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FIELD ARTILLERY NOTES

No. 3

EDITED AT THE
ARMY WAR COLLEGE
WASHINGTON, D. C.

JUNE, 1917

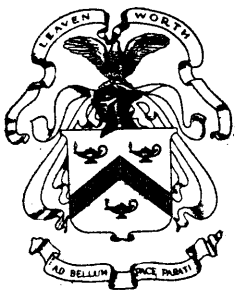
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WAR DEPARTMENT,
WASHINGTON, *June 8, 1917.*

The following Field Artillery Notes, No. 3, are published for the information of all concerned.

[2618449, A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

TASKER H. BLISS,
Major General, Acting Chief of Staff.

OFFICIAL:

H. P. McCAIN,
The Adjutant General.

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ABBREVIATIONS AND EQUIVALENTS.

A. A.....Anti-aircraft.
A. S.....Angle of sight.....Site.
A. S. C.....Army Service Corps.
B.....Battery.
B. C.....Battery commander.
B. C. A.....Battery commander, assistant.
B. L.....Battery leader.....Executive.
B. S. M.....Battery sergeant major.
D. A. D. M. S..Deputy assistant director medical service.
D. A. Q. M. G..Deputy assistant quartermaster general.
Director.....Aiming circle.
First line .....Combat train.
wagons.
G. O. C.....General officer commanding.
G. S. O.....General staff officer.
I. O. M.....Inspector ordnance machinery.
I. O. O.....Issuing or inspection ordnance officer.
M. G. R. A.....Major general, Royal Artillery.
M. V.....Muzzle velocity.
No. 1.....Chief of section.
O. P.....Observation point.....B. C. station.
Order.....Command.
R. A.....Royal Artillery.
R. O.....Reconnaissance officer.
Section.....Platoon.
T.....Target.
T. M.....Trench mortar.
Wagon line.....Combat train position.
×.....Yards.

SYNOPSIS OF TWO LECTURES AT A BRITISH ARTILLERY SCHOOL.

MAP SHOOTING.

1. Importance of subject for all branches.
Surprise and concentration the two factors that count in war.
Need for expertness, from which springs accuracy and quickness.
Sometimes B. C's job, sometimes B. L's, sometimes half each.
Make all arrangements before first round.
2. Divides itself into two cases—
(1) With observation;
(2) Without observation.
In (1) Range.
In (2) Search and sweep.
3. In both following preparations are necessary:
(a) Locate battery.
(b) Locate target.
(c) Know M. V. and consequent gun corrections for range and line.
(d) Know temp. charge.
(e) Air.
(f) Baro.
(g) Wind (short remarks on this subject).
(h) Lotting generally, fuzes, propellant, shell, and everything for uniformity.
(NOTE: *d*, *e*, *f* same for any switch and should be kept separate from *g*.)
4. Next work out—
(a) Bearing B-T and switch, remembering wind.
(b) Map range B-T.
(c) Difference in height, in meters, B-T and hence A. S.
(d) Charge correction.
(e) Air.
(f) Baro.
(g) Wind.
5. Collate *d*, *e*, *f*, *g* and add or subtract for range.
6. While this collation is being done B. C. A. sends down A. S., deflection, method of fire, fuze, shell, propellant, charge. By this

time bracket is ready and goes down. B. L. converts latter in accordance with calibrated M. Vs. B. C. must not be bothered with calibrated results.

7. So far (1) and (2) the same. From this on (1) follows ordinary lines.

8. With (2) before shooting you must—

(a) Verify your calculations by ranging on a datum point with observation.

(b) Study your map very carefully, particularly for slopes and shape of T.

(c) Study your Range Table very carefully, particularly for 50 per cent zone, angle of descent, and 5′ alters elevation.

(d) Make out a careful program of how you will use your ammunition to the best advantage, taking into consideration *b* and *c* and the tactical situation.

EXAMPLE, 18-POUNDER.

3–a. B—A.17.a.80.80.
b. T—G.9.b.3.4.
c. M.V. 1 1605, 2 1605, 3 1600, 4 1600, 5 1610, 6 1610.
d. Charge temp. 40° F.
e. Air temp. 50° F.
f. Baro. 29.6″.
g. Wind 48° east of true north 20 f. s., 10.50 20 048.
h. Lots uniform.
4–a. Map switch 39° R. Wind switch. Zero line A.30.c.30.60.
b. Map range. B.T. 4550. Time of flight 12.55″.
c. Diff. in height in meters=0 ∴ L.S. 0.
d. Temp. charge (effect of)−64^x.
e. Temp. air (effect of)−28^x.
f. Baro. (effect of)+10^x.
g. Wind resolved to 25 f.s. behind+86^x.
g. Wind resolved to 10 f.s. L. to R. 10′ L. for wind.
5. Correction to range deduct 13^x ∴ Bracket 47.4400.
6. C.R. gun corrections add 50^x.
8. Verify on zero. 1st, ordinary; 2nd, gas. Concentrate on 3–15′. Everything correct.
8. Allotment 200 gas. 8 rounds per gun, gunfire at irregular intervals throughout day, i. e., on 4 occasions.

TACTICAL EMPLOYMENT OF ARTILLERY.

1. *Accuracy.*—(*a*) Against billets, bivouacs, and large columns one can be content with registering a zone and sweeping an area.

(*b*) Against batteries one works to closer limits.

(*c*) Against front-line trenches and in barrage work absolute accuracy is essential.

2. *Surprise.*—Range on and register datum points.

3. *Concentration of effort* is necessary. In order to achieve it you must have sufficient tactical knowledge to be firm in sticking to your main objective and not be led into side issues.

4. *The main objective* is—

First phase, the hostile trenches, for all field guns and howitzers and heavy siege howitzers (6″ and 9.2″ howitzers) (part of the time).

Approaches and billets, for heavy guns.

The hostile artillery, for super-heavy siege howitzers and heavy siege howitzers (part of the time).

Second phase, hostile counter-attacks, i. e., protection of our infantry from hostile infantry, field guns, and howitzers.

Approaches, billets, and troops massing, heavy guns.

Hostile artillery, siege howitzers.

5. *Barrages* must be kept absolutely close down in front of our infantry. This is vital.

6. *Foresight, work, and the offensive spirit* are all equally essential to insure the correct tactical employment of artillery as outlined above.

A BRITISH SYNOPSIS OF THE OPERATIONS OF BATTERY PERSONNEL IN THE OCCUPATION OF A POSITION.

The Occupation of a Position.

(1) On receipt of orders the B. C.'s procedure is as follows:

(*a*) Read orders carefully.

(*b*) Study map.

(*c*) While doing above send for officers, Nos. 1, etc.

(2) It is very important that as many people as possible should be told the situation first hand. For this purpose the order "Orders" should be passed down the battery; on this order the following at once fall out dismounted to the B. C., leaving their horses with their horseholders: Captain, B. Q. M. S., farrier, corporal shoeing smith, section commanders and Nos. 1. Whole battery staff and all signalers.

(3) It is of great importance that this powwow is held in a place clear of the road and that while it is going on, as always, the road is kept clear.

104077°—17——2

(4) At this powwow the B. C. will give the following information:

(*a*) Probable position of battery.

(*b*) His probable route to it.

(*c*) Probable best line of advance for the battery.

(*d*) How far the B. L. is to bring the battery without further orders or information; also pace at which battery should move.

(*e*) Probable position of O. P.

(*f*) Method of establishing communication from battery to O. P.

In short all possible information that he can give as to probabilities from a study of the map.

(5) The B. C. will then go on to reconnoiter; he will take with him the following: Reconnoitering officer, reconnoitering officer's director man, two horseholders, who should be signalers.

(6) About 200 yards behind the B. C. will come the captain, B. Q. M. S., and one horseholder.

(7) Another 200 yards further back will come the rest of the battery staff, marching as a formed body, under command of the B. S. M. This staff will consist of the following and march in the following order:

Battery sergeant major—

Telephonist (with wire).	Horseholder telephonist (with wire).
B. C.'s director man.	Horseholder lookout man.
Signalers.	Horseholder signalers.
Signaler.	Horseholder signaler.
B. C.'s groom or horseholder.	R. O.'s groom or horseholder.

(8) As soon as the B. C. leaves the battery the B. L. is responsible for the following:

(*a*) Keeping touch between B. C. and battery—this he does by stringing out—first, all mounted men with battery Nos. 1, coverers, etc.; and secondly, dismounted men.

(*b*) Preparation for action.

(*c*) Reconnaissance of line of advance for the battery, very likely different to that of B. C.

(*d*) Keeping touch between himself and battery while he is away.

(*e*) The pace of the battery, i e., that the battery gets to the position at the exact right moment, neither before nor after the position is ready for the battery.

(*f*) Protection of the battery.

(9) The B. C. must first of all select the gun position. That is the important place.

(10) Next he sends the telephonists off in the direction of his probable O. P., laying wire.

(11) Next he personally selects and marks the site for each individual gun. This is vitally necessary if the position is at all cramped or difficult. In an open position or a simple one to occupy the B. C. would only arrange to have the center of flanks of the position clearly marked.

(12) 9, 10, and 11 *must* be done by B. C. He then goes off to select O. P., taking with him B. S. M. and rest of staff and overtaking telephonists en route.

(13) R. O. now sends back to battery leader to bring battery on.

(14) R. O. next tells his director man—

(*a*) Coordinates of position on map.

(*b*) Coordinates on map of zero line.

(*c*) Aiming point.

R. O. then leaves director man to work out angles for lines of fire.

(15) R. O. next goes back and leads battery into position sending B. L. on to superintend director man.

(16) It is important that R. O. should lead battery into position as he has seen the position and knows line of approach and all details. If B. L. does this it is only a case of swopping horses in midstream, which leads to delay and confusion.

(17) As soon as the battery is in action the B. L. (or senior subaltern) reports to B. C. all guns on zero line (stating what it is if B. C. does not already know) and lowest range to clear the crest.

(18) As soon as the gun position is marked the captain and B. Q. M. S. go off to select the wagon line.

(19) As soon as this is roughly selected the Q. M. S. goes back to the gun position and leads the teams back to the captain. The latter forms up the teams. He also arranges for the protection of the wagon line.

(20) The corporal shoeing smith, who rides at the head of the battery in the advance, remains in the gun line answering for the captain until relieved. He is responsible for establishing communication with the wagon line and for replenishment of ammunition and replacing casualties.

(21) The farrier is in charge of the first line wagons. These are separated from the firing battery at "prepare for action." They march as a formed body in rear of the firing battery; the distance varies according to circumstances but should not exceed 800^{x}.

(22) The first-line wagons go straight to the wagon line.

(23) Normally the captain should be in the wagon line, particularly if there is any danger of it coming under fire. There must always be one member of his staff in the gun line.

(24) It is of very great importance that alternative wagon lines should be selected at once and communicated to all concerned; also the routes to them and to the gun position.

(25) The captain is also responsible for the selection of the position of assembly and the communication of this information to all concerned.

(26) In case of a retirement the procedure is as follows:

(*a*) B. C. receives and explains orders as in 1, 2, 3, and 4 above.

(*b*) The captain then goes back to select the position, taking with him the B. C.'s party as in 5 above.

(27) Before leaving to reconnoiter the captain is responsible that satisfactory arrangements are made so that full wagons are left for the firing battery. He takes with him, or orders to follow close behind him, the newly made and comparatively empty first-line wagons. These he arranges to refill for the occupation of the new position.

(28) It is of the utmost importance that the B. C. remain with the firing battery itself throughout the retirement. On arrival near the new position the captain meets the B. C., explains all details to him, and leads the battery into the position. The B. C. then takes over.

(29) In details the procedure is identically the same as for an advance except that the captain performs the reconnaissance duties of the B. C.

Syllabus of courses at a British artillery school.

SIEGE (6 WEEKS).

Subject.	Hours allotted.	
	Officers.	N. C. Os.
Discipline[1]	4	4
Marching and saluting drill	10	10
Physical training lecture[1]	1	1
Physical training (one-fourth hour each day)	10	10
Shouting drill	2	2
Standing and X gun drill (including stripping and sight testing)	20	36
Battery gun drill	6	6
Battery drill orders	5	5
Battery organization	1	1
Map-reading lectures	5	6
Map reading	10	16
Gunnery lectures	6	9
Lines of fire lecture	1	1
Directors	4	5
Reconnaissance lectures	2	.....
Reconnaissance	12	.....
Observation of fire lectures	5	5
Ranging lectures (including line of observation)	8	6
Ranging (including line of observation)	25	15
Map shooting lecture	1	1
Schemes	12	9
Duties generally	3	2
Interior economy	2	2
Inspections	1	1
Packing	1	1
March discipline	1	1
Building	7	7
Repository	15	17
Ammunition (I. O. O.)[1]	5	5
Ammunition supply (D. A. Q. M. G.)[1]	1	1
Telephones (signals)[1]	3	4
Calibration	4	.....
Registration	1	1
Slide rules	2	2
Gun rules	1	1
Aeroplanes (R. A. liaison officer)[1]	6	10
Aeroplane photos[1]	2	2
A. A. work (A. A. adviser)[1]	2	2
Trench artillery (visit to T. M. School)[1]	3	3
Employment of artillery (M. G. R. A.)[1]	3	3
Infantry tactics (G. O. C. infantry school)[1]	1	1
Administration (A. Q. M. G.)[1]	1	1
General staff (G. S. O.)[1]	1	1
A. S. C. supplies (supply officer)[1]	1	1
Medical services (D. A. D. M. S.)[1]	2	2
Gas and gas shell (chemical adviser)[1]	5	5
Care of equipment (I. O. M.)[1]	2	2
Work of survey section (maps)[1]	3	3
Work of meteorological section[1]	1	1
Discussions	3	.....
Examination	3	3
Total	236	236

[1] Includes outside lecturers.

Syllabus of courses at a British artillery school—Continued.

FIELD AND HEAVY (6 WEEKS).

Subject.	Hours allotted.	
	Officers.	N. C. Os.
Discipline [1]	4	4
Marching and saluting drill	8	10
Physical training and lecture [1]	11	11
Shouting drill	2	2
Driving drill lecture	1	1
Driving drill (dismounted)	4	4
Driving drill (without vehicles)	10	10
Battery leading lecture	1	1
Standing and X gun drill	16	37
Battery gun drill	6	6
Section drill order	10	10
Battery drill order	5	5
Schemes	9	8
Ranging lecture	3	3
Observation of fire lecture	1	1
Map shooting lecture	1	1
Battery organization	1	1
Ranging	25	18
Gunnery lecture	5	5
Directors	3	6
Map reading lecture	5	6
Map reading	10	16
Reconnaissance lecture	2	.....
Reconnaissance	11	.....
Stable management	3	3
Shoeing	2	2
March discipline	1	1
Harness	2	2
Interior economy	2	2
Inspections	1	1
Packing	2	2
Duties generally	3	2
Calibration	4	.....
Discussion	3	.....
Examination	3	3
Slide rules	4	.....
Meteor [1]	1	1
Anti-aircraft [1]	2	2
Aeroplanes photos [1]	2	2
Aeroplanes [1]	9	8
Veterinary lecture [1]	2	2
Telephones [1]	3	4
General staff [1]	1	1
Ammunition [1]	5	5
Building [1]	5	5
Trench artillery [1]	3	3
Ammunition supply	1	1
Administration [1]	1	1
Medical services [1]	2	2
Gas and gas shell [1]	5	5
Care of equipment [1]	2	2
Survey section work [1]	3	3
Employment of artillery [1]	3	3
Infantry tactics [1]	1	1
A. S. C. supplies [1]	1	1
Total	236	236

[1] Includes outside lecturers.

Syllabus for 4 weeks' course for N. C. Os.

	Field and heavy.	Siege.
	Hours.	*Hours.*
Discipline	3	3
Marching and saluting drill	7	7
Physical training	6	6
Shouting drill	2	2
Driving-drill lecture	1	.....
Driving drill dismounted	3	.....
Driving drill (skeleton)	8	.....
Battery-leading lecture	1	.....
Gun drill	24	24
Battery gun drill	4	3
Section drill order	10	.....
Battery drill order	5	2
Schemes	5	6
Ranging lecture	3	6
Ranging	10	12
Map shooting lecture	1	1
Gunnery lecture	5	7
Directors	4	6
Map-reading lecture	5	5
Map reading	10	10
Horse management	3	.....
Shoeing	2	.....
March discipline	1	1
Harness	3	.....
Interior economy	2	2
Inspections	1	1
Packing	3	1
Building	3	6
Aeroplanes	7	7
Telephones	4	4
Ammunition	2	2
Sanitation	1	1
Riding drill	4	.....
Gas and gas shell	5	5
Care of equipment	1	1
Examination	3	3
Lines-of-fire lecture	.....	1
Observation-of-fire lecture	.....	2
Duties generally	.....	2
Repository	.....	15
Calibration	.....	4
Registration	.....	1
Slide rules	.....	2
Gun rules	.....	1
Total	162	162

Syllabus for 4 weeks' course for young officers.

	Field and heavy.	Siege.
	Hours.	*Hours.*
Duties generally	.....	2
Discipline	4	4
Marching and saluting drill	4	4
Physical training	6	6
Shouting drill	3	3
Driving drill lecture	1	.....
Driving drill dismounted	3	.....
Driving drill (skeleton)	8	.....
Battery leading lecture	1	.....
Gun drill	5	10
Battery gun drill	6	3
Section drill order	10	3
Battery drill order	5	2
Schemes	6	8
Ranging lecture	3	6
Ranging	16	16
Observation of fire lecture	1	2
Map shooting lecture	1	1
Battery organization	1	2
Gunnery lecture	3	5
Lines of fire	.....	1
Directors	2	4
Map reading lecture	4	4
Map reading	4	10
Reconnaissance lecture	2	2
Reconnaissance	3	3
Horse management	3	.....
Repository	.....	15
Shoeing	2	.....
March discipline	1	1
Harness	3	.....
Interior economy	2	2
Inspections	1	1
Packing	3	1
Law	1	1
Calibration	4	4
Registration	.....	1
Slide rules	2	3
The offensive	2	2
Employment of Artillery	3	3
Building	3	6
Aeroplanes	8	10
Telephones	4	4
Meteor	1	1
Ammunition	2	2
Sanitation	1	1
Riding drill	4	.....
Survey section work	1	1
Gas and gas shell	5	5
Care of equipment	2	2
Early morning stables	8	.....
Duties of section commander	1	1
Examination	2	2
Total	171	170

Syllabus for 2 weeks' course for officers.

	Field and heavy.	Siege.
	Hours.	*Hours.*
Discipline	2	2
Marching and saluting drill	2	2
Physical training	3	3
Schemes	4	4
Ranging lecture	3	4
Ranging	10	10
Map shooting lecture	1	1
Gunnery lecture	1	2
Directors	1	1
Map reading lecture	3	3
Map reading	4	4
Reconnaissance lecture	2	2
Reconnaissance	3	4
Horse management	1	.....
Shoeing	1	.....
March discipline	1	1
Harness	2	.....
Inspections	1	1
Law	1	1
Calibration	4	4
Registration	.....	1
Slide rules	2	2
Building	3	3
Aeroplanes	6	6
Ammunition	2	2
Care of equipment	1	1
Examination	3	3
Total	67	67

LATEST BRITISH ORGANIZATION FOR SUPPLY OF AMMUNITION IN THE FIELD (MARCH, 1917).

1. The old organization for the supply of ammunition in the field by means of brigade ammunition columns and a divisional ammunition column was designed to meet the requirements of a division acting independently, so that the division might be self-supporting. Owing to the necesity for massing far more troops on a given front and the consequent increase in depth of our present organization, the corps has now become the unit for marching and fighting. A corps, consisting of two or more divisions, must accommodate itself on a front little greater than that formerly allotted to a division, and may have to move along one road.

The density of troops on a given front automatically creates an accumulation of ammunition, and, by the system of "pooling," a considerable reduction may be made in the number of rounds per gun carried with the fighting formations.

The new organization has therefore been introduced with the objects—

(*a*) Of pooling the ammunition carried under corps control and thereby reducing the number of rounds per gun to be carried.

(*b*) Of effecting a saving in personnel, horses and vehicles.

(*c*) Of reducing the road space occupied by a division.

(*d*) The experience of the earlier part of the war showed the necessity for separating brigade ammunition columns from their brigades and concentrating them under one central control.

2. A further change has recently been made in the organization of the divisional artillery to meet the requirements on an offensive front. One brigade of field artillery has been withdrawn from each division, and these brigades have been regrouped to form "army field artillery brigades." The divisional artillery will therefore consist of two field artillery brigades, each brigade having three 6-gun 18-pounder batteries and one 6-gun 4.5-inch howitzer battery.

The army field artillery brigades will consist of three 6-gun 18-pounder batteries and one 6-gun 4.5-inch howitzer battery, or four 6-gun 18-pounder batteries. These brigades will be available to reinforce the artillery on any offensive front as may be required.

3. *Organization of the divisional ammunition column.*—The brigade ammunition columns as such have been abolished for divisional artillery, and the divisional ammunition columns have been reconstructed into two echelons.

"*A*" *echelon.*—Divided into two sections. It consists of one ammunition wagon for each gun and howitzer in the division, and S.A.A. carts, etc., to carry the same quantities of rifle and machine-gun ammunition and grenades as were formerly carried by the brigade columns. The sections are equally divided, the number of vehicles to each section is the same, and they contain the same percentage of gun, howitzer, and S.A. ammunition.

"*B*" *echelon.*—Has one section. It consists of some of the G. S. wagons which formerly carried gun and howitzer ammunition in the old divisional ammunition column, and G. S. wagons to carry the same amount of S. A. and machine-gun ammunition and grenades as was formerly carried by the divisional ammunition column.

4. *Organization of the brigade ammunition column.*—To each brigade of the army field artillery will be allotted a brigade ammunition column. It will consist of one ammunition wagon for each gun and howitzer in the brigade, with a proportion of G. S. wagons for baggage, stores, etc.

5. The new divisional ammunition column is directly under the divisional artillery commander, and forms an integral part of the divisional artillery. It may still be drawn upon as a first reserve for the batteries in men, horses, and material in an emergency.

It will normally march with the division; but when several divisions are marching on one road, it may be necessary to withdraw the "B" echelons, and concentrate them in rear under corps control. The "A" echelons always accompany their divisions, and will usually march in rear of all the batteries. The divisional ammunition column commander will remain with the "A" echelon.

In action, the divisional ammunition column will usually be concentrated, but, when the wagon lines are a long way from the guns, wagons from the "A" echelon may be attached to the batteries to assist in taking up ammunition.

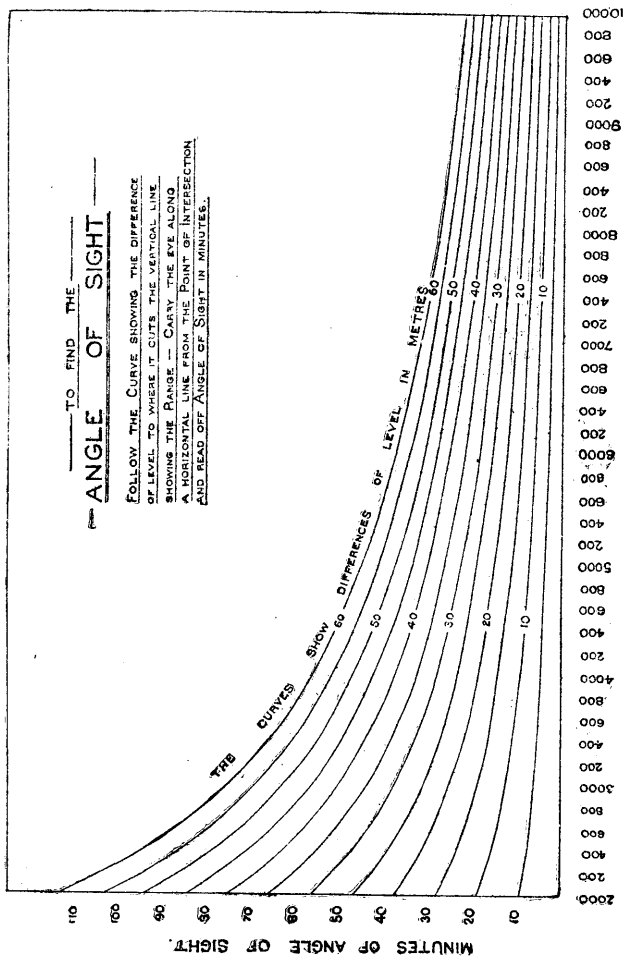
If the ammunition park is a long way in rear, it may be necessary to keep back the "B" echelon, and push up the "A" echelon, but this case will be the exception rather than the rule.

The normal position of the divisional ammunition column commander in action will be where he can best control the supply of ammunition.

The normal chain of supply of ammunition will be from the subpark (which has now been transferred from lines of communication to corps control) to the "B" echelon, and thence to any section of the "A" echelon.

6. In the case of the army field artillery brigades, the normal chain of supply of ammunition will be from the subpark direct to the brigade ammunition column.

7. As the new organization has reduced the number of rounds carried in divisional charge, it is essential that the column be looked upon as a pool from which ammunition can be drawn by any unit. It is not intended that certain sections of the "A" echelons should be affiliated to certain artillery brigades, but the organization is elastic, and permits of the detachment of such an amount of ammunition as may be considered necessary for a specific task.


TO FIND THE
ANGLE OF SIGHT
FOLLOW THE CURVE SHOWING THE DIFFERENCE OF LEVEL TO WHERE IT CUTS THE VERTICAL LINE SHOWING THE RANGE — CARRY THE EYE ALONG A HORIZONTAL LINE FROM THE POINT OF INTERSECTION AND READ OFF ANGLE OF SIGHT IN MINUTES.
THE CURVES SHOW 60 DIFFERENCES OF LEVEL IN METRES
60
50
40
30
20
10
MINUTES OF ANGLE OF SIGHT.
RANGE IN YARDS