarding the engagement of large units:

> "The commander must formulate his plan of action before each operation. The plan gives the general object in view and the general scheme of maneuver. It fixes the initial directions of attack and the initial disposition of the troops.
>
> "Once engaged, as the combat better discloses the enemy's dispositions and intentions, the role of the commander is to adhere to the general lines of his plan, modifying the details as required, but always with the idea of imposing his will on the enemy. Thus, by successive changes, he accomplishes the mission set.

"Success in war depends more on perseverance and tenacity in execution than on brilliancy of conception."

An offensive battle consists of successive attacks, preceded by periods of preparation, and succeeded by more or less extended intervals of movement. During these intervals the infantry seeks to regain contact with the enemy in spite of his delaying detachments.

In such a movement, light artillery must be made available for the support of advance guards, but no absolute rule can be followed as to the amount assigned—the situation determines this. Rule of thumb arrangements for constituting advance guards in fixed proportions of infantry and artillery must be carefully avoided. Rapid and effective intervention of artillery is secured only by allowing freedom of control to the division artillery commander and freedom of initiative to artillery regimental commanders. The constitution of mixed march columns with the artillery under the strict orders of column commanders is a convenient staff procedure, no doubt, but one to be discouraged, whether in the presence of the enemy or not.*

In march, as well as in combat, the division commander retains control of the major part of his artillery. In fact, the moment when he engages it marks for him the beginning of combat.

This fundamental question of centralized control is not limited in its scope to the division. One frequently encounters, unfortunately, the naive idea that battle is begun by the action of separate detachments, left more or less free within the limits of a general mission; after this the division commanders, finally enlightened, intervene with their main bodies of infantry and artillery; then, the divisions once engaged, the corps commander acts in his turn, applying his reserves and the fire of the corps artillery against a point chosen as a result of the preceding combats.

With this conception, the inevitable solution is to divide the divisions into mixed detachments and to parcel out the heavy artillery among the divisions, so as to be partially ready for any situation that may arise. Such a solution may work well in maneuvers or in map problems since it is unaffected by the effects of fire or the uncertainties and fears of combat. In war, however,

*However, columns of this sort with attached artillery are indicated by the French combat regulations as suitable in the pursuit of a shaken enemy.

a commander cannot thus shed his responsibilities. He must plan, engage, and direct the combat.

But the long range of the artillery makes it the arm with which a commander first engages the enemy, and its mobility of fire enables him to intervene rapidly in combat. Hence, the role of a corps commander and that of his heavy artillery become of prime importance in the engagement. The corps commander must secure from the start an amplitude of front sufficient for the development of his plan of action. He cannot shift this responsibility; and he must often engage not only the heavy artillery, kept strictly in hand, but also the whole or part of the reinforcing artillery intended for later distribution among the divisions. In so doing, he assures the power of his action at the outset and imposes his will on the enemy—the eternal mark of a commander's superiority.

NOTE: It will be seen that the French doctrine, in principle, differs little from our own. There is, however, much greater insistence on fire as the dominant factor in combat, and there is less consideration of movement and maneuver, particularly in the action of the division. In the French scheme of national defense, on which their doctrine is based, divisions do not wander about the country acting alone, but always under close control of the corps as part of an army maneuver. Independent missions and objectives are not considered for units less than an army. The whole conception is one of closely controlled and concerted action against more or less limited objectives. The resultant operations are apparently slow moving, but the French are convinced of the delaying effect of fire. They know its devastating power, and there is no idea of a rush toward the enemy nor of pushing divisions ahead to their limit under their own power—no Nivelle plan of rapid advances toward far distant objectives.

To attack, as the French see it, is to advance one's fire; to defend, is to stop the enemy by fire. To them, generally speaking, the attack means artillery; the defense, automatic weapons. In both cases individual rifle fire is considered of minor importance.

Owing to their conviction of the predominant role of fire, the French visualize a much slower tempo in the attack than we do. This is the main difference in the two doctrines. A French force in an advance toward an enemy would begin its *marche d'approche,* which corresponds to our development, as soon as its

columns reached the zone of the enemy's long range artillery, i. e., 15 or 20 kilometers from the front. Its own long range artillery would go into position to cover the movement. As it advanced into the zone of probable action by all calibers of the opposing artillery, it would move by bounds from one line of crests to the next, each bound covered by a portion of the divisional light artillery which now would move by echelon from position to position. Advance guard artillery in close support is not utilized to cover this stage of the advance as it is by ourselves and by the Germans. As closer contact was gained, more and more artillery would be brought into action until finally the corps would prescribe a preliminary action called the *engagement,* a sort of corps advance guard action, utilizing the maximum amount of artillery available to secure certain objectives favorable for the subsequent attack and to obtain a more exact knowledge of the nature of the contact. Meanwhile the main bodies would be closed up and preparations made for the attack which, in principle, would not be undertaken until all forces considered necessary were on hand and ready. Their divisions do not push ahead following up separate advance guard actions as quickly as possible. The whole action after the initial contact is a corps operation, controlled and carefully timed.

SECTION III—AMMUNITION SUPPLY

The corps chief of artillery is charged with the supply of ammunition from corps depots or refilling points to the batteries. To effect this, he has at his disposal the corps train (motorized; capacity, 80 tons), the division trains (horse and motor, capacity 120 tons) and the organic transportation of the various artillery regiments (horse drawn; capacities 100 tons for 75s and 105s, 130 tons for 155s), giving a total capacity of about 1,900 tons for a corps of two divisions, or about 2½ units of fire.

In certain situations, ammunition supply within the divisions may be left entirely to the division. At other times (stabilized situations) the corps chief of artillery may centralize the supply strictly under his own control. In any case, the responsibility is always his.

A munitions officer is placed on the corps artillery staff to handle this problem which is often very complex on account of the tonnages involved, the limited means of transport, and the limited roads available. Many solutions are possible, and each situation requires close study in order to find the most suitable arrangement. In general, the French favor the scheme of organizing a

motorized delivery train for each corps depot or set of refilling points, the extra trucks required being taken from the divisions or supplied by the army, leaving the regiments as much freedom as possible in the use of their own vehicles.

By tabulating the ammunition requirements of the various units and the means of transport available daily and comparing the two, a first approximation of the minimum time involved may be obtained. This done, the other factors are considered: the location of depots and dumps, the capabilities and capacities of motor and animal-drawn transport, the possibility of delivery direct to the batteries, the road net. A tentative organization of the necessary ammunition columns is then made, and an idea of the time required for a complete cycle of supply is obtained. In this, a ton of ammunition, motor or horse-drawn, is figured as occupying 15 meters of road space and as requiring one hour for loading or unloading. March graphs of the circulation involved are made for the approval of G4.

The corps chief of artillery then issues his plan of ammunition supply which gives:

> The allotments of ammunition to the corps and to its divisions, including place and hour of issue.
>
> The dates and hours for the beginning and completion of the movement of ammunition.
>
> The amounts to be stocked at the battery dumps, in the trains and limbers, and at the depots.
>
> The general organization of supply; distribution of means of transport; location of establishments, and instructions for their maintenance and police.
>
> Circulation.
>
> Assignment of personnel.

In conformity with this plan, the commander of the corps train makes up a daily transport plan, taking into account the reports of ammunition transport for the preceding 24 hours rendered to him each morning by the munitions officers of the various large units.

(*To be continued*)

PERQUISITES OF THE ANCIENT ARTILLERY

BY COLONEL JOHN W. WRIGHT, Infantry (D. O. L.)

DURING the Fourteenth Century firearms consisted of a variety of hand guns and some larger pieces, and their first appearance upon the battle field brought about no important tactical changes; but in the following century their effect became serious. All firearms pertained to the artillery, and their use continued in spite of violent opposition. The Pope excommunicated gunners, and captured artillerymen were treated with great severity; some had their arm severed from the body; all were considered as beyond the pale.

The artillery improved, and soon cannon were destroying the stone walls that had hitherto been so effective a defense for towns. The casting of the large pieces, procuring the powder, training of the personnel, were so expensive that only the king could meet the charges; the gunners formed a distinct corps, and the central power did not permit the Feudal lords to have ordnance. So the guns were a factor in strengthening the royal authority. Artillery became a close corporation with its own government and justice; and the making of guns and gun-powder, the loading of bombs, and even the firing of the pieces were trade secrets.

In every European country the artillery had its head, appointed by the king, who occupied one of the great offices of state. In France there was the Grand Master of Artillery who practically disposed of all the commissions. It was during this period that many perquisites were acquired.

Don Bernardino de Mendoza, writing on the theory of artillery in 1560, says that when a fortress was taken by siege all captured guns remaining mounted pertained to the crown, dismounted pieces to the general of artillery, while broken pieces were the property of the gunners, from whom the king purchased the metal.

Another perquisite appeared. At sieges it was usual to attack a fortress on two fronts, and on each it was estimated that the attack required three batteries of four guns, or twenty-four guns in all. The heavy siege pieces with their trains usually remained in

some strong place during a campaign as they were unable to follow a maneuvering army. When a siege was determined upon they marched to their objective with much difficulty as roads were bad, horses and wagons had to be requisitioned, bridges built or repaired. The expenses involved were paid from the chest of the Grand Master. Arriving before the fortress, the artillery built their own batteries and mounted their guns in them. This required many "pioneers," who were paid. When the breaching batteries were constructed a hundred yards from the walls of the fortress the men who constructed them and mounted the guns were given extra allowances, depending in value upon the importance of the battery and its distance from the hostile works. All of this was paid from the artillery chest. To reimburse the corps it was the custom during the Eighteenth Century for the king to allow them a certain sum for every piece mounted during the siege, up to the number of twenty-four guns; those pieces in excess of this number were paid for at a reduced rate. The sum was less if the piece fired *en barbette* as there was no expense in building the embrasure. The entire amount of these fees was usually divided by the Grand Master into three parts. He retained one third; the artillery officers received a third; the remainder was paid to the men. These payments were made with due regard to rank, and distinguished service and wounds brought to the individual an increased fee. It was a matter of general remark that the artillery at a siege demonstrated the most amazing zeal in bringing into action every available piece of ordnance, and few fired *en barbette*. The infantry never had cause to complain of a lack of artillery support.

When a fortress surrendered a most interesting and important document was addressed by the commander of the attacking artillery to the municipal authorities, bishops and clergy. It recalled to mind that under the ancient laws of war, handed down from time immemorial, the besieging artillery was entitled to all bells within the city and the territory under its jurisdiction; and this included the bells of the municipal buildings, churches, convents, monasteries, in fact all ecclesiastical buildings. Furthermore, the letter stated, the artillery was entitled to all objects, implements, utensils, ornaments of every kind belonging to the Church or State or private property, made of iron, tin, pewter,

bronze, brass, copper or lead. The letter closed with an expression of willingness to meet in conference all parties interested before this ancient prerogative was enforced. In the meantime, to encourage a prompt and successful meeting, hard looking artillery sergeants visited house after house, listing the cooking utensils, and then entered all churches and other religious establishments. When the meeting was finally held an offer to ransom the bells and other metal was made to the representative of the artillery and an agreement was finally reached after much bargaining.

When the city of Barcelona was taken by France in the War of the Spanish Succession, the French commander, the Duke of Vendome, permitted the inhabitants to insert in the capitulation a clause that the Duke agreed to use his good offices with the artillery to reduce to a low figure the ransom demanded. When the conference took place the city offered a sum considered entirely inadequate as they had counted on the intervention of the Duke. But it appeared that he was not of the artillery whose officers resented that he presumed to dictate, or even suggest, in a matter of ancient privilege. As a last appeal the citizens were permitted to carry their case to the highest court in Paris, to the Duke of Maine, Grand Master of the Artillery of France.

This perquisite of the bells and metals was universal throughout Europe. Grose in his *Military Antiquities,* speaking of the English army of the Eighteenth Century, says that immediately after the fall of a place by siege the commander of the attacking artillery (quoting an ancient manuscript) "ordained that the Master Gunners and their Companies should have the best bells in the place," and he then describes the steps taken to collect the founded metal or collect the ransom. The Vizconde de Puerto in his *Reflexiones Militares,* 1726, says that every artillery officer who fired a single discharge at a siege was entitled to his share of the ransom money; and Mallet, *Les Travaux de Mars,* Paris, 1696, refers to this claim as a matter of course and of long standing. From this we conclude that no artillery officer failed in his duty of touching the linstock to the vent of a cannon; in fact the morale of this distinguished corps was so high that we read in the records where officers were transported to the batteries on stretchers by their brave comrades.

When the British took Havana after a long siege in 1762, the

artillery commander collected a handsome sum in ransom as the city was rich with many fine churches. Now the British cavalry commander was an old and experienced dragoon. He thought over the matter for some time; yet what could he do? We all know that a siege is no place for a horse; but this particular gentleman was of a most unusual type. A few days later the Spanish Bishop of Havana was much astonished to receive a communication from the British cavalry commander, a letter that today stands as a model in graciousness and courtesy, one that every cavalryman should read. It invited the attention of the Bishop to the fact that the General of Horse had been so solicitous of Mother Church and the convenience of the Bishop and Clergy that he had refrained from exercising that ancient prerogative of the cavalry of quartering the horses in the churches; in fact he had even directed that none of his men should be billeted in any edifice belonging to the Church. The Bishop replied most courteously expressing deep appreciation; but he did nothing further. After a few days had elapsed a number of cavalry sergeants with ferocious mustaches and long sabers entered all churches and were seen taking measurements and making mysterious entries in note books. They even entered the buildings used for the habitation of the clergy where they continued their measuring and notation. Then one day the stone paved streets of Havana resounded with the clattering of horses' hoofs and another cavalry regiment arrived in town for billet. At this point the Bishop capitulated, and the General of Horse received from a grateful prelate a substantial sum as a just recompense for his exemplary conduct.

There are those who maintain, with some show of reason, that the ancient perquisites had an undue effect upon tacticians. When they advocated with such profound logic the thesis that the offensive was the stronger mode of action, when they unhesitatingly advised that they should at once carry the war into hostile territory, was it possible that they had in mind certain perquisites? At any rate, it is undisputed that the ancient artillery always advanced strong and cogent reasons for the immediate undertaking of a siege; and it is a curious phenomenon that those strategic places urged for immediate attack always contained numerous and rich churches. Probably, then as now, the corps of artillery was composed of pious men.

ECLIPSE—BY ORDER

Summary of Conversations, 30 August, 1932

Adjutant to Sergeant-Major:

Tomorrow afternoon there will be a total eclipse of the sun, a rare event, which is seldom seen. Notify the batteries to have their men form, dismounted, on the regimental parade, in service uniform, at 3.15 P. M. This will enable them to see the eclipse; I will be present to give explanations. If it should rain, there will, of course, be nothing to see. In this case, there will be the usual indoor instruction.

Sergeant-Major at 1st Sergeant's Call:

By order of the colonel, tomorrow afternoon, at 3.15 P. M., there will be a total eclipse of the sun in service uniform. Batteries to attend, dismounted. The adjutant will be present, and will give necessary orders. If it should rain, there will be nothing to see, which seldom happens; in this case this rare event will take place indoors.

1st Sergeant to Battery Clerk:

The colonel is going to have an eclipse of the sun tomorrow, to start in service uniform on the regimental parade at 3.15 P. M. Everybody present, dismounted. If it rains, which seldom happens, the adjutant will explain this rare event indoors, with necessary orders, as there will be nothing to see.

Battery Clerk at Retreat:

Tomorrow afternoon at 3.15 P. M., the colonel will eclipse the sun, with necessary orders in service uniform. Everybody to attend. If it rains, this rare event will take place indoors, which seldom happens, and there will be nothing to see.

Men at Supper:

Tomorrow at 3.15 P. M., the sun will eclipse the colonel with necessary orders. If it rains, this event will take place indoors in service uniform, which seldom happens.

NOTE: The foregoing is from a French account.

EXAMINATION FOR APPOINTMENT OF NON-COMMISSIONED OFFICERS OF THE NATIONAL GUARD

BY CAPTAIN JAMES ANDREWS
105th Field Artillery, N.Y.N.G.

NEARLY everyone believes that persons desirous of promotion should be examined as to their qualifications. As a rule, however, battery commanders seem to feel that they are almost infallible judges of the capabilities of their subordinates and that any formal test is unnecessary in their particular case.

The writer will attempt to show that this view is erroneous; that an examination for non-commissioned officers is so advantageous that no captain can afford to sponsor the appointment of these key-men of his unit through any hit-or-miss method of selection.

At the outset it must be understood that no claim is made that the best man will invariably be found through a competitive examination. Mistakes will be made by any human agency; no matter how painstaking or careful. It is a fact, nevertheless, that there will be fewer men promoted who are unfit, if they are required to pass a comprehensive test before a conscientious, impartial board; than if their advancement is the result of caprice or "guess."

The examination to be outlined herein has been developed over a period of five years during which the writer has commanded a battalion headquarters battery and combat train. To be applied to a lettered battery it would, of course, have to be modified to emphasize matériel, animal or motor transport, etc. Basically, however, the plan will fit any artillery unit.

The subjects, with weights are as follows:

PRACTICAL	
Dismounted Drill	25%
Fire Control Instruments	10%
Telephone Communication	10%
THEORETICAL	
Written Examination	25%

Oral Examination	20%
Attendance	10%
Total	100%

It usually takes three drill nights to complete the work, divided in this manner:

First Night	Dismounted Drill
Second Night	Written Examination
	Oral Examination
Third Night	Practical (Telephone and Fire Control Instruments).

The board is composed of the officers and First Sergeant of the unit. The First Sergeant is included for two reasons:

(a) Because of the prestige it gives him.

(b) Because he, of his own knowledge, is able to, and does, convey to the men the absolute impartiality of the board.

It is believed that the importance of having a *board* should be stressed. The number of persons conducting the examination lends dignity to the proceedings and the factor of group judgment all along the line makes for an unbiased decision.

The date and scope of the examination are announced about two months beforehand, together with the statement that any man in the unit may be a candidate. By judicious reminders at subsequent drills, interest is maintained and the more ambitious men are soon actively studying.

On the first night of the test each candidate is required to drill the organization, dismounted, for a period of three minutes. He may give any commands he pleases during that time. He is then required to form the battery in line and explain, in as nearly the language of the book as he is able, one simple command, such as: Right Face; Parade Rest; Right Dress.

During the dismounted portion of the test, the candidate is marked by the members of the board, in accordance with the following schedule:

Member	*Category Marked*	*Scale*
Captain	General deportment	7
	Explanations made	

1st Lt.	Method of giving commands Kind of commands	6
2nd Lt.	Mistakes caught Mistakes made and not caught	6
1st Sgt.	Whether he corrects cadence Does he give commands on proper foot and time?	6
	Total	25

On the second night the candidates are seated in a room with paper, pencils and code books. The questions, five in number, are written on a blackboard. A Staff Sergeant is present in the room to see that silence is preserved and that there is no "cribbing."

The questions used in this year's written examination are given below:

1. Decode this message.

FAI V	DAI	P MESSAGE		GR 19
NR26	DFC4	INUQ	KIBR	ASUX
VORH	ORTU	QYJW	DAVQ	ZOAX
CUPA	LOLA	GEEJ	ZPIQ	XELM
JOFZ	ZUCO	AOAO	1155 P	

2. What is the Message Center?
3. Encode this message

O MESSAGE

No. 10 12 May 32

TO C. O., 1st Bn., 105th F. A.

Request fire on infantry supporting weapons in woods 500 yds. S. W. of R. J. 578-D

LnO No. 1 505A

J. J. Jones,
1st Lt., 105th F. A.

4. Describe the salute with the hand.
5. Draw a traffic diagram of a battalion.

Each question has a weight of five. The candidate writes his name on every sheet of paper he uses and turns his answers over to the Staff Sergeant who, in turn, gives them to the Captain.

The board considers the answers and marks them, at leisure, in a conference held during the week.

For the oral questions the board sits in a room and calls for each candidate by name. The candidate called leaves the room where the written test is being held, taking his paper with him, answers the questions of the board, as put to him by the Captain, and returns to continue the written examination. There are twenty oral questions, each with a weight of one point. For this part of the examination each member of the board has a sheet of paper in front of him. As each answer is given the board member writes down his rating, expressed decimally (such as .5 or .2), or 1. if, in his opinion, the answer is entirely correct. These ratings are then averaged to express the rating by the board as a whole.

These are the oral questions asked this year:

1. What care should a draft horse receive at a routine halt? Should a horse be watered or fed first?
2. You are a switchboard operator. Gen. "A" asks to use your telephone. What would you tell him?
3. What are the classifications of messages and what are the symbols?
4. What is the cadence when marching in quick time? At double time? What is the length of the step in each case?
5. How often should lines be tested in action?
6. If you were instructed to give the horse a hasty grooming, what would you work on most? How would you know when a horse was thoroughly groomed?
7. What is meant by "staggering" splices and when is it used?
8. What are panels used for?
9. What is a contour interval?
10. What is site?
11. What precautions should you take before and after using a pistol?
12. Give a command for turning on a fixed pivot. A moving pivot.
13. Give the General Orders for Sentinels.
14. Is there any way of increasing the electrical strength when talking over a long line? How?
15. What is a mil? What is its value at 3000 yds.? At 5000 yds.?

16. Name the grades in the Army from Private gr. VII to General.
17. Does increasing the deflection cause the muzzle of the gun to go to the right or the left?
18. What action would you take in the event of sickness of or injury to a horse?
19. Name six means of communication.
20. How would you deliver this message from Major X to Captain Y?

    "Tell Capt. Y to bring his battery to the crossroads at Z."

    If mounted at what gait would you proceed?

For the third night a French aiming circle, a B. C. telescope and a rangefinder are set up in one part of the building and a monocord switchboard with operator's phone connected, and two phones connected to panels on the board to stimulate two stations are placed elsewhere.

Each candidate is required to measure both a horizontal and a vertical angle with the telescope and with the aiming circle and to answer questions as to the operation and adjustment of the rangefinder. There is no time element: accuracy is the only consideration and each candidate starts with the instrument out of level and off zero. Two members of the board conduct this part of the test and mark each candidate on a scale of 10.

Two other members of the board examine the candidates on the telephones and switchboard and rate them on a scale of 10. Some of the requirements of this phase of the test follow:

"What is the model number of this board?"

"What is the model number of these panels?"

"What is the model number of this telephone?"

"Give this phone the 100% test."

"What are those four terminals for?" (On the telephone)

"What are those three terminals for?" (On top of the switchboard)

"What are those four terminals for?" (On the bottom of the switchboard)

"Test the operator's cord."

"Test this panel." (Pointing)

"Your operator's cord doesn't function: you cannot repair it. What will you do to operate the board?"

Have the candidate handle a call on the switchboard.

The only other consideration is attendance. It is the practice, in the author's unit, to hold examinations in the late spring of the year. That means that about forty drills have been held since the preceding Camp Tour. If an aspirant has attended every drill he gets the full 10% credit. If not he is penalized ¼ of 1% for every drill missed. If, for example, a man enlisted three months prior to the examination, he can take it but starts with a handicap of 6% or 7%. This requirement tends to make it difficult for a bright man, who is a good student, to pass a dependable plodder.

At one time the examination also embraced radio sets and procedure. For the past three years radio instruction has been handled, in New York City, by a Division School which all radio details are required to attend. Hence the radio detail is handled as a separate group and the Radio Corporal is picked from the radio detail and is the man who makes the best record at the school.

So much for the examination itself. Now for a consideration of its advantages and disadvantages.

Let us take up the disadvantages first; they are few in number and easily disposed of.

(a) The work involved is considerable. It takes three drill nights and a large amount of labor to select three or four non-commissioned officers. The answer to that objection is: that good non-coms are worth all the effort it takes to find them.

(b) Many men, who would make good N.C.O.'s, haven't the ability to pass examinations and the tendency is to have theorists, who are not good "man-handlers," wearing chevrons. This argument is serious and has cogency. This condition can be overcome through the system of weighting the subjects covered in the examination. By no stretch of the imagination can we conceive that a Field Artillery N.C.O.'s knowledge of foot drill should be 25% of his total military knowledge. But by giving his conduct of the dismounted drill portion of the examination a disproportionately heavy weight we recognize the fact that the way in which he handles that task is a fair measure of his

personality, bearing and leadership. If that is not enough, attention is called to the condition that "practical" work on the instruments and communication is given a total weight of 20% alone, whereas written and oral questions, generally along the same line, together total only 45%.

(c) There is no element of choice on the part of the battery commander, the whole selection is impersonal and is purely a matter of figures. This is no disadvantage but is a great advantage. In the first place, the captain would make some mistakes following the usual Eeney-Meeney-Miney-Mo method. By the system suggested he makes fewer and less serious errors. Hence he is better off than when he injects his own personal view into the situation. If, however, he feels he must meddle and cannot trust figures, he can set aside 5% or 10%, to be applied in whole or in part, to the final score of each candidate as seems best to him.

Now to summarize the advantages.

(a) Every man promoted will be at least fairly well qualified and will have demonstrated to all the fact that he knows something of his work.

(b) It will be found that competition will be very keen and that men will study and practice, in their spare time, for weeks beforehand. They will be down at the armory at all hours seeking instruction from officers and armory employees on the operation and care of instruments and other phases of military information. Although only three or four men may be successful in the examination, perhaps one half of the unit tries and in trying learns something—which adds to the efficiency of the whole organization. As a sidelight on the desire to study, developed by this method, it is interesting to note that fifteen enlisted men out of a strength of thirty-nine—forty is the maximum authorized—are taking the Army Correspondence School Course.

(c) Every National Guard unit commander has to be his own Recruiting Service. Recruiting is largely dependent upon satisfied personnel. If the yardstick used in promoting men is not such that all may see and appreciate its fairness,

some of those who have attended one or two Camp Tours, but are not otherwise qualified, will feel hurt at being passed over. This causes dissatisfaction, poor attendance and lowered morale. If an examination is held; open to all, and all who come before the board stand on an equal footing; jealousy concerning promotions is largely eliminated. To secure this result the board must be absolutely disinterested and impartial.

(d) If the individual standings are published when promotions are announced the effect is very favorable. The standings should be broken down into the score secured in each phase of the test so that each man knows how he fared in every class of the work and finds out where he is weak so that he may guide his future study to overcome that weakness. The records of the board should be open to inspection.

It is believed that the advantages outweigh any disadvantages.

In the examination completed this year, in the writer's battery, there were twelve candidates to fill three vacancies. The marks varied between 84.85% and 31%. Seven of the twelve were over 70% and only two were below 64%. The type of questions asked and the grading of the answers was of a higher standard than in any previous year. It will be found that, as the years pass, it is necessary to make the test more rigid.

In conclusion, if any unit will follow the policy of promoting men only by examination; an examination that is thorough but gauged to the state of training of the battery, hard enough to be a test but not so difficult as to be discouraging; it is believed that the officers and enlisted men will be so well satisfied that they will never go back to the old "system."

JOIN THE RED CROSS

FIELD ARTILLERY NOTES

Gunnery Liaison Methods

The advent of the SCR-161 short wave radio set has introduced new possibilities in liaison between the field artillery and infantry. Practical work already has shown that the artillery's response to calls for fire from the infantry can be speeded up materially. It has been found that effective fire can be placed on any target in less than five minutes, and that battalion concentrations can be delivered in less than ten minutes. These times are from the identification of the target to the liaison officer to the delivery of effective fire.

In view of the great possibilities of the use of the SCR-161 short wave radio set the Field Artillery School has recently issued a new Field Artillery School note No. G-47, "Gunnery Liaison Methods." It should be remembered in reading this that the airplane method of adjustment is used.

These notes are authorized by the Chief of Field Artillery for use at the Field Artillery School only. Where in conflict with TR 430-85 they are to be considered as experimental, being tested at the Field Artillery School, and unorthodox until embodied in the Field Artillery Field Manual or other regulations.

LIAISON METHODS

1. The principal mission of the liaison officer is to insure that the field artillery battalion delivers supporting fires where and when the infantry wants them. The technical methods herein described for attaining this mission are simple and their use results in accuracy and speed.

2. Radio communication, often the only means of communication between the liaison officer and his artillery battalion, necessitates a simple and familiar code for accuracy in transmitting messages. The use of essentially air observation methods (see G-43) and the fire control code No. 2 is indicated.

3. Frequently it becomes necessary for the liaison officer or scout sergeant to conduct or observe fire.

a. The *liaison method* of conducting this fire is based on the assumption that a forward observer *can* estimate, with reasonable accuracy, the deviation in yards both in range and deflection

of a round from a target within a reasonable distance from him. Failing this, he can sense so that the target may be bracketed rapidly both in range and deflection.

b. When his location is such that he cannot estimate errors in yards, the appropriate lateral or axial artillery conduct of fire is indicated.

LIAISON METHOD OF CONDUCTING FIRE

4. *a*. (1) When the liaison officer or sergeant knows the approximate location of the battery and can see and identify its base point and the target he reports, for example:

Btry. "E" base point, 300 *right,* 600 *over, machine guns, can observe*. (FIG. 1).

(2) The battalion commander having assigned "E" battery to fire for the liaison officer, the battery commander gives the necessary commands to fire one round at a deflection 300 yards *left* and at a range 600 yards *shorter* than that to the base point, but holds his fire, informing the liaison officer:

Battery ready.

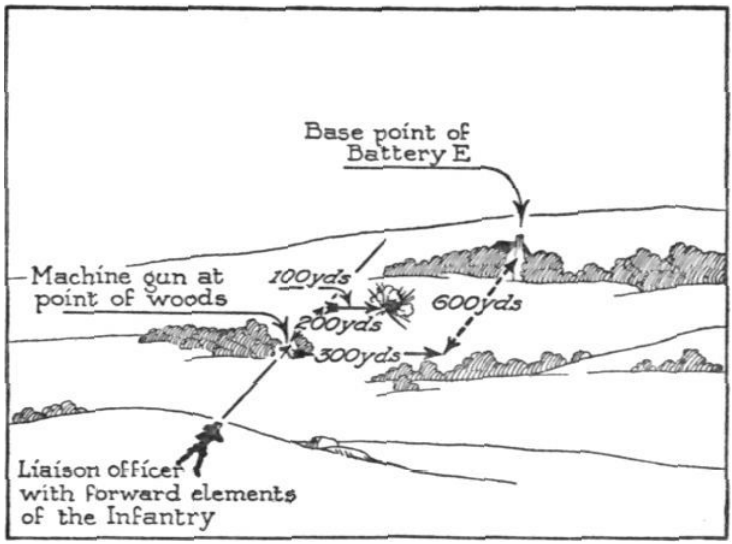


FIGURE 1.—REPORTING THE ERROR OF THE ROUND IN YARDS

The liaison officer on receipt of this message sends:

Fire.

The round is fired and the battery commander sends:

Battery has fired.

The observer senses the round, for example:

100 *right,* 200 *over*.

The battery commander makes the appropriate corrections as in fire with air observation and the fire is continued by air observation methods.

5. *a*. When a battery, whose location and base point are unknown to the liaison officer is assigned to fire, the liaison officer calls on the BC to *mark base point*. The BC fires one round (of smoke, if necessary) on the base point, and proceeds as given in *a* above. If the liaison officer does not know the direction of the battery he may have it marked for him by the battery. To do this, he senses the round on the base point as, for example:

1000 (*or so much*) *over*.

The battery then fires a round 1000 yards short of the base point. This gives a scale on the ground in addition to the base line.

b. If the target is such as to warrant a battalion concentration the battalion can be adjusted as follows:

Based on the information obtained from the adjusted data of the battery with which the liaison officer is working, the battalion calculates the necessary data for the other batteries and on receiving the call *Bn right* from the liaison officer causes battery volleys to be fired in sequence from right to left.

The liaison officer senses each volley on its appropriate part of the target, such as:

A, 100 *L, over,*

B, over,

C, 200 *R*, 100 *over*.

The battalion commander then fires for effect with the battalion and the liaison officer continues to observe.

6. When conditions permit, it is desirable that several points be marked on the ground with fire. A quadrilateral, 1000 yards on each side, with the base point at the center thereof, may be marked on the ground by the following procedure:

a. The base point having been identified by the liaison officer, he requests, for example:

Mark corners, base point Btry. A, 500 left, 500 over.

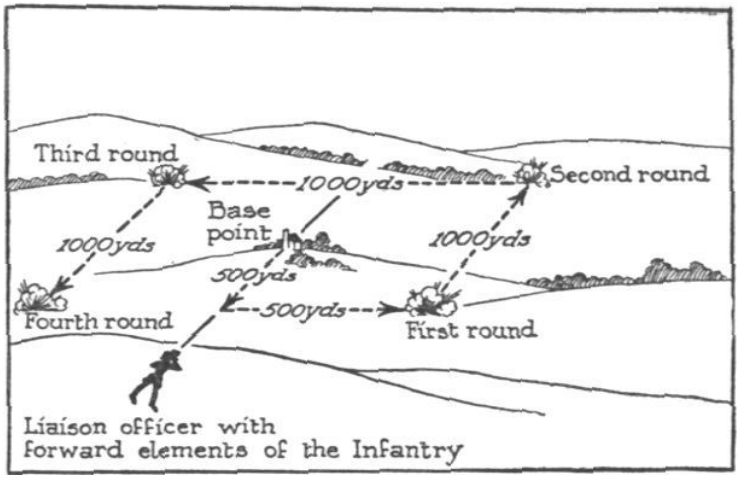


FIGURE 2.—MARKING THE CORNERS

Four rounds are fired, as follows: (Fig. 2).

Round	Sensing
1st	1000 short
2d	1000 right
3d	1000 over
4th	No sensing

b. The base point not having been identified by the liaison officer he may send:

Mark base point, ladder, or, mark base point 1 *round, smoke*. (Fig. 3.)

The liaison battery fires a *ladder* with a converged sheaf with ranges differing by 200 yards. The battery may fire one round of smoke as one round of the salvo to identify its fire to the liaison officer. He notes the location of the center of the ladder and thereafter uses this center as a base point.

With evident exceptions it will be noted that air observation methods are used throughout.

7. *a*. When the BC and the liaison officer both have maps or gridded air photos, the liaison officer may send the coordinates of the target to the BC; thereafter, the procedure follows that of air observation.

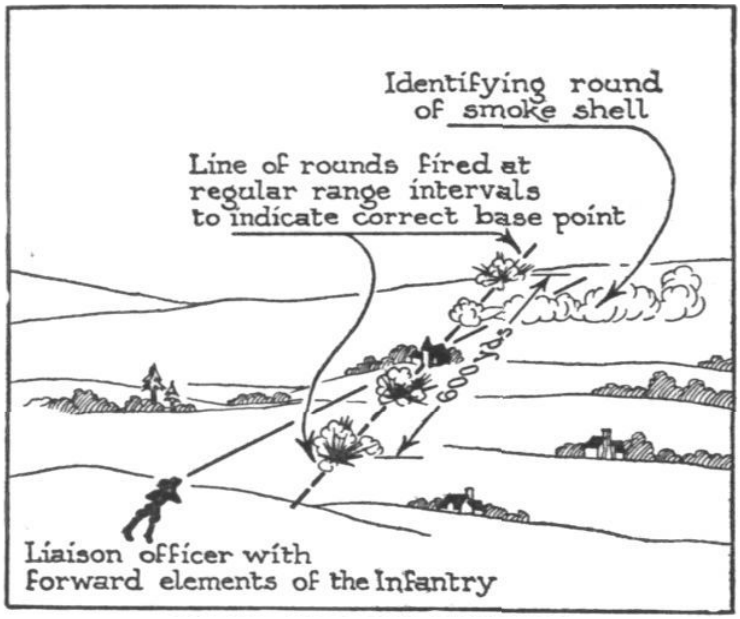


FIGURE 3.—THE LADDER, WITH SMOKE

b. The use of a panoramic sketch or oblique air photo by the liaison officer is particularly advantageous in order to materialize the base point and the direction of fire.

c. Schedule fires can be utilized to bring down fire quickly, although the concentration is not exactly where it is desired. For example the observer sends:

Fire volley, concentration 37.
(Battalion) *Battery is ready*.
(Observer) *Fire*.
(Battalion) *Battery has fired*.
(Observer) 300 *over, fire for effect*.

d. As the target moves, if it does, the observer can keep the fire on it by sensing during the fire for effect, as:

100 *left,* 200 *short, etc*.

The advantage of scheduled concentrations is evident.

Propelling Charges for the 155mm Howitzer, M1918

At the request of the Chief of Field Artillery, the Ordnance Department started an investigation several years ago to determine a means of improving the accuracy of the 155mm howitzer,

Model 1918, in the inner zones, Charges I-V, inclusive. As a result of this investigation there were developed special quick burning powder charges for the first five zones. Extensive firings at Aberdeen Proving Ground with these special Charges showed decreases in the probable errors, as compared with the standard powder, varying from 27 per cent in Charge V to 69 per cent in Charge II.

The Field Artillery Board recently completed its test of these special propelling Charges. The Board found that a very material saving of ammunition was effected by the use of these Charges on account of the increase of accuracy, and recommended their adoption for this weapon.

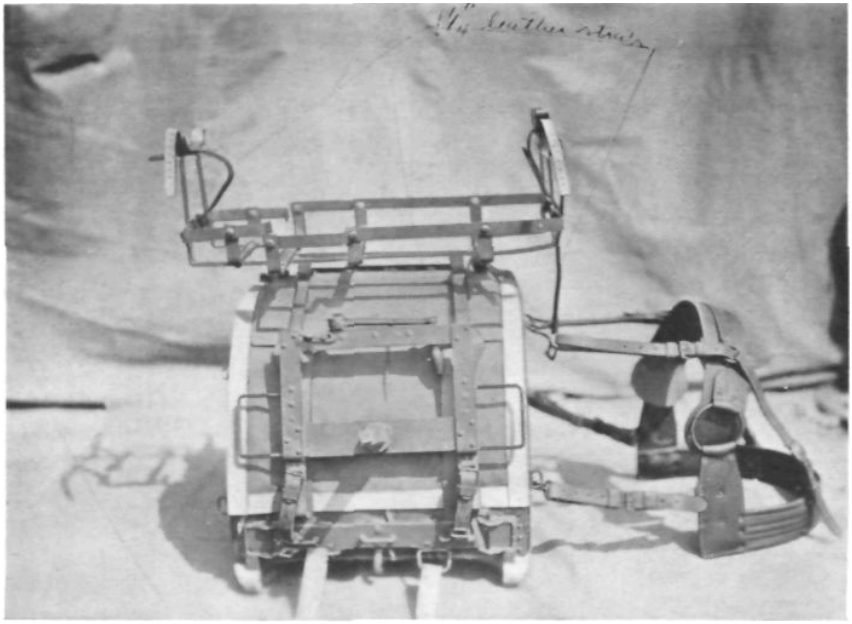
The quick burning powder gives increased chamber pressures as compared with the standard powder and, for that reason, cannot be used in making up Charges VI and VII. Two types of propelling charge are therefore contemplated as follows:

1. Charges I to V to be made up of quick burning powder.
2. Charges VI and VII to be made up of appropriate slower burning powder in one bag for Charge VI and one increment for Charge VII.

One type of Charge will be made up in bags of a distinctive color and packed in containers distinctly marked.

Changes of Address

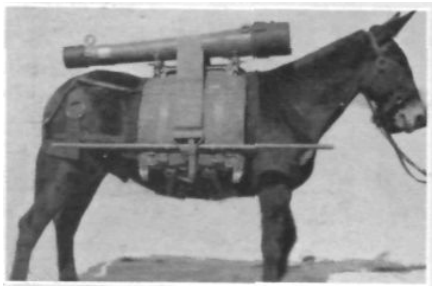
It is urgently requested that the members of the Field Artillery Association notify this office immediately upon change of address. There is always provided, for this purpose, on the second page of the JOURNAL a blank form which can easily be filled out. Under the provision of a recent post office regulation second class matter delivered to a given address and uncalled for is not forwarded to the new address. As a consequence many copies of the JOURNAL are being returned to this office for re-forwarding to the new address. This means that the Association pays postage three times on such JOURNALS, with the added disadvantage of delivery to you being delayed several weeks. You can help immeasurably by furnishing us with your new address.



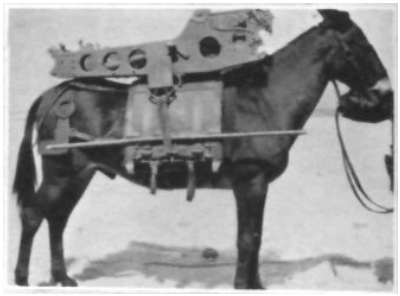
RIGGING AND FRAME FOR RADIO PACK NO. 2 (COMBINED WIRE AND RADIO).

RADIO PACK NO. 2 (COMBINED WIRE AND RADIO PACK FOR LIAISON SECTION, CARRYING SCR NO. 161 RADIO SET AND TWO SPOOLS OF WIRE.)

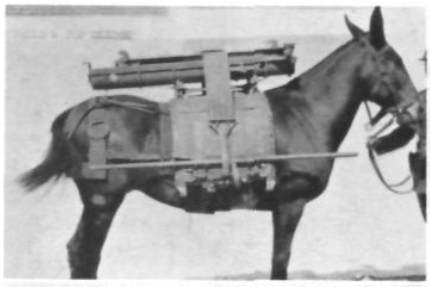
75 MM PACK HOWITZER CARRIAGE, M1



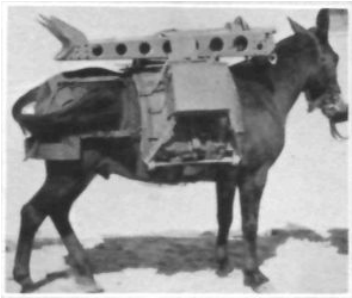
TUBE



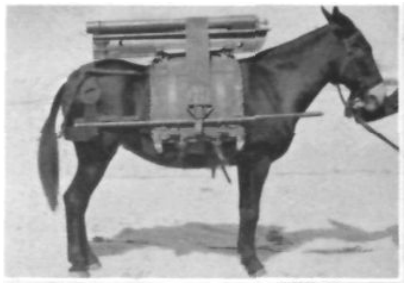
FRONT TRAIL



CRADLE & TOP SLEIGH



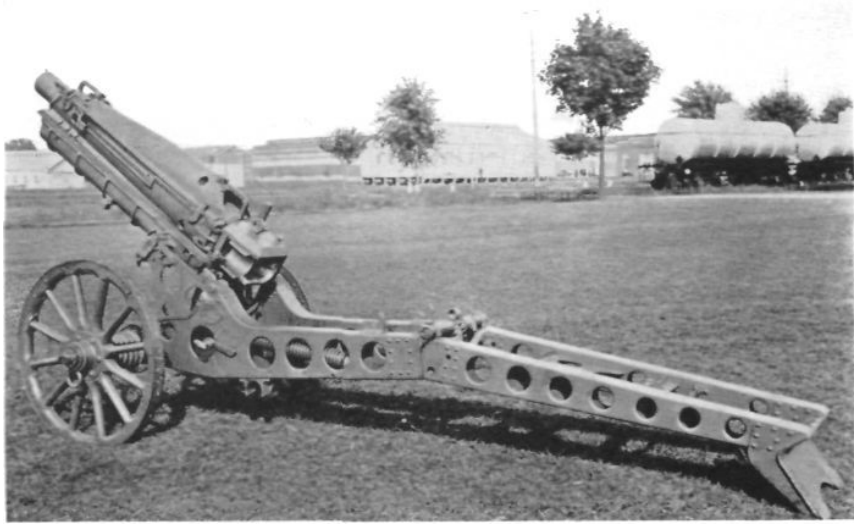
REAR TRAIL



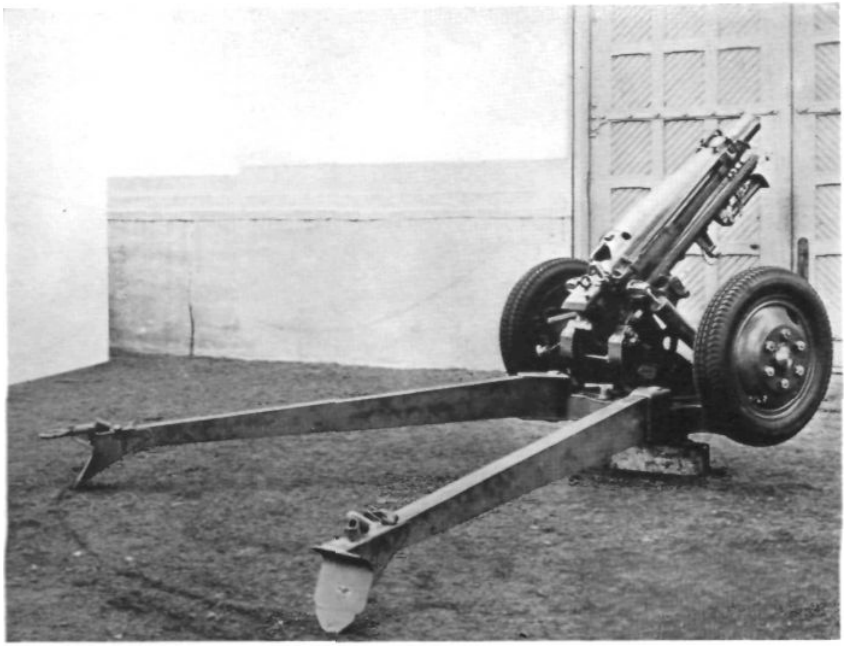
BOTTOM SLEIGH & RECOIL

WHEEL & BRECH

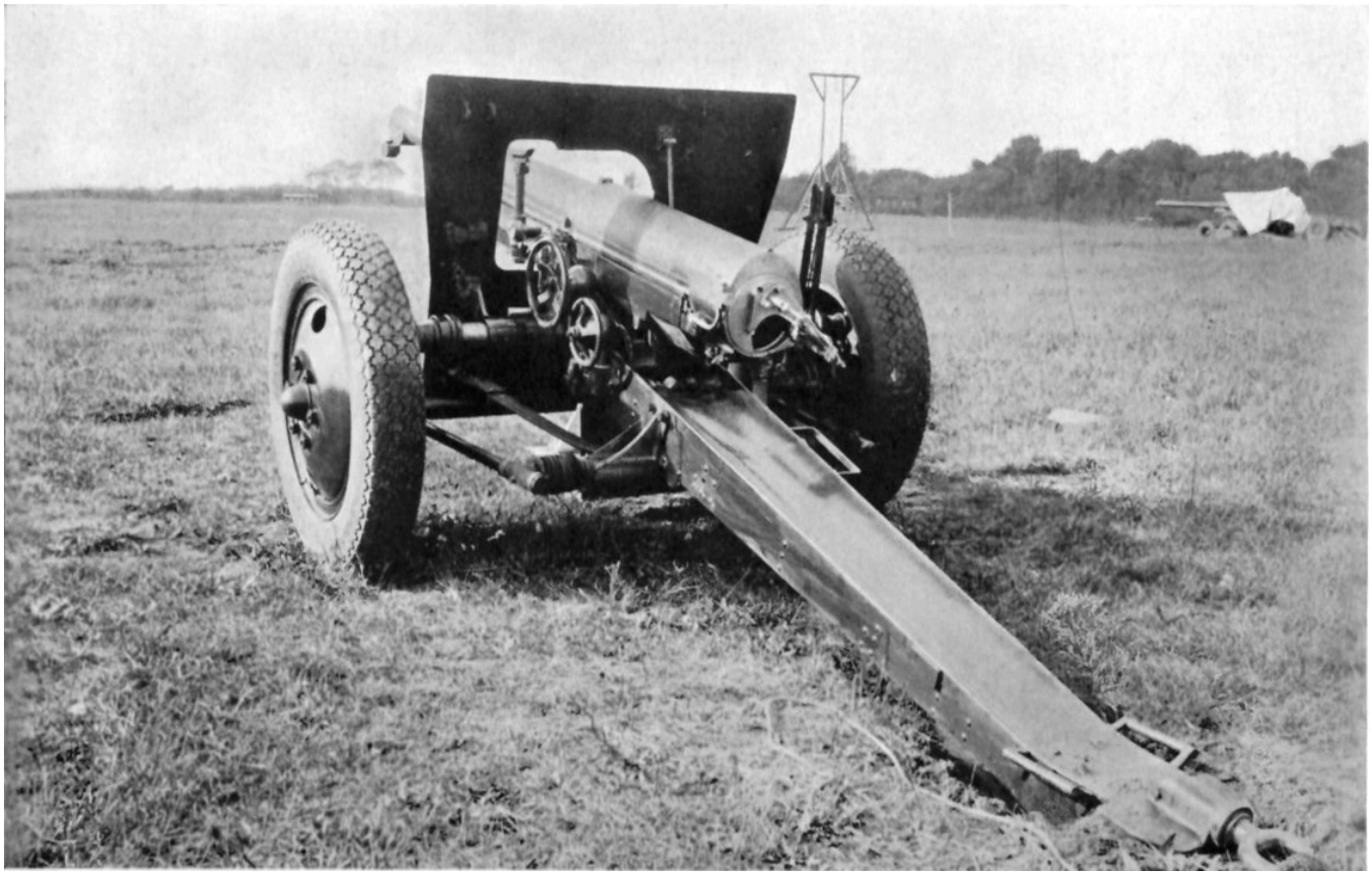
SHOWING THE SIX PACK LOADS FOR THE TRANSPORT OF THIS WEAPON.



THE 75MM PACK HOWITZER, M1. IN FIRING POSITION



75MM HOWITZER CARRIAGE, T1 (HIGH SPEED CARRIAGE FOR THE 75MM PACK HOWITZER, M1), DESIGNED FOR SUPPORT OF CAVALRY — EITHER HORSED OR MECHANIZED



75MM GUN CARRIAGE MODEL 1897, M1E7, HIGH SPEED CARRIAGE FOR THE FRENCH 75, PRODUCED BY THE MARTIN-PARRY CO.

ACCOMPANYING ARTILLERY

BY H. H. HUNT, 2nd Lieutenant, 18th Field Artillery

WITH the appearance of cannon of long range, indirect fire methods, and complicated communication systems in warfare, accompanying artillery has been much neglected both in the matter of training and in the development and issue of suitable equipment. It is the purpose of this article to consider available information on the subject to determine whether or not this neglect seriously effects the efficiency of our army, and, if so, to what extent.

Accompanying artillery is artillery attached to and physically accompanying a subordinate unit of infantry or cavalry. (Page 493, FAFM, Vol. II). Usually accompanying artillery is attached and employed in units of a battery or less to give close support to a brigade, regiment, or assault battalion. Guns and mortars permanently assigned to infantry regiments are classed in our service as infantry auxiliary weapons. The tactical functions of these infantry cannon, within the limits of their power, are identical with those of accompanying artillery. The use of accompanying artillery under proper circumstances is prescribed by our regulations. (Par. 24, 114-122, TR 430-105. Par. 38-40, Special Text 98, A. E. C.) This class of artillery has been in constant use for over four hundred years, the principles of its use are quite well established, and the pages of its history contain some of the bravest and most brilliant acts ever recorded. Frequently it fought not in the infantry line, but ahead of it.

Unlike the artillery of direct support, accompanying artillery has a precise and limited mission—the close support of the infantry. It follows the infantry closely and attacks enemy elements immediately dangerous to the infantry at short range with surprise and rapidity. It maneuvers rapidly and keeps its communications simple. Its most usual targets are machine guns, tanks, and points of resistance. A weapon of opportunity, it must be handled with skill, determination, and boldness.

The power of automatic weapons was considerably underestimated prior to the World War and close support guns to combat

them do not appear to have been very seriously considered. A tendency existed to increase the range of light artillery at the expense of mobility. The machine gun very quickly demonstrated its terrible effectiveness and made the need for close support keenly felt. The artillery of direct support generally failed to give efficient support to suit the immediate requirements of the infantry and accompanying artillery accordingly came into use in all armies, although the conditions of the terrain on stabilized fronts created unusual difficulties to its employment. Its success varied. It was used extensively and most successfully by the Germans. In our service it was a notable failure in all but a few cases.

SOME BATTLE RESULTS

Throughout the war, serious and continuous efforts were made toward solving the problem of giving the infantry efficient support from the divisional artillery. Results were distinctly unsatisfactory. The failure of the artillery to keep up with the infantry was notorious. The artillery observation was most often unsatisfactory, or nonexistent. Contact with the infantry was usually soon lost; and, when one considers the increase in the probability of failure of communications with the distance involved and their proximity with the front lines, one is not so much surprised that they should usually fail as that they should sometimes work. It is almost axiomatic that only simple things are likely to work well in battle, and certainly neither our communication system nor the problem of effective liaison can readily be classified as exactly simple. Furthermore, the training of the infantry and artillery was so distinctly separate that neither branch possessed an adequate understanding of the other, a condition that resulted in poor cooperation. A British contributor, "Pompey," to the *Journal of Royal Artillery,* writing on "Close Support Artillery," said:

"A year or two ago" (this was written about 1925) "the question of attacks and counter attacks was being studied at the Staff College and a number of good descriptions were given of such attacks made during the late war. These stories were told in most cases by infantry officers. In no single case had efficient artillery support been available for the attack described, in few cases was there any mention of artillery, communications had failed, the

ground was too bad, or 'I don't know where they were, firing a barrage somewhere, I think.' There was in fact a clear impression left by every story that the artillery had failed and it was most striking that this impression was not intentionally given, guns had just been forgotten, they were not in the picture. On the other hand, a gunner when consulted on the subject of close support guns said, 'You mean practically handing the guns over to the infantry? They don't know how to use them.' And another said, 'I know an infantryman who was given a section of pack artillery and who told its commander to put the guns up some trees in order to fire down a communication trench.' And now for the pessimists a little optimism is provided by the battalion commander who, in a bushwhacking theatre of war, had a pack battery affiliated with his battalion. Mutual confidence became well established after some time and one day the battalion was ordered to capture a village. The battalion commander was asked what support he required from the divisional artillery, and, in answer, requested that he might be allowed to depend on his pack battery alone. This sounds rather mad but the result was a few shells at the right time in exactly the right place, complete surprise, and complete success."

In the example of the use of an accompanying battery, the infantry and artillery knew and understood each other. They were confident of each other's abilities. There was no separation in space, and all troops assigned to the task at hand were under one command—that of the officer responsible for the attack. The actions of the infantry and artillery were perfectly coordinated. Success was complete. There was less shooting and more results. That is precisely what we want. Efficient support exists when our projectiles are placed exactly where they are wanted at the time when they are wanted.

A similar staff study in armies other than the British should give much the same results. In studying incidents occurring during the battle fighting of the World War, the writer has found a number of instances where British battery commanders displayed fine initiative in pushing their observation forward with the infantry and doing most excellent work but failed to find a single case where an American battery commander did the same. The

stories are usually those of infantry pushing forward in the face of terrible losses against machine guns that should have been silenced by the artillery. One looks in vain for cases of prompt intervention by the supporting artillery against targets that were overlooked by the preparation. And when a statement could be published in print in the "Victoire," of June 17, 1917, demanding judicial investigation of short fires maintaining that the French Artillery, in spite of all liaison signals, had continually fired upon its own infantry, neither satisfactory observation nor liaison is thereby implied.

BRITISH ACCOMPANYING ARTILLERY

Unfortunately, the writer has not much information available as to the uses of accompanying artillery by the British during the war, although these guns were used quite extensively by them and, I believe, considered quite satisfactory. Post war reorganization of the British army includes pack artillery (3.7 inch howitzers) in the division for use as accompanying guns. This, I believe, is only a temporary expedient until they are able to determine on the most suitable type and put it into service. Apparently, their experiments with these guns include draft both by mules and by very light tractors. They use this gun to obtain both curved fire from covered positions and flat trajectory fire against tanks at short ranges. It does not appear that their present divisional organization includes mortars.

The tendency seems to be to seek a single weapon for all close support. Their organization of the close support artillery as a part of the divisional artillery has much in its favor. A permanent sub-allotment of guns divides these into watertight compartments. Kept as a part of the divisional artillery, it becomes possible for the division commander to assign them where they are needed most.

GERMAN ACCOMPANYING ARTILLERY

The Germans, perhaps, used accompanying artillery more extensively and effectively than any other army and relied upon it at the height of their most successful drives. Colonel Bruchmuller

says of them in "The German Artillery in the Break-through Battles of the World War":

"The infantry accompanying batteries followed the assaulting infantry immediately and served the purpose of taking under direct fire at closest range any machine gun nests, resistance points, tanks, etc., revived during the advance of the attacking infantry."

". . . . Rapid advance by these batteries was of outstanding significance. They were frequently to be thanked that the progress of the infantry was not halted. In this war they performed deeds which may be compared to the most heroic acts of history."

The writer is very much indebted to Captain Baron von Bechtolsheim, German Army, for most of his information on the German Artillery. He said in part: "The Germans used accompanying guns extensively in all their offenses. (The trench mortars may be regarded as accompanying artillery as well.) These guns were highly efficient, very successful, and appreciated by the infantry. Sometimes they were the only means of pushing an attack forward. Generally every infantry regiment in assault had one accompanying battery of four guns. The Germans may have been led to this procedure, to some extent, by their want of tanks.

"The Germans are now of the opinion that for an up to date infantry regiment, a company of twelve trench mortars and a company of infantry cannon (six of about 57mm) are necessary. Actually, they have no infantry cannon as these are forbidden by the Treaty of Versailles, but in maneuvers they use wooden substitutes. In addition, the Germans according to their ideas of decentralization and independence of subordinate commanders, will not hesitate to attach a battery or even more from the divisional artillery to the infantry if the terrain or tactical situation makes this disposition necessary."

It is seen that the Germans do not depend upon a single type of cannon for close support, but plan on two distinct types of specialized cannon. Their organization, unlike the British, lacks flexibility, but they believe that the post war infantry regiment is equivalent to the pre-war division and that these cannon will always be needed in at least the proportion of their permanent assignment, and further that this permanent assignment will insure better coordination.

FRENCH ACCOMPANYING ARTILLERY

The French used accompanying artillery to some extent during the war. Unlike the British, they do not favor the use of pack artillery. The French infantry is still equipped with one 37mm gun and two Stokes mortars per battalion carried as a part of the headquarters companies. Two infantry cannon, the 75mm St. Chamond Howitzer, Model 1923, and the 47mm gun, Model 1923, have been developed. The former fires a six and one-half pound shell, has a range of 1800 yards, and can be broken into loads and carried. The latter fires a two and one-half pound projectile which penetrates one and one-third inch armor at 300 yards, and has a range up to almost 6000 yards. It is not known whether or not the French have adopted these weapons for issue.

In addition to these "engins d'accompagnement," the French regulations contemplate the use of the 75mm gun as accompanying artillery. The procedure of attaching batteries or single guns to the infantry as accompanying artillery, however, is adopted only when the artillery of direct support finds it difficult to keep in close touch with the infantry and cannot give accurate support to suit the immediate requirements of this arm. Its task is to overcome at short range obstacles holding up the infantry. The infantry commander decides the tasks and the areas in which these guns are to operate, but neither details actual positions nor interferes with the conduct of fire.

U. S. ACCOMPANYING ARTILLERY

In our service, opinion in the artillery is somewhat unfavorable to accompanying artillery due to our experience with it in the last war, especially so among wartime officers. Of the opinions and recommendations of our artillery officers collected during the war and contained in the Hero Board Report, about one half were adverse to its use. Due to an almost complete, if not complete, lack of training in handling this artillery among both the infantry and artillery officers, to lack of suitable equipment, and to the difficult terrain, our attempts to use it during the war were most unsuccessful. General H. G. Bishop, the present Chief of Field Artillery, in his recommendations to the Hero Board on that subject, said, "With very few exceptions the results coming under my observation

were nil. Lack of results was always due to one or both of: Lack of aggressiveness and judgment on the part of the field artillery officer in command and failure on the part of the infantry to afford proper facilities for their use. The only remedy I know of is training for both artillery and infantry officers in this respect."

Since the war the situation has not been greatly improved. Although the employment of accompanying artillery is contemplated in regulations, actual training in the service with respect to handling accompanying artillery has been seriously neglected. I know of no officer who entered the service since the war who has received such training although the experiences of the war have demonstrated its importance clearly enough.

The training and experiments being carried on in firing on moving targets (tanks), a normal accompanying artillery mission, have a great value but usually are limited to the gunnery problem. The use of artillery with security detachments, while its missions may not be generally those of close support, nevertheless may, to some extent, accustom artillerymen to operating under the direction of an infantryman and force the infantry officer to learn something about handling artillery.

The infantry appear to take a rather keen interest in both accompanying artillery and their own infantry cannon. Two new infantry weapons have been developed—a 75mm mortar, of somewhat similar characteristics to the French St. Chamond Howitzer, and an improved 37mm gun. These, however, are not issued to the service and it is highly unlikely that they will be in the near future. There were some experiments carried out by the Infantry School a few years ago with horse drawn field guns and a self propelled gun as accompanying artillery. Other than some data on the self propelled gun contained in the Infantry Journal, the results are not known to the writer.

The Field Artillery Board has recently tested the new 75mm pack howitzer and rejected it as an accompanying gun because its trajectory was considered too flat for the short ranges applicable to the accompanying gun. The Stokes Brandt mortar is now under test. Whether or not signal equipment and headquarters personnel

for platoons or single close support guns have been considered is not known.

ACCOMPANYING GUN TESTS

Certain Tests were made by the A. E. F. of the accompanying gun with conditions as nearly approximating battle conditions as was possible. The assaulting battalion had an accompanying gun attached; the regiment was further supported by the divisional artillery in position, batteries of which had previously registered on some point of the terrain prior to the designation of the target. Usual liaison was maintained. A message was originated from the infantry front lines indicating that they had been stopped and that their auxiliary weapons were insufficient to reduce the target and that they required assistance. Umpires were present to see that battle conditions were observed. The target was in three separate parts to eliminate the element of chance. The test became a comparative one as to whether a battery of the divisional artillery or the accompanying gun could destroy the target first after the infantry line requested assistance. The following comparative data resulted:

Times Considered	Accomp. Gun	Sup. Batt.
To get message from front line to first shot	14′41″	15′30″
To get message from front line to total destruction of target	19′00″	24′52″
Other Data:		
Number of failures to destroy target	1	2
Number of rounds required to destroy target (average)	18	76
Range (average) metres	1190	2656

The above figures are an average of five separate trials. A comparison of the data gives the following interesting points.

1. Gun commanders chose and used indirect laying in 80 per cent of the cases.
2. The average range of the supporting battery was less than 2700 metres.
3. The supporting battery had twice as many failures as the accompanying gun.
4. The battery used, on an average, more than four times as much ammunition as the accompanying gun.
5. The time from the origin of the message in the front line to the actual destruction of the target was 31 per cent longer for the

battery than for the gun, although the time to get the message from the front line to the first shot from both battery and gun averaged very much the same.

6. The actual time consumed in firing is very much less for the gun than for the battery.

Inasmuch as indirect laying was used by the gun in 80 per cent of the cases, a very rapid decrease in the efficiency of the gun is indicated by the ammunition expenditures as the gun range and the distance between the observer and target is increased. In this test an average increase of 1500 metres decreased its efficiency approximately 75 per cent. From the standpoint of both time and the number of failures the gun proved very much superior. It is indicated that the claim that a supporting battery with good liaison can do as well as an accompanying gun is a matter of opinion only and is not substantiated by facts.

Accompanying artillery has the following disadvantages and advantages.

Disadvantages: Its actions are very much localized and like the infantry it supports, its losses in men, animals, and matériel are heavy and supply and replacements difficult. Its duties are arduous, and, if operations are continuous, men and animals will become exhausted unless frequently taken out of the lines and rested.

Advantages: Because of better observation and shorter ranges, it requires much less ammunition than the divisional supporting artillery to accomplish the same mission. Operating by small units, it can maneuver rapidly, keep in close contact with the infantry, and promptly and accurately meet the needs of the local situations. To the infantryman, the present of a field gun looks like something more substantial and certain in the way of a little help when it is needed than does the presence of a radio or telephone—and perhaps his impression is correct. These guns have also the advantage of the tremendous moral and material effect of short range field gun fire.

ACTUAL CASES

With a view to determining the factors primarily responsible for the success or failure of accompanying artillery during the

late war, fourteen cases of its use have been collected and analysed. Inasmuch as these cases include all that could be found at the time, and may therefore be considered as a random selection, it is believed that the number of cases and variety of sources is such that from the laws of probability we are afforded a reasonable indication of causes and average percentages.

CASE I (BRITISH)

Source: "Some Episodes during Battle Fighting on the Western Front," by Major General Sir H. C. C. Uniacke, K. C. M. G., C. B. Printed in the Journal of Royal Artillery.

"On November 1, 1918, Lieutenant Gorle, R. F. A., 'A' Battery, 50th Brigade, R. F. A., was in charge of a forward gun of the battery with orders to act in close support of the attack of the 11th Battalion of the Royal Scots. He brought his gun into action in line with the leading infantry four times during the morning against enemy machine gunners at close range who were holding up the advance and knocked them out.

"In the afternoon the infantry had become exhausted owing to the hard fighting they had undergone and the intense hostile fire, and began falling back behind the line of the railway. Lieutenant Gorle, seeing the situation at once, without the slightest hesitation, took forward his gun into action right out in front of the leading line of infantry in face of heavy machine gun fire and a close shooting German gun and remained there, isolated, engaging the enemy's posts. His gallant action and the sight of the solitary gun fighting stoutly quite unsupported checked the withdrawal of our infantry and encouraged them, weary as they were, to advance anew to the attack—thus saving the loss of the village to the enemy.

"The coolness and steadiness of this subaltern and his detachment under the heaviest machine gun fire and that of a German gun was beyond praise. The gun was served and layed so accurately that the enemy's posts were all knocked out in turn, and the gun limbered up and withdrew as if on parade."

Discussion:

The gun commander kept in contact with the situation. He displayed initiative and courage far beyond that which could be

reasonably expected of him. That he was able to bring his gun forward and occupy his position in the face of intense hostile fire speaks well for his skill and good judgment in handling the gun. He did not continue to occupy this position and expose his gun to retaliation from the German artillery after his mission was accomplished. He withdrew it to cover at once.

It is also shown that a field gun *in position* against machine guns at short ranges is thoroughly the master of the situation. The burst of its projectile allows accurate correction of the range, a thing much harder to accomplish with the bullets of a machine gun in battle, where there is considerable firing. The shield of the British 18-pounder protects its crew from machine gun bullets; the machine gun cannot protect itself from the projectiles of the gun except by concealment. The prominence and weight of the field gun are the price that is paid for its power—the weight and high velocity of its projectile. It is these that produce the important consideration of material and moral effect at the point of impact.

CASE II (FRENCH)

Source: "75mm Field Gun as a Close Support Weapon," by Colonel E. Pagazy in the Revue Militaire Francaise (March) 1927, Translated by Captain C. T. Beckett, M. C., R. A., for the Journal of Royal Artillery.

9th October, 1914. Notre Dame de la Lorette.

". . . . All attempts to advance from these positions hitherto had been abortive. German infantry machine gunners in position behind the hedge had made all progress hopeless . . . . Such was the situation when Lieutenant Y in command of a battery in position in readiness near Petit Servins, received at eleven o'clock on the morning of the 9th, a verbal order to report himself to Captain X who proposed to point out to him the objective of the proposed attack and to formulate with him the details of the artillery support he required . . . . This officer, whose command was exposed to heavy field artillery* fire, requested Lieutenant Y to act with the utmost expedition. The latter rapidly carried out his reconnaissance and decided to bring a section** into action on

*Light Artillery.

**Platoon.

the plateau itself in the eastern outskirts of Bois de Bouvigny. The battery position was occupied, a telephone line laid out between the battery position and Lieutenant Y reported himself personally to Captain X, remaining with him. 400 metres of wire was laid out.

"At 1400 hours fire was opened; the shells burst upon the target and the machine guns were silenced. The infantry allotted to the attack rose and resumed the advance towards the objective but the line of skirmishers, once more under the fire from the enemy, was checked some hundreds of meters from the hedge in the neighborhood of the cottage. Captain X then demanded a period of more intensive fire upon his objective and with a lift to a longer range when ready. This lift was timed to take place so soon as the infantry were ready to resume the advance. Runners were despatched by Captain X to his subordinates in the front line with orders to take advantage of the bursts of artillery fire to reform their commands as soon as fire was lifted and to attain the hedge, their objective, in one rush. These orders reached the infantry. Shell fire was at once intensified. After a short interval the range was lengthened and the infantry rushed and held the objective and kept it. The Germans were thrown back to the Chapel."

Discussion:

The battery commander made a reconnaissance. He knew his target and the ground before he brought his guns up. He occupied his position without detection. He had four guns but chose to use but two so he could bring them well forward, have close observation, a short wire line that would surely work, and keep in close personal contact with the infantry commander. His liaison was perfect, the coordination of the infantry and artillery efforts was excellent, and the attack was successful. The infantry unaided were helpless against the German machine guns, but the two infantry companies and the artillery platoon working in close cooperation were an irresistible combination.

CASE III (GERMAN)

The following incident was related to the writer by Captain Baron von Bechtolsheim, German Army.

"On the twenty-first of March, 1918, during the German drive

south of St. Quentin, the First Bavarian Division attacked with two regiments abreast in the sector of Urvillers towards Essigny le Grand. To each of the two infantry regiments an infantry accompanying battery was attached. The attack jumped off at about nine o'clock in a very dense fog. Towards noon the fog lifted. The attack had already penetrated the second British position, but behind the assaulting infantry there had been left a good many isolated strong points and machine gun nests.

"Shortly before two o'clock, a lieutenant of the First Bavarian Field Artillery bringing up the horses of the battalion staff of the Third Battalion, in crossing the High Road St. Quentin-la Fère about 800 yards east of Urvillers, received fire from a strong point a little to the east of where the houses of Urvillers had once stood. There was no infantry near at hand . . . . In a dip of the ground about fifty yards east of the road, he perceived an accompanying gun (77mm) of his regiment in readiness waiting for orders. He dismounted, sent his horses to cover, and had the gun unlimbered and brought into action on the road. Shortly after this gun opened fire a second gun, this time a 105mm howitzer, came along the road. He also stopped this gun and brought it into action beside the other one. The guns fired point-blank at a range of about 600 yards.

"Meanwhile some infantry supports had come up and passed the platoon about 100 yards to the left. The officer sent a runner to the nearest infantry officer and asked him to attack this strong point by the left flank while he would neutralize it with his fire; but while the infantry was still moving forward, the enemy withdrew from the strong point in a westerly direction."

Discussion:

In this instance, the guns successfully engaged a strong point at short range without the support of infantry. The qualities of initiative and determination displayed by the German artillery lieutenant cannot be praised too highly. He was not responsible for the actions of the troops involved and under no orders to engage this strong point. He immediately grasped the situation and upon his own responsibility took up the fight. Such are the qualities that should be possessed by commanders of accompanying artillery.

CASE IV (U. S.)

Source: "Some Observations Concerning the Use of Accompanying Batteries During the World War with Some Personal Experiences," by Lieut. Colonel R. C. Burleson, published in the FIELD ARTILLERY JOURNAL.

On September 26, 1918, three platoons of field artillery were detailed as accompanying guns with infantry assault battalions. A captain was detailed to generally look after these platoons and to help the platoon commanders in any way possible; and, insofar as he was able, to keep their regiment informed of their needs and progress. The training of these troops was not very complete. Previous reconnaissance had been forbidden by higher headquarters.

These guns had difficulty in getting forward and failed to reach the infantry. About noon, their regimental commander on a reconnaissance found them in the zone of an adjoining brigade halted under cover. "Of course, the officers were sitting on their horses and the drivers were, as usual, following the example of their officers. Immediately I gave orders that the platoons advance, and that at the gait used by accompanying artillery when changing position, the trot. I moved forward at the gallop, and on reaching the old trench system, I found that the crossings had not been completed by the engineers. The platoons arrived about this time, and observing that the infantry were being held up by a machine gun nest about 1500 yards beyond the old trench system, I directed that a platoon be placed in position and that the enemy machine gun nest be silenced or destroyed. Due to the fact that the platoons were only furnished with large reels of wire weighing 180 pounds, I directed that an officer accompanied by two signalers, go forward and conduct the fire. The officer and the signalers advanced to within three hundred yards of the enemy machine gun nest and directed the firing of about twenty shots. The enemy machine gun nest was driven from position and the infantry advance was continued on that part of the line.

"Had it not been for the fact that I encountered these platoons on my reconnaissance, they would not have fired a shot or occupied a position the entire day . . . ."

Discussion:

This case is considered a failure. The higher headquarters are at least partially responsible for wasted effort in that orders prevented a reconnaissance of the ground before the attack. Thus suitable routes forward might have been found or at least made passable by engineers.

The gun commanders displayed a lack of initiative and determination. They had no liaison. They did not get their guns forward. Perhaps this was impossible. It was not impossible to promptly report such facts to either the infantry commander or to their own regimental commander. In this case it is shown that it was not impossible to get into action even though the guns were immobilized. Their observation was still mobile.

The gun commanders were not well trained and the guns were totally ineffective until an officer who knew what he was about took them in hand. Then they became immediately effective. That their regimental commander, an experienced officer, was able to immediately grasp the situation and put these guns to effective use is the answer to why there were so many failures of accompanying artillery in our service—lack of training—lack of initiative—lack of resourcefulness and determination.

CASE V (BRITISH)

See page 643.

CASE VI (GERMAN)

Source: Same as Case II. (French).

June 1, 1918, The neighborhood of Autreches.

A French delaying force of three battalions without artillery occupied the high ground around Autreches. At a critical moment during the German attack, a German platoon of 77mm guns made an attempt to take up a position in the open at a gallop one kilometer southeast of Tiolet in the face of the fire of all the machine guns of the center French battalion at 1500 metres range. The machine guns were all turned on the platoon and the teams and gunners were all either killed or wounded. The guns remained silent throughout that day.

Discussion:

The horses and men of the platoon were lost without any compensating advantage. Field guns in battery have a distinct advantage over machine guns, limbered they offer a large and promising target with no protection for horse or man from the fire to which they are powerless to reply. The French machine gunners correctly understood the situation. They knew that if the guns got into action, things would become unpleasant. They annihilated their enemy while they had the opportunity.

The German gunnery officer made a gallant and determined attempt, but it had the quality of rashness. If he had paused to think he would have known the result and would have occupied a position without exposing his limbered guns to the machine gun fire. He should have followed the example of "hundreds of gunners who have succeeded in similar situations, who have succeeded because they have understood how to avoid advertising their presence to the enemy until they disclosed their existence by their well directed fire."

CASE VII (FRENCH)

Source: Same as Case II.

October 5th, 1914. Neighborhood of Agny. Close support in the Defense.

Following a retirement, the French organized a line of resistance, Agny-Vailly, along the valley of Crinchon. An artillery battalion commander, anxious lest he should be unable to bring fire upon the slopes of the Crinchon valley, left a silent gun behind the hamlet of Agny enfilading the whole ground between Agny and Vailly. The gun was emplaced with the aid of the infantry and the teams placed under cover behind a house twenty metres from the gun position.

The first German attack, of about ten minutes' duration, was against Agny. The gun commander, seeing the Germans at 1000 metres range, forgot dead space and opened fire with high explosive "as fast as the gun would deliver the goods." The attack was thrown back. On the morning of the 6th the Germans searched for the gun with 77's and 105's and launched a fresh attack. Although engaged by intense hostile field gun fire which

wounded two gunners, the gun fired under the same conditions as the previous evening and the attack was again thrown back. Although there was no further general attack, the gun was overwhelmed that evening with artillery fire principally 150mm heavy howitzer. Little damage was done until a 150mm shell fell amongst the teams, inflicting nine casualties.

Discussion:

The gun was well emplaced and was therefore able to remain in action even under field gun fire. Its crew suffered heavy casualties, but it played a very important part in the defence of Agny. It undoubtedly strengthened the morale of the infantry at Agny and the effectiveness of its fire is shown by the importance the Germans attached to the gun—the weight of the fire directed against it.

CASE VIII (GERMAN)

Source: Same as Case II (French).

September, 1914, After Morhange. The beginning of the Battle of Grand Couronne.

The German front line was closely supported by an extremely active and harrassing battery in infilade. A French 60mm battery came into action and established a forward observation post 300 metres from the German battery 2400 metres of wire being laid out. The German battery was destroyed within ten minutes of the opening of fire by the French battery.

Discussion:

A battery is too large and profitable a target to be placed within 300 metres of an enemy line. It should have been employed by sections if the mission required guns this close. In the face of an active and skillful enemy artillery such forward guns usually must rapidly complete their mission and then move out of that position.

This case illustrates the excellent results that can be obtained with forward (and close) observation when communications can be made to work.

CASE IX (U. S.)

Source: Same as Case IV. (Sept. 27, 1918).

A light battery was attached to an infantry regiment as an

accompanying battery for an attack. It was ordered into a position in readiness and remained in this position the entire day without firing a single shot. The infantry commander failed to make any attempt to use this battery and the battery commander allowed his battery to be forgotten.

Discussion:

The only result of this detail was to keep a battery out of action. Perhaps there proved to be no vital need of it but it need not have been kept inactive. A general mission and an area to operate in could have been given allowing the artillerymen to use some initiative. If the infantry commander had any doubts about its use he could have asked the battery commander for his recommendations. He neglected to use a powerful weapon when he had it.

The battery commander allowed his guns to be forgotten. The infantryman had other things to think of; the artilleryman did not. He should have, at least, kept in contact with the infantry commander, kept familiar with the situation, and been ready with suggestions. He lacked the qualities noted in the successful gun commanders—a quick grasp of the situation, determination, and initiative. He was unsuited to the command of a weapon of opportunity. He was probably well trained insofar as figuring barrages was concerned, but lacking in tactical training.

CASE X (U. S.)

Source: Same as Case IV. (Afternoon of September 27th, 1918).

A battalion of light artillery was ordered forward as accompanying artillery with the infantry. After advancing 2000 yards, it was ordered to move to the left and rear and to take up a position which was done. In the meantime the remainder of the regiment moved forward and both battalions were on approximately the same east and west line. This battalion remained in that position during the day without being given a target to fire upon.

Discussion:

The only result of this detail was to divide the artillery into small units. The remarks in the preceding case apply to the artilleryman here as well.

CASE XI (U. S.)

Source: Same as Case IV. (October 4, 1918).

A light artillery battalion was attached to the supported infantry brigade as accompanying artillery, but did nothing for two days when it returned to its regiment. "I was informed by the battalion commander that the only order he had received calling for the use of the accompanying gun was one in which he was directed to place his battalion, or at least a battery, on the crest of a ridge and drive the enemy machine guns from its northern slope. (At this time the crest marked the front line of the infantry at this point and the northern slope was filled with machine gun nests. In fact the machine guns made it impossible for even a single infantry soldier to show his head above the crest line without drawing the fire of at least one machine gun, and due to this fire the infantry line was held up at this point for about one week.) Of course, he did not try to carry out such a foolish order, and was able to show the brigade commander that it was impossible to do so."

Discussion:

The infantryman lacked an understanding of artillery, furthermore the artillery should be given a mission and be allowed to select their own positions and means of carrying it out. The artilleryman, on his part, was not qualified to command an independent artillery unit. He had the courage of his convictions in declining to place his guns where he believed that they would be lost, but he did not propose an alternative to the brigade commander's plan. He was content to allow the enemy's machine guns to remain unmolested just over the hill. He had the wire of his headquarters and three gun batteries. It must have been ample to establish forward observation from a rear position to an O. P. on the crest, and he might even have been able to borrow more from the infantry. If he had possessed even a fair knowledge of tactics, he would not have allowed himself to be a slave to names, but would have selected the best possible means of accomplishing his mission. Because accompanying artillery usually attacks the enemy at short ranges and sometimes from positions in the open, constitutes no brief for a belief that it is necessarily restricted to such tactics. Furthermore, had he possessed initiative and taken

a certain amount of interest in the fight, he would not have waited for orders to go into action against the enemy when the necessity became apparent.

The artillery commander had an opportunity to get into action and push the attack through to victory. Here were the machine guns that were to hold up the infantry for a week and in his twelve guns was the power to crush them. He let his opportunity slip.

CASE XII (U. S.)

Source: Same as Case IV. (Oct. 31 to Nov. 1, 1918).

This battery accompanying an infantry brigade was commanded by an officer of more than twenty years' service in the national guard. Due to the failure of the division on the right to advance, the attack was held up with the battery occupying a position in the open 1000 yards from the enemy lines from which it could not readily be withdrawn. The ground between the enemy lines and the battery was devoid of any cover. The battery fired upon several machine guns during the afternoon. The attack was resumed the next morning and progressed rapidly. At two in the afternoon after an advance of ten kilometers when the attack was halted, the battery was in a direct fire position on line with the support battalions. ". . . . I believe that the success in this case was due to the fact that the battery was commanded by an officer of long experience, who, in spite of the fact that his battery was very poorly horsed, was able to keep up with the infantry over an extremely long advance."

Discussion:

The battery was commanded by a capable officer. It was successful.

CASE XIII (U. S.)

Source: "Some Features of the Accompanying Gun," by Colonel C. Deems, Jr., published in the FIELD ARTILLERY JOURNAL.

In a particular local operation, an infantry regimental commander objected to the presence of an accompanying gun (although the terrain was suitable for its use) because of the response

it might draw from the German artillery. The infantry battalion commander felt that with his attached machine guns and auxiliary weapons, he had all that he could be expected to maneuver and did not desire to be hampered with another tactical unit.

Discussion:

The fact that in stabilized positions, where artillerymen are inclined to keep their hands in by "duck shooting," trench mortars usually drew a very prompt response making their presence unpopular, probably accounts for the regimental commander's ideas. In an attack with artillery communications disrupted by the preparation and with their hands already full, an accompanying gun would hardly be likely to draw fire without drawing it away from at least some of the infantry. The battalion commander appears to have held the notion, very unpopular with artillerymen, that he must very closely supervise its operations, such as selecting its positions.

CASE XIV (U. S.)

Source: Same as Case XIII.

"In this case, a young officer in command of an accompanying gun did most excellent work, among other things knocking out several hostile machine guns. He secured the most wonderful confidence of the troops that he was supporting, but this confidence in the assumed powers of the artillery weapon combined with his own ability placed him in an exceedingly embarrassing position . . . . the battalion commander of the infantry to which he was attached asked that he keep his gun with them all night so that this weapon could be used to lay a protective barrage in front of the infantry battalion in case of a counter attack during the night."

Discussion:

The infantry did not quite understand the weapon, and, perhaps, in their enthusiasm it did not occur to them that its effectiveness would be very materially reduced in blind firing. In any event, so long as artillerymen are inclined to seriously overestimate the effectiveness of the "75" in concentrations, a point very much the same, we are in no position to criticise.

The gun commander was an able officer. The gun was successful.

TABULATION OF RESULTS AND PERCENTAGES

	No. of Cases	Percent
Cases considered	14	——
U. S.	7	——
Foreign	7	——
Guns successfully used	7	50.0
U. S.	2	14.28
Foreign	5	35.71
Guns lost by errors in tactical judgment	2	14.28
U. S.	0	——
Foreign	2	——
Ineffective due to: Lack of initiative, resourcefulness, and determination by the artillery, and failure to make use of them by infantry	3	21.43
U. S.	3	——
Foreign	0	——
Presence of guns objected to by infantry	1	7.14
U. S.	1	——
Foreign	0	——
Ineffective due entirely to lack of initiative, resourcefulness, and determination by the artillery commander	1	7.14
U. S.	1	——
Foreign	0	——
Total of all unsatisfactory cases	7	50.0
U. S. (71.43)	5	35.71
Foreign (28.59)	2	14.29

Based upon these figures, the results obtained with accompanying artillery in our service were decidedly unsatisfactory. In our service over 71 per cent are estimated to have been failures as against only 29 per cent of the foreign cases. It indicates that our training was faulty as well as rather incomplete. Four of the five unsatisfactory U. S. cases were primarily due to sending up guns under officers who seem to have been trained as specialists instead of troop leaders—their tactical training had been neglected. It is indicated that generally where the guns were well handled and the terrain was suitable, they were successful. General Summerall said in his recommendation to the Hero Board: "Accompanying guns and batteries will always have varying opportunities on the battle front. The difficulties in their employment have arisen not from the principle involved but from a lack of understanding on the part of the infantry and the artillery as to how to utilize these guns. This knowledge can be gained by proper instruction and the prejudice against them will be replaced by enthusiasm for their use."

CONCLUSIONS

Based upon battle results in the late war, and the lack of satisfactory post war improvement in facilities for communications and observation, it does not seem at all probable that the divisional supporting artillery will be able to answer all the requirements of artillery support. Results indicate that failure of liaison and observation were far too common. It cannot be reasonably anticipated that our signal equipment will reach the necessary standard of reliability and ease of installation that will give entirely satisfactory results for many years yet to come. Meanwhile there is a gap that must be filled either by improved infantry cannon, accompanying artillery, or both. It is not a question of whether or not this fits our theories of artillery employment. It is a question of getting results. We must not become so enamoured with plausible theories that we forget essentials.

It has been shown that initiative, determination, resourcefulness, and tactical skill are essential to the handling of accompanying artillery—that men, not matériel, are the deciding factor. These qualities are to be developed by training, and training above all is the thing that is needed. We should not become so engrossed in the problems of fire direction and the working of large and cumbersome staffs that we allow officers of our light batteries to degenerate into technicians. These officers should understand how to handle and maneuver their guns skillfully under all conditions of combat and terrain and how to cooperate with the troops they support. These lessons are to be learned thoroughly only by actual practice. Advantage should be taken of field exercises, especially those of smaller units, to actually work the infantry and artillery together. The mutual understanding and cooperation developed by these troops during such training will later be reflected in their conduct on the field of battle. The spectacle of the infantry and artillery each fighting a little private war all of its own will definitely become a thing of the past.

The light field gun has its defects as a weapon of accompaniment. It has its good points as well. Properly handled it has been put to very effective use. What is more to the point, it is all that

we have and all we are likely to get for some time. We must make the best of the situation and learn to accompany the infantry with the weapon we have and to get the best possible results from its use. It is a mistake to do nothing until we get the perfect gun. We may never get it and if we do we cannot profit by it unless we know how to use it. We need not be satisfied, but we should not be inactive.

Annual Meeting of U. S. Field Artillery Association:

In compliance with Article VII, Section I, of the Constitution, notice is hereby given that the Executive Council has fixed 4:30 P. M. Wednesday, December 14, 1932, as the time of the annual meeting of the Association, to be held at the Army and Navy Club, Washington, D. C.

The business to be disposed of will be the election of one member of the Executive Council from the Regular Army, and the transaction of such other business as may properly come before the meeting.

Since one-half of the active members in the United States are required to constitute a quorum, if you are unable to attend the meeting in person it is urgently requested that you execute the proxy which has been mailed to you.