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THE KNOX TROPHY BATTERY, 1929: BATTERY A, 83D F. A., STATIONED AT FORT BENNING, GA.

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THE ANNUAL REPORT OF THE CHIEF OF FIELD ARTILLERY—1929

SECTION I—PERSONNEL

1. REGULAR ARMY

a. *Commissioned Personnel*—(1) The table below gives the number of officers, by grade, commissioned in the Field Artillery as of June 30, 1929, together with the authorized strength in the various grades and the difference between the authorized strength and the actual strength:

	Cols.	*Lt. Cols.*	*Majs.*	*Capts.*	*1st Lts.*	*2d Lts.*	*Total*
Actual strength	31	60	235	432	444	268	1470
Authorized	68	75	235	533	377	212	1500
Difference	–37	–15	.....	–101	+67	+56	–30

(2) Of the 1,470 officers commissioned in the Field Artillery, fifty-five (55) are detailed for duty in other arms of services, leaving 1,415 for duty with the Field Artillery.

(3) The gains and losses during the fiscal year ending June 30, 1929, were as follows:

GAINS

From the United States Military Academy, Class 1929	52
By transfers from other arms	4
Total gains	56

LOSSES

Retired	11
Relieved from detail with the Field Artillery	3
Discharged per Class "B" proceedings	3
Dismissed	2
Resigned	14
Died	4
Transferred to:	
Air Corps	9
Cavalry	1
Coast Artillery	2
Engineers	1
Finance Department	2
Ordnance Department	3

Quartermaster Corps	7
Signal Corps	2
Total losses	64
Net loss	8

(4) The distribution of officers on June 30, 1929, is shown in Table A.

TABLE A

	Cols.	*Lt. Cols.*	*Majs.*	*Capts.*	*1st Lts.*	*2d Lts.*	*Total*
Duty with arm	14	21	49	231	271	179	765
Sp. Serv. Sch		1	28	37	53	37	156
C&GS Sch. St. & Fac		2	8				10
C&GS Sch. Students			32	7			39
AWC St. & Fac	1	1		1			3
AWC Students		1	10				11
NWC Students			1				1
Ecole de Guerre			1				1
Italian Cav. Sch					1		1
Or Lang Students				1	3		4
USMA		1	4	9	28	1	43
ROTC		1	20	48	35		104
OR	6	14	19	39	15		93
NG	1	4	30	43	7		85
GS WD	2	2	10				14
GS Trs	4	6	12	1			23
GS Attaches	1		6	2			9
AC			1	1	1	46	49
CWS					1		1
QMC	1	1			2	1	5
Sig. Corps					3		3
Ord Dept					5	2	7
IGD		4	2				6
JAGD				2			2
ADC				3	14	2	19
CMTC O CA Hq	1						1
Public B & G				1			1
BIA		1					1
P R Relief			1				1
Asst G-2 QCA					1		1
Dis Bks			1	2	1		4
Rctg				3	3		6
Instr. Or Lang				1			1
Totals	31	60	235	432	444	268	1470

Notes: Officers who have been detailed as students usually do not report at the various schools prior to September 1, 1929. Such officers are carried in the table above as students and not as performing any of the other duties.

Fifty-two (52) second lieutenants, commissioned from the U. S. M. A., Class of 1929, are included in the above table; thirty-five (35) under duty with the arm, seventeen (17) under duty with the Air Corps.

(5) During the year the Field Artillery has furnished its full quota of officers for all classes of duty away from the arm. This has resulted in many cases in a shortage of officers with organizations.

(6) Considering the number of officers commissioned in the various field grades, as of June 30, 1929, it appears that the average service of officers with organizations of the Regular Army will be, approximately:

Colonels	4.5 years in 10
Lieutenant-Colonels	3.0 years in 10
Majors	1.8 years in 10

This statement, indicating the great amount of time that the average officer must spend on detached service, serves to emphasize the importance of having officers of battery grade serve the maximum practicable time with batteries of the Regular Army, and of having all officers attend the Battery Officers' Course, the Field Artillery School, early in their careers. At no other place can officers so readily acquire the basic training of their arm.

(7) As far as has been practicable, officers of battery grade have been left at their stations for four years. In meeting the requirements of foreign service and in recommending officers for school duty in the approximate order of their rank, it has been necessary to move some battery officers after a shorter period, but such moves have been held to the minimum consistent with the interests of the service.

As to officers of field grade, the general practice has been to leave colonels in command of regiments for three years, lieutenant-colonels with troops for three years and majors with battalions for two years. This turnover has been necessary in order to equalize the command duty in these grades.

b. *Enlisted Personnel*

(1) The situation, with respect to enlisted personnel, is shown in Table B.

TABLE B

	July 1928	Aug. 1928	Sept. 1928	Oct. 1928	Nov. 1928	Dec. 1928	Jan. 1929	Feb. 1929	Mch. 1929	Apr. 1929	May 1929	June 1929	Retg. Allot.
1st FA Brig													
Hq & Hq Btry	42	42	40	41	41	40	42	46	43	38	37	42	111.3%
1st Amm Tn	69	69	68	65	65	66	65	59	57	51	69	70	101.3%
6th FA	840	829	790	763	756	758	815	817	791	753	742	774	102.1%
7th FA less 2d Bn	463	490	490	485	494	516	536	523	512	485	462	456	95.3%
2d Bn 7th FA	383	358	350	409	452	446	425	413	421	405	393	383	97.8%
2d FA Brig													
Hq and Hq Btry	36	37	39	36	38	38	38	37	37	36	34	37	93.6%
2d Amm Tn	58	55	56	57	54	61	64	64	66	64	62	62	95.9%
12th FA	734	724	695	683	694	761	771	782	782	784	784	761	97.9%
15th FA	717	716	709	690	701	750	770	698	775	781	797	779	96.7%
3d FA Brig													
Hq and Hq Btry	29	33	33	31	36	36	35	36	37	35	36	38	105.1%
3d Amm Tn	53	64	63	59	60	59	58	57	59	60	59	56	90.9%
10th FA	742	744	719	605	672	650	608	616	628	653	776	770	92.1%
76 FA less 2d Bn	484	475	465	448	429	411	396	396	412	418	422	444	100.0%
2d Bn 76th FA	357	359	345	337	329	299	307	312	321	311	313	309	92.7%
13 FA Brig													
Hq and Hq Btry	42	44	44	41	41	40	41	40	44	44	43	44	104.1%
Btry A 1st Obs Bn	88	87	88	86	84	82	86	90	82	80	77	77	99.9%
13th Amm Tn	51	49	52	49	52	51	53	53	52	51	49	48	98.3%
5th FA	754	805	847	845	848	830	830	823	819	800	779	783	98.9%
17th FA	604	669	704	707	709	705	709	722	706	695	670	691	100.0%

TABLE B—*Continued*

	July 1928	Aug. 1928	Sept. 1928	Oct. 1928	Nov. 1928	Dec. 1928	Jan. 1929	Feb. 1929	Mch. 1929	Apr. 1929	May 1929	June 1929	Retg. Allot.
Miscellaneous													
1st FA	931	903	891	870	857	918	950	967	966	931	928	948	91.6%
3d FA 5th CA	521	521	527	534	536	531	528	529	491	463	453	352	100.0%
3d FA 6th CA	372	368	363	386	426	448	445	444	426	405	404	492	98.0%
4th FA Bn	315	307	315	321	331	385	415	425	430	412	401	369	86.2%
1st Bn 16th FA	452	440	427	422	443	435	444	516	501	480	459	449	105.9%
2d Bn 16th FA	402	427	436	442	434	420	404	390	372	358	376	372	100.0%
1st Bn 18th FA	409	389	369	359	371	403	423	427	434	419	420	422	88.8%
2d Bn 18th FA	380	368	373	379	375	376	393	406	419	381	302	388	91.8%
82d FA Bn (H)	420	420	435	424	417	441	473	476	462	450	447	435	92.9%
83d FA Bn	435	489	459	448	461		473	482	478	463	454	439	101.8%
OC of FA	24	24	22	23	23	23	23	24	24	24	24	24	96.5%
FAS Det (W)	144	150	152	152	147	147	151	149	148	145	152	152	94.4%
FAS Det (C)	153	158	171	172	172	168	175	173	171	168	164	159	100.0%
												Monthly Av'r'ge	
Monthly totals (US)	11524	11633	11535	11362	11548	11754	11948	11998	11969	11651	11536	11639	11675
Foreign Service													100.0%
2d FA Bn	445	421	405	454	448	442	470	464	461	462	462	442	91.1%
11th FA Brig	2570	2594	2564	2515	2490	2563	2654	2651	2668	2709	2654	2682	91.6%
24th FA	874	855	900	938	947	950	954	987	979	982	975	952	
												Monthly Av'r'ge	
Monthly totals (FS)	3889	3870	3869	3907	3885	3955	4078	4102	4108	4054	4091	4076	3990
												Monthly Av'r'ge	
Grand totals	15413	15503	15404	15269	15433	15709	16026	16100	16079	15705	15627	15715	15665

NOTES—Recruiting allotment for the Field Artillery (exclusive of Philippine Scouts) from July, 1928, to March, 1929, was 15210, and from March, 1929, to June, 1929, 15138.

Above foreign service totals and grand totals include an average of 941 Philippine Scouts.

2. NATIONAL GUARD

a. The allotment of Field Artillery units to the National Guard, and details covering its personnel are carried in the annual report of the Chief of Militia Bureau and will not be repeated here.

b. The selections of Field Artillery officers of the Regular Army, for detail as instructors with the National Guard, have been made with the utmost care. Effort has been, primarily, to select for this duty officers who possess tact and ability to work efficiently with the National Guard personnel. In addition, their records must have been such as to indicate a thorough knowledge of their own arm.

3. OFFICERS' RESERVE CORPS

a. During the year the Field Artillery Section of the Officers' Reserve Corps changed as follows:

GAINS

Regular acceptance (appointed by examination)	225
Dual commissions (N. G. officers commissioned in O. R.)	580
From R. O. T. C	637
Transfers from other arms	24
Total gains	1466

LOSSES

Died	28
Transfers to other arms	33
Discharges (Dual commissions, N. G. commission terminated)	194
Discharges (O. R., unable to locate, etc.)	392
Declined reappointment	1034
Resigned	60
Total losses	1741
Net loss	275

Excluding from the above gains and losses Reserve officers holding dual commissions, the net loss becomes 661.

b. The total number of Field Artillery Reserve officers as of June 30, 1928, was 11,564, of whom 1,620 held commissions in the National Guard. The total number of Field Artillery Reserve officers, as of June 30, 1929, was 11,289, of whom 2,006 held commissions in the National Guard.

c. Table C shows the distribution of Field Artillery Reserve officers:

TABLE C

Assignment Jurisdiction	*Cols.*	*Lt. Cols.*	*Majs.*	*Capts.*	*1st Lts.*	*2d Lts.*	*Total*
Corps Area Commander	67	110	360	947	1543	4891	7918
Chief of Field Artillery	7	10	39	67	54	53	230
The Adjutant General	2	1	5	1		3	12
With restrictions	3	9	38	129	217	727	1123
Totals	79	130	442	1144	1814	5674	9283
Dual Commissions	44	49	103	528	548	734	2006
Grand totals	123	179	545	1672	2362	6408	1289

SECTION II—TRAINING

4. REGULAR ARMY

* * * *

d. Service practice of organizations during the past year has demonstrated the need of giving all junior officers of Field Artillery the excellent training of the Battery Officers' Course at the Field Artillery School as soon as possible. Present ammunition allowances are not sufficient to enable battery officers to acquire expertness in fire control in any other way. Extensive use is now being made of 37 mm. sub-caliber ammunition for this purpose and the results have been very satisfactory, but there are conditions under which this ammunition cannot take the place of normal service shell and shrapnel.

e. Road marching has taken place in connection with the summer work of all Field Artillery units, and continues to be stressed as one of the prime factors in Field Artillery training. Even more emphasis is to be placed upon it during the coming year.

f. Continued experiment has been had with a view to perfecting the organization and prescribing the operation and training of artillery liaison detachments with supported infantry troops. Although much work remains to be done along this line, which has always been one of the most difficult of Field Artillery problems, it is felt that real progress is being made and a satisfactory solution approached.

g. Through the cooperation of the Air Corps officers on duty at the Field Artillery School, excellent work was done in quickwork air photography and very gratifying results were obtained in locating targets for artillery fire.

h. Study and experiment have been had in methods of fire at fast-moving tanks and armored cars, as the Field Artillery is, and must remain, the most dangerous foe of the modern mechanized forces.

i. Substantial progress has been made during the past year in the development of the sound ranging functions assigned to the Field Artillery in December, 1927. A working organization has been adopted, simple basic training methods developed, and a commissiond and enlisted personnel specially trained, all along lines which are counted on to give to the Field Artillery in the near future the benefit of the very valuable services which this newly acquired activity can render it.

j. There have been completed, reviewed and forwarded for approval and printing during the year the following Field Artillery Training Regulations:

T. R. 430- 70—The Firing Battery (revision).
T. R. 430- 76—The Tractor Driver (new).
T. R. 430-165—Dismounted Formations and Ceremonies (new).
T. R. 430-170—Camps, Marches and Field Equipment (new).

In addition the following are completed and are now under review:

T. R. 430-85—Field Artillery Firing (revision).
T. R. 430-95—Machine Gun Instruction and Training (new).
T. R. 430-90—Field Artillery Communications (new).
T. R. 430-60—Service of the Piece, 240 mm. Howitzer (new).
Field Artillery Manual (tentative).

Of these, it is believed that the review of the important T. R. 430-85, Field Artillery Firing, will be completed and the regulation issued to the service before January 1, 1930.

k. (1) During the past year Field Artillery officers have attended courses at the following civilian educational institutions:

Massachusetts Institute of Technology (Automotive Engineering)	2 officers
YaleUniversity (Communication Engineering)	2 officers
University of Pennsylvania (Sound Ranging)	2 officers

(2) In addition, officers have been sent as follows to other special schools:

Cavalry School	2 officers
Sigal School	2 officers
Air Corps Tactical School	1 officer
Chemical Warfare School	1 officer
Ecole de Guerre, Paris, France	1 officer

(3) Eleven (11) Field Artillery officers completed the one-year course at the Command and General Staff School, Fort Leavenworth, Kansas, in June, 1929, and twelve (12) were graduated from the Army War College.

l. In order to enable the Field Artillery to obtain the benefit of the best European practice in methods of horse training and in horsemanship, one officer is being sent to take the Special Course for Equitation Instructors at the Italian Cavalry School at Pinerolo, Italy, during the coming year.

m. (1) The Knox Trophy was won this year by Battery F, 16th Field Artillery, Fort Bragg, N. C., Captain H. E. Tisdale, F. A., Commanding. This trophy is awarded annually by the Society of the Sons of the Revolution in the Commonwealth of Massachusetts to that Field Artillery battery of the Regular Army which shall obtain the highest rating in efficiency—this rating to be based on firing efficiency, tactical mobility, proficiency in the use of field artillery means of communication, and on interior economy. Interest in this test has continued to increase throughout the Field Artillery and this interest is resulting in increased efficiency as is evidenced by the high marks made this year, when the seventeen competing batteries avearaged 386 out of a possible 400, as compared with 342 last year.

(2) The Knox Medal, awarded annually by the same society for excellence as an enlisted student at the Field Artillery School was won this year by Sergant Roy B. Maynard, Battery D, First Field Artillery, Fort Sill, Oklahoma.

5. THE FIELD ARTILLERY SCHOOL

The past year has been a most progressive one at the Field Artillery School. Special attention has been given to the coordination of the courses of instruction, which, as now taught,

are believed to be in every way adapted to the missions for which they were developed.

These courses are as follows:

a. *Officers' Courses*

(1) Eight (8) classes of officers received courses of instruction during the year. Those courses were:

The Advanced Course (Regular Army).

The Battery Officers' Course (Regular Army).

The National Guard and Reserve Battery Officers' Course (Fall).

The National Guard and Reserve Field Officers' Course.

The National Guard and Reserve Battery Officers' Course (Spring).

The Refresher Course (Regular Army).

The Advanced Course in Horsemanship.

The Advanced Course in Motors.

(2) The Advanced Course (R. A.) began September 12, 1928, and ended June 12, 1929. Twenty-eight (28) Regular Army Officers, and one (1) Marine Corps Officer satisfactorily completed this course and were awarded diplomas and certificates in all subjects.

(3) The Battery Officers' Course (R. A.) began September 12, 1928, and ended June 12, 1929. Sixty-nine (69 Regular Army and one (1) Marine Corps Officer began this course. Of this number, all but two (2) Regular Army officers satisfactorily completed the course and were awarded diplomas and certificates in all subjects.

(4) The National Guard and Reserve Battery Officers' Course (Fall) began September 12, 1928, and ended December 12, 1928. Thirty-seven (37) officers began this course. Of this number twenty-eight (28) satisfactorily completed it; seven (7) failed to satisfactorily complete it, and two (2) were relieved during the course. Each officer who completed the course satisfactorily was awarded a certificate of proficiency.

(5) The National Guard and Reserve Field Officers' Course began January 8, 1929, and ended February 16, 1929. Ten (10)

officers reported for this course and all satisfactorily completed it and were awarded certificates of proficiency.

(6) The National Guard and Reserve Battery Officers' Course (Spring) began January 28, 1929, and ended April 27, 1929. Thirty-three officers began this course and twenty-seven (27) satisfactorily completed it, receiving certificates of proficiency. One officer was relieved during the course, and five failed to satisfactorily complete it.

(7) The Refresher Course for Regular Army officers began March 4, 1929, and ended April 27, 1929. Three (3) officers followed this course successfully.

(8) The Advanced Course in Horsemanship began September 12, 1928, and ended June 12, 1929. Six (6) officers began this course and all satisfactorily completed it and were awarded diplomas.

(9) The Advanced Course in Motors began September 12, 1928, and ended March 28, 1929. Five (5) Regular Army officers and one foreign officer began this course. The five (5) Regular Army Officers satisfactorily completed the course and were awarded diplomas. The foreign officer, Lieutenant E. O. Marchander of the Swedish Army, left the post prior to the completion of the course. This is the first year that this course has been given. The five months allotted to it proved too short and the course will be of nine months in the future. Graduates will be well qualified to act as instructors in unit motor schools.

b. *Enlisted Specialists Courses*

(1) Seven (7) classes of enlisted men completed courses during the past year as follows:

Horseshoers (R.A.)	Sept. 12, 1928 to Jan. 25, 1929
Motor Mechanics (R.A.)	Sept. 12, 1928 to Jan. 25, 1929
Saddlers (R.A.)	Sept. 12, 1928 to Jan. 25, 1929
Communications (R.A. and N.G.)	Feb. 4, 1929 to June 12, 1929
Saddlers (R.A.)	Feb. 4, 1929 to June 12, 1929
Battery Mechanics (R.A.)	Feb. 4, 1929 to June 12, 1929
Horseshoers (R.A.)	Feb. 4, 1929 to June 12, 1929

(2) Thirteen (13) students began the Horseshoers Course and all graduated.

(3) Three (3) students began the Motor Mechanics Course and all graduated.

(4) Eight (8) students began the Saddlers Course and all graduated.

(5) Fifty-four (54) Regular Army and twenty-six (26) National Guard students began the Communication Course. Of these, thirty-one (31) Regular Army and twenty-three (23) National Guard Students graduated; thirteen (13) Regular Army and three (3) National Guard students failed to graduate, and ten (10) Regular Army students were relieved before the completion of the course.

(6) Three (3) students began the Saddlers Course and all graduated.

(7) Eleven (11) students began the Battery Mechanics Course and all graduated.

(8) Nine (9) students began the Horseshoers Course; seven (7) students graduating, while two (2) students were relieved before the completion of the course.

MISCELLANEOUS

In addition to giving the above listed courses, the personnel of the Field Artillery School reviewed all Training Regulations and Manuals sent in by this office; wrote the final revision of the T. R. 430-85, Field Artillery Firing; carried on tests of Field Artillery tactical formations and doctrine sent to it for study; prepared the Field Artillery correspondence courses and the text of Qualifications of Reserve Officers for Initial Appointment and Promotion.

6. NATIONAL GUARD

The only direct contact had by agencies of this office with the National Guard has been that with the National Guard officers and the enlisted specialists taking courses at the Field Artillery School (See 5 a and 5 b above). Under War Department policies, no inspections of National Guard activities are made by this office.

7. OFFICERS' RESERVE CORPS

Field Artillery Reserve officers of the Branch Assignment Group were given their active duty training with territorial

organizations. Plans have been completed to give special training in sound, flash, and high-burst ranging in August, 1929, to a small group of about twenty (20) Reserve officers of the Branch Assignment Group, specially selected for that purpose.

8. RESERVE OFFICERS, TRAINING CORPS

a. To compensate for the withdrawal (June 30, 1928) of the unit at the University of Wisconsin, a Field Artillery unit was established during September, 1928, at the University of Florida with an initial enrollment of 285 students in the first year basic course.

b. In October, 1928, there were enrolled a total of 11,107 basic students and 2,055 advanced course students, in the twenty Field Artillery units. These figures show only a very slight increase over the enrollment of the previous year. At the close of the college year, commissions or certificates of eligibility were issued to approximately 838 graduates. Last year a total of 831 were issued. The enrollment and output of the Field Artillery units apparently have become practically stabilized at the present figures.

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d. The general rating of the Field Artillery units, as determined by the Corps Area Inspection Boards, is highly satisfactory from the viewpoints both of administration and of instruction.

* * * *

f. Pursuant to War Department instructions a common program of instruction for all the Field Artillery units was prepared. It was issued in March, 1928, to all Field Artillery units. This program will be given its first test during the coming year.

g. On account of the reduction in the allowance of ammunition for the 75 mm. gun, the 37 mm. sub-caliber gun is now used to assist in preparing the students for service practice. This has been proved to be very beneficial.

9. CORRESPONDENCE COURSES

a. In order to effect better the general revision of the correspondence courses, now taking place, and also to provide for the

proper development and coordination of this important instruction agency, a correspondence course section was established at the Field Artillery School, Fort Sill, Oklahoma, with a field officer in charge.

b. This section, during the past year, has revised the 1928-1929 courses for use during the school year, 1929-30, and in addition, has been engaged in a great deal of preparatory work on a general revision of all the Field Artillery Correspondence Courses. It has also rendered valuable assistance in the preparation of the new Qualifications of Reserve Officers for Initial Appointment and Promotion.

SECTION III—MATÉRIEL AND DEVELOPMENT

10. ORDNANCE DEPARTMENT DEVELOPMENTS

a. *Present Status*

(1) The Ten Year Ordnance Program for Rearmament and Extended Service Test, based upon the requirements set up in the approved Caliber Board Report, has definitely fixed the policy of matériel development in general. In consequence we have new standards as follows:

Pack artillery	75 mm. Gun. M1
Division artillery	75 mm. Pack Howitzer, M1
	105 mm. Howitzer, M1

and in the development stage, experimental pilots only, of:

Medium artillery	155 mm. Howitzer, T1
	155 mm. Howitzer, T1E1
Heavy artillery	155 mm. Gun—8″ Howitzer

While it is to be expected that certain features of the new types of matériel which have been adopted as standard will require further study and design, it is considered that the development of them is, as of this date, satisfactory and complete.

The medium and heavy experimental types are still in the development stage. Two pilots, Models T1 and T1E1, of the 155 mm. howitzer have been manufactured to date. A failure in the base of the top carriage casting in firing tests by the Ordnance Department has set up the requirement for a change in design and construction of that element. With delivery, the test will be continued by the Field Artillery Board. In this matériel

ballistic characteristics comparable to those of the 155 mm. gun, Model 1918, have been attained with a reduction in gross weight of 40% of the latter.

Faults in the design and construction of the 155 mm. gun—8″ Howitzer, M1920E, as developed by test under the Field Artillery Board have resulted in a new design of this matériel. A half size model has been built and submitted for inspection. The complete design contemplates a sprung load above the axle, as in the first model, and antifriction wheel bearings. While the assembly of this matériel is unique, it does not incorporate a single new feature of design or construction which is not found in other accepted types.

* * * *

(3) As mechanical track-laying prime movers, post war developments have resulted in the following standards:

For light artillery	Caterpillar 35 (2½-ton)
For medium artillery	Caterpillar 30 (5-ton)
For heavy artillery	Caterpillar 60 (10-ton)

The Caterpillar 35 has never been considered entirely satisfactory as a prime mover for a two-axle light artillery load. It was adopted as the best available commercial type. Since its adoption however the Caterpillar Company has produced a 3½-ton type, Caterpillar 20. Units of this type are now under test by the Field Artillery Board and Field Artillery School. In test they are proving very satisfactory and early adoption of this type to replace the lighter 35 as standard is foreseen.

b. *Future Developments*

(1) While the new standard and experimental types of matériel do not meet the requirements set up as "Ideal" in the Caliber Board Report, considerable satisfaction is warranted in that they do actually approximate closely what that Board foresaw as the practical possibilities.

(2) The Caliber Board gave as the ideal light Field Artillery weapon: "A gun of about 3-inch caliber on a carriage permitting a vertical arc of fire from minus 5 degrees to plus 60 degrees and a horizontal arc of fire of 360 degrees". To meet a requirement for a light artillery weapon capable of being towed

at high speeds, the Ordnance Department has completed layout plans of a 75 mm. gun meeting not only that requirement but also meeting the requirements given as ideal by the Caliber Board. A pilot of this weapon will be built in the Fiscal Year 1930. Such a weapon while capable of all the uses of present light artillery will have a flexibility of fire insuring greater efficiency as an anti-tank gun and at the same time will be capable of fire at aerial targets.

(3) As regards other types of calibers, future development will consist in the main of reaching new standards in the 155 mm. howitzer and the 155 mm. gun—8″ howitzer previously described.

c. *Improvements of Existing Matériel*

(1) While new standards have been achieved or are assured for every type of Field Artillery found in a field army, and while our armament is assured with weapons of proven merit, until such time as production shall insure replacement with the new standards, certain modifications or adaptations are being found desirable in existing types to improve their efficiency.

(2) A panoramic sight and mount has been adopted for the 75 mm. Gun, M 1897, as a replacement for the present collimator sight and mount.

(3) The 75 mm. Guns, M 1897 (French), M 1916 (American) and M 1917 (British), the 155 mm. Howitzer M 1918 and the new standards 75 mm. gun M1 and 105 mm. Howitzer have decidedly limited speeds when towed behind mechanical prime movers. While their speed capacity is sufficient when handled by our present track-laying prime movers, the lack of springs and antifriction wheel bearings proclude their being towed behind present high speed trucks. To meet this condition, resort has been had to loading these weapons and their track-laying prime movers on trucks and trailers. To reduce the number of trucks required for such movement, or to eliminate the heavy trailer, the construction of a false or bogie axle to be placed under the carriage is projected. Initially this project is being studied for the 75 mm. Gun, M 1897. Layout drawings have been made of one such false axle assembly and others are under consideration. The study will progress to the 155 mm. Howitzer, M 1918. It

is confidently believed that the coming year will give very acceptable solutions, assuring economical strategic speed characteristic for the types of matériel which must constitute our initial armament in event of mobilization. The designs of the newly projected light artillery weapon and of the 155 mm. howitzer and 155 mm. gun—8″ Howitzer carriages assure the capability of being towed at truck speeds by the inclusion of springs and antifriction wheel bearings.

11. QUARTERMASTER CORPS DEVELOPMENTS

a. *Automotive Developments*

(1) The soundness of the policy of utilizing commercial types to the very limit cannot be questioned. The multiplicity of types found in commercial production designed, as they are, to meet nearly every requirement of passenger and cargo transportation, assures the success of such a policy. It does not follow however that trade names in vehicles need be followed precisely. Many of the better passenger and cargo vehicles, especially where production is small, are built up of standard assemblies. Operators of large fleets of automotive equipment appreciate this, and in their orders specify the particular type of unit assembly found necessary or most desirable for their particular uses. Supporting the automotive industry in production of units bearing trade names is a huge industry, elements of which specialize in the production of such vital assemblies as motors, clutches, transmissions, axles, front and rear, ignition and fuel systems, wheels and tires.

With this background it is believed that our needs in automotive equipment can be met in type without resort to the manufacture of a single special assembly not in actual production. Whether war time procurement will demand acceptance of completely assembled commercial products under trade names, or the assembly under government supervision or by governmental agencies, is a matter of slight relative importance in development.

(2) Briefly the requirements for automotive equipment for the Field Artillery are as follows:

Passenger vehicles

Light cargo vehicles for personnel or cargo loads

Heavy duty cargo vehicles

In all these types the maximum mobility on good, poor or indifferent roads, and off roads is essential.

(3) Based on test and experiment, both light and heavy cargo vehicles should be four-wheel drive in type, equipped with pneumatic tires. The Field Artillery Board has now in progress a test of three heavy cargo trucks. During the year several types of light cargo trucks will be tested as well as a medium six-wheel drive type. It is expected that the procurement of new cargo trucks for the 5th Field Artillery will be based upon the result of the competitive test now in process.

b. *Present Automotive Equipment*

The present truck equipment of the arm is of war-time design and procurement. Appropriations for the Fiscal Year 1930, assure the replacement with modern equipment of one half of the heavy cargo vehicles of the 5th Field Artillery. The need for a definite program of complete replacement to avoid excessive and prohibitive maintenance costs is obvious.

12. SIGNAL CORPS DEVELOPMENTS

a. *Sound Ranging*

(1) This development, through the medium of Battery A, First Observation Battalion, at Fort Bragg, continues. As a means of testing the equipment and the determination of the tactical operation of observation units, a project involving firing service ammunition from the allowance to the Chief of Field Artillery, is in process.

(2) It is my belief that, in war, the location of hostile weapons by means of sound location will become the primary mission of observation units; exceptionally only, sound ranging and high burst ranging. As a means of studying the capabilities and limitations of equipment, however, sound ranging and high burst ranging are valuable media. The work that is now going on at Fort Bragg is most important. It will soon afford a means whereby the tactics and technique of operation of observation units can be reduced to training regulations. The unit itself will become a parent organization for the instruction of that group of Reserve officers assigned to observation units.

(3) The development of equipment for observation units referred to above is of great importance, and the Signal Corps has assembled for the unit the latest type equipment. The study of this equipment is a continuing one.

b. *Communications and Communications Equipment*

(1) The principal items of development by the Signal Corps in this line, during the past year, have been:

Radio
Telephone
Field wire
Wire-carrying vehicles

(2) There has been under test the radio set, SCR 131, designed for use in the Infantry net and, because of this, for issue to divisional units of Field Artilery. While the test has not yet been completed, the indications are that it will be accepted as the new standard. The new radio set SCR 161, for the artillery net will be released for service test during the coming year. It is now being tested by the Signal Corps.

(3) In an effort to improve the present standard EE 5 telephone, the EE 8 model was developed and subjected to service test. While it offered certain advantages, it is generally conceded to be too heavy for general issue and use with the result that the EE 5 will in all probability remain standard. When modified to accomodate standard commercial batteries in lieu of the special type heretofore used and to incorporate certain other minor changes it will be satisfactory for all purposes and issues.

(4) A new seven-strand field wire has been developed and is now under test by the Field Artillery Board. It is intended to meet the requirements of a replacement for the W 40 and W 44 types,

(5) The present battery reel, M 1917, and battalion reel, M 1909, with cart, M 1918, while satisfactory in most respects are deficient in wire capacity. A modification, devised by the Field Artillery Board, mounting extra reels on brackets on the battery reel has proven not entirely satisfactory. The large number of both of these models on hand presages the necessity for their continued use. With a view to future manufacture, the Signal

Corps has developed a new animal-drawn reel and cart. Service pilots have been constructed and tested by the Signal Corps Board. One of these will shortly be released for test by the Field Artillery Board. One principle used in its design, is that of mounting the spool of wire as it comes from the manufacturer, obviating the present necessity of refilling the reel from the large drum or spool on which the wire is issued.

Using a cross country car (Chevrolet chassis with over-size wheels and tires) a vehicle was developed carrying issue spools of wire. This vehicle was to meet the requirement of a wire-laying medium for use with artillery with a mechanized force, or as an additional fast method of laying wire with other units. In test the vehicle lacked power for the considerable load required to insure adequate wire mileage, and its mobility therefore was questioned. It has been recommended that the development be continued using a heavier and more powerful chassis.

Tactical exercises and maneuvers constantly establish that our present wire-laying vehicles lack wire capacity. In peace time it is imperative for obvious reasons that all wire laid be recovered and rewound on reels for further use. This recovery involves considerable time and effort. In order to lay a newly and imperatively required line, old wire must be taken up and relaid. Recovery is the slower operation. The result is usually a criticism to the effect that wire capacity is lacking. I believe that in war-time we must consider practically that wire is as expendable as ammunition and that the supply of wire to the reels must be as automatic as the supply of ammunition to the guns.

13. CHEMICAL WARFARE SERVICE DEVELOPMENTS

The requirements in Chemical Warfare Service developments are for defensive and offensive means. The Field Artillery has no requirements for defensive means not shared by other arms, and the development of such is considered satisfactory.

The offensive means required are:

a. A satisfactory smoke agent,
b. A satisfactory non-persistent agent,
c. A satisfactory persistent agent.

The last requirement is met in the present standard, viz:

mustard. While the others are not satisfactory at this date, the requirements have been presented to the Chemical Warfare Service and are receiving all the attention, thought and experiment possible.

* * * *

14. GENERAL

a. *Rearmament*

(2) Coincident with the development of the new pack weapon has gone the development and standardization of the Phillips pack saddle as a replacement for the present aparejo. Estimates have been drawn to provide for the procurement of the new weapon. With the adoption of the new saddle have come the many problems of securing loads of packing accessories and of packing ammunition. Designs to solve these details have been worked out and models made which are now under test by the Pack Artillery Board.

(3) The six new 105 mm. howitzers, together with the two M1 units now on hand, provide sufficient matériel to equip two batteries. One battery must, for cogent reasons, remain available to the Field Artillery Board as a means to test and work out details of ammunition design, and for the development of the tactical doctrine of employment of the division light howitzer. It is purposed to send the other battery to the Field Arillery School to be utilized by a battery of school troops as secondary armament.

b. *Mechanization or Motorization*

(1) Without attempt to differentiate between the two terms, when applied to Field Artillery, they indicate the substitution of mechanical traction or carrying power for animal traction or carrying power. In contemplating extension of motorization in Field Artillery units, consideration should be given to the following facts:

(a) All medium and heavy Field Artillery is now tractor-drawn.

(b) Certain units of light artillery are now tractor-drawn, viz: both light regiments of the Field Artillery Brigade of the Hawaiian Division; one battalion of the First Field Artillery at

Fort Sill for purposes of instruction at the Field Artillery School; one battalion of the 6th Field Artillery for possible use with an experimental mechanized force; and, temporarily, the artillery battalion of the Panama division. All of the above units in addition to being tractor-drawn have sufficient truck and trailer equipment to give strategic mobility in addition to the tactical mobility assured by its track-laying prime movers.

(c) At the end of the calendar year 1928, 57% of all the active Field Artillery units of the Regular Army were horse-drawn, 34% tractor-drawn, and 9% pack.

(d) On a mobilization basis, 56% of the Field Artillery provided for a field army is tractor-drawn or portée artillery.

(e) According to the best obtainable figures, the United States has an actual resource of some 3½ million horses suitable and available for military service after generous allowances have been made for agriculture, commerce, breeding, etc. This figure is over nine times the initial requirement for horses based on present tables of organization and present mobilization plans.

Without regard to which is the more satisfactory prime mover, the mechanical type or animal type, it appears obvious that that policy which assures the use of our finite resources without undue strain on manufacture and production to the prejudice of production of other needed war supplies and commodities, is soundest economically.

(2) Probably no subject has had more or such varied study as has this question of extension of motorization. The recommended solutions vary from a complete replacement of the animal, to a replacement of animals in certain component units of regiments and even battalions. Were there not units of division artillery already motorized, I should certainly recommend that some be motorized. However, such as we have already tax available maintenance funds far beyond their limit. Throughout the arm, motor equipment is old and maintenance figures are climbing. Replacement of existing obsolete automotive equipment is of greater importance than an increase in motorized units. No issue is taken on the possibility of motorizing regimental and brigade headquarters batteries or even of battalion

combat trains. The question is not, will it work in theory; the issue is, can they be initially equipped and maintained, motorized? There can be no question but that the inclusion in a horse-drawn unit of some motor vehicles is a convenience. In certain tactical exercises it will be a great convenience, but to go ahead on such reasoning is to argue from the special to the general. I believe the physical presence or availability of motors in units not basically motorized is most inadvisable, in that if available they are demanded for uses for which other means are still sufficient and efficient.

c. *Artillery with a Mechanized Force*

I am convinced that there is a necessity for experimentation with a mechanized force. In such a force, for the Field Artillery, mechanical traction in one form or another must be utilized. I have presented separately the requirements to be met in the development of matériel for the Field Artillery of such a force, including a self-propelled mount based on the chassis adopted for the fighting tank.

d. *Antiaircraft Defense*.

Continued study and experiment concerning this problem has been had up to the limit of availability of means. The Field Artillery weapon with which units will be equipped initially in mobilization can not be modified or improved to permit their being used for antiaircraft fire. Artillery or columns on the march are targets of opportunity for attack aviation. Protection of such columns must come largely from within these columns. The machine gun and shoulder weapons and training therewith are the means of defense. The semiautomatic shoulder weapon in small arms development, which at this moment seems assured, will materially affect and assist in the solution of this vital problem.

15. The Field Artillery Board has been, during the past year, continually in operation at Fort Bragg, North Carolina. While a considerable portion of its work has been in connection with the preparation of Training Regulations and Manuals, the test section has had a great many projects before it, many concerning details which may not be delineated here.

16. The Pack Artillery Board has, during the same period,

functioned at Fort Robinson, Nebraska. An outstanding achievement of it has been the test and adoption of the Phillips Pack Saddle and the progress toward a solution of the incidental problems of securing loads thereto and the packing of accessories and ammunition.

17. I am each day impressed by the enormity of the development projects carried by the Supply Services for the Field Artillery. My office maintains close liaison with the Ordnance Department, the Quartermaster Corps, the Signal Corps, the Chemical Warfare Service and the Engineer Corps. The requirements of the Field Artillery are invariably received with courtesy, consideration and understanding, which undeniably bespeak the zeal for service of the chiefs of these supply services and their staffs.

SECTION IV—ORGANIZATION

18. TABLES OF ORGANIZATION

a. As a result of the work with the Experimental Mechanized Force during the summer of 1928, instructions were issued for the Sixth Field Artillery to be reorganized with two battalions of two batteries each, one battalion to be horse-drawn and the other to be motorized. Tables of organization for the regiment are now being prepared on this basis.

b. The decision to include one regiment of 155 mm. howitzers in the organic field artillery brigade of the infantry division and to reduce by one regiment the 155 mm. howitzer component of the organic corps artillery brigade, necessitated the revision of the tables of organization affected thereby. Tables for the division artillery brigade have been submitted and approved, while those for the corps artillery brigade are about completed.

c. In the revised tables of organization for the two brigades mentioned above, there have been included new organizations for the ammunition trains thereof. The ammunition train for the division artillery brigade now comprises a train headquarters and headquarters battery, one ammunition battery, wagon, and two ammunition batteries, truck. The new ammunition battery includes personnel and facilities for the two functions, transportation and labor, heretofore provided, respectively, in the transport

battery and the ammunition battery. In the case of the corps artillery brigade, it is contemplated that the ammunition train will contain a suitable number of ammunition batteries, truck, identical with those of the division artillery ammunition train.

d. Tables of organization for a new observation battalion which will be capable of performing for the army corps both flash and sound ranging simultaneously, have been prepared, and will be submitted for approval during the month of July.

e. The decision to increase the Field Artillery component of the war strength cavalry division from a separate battalion of horse artillery to a regiment, has necessitated the preparation of tables of organization for such a regiment, and this subject is now under study.

19. CHANGES IN ORGANIZATION

a. The above-mentioned changes in the assignment of 155 mm. howitzer regiments has necessitated the inclusion in the mobilization plan of additional inactive regiments of this type, and the reassignment to divisions and corps of active and inactive 155 mm. howitzer regiments of the Regular Army, the National Guard and the Organized Reserves. Recommendations covering this matter are in course of preparation and will be submitted shortly.

* * * *

SECTION V—WAR PLANS

Those duties in connection with the War Department war plans and mobilization plans, which pertain to the Office of Field Artillery, have been promptly and, it is believed, satisfactorily performed during the past year. All Field Artillery annexes are constantly kept up to date, as changes occur.

* * * *

It is believed that the liaison between this office and the various agencies of the War Department, charged with the preparation of these plans, is satisfactory.

FRED T. AUSTIN,
Major General,
Chief of Field Artillery.

SOME NOTES ON THE NEW ARMY EXTENSION COURSE

BY MAJOR MARSHALL MAGRUDER, F. A., TRAINING BRANCH, OFFICE OF THE CHIEF OF F. A.

After several years of careful study of the correspondence extension courses of our best universities, the present Army Correspondence Course system was instituted. The courses were primarily intended to afford an interesting and practical method of training for thousands of Reserve officers during their active training period, thereby assisting them in obtaining certificates of capacity and, eventually, their coveted promotions, following the required years of service in grade.

The popularity of these courses is shown by their rapid growth as indicated in the following data:

Total enrollment—

1925-26—23,316 students
1926-27—30,953 students
1927-28—34,998 students
1928-29—38,860 students

Completion of subcourses—

in 1925-26,—11,976 students completed 15,972 subcourses.
in 1926-27,—13,483 students completed 23,336 subcourses.
in 1927-28,—19,066 students completed 32,403 subcourses.
in 1928-29,—18,851 students completed 30,481 subcourses.

The 30,481 subcourses completed last year represented 683,240 hours of instruction.

With reference to Field Artillery, Table A shows the number of students who were enrolled for the quarter ending March 31, 1929.

It will be seen from Table A that these subcourses are used in the training of all components of the Army, including qualified civilians.

Inactive duty training is usually considered to be any training

TABLE A

Corps Area Correspondence School, ALL CORPS AREAS AND DEPARTMENTS. Quarter Ending March 31, 1929.

Branch	Course	Enrollment last report	GAINS		LOSSES						TOTAL ENROLLMENT END OF QR.	DISTRIBUTION OF ENROLLMENTS								Number of Subcourses & number of hours of instr. completed		
					ENROLLMENTS CANCELLED							COMMISSION'D			ENLISTED							
			New enrollments	Enrollments renewed	Completed course	Separation from service	Failure to complete qr. minimum	Failure to complete annual minimum	Transfer from corps area	Other causes		R.A.	N.G.	Res.	R.A.	N.G.	Res.	CMTC	Civ.	Number of students completing Subcourses	Number of Subcourses completed	Hours of instr. (Completed Subcourses only)
	Basic	3352	470	19	24	19	265	22	12	222	3277	1	607	1648	32	505	116	253	115			
F.A.	Btry.	1345	251	28	15	11	76	5	6	40	1471	1	375	1078	2	12		1	2			
	Adv.	455	37	12	6	1	46	2	3	12	434	8	121	305								

given a Reserve officer without expense to the Government, i.e., when the Reserve officers do not receive pay, allowances and mileage. The following classes of inactive duty training are available to Reserve officers.

Correspondence School Course,
Unit Schools,
Duty at Summer Camps,
Attachment to Regular Army Units,
Courses at Service Schools,
Attachment to National Guard Units,
Group Conferences.

The inactive duty training offers opportunities to officers to prepare themselves for the active duty training, where the officer's time is devoted to putting into practice on the ground the principles learned during inactive duty training. Officers and units that make the best records in training during the inactive training status are given priority for selection for training on an active status.

The correspondence courses are the most popular method of taking inactive training to build up training hour credits toward reappointment with privileges at the end of five years, appointment. These privileges consist of time in grade for promotion, active duty training with pay and allowances, and eligibility for assignment to a unit of the Organized Reserves.

During the past year the General Staff has made a very careful and searching study of our correspondence course system, and, as a result, is now planning a thorough revision of the present system. The first new courses will be ready for the School Year 1931-32.

Some important features of the new courses are:

a. Coordination with the resident courses of the various service schools.
b. Coordination with Army Regulations which prescribe the minimum requirements for appointment and promotion of Reserve officers.
c. Special correspondence subcourse texts.
d. Special correspondence subcourse maps.

e. Reduction in the number of special subcourses and increase in the number of common courses.

COORDINATION WITH THE SPECIAL SERVICE SCHOOLS

This has been secured by making the new subcourses into extension courses of the branch schools, where the new subcourses are prepared. This not only insures that the subcourses will be in thorough accord with the teachings of these schools, but the courses will be up to date and academically on a par with the resident courses taught by the schools.

Branch schools will prepare the subcourses for the training of all Reserve officers up to and including majors in the tactics and technique of the branch, while the Command and General Staff School will prepare subcourses for the training of the lieutenant colonels and colonels.

COORDINATION WITH ARMY REGULATIONS

The 140-series of Army Regulations have been rewritten and the requirements for the promotion of Reserve officers so drawn that the satisfactory completion of the correspondence subcourses of a branch will exempt an officer from the written examination in the *knowledge requirements* for promotion.

A period of active training will enable an officer to pass off his *ability requirements* for promotion.

The new name of the courses will be, The Army Extension Courses. The Field Artillery courses will be known as The Field Artillery School Extension Courses.

No longer will the Field Artillery subcourses be divided into three groups as basic, battery officers' and advanced. There will be only one Field Artillery course. The subcourses will be numbered somewhat similar to the Army Regulations. For instance, 10-1 will be the name given to the first subcourse required of candidates for second lieutenants; 20-1 will be given to the first subcourse required of second lieutenants for promotion; 30-1 will be given to the first subcourse required of first lieutenants for promotion; 40-1 will start the captains' series; 50-1 the majors' series, and so on.

The Field Artillery School Academic Staff has been so organized as to include a correspondence section with Major Heyser in charge.

One difficulty with the present subcourses has been caused by the lack of suitable texts.

Entirely too many Training Regulations, pamphlets, Army Regulations, and instructional literature of one kind or another were issued for use in a single correspondence course. Furthermore, the Training Regulations were not written for use in correspondence courses. They lacked the special correspondence course technique so necessary to interest and to hold the attention of the student.

SPECIAL TEXTS

New texts are being written especially for these subcourses, but for the present a lack of funds will only allow special texts to be printed for subcourses where more than five separate Training Regulations or pamphlets are required.

First Lieutenant Eleazar Parmly, F. A., of the Correspondence Course Section of the Field Artillery School, is engaged in making illustrations, diagrams, and charts for these special texts.

SPECIAL MAPS

At the present time many map sheets of the Gettysburg-Antietam area are issued to a student for use in solving a single map problem. The student has to paste these sheets together and when he has finished he has a rather irregular shaped and bulky map with which to work. In the interest of economy, and also in order to provide a standard size map in one sheet that can easily be handled by the student on a desk or kitchen table, nine special (1:21120) maps 34″ × 45″ covering the entire Gettysburg-Antietam area are being printed. Also, one special map will include the area around Gettysburg and the important passes in the mountains to the west. Overprinted maps and overlays are also authorized under certain restrictions for use in problems.

REDUCTION IN THE NUMBER OF SUBCOURSES

Wherever possible and practicable, a common subcourse has

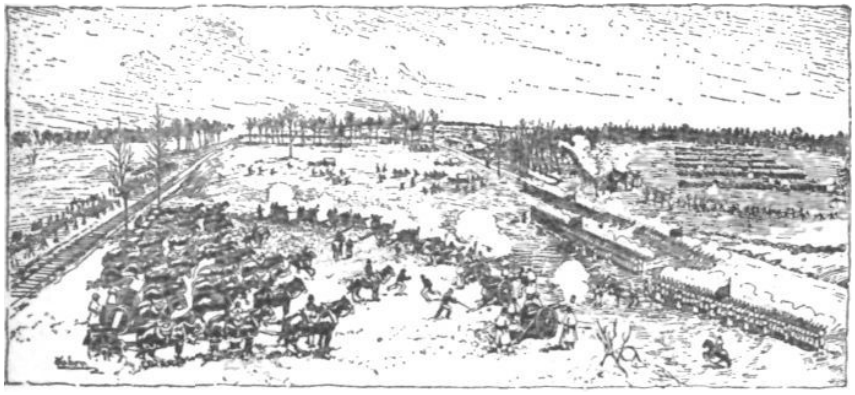
been prescribed for all branches requiring a subcourse in the same subject. Most of these subjects, in so far as the Field Artillery is concerned, are, however, only required for initial commission as second lieutenant. Some of these subcourses are—

Military Discipline, Courtesies and Customs of the Service,
Interior Guard Duty,
Military Sanitation and First Aid,
Administration,
Organization of the Army,
Care of Animals and Stable Management.

The increase in the number of common subcourses has decreased the number of subcourses that will have to be prepared by each branch in the present general revision of the courses.

THE COMMAND AND GENERAL STAFF SCHOOL

The Command and General Staff School is responsible for the preparation of the subcourses for all officers above the grade of major.



LOOMIS' AND GUENTHER'S BATTERIES IN ACTION AT THE BATTLE OF STONE'S RIVER, JAN.2, 1863

THE UNITED STATES FIELD ARTILLERY ASSOCIATION

ANNUAL MEETING

The nineteenth annual meeting of the Association was held at the Army and Navy Club in Washington on December 11, 1929. It was called to order at 4:30 p. m. by Col. Leroy W. Herron, who, as senior member of the Council, occupied the chair in the absence of the President of the Association.

The call for the meeting, which had been furnished by mail to all active members of the Association, was read by the Secretary-Treasurer. He reported that a quorum for the transaction of business was present in person and by written proxy.

On motion the reading of the minutes of the last meeting was dispensed with, and they were approved as published in THE FIELD ARTILLERY JOURNAL of January-February, 1929.

The annual report of the Secretary-Treasurer and his financial statements, appended hereto, were presented and read by him. A motion to accept them was made, seconded, and adopted.

Lieut. Col. Bryden made the following motion, which was seconded and adopted:

> "That the Secretary be directed to accept for the Field Artillery Association the desk, chair, and lamp, presented by Mrs. Cassels in memory of Lieutenant-Colonel Arthur F. Cassels' connection with the Association as Secretary-Treasurer and Editor of THE FIELD ARTILLERY JOURNAL, and that the Secretary be directed to cause a plate, engraved with the following words, to be affixed to the desk: Presented by Mrs. Arthur F. Cassels to the United States Field Artillery Association in memory of Lieut.-Col. Arthur F. Cassels, Secretary-Treasurer of the U. S. Field Artillery Association and Editor of THE FIELD ARTILLERY JOURNAL, 1918-1922."

The chair announced that the committee appointed to audit the financial statements of the Treasurer consisted of Major J.

L. Devers and Major A. W. Waldron. The report of the committee was presented in writing and read by the Secretary. It stated that the financial statements had been found to be correct. Thereupon a motion to accept the report was made, seconded, and adopted.

The chair stated that the terms of office of eight members of the Executive Council had expired, and that the next order of business would be the election of members to fill these vacancies. The following nominations were made:

From the Regular Army—The Chief of Field Artillery, Brig. Gen. Albert J. Bowley, Col. William S. McNair, and Major Herbert S. Clarkson.

From the National Guard—Brig. Gen. Harold M. Bush and Col. Edward C. Rose.

From the Field Artillery Section of the Officers' Reserve Corps—Col. Leroy W. Herron and Col. Noble B. Judah.

A motion was adopted directing the Secretary-Treasurer to cast the ballot of the Association for the candidates nominated. The ballot was so cast, and the chair declared those named to have been elected unanimously.

A motion was made declaring it to be the sense of the meeting that the Executive Council should consider the question of increasing the rate of pay for articles submitted and accepted for publication in THE FIELD ARTILLERY JOURNAL. The motion was seconded and adopted.

A motion was adopted directing the chair to appoint a committee of the Executive Council to draft resolutions of the Association expressing its sentiments on the retirement of General Austin, Chief of Field Artillery and President of the Association.

There followed an informal discussion of ways and means of increasing the number of members of the Association and the circulation of THE FIELD ARTILLERY JOURNAL, of investment of the surplus funds of the Association, and of the possibility of improvements in the contents of THE JOURNAL, after which the meeting adjourned.

ANNUAL REPORT OF THE SECRETARY-TREASURER

The finances of the Association during the past year have continued to gain, as shown by the following:

Assets—November 30, 1928:		
Cash on hand	$2,721.41	
Securities on hand	22,000.00	$24,721.41
Assets—November 30, 1929:		
Cash on hand	5,271.53	
Securities on hand	22,000.00	27,271.53
		2,550.12

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

RECEIPTS		
Membership dues	$6,298.55	
Advertising	4,258.08	
Refund on advertising	794.19	
Interest	1,424.28	
Sale of books and binders	817.15	
Miscellaneous receipts	15.14	
	13,607.39	
Cash on hand November 30, 1928	2,721.41	$16,328.80
EXPENDITURES		
Printing and mailing the Field Artillery Journal	$6,161.25	
Office supplies	112.89	
Postage and express	204.56	
Rent	420.00	
Services	2,370.08	
Telephone and telegrams	80.73	
Authors, translators, draftsmen, photographers	534.00	
Books and binders	638.31	
Commissions on advertising	394.26	
Miscellaneous	141.19	
	11.057.27	
Cash on hand November 30, 1929	5,271.53	16,328.80
Total receipts for the year ending November 30, 1929 were		13,607.39
Total expenditures for the year ending November 30, 1929, were		11,057.27
A gain of		2,550.12

Outstanding obligations and amounts receivable are approximately the same as on November 30, 1928. The only outstanding obligation of any importance is the printer's bill for the November-December, 1929, number of THE JOURNAL, which has not been received. This same obligation was also outstanding on November 30, 1928. Small amounts are receivable consisting of current advertising, dues and book department bills.

As regards membership, the Field Artillery Association has shown a slight increase in Regular Army membership and a slight decrease in National Guard and Reserve membership.

The importance to the Association of increasing its membership among field artillerymen of the Regular Army, National Guard and Organized Reserves, is obvious. The more members we get and the more readers THE JOURNAL has, the better we are accomplishing our mission of disseminating professional knowledge. The help of our present members in interesting prospective members is most important. A few personal words will do more than many letters from the Secretary. Circular letters asking Field Artillerymen to join the Association may go into the waste paper basket just as promptly as do the many soliciting circulars which clutter our mail.

A sincere attempt has been made during the past year to make THE FIELD ARTILLERY JOURNAL more attractive and interesting to its readers as well as being of purely technical or professional value. The interests of Field Artillerymen are exceedingly varied. Some are particularly interested in advanced forms of gunnery, others in horses, motors, tactics, history, training, National Guard and Reserve activities, organization, communications, sports, Field Artillery fiction and some even in poetry. It is believed that we have room in THE JOURNAL to cater to all these individual tastes, because at present the material available in any one activity is quite limited. In addition to submitting manuscripts to the Editor, our members can be of great assistance by suggesting topics or persons that might be used in providing interesting articles.

Mrs. Arthur F. Cassels, the widow of Lieutenant-Colonel Cassels, who was Secretary-Treasurer of the Field Artillery Association and Editor of THE JOURNAL from the beginning of 1918 to the end of 1922, has sent to the office of the Association a fine mahogany roll-top desk with swivel chair and desk light to match. It was Colonel Cassels' desk and Mrs. Cassels desires to present it to the Association in memory of his affiliation with it.

J. M. EAGER,
Major, F. A., U. S. Army,
Secretary-Treasurer.

FIELD ARTILLERY NOTES

Assignment of Field Artillery Regiments to Divisions

On December 7, 1929, the War Department issued an order relieving a number of Regular Army Field Artillery regiments from the divisions to which they are at present assigned and putting them back in the divisions with which they served during the World War.

Since the World War a number of Field Artillery regiments, for one reason or another, were relieved from assignment to their World War divisions. The principal reasons were the following:

a. Upon reorganization Field Artillery brigades were reduced to their war-time strength of two 75 mm. regiments and one 155 mm. Howitzer regiment to only two light regiments. This, of course, necessitated transferring one Regular Field Artillery regiment out of each division.

b. The necessity for stationing Regular Field Artillery units on foreign service made it impracticable to let them remain with their World War divisions, since the latter were stationed within the continental limits of the United States.

c. The duties, geographical locations and armament of certain Regular Field Artillery regiments made it impracticable to continue their assignments to their World War divisions.

Section 3(a) of the National Defense Act, as amended, requires National Guard and Reserve units to remain, as far as practicable, in their World War divisions. In the case of National Guard and Reserves this was a comparatively simple matter in view of the fact that after the war they returned to the states from which they came.

The recent War Department order putting one Howitzer regiment back into each division simplified the matter of returning Regular Field Artillery regiments to their World War divisions.

The following table shows the war-time assignment of Field Artillery divisional units as of November 11, 1918:

1st Brig. Hdqrs.	*2nd Brig. Hdqrs.*	*3rd Brig. Hdqrs.*
5th Regiment	12th Regiment	10th Regiment
6th Regiment	15th Regiment	18th Regiment
7th Reiment	17th Regiment	76th Regiment
1st T. M. B.	2nd T. M. B.	3rd T. M. B.
1st Am. Tr.	2nd Am. Tr.	3rd Am. Tr.
4th Brig. Hdqrs.	*5th Brig. Hdqrs.*	*6th Brig. Hdqrs.*
13th Regiment	19th Regiment	3rd Regiment
16th Regiment	20th Regiment	11th Regiment
77th Regiment	21st Regiment	78th Regiment
4th T. M. B.	5th T. M. B.	6th T. M. B.
4th Am. Tr.	5th Am. Tr.	6th Am. Tr.
7th Brig. Hdqrs.	*8th Brig. Hdqrs.*	*9th Brig. Hdqrs.*
8th Regiment	2nd Regiment	25th Regiment
79th Regiment	81st Regiment	26th Regiment
80th Regiment	83rd Regiment	27th Regiment
7th T. M. B.	8th T. M. B.	9th T. M. B.
7th Am. Tr.		9th Am. Tr.

The following is the War Department order reassigning Field Artillery regiments to their World War divisions:

1. In order to restore Field Artillery regiments, in so far as practicable to their World War assignments, the following changes in assignment and armament are announced, effective January 1, 1930:

a. The 1st Field Artillery is relieved from assignment to the 2d Division.

b. The 3d Field Artillery is relieved from assignment to the 5th Division, and is assigned to the 6th Division.

c. The 5th Field Artillery is assigned to the 1st Division. Its armament on mobilization will be 155 mm. howitzers, motorized.

d. The 9th Field Artillery is relieved from assignment to the 9th Division and the Seventh Corps Area, and is assigned to the 4th Division and to the Fourth Corps Area. Its armament is changed from 75 mm. guns, horse drawn, to 155 mm. howitzers, motorized.

e. The 10th Field Artillery, on mobilization, will be changed from 75 mm. guns, horse drawn, to 155 mm. howitzers, motorized.

f. The 15th Field Artillery is relieved from assignment to the 4th Division, and is assigned to the 2d Division.

g. The 17th Field Artillery is relieved from assignment to the 1st Division and is assigned to the 2d Division.

h. The 18th Field Artillery is relieved from assignment to the 6th Division, and is assigned to the 3d Division.

i. The 20th Field Artillery is relieved from assignment to the 8th Division, and the Third Corps Area, and is assigned to the 5th Division, and to the Fifth Corps Area.

j. The 21st Field Artillery is relieved from assignment to the 9th Division, and is assigned to the 5th Division. Its armament is changed from 75 mm. guns, horse drawn, to 155 mm. howitzers, motorized.

k. The 22d Field Artillery is relieved from assignment to the 4th Division, and the Fourth Corps Area, and is assigned to the 6th Division and to the Sixth Corps Area.

l. The 23d Field Artillery is relieved from assignment to the Fourth Corps Area, and is assigned to the Philippine Division and to the Philippine Department as a Philippine Scout regiment. Its armament is changed from 155 mm. howitzers, motorized, to 75 mm. guns, horse drawn.

m. The 25th Field Artillery is relieved from assignment to the Philippine Division and the Philippine Department, and from designation as a Philippine Scout regiment, and is assigned to the 9th Division and to the Seventh Corps Area.

n. The 26th Field Artillery is relieved from assignment to the 5th Division, and is assigned to the 9th Division. Its armament is changed from 155 mm. howitzers, motorized, to 75 mm. guns, horse drawn.

o. The 27th Field Artillery is assigned to the 9th Division.

p. The 28th Field Artillery is relieved from assignment to the Fifth Corps Area, and is assigned to the 8th Division, and to the Third Corps Area.

q. The 31st Field Artillery is relieved from assignment to the 2d Division, and is assigned as corps artillery.

r. The 32d Field Artillery is relieved from assignment to the 3d Division, and is assigned as corps artillery.

s. The 33d Field Artillery is relieved from assignment to

the 6th Division and the Sixth Corps Area, and is assigned to the Fourth Corps Area as corps artillery.

t. The 34th Field Artillery is relieved from assignment to the 7th Division and the Seventh Corps Area, and is assigned to the Fifth Corps Area as corps artillery.

u. The 35th Field Artillery is relieved from assignment to the 8th Division and the Third Corps Area, and is assigned to the Fifth Corps Area as corps artillery. Its armament is changed from 155 mm. howitzers to 155 mm. guns, motorized

v. The 36th Field Artillery is relieved from assignment to the 9th Division and the Fifth Corps Area, and is assigned to the Fourth Corps Area as corps artillery. Its armament is changed from 155 mm. howitzers to 155 mm. guns, motorized.

w. The 77th Field Artillery is relieved from assignment to the 7th Division and the Seventh Corps Area, and is assigned to the 4th Division and to the Fourth Corps Area.

x. The 79th Field Artillery is relieved from assignment to the Fifth Corps Area, and is assigned to the 7th Division and to the Seventh Corps Area. Its armament is changed from 155 mm. guns, motorized, to 75 mm. guns, horse drawn.

y. The 80th Field Artillery is relieved from assignment to the Fourth Corps Area, and is assigned to the 7th Division and to the Seventh Corps Area.

z. The 81st Field Artillery is relieved from assignment to the Fourth Corps Area, and is assigned to the 8th Division and to the Third Corps Area. Its armament is changed from 155 mm. guns, motorized, to 75 mm. guns, horse drawn.

z1. The 83d Field Artillery Battalion is assigned to the 8th Division.

z2. The 86th Field Artillery is relieved from assignment to the 8th Division, and is assigned as corps artillery. Its armament is changed from 75 mm. guns, horse drawn, to 155 mm. guns, motorized.

2. It is desired that corps area commanders concerned issue the necessary orders to make the above-mentioned changes effective.

Balloon Bursts at Fort Sill

Three officers and one enlisted man of the Air Corps at Post Field were hurriedly forced to abandon a free balloon in which they were riding at something over 5,000 feet and resort to their parachutes, when the craft burst allowing the hydrogen with which it was filled to escape.

They had left Fort Sill and had traveled with the wind about fifty miles, when from causes undetermined the balloon burst suddenly, leaving no alternative but the use of the parachutes, one of which was strapped to each of the occupants.

Of interest is one incident during the jumping of this group from the balloon. Lieutenant McCauley, who had never been on such a trip before, but is an airplane pilot of the 88th Observation Squadron, was, because of lack of knowledge of ballooning, unimpressed with the first command to jump, thinking that his fellow-officers were joking. However, it is reported that a rather casual glance at the face of one of the other occupants caused his departure from the basket to be of uncommon rapidity.

All members of the party left the basket without difficulty and landed with only slight bruises.—*Guidon*.

Policy for Selection of Students for Command and General Staff School

In the selection of student officers of the Regular Army for the 1930-32 class of the Command and General Staff School at Fort Leavenworth, Kansas, the Secretary of War has directed that they be selected from officers of field grade who will be less than 50 years of age on September 1, 1930, from captains who on October 1, 1929, were among the first 1,500 on the promotion list, and who in September, 1930, will be less than 50 years of age, and from captains below the first 1,500 on the promotion list on October 1, 1929, who are particularly qualified for higher training and who in September, 1930, will be less than 45 years of age. However, the number of officers from this latter category will not exceed 10 per cent of the total authorized for any branch.

All officers recommended for the detail must possess those qualifications which make them suitable for higher command and general staff training.

A departure from past policies in the selection of students for this school is that graduates of the 1929-30 classes of the advanced courses of special service schools will not be recommended for detail as students of the 1930-32 class at the Command and General Staff School. Hereafter graduates of advanced courses will be required to serve at least two years with troops or on other duty before being detailed as students at the Command and General Staff School.

The total number of students for the 1930-32 class is 132. One hundred and twelve of this number have been allotted to the arms, ten to the services and ten to the Secretary of War. The apportionment of students to the arms is as follows:

Infantry	46
Cavalry	14
Field Artillery	19
Coast Artillery	12
Engineers	7
Air Corps	10
Signal Corps	4
	112

The apportionment of students to the services is as follows:

Adjutant General's Department	1
Quartermaster Corps	3
Judge Advocate General's Department	1
Finance Department	1
Medical Department	2
Ordnance Department	1
Chemical Warfare Service	1
	10

Policy for the Selection of Students for the Army War College

It has been decided by the Secretary of War that the class which will enter the Army War College, Washington, D. C., in September 1930, will total 75 student officers of the Regular Army. Fifty-five of these will be selected from the arms, 10 from the services and 10 by the Secretary of War.

In making their selections, Chiefs of Branches will be limited to officers of field grade, to those who will be less than 52 years of age on September 1, 1930, to those who are not graduates of

the Army War College and to those who are considered by their respective chiefs of arms and services as possessing those qualifications which would justify their training for higher command and general staff duty.

At least 50 per cent of the quota from each arm of service will consist of officers who upon graduation from the War College will be available for duty on the War Department General Staff.

Each of the arms has been allotted students as follows:

Infantry	20
Cavalry	8
Field Artillery	9
Coast Artillery	9
Air Corps	4
Engineers	4
Signal Corps	1
	55

The apportionment to each of the services will be as follows:

Adjutant General's Department	1
Quartermaster Corps	2
Judge Advocate General's Department	1
Finance Department	1
Medical Department	2
Ordnance Department	2
Chemical Warfare Service	1
	10

The Toulmin Trophy

The Toulmin Trophy has been awarded to the 455th Field Artillery for 1929, which organization is commanded by Major M. V. Loewenstein, F. A.-Res., Cincinnati, Ohio. The presentation was made by the Chief of Staff of the artillery group, Lieutenant-Colonel Lewis S. Ryan, at the weekly luncheon of the Cincinnati Reserve Officers' Association, which affair was devoted to the Field Artillery arm of the service.

This handsome trophy was supplied by Lieutenant-Colonel H. A. Toulmin, Jr., Eng.-Res., Dayton, Ohio, to be awarded to the Organized Reserve regiment having the greatest number of hours credit for inactive duty training. It was won in 1928 by

the 326th Field Artillery of the 84th Division, which had a credit of three hours and forty minutes inactive duty training for each officer assigned to the regiment. The 455th Field Artillery won it this year with a total of six hours and forty-five minutes' credit for each officer. The inactive duty training consisted of correspondence course work, troop and group schools and contact camps.

The Toulmin Trophy is competed for annually and the regulations governing the award provide that it shall be the permanent property of any organization that wins it three times. The contest year runs from September 1 to August 31, and the award is made based upon the official reports of the organization as to the inactive duty training accomplished.

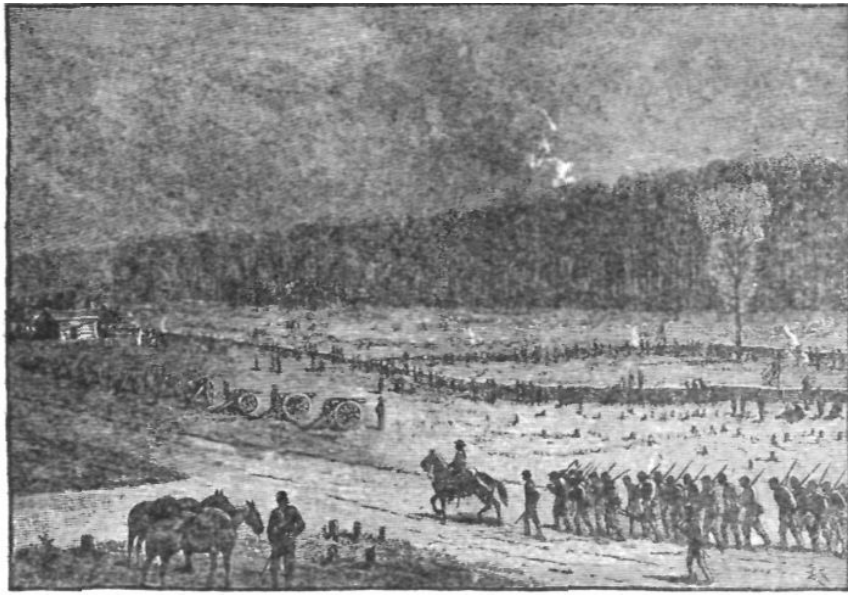
The fact that the 455th Field Artillery accomplished an average of six hours and forty-five minutes of inactive duty training for every officer in the organization nullifies the idea that Reserve officers do not have time for this class of work. If one group of officers can do this it is contended that others can do it as well. It is a matter of finding time for it and regulating activities so that some time is available for such work. The great majority of Reserve officers are business and professional men. They are not time-clock punchers and if the inactive duty training is made interesting and attractive they will like it.

The Fifth Corps Area stood high in this work last year and the progress for October indicates that the coming year will be a banner one. It will require, however, that every Reserve officer do his part.—*The Fifth Corps Area News*.

Responsibility of Reserve Officers Commanding Units

Recent instructions from the War Department set forth the fact that the primary duty of Regular Army instructors is to give, by advice and assistance, the fullest aid in the theoretical and practical instruction and training of the organizations to which they are assigned. In the performance of this duty the fact will not be lost sight of that upon each Reserve commander devolves the full responsibility for the instruction and training of his command and that he must be encouraged to the utmost to exercise such functions. Only in such cases where, in their

judgment, the situation requires, will instructors actually conduct the instruction within Reserve units. One of the outstanding duties of instructors is, therefore, to develop teaching ability and qualities of leadership in Reserve officers and to create a state of confidence and a degree of enthusiasm which will insure success in an emergency. Responsibility for the organization and training of each unit, including the preparation and execution of the training program, the preparation and maintenance of the unit mobilization plan and the development of the necessary commissioned personnel is vested in its commander.



UNION SECOND LINE OF DEFENSE AT CHANCELLORSVILLE

THE KNOX TROPHY

The Chief of Field Artillery announces that the Knox Trophy for the year 1929 was won by Battery A, 83d Field Artillery Battalion, stationed at Fort Benning, Georgia, and commanded by Captain Solomon F. Clark, F. A. This trophy is presented annually by the Society of the Sons of the Revolution in the Commonwealth of Massachusetts to that battery of Regular Army Field Artillery which shall have the highest rating in efficiency—this rating to be based on firing efficiency, tactical mobility, proficiency in the use of Field Artillery means of communication, and interior economy.

The Knox Trophy Medal, awarded by the same society for excellence as an enlisted student at the Field Artillery School, was won this year by Corporal Ergo Iosbaker, Headquarters Battery and Combat Train, 2d Battalion, 18th Field Artillery, Fort Des Moines, Iowa.

The batteries selected to represent the commands of which they are a part, and to take the final competitive test for the Knox Trophy, were:

1st Corps Area—Fort Ethan Allen, Vt	Battery	A, 7th F.A.
2nd Corps Area—Madison Barracks, N. Y.	"	D, 7th F.A.
3rd Corps Area—Fort Hoyle, Md	"	D, 6th F.A.
3rd Corps Area—Fort Myer, Va	"	C, 16th F.A.
4th Corps Area—Fort Bragg, N. C.	"	B, 5th F.A.
4th Corps Area—Fort Benning, Ga.	"	A, 83rd F.A.
5th Corps Area—Fort Benjamin Harrison, Ind.	"	C, 3rd F.A.
6th Corps Area—Camp McCoy, Wis.	"	F, 3rd F.A.
7th Corps Area—Fort Robinson, Neb.	"	B, 4th F.A.
The Field Artillery School, Fort Sill, Okla.	"	E, 1st F.A.
8th Corps Area—Fort Sam Houston, Texas	"	F, 12th F.A.
9th Corps Area—Fort D. A. Russell, Wyoming	"	B, 76th F.A.
9th Corps Area—Presidio of Monterey, Calif.	"	E, 76th F.A.
9th Corps Area—Fort Lewis, Wash	"	B, 10th F.A.
Hawaiian Department—Schofield Barracks	"	A, 13th F.A.
Panama Canal Dept.—Camp Gatun, C. Z.	"	A, 2nd F.A.

The scores considered in making the award were as follows:

Firing Efficiency	*Mobility*	*Battery Detail (Communicati ons)*	*Interior Economy*	*Totals*
98	100	92	100	394
97	100	96.8	100	392
100	100	86	100	386
91	97	95	100	373
91	92	76	100	359
76	94	87	100	357
72	95	81	100	348
94	97	63	92	346
56	90	97	100	343
62	99	51	100	312
85	94	15	100	294
68	76	62	84	290
47	65	74	100	285
62	100	14	100	276
46	86	42	100	274
67	86	13	74	240
Average 75¾	91 5/16	65¼	96⅞	329 15/16

Interest in this test continues unabated throughout the Field Artillery arm. Every effort is made to make it truly representative and of such a nature that no one type of Field Artillery matériel or service will be favored above any other type. Each year criticisms are invited of the test as given, and such recommendations as are pertinent and practicable are embodied in the test for the ensuing year. It is hoped that, in spite of the difficulties imposed by limited firing ranges and essential safety precautions, a way may soon be found to include problems which will involve firing at moving targets representing tanks and armored cars. Proficiency in defense of Field Artillery formations against low-flying aircraft, possibly, may also be included.

A FEW WORDS FROM THE WINNING B. C.

A few years ago the mere mention of Fort Benning as a prospective station to an artilleryman was likely to make him jump hastily for the nearest cover. During its transitional stage from a camp to a permanent post it was well and unfavorably known, and few, if any, were its partisans, even in the infantry.

Happily, those days are gone forever. The modern post of Fort Benning, with its many-sided official, social, and recreational life, is certainly one of the most desirable stations in the

Army. To the artilleryman it offers the double charm of a pleasant social life, with opportunities for professional improvement which are perhaps unavailable anywhere else. The constant contact with the Infantry School and with the war-strength 29th Regiment keeps the artillery officer in close touch with the latest ideas and doctrines of the infantry, while practically unlimited facilities are at his disposal for recreation.

Perhaps no post in the Army has so many different types of diversion. Polo (five teams), golf, tennis, an excellent swimming pool, a large gymnasium, and really good hunting and fishing in the vicinity. For those who take their amusements indoors there are dramatic and glee clubs (and even clubs for stamp collectors).

The 83d Field Artillery Battalion, now stationed at Benning, has two main functions: one is its own training as a combat organization; the other is a demonstration unit for the Infantry School. The battalion is practically always maintained at full peace strength. It has little fatigue or overhead, and is in a very happy situation as regards training. Demonstrations for the school take the form of organizational layouts, maneuvers, and firing, and there is a very considerable amount of the latter. In fact, probably more firing is done by the 83d each year than by any other battalion in the Army, excepting, of course, those at Sill. Benning's terrain is extremely difficult, rough, heavily wooded, and ravined. Lessons in firing technique learned thereon stick longer, no doubt, than those on easier ground. A number of terrain exercises are carried out each year with the 29th Infantry, in which close liaison is emphasized. Since the reservation comprises some 97,000 acres of varied terrain, it is easily seen how these exercises and firing are never lacking in variety,

During the summer of 1927, the 83d was converted from motorized to horse-drawn. Though the battalion was well into draft by fall, still so much time had been lost from gunners' instruction, and the demands for the following school year were so great that little hope was entertained of winning the Knox Trophy in 1928. Battery A was detailed to take this test, more or less in its normal stride, and it failed—as most first attempts in this contest seem to do—in its communications.

The next year, however, a more definite effort was made. The battalion commander announced that a competitive test would be held within the battalion in April, when the batteries were approaching their peak in efficiency, rather than in the fall, as before.

The date set was early in June, just prior to the battalion's departure on its annual road march. The battery commander had hoped to polish off the training of the battery during the intervening few weeks; a hope that was never to be realized. Before the test was taken no less than five general inspections of the battalion were held, including those by the Chief of Staff, Chief of Field Artillery, and the Chief of Infantry. These inspections were so nicely timed that no one battery cleaning and overhaul would suffice for two; each one had to be made a separate event. The result was that the battery went into the contest with only a few days' immediate preparatory training.

Of the test itself there is little to say. The battery was sure of one hundred per cent in interior economy and expected the same in mobility (due to lengthy experience in turning tractors into horses). It hoped for a high score in firing; and the communications were simply laid on the altar of the gods.

The day of the firing was enlivened by a few minor mishaps. While Lieutenant Murphy was firing, a sudden rainstorm came along (Georgia is famous for them) and blew down his targets, apparently to his complete unconcern. However, the rain did succeed in obliterating the red clay trail over which the battery had to pass on its way through the woods to its last firing position. En route, one gun overturned in a washout in a ravine, thereby delaying the battery to such an extent that less than ten minutes remained for firing the last problem.

I believe the entire battery enjoyed the test. Lieutenant Murphy, Lieutenant Avra, and Liutenant Burbank were splendid in their own departments. The men were keenly interested and morale was high. The battery took the road on the battalion hike to South Georgia twenty-four hours later, confident that it had made a good score, but quite unaware that it had won the Knox Trophy.

COMPETING FOR THE TROPHY IN WYOMING SNOW
Battery B, 76th F. A., Taking Knox Trophy Test at Fort D. A. Russell, Wyo.

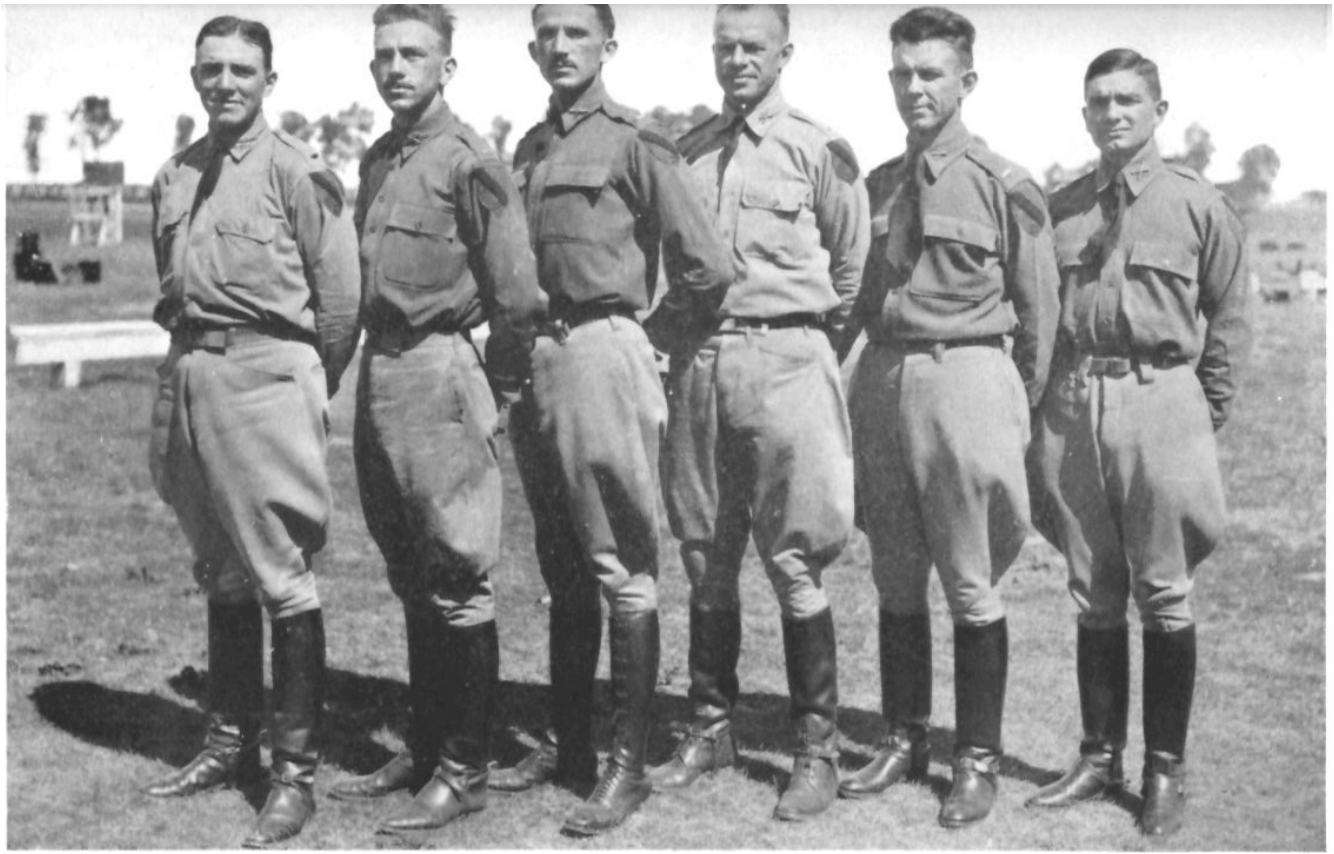
THE FIELD ARTILLERY PISTOL TEAM

THE entire Field Artillery has just reason to be proud of the pistol team which represented it so well in the last National Pistol Team Match at Camp Perry.

Some may say "How could a Field Artillery pistol team be sent to Perry?" It couldn't. Only units armed with the rifle are sent to the Camp Perry matches. However some of our officers took leave for the purpose, others, when they received orders to report to Camp Perry for duty as Range Officers, got busy and practiced a bit, and some shot matches with each other by mail After their work for the day at Perry was over, they practiced together, selected a team, and, through the courtesy of Colonel Hu B. Myers. Executive Officer, they were excused from their duties long enough to compete in the National Pistol Team and Individual Matches.

Pretty good for a group of "sand rats" to pick off sixth place in the big pistol match of the year against thirty-five of the best hand-gun shooters in the country!

To add to their laurels our pistollers also picked up medals in the Individual Match so that now they are all wearing the coveted "Distinguished Pistol Shot" Badge.



F. A. PISTOL TEAM—NATIONAL MATCHES, 1929 (6TH PLACE)

Left to Right: 2d Lt. R. W. Mayo, 5th F. A.; 1st Lt. W. W. Ford, 82d F. A. (Team Captain); 1st Lt. C. A. Pyle, Iowa State R. O. T. C.; 1st Lt. F. A. Roberts, 16th F. A.; 1st Lt. John Mesick, 1st Obs. Bn.; 1st Lt. F. V. Kerr, U. of Mo. R. O. T. C.; Capt. E. T. Barco, F. A. (absent)

THE ARTILLERY HUNT

BY MAJOR G. M. PEEK, F. A., M. F. H.

Following the hounds at Fort Sill has been a popular sport almost from the date of the establishment of the first military camp on Medicine Creek near White Wolf Ford. While there is no authentic record of it, the first detachment of cavalry to pitch camp here must have had with it one or more hounds. Throughout the history of Fort Sill one finds the "Chase" mentioned time and again and, knowing the love of the soldier for his dog, it is hardly

COMING HOME ACROSS THE STEEL BRIDGE

possible that this cavalry detachment wended its way through the Wichita Mountains in search of hostile Indians without the usual soldier's mascot.

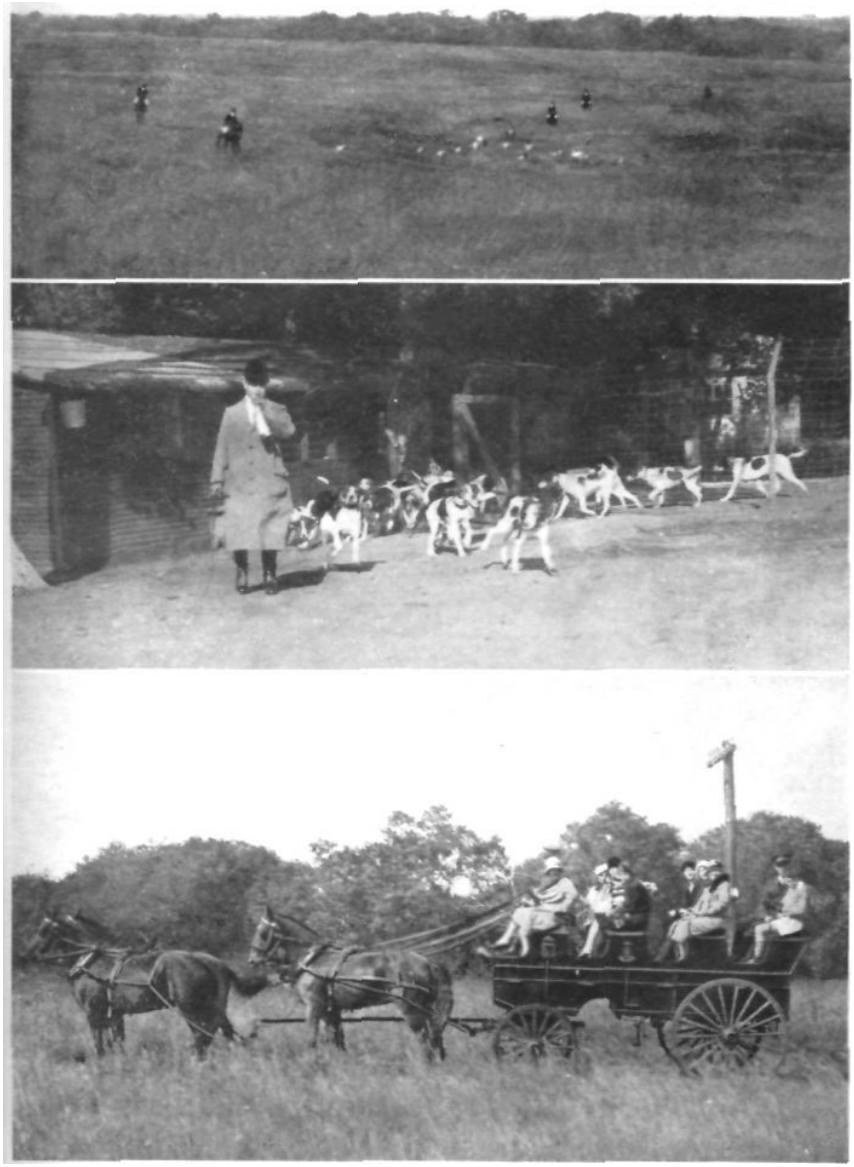
President Roosevelt rode to the hounds in the "Big Pasture", as it was known then, stretching from Lawton to the Red River. President Taft, while Secretary of War, also witnessed hunts in this great stretch of prairie. The lover of the "Chase" can visualize with pleasure a run across this open space behind a pack of hounds unhampered by the abominable

wire fences of today. Coyote in those days were plentiful and one could be gotten up almost anywhere. In more recent years a number of packs have been organized from time to time and kept at the Field Artillery School and just before the World War hunting the coyote was a lively sport in which both soldiers and civilians participated.

During the World War the attention of everyone at the Field Artillery School was centered on learning how to shoot cannon, so hunting activities received little thought. This lack of hunting

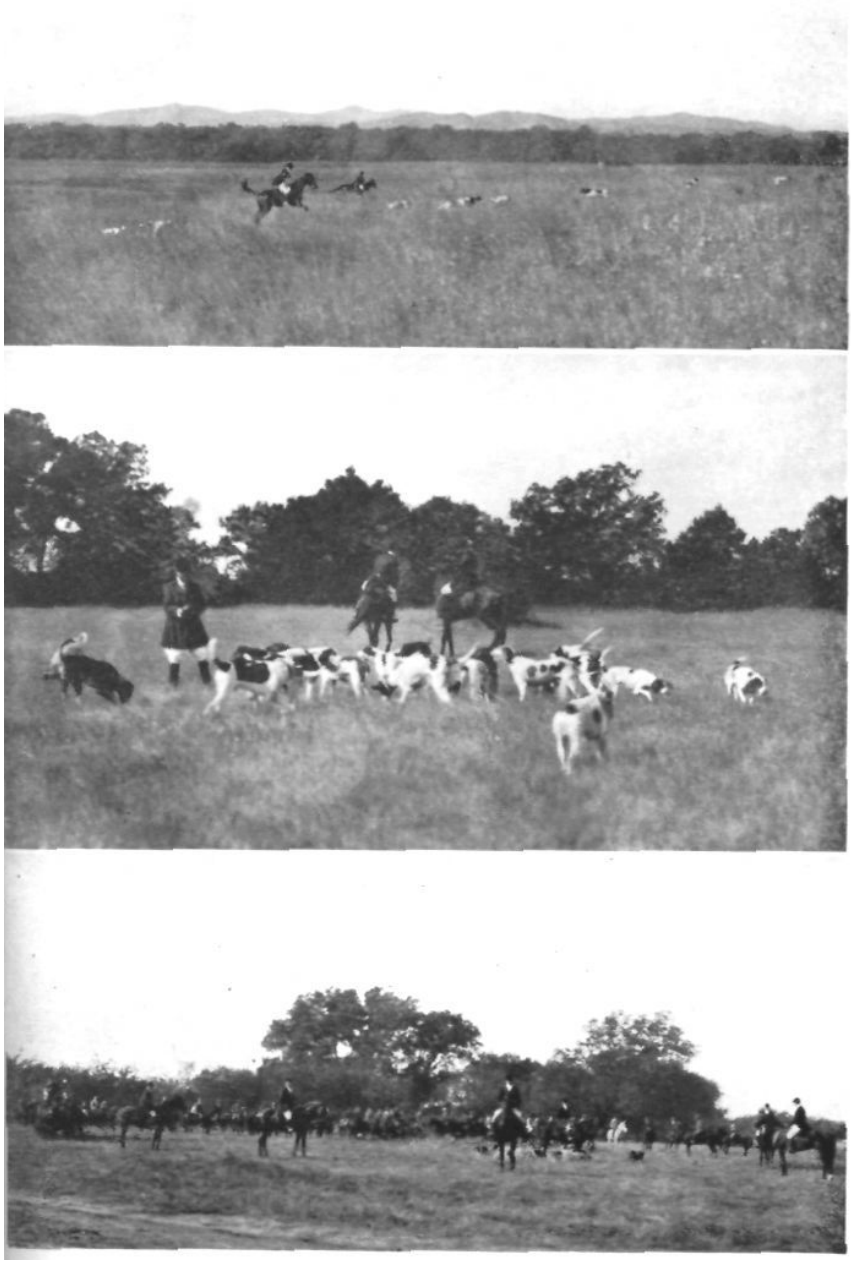
PACK AND MASTER

enthusiasm was felt also by the civilian packs in the vicinity of Fort Sill, although these packs were kept together and did not run down as much as did the military pack. After the World War, when things began to move on an even keel, those interested in following the hounds turned their thoughts to the organization of the Hunt at the Field Artillery School. Several attempts, without much success, were made to organize a pack until finally in the Fall of 1925 Mr. E. W. Marland presented the author with three and a half couples of draft hounds. Starting with these few hounds



TOP: DRAWING A RAVINE (KIOWA HILL); CENTER: MASTER CALLING PACK FROM KENNELS; BOTTOM: THE DRAG

THE ARTILLERY HUNT



TOP: AWAY ON A LINE; CENTER: AFTER THE KILL;
BOTTOM: FIELD AND PACK

and assisted by other donations an excellent pack was built up, so that on August 1, 1926, the Artillery Hunt was organized and presented with a pack of some twelve couples which had grown up around the original three and a half couples presented by Mr. Marland. In February 1927, the Artillery Hunt was recognized by the National Steeplechase and Hunts Association.

The membership of the Hunt is divided into three classes. Active members—officers permanently or temporarily stationed

GOING TO A MEET

at the Field Artillery School. They vote in government of the Hunt.

Association members—officers temporarily stationed at the Field Artillery School. This includes Student Officers. They do not vote in government of the Hunt.

Non-resident members—officers of the Army not stationed at the Field Artillery School.

Civilians and officers of foreign armies may be elected to membership by the Hunt.

After its organization, the Hunt grew rapidly in popularity, and soon it became one of the leading sports at the School with large fields present at all meets. The fixtures consisted of drags, coyote hunts and some fox hunts. Considerable difficulty was experienced in obtaining replacements for the pack because of troubles in raising puppies. The first year, out of twenty-seven puppies all were lost. The second year, only four replacements

MASTER AND WHIPPERS-IN, LEFT TO RIGHT: LT. BEVANS, LT. MITCHELL, CAPT. RUMBOUGH, MAJ. PECK, MAJ. WHITE, AND MAJ. WINSLOW

were obtained from a total of forty-four puppies. Hookworm and distemper raised havoc with the puppies.

In 1927, due to change of station, the author resigned as Master, and Major I. T. Wyche, Field Artillery, was elected to fill the vacancy. Major Wyche obtained excellent results with the pack and one of his greatest achievements was to overcome to some extent the replacement difficulty by obtaining full grown hounds locally. Although the replacement difficulty as to numbers was overcome, greater difficulty in training was encountered, as it is much more difficult to amalgamate

full-grown untrained hounds into a pack than hounds whose training started when they were fairly young. Regardless of this difficulty, Major Wyche made excellent progress and during his two years as Master, carried the Hunt to a still higher place in popularity with the garrison.

The Hunt at the present time is well established, the kennels are excellent, and while we are still faced with replacement difficulties, the pack consists of fourteen and a half couples of trained hounds and seven couples of puppies.

The greatest credit for the organization of the Artillery Hunt is due to Colonel C. D. Herron, Field Artillery, and Major D. W. McEnery, Medical Corps. Colonel Herron was the first president and it was due largely to his efforts that the numerous difficulties in the organization were overcome. Major McEnery, a lover of both the horse and the hound, was for some years M.F.H. of the Cavalry School Hunt. His assistance made organizing and training of the original pack possible.

FEDERAL ARTILLERY IN ACTION ON THE PLANK ROAD AT CHANCELLORSVILLE STAYING JACKSON'S ADVANCE, MAY 2, 1863

WAR BUGS

BEING A WORM'S-EYE VIEW OF THE WAR TO END WAR

BY CHARLES MacARTHUR

Formerly Private, Second Class, Battery F, 149th Field Artillery, 42d (Rainbow) Division, A. E. F.

Pictures by *Raymond Sisley*, formerly of Battery C, 149th F. A.

By Courtesy of Liberty Magazine

This is a Rainbow Division artilleryman's version of his battery's experiences in the World War. In the six preceding installments, he has intimately described training camp frolics, the trip overseas, their first taste of battle, Champagne, Chateau-Thierry, and the Ourcq offensives. Herewith he presents St. Mihiel—as the doughboys and his buddies, who pumped shrapnel and dragged their guns ever onward, saw it and lived it.

"BOO!" FOR THE GERMANS

The condemned men ate a hearty breakfast, kicked the horses in the pants, and paddled out for St. Mihiel in the early hours of September 10.

A dozen times the guns and carriages stalled on the pitch black road as another tank bit the bog and foundered up ahead.

We were milling through a trail of rice pudding fifteen feet wide and choked with all the horses and men in the A. E. F.

It was 2 in the morning, rush hour at the front. Miles of dripping doughboy ghosts slopped along at our left, whispering the same sad song:

The old gray mare, she ISUNT what she USED to be, ISUNT what she USED to be, ISUNT what she USED to be.

The old gray mare, she ISUNT what she USED to be.

Many long yeeeeeeeeeeeers ago.

The whisper ran down the column in exact ratio to its progress forward, so that for three hours we were cheered by the same monotonous verse as it passed our given point. We got slightly on edge after the first forty-five minutes. The entire matter of the old gray mare could have been cleaned up in half that time.

Our position seemed to be in the second line of doughboys. Moving in was a bit desperate, but was accomplished without casualties. We sat down to wait. A bleak few hundred yards ahead, just over the hill, was the wide and ragged trench system we were scheduled to cross with the first wave. Some engineers waited on us and promised to bridge the narrowest point of the first line, which was some comfort. It meant that we might not have to haul the guns over by hand, after all.

If we had'nt been sleeping two feet underground a lot of us would have been marmalade

The barbed wire never looked so thick and uncomfortable. Apparently the Germans didn't want any visiting. Zip went 77s and bang went the big babies, and we weren't even allowed to fade them. All our shells were being held for pointblank fire.

The Germans spotted our ammunition dumps and began lamming them with everything they had. It was tough on our drivers, who had to work through the bursts and pick out the shells before they blew up in their fingers.

Several horses were killed at one of the dumps, and the boys had to step some to finish loading, cut the screaming, dying animals from the traces, and snap out of the danger zone alive.

A certain driver ran like a whitehead, and nothing the boys yelled in his wake would induce him to come back. Over his shoulder he announced that he had a wife to think about.

"She LOVES me!" he bawled as he continued to pick them up and lay them down on the greasy homeward track. The boy was a great mudder. The notion that somebody loved him

Supernatural or not, that rainbow was the big thrill of the war

served to break the tension and the gents sat in the mud and laughed. The rest of the party wasn't much fun. Charlie Linde's arm was shot nearly off, helmets were badly battered, and two of the surviving horses had to be shot.

The happily married man was dropped socially. To the end of the war he was given non-combatant chores and addressed by his last name.

All day long the gun crews lay in their flop trenches, pulling their ears in close and writing grim letters home. The chaplain was bow-legged from the weight of mail (to be sent only in case we went what the boys never called West). Sentiment thus disposed of, we began kidding each other as behooved brave men. and cracked many jokes about taking 75s over the top. None of them were very funny, but they were hysterically received.

A withering enemy fire stung the lines all day long. At night Captain Stone had a big powwow with Wild Bill Donovan, commander of New York's old Sixty-ninth, our dearly beloved

doughboys. Because our stunt was without precedent the captain got *carte blanche*. He decided to shoot when we saw the whites of their eyes, just like Prescott or somebody.

A nervous lull, broken by gabby machine guns here and there. A bunch of tanks crept up so silently that we didn't see them until they were on top of us. If we hadn't been sleeping two feet underground a lot of us would have been marmalade, as they literally ran over the flops. We bawled them out for a lot of meatheads with many a "Where do you think you are, you so-and-so-and-so-and-so? Fifth Avenue?" They came back with amateur S. O. S. remarks, all stale, and dipped silently ahead and out of vituperative range.

We waited, snoring, copping a smoke or biting our nails, according to individual temperament. The hours dragged by. Then BLOOEY—

The entire front blew up. The attack was on, and very pretty too. White hot tracer shells laced the night with fire as they sped back and forth. Every rocket and flare in Europe went up on the dot. Liquid fire dripped into the trenches from above. The smash of sound almost equaled the Champagne as thousands of cannon chewed their wad of brimstone and spit it out. A concentration was located. We pulled some fire at machine gun speed, glad to have something to do.

A badly scared sun came over the hills. We got an order to cease fire and get ready to go over. The tanks already were drawn up in battle formation 100 yards ahead. After standing in the roads all night, dodging confetti, the drivers were ordered up. They came on the gallop. Up in the front line the doughboys were beginning to stir.

We limbered and waited. The poor bums of E and D batteries maintained their fire. We pitied them from the botton of our hearts, or maybe we didn't. But we said so—loudly and a bit derisively. Came the echo of a friendly razz.

Buckety-buckety-buckety. A courier galloped up. "Is it a pardon?" asked Johnny Foster, who had been reading up on Civil War stuff.

The courier brought cookies and cigarettes, presents from

Colonel Reilly—an ominous circumstance in itself. Nobody ever heard of a Colonel sending presents to his men. Not Reilly, anyhow. He was a swell guy, but hell on wheels socially. Obviously, there was something very fishy about this cooky business.

Slowly it dawned on us that it was a deathbed donation. The Colonel was sorry now for all the names he had called us, and he was trying to square himself at the last minute.

He knew we were going to die and was getting superstitious. There is no military rank in the Hereafter.

We choked on the cookies, and resolved not to sell ourselves so cheaply. Then a Second Lieutenant did a comical sit-fall in a muddy shell hole. Gloom vanished immediately. We laughed ourselves sick and started out.

Long lines of doughboys trudged abreast in the rain. It began to let up a bit and the sun poked through the clouds. Laboriously we pushed and pulled at the guns and got them up the hill in back of the first line trenches.

The view was grand. On our left was Montsec, peppered with pearls. The boys were snowballing with shrapnel. Below us was the valley, chewed to pieces and cluttered with machine guns and barbed wire. Up and down its dirty floor rolled a perfect barrage whiter than an angel's wing.

The doughboys were scrambling out of the trenches, clicking bayonets into place and yelling obscure things to one another. Their officers ran after, yelling, "Dress on the right, you gosh dam (approximately) lousy doughboys!"

The lines filled up and trailed abreast of the tanks, which dipped and bobbed like cautious old ladies. They stopped at shell holes, and seemed to hesitate. You felt they had left their rubbers home. Then a flash from the turret. A one pounder into a patch just ahead, and two German machine gunners with their hands in the air.

The doughboys strung along like crowds following a golf match, slowly and deliberately—dressing on the right whenever they were told. Here and there a man stumbled and fell. The line moved on under a cataract of shrapnel and high explosive.

Suddenly a flock of German shells reminded us that the crest was no place for a battery of field artillery. We played hide and go seek for a nervous ten minutes until one of our heavies located the boys and played a xylophone solo on their guns.

In the meanwhile the engineers had thrown a few planks over the first line trenches. We rattled across and caught up with the infantry.

It was a long, tough pull across no man's land. The night's rain had made it a duck pond, and it was cannoneers-to-the wheels all the way. Time and again the guns and caissons sank to the hubs in mud thicker than tar. We laid on them with a "Yeeeooo!" The drivers yanked off their helmets and socked the horses, and we got them out every time. God knows how. By that time the tanks were gasping in the mud, unable to budge an inch. Maybe our expertness was due to the fact that we were such swell targets whenever we stood still.

Halfway across the bog the sun sailed out from behind a cloud. Bayonets flashed for twenty miles. In the same moment a rainbow ran across the sky, and the division for which it was named let out a yell that rang high above the roaring barrage. Obviously, it meant *Gott mit Uns*. Supernatural or not, that rainbow was the big thrill of the war.

We scrambled over the German trenches and rolled merrily down the Seicheprey-St. Baussant road, catching up with the doughboys at Essey. The dead of both armies lay along the way, though not in the numbers we had seen at the Ourcq.

There were some odd cases of mutilation and the usual macabre remarks. One German was beaten to death with a doughboy's shovel. The job was severely criticized and there was some talk of catching the doughboy and making him do it all over again. Two stretcher bearers struggled past, carrying a mountainous officer.

"A lazy man's load!" we yelled, and so on. Through Essey to Pannes, where the army came to a halt. Immediately tension snapped. All the steam we'd been saving for nearly two days fizzed like a wet firecracker. We had dragged our guns

over the top—and we were alive. All of us were alive. What a lousy battle! Fervently we hoped that the chaplain hadn't mailed any of those letters. Why, these German gussies were pookies! Who ever told them they were soldiers? Their mothers?

They were straggling down the road by the thousand, guarded by handfuls of doughboys.

We roosted on the trails of the guns, kidding the pants off them for being such mamma's boys. Whole regiments had surrendered at once and now trooped by, waving sheets of American propaganda.

These pamphlets, printed in German, had been broadcast by our aviators the day before the battle. In them the hungry Heinies were promised everything but the White House if they would quit clowning around and surrender.

Weissbrot, Marmelade, Schweinfleisch, a wide choice of magazines, a dollar a day, good music, pretty girls, and a beautiful view. Whoever wrote that junk made the prison camps sound like night clubs. He also put a swell battle on the bum.

We stopped some of the Heinies in their happy rush for *Marmelade* and *Weissbrot* and frisked them for *Schnapps*. Some brisk trading went on until the officers interfered. A can of corn willie was worth an Iron Cross, first class, and ten francs would buy any helmet in the whole push. Swell helmets with spikes on them. It didn't occur to us to simply grab.

Some of the officers were pretty snooty, especially when we asked for *Schnapps*. A few spoke English and said they would have nothing to do with common soldiers—only colonels, like themselves. We worked on two or three of these babies. A ritzy *Hauptmann* had one hung on his nose, right in front of his men. His monocle was tossed up for grabs.

The front was everywhere. A snappy *Oberleutnant* cantered upon a beautiful horse, holding out his sword in surrender. One of our dumb lieutenants misunderstood the *beau geste* and had him hauled down and carried away. We blushed at the German's pained surprise and decided to send all our lieutenants to military school.

A startling rumor passed down the line: Porch Climber had prowled a German canteen and discovered a barrel of real beer! Pilsener! There was a panic. The officers shouted that it was poison, put there on purpose. We never fell for *that* old gag. It usually meant that the officers wanted it all for themselves.

We swarmed into the canteen like locusts and found—not one barrel of beer, but two! The rush was so great that Porch Climber divided the men into two lines. We got out our mess cups, Porch knocked the stoppers out of both kegs, and we filed by in something like order. Half the battery had been served when a doughboy general squeezed in the door. The lookout had deserted the door to take his place in line.

The general's rage was terrible.

"Stop this looting!" he thundered. The boys pegged him for an officious lieutenant and told him to soak his head. (He had a slicker over his stars.) The general foamed at the mouth and announced that everybody present was under arrest. We told him to button his nose. Obviously, one general can't arrest a battery.

He realized this himself, and elbowed his way out, squawking for the military police. But we were in the German lines and there weren't any police. And so we continued to rush the kegs. When both barrels were empty, we escaped through a back window in time to form part of the posse to arrest ourselves. There was a great deal of breath smelling on the part of the general and threats to shoot, but nothing ever came of it. It's against the law to shoot people.

This pleasant interlude was ended by orders to shove off and catch more Germans. We were in a good mood now and sang as we tramped abreast of the doughboys. Also, we knew our oats a little better. Whenever a gun or caisson stuck in a shell hole, we gathered a mob of retreating Heinies and made them pull it out.

On the edge of La Marche we halted and let the doughboys run up and take the town. We were still waiting for point-blank fire, but the captain passed up all the good targets. He

was afraid that we might be walking into a trap and didn't want to shoot until he had to.

Through La Marche, which the doughboys had taken by going "Boo!" at the Germans. We rested in a field outside the town with our boy friends from Alabama.

They were equally disgusted with the Germans' lack of resistance, and when groups of Heinies went by Alabama's rifles clicked and it was all we could do to keep them from taking pot shots. They assured us that they would only nip off an ear or two. We gossiped a little and sympathized with their bitterness over the replacement system. They complained that the government had shipped them a lot of Northern sissies and yellow-bellies in place of the starry roughnecks who yelled and died in the Champagne and beyond the Marne.

A squadron of American planes appeared and circled overhead in Ferris wheel formation. Like saps, we waved at them. Immediately they dived into the field, spraying us with machine gun bullets. There was a howl of rage and surprise from the army. Some bright blue language went up.

The halfwit aviators kept it up, horses and men dropping right and left. Every rifle in the field rattled back. Ray Quisno and Sam Wallace jumped for the battery machine guns, and tracer bullets began to smoke into our bright war birds' backs. They sailed away, followed by brimstone curses and more shots in the back.

Obviously, they had mistaken us for Germans. (By that time our column was five miles ahead of our wagon trains.) But that did *us* a fat lot of good. Two of the doughboys were dead; several were wounded; and John Rising and Eddie Edwards missed death by an eyelash. Their clothes were ripped by the bullets.

Bitterness quickly vanished with the discovery of some elegant souvenirs—field glasses, spiked hats, cameras, and Luger automatics—all piled in an empty shack. This was something like it. War was a swell institution again. Also, we ran across some German canned salmon that had our own reserve rations skinned to death.

Turning the corner of the Bois de Thiaucourt, we encountered two German batteries on the run. Guns were immediately unlimbered and we got ready to polish them off. They were only three or four blocks away. But Captain Stone, though sorely tempted, ordered us to hold fire. He was still worrying about traps and machine gun nests. So we watched the juiciest target of the war make a clean getaway.

The doughboys decided to dig in and call it a day. We turned back to Essey and took position beside the First Battalion, which pulled up a little later. Horse lines were established on a river bank near by, and the thirsty nags went cuckoo. Nobody got any sleep that night.

The divisional record carries this report for the day:

> . . . The morale of Battery F was exceptional. The entfiire battery volunteered to go on this mission; and in spite of fatigue caused by continuous work in extracting the carriages from shell holes, and the absence of food, the spirits of the men were very high.

Illustrating the weakness of words. If the spirits of the men didn't excel any previous enthusiasm of the war we'll eat that report.

In the morning the kitchen had not yet arrived; and we were as hungry as wolves. All our reserve rations were gone. The rule was that they couldn't be eaten without the captain's permission, but that was like a lot of other rules. Captain Stone reminded us that we wouldn't be hungry now if we had obeyed orders, but that was just his way, too. He had eaten his, and was suspected of having eaten Addie Moore's besides.

We had prowled around and found some sugar beets. They were stringy and bitter and about as edible as pine shavings. Finally somebody thought of examining the German dead. Sure enough, in every pack was a little bundle of rations—salmon, hardtack, and sugar. Those boys were soldiers. You wouldn't catch *them* breaking ration rules. And look what it got them.

Considerably sustained, we hooked up with the doughboys again and took position in a field outside of La Marche. The snacks we had pinched from the Germans wore out. By noon we were dizzy again—and there were no more Heinie rations.

The doughboys had gotten next to that little stunt and were taking first picks.

Our hunger was at its height when we were aroused by a gentle *moo*. It was a familiar sound, and we racked our brains to place it. Seemingly it came from a wood just ahead of the guns. We crept forward, automatics drawn, prepared for any dirty work. Another *moo*.

"God in the mountains, it's a cow!" shouted Nick Coss. Nick was a farmer lad and knew all about barnyard conditions. He was as correct as hell in this instance. Out walked a big mooley cow and tried to make friends. That cow might as easily have tried to make friends with a Chicago beef baron. With many an anxious "So, Bossy! Here, bossy!" we lured her out of the wildwood, roped her, and abandoned all pretense of affection. It was just a question of who was going to kill her, and how.

Wild Bill Sloan claimed some knowledge of the slaughtering art and got the job. Bossy was blindfolded, and Bill took good aim with an ax. Captain Stone wiggled out of his pup tent and wanted to know what the hell we were doing. It was immediately whispered that he wanted milk in his coffee, as he kicked up a big stink and forbade the marriage.

Respectfully we pointed out that bossy had stopped a machine gun bullet in the leg, making it sheer mercy to put her out of the way. The captain capitulated reluctantly.

Bill hit her a terrible sock on the pan. Bossy groaned in disillusionment and pain. Ike Sutton leaped like a panther and cut her throat. We strung her from a tree, and before she had quit kicking the boys had her liver on the fire.

The notion of liver, after years of corn willie, was ravishing. We tried to remember what liver tasted like. We could hardly wait for it to brown. At last it was done, and it was discovered that we had anticipated bossy's death from liver trouble by ten split seconds. Her liver was awful.

To make matters worse, the little Greek divided bossy's carcass with a view of getting some choice steaks for himself—and carelessly forgot to skin her. Great chunks of "fur"

kept bubbling up in the stew, and the meat was as tough as rubber. The gravy wasn't bad. At least it kept body and soul together for a couple of days longer.

What with bossy and a chance to sleep eight hours, we were quite happy at La Marche until some Dutch hoodlum began taking pot shots at us from the woods 100 yards away. He had a great big 77.

Now, the woods were surrounded. That German gun was by rights American property. Nobody is supposed to go shooting at people from behind their own lines, and yet every-three or four minutes there was that short, lethal hiss and another baby volcano in front of the guns. When people do things like that, war isn't safe.

We formed posses and made a break for the woods. Immediately Baby laid off. But the moment we returned he was at it again. Ah! Some little pal of his was up a tree, tipping him off, probably. We would settle *his* hash.

The machine gunners trained on the woods and went over every leaf with their glasses. The shells kept burning into the gun pits. The battery commander's detail tried to locate the trouble by trigonometry and the science of sound, and reported what we already knew—that Baby was shooting from the woods.

We rushed back en masse and finally found the gun. The German had beat it, being a wise guy. There's no telling what we would have done to him. His continued presence in the sector was a bit worrisome. A man like that will do anything.

Some newspaper correspondents dashed up to the position and we got a little credit—finally. So far, we had been winning the war in a whisper. One of them, Freedy Smith, represented the Chicago *Tribune*, and he gave us all the news from home: who was getting elected, how the Chicago Beautiful plan was working out, how the city rang with our heroism, and many other pleasant items. He even parted with cigarettes. We had been rolling grass for a week.

It was here, too, that the Ancient and Honorable Society of Algerians was formed. This derived from the frequent

recitation by one of the boys of a quaint rhyme concerning the Bey of that country and his curious pleasures.

For no reason, the elecutionist became the Bey of Algiers and a select 50 per cent of the battery became his subjects. (The Bey was too foxy to include everybody.)

Roger Baker, a crackajack organizer, became Caliph, or second to the Bey. At first it worked as smoothly as any lodge and the ceremonies were quite as elaborate. It's a cinch that the Bey got more respect than the officers.

For instance, no one in the order might address him without making a profound salaam and prefixing the words, "Oh, Worshipful Most Glorious Bey!" to the simplest request. As in the American army, the Bey was obliged to recognize this obeisance with a grave and dignified inclination of his head.

For several days the officers beheld these ceremonies with childlike wonder, but they never got anywhere with their questions. It was Death to reveal the secrets of the Order.

The Order had hardly been formed, and a flop trench set apart for the High Council, when we got hurry up order to take over another section of the front, back of St. Benoit. Once more we squawked our hearts out—and once more we did what we were told.

THE CONDUCT OF WAR

BY MARSHAL FERDINAND FOCH, AUTHOR OF "THE PRINCIPLES OF WAR"

TRANSLATED BY CAPTAIN W. F. KERNAN, FIELD ARTILLERY, U. S. ARMY

PART II

EXECUTION OF THE PLAN OF WAR MANOEUVRE

CHAPTER VII—LOGISTICS

Let us compare the French plan of war with the plan worked out by Moltke. The latter with all its faults must still be regarded as the development of a central idea together with an estimate of the means necessary to carry it out. In the first place the numerical superiority of Germany was clearly recognized; the French expected to offset this by commencing an immediate offensive which, it was hoped, would force the neutrality of South Germany and make it possible for the French Army to unite with the Austrians before advancing against the Prussians. This offensive was to be launched through Maxau and thence the French thrust was to be directed on Stuttgart and Nuremberg.

It was the general belief that Lebrun's mission to Vienna would result in Austria entering the war on the side of France; it was known that Lebrun had had several audiences with the Archduke Albert and that the conditions and bases of agreement for an entente contemplating the joint action of the two nations in a war against Germany had already been discussed. The reasoning used was as follows: "Prussia", said the Austrian General Staff, "is unable to complete the concentration of her forces before five weeks have elapsed; Austria will need at least that much time to finish her preparations. Therefore it is necessary that the French, who can mobilize their entire army, including the reserves, in sixteen days, make a thrust in the direction of the River Main (i. e., execute a march of about one month's duration) in order to effect a union with Austrian forces in Bohemia and finally arrive at Nuremberg after six weeks.

Such were the conditions imposed by Austria as the price of her alliance with the French. To consider such an undertaking,

which involved a march across Germany with that nation in arms and the German Army more or less in movement, in order to assist an uncertain and vacillating ally, was, from the point of view of the French, to suppose the problem already solved, the enemy inactive or defeated and the purpose of the war accomplished before hostilities commenced. It was in accordance with these propositions, however, whether inspired by irony or simply by ignorance, that the French General Staff made ready its plan of operations.

Because it is difficult to make effective preparations for the execution of a plan that is wholly fantastic, no preparations whatsoever were made for the execution of this project. When the time for action arrived the location and direction of the railway lines of France operated to cause the French Army to be divided into two masses, one in Alsace, the other in Lorraine, separated from each other by the Vosges. The third army in reserve, was located at the camp of Chalons. This conception contained no idea of action whatsoever and the question of rations alone soon intervened to fix the assembly points; the initial concentrations of the French forces were actually effected at the various bases of supply, and the French Army on July 23 was concentrated as follows:

I Corps at Strasbourg; II Corps at Saint-Avold; III Corps at Metz; IV Corps at Thionville; V Corps at Bitche; VI Corps at the Camp of Chalons; VII Corps at Belfort; Guard at Nancy.

The plan agreed upon showed a lack of serious consideration with regard to other points. In conjunction with the invasion of South Germany it was proposed to disembark troops on the Baltic coast of Prussia. For this purpose a body of 30,000 men was organized, made up of Marines and of the Toulon Division. This detachment was to embark on a fleet which was to assemble at Cherbourg. Without mentioning the serious error involved in such a dispersion of forces, bound to weaken the army designated for the invasion of South Germany, the most important objection to this project appears to be that it could not be carried out because no adequate fleet could be assembled.

With regard to the concentration of forces on the Northeast frontier—this was accomplished to start with, along a front of 240 kilometers. According to this linear distribution of forces, the various corps, instead of being grouped, were distributed in cordon along the entire frontier, the V Corps in Lorraine, the I and VII Corps in Alsace. Thus the least movement of the enemy would reveal the essential weakness of the French dispositions. Nevertheless, the situation could have been improved as late as July 23rd if the decision had been made to unite promptly the two Armies of Alsace and Lorraine and then undertake the execution of the plan of invasion on a somewhat modified scale. In this, however, the first condition of success was promptness of action.

But at this point the absolute destitution of the French Army became apparent; reserve provisions, field equipment, ambulances, trains, convoys were all wanting. The reserves failed to assemble until the beginning of August. The contemplated invasion of Germany thus became unthinkable. It was even impossible to attempt the union of the Armies of Alsace and Lorraine and the two armies had to remain where they were and await the arrival of necessary supplies. The Army of Lorraine was concentrated along the Saar. Nothing was known regarding the formation of the German Armies. The difficulties of the situation increased with time until a point was reached where the lack of organization on the part of the French amounted to an initial defeat.

August the first arrived and there were only five corps ready to advance. At this point the offensive should have been definitely abandoned by the French; the only logical course of action now was the defense of French territory. However no one appeared to realize this. After adopting a plan for an offensive that was carelessly and insufficiently worked out, the absence of all initiative became manifest. The result was bound to be absolute confusion. No further action was taken, and indeed how could it have been otherwise? The initial dispositions were made without any valid reasons. Why, in the absence of new plans, should they have

been changed? Nothing further was known and therefore the French had to wait until the trend of circumstances dissolved the general state of indecision and confusion into which the command had fallen. Any action at this point would only have served to increase the confusion already existing. Let us now return to Germany and observe the execution of the plan whose construction we have already studied.

For North Germany the 16th of July was the first day of mobilization. For Bavaria the 17th. For Wurtemberg the 19th. The transportation of the German Army to carry out Moltke's strategic plan was commenced on the ninth day of mobilization (July 24). The efficiency of the German railways was still somewhat below what was desired. These railways were capable of eighteen trains per day on double track line and twelve trains per day on the single track lines. Each double track line was to be required to transport two corps. First, one entire corps was to be transported and then the transportation of the other would commence.

The following order was to be observed:

First, combat troops of a leading Corps.

Second, combat troops of a following Corps.

Third, field trains, supplies and convoys for both Corps.

If, by August 3 (ninteenth day of mobilization) the French Army had not yet assumed the offensive, the German Armies had to be ready to commence active operations on August 4 as follows:

First Army on the front Saarlouis—Merzig.

Second Army on the front Volklingen-Saarbrucken-Saarguemines.

Third Army in the direction of the Lauter.

The Reserve to move to Kaiserslautern and Homburg.

What the German General Headquarters really sought was the deployment of the First and Second Armies along the Middle Saar on a front of fifty kilometers; afterwards the deployment of the Third Army along the Upper Saar somewhere in the vicinity of Saarguemines. Of the two first named armies it was demanded that they *remain in readiness* until the Third Army commenced its advance.

"It appeared to be in conformity with the central plan which his Majesty's General Staff was pursuing to remain in readiness and to attempt only to hold the French Army along the Saar until the advance of the Third Army enabled the Prussian Army to commence operations. If a decisive engagement took place on the French frontier the First and Second Armies would then be able to make a frontal attack and the Third Army would immediately take advantage of this situation to deliver a flank attack from the Upper Saar."*

This plan was not carried out. It was abandoned while being put in execution. What interests us in it is the fact that the proposed attack was something more than a mere thrust to the front. It was, in fact, a maneuver. This maneuver contemplated an envelopment of the enemy's flank. The Armies were assigned positions and their movements were regulated with this end in view. The tactical action resulting from such a strategical combination would have constituted a battle of maneuver; at any rate a maneuver of a definite sort would have taken place.

Information regarding the enemy was being sought. Major Krause was placed in charge of the information service in Berne. He set to work there and reconstructed a plan of operations of the French Army which ensuing events proved to be correct. Since the 22nd he had known that the French proposed to concentrate at Metz and Strasbourg and that the French Corps had been entrained without waiting for their reserves. This information, when transmitted to Moltke, greatly astonished him.

"It was impossible to suppose that the enemy would thus renounce the advantages of a regular and orderly mobilization and of the preliminary organization of his forces unless he was confident of gaining a great advantage by so doing. It appeared reasonable therefore to assume that the French would execute a rapid concentration of the forces immediately available and move toward the frontiers of Rhenish Prussia and the Palatinate in order to strike at the German concentration on the left bank

*History of the Franco-Prussian War by the German General Staff.

of the Rhine. Whatever might be the final consequence of such a move it still presented a danger against which steps had to be taken."*

Thus we see that the force of circumstances had dictated a "no" instead of the positive "yes" with which Moltke had answered the question "Can we carry out our first concentration beyond the Rhine and in the immediate vicinity of the French frontier without risk of being disturbed?"

This is generally the result of basing plans on unsound logic. Moltke had foreseen and provided for two alternative courses of action, only in the end to be faced with the necessity of preparing for a third, which called for a careful study.

This valuable information came, as we have seen, not from any covering force, but from sources so uncertain that little reliance would ordinarily have been placed on them. In this instance however, valuable assistance was given a system of security which had proved unable to reconnoiter and later was found insufficient for any effective protection.

Nevertheless, since the possibility of a sudden advance of the French Army had already been considered by Moltke, defensive measures had been prepared. The scheme of transportation had to be altered. Troops would be detrained in rear of the position originally selected. As to the manner in which these alterations of plans were to be made and as to how the zone of concentration of three Armies was to be shifted further to the rear, this was Moltke's problem and he immediately set out to obtain a solution. The First Army, he thought, did not need take into account the possibility of a surprise since it was advancing toward the zone of concentration by route marching, and therefore its columns could maintain contact with each other, take up a defensive position, or retreat, thus utilizing to the fullest extent the advantages of the terrain.

The Third Army was also in a favorable situation and in addition could count on having a covering force (thus ran Moltke's reasoning).

Moreover the enemy's troops that would be brought up to

*History of the Franco-Prussian War by the German General Staff.

oppose this Army would be drawn from France's Algerian provinces and were not yet concentrated.

His Second Army would entrain and move by rail from the most distant parts of Prussia and consequently would find itself unable to detrain if the Zone of its concentration were threatened by the enemy.

Due to the above considerations, set forth on July 22 in a memorandum to the King of Prussia, Moltke arrived at the following decision:

"If the French, who have already concentrated 142,000 men, commence their advance on the eighth day (July 23) they will reach the Rhine in six days and it is necessary that we meet them on that river (July 29) with superior forces.

"I propose therefore that the following decision be made:

"The Second Army to detrain on the Rhine. This decision will not operate to prevent our moving two divisions on the twelfth day of mobilization (July 27) from the other side of Mayence to act as Advance Guards. *The advance of the whole Second Army will thus be made by marching after the situation has been cleared up."*

Thus the original plan of concentration prepared for all of the Prussian forces held good only for the First and Third Armies and was modified as outlined above for the Second Army.

The plan of transportation of the Third Army was to remain unchanged, and the troop movement of this Army would be hastened; that of the Second Army would be considerably modified. The plan thus modified might have been altered again in accordance with circumstances easy to foresee. For example, let us suppose that the French Army of Alsace had been made up of French troops only, and all of the Algerian Detachments had been allocated to the Army of Lorraine. In this case Alsace would have been regarded as a possible source of immediate danger to the Prussian Army. In such an event the Third Army's concentration would have had to be altered and the distance it was to travel would have been considerably shortened.

From the above we are able to draw the following conclusion:

(1) The entire plan of troop movement did not need to be changed.
(2) Only the latest developments determined which elements of the plan should be modified.

The organization of a plan of troop movements should be sufficiently elastic to be varied either partially or totally in accordance with the latest information received.

With regard to the extent of the variation of the Second Army's scheme of transportation, this variation was based on the supposition that in *eight plus six equals fourteen days* the French might strike.

As a matter of fact the decision was made on July 22 (seventh day of mobilization). The enemy was expected to commence his movement on July 23 (eighth day). If the detraining points of the Prussian troops engaged in carrying out their concentration were moved back six days' marching time the enemy would be unable to reach the zone of concentration before the fourteenth day at the earliest (eight plus six equals fourteen). By this time the Prussian scheme of operations would have been sufficiently advanced to enable them to oppose with superior forces.

It was evident that Moltke was simply pulling back his concentration to a line so selected that when the enemy might reach it he would be certain to encounter there a crushing numerical superiority.

It is also clear that while a large covering force would have made this unnecessary it would have diminished appreciably the extent of the space which Moltke found necessary to interpose between his concentration and the line of the enemy's (supposed) advance. If the French had really numbered 142,000, it is true that when they encountered the Prussian covering force they would have forced it to fall back. But the rate of march of the French armies would at the same time have been slowed up considerably. They would have needed more than six days to cover the 120 kilometers between Saar and the Rhine at Mayence. In fact they would have used up six days in advancing a quite small distance. The German concentration

could therefore in this case (if they had used covering troops) have been withdrawn to a line only three or four days' marching distance from the French frontier.

Even with a covering force the necessity for a withdrawal must be taken into consideration; the extent of a withdrawal depends upon the completeness of the enemy's preparation and consequently it would depend upon many conditions which must be evaluated in their possible bearing on the question at issue, for example such conditions as the following:

(1) The hostile government which permits certain classes of reserves to be mobilized without the necessity of additional legislation.

(2) An enemy with an easier and consequently swifter scheme of mobilization.

(3) An enemy who can mobilize certain units in two echelons permitting the immediate formation and entry into action of certain forces, followed later by certain other forces (Troops of the Advance Guard; shock troops; replacements).

(4) In this connection we must consider the formation of a covering force which might be properly changed into an advance guard and whose entry into action could be immediate, either in order to provide security for the concentration or to prepare the maneuver of the main body.

(5) Unexpected events must be mentioned here such as political upheavals, revolutions and popular uprisings.

These circumstances with their effects on the extent of a withdrawal which they might cause cannot be properly evaluated except at the last moment. Consequently, any proposed variation in the original plan of operations must meet all possible cases and must therefore be exceedingly elastic in order to embrace the conduct of a possible retreat as well as all changes in the plan of transportation that may be found necessary.

It was laid down as an established principle (in Moltke's plan) to commence his movement of troops with the transportation of the combatant arms and afterwards to bring up the field trains. "It was desirable to avoid as far as possible mingling the various Army Corps on one railway line. However,

several different lines might safely be employed for the transportation of a single Corps." This principle was observed throughout. Thus the solution arrived at though not *uniform* was reached in a *purely objective manner*.

With regard to the Second Army in particular, if we refer to the dispositions taken by Moltke on July 22nd in conformance with the order of the King of Prussia and transmitted to the Army Commanders on the same day, we observe the following plan:

First: line A (Berlin, Hanover, Cologne, Bringerbruck, Neunkirchem) will detrain as follows:

At Bingen: the III Corps on July 25-28; the XII Corps on July 29-August 5; and after these troops have detrained their field trains will be brought up.

Line C (Berlin, Halle, Cassel, Frankfort, Mannheim, Homburg) will detrain as follows: at Mannheim: IV Corps July 26th-July 29th; the Guard July 30th-August 5, and afterwards the field trains of these two corps.

These orders resulted in the following situation:

On the 26th of July the III Corps detrained the combatant troops of one entire division which was utilized to form an advance guard at Kreutznach.

On the 28th the Corps was complete and went into camp in rear of its advance guard.

The XII Corps then commenced its concentration.

The IV Corps commenced on the 26th with the detraining of a division and was completely concentrated on the 28th with an advance guard at Durckheim (26 kilometers away). On the 29th the IV Corps concentration was complete and began to close upon its advance elements. The detraining of the Guard began.

This plan was to be carried out in a *certain progression;* its salient features were:

On each railway line the combatant troops were transported first, and of these *one Army Corps evidently destined for the first line and one for the second line*.

The leading element of each Army Corps of the first line was always *a division*.

After the combat units of the second line had been detrained the transportation of the field trains commenced.

In short *"a normal order of march* prevails throughout this scheme of transportation by rail." (Bonsart de Schellendorf.)

But while this scheme of transportation was being carried out the whole situation changed. By July 28 the enemy's dispositions became known. The French were very evidently not going to assume the offensive. The unexpected had occurred. Moltke thus found himself in the following situation: He had withdrawn his concentration to the Rhine in preparation for the attack of an enemy who had not yet reached the Saar.

The advance of the Prussian forces had to begin without delay because contact with the enemy had to be gained and for other reasons. But how could the advance be made without endangering the troops still separated from each other by great distances and lacking the protection of a covering force?

"In the first place, the First Army (in process of formation at Treves July 30th and 31st and containing at this time about 50,000 infantry) would be able, it was believed, to escape any attack by superior forces because of mountainous country.

"The Third Army although still incomplete and divided into two parts by the Rhine, was already concentrated behind a line 30 kilometers long reaching from Landau to Carlsruhe.

This Army already contained 77,000 infantry and was soon to be brought up to its full strength of 125,000 when it would be equal to the task of overcoming the French Army of Alsace which was known to be much weaker in numbers."

The Second Army remained to be taken care of:

"After having completed a concentration before Mayence during which it was protected by an Army on either flank and by being at a great distance from the frontier, it had to advance with as little delay as possible in order to make room for the troops following it." Also, we might add, in order to gain contact with an enemy who, because he refused to attack, had therefore to be attacked.

The Second Army had to march across the Palatinate where it might meet the enemy's main body at any moment, for the latter was free to advance. In such an engagement the German forces would be under great disadvantage because the country traversed is heavily wooded and mountainous and also because their communications would be exceedingly difficult to maintain. The chances were that this Army, which with the addition of Reserve constituted an enormous mass, might be thrown into complete disorder by such an attack.

How could this difficulty be overcome?

First by making an initial advance with the heads of the various columns of the Corps. These leading elements would be detrained along the line Allsenz-Grunstadt on a front sufficiently large to obviate any danger.

"For even if we grant that the adversary possessed extraordinary mobility he would still be unable to reach this line before August 5 and the German Army would be able to effect a concentration within 24 hours on one of its wings if this were found necessary."

"On the date set the Second Army, to which the IX and XII Corps had been added on July 30, would also be reinforced by the addition of the I Corps and a part of the VI. Thus Prince Frederick Charles would be able to dispose of more than 194,000 infantry in his operations on the line selected."*

Moreover the French would not be able to advance in the Palatinate without detaching at least four corps for operations against the First Army which occupied a very strong position.

"Even if the French should succeed in adding to their forces the VI Corps now in camp at Chalons, they would still have only 133,000 men for their offensive against the Second Army. Thus Prince Frederick Charles would be able to engage the enemy with greatly superior forces when he debouched from the mountains."*

Furthermore, the Third Army could be counted on to take part in the operations. This Army was cerain to be ready to maneuver by August 1 and by August 5 it should be able to make its weight felt.

*History of the Franco-Prussian War by the German General Staff.

The logic used here is faultless; the desired result was possible provided this maneuver was properly executed.

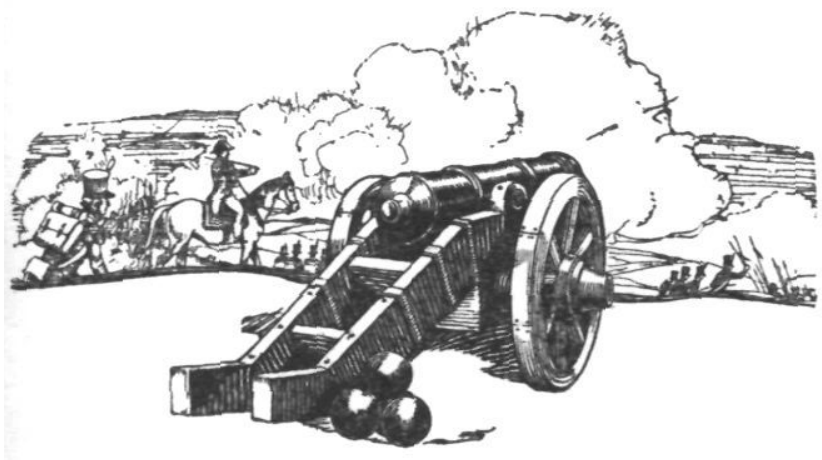
With regard to a French offensive directed against South Germany, this became more and more unlikely as time went on.

"The first advance being completed, the march to the Saar will be continued."

"Moreover if the French persist in their present inaction the Second Army will continue its movement towards the Saar; its reinforcements will be sent forward by rail and will join it somewhere along the road.

"It will be necessary, however, to take care that the First Army is not attacked by the enemy while its columns are disunited by the rapid march and before the Second Army has reached the Saar. The advance of this Army must therefore be regulated in accordance with the movements of the Second Army."*

*History of the Franco-Prussian War by the German General Staff.



WHY THROW AWAY GOOD OIL?

BY CAPTAIN G. H. RAREY, INF. (TANKS), INSTRUCTOR AT THE TANK SCHOOL

Each one of the millions of automobiles, trucks and passenger busses which crowd the city streets and rural highways, and each of the many thousands of tractors, stationary power plants, airplanes and tanks take their daily toll, in the form of fuel and lubricating oil, from the limited supply of crude oil in the ground.

At the present rate of expenditure the day when an oil shortage will begin to be felt may not be far off and there is no good purpose served by closing our eyes to this possibility. At any rate it is not likely that this product is being formed as fast as we are now using it and this contingency points to the probable ultimate exhaustion of all oil pools.

While the purpose of this article is not to predict calamity or prophesy misfortune to industries rapidly being equipped for a greater use of gas and oil-burning engines and the smokeless furnace, it does seem that a decent regard for the rights of future generations requires that we pause occasionally and inquire into the tremendous expenditure of a product which is known to be limited and which we cannot replace, with a view of determining whether or not the rate we are using it is justified. Indeed, for all we know positively to the contrary, it may be that generations now living will see the time when, through the failure of oil pools in increasing numbers, people generally will be forced to realize, as they apparently do not at this time, that in a mechanical world such as this the oil wells supply the life blood which is vital to so many forms of our industrial life and to the well-being and happiness of millions.

The particular wastage of oil for which corrective measures are recommended, is that which occurs after the lubricating oil has reached the consumer and has been used once for lubrication purposes.

Unless the reader has investigated this matter it will be natural for him to conclude that the oil has given all of the service of which it is capable when it has lubricated the engine

over a given number of miles, or for a given time, and consequently, that there is no waste in then discarding the oil, or that this waste is unavoidable.

The facts are however, that a large percentage of this great waste can be avoided easily and scientifically by the use of simple and economical equipment which has now been in use long enough to prove its utility and practicability. The used oil may be drained from the engines and sent to the oil cleaner, from which it will be returned free of the carbon, dirt, metal particles, water and fuel dilution, fresh and clean for further use.

We cannot expect to drain the same quantity of oil put into the engine because some of it will be burned up and lost during engine operation. Neither can we expect to have the same quantity sent to the cleaner returned to us, as the drained oil contains considerable dilution and foreign matter.

Questions may occur to the reader as to the quantity that will be drained after one period of use, the percentage of the drained oil remaining after it has gone through the cleaning process, the cost of cleaning, and the actual value of the reclaimed oil as a lubricant.

THE QUANTITY DRAINED AFTER ONE PERIOD OF USE

This quantity can be controlled within certain limits, by the length of time the oil is used in one lubrication period. For the purpose of arriving at a basis for calculation, we will assume that 40% of the oil originally placed in the engine is drained at the end of the first period of use. This assumption is not excessive (providing there are no leaks) in fact this quantity may be increased by shortening the period of use.

THE COST OF CLEANING THE OIL

Some time ago the writer had an opportunity to make a study of this question, and data obtained from users of oil-cleaning equipment showed that the cost of cleaning a gallon of oil including the materials used, fixed charges, insurance, electrical power used, and the labor involved, was well under 18c per gallon.

The cost of cleaning will be practically the same for any grade of cylinder oil used, hence the saving to be effected, in any particular case, is easily determined. Securing cylinder oil by this method is equivalent to purchasing the oil at the figure shown.

THE VALUE OF THE RECLAIMED OIL AS A LUBRICANT

As a result of the above mentioned study the writer reached the conclusion that the reclaimed oil may be used for engine lubrication and that it would lubricate the engine as thoroughly and efficiently as new oil.

This conclusion was not based upon claims made by the manufacturers of the equipment. It was based entirely upon statements made by the oil experts of the Bureau of Standards and by reputable users of the equipment.

The following extracts from technical papers and correspondence received from the Bureau of Standards constitute part of the evidence in favor of the reclaimed oil as an engine lubricant:

"Used lubricating oils may be reclaimed by apparatus already commercially available and thus saved for future use. Such reclaimed oils will pass all of the commonly accepted tests for new oils, such as flash point, viscosity and sediment." "Used oils should be judged by the same tests as are applied to new oils, and they will be equally serviceable."

The users of oil cleaning equipment confirm the statements of the Bureau of Standards as to the value of reclaimed oil in lubricating qualities.

The Ford Motor Company states: "As far as we know, there is little or no dimunition in the lubricating qualities of the reclaimed oil."

The Ford Company Plants have used reclaimed oil extensively in their newly assembled engines during the "running in" period. This is an oil job, by the way, which requires good lubricating oil.

The Yellow Cab Company of Philadelphia reported: "We have secured good results and we are able to bring our oil

back to its original characteristics with the exception of color." (The color of the oil is of little real importance.)

The Public Service Production Company of Newark, N. J., stated: "The first of the year we had a 50-gallon reclaiming unit installed for a six-month trial, and as a result of our experiments we purchased the machine and are now adding a second unit. We have tried the reclaimed oil carefully on several sets of units (vehicles) and from the satisfactory results of these tests we are intending to make its use general in the near furture."

Section Base Nine, of the Coast Guard Service at Cape May, N. J., reported: "Our experience has been that the reclaimed oil is superior to that in the original package." This statement may, at first glance, appear to be too enthusiastic. However, this claim is sometimes justified and in accordance with the facts, especially if the oil used was of a comparatively low grade, in which case the tempeatures in portions of the cleaning process bring about additional refining. The oil used by Base Nine at the time this report was made was not of a high grade.

The Dayton Power and Light Company stated: "The reclaimed oil is quite satisfactory."

The Packard Motor Company of Long Island City reported that its oil-cleaning equipment has given excellent results and that the use of the reclaimed oil has resulted in a reduction of the expense of operating its vehicles.

The Engineering Department of Camp Holabird, a branch of the U. S. Quartermaster Department, stated that they have used their oil cleaning equipment over a period of eighteen months; that they have used the reclaimed oil in their trucks and passenger cars for over a year; that the cost of cleaning a gallon of oil is about .08c. This cost was reported by a number of users of the same kind of equipment as that used at Camp Holabird. It is believed that fixed charges, insurance, etc., were not included in the amount stated.

Other companies have reported that the reclaimed oil compares favorably with new oil. One company stated that it had

secured 48 gallons of good oil from a batch of 52 gallons of drained oil, or more than 92% of the amount drained.

In determining the practicability of the use of this equipment at Military and Naval Stations and by commercial firms, one other point remains to be considered: The number of vehicles required at one point in order to justify the purchase of the equipment.

THE NUMBER OF VEHICLES REQUIRED AT ONE POINT

The equipment is available in various sized units, the smallest of which is designed to make the cleaning process profitable with a fleet of ten vehicles. There are a great many places in commercial and governmental service where ten or more vehicles, boats, stationary gas power plants, etc., are in use, and in addition to these vehicles and plants, airplanes have successfully used the reclaimed oil for engine lubrication.

The cost of cleaning and the saving to be effected thereby is based upon one cleaning operation only. This does not tell the whole story because the oil may be cleaned and recleaned over and over again as long as any of it lasts, hence the actual monetary saving will be great and the reduction in the quantity purchased per annum will be more than 50% wherever the oil is carefully drained and cleaned. At some points where less than the minimum number of vehicles are operated, it has been found well worth while to drain and save the oil and, where transportation costs justify, to take it to a point where there was an oil cleaner in operation. The transportation and handling charges can be computed in any case and the question of the practicability and advisability of transporting the oil to a cleaner, can easily be determined.

The small oil cleaning sets placed upon motor vehicles have helped the situation somewhat since they have increased the mileage secured from a given batch of oil. The oil is often discarded and wasted, however, when it is finally drained.

The monetary saving derived by cleaning cylinder oil is impressive and worth while even if that were the only advantage to be gained by the practice, but when it is remembered that every gallon that is cleaned and used again will

reduce to that extent the quantity of oil required to be withdrawn from the oil wells, this practical and economical practice seems doubly desirable.

A saving of two or three per cent in the form of discounts on monthly statements is considered important both in governmental and commercial transactions.

The use of oil-cleaning equipment offers a profit or saving of many times three per cent.

Great sums are spent upon forest conservation and this is a worthwhile form of insurance for future generations. The forests can be replaced and this is being done to a great extent by replanting the devastated areas.

No method has yet been devised for the replacing of the crude oil taken from the ground.

We are burning our candle at both ends. At one end, we are spending money needlessly to replace perfectly good cylinder oil which we literally throw away after one period of use; while at the other end we are daily drawing upon a limited supply, which we cannot replace, in order to secure oil to take the place of the oil we have thrown away.

GREAT COMMANDERS OF THE FAR EAST

(*Continued*)

BY MAJOR W. H. CURETON, F. A. (D. O. L.)

SUBOTAI

Genghis Khan died during the year of 1227 and was succeeded by his son, Ogotai.

During the first few years of his reign Ogotai pushed operations to the southwest of what had formerly been Karismia into Persia, and sent Subotai against the Kins to put down once and for all a series of revolts which had started soon after the death of the great Mongol.

This Subotai did with a vengeance, crowning a series of successful capaigns with an assault on the walls of Kai Feng, which swept everything before it. The siege which preceded this assault lasted several months and was bitterly contested on both sides. Toward the end, however, a severe epidemic broke out in the city which greatly weakened the power of resistance of the besieged. It is said that during the last month before the assault over 900,000 coffins were counted, from sickness alone.

In 1235 Ogotai held a grand kuraltai and it was decided to launch three invasions, one into Korea, a second against the Sung Empire, and a third against Europe.

Batu, a grandson of Genghis, was selected as nominal commander of the army of Europe, but the real leader of this expedition was the famous Subotai, who was recalled from the east for this duty.

Subotai's force numbered about 120,000 men when it finally took the field. The fall of 1237 was spent by him in concentrating his forces near the northwest shores of the Caspian, in establishing his remount depots, obtaining the latest information from his European intelligence services, and in stirring up the mutual jealousies of the many border Russian provinces.

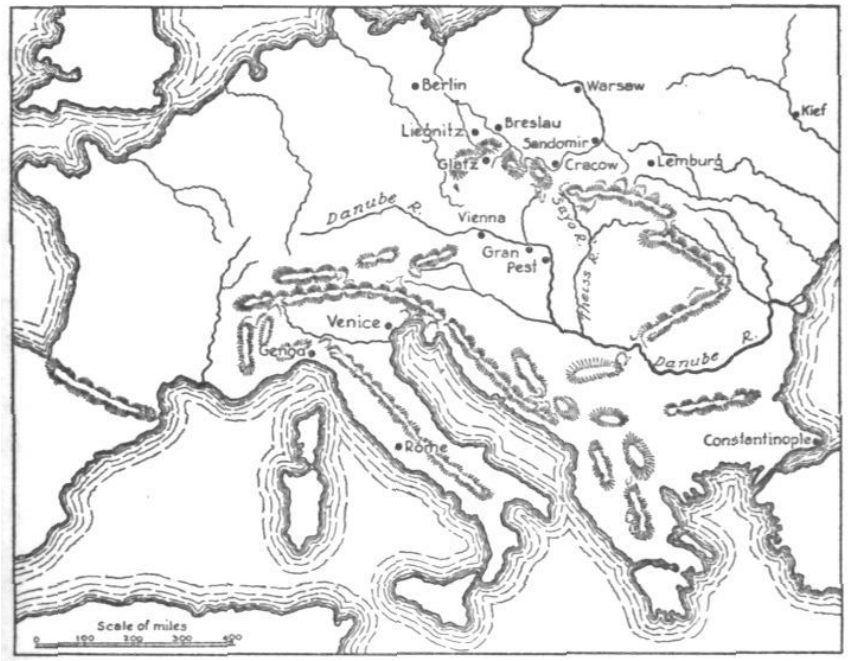
As soon as winter set in and the rivers were frozen over he struck.

In turn, Bolgar, at that time the world's largest fur mart, Moscow, Vladimir, and all cities of importance were taken by

assault, after the thick wooden walls with which they were then surrounded had been battered down by the Mongol heavy ordnance.

Only three days were necessary for the capture of Moscow, eleven days for the siege of Vladimir, and less than a week for the fall of Kief, then the largest and strongest city of Russia. Every army that took the field against Subotai was annihilated, and by 1240, three years after the expedition launched its first campaign, the whole country, as far as the Polish and Hungarian borders, was completely subjugated.

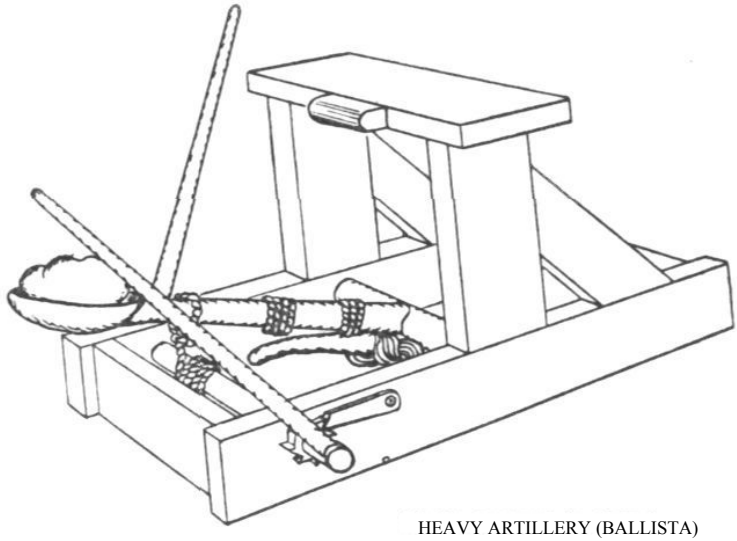
MAP ILLUSTRATING SUBOTAI'S EUROPEAN CAMPAIGN



This yoke of the Mongols, placed around the neck of Russia by Subotai, was to remain there for about 250 years.

In the early days of spring, 1241, the Mongol Army was concentrated between Lemberg and Kief. All of Central Europe was mobilizing to repel the invader who had so easily and quickly overrun the vast plains of Russia.

The enemy situation as known to Subotai was as follows:



HEAVY ARTILLERY (BALLISTA)

(1) In his front were the Polish-Gallician armies of around 40,000 men under Boleslas, King of Poland.

(2) Beyond, to the northwest, Henry of Silesia was gathering an army of about 30,000 men, composed of Bavarians, Teutonic Knights and Knight Templars from France.

(3) Near Glatz, the King of Bohemia was assembling his army of around 60,000 with contingents from Austria, Moravia and Saxony.

(4) On the left front detachments from Hungary were guarding the Carpathians.

(5) On the Mongol left the army of Hungary, over 100,000 strong, was mobilizing in the area: Vienna—Gran—Pest.

The total number of enemy troops in the field certainly exceeded Subotai's army by almost two to one.

As you see from a glance at the map, if Subotai turned to the southwest against Hungary the Polish Army would be on his right rear. If an advance westward against the Poles was conducted, then the Hungarians would be on his flank.

If offensive action was to be undertaken, speed was essential, the various hostile armies had to be struck while still divided.

Subotai acted promptly. With the main army of three corps, nine tumans, he advanced against the hostile main army, that of

Hungary, crossing the Carpathians in three columns and easily driving back the would-be defenders of the passes.

Kaidu, a grandson of Genghis, was sent into Poland with one corps to protect the right flank of the army and prevent a uniting of the northern hostile forces.

At the beginning of March, 1241, Kaidu's corps crossed the Vistula at Sandomir, which it easily took by storm. On the 18th, in a meeting engagement, it fell upon the Polish and Gallician armies at Szydlow, and crushed them. He swept on, took Cracow, Breslau, then late on the 8th of April met at Liegnitz the forces of Henry of Silesia. A day's march to the south was the Bohemian army. The Mongols struck at daybreak on the 9th of April, before the allied armies could effect a junction, and by noon Henry and his entire army had passed out of existence.

In less than a month this Mongol corps had covered over 400 miles, won two decisive battles, captured four cities, subdued Poland and Silesia, and cleared Subotai's right flank of the enemy.

The King of Bohemia fell back on Glatz hoping that the Mongols would follow him into the mountain passes. Instead, Kaidu laid waste to Morovia, finally drew Weneslas out, led him all over the country on a wild goose chase, and then while Weneslas was marching north, thinking that the Mongols had gone toward the Baltic, Kaidu was on his way to join the main body. In the meantime the Hungarian army had passed out of the picture.

Subotai had arranged his march table so that his three columns should join hands in the plains of Hungary some distance east of the Danube. This was accomplished according to schedule. Subotai's advance guard arrived on the Danube on the 15th of March and he arrived with the main body two days later.

On the 4th of April the Mongol and Hungarian armies were facing each other across the Danube near Pest. Realizing the difficulty of forcing such a large river in the face of superior numbers, and as yet uncertain as regards the final outcome of the situation in the north, Subotai decided to withdraw, hoping to entice the enemy to follow him. Events turned out exactly as he had planned. Subotai slowly fell back, at once followed up

by the elated Hungarian Army. During the afternoon of 9 April, Subotai, preceding his army, carefully reconnoitered and selected a position in rear of the Sayo River. His army crossed over and went into bivouac in the thick brush several miles beyond the river, leaving a large stone bridge, over which it had crossed, intact. The Hungarians, moving up, posted about a thousand men on the east side of the bridge and then went into bivouac, prepared to attack the next morning.

Then, under cover of darkness, with about 40,000 men, Subotai marched to the north, and by daybreak was crossing the Sayo at a ford which he had discovered the previous day. Just before daybreak Batu returned to the river, and under cover of the fire of two batteries of catapults forced the stone bridge and crossed to the west bank. The Hungarians promptly moved to the attack of this force, apparently thinking that it represented the whole Mongol army. Batu was indeed having a hard time of it, but he succeeded in accomplishing his mission—that of pinning the enemy to the ground. Suddenly, about 11:00 A. M., Subotai, having completed his turning movement, struck the enemy in left flank and rear. By dark all was over and the army of King Bela was no more. Chronicles of the time stated that over 60,000 Hungarian lay dead upon the field of battle. The Mongols pursued day and night and it is said that for a two days' journey from the scene of action the roads were strewn with corpses.

Subotai pressed on, captured Pest, Gran, sent out a corps which took Vienna, and penetrated into the heart of Austria, then raided along the shores of the Adriatic, after which his army was reassembled and prepared for further major operations when the death of Ogotai Khan recalled both him and his army to the east.

The superior strategy displayed by Subotai throughout this remarkable campaign is apparent. By moving against the main hostile army Subotai correctly applied the principles of the objective and of the offensive. The classic counteroffensive launched from the Sayo and the ensuing pursuit completed the destruction of that army. Subotai's night march up the Sayo and the turning

movement executed on the 10th of April are excellent examples of the principles of movement and surprise.

Many valuable lessons on the use of detachments may be learned from a close study of this campaign. The strength of Kaidu's command was reduced to a minimum commensurate with the circumstances, and that leader's actions throughout are models of correct observances of the principles of cooperation and of security.

If Ogotai had not died, no one can state what might not have been the fate of Western Europe.

After this campaign, dissatisfied with the "carrying on" of the younger generation, Subotai retired to the country to spend the remaining years of his illustrious life.

He had, during his career, according to the chronicler, subdued over 32 nations and won 65 pitched battles.

TIMUR

Let us now pass on to the XIV Century to find our third Great Commander of the Far East.

After the death of Ogotai, the Mongol Empire continued to flourish, reaching the peak of its power under the great Kubalai Khan, grandson of Genghis, in the latter part of the XIII Century. After the death of Kubalai, family jealousies and constant bickerings among the descendants, gradually brought about a breaking up of the unified empire into smaller khanates or provinces, then into still smaller parts, until, by the midle of the XIV Century we find in Asia a number of independent principalities ruled over by their own Khans, and the Mongol power completely ousted from China. In Russia, the Golden Horde, descendants of Batu, were still supreme.

In Transoxiana, part of the former Karismian Empire, there were any number of small clans, composed chiefly of Tatar and Turkish peoples, constantly at outs and at war with each other. In Asia Minor and the Balkans, the Ottoman Turks, who had fled from Karismia upon the approach of Genghis Khan, were beginning to make their power felt.

It was into this condition of the world that a new strong man made his bow—Timur the Tatar.

Timur was born in 1336 at Kesh, then a small town about fifty miles south of Samarkand. In his young manhood he soon showed aptitude as a soldier and a leader and gained distinction in a number of minor wars under the local Shah. Space does not permit leading him through year after year of civil war, when at times he was practically an outcast, and at other periods, by his indomitable will, almost suceeding in defeating all of his many enemies.

Suffice it to say that in 1369, at the age of 35, he had conquered all the neighboring Khans and mounted to the throne at Samarkand, which city he chose as his capital.

The next 30 years were spent by him in consolidating his rule at home and extending his sovereignty in all directions. To the north he subdued the Mongol tribes, to the east he overcame part of Tibet. As far as the Caspian and the Persian Gulf the countries toward the west felt the weight of his hand.

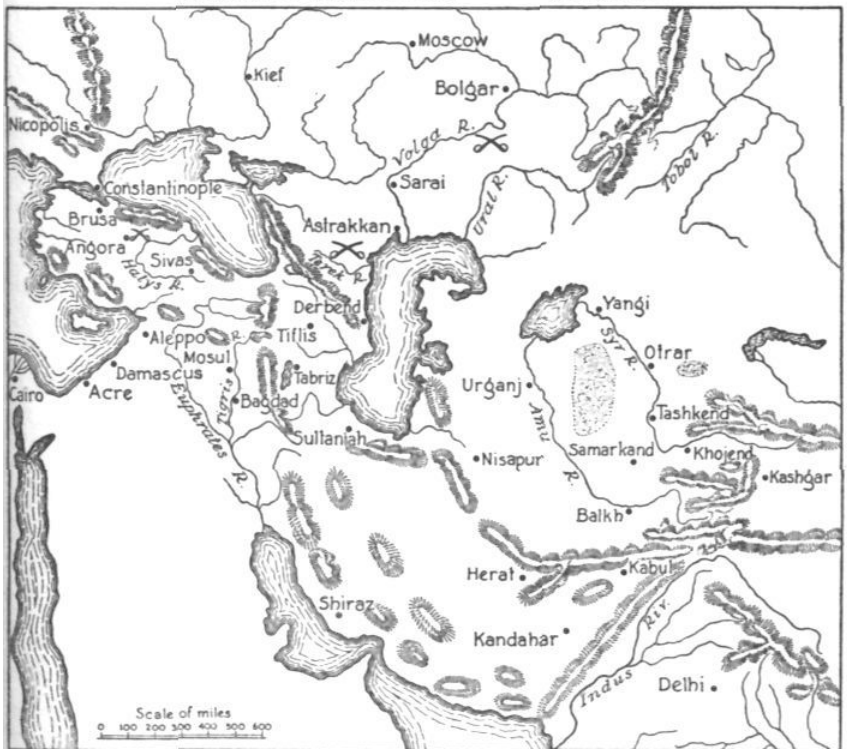
Only two of Timur's many campaigns will be touched upon in this article.

First, however, a brief statement of Timur's military organization should be noted. Mobility his army had, by making full use of the horse as a means of transportation for all arms as did Genghis Khan. At swords play, and with the bow, his Turks and Tatars were probably the equals of the Mongols of the XIII Century, and Timur made equal use of his artillery. It appears without doubt that his army was modeled upon that of Genghis, as far as local conditions permitted. His men were not quite so inured to hardships and privation as had been the Mongols; accordingly Timur's baggage trains and system of supply had to be more extensive; thus, supplementing the pack horse we find camel trains and high-wheeeled carts accompanying his expeditions, and at times elephants. Certain deviations in tactics from the Mongolian conception are noticeable, probably due to the fact that Timur was never surrounded by such an illustrious number of generals as were Subotai, Chépé, Mukili and others. Where Genghis practiced centralized control and decentralized operation, it was necessary for Timur to give his personal attention not only to the broad plans for an engagement, but to the

actual execution as well. Accordingly, we find in many of his battles rather set formation and maneuvers, the same order of battle from right to left, and the final thrust made by the same troops.

At any rate his organization was a satisfactory one, and his manner of handling various situations hard to improve upon, the

TIMUR'S THEATERS OF OPERATION



proof being that he was always victorious even over generals who were the terror of Europe.

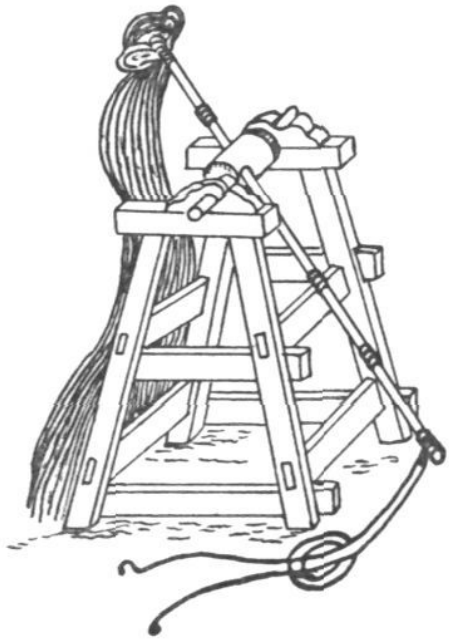
Late in the year 1391, Toktamish, Khan of the Golden Horde, a man whom Timur had many times befriended, became worried over the growing power of the Tatar Lord, and without cause, raided Timur's domains, almost to the gates of Samarkand.

Timur was engaged in an expedition near the Caspian Sea when the news reached him. The messenger who brought it had ridden the 900 miles from Samarkand in 7 days.

Swiftly Timur acted, and by clever maneuvering almost got between Toktamish and his home country. Toktamish withdrew and both sides prepared for a death struggle.

A number of border tribes took occasion to revolt on the appearance of Toktamish, and these were firmly put down by Timur. Then, feeling assured that his flanks and rear were secure for the time at least, the Tatar made his decision.

He mustered and reviewed his army on the plains of



LIGHT ARTILLERY (CATAPULT)

Samarkand, and then announced his purposee, which was to ride north into the land of the Golden Horde, seek out and destroy Toktamish and his army. Subsequent events have proven the dangers which lay in wait for the execution of such a decision. Napoleon attempted the same thing 400 years later in his invasion of Russia. Many have been the Russian forces sent into that territory within the last hundred years only to meet with disaster.

While this plan of Timur's had many disadvantages, yet it presented one great feature, the element of surprise, since Toktamish

naturally expected Timur to base himself on Urganj and then advance to the east of the Caspian. In addition, Toktamish had lived at Timur's court for over ten years, and the latter was as thoroughly familiar with the weak points of the Mongol's character as was Robert E. Lee with the personalities of many of his northern adversaries.

Timur's three chief maxims of war were:

(1) Never to involve his own country as a theater of war.

(2) Always to take the offensive.

(3) Always to act swiftly.

These he followed in the situation confronting him.

His favorite expression was, "It is always better to be at the right place with ten men, than absent with ten thousand."

At the end of February, 1392, Timur started forward. His army totaled 100,000 men. Two horses were provided for each man. Provisions carried were limited to a minimum, flour, dried fruit, etc. Sixteen pounds of flour per man per month was the allotment. Every move was made with proper provisions for security, for in that vast wilderness enemy horsemen might appear from any direction.

For eighteen weeks the march continued unopposed and during that time over 1800 miles were covered. His route lay northward beyond the head waters of the Tobol, thence west. He reached the Ural River on the 29th of May. There several suitable fords were found, but the Tatar scouts reported that the far banks were guarded by strong bodies of mounted men. By means of a night march he succeeded in crossing further up the river the next day, unopposed. Then information began to come in. Pushing on by forced marches, Timur came upon the Mongol host, near the Volga, on the night of the 17th of June, 1292.

Timur had available, in fighting troops, about 70,000; while Toktamish probably had around 100,000. His forces were divided into three corps of approximately two tumans each. One tuman was held in general reserve.

The Tatars opened the attack at daybreak 18 June, making the main effort with their right. Timur had intrenched his center, which was occupied by his least efficient troops. The attack

made some headway, but was finally stopped and about to be enveloped by the superior Mongol numbers when the local corps commander threw in his reserve and again forced the enemy back. Neither side attempted a strong effort with the center, but early in the afternoon the Tatar left began to fall back. Observing this Toktamish personally led his last reserve against the flank of the retiring left wing and succeeded in advancing so far that he was in the rear of the center of the great Tatar's line. It was then that Timur struck. He sent forward the general reserve, 10,000 picked Tatar heavy cavalry, to strike Toktamish in flank. This concentration of effort at the decisive point decided the battle. Toktamish fled from the field followed by those of his men able to get away. The slaughter of the fleeing Mongols was very great.

Timur then plundered the country, taking legions of captives, with cattle and treasures of all kinds.

Although the Golden Horde had been badly shattered, Toktamish again tried conclusions with Timur in 1395. This time Timur spared nothing and after a hard-fought battle near the river Terek, the yoke of the Mongols on Russia and the power of the Golden Horde was forever broken. Timur then ravaged all of southeastern Russia, destroyed the rich city of Azoff, stormed Astrakan in midwinter, ruined Serai, and then returned to Samarkand over the Caucasus taking by storm all towns that attempted to resist his advance. Never again was his northwest frontier threatened.

During the next few years Timur extended his domains to the Tigris and the Ganges, and then set about improving the condition of his conquests. Now we see him as Timur, the administrator. Great buildings were erected in Samarkand, highways improved, post stations established and trade encouraged.

For the first time in almost two hundred years, Samarkand again became a great center of commerce. Throughout the lands controlled by Timur, law and order held sway and his subjects prospered. The caravan routes and high roads were safer for the traveler than are many of our highways and cities today.

However, such peace was not to last. A great alliance had

been formed against him in the west. Fearing the encroaching power of the mighty conqueror, the Sultan of Egypt and the Caliph of Bagdad had joined forces and requested Bajazed, head of the Ottoman Turks, to assist them.

The Ottomans by this time made their name felt in all of southern Europe. They had crossed over from Asia Minor and were now overrunning the Balkans. At Kossova they crushed the Serbians. A great crusade to repel the infidel was formed from all parts of Western Europe, known as the Last Crusade. From England, France, Germany, and the Netherlands came volunteers. The bulk of the troops were Frenchmen. The total force numbered about 100,000 men.

This army moved slowly down the Danube, and in 1396 invested a Turkish force in Micopolis. Here they heard that a large army under Bajazed was approaching. In the battle which followed the Europeans were at first apparently successful, but finally they were confronted by the flower of the Turkish Army, 60,000 strong. From then on the affair turned into a massacre and the crusading forces, the flower of European manhood, were completely destroyed.

Bajazed later invested Constantinople and overran Greece. Terms were being drawn up for the surrender of Constantinople when news reached him that Timur had captured Sivas. Bajazed called off the siege and crossed over into Asia Minor late in the fall of 1401.

In September, 1399, Timur had set out from Samarkand to subdue the powers of Egypt and Bagdad. By the summer of 1400 he had won several important engagements, taken all cities as far west as Sivas, the key of Asia Minor, and in the meantime established an excellent base at Tabriz.

Timur turned south from Sivas, took both Aleppo and Damascus by assault, pursued the Mamluks beyond Acre and then rested his troops for several months.

Trouble having arisen in Bagdad, due to the reported alliance with Bajazed, Timur quickly covered the 400 miles to that city, leaving one corps to observe Bajazed's movements from Europe. Bagdad, after a siege of several weeks, was taken by a surprise

assault at noon of a midsummer day—certainly a feat in the exceptionally torrid weather which exists in that vicinity in the summertime. Bagdad fell in June, 1401. Timur then returned to his base at Tabriz.

In fourteen months Timur had won two major engagements, and taken by assault all of the important cities except Brusa and Angora. His base and the line of communications from Samarkand to Sivas were now secure.

Early in the summer of 1402 the forces of Timur and Bajazed moved toward each other. Bajazed's army was an excellent one, confident in its leader and flushed with many victories. It numbered in the neighborhood of 200,000 men, and was composed chiefly of infantry. The army of Timur was the largest, best equipped and trained force that he had ever led into the field. It probably numbered around 150,000 and was largely composed of cavalry.

Bajazed established his base at Angora and moved eastward across the Halys River. Timur was supposed to be at Sivas, from which town only one road ran to the west, and that one through Angora. The Sultan's intelligence service reported that Timur was about 50 miles to the east. Bajazed, having heard that Timur always took the offensive, halted on favorable ground, dug in, and waited for over a week. Then he received information from Sivas which was rather annoying. Timur and the main army had long since departed. Bajazed's cavalry covered all the surrounding country, but no trace of the Tatars could be found. He determined not to move until he had definite news of the enemy. On the eighth day he received what he considered reliable information to the effect that Timar was to the south. So thither the Turks marched, until they reached the Halys River, but found no Tatars. Bajazed then sent out his son Suleiman, a good cavalry leader, with several regiments to locate the enemy. The next day Suleiman succeeded in doing so and the Turks were fully informed as to the situation—Timur, with his whole army, had occupied Bajazed's own base, at Angora. Somewhat startled, the Sultan crossed the river and started following his enemy toward Angora.

Timur, having reconnoitered the country west of Sivas and found it rough, wooded, and unsuited for mounted action, had simply marched around the great bend of the Halys, keeping under cover until in rear of the Turks and then he made the last hundred miles to Angora in three days. He, like his great predecessors, Genghis Khan and Subotai, appreciated and applied correctly the principles of movement and surprise and ever made his objective the main hostile forces.

Angora lay in the center of a wide plain, and Timur decided that the position which Bajazed had selected was as good as any. So his army quartered itself in the camp of the Turks. Timur then had the small river which flows into Angora dammed up, changing its course to in rear of his position. The only other water available was that in a spring, which Timur had destroyed. He then intrenched his camp and waited.

The Turks finally arrived before Angora after a long week's march, with little water and food, after following the devastated route left by the Tatars. Bajazed's soldiers were weakened and suffering from the heat. Timur's army was comfortably installed in Bajazed's own base and no water was to be had except behind the Tatar line. There was only one thing that the Turks could do—attack. They had lost the battle before a shot had been fired. By night the whole Turkish Army had been annihilated and Bajazed himself captured. So badly were they crushed that all the remainder of Asia Minor fell during the vigorous Tatar pursuit and in less than two weeks not a Turkish soldier remained south of the Bosphorus.

Timur then, after a few minor operations, returned to Samarkand and began preparations for a great invasion of China. Two hundred thousand men formed the army, picked officers and soldiers from throughout his vast dominions. The march started in November, 1404, along the great north road to Cathay. At Otrar, a long halt was made, and Timur planned to go on in the spring, but such was not destined to be, for the old conqueror, weakened by overexertion and exposure for one of his age, passed away on the 17th of February, 1405, at the age of 69.

FOREIGN MILITARY JOURNALS: A CURRENT RESUME

Revue Militaire Francaise, September and October, 1929

"The Soviet Army", by Captain Malraison, is a study of the results obtained by the Soviet Government in the organization and instruction of its army. After many experiments the Russians have established a system which seems to fulfill the special needs of their vast country, a system which provides for the joint existence of an active army and a militia. An unusual feature of the Red Army is its political character; for, like all Soviet organizations, the army is carefully instructed in communistic doctrines. As a result of this instruction, the Soviet soldier considers himself a pioneer in a world revolution and a defender of the proletariat against the aggression of foreign capitalists.

In the dual system of active army and militia, the active army provides the framework for future mobilization and assures at all times the protection of the frontier. The territorial army, or militia, which is still in a state of development, will correspond in a general way to our National Guard, differing from it, however, in that the personnel is conscripted.

Russia imposes very severe military obligations on its citizens, all of whom must perform military service between the ages of 20 and 40, inclusive. This service includes: (1) military preparation before the actual call to active service: (2) active military service; and (3) a long period in the reserve.

Military preparation before the call to active service lasts for two years and consists of military and political instruction for one month of each year at local centers of instruction. College students and technical students, who are officer material, receive special instruction and also undergo training with the active army during this period.

Each year 1,200,000 men reach the military age. Of this number from 850,000 to 900,000 are considered available for military service, and are divided about as follows: (1) 270,000 to the active army; (2) 230,000 to the militia, and (3) 350,000 to 400,000 to the surplus.

This system permits the Soviet Government to maintain a permanent active army of 700,000 men, of whom 40,000 are officers. During the summer, while the territorial army is undergoing training, the total strength of the army is 1,500,000.

Russia is progressing in the development of military and commercial aviation. In 1922, the Soviets had no planes; today they have between 1,000 and 1,200 military planes and about 100 commercial planes.

"The commanding personnel" (the word "officer" has been suppressed), includes officers of the old imperial army, graduates of courses organized during the Civil War, and graduates of military schools organized since the Civil War. Although there are about 500 military schools and 6 military academies for training officers, the value of officer material is very low, since a large part of the intellectual class of the country was eliminated by the war, the revolution, or by emigration. In the higher ranks, however, are found many capable officers of the old imperial army.

In its present state of development the Russian army is incapable of imposing the will of the proletariat on the capitalistic world, which is the dream of the Soviets. This army has many weak features; the intellectual level of its personnel is low; its war matériel is insufficient; and in case of war, Russian industrial plants are incapable of supplying sufficient replacement of matériel. The political character of the army, although a strong feature as long as the central government is powerful, may be a weakness in case of military reverses or political upset. However, the Soviet Army is a well-organized and well-trained force, considering its youth, and it is well worth while to follow its future development with the greatest attention.

"Motorization of Close Combat Weapons", by General Chédeville, is a general discussion of the development of the tank and a study of its essential characteristics.

When the idea of a tank was first conceived, the French intended to use it merely as a means of transport for infantry. The British believed that it should be used as a combat weapon. Succeeding events made both armies realize that the tank was

a valuable weapon in overcoming obstacles and in opening the way for the infantry. However, during the war British and French still differed concerning the mission of the tank. Infantry combat, supported by the tank as an auxiliary weapon, still remained the basic French doctrine; on the other hand, the British Army favored a combat led by the tank and supported by infantry.

As a result of these two policies, the tank, at the end of the war, passed under the control of the infantry in France; and they were considered as auxiliary infantry weapons. In England, the Tank Corps remained a separate branch of the service.

This early difference of opinion has led to many diverging tendencies and opinions concerning the ideal type of tank. The opinions of various military authors are well portrayed by the names they give to the tanks they advocate: Infantry tanks, artillery tanks of accompaniment, troop transport tanks, scout tanks, liaison tanks, command tanks, anti-tank tanks, etc.

Lieutenant - Colonel Desmazes, in concluding his article, **"From Liao-Yang to Mukden",** shows in what manner the Russo-Japanese War differed from preceding wars and in what respects it announced the World War.

The predominant tactical feature which distinguished this war from previous wars was "fire power". The infantry gained increased fire power by means of its repeating rifles and machine guns. The artillery fire power was augmented by either increased rapidity of fire or larger calibers of the field pieces. This increase in fire power led to a series of consequences: Difficulty and delay in gaining contact, increase in the capacity of resistance of an intrenched force, impossibility of troop maneuver under hostile fire, absolute necessity of abandoning dense formations while in the zone of fire. All these features caused the battles in Manchuria to resemble the subsequent World War battles; battles of long duration without intermission, troop movements by night, et cetera.

The single railway traversing Manchuria was the only line of communication that either army had with its base. This single line of communication limited the strategy and the liberty of maneuver of the two armies; they could merely advance or retreat

along the railway. This stabilization was similar to that on the French front in November, 1914, when the two adversaries had their flanks resting on impassable obstacles.

The Japanese were victorious due to their relatively superior leadership. Lieutenant-Colonel Desmazes is unable to determine, from a study of Japanese sources, whether credit for the victory should be given to Marshall Oyama or to his immediate subordinates. However, in relative value, Oyama was far superior to Kuropatkine, the Russian commander. Although Kuropatkine was unsuccessful, it is safe to believe that no other Russian general would have done better. Rennekampf and Samsonof made brilliant records during the Japanese War as subordinate commanders, but they did not prove to be capable as army commanders nine years later at Tannenberg.

In concluding his article, **"The French Artillery from 1914 to 1918",** Lieutenant-Colonel Rublet reviews his study as follows:

"At the beginning of the war, the most noticeable features of its conduct were the absence of liaison between the infantry and artillery and the complete absence of artillery preparation in the attack.

"Liaison between infantry and artillery soon developed; the artillery was already prepared; it had no difficulty in adaptaing itself to the needs of the infantry.

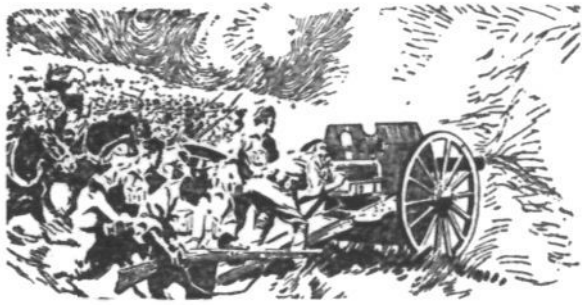
Concerning artillery preparation for the attacks, the reaction was felt as soon as stabilization set in; artillery plans of employment developed; everything was minutely foreseen and regulated in advance. Artillery preparations became longer and longer, from days to weeks, because the command was seeking the complete destruction of enemy organizations.

"However, the adopted method failed, in spite of the frightful consumption of ammunition. The effectiveness of our fire depended on direct observation, and the length of the preparations resulted in total absence of strategic surprise.

"After the summer of 1917, the surprise element was particularly sought. The preparation for an attack was conducted according to the mission in view. The preparation was long and

careful, based on destruction, if only a slight tactical success was sought. The preparation was reduced to a few hours or to none at all if greater tactical results were sought. Neutralization fire was always sought and adopted itself to any tactical or strategic condition with the greatest flexibility.

"This evolution was due to the presence of modern rapid fire matériel with new-type principles, due to the new methods of fire and preparation of fire, and due also to the aid of the tank and other modern weapons".



THE FIELD ARTILLERY SCHOOL TEAM
Left to right: 1st Lt. LeR. J. Stewart; Maj. A. R. Harris; 1st Lt. A. R. S. Barden; Maj. J. M. Swing

FIELD ARTILLERY SCHOOL WINS PONCA CITY POLO TOURNAMENT

DEFEATS CAVALRY SCHOOL IN FINAL GAME

One of the best and most colorful polo tournaments in the Middle West is the annual Ponca City (Oklahoma) Polo Tournament. Ponca City boasts three fine polo fields, about fifteen beautifully mounted polo players, and a certain Mr. E. W. Marland who is a great lover of sport and backs polo in his home town to the limit.

Here every Fall are gathered together the best polo teams in Kansas, Oklahoma, Missouri and eastern Texas. The civilian teams that usually compete are Kansas City, Wichita, Houston, and two Ponca City teams. The army is usually represented by teams from Fort Riley. Fort Leavenworth, Fort Reno, and Fort Sill. For the last three years, however, no army team has been able to win the tournament,—the faster mounts and better team work of the civilians more than compensating for the individual brilliancy of any particular army player.

This year, however, the army teams were not to be denied. Although Kansas City eliminated Fort Reno in the first round, the Cavalry School avenged this by eliminating Kansas City in the second round 12-8. The Field Artillery School took on the Ponca City Whites and Ponca City Reds in succession and defeated them 11-8 and 13-10 respectively. As the Ponca City Reds had already disposed of Wichita in a fast game, the two service teams were brought face to face in the finals.

As everyone knows, there is always considerable rivalry between the mounted services in all sports. And naturally when the two mounted service schools were scheduled to clash, interest in the game mounted high. The polo fans expected a great game and they got it.

Prior to the final game there was a parade of polo ponies. The contrast there looked bad for the Artillery School. The Cavalry ponies (with a very few exceptions) looked breedier, bigger, and faster. They were; but not handier. The Cavalry ponies won most of the races down the field, but as a rule the

Artillery ponies stopped better, turned quicker, and started faster than their opponents.

When the two teams rode on the field, few indeed among the well-wishers of the Field Artillerymen looked for a victory against the crack Cavalry team. And why should they? Had the Artillery School ever won from the Cavalry School? Not as far as even the oldest inhabitant could remember. Probably the only ones in the huge crowd who actually expected an artillery victory were the artillery colored orderlies (who bet everything they had) and the artillery players themselves. For the most part the crowd hoped that the game would not be too lop-sided and uninteresting.

The artillerymen started off with a rush and had the jump on their opponents from the start. At half time the score was 6-3 in favor of the Artillery School. Then the going became harder for both teams. Five number two fouls were called against the artillerymen, and the cavalry converted four of these into goals. But the artillerymen were doing some effective scoring themselves, and when the game ended they were on the long end of a 9-8 score. Both teams played hard fast polo.

Just prior to the finals Fort Reno, with Captain Wilkinson in the line-up, won the consolation tournament by defeating Wichita. This made it an all-army day.

BOOK REVIEWS

FOCH SPEAKS—By MAJOR CHARLES BUGNET. The Authoritative Personal Memoir of Foch by His Aide-de-Camp and Confidant.

This book gives an intimate personal portrait and is very largely composed of the Marshal's own words, taken down by Major Bugnet during eight years of friendly association.

Foch spoke to Bugnet as to a friend; the book thus contains spectacular and controversial material, but is itself not written to excite controversy.

"A portrait of the perfect Frenchman which is itself perfect."—P. W. Wilson, in the *New York Times*.

"The first and in many respects likely to remain the best of the forthcoming Fochiana."—John Carter in the *New York Sun*.

WAR BREAKS DOWN DOORS—By MAJ. JOHN N. GREELY, F. A. (G.S.). Hale, Cushman and Flint, Boston. $2.50.

(The attention of all Field Artillery people is invited to this novel, a review of which by Brigadier General John McA. Palmer, Retired, follows. It is a thoroughly Field Artillery story, replete with incidents, characters and places familiar to followers of the Red Guidon. We cannot but feel grateful to John Greely for brightening up our army life by weaving into it a thrilling and colorful romance.—Editor.)

We are informed by literary philosophers, that though novels may be numbered by the thousands and novelists by the tens of thousands, there are only a few typical human stories. In the last analysis, the themes of fiction can be counted on the fingers of one hand. There may be a thousand-and-one tales in *The Arabian Nights*. But there is only one theme: that love laughs at locksmiths. Even though the lock is guarded by sleepless eunuchs with naked scimitars, true love is always triumphant. If necessary, the genii will aid the lover with a mysterious lantern or will whisk him from Araby to Cathay on a magic carpet.

Now one of these primitive stories had been told over and over for ages before the first written story was ever penned. It is the story of the poor peasant who catches a glimpse of a beautiful princess, who dares to dream of her love, who weaves his dream into heroic action and thereby wins her.

This is the story that John Greely tells us again in his *War Breaks Down Doors*. The peasant is Jan Sincowiez, a coarse, rough-necked Polack born to poverty and hunger. Jan's father is an ignorant miner in the Pennsylvania coal fields. At night Jan sees the glare from the coke ovens over at the Flower Steel Mills.

The princess is Ellen McLean, born to the purple, such as it manifests itself in the inner circle of Washington Society. She is beautiful as princesses always are. Her portrait limned by a great French artist is one of the treasures of the Luxembourg. For she has married her prince. Devereux Flower. And Devereux is heir-apparent to the very steel mills that glared on poor Jan Sincowiez at night.

Now with this setting we can tell at once that, somehow or other. John Greely is going to marry this same Jan Sincowiez to this same princess. But how in the deuce is he going to do it? His predecessors, when this theme was new, had a comparatively simple task. They would give Jan a fairy godmother, who would give him a fairy coat of mail and show him just how to plunge a magical snickersnee through the gizzard of a flame-breathing dragon.

But the rules of the story-telling game have changed. John Greely can not be indulged with a fairy god-mother. In modern fiction as in modern life, it is up to Jan Sincowiez. And so Greely tells us the most thrilling of all stories. The story of a strong man fighting his way up step by step through poverty and ignorance to victorious, successful manhood—not the story of one victory over one dragon, but the story of one victory after another which is always the story of the self-made man.

This is no place to tell the story, but we may be permitted to tell where the battles were fought. Hunger and poverty

and lack of work introduce Jan to the Recruiting Sergeant, Principally because he is hungry, he enlists in the Army. He becomes a recruit in the old Third Artillery. But there is strong, rough manhood in him. First, he fights his way up to the respect of his comrades. He becomes a corporal and makes good and then becomes a sergeant. When his ignorance blocks his way to further promotion, he fights the grim battle of self-education and wins his shoulder-straps. Then the World War comes and Jan Sincowiez has his chance to break down doors.

Here I must make my only adverse criticism. I don't like the title that Major Greely gives to his book. *War Breaks Down Doors* is not complimentary to his hero. It suggests the old fairy god-mother device. And I desire to register my conviction that this hard-headed, hard-fisted, rough-necked Polack would have won the princess even if John Greely had placed his story ten years earlier. The reader of the book will discover that Sergeant Sincowiez killed his principal dragons before Uncle Sam threw him into the World War.

Now in referring to the rise of Recruit Sincowiez to the dignity of Major Sincowiez. I do not wish to convey the idea that this is merely the conventional story of a good little boy. If Private Sincowiez was a good soldier, he was also a real soldier. He fully enjoyed the lurid social life that was presented to the soldier man in San Antonio before the days of the Eighteenth Amendment. He drank whiskey, won at poker, fought for his friends, and made love too before he ever heard of the beautiful princess. But he was always a man. And here Major Greely may be grateful that novelists are no longer hampered as Thackeray was when he wrote in the preface to Pendennis:

"Since the author of 'Tom Jones' was buried, no writer of fiction among us has been permitted to depict to his utmost power a *Man*."