GALE & POLDEN'S MILITARY SERIES.

HAND-BOOK

TO

FIELD TRAINING

IN THE INFANTRY.

BY

MAJOR J. W. MALET.

IN ACCORDANCE WITH THE REVISED SYLLABUS CONTAINED IN THE NEW INFANTRY DRILL.

Gale & Polden Ltd

ALDERSHOT.

TWO SHILLINGS.

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MAJOR J. W. MALET,

1st Batt. Northumberland Fusiliers.

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PREFACE TO SECOND EDITION.

If few words were necessary by way of Preface, to introduce the "Hand-Book to Field Training," when it first appeared, still less are now required. The new Regulations for Military Training, added to kind and encouraging letters from General Officers and others, have induced the writer to once more take up his pen and adapt his work to the requirements of the present day.

As before, the book may be used for purposes of Lecture as well as Catechism, this system having appeared to answer; the insertion of the various plates in the body of the work, instead of all together at the end, will, it is believed, be found an improvement.

J. W. M.

NAVAL AND MILITARY CLUB.
7th April, 1894.

AUTHORITIES.

Reference Letter.	TITLE OF WORK.
"A."	"Minor Tactics." By Brigadier-General Clery, C.B.
"B."	"The Operations of War." By General Hamley, K.C.B., K.C.M.G.
"C."	"The Soldier's Pocket Book." By General Viscount Wolseley, K.P., G.C.B., G.C.M.G.
"D."	"Infantry Drill, 1893."
"E."	"Military Sketching Made Easy." By Major Hutchinson, B.S.C.
"F."	"The Elements of Modern Tactics." By Lieut.-Colonel Wilkinson Shaw, M.A.
"G."	"Infantry Fire Tactics." By Captain Mayne, R.E.
"H."	"Field Fortification." By Major Hutchinson, B.S.C.
"I."	"Manual of Elementary Field Engineering."
"K."	"Regulations and Instructions for Encampments."
"L."	"Instruction in Regimental Transport Duties."
"M."	"Hand-Book for the Lee-Metford Rifle, 1894."

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HAND-BOOK

TO

FIELD TRAINING

IN THE INFANTRY.

CHAPTER I.

PRELIMINARY.

Conventional Signs—E.

1. *Conventional Signs.*—These are particular ways of representing on a sketch natural features and objects, such as roads, railways, troops, &c.; the authorized conventional signs will be seen on Plates I. II. and III., and should be attentively studied, together with the following remarks.

2. *Roads.*—These should be drawn with continuous lines if they are fenced or have any obstruction along their sides which might prevent troops moving freely on and off them; if there is no such obstruction they are drawn with dotted lines, it should be written along them here and there whether they are metalled or unmetalled; every road or railway shown on a sketch should have *From*——at one end of it, and *To*——at the other, as a rule *From*——should be used on the left and at the bottom of a sketch, and *To*——where the road leaves the sketch at the top or on the right-hand side of the paper; occasionally the distance in miles to the next village may be added with advantage, thus:—*To York* 14 *miles*; or *To Aldershot said to be* 21 *miles.*

3. *Rivers.*—The name of a river should be written winding along and in its course, and the direction of its current shown by an arrow in mid-stream.

4. *Bridges.*—The construction of a bridge should be indicated by words, describing it thus :—*Iron*, *Wood*, *Stone*, &c. ; iron bridges may be shown in blue (see Railway Bridge, Plate II.), masonry bridges in red, and wooden bridges in black.

5. *Woods.*—With regard to woods it should be noted what the timber is, whether undergrowth, which would hinder passage of troops, exists or not ; pine and beech woods are usually free from undergrowth.

6. *Villages.*—These are generally either long in proportion to their breadth, broad in proportion to their length or circular ; in drawing them their general shape should be as accurately depicted as possible, this occasionally being a matter of great importance.

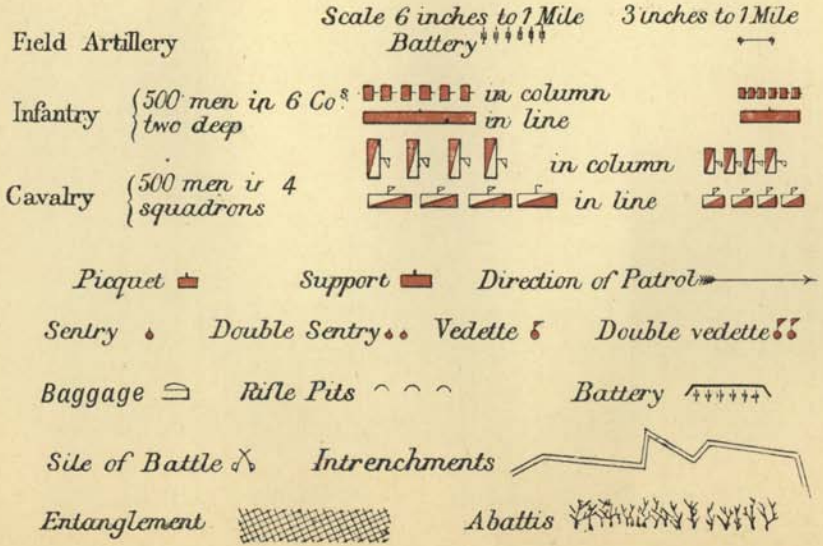
7. *Indian Villages.*—These are simply an agglomeration of mud huts, with many tortuous and ill-defined paths leading through them ; these should be drawn as shown on Plate III.

8. *Printing, &c.*—All printing with a few exceptions, such as the names of rivers, roads, railways, mountain ranges, &c., should be horizontal ; perpendicular objects, such as trees, should be drawn upright. Do not trust entirely to conventional signs if you think there is the smallest chance of your meaning not being understood ; a *marsh* for instance may be mistaken for *heather*, write the word *marsh* over it.

9. *Colours.*—If time and materials are available sketches should always be coloured ; in the field, coloured chalks can be substituted for paint ; when paint is used it must be laid on *before* the sketch is touched with ink, pencil lines should be first rubbed out unless it is intended to eventually ink them in. (The conventional colours for various objects are all given in Plate I.)

CONVENTIONAL SIGNS.

TROOPS &c.



COLOURS.

Woods	Green.
Cultivation	Pale Yellow
Roads	Bt Sienna
Railroads	A Crimson line
Water	Blue.
Sand	Yellow Ochre.
Heather	Purple.
Buildings.	
Masonry	Red
Wooden	Black.
Indian Villages	Sepia.
British troops	Vermillion.
The Enemy.	Blue

PLATE I.

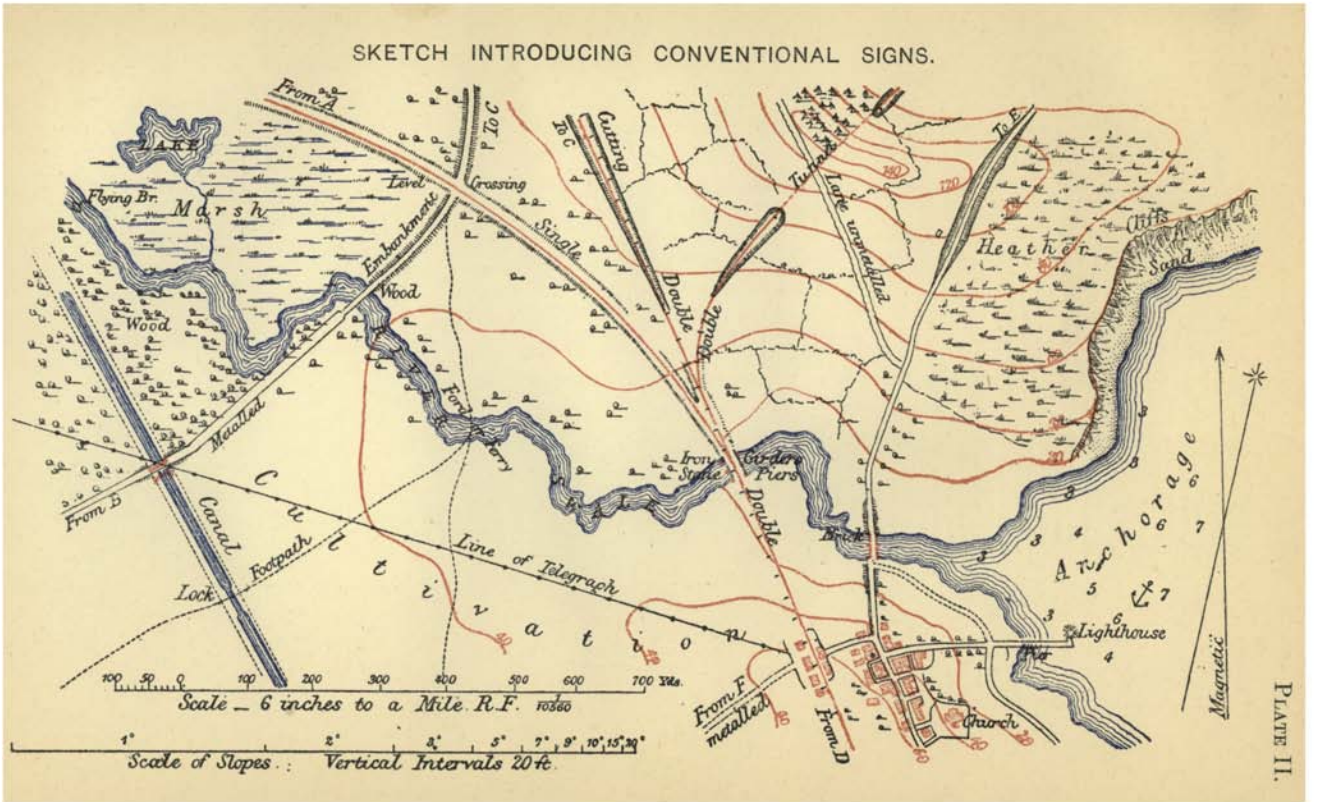

SKETCH INTRODUCING CONVENTIONAL SIGNS.
From A
LAKE
Flying Br.
Marsh
Level Crossing
To C
Cutting
To C
Single
Embankment
Wood
Wood
Double
Double
Tunnel
Lake unmade
To E
Heather
Hills
Sand
Metalled
Iron Girder Piers
Double
Brick
From B
Canal
Footpath
Line of Telegraph
Lock
Cultivation
Anchorage
Lighthouse
Pier
Church
From F
metalled
From D
Magnetic
100 50 0 100 200 300 400 500 600 700 Yds.
Scale _ 6 inches to a Mile R.F. 1/10560
1° 2° 3° 5° 7° 9° 10° 15° 20°
Scale of Slopes. : Vertical Intervals 20 ft.

PLATE II.

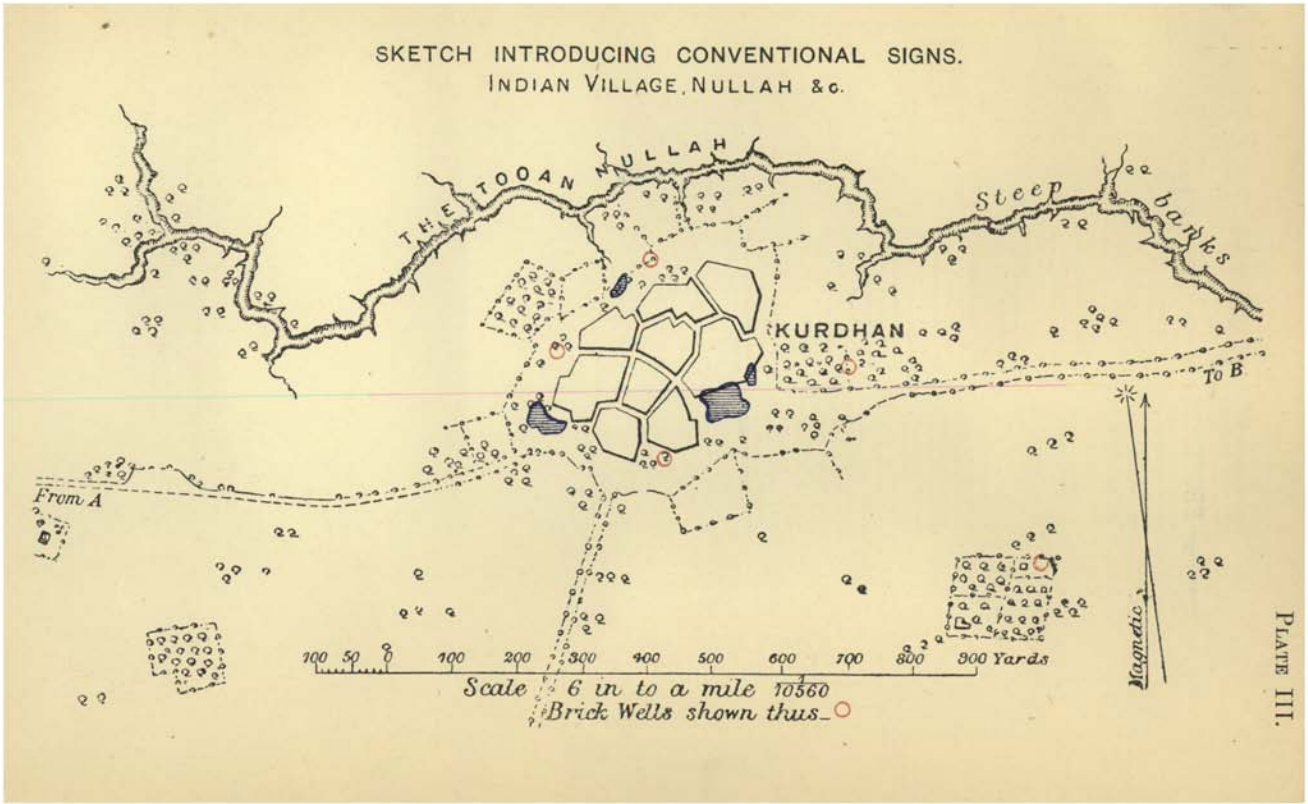

SKETCH INTRODUCING CONVENTIONAL SIGNS.
INDIAN VILLAGE, NULLAH &c.
THE TOOAN NULLAH
steep banks
KURDHAN
To B
From A
Magnetic
100 50 0 100 200 300 400 500 600 700 800 900 Yards
Scale 6 in to a mile 10560
Brick Wells shown thus

PLATE III.

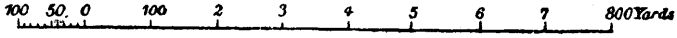
Measuring Distance on a Map by Scale, &c.—E and F.

10. *Scales.*—A scale is a statement of the proportion between a map or plan and the ground which it represents, this may be shown in various ways :—

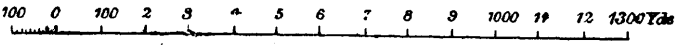
(*a*) By a statement in words : *e.g.*, it may be stated on the face of a map that the scale is 6 inches to a mile.

(*b*) By a Representative Fraction : *e.g.*, it may be marked on a plan that its R.F. is $\frac{1}{10560}$.

(*c*) By a line divided into several equal parts, and figured thus :—



11. *Complete Scales.*—In all Military sketches it is usual to give all three ways, and a scale to be complete should be drawn, and figured, thus :—



Scale of Yards. 4 in to a Mile. R.F. $\frac{1}{10560}$.

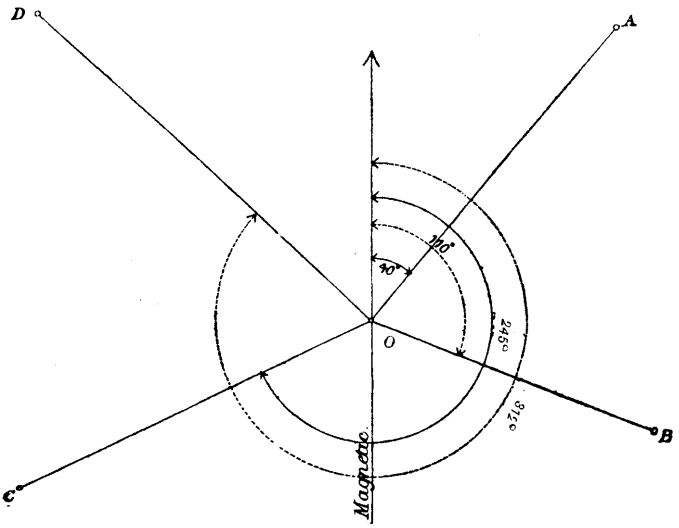
12. *Representative Fraction.*—Is a fraction of which the numerator bears the same proportion to the denominator, that the map, or any distance of it, bears to the ground that it represents. Thus, if the R.F. of a map is $\frac{1}{63360}$, it means that 1 inch on the map represents 63360 inches (*i.e.* one mile) of ground. The numerator of the R.F. must always be 1, and this one is always taken to mean 1 *inch*, therefore the denominator must, of conrse, be invariably expressed in inches.

13. *Suitable Scales.*—As a general rule a scale of two inches to a mile ($\frac{1}{31680}$) is suitable for a road sketch, six inches to a mile ($\frac{1}{10560}$) for a military position, and a useful scale for sketches of country expected to be the scene of military operations is one inch to a mile ($\frac{1}{63360}$).

14. *Measuring distances on a map.*—The direct distance or range from one point to another would of course be taken as the crow flies, and the length by scale of a line joining the two points would give it.

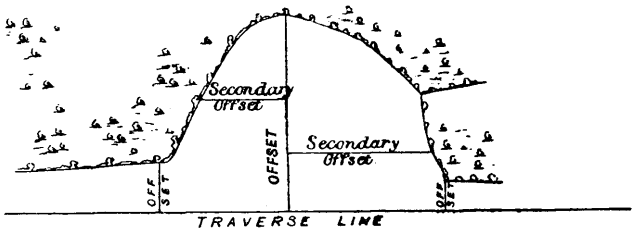
15. *Measuring a Curved Road.*—A pair of ordinary compasses or dividers will be required; for the purpose of illustrating the mode of using these we will assume that it is required to measure the exact distance by road on a one-inch map from a farm to a village; we notice the road on the map goes for a short distance nearly straight from the farm to a bridge. We accordingly place the point of one leg, which we will call the near leg, of the dividers at the farm house, and, allowing the weight of the compass to bear lightly thereon, we push out the other, which we will call the far leg, till the point rests on the bridge; here the road, after crossing the bridge, turns to the left along the bank and the weight of the compass being transferred to the far leg, upon the point of which they revolve, is brought down again to the paper in the line of the new direction of the road *produced backwards.* The weight is now shifted to the near leg and the far leg is pushed gently forward so far as the road goes straight, or until there is a pronounced change, and so on, the movement being repeated until the village is reached. The angle to which the compasses are already opened will be slightly increased each time; the distance between the points of the dividers is now measured by application to the scale on the map and found to show six and a quarter miles; the village, therefore, is that distance by road from the farm.

16. *Bearings.*—The bearing of an object is the number of degrees between a line drawn to it from the point of observation, and the magnetic meridian passing through that point. The annexed diagram makes this clear. O being the point of observation, the bearing of A is 40°; of B, 110°; of C, 245°; and of D, 312°. It will be observed that the degrees must be counted from North round by East, South and West, up to North again.



17. *Offsets.*—An offset is a measurement made to an object at right angles to the forward direction. In Military Sketching offsets are more often judged than actually measured.

18. *Secondary Offsets.*—Are measurements perpendicular to the principal offsets. They would only be used when some outline has to be put in with great accuracy, thus :—



Reading a Map, &c.—E. and F.

19. *Comparing the Map with the Ground.*—It will be found that comparing a map with the ground it represents is an excellent plan for obtaining proficiency in map reading; the map for a preliminary exercise should be of fairly large scale, about six inches to a mile is a good size, smaller scales should be used as the student progresses; having selected some starting point on the ground, easily found on the map, such as four cross-roads, &c., the student should walk along the main road holding the map as the ground lies, at every cross-road the angle at which it intersects or runs into the main route should be roughly estimated and the map compared to see if it looks the same on paper; a few distances may first be judged and then measured on the map according to the scale, any marked features of ground in the vicinity should now be measured and compared with the map.

20. *Importance of knowledge of Conventional Signs.*—It is presumed that the various conventional signs described in the first nine paragraphs of this book have been carefully learnt and understood, this is indispensable for a correct knowledge of map-reading.

21. *Contours.*—On a military sketch, hills are represented by contours; these are imaginary lines running round a hill at the same level all the way round, and each contour represents a fixed rise or fall of so many feet; contours enable us to say what is the height of any given spot on a map, besides this they show us the shape of a hillside, and also indicate whether the slopes are steep or gentle.

22. *Contours close together.*—Wherever we see contours close together, there we know the hill-side must be steep; and where they are far apart, there the slopes must be gentle; it is easy to understand this, if you can suppose yourself required to walk straight from the foot of a hill to the top, and to plant a picket in the ground at every vertical rise of 20 feet, say: each picket representing the position of a contour. If the slope you ascend is very gentle you will have to walk a long way before you have risen 20

feet, and have reached a contour. But if the ascent is steep, a very short climb will take you up the required height; and in that part of the hill-side, if you could inspect it from above, you would see that the horizontal distances between the pickets were very small; while on the gentle slopes they would be considerable. In short, where contours are close together the slopes are steep, and where they are far apart, the slopes are easy.

23. *Steep or easy Slope.*—For military purposes, it is not sufficient to decide that a slope is steep or easy. We must be able to say, or ascertain, *what is the exact degree of slope at any given spot.* And the contours enable us to do this at a glance, after a very little practice, provided they are drawn on what is known as "the normal system."

24. *The Normal System.*—Is a system by which it is insured that no matter what is the scale of the map, the distance between the contours in plan shall always be the same for the same slopes; this means for example, that if contours a quarter of an inch apart on paper represent a slope of 5° on one map, they represent that slope on every map, no matter what the scale is.

Use of the Compass.—E.

25. *The variation of the Compass.*—The variation of the compass (also spoken of as "the declination" of the compass) is the deviation of the needle from true North; or, in other words, is the angle between the direction of the needle and the direction of true North. The variation is said to be so many degrees East, or West, according as the needle points to the East or West of true North.

26. *Variation of the Compass in England, &c.*—At the present time the deviation in England is about 18° West. In Northern India, it is about 2° 50′ East. The variation is not the same in all compasses. Hence it is important that every one should know the variation of his own compass; and that a sketch should be begun and finished with the same compass.

27. *True and Magnetic North.*—On every sketch the direction of true North and of magnetic North should be clearly indicated by the proper conventional signs. True North is a direction which never changes; therefore, by showing it on every sketch, we get a line on each common to all, by reference to which sketches of adjacent bits of country executed by different officers (as in a combined survey) can be correctly pieced together; or compared with existing maps; or extended, or revised, at a subsequent period when the magnetic conditions may have altered.

28. *To find the variation of the Compass.*—We must first find the true North. Then take its bearing with the compass; if the bearing is 360°, of course the variation is *nil.* If the bearing is not 360°, then the variation is the number of degrees between 360° and the observed bearing; and it is East, or West, according as the needle points to the East or West of true North.

Field Sketching and Traversing.—E.

29. *A Field-book.*—Is simply a pocket-book in which a surveyor records in a particular form, observations made in the field, and distances measured, &c. These observations are subsequently "plotted" at leisure; the book has a column ruled length-ways up the centre of each page, this is called "the chain column" and the spaces on each side of it are called the offset columns.

30. *A Traverse.*—Is the process of sketching roads, rivers, &c., by taking forward bearings, or angles, pacing or chaining along them, and measuring or judging offsets to objects on either side. Whenever practicable, a traverse should start from a point fixed by triangulation, and close on a similar point.

31. *How to Traverse.*—If we are going to make a traverse, we can get to work in two ways, either we can take a sketching case and protractor, &c., and plot our observations as we go along; or we may take only the prismatic compass and field-book, and recording all our observations in the latter, plot them afterwards at our leisure on reaching home.

32. *Traversing with a Field-book.*—The entries in the field-book are commenced at the bottom of the last page, and continued upwards towards the first page.

33. *First Station.**—A point is selected to start from, and marked in the chain column thus : ⊙ I., which means *Station No.* 1. Immediately above this is entered the forward bearing to the next station on the road, or line, about to be traversed.

34. *What to write in the Offset Column.*—To the right and left of this entry, in the offset columns, are written down the distances measured at right angles to the traverse line, to the sides of the road, or to houses, or objects off it. These distances may generally be estimated. As a rule, offsets need not be taken to objects more than 200 yards, or so, off the line. More distant objects, if to be noticed at all, may be fixed by bearings taken to them. It must be clearly shown from what spot these bearings are taken, and they are recorded in the offset columns, not in the chain column.

35. *After making observations at the Starting Point.*—Having made all the observations necessary at the starting point, pace forward, taking care to march strictly on the forward bearing. As you proceed, if you notice anything that should be recorded, such as an alteration in the width of a road, or houses, plantations, &c., alongside it, you stop and put it down, thus :—First enter in the chain column the total number of yards traversed up to that point, then enter in the offset columns whatever has to be noted. And observe, in these offset columns you not only write down distances, but also as you go along, you make a rough outline respecting the sides of the road, houses, hedges, woods, &c. Nothing is drawn to scale, but simply you make what may be called *pictorial memoranda* which will help you afterwards to remember clearly what you saw.

36. *Forward Bearings.*—Remember that the *only* entries made in the chain column are the forward bearings, and the distances measured along them.

* A Station is a point fixed by the triangulation: or, speaking generally, it is any point fixed by the intersection of two or more bearings, or angles, or by pacing, or chaining (as in a traverse). Stations should always be clearly marked on a sketch by a small circle, and bearings to or from them should not penetrate its circumference.

37. *Chain Column.*—The chain column represents a line having no breadth; therefore, if a hedge, line of telegraph, &c., crosses your forward direction obliquely, it must be shown arriving at, and leaving, points exactly opposite each other, on opposite sides of the chain column. Its bearing may be written on it if considered necessary.

38. *How to proceed when a fresh Bearing is necessary.*—In this way continue to pace on your forward bearing, recording observations right and left as you proceed, until you reach a bend, and a fresh forward bearing becomes necessary. You now stop, write down in the chain column the total distance traversed from ⊙ I., draw a line right across the chain column, and immediately above it, enter ⊙ II., and the new forward bearing. This done, you go on exactly as before until your task is completed. The following cautions must, however, be borne in mind.

39. *Entries in the Field Book.*—Be careful never to crowd your entries. It is a good plan to rule lines for them about one-third of an inch apart. Your work should be so clear and intelligible, that another person can plot it without difficulty.

40. *Intermediate Measurements.*—All intermediate measurements between stations are inclusive; fresh counting is only commenced at a new station.

41. *Offset Measurements inclusive.*—In the same way offset measurements are inclusive; thus, if from the traverse line to the side of the road is fifteen yards, and a house stands twenty-five yards beyond that, then the entries would be—15; then a line representing the side of the road, then 40, then a rough outline of the house, which is then understood to be 40 yards from the traverse line.

42. *Station Lines.*—Station lines are the direct lines between any two stations; those in fact which the surveyor walks along as he measures from one station to the next; these should be as long as possible, the more few and longer they are the less is the chance of error in the traverse and time and trouble are saved.

43. *Traverse should begin and close at Stations fixed by Triangulation.*—Whenever it is practicable a traverse should always begin and close on stations which have been

fixed by triangulation; if this is not possible, then, in order to have some means of checking your work, seek for some conspicuous point of your line and intersect it as opportunity affords.

44. *Do not waste time in Offsets.*—Have regard to the scale on which your work is to be plotted and do not waste time in offsets or measurements too small to be represented.

45. *Plotting the Traverse.*—The first step is to lay down the forward bearings in succession from start to finish, and the total distance measured along from station to station; by doing this it is seen at once whether the traverse closes correctly; as soon as this is done and you are satisfied with the correctness of the work, you return to station number 1, and commence to plot the offsets; each forward distance is taken in succession and its corresponding offsets laid off perpendicularly to the right and left; the drawing paper should always be turned so that the direction of the forward bearing along which you are plotting the offsets may correspond with that of the chain when in the field-book; without this precaution you are apt to plot the offsets on the wrong side of the road.

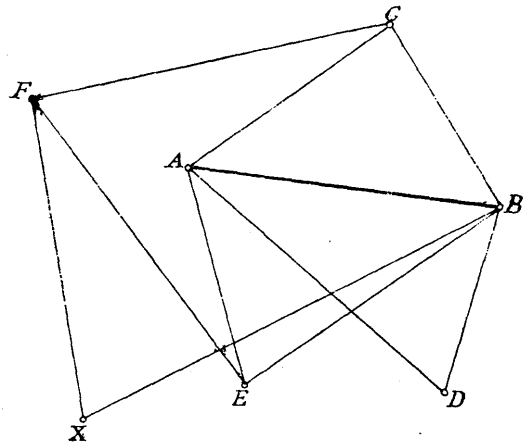
46. *Difference in Traversing with and without the Field-book.*—The only difference between traversing with a field-book, and without one, is that in the former case you record your observations in a book, to be plotted afterwards at your leisure, whereas in the latter, your sketching-case and protractor are taken with you, and you plot each observation on the spot. Beyond this, the procedure is the same in both cases.

47. *When working with a Plane table.*—If working with a plane table, you would set it up at your starting point, then revolve the board so that its longest axis shall lie in the general direction of the road, or line, you are going to traverse; then clamp it, and placing the compass on one corner of it, move it about until the needle points to the North, then draw a pencil line along it (North end marked with an arrow head), so that at any subsequent station the table can be "set" by aid of the compass, and reference to this line.

48. *To use the Plane table.*—As just stated, if working with a plane table, you set it up at your starting point and level it carefully. In setting it up take pains to put it exactly over this point. To ensure theoretical accuracy, the point on the ground, and the point representing it on the paper, should be in the same vertical line. Now revolve the table, which all this time is unclamped, until you have got it into just the position you want with reference to the position of your starting point, and the direction in which you are going to work. In short, take care so to arrange that the whole of your sketch will come on to the paper. This being satisfactorily settled, mark your starting point on the paper, stick a pin into it, and clamp the table. Now take the compass, lay it somewhere near the edge of the paper, and move it about till you get the needle to point exactly to North. Then draw a pencil line along it, and mark the North end of this line with an arrow head, and write "magnetic" on the tail. The compass can then be taken up and put away for the present. This line that you have drawn will be the *zero line* * of your sketch, and it is evident that at any subsequent period in your work you can by reference to it "set" the table correctly. ("*Setting*" the table means placing it in a position parallel to its original position, and, therefore, in a correct position with regard to surrounding objects. In other words, when a table is "*set*," every line on the sketch will be parallel to its corresponding line on the ground).

49. *Commencing Work.*—We are now ready to commence work, take the ruler and place it against the pin; align the sights on any object whose direction is required; draw a line along the edge of the ruler, and the thing is done. In this way, by directing the ruler in succession at various objects, their direction is rapidly and accurately fixed. The table is now taken up and carried to the next station. Let us suppose the first station was A, one end of a selected and measured base, as in the figure below; and that rays have been taken to B, C, D, and E. We now put up the table at B, stick the pin into the point representing it on paper, and proceed to "set" the table.

* The *zero line* of a sketch is the one upon which all the others depend for the accuracy of their direction.



50. *To set the Table.*—This may be done *independently of the compass* in the following way :—Lay the ruler exactly along the line A B; unclamp the table, and revolve it steadily till the sights are correctly aligned on A. Then clamp it. The table is now "set;" but as a check on its correctness take the compass out, lay it on the zero line, and see if the needle points as it ought to, to North.

51. *How to proceed.*—Having now got the table "set," we have only to proceed with our observations; the ruler is placed against the pin and rays (*Note*, a "ray" is a term used when plain tabling to express the direction of an object) taken to C, D, and E, these, if common care has been taken, will fix the position of those stations with absolute accuracy; our next station would probably be E, here the table is set with reference to the line E B, or E A (the longest lines are the best), and checked again, if considered necessary, by the compass; then rays are taken to various objects and the ground in the vicinity can be sketched in by eye to save visiting it again; so the work proceeds.

CHAPTER II.

ATTACK AND DEFENCE, &c.

The Company in Action.—D.

52. *The Company in Attack.*—The captain having thoroughly understood the object which the battalion commander has in view and explained and impressed the same on all ranks of the company, acts in concert with the company on his flanks and sees that the correct direction is maintained; he should be where he can best watch the action of his firing line and issue order to his supports during the advance. Extra ammunition will be supplied to the company before going into action and arrangements made for the supply of reserve ammunition during the fight (*see* Para. 174).

53. *How Fire is controlled, &c.*—The captain, subject to the orders from his commanding officer, controls the fire, decides when it is to be opened and the nature of fire to be employed, how and when to reinforce the firing line, leads his company in the assault, losing no time to re-form it during the fight and after the assault.

54. *Who gives the Range, &c.*—In the firing line half-company commanders give the range, orders as to the number of rounds and nature of fire, select the ground to which the next advance is to be made and lead their half-companies; the men must be careful to maintain the true direction; half-company commanders lead their companies to the charge.

55. *Executive words of command.*—Section and sub-section commanders give the word of command for firing, &c., see the sights are properly adjusted, watch over the expenditure of their ammunition and the re-filling of magazines if emptied.

56. *Extensions.*—Extensions may be made by one or more sections not in excess of half the number in the company, the remainder being kept in support.

57. *Remarks on the Attack.*—The frontage* to be occupied by the company in an attack cannot be laid down precisely; prescribed intervals (*see* Para. 77) between companies and sections will always be preserved; for a range of 3,000 to 1,500 yards from the position to be attacked in open country the company will probably find it most convenient to move with one fourth of its strength in an extended line, with the remainder in support 200 or 300 yards in rear.

58. *Cover.*—Men in the firing line must avail themselves of any cover that may offer in their direct line of advance, but they must not move to a flank to obtain it except by command of an officer.

59. *Supports to make use of Cover.*—Supports should make use of any cover as long as they do not lose touch with the firing line.

60. *Assembling when dispersed, and rallying.*—Troops will be practised in rapid assembly when dispersed as described in Infantry Drill, Part 2, Section 74. To rally, close in, and re-form whenever and wherever it can be done without risk in the course of an action is the first duty of all units from the sub-section to the battalion; the several parts of the company will during the attack often have to halt, and occasionally for some time under chance cover, when they should reorganize and issue from it for a fresh effort as from a new starting point.

61. *Words of Command, &c.*—When men are thoroughly trained in the attack all words of command will be as few as possible and no bugle used, signals will be freely used and the whistle used to attract attention to any new command or signal.

* Frontage is the extent of ground covered laterally by troops.

62. *General principles of the Attack.*—No fixed rules can be laid down beforehand for movements in presence of, and action against, an enemy, these vary according to the circumstances of the occasion; the movements however must be conducted in accordance with certain general principles and rules which will now be explained.

63. *Small bodies in presence of the Enemy.*—All small bodies of troops, when there is any possibility of contact with the enemy, should be protected by scouts moving parallel to their own advance and in a position to prevent surprise from a neighbouring valley, wood, or any feature that might conceal an enemy within short distance from the line of march.

64. *Limit of Ranges.*—For about 3,000 yards from the enemy's position, the ground over which the troops destined to attack have to move, is under the influence of two different kinds of fire in different places which greatly affect the conduct of the advance.

65. *Terms applied to Ranges.*—For descriptive purposes this space is divided into ranges, those here given, however, must be considered only approximate.

Terms applied to ranges.	Limits.	Description of Fire.
Distant.	About 3000 to 1500 yds.	Artillery.
Long.	1,500 to 800 yards	Long Range rifle.
Medium.	800 to 500 yards	Collective rifle.
Decisive.	500 yds. to position.	Collective and individual rifle.

66. *Effect of Rifle Fire.*—The effect of rifle fire depends on knowledge of the range, features of the ground, &c.; on troops in close order, volley firing by sections is effective if it is well regulated and directed— at 800 yards, on a small section;—at 1,000 yards on a large section;—at 1,200 yards on half a company or on a section (two guns) of Artillery;—from 1,400 to 1,700 yards on a battalion in column and on compact bodies of Artillery or Cavalry.

67. *Inference.*—Inversely a company in column of sections will probably suffer at long ranges twice the losses of a company in line.

68. *The effect of Distant Fire and how mitigated.*—The effect of distant fire may be mitigated by observing where it falls, and either avoiding or passing rapidly over those places.

69. *Fire that Tells.*—The fire that tells and causes the heaviest losses and most checks the advance is the well-aimed and directed infantry fire at medium and decisive ranges; victory is prepared at the former but gained at the latter.

70. *Distribution of the Three Lines.*—Troops allotted to attack will usually be divided into first, second and third lines.

71. *Duties of the First Line.*—The duties of the first or firing lines are to push forward as near as possible to the enemy's position and keep up a well-directed fire as soon as such fire is effective; they will often have to halt and occasionally for some time under chance cover, when the units will reorganize and issue for a new effort as if starting again.

72. *Duties of Supports and Reserves.*—These keep the firing line at its most efficient strength by filling gaps caused by casualties, protect its flanks, should these be threatened, and give confidence to those in front by the feeling that there is a body of comrades following to assist them; thus supported, the firing line tries to envelop the front of the enemy's position and between the ranges of from 800 to 500 yards, keeps up on it the most effective fire possible; when about 500 yards from the position, more or less, according to the nature of the ground, the firing line endeavours to establish itself in good defensive positions all along the front.

73. *Position for Main Attack.*—The officer commanding will now have selected the portion of the enemy's position upon which he intends to direct his main attack. Opposite this portion, the supports and reserves of the first line may already have been absorbed into the firing line, and it may even have been necessary to reinforce it by men drawn from

other and less important parts of the field to enable it to push forward at all hazards to well within decisive range of that portion of the enemy's position which it is intended to assault.

74. *The Second Line.*—Would be assembled in several lines deep, opposite that portion of the enemy's position which has been selected for assault, and which is to be taken, cost what it may.

75. *The Third Line.*—Would take up a good defensive position where, in the event of reverse, the enemy can be effectively checked, and behind the flanks of which the remains of the first and second lines can be safe, at least for a time, from anything like an effective pursuit; in the event of success it marches to the front and takes up the pursuit of the enemy.

76. *All Formations.*—Should—

(1) Admit of the most effective fire.

(2) Offer the smallest target.

(3) Allow of the use of such cover as may be consistent with a direct advance.

77. *Intervals.*—Unless orders have been given to the contrary there will be thirty paces interval between battalions and brigades, and two paces between companies, sections and sub-sections.

78. *Gaps in the Firing Line.*—Gaps caused by casualties in the firing line must be filled up from the supports, and when they are expended from the reserves.

79. *Distances.*—Should rarely exceed about 400 yards between the several portions of the first line, but these distances naturally depend upon the ground and weapons of the enemy.

80. *Pace.*—Undue rapidity exhausts troops, and impairs therefore the accuracy of their fire. During the early stages of an attack, when the troops are not exposed to effective fire, the quick step should generally be maintained, and the advance be made in a general line. When the defenders' fire begins to tell seriously, the advance must be continued

by alternate portions of the line, taking advantage of dead ground, if available, and thus making progress by a system of mutual assistance, as described in the drill of a section, —Part I., Section 53, Infantry Drill.

81. *Infantry in Defence.*—The manner in which a defensive position is occupied depends upon its nature, extent, the character of the ground, and strength and composition of the forces available. Before taking up a defensive position all ground in the vicinity would be reconnoitred.

82. *Obstruction to the Enemy's Advance.*—If circumstances compel a purely defensive attitude, a river, marsh, or other impediment to the enemy's advance—especially if under effective fire from the position,—will materially assist the defenders, but if, as should generally be the case, the defending force intends to take the offensive after having repulsed the enemy's attacks, the ground in front of the position should admit of an advance.

83. *Requirements of a Defensive Position.*—The chief points to be considered in selecting a position may be taken in the following order :—

(*a*) The extent of the position should be suitable to the strength and composition of the defending force. As a rough estimate, it may be assumed that a fairly strong position, partly entrenched, would require, including all arms and troops in reserve, about five men per pace.

In the event of it being necessary to occupy a position too extended for the numbers available to defend it, it will usually be preferable to occupy the front thinly, keeping a strong reserve to reinforce at any threatened point, rather than to distribute the force generally throughout the front.

(*b*) There should be a clear field for fire over the country in front, and on the flanks, and there should be no ground in the immediate front unseen from the position.

(*c*) The flanks should rest on ground strong for defence, either by nature, or from the existence of suitable cover.

(*d*) There should be good cover, especially for the supports and the reserves.

Cover for the first line, if none exists, can be obtained speedily by shelter trenches, but as regards the remainder of the force, it must generally be sought for in the folds of ground behind the position.

(*e*) Good artillery positions, so placed as to take the enemy's main advance in flank.

(*f*) There should be sufficient depth behind the position, with good lateral communications, to admit of the free passage of troops to any desired point.

(*g*) To ensure good means of retreat, there should be several roads or tracks leading from the front of the position to the rear.

(*h*) There should be no good positions for the enemy's artillery.

84. *Advance-Posts.*—During the reconnaissance prior to the occupation of the position, advanced posts, which it is necessary to hold, should be noted.

85. *Communication.*—Signallers will be attached to the advanced posts in order to report the movements of the enemy from time to time, and thus enable the commander of the defending force to issue his instructions.

86. *Ranges to be noted.*—When time permits, the distances of all prominent objects and exposed points on the probable lines of attack should be carefully ascertained and noted.

87. *Distribution of Troops for the Defence in the First Line.*—Large bodies of troops acting on the defensive should be distributed in three lines. The firing line of the *first line* should be as thick as is compatible with the free use of the rifle; the position should be divided into sections for the purpose of command, each section having its separate reserve; the supports and reserves should be placed well under cover, but near at hand ready to replace casualties in the firing line. The first line provides for the occupation, both of the front line, and of the advanced posts.

88. *The Second Line.*—The *second line* will provide for the defence of the flanks, the troops detailed for this duty

being placed according to the ground and other conditions, but, as far as practicable, under cover. Troops not required for the flank should be assembled at one or more points from which prompt aid can be sent to support the more exposed positions of the first line, or from which counter-attacks may be readily undertaken.

89. *The Third Line.*—The *third line* should be so placed as to be able to assume the offensive with the greatest possible effect after the attack has been fully developed.

The Attack of Woods.—A.

90. *Attack of a Wood.*—In making dispositions for the attack of a wood, the assailants labour under the serious disadvantage of being ignorant of the strength and position of the force opposed to them.

91. *When a Wood should be Attacked.*—A wood should never be attacked unless its position is indispensable, or through some equally urgent cause.

92. *Possession of border of a Wood.* — Though the strength and position of the defenders only becomes apparent as the fight progresses, yet the primary disposition of the attacking force can usually be adhered to until the border is occupied, and the possession of the border at some points is the first thing sought for as it at once puts the front line on an equality with their opponents as regards cover.

93. *Dispositions for attacking a Wood.*—The dispositions of troops attacking a wood would be similar to that for attacking any other strong position ; the defenders must be driven from the border, the troops extended must be followed very closely by Supports.

94. *When border of a Wood is carried.*—As soon as the border is carried by the front line, the supports should at once move forward, and the whole press on through the wood.

95. *Advantages af advancing far into a Wood.*—The further the assailants advance into a wood, the greater difficulty, as a rule, will the defenders have in expelling them, provided the former are well supported.

96. *When issuing from a Wood.*—Infantry should be re-formed before issuing from a wood to follow up a success.

97. *Attack on a Wood should be prepared by Artillery.*—As in other attacks, that on a wood should be prepared by Artillery, and the advance of the Artillery conforms to that of the Infantry.

The Defence of Woods.—A.

98. *Advantages to troops occupying a Wood for defence.*—The advantages afforded by a wood to troops occupying it, are that it conceals them from the enemy's view, and therefore from his aimed fire, while the trees afford a certain amount of shelter from his bullets; moreover, the enemy is kept in ignorance of the dispositions and strength of the force holding the wood, and therefore must move a good deal in the dark in attacking it.

99. *Woods to be reconnoitred.*—Previous to occupying a wood for defence, it would be carefully examined.—(*See Para.* 327).

100 *Artificially strengthening a Wood.* — The best way of artificially strengthening a wood is to erect obstacles at its entrance, and establish inner lines of defence; when the outline of the wood is irregular, those parts jutting out to the enemy are the most vulnerable, and here abatis might be placed with great advantage.

101. *Roads in a Wood.*—Roads leading from the enemy should be broken up outside the wood, or barricaded at its entrance; but how far they should be rendered unserviceable to the defenders entirely depends upon the commander.

102. *Border of the Wood.*—In the border of the wood lies the heart of the defence, so that every effort must be made to strengthen it; frequently an existing track supplies a natural parapet, and where this is not found, a shelter trench would be rapidly constructed, if the tools are at hand.

103. *When second Line of Defence is made in a Wood.*—When the wood is of some depth, it will be usually desirable to form a second line of defence; for this purpose, a natural feature, such as a ravine or a commanding ridge, will be most favourable.

104. *Defensive Line in Rear of a Wood.*—A defensive line in rear of a wood is always of importance to rally on.

105. *Advantages of a Wood to Defenders.*—It should be borne in mind that the advantages of the wood for defence exist only as long as the defenders keep their opponents out of it, hence everything should be regulated with a view to maintaining possession of the border.

106. *Points in a Wood that require to be strongly occupied.*—The points that require to be most strongly occupied are those nearest the enemy, those to which the approaches will afford him most cover, and those whose possession would enable him to turn strong points in the defence, such as ravines, commanding ground, &c.

The Attack of Defiles.—A.

107. *Attack of a Defile.**—The mode of attacking a mountain defile is pretty clearly indicated by what can be said in its defence; it would be rash to push a force into the gorge while the enclosing heights at its entrance were held by the enemy; the first part of the attack, therefore, would be devoted to clearing the heights.

108. *Disposal of Force attacking a Defile.*—An attacking force would, therefore, be disposed part against the heights and part against the entrance; after this latter has been forced, the progress of the main body through the defile must be regulated by that of the flanking parties on the heights, who continue to cover it to the last.

The Defence of Defiles.—A.

109. *Object for which a Defile is held.*—The object for which a defile is held mainly regulates the manner of its defence; it may be held for the use of the defenders, or it may be held simply to prevent the enemy from using it.

110. *In the case of a Defile held for use of Defenders.*—In the first case it would be preserved as an outlet to the

* NOTE.—A defile may be defined as any portion of ground that, owing to local impediments, can only be traversed by troops on a front, narrow in proportion to their numbers; the term, therefore, is a relative one, and dependent on the force engaged.

side holding it for offensive operations, which would restrict the amount of obstacles that could be created to the enemy's advance, for all artificial aids in the defence should admit of the defenders having free movement through the defile.

111. *When a Defile is held to prevent enemy from using it.*—When it is held simply to prevent the enemy using it, the passage may, if necessary, be rendered wholly unserviceable.

112. *Three positions from which a Defile may be defended.*—A defile may be defended from three different positions—

(*a*) On the side nearest the enemy (in front).
(*b*) In the interior.
(*c*) On the side farthest from the enemy (in rear).

113. *Defile defended from a Position in Front.*—When defended from a position in front, the defile adds little power to defence; points of support may be afforded to the flanks, but beyond this it is a source of weakness rather than strength.

114. *Defence of a Defile from the Interior.*—The circumstances must be exceptional that would require the defence to be organized from the outset within the defile; but when it is of some length, positions may be found in the interior of such strength as to afford advantages unobtainable at the entrance.

115. *When the Flanks are secure.*—When its flanks are well secured, a small force has certain advantages in a position of this kind, since the front on which it can be attacked does not allow the enemy to make use of his superiority; the strength of such position must greatly depend on the obstacles that can be interposed to a direct advance of the enemy, hence barricades, abatis or some such obstruction should be constructed.

116. *Defile defended from the Rear.*—A position in rear of a defile is usually the strongest the defenders can assume; it enables them to concentrate, from a comparatively wide front, a great superiority of fire on the enemy, constrained to advance on a very narrow one; the advantages of the situation are at once apparent, and theoretically, should be so great as to make it impossible for the attacking force to contend against it.

117. *Special advantage to defenders from a position in rear of a Defile.*—The special advantage of such a position must never be lost sight of, namely, crushing the head of the enemy's column in its attempt to issue from the defile.

118. *Best position with reference to a Defile.*—When the defile is short and its flanks open, so that the force defending it commands not only the outlet but also the approaches to the entrance, the strength of such a position is at its greatest.

119. *Defence of Mountain Defile.*—In defending a mountain defile where the adjoining heights are difficult to climb and the ground is otherwise favourable, the defence would usually be organized at the entrance, for here the defile itself has considerable attributes for defence; infantry occupying the heights command the approaches and secure the flanks, while the mouth of the pass, strongly barricaded, closes the entrance.

120. *Defence of Mountain Defile usually falls on Infantry.*—The defence of such a position will almost entirely fall on the infantry, as guns can but seldom be got on to the heights.

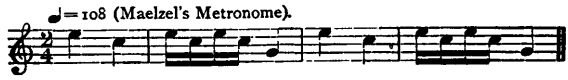
121. *Defence of the outlet of a Mountain Defile.*—In defending the outlet of a mountain defile, the one point to aim at is to crush the head of the enemy's column as it arrives; for this purpose the heaviest possible fire must be concentrated on the *Débouche* and adjoining ground; here Artillery becomes the important arm.

Bugle Calls and Signals.—D. and M.

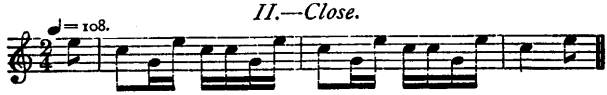
122. *Field Calls.*—The following are the Field Calls on the Bugle (*see* Plate IV.):—

i. *Extend.* ii. *Close.* iii. *Advance.* iv. *Retire.* v. *Halt.* vi. *Fire.* vii. *Cease Fire.* viii. *Assemble.* ix. *Incline.* x. *Wheel.* xi. *Alert.* xii. *Cavalry.* xiii. *Quick.* xiv. *Double.* xv. *Lie Down.* xvi. *Rise.* xvii. *Charge.* xviii. *March at Ease.* xix. *Attention.* xx. *Advanced Guard.* xxi. *Rear Guard.* xxii. *Flank Guard.* xxiii. *Signallers.*

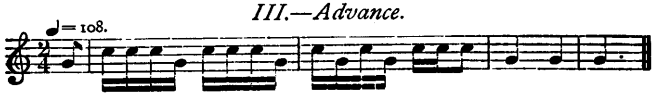
I.—Extend.



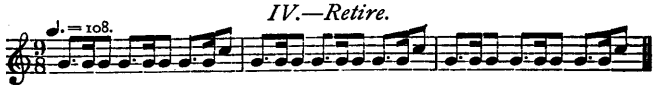
II.—Close.



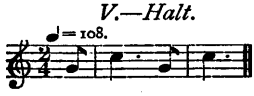
III.—Advance.



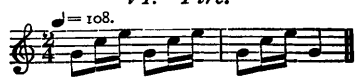
IV.—Retire.



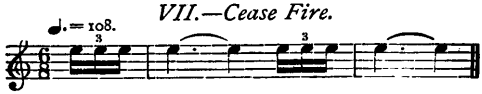
V.—Halt.



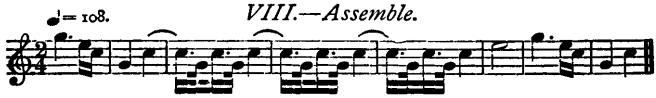
VI.—Fire.



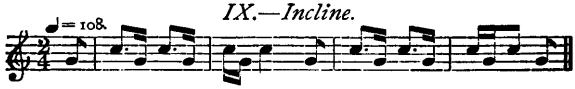
VII.—Cease Fire.



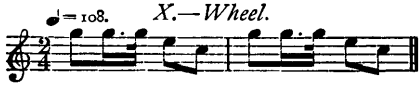
VIII.—Assemble.



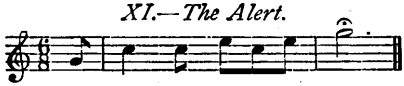
IX.—Incline.



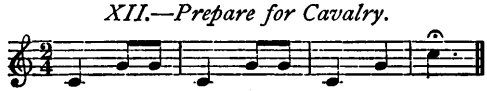
X.—Wheel.



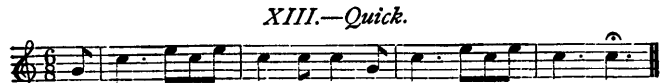
XI.—The Alert.



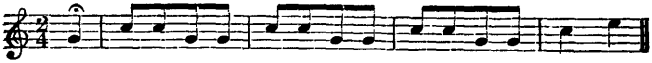
XII.—Prepare for Cavalry.



XIII.—Quick.



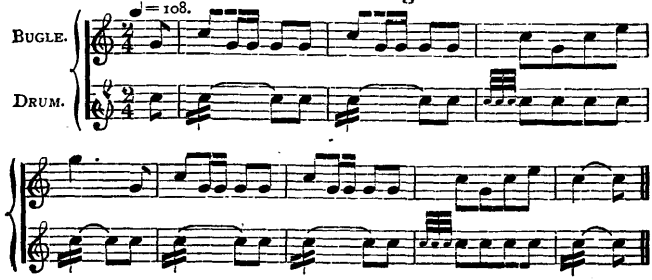
XIV.—Double.



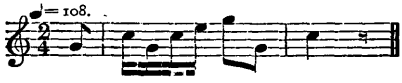
XV.—Lie down.

XVI.—Rise.

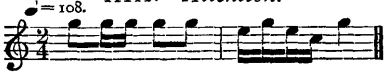
XVII.—The Charge.



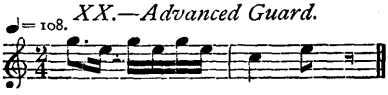
XVIII.—March at Ease.



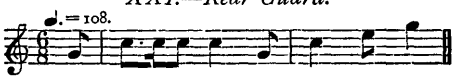
XIX.—Attention.



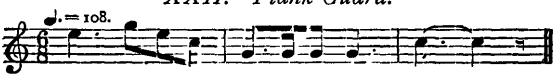
XX.—Advanced Guard.



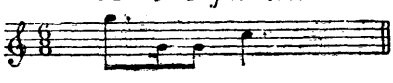
XXI.—Rear Guard.



XXII.—Flank Guard.



XXIII Signallers.



123. *The "Halt" Bugle Call.*—The *Halt* annuls all previous sounds except the *Fire.*

124. *The "Alert" Bugle Call.*—The *Alert* is a call of warning; when it is sounded the men in movement will at once halt, and if retiring, front, waiting if necessary for orders, if the danger cannot be seen.

125. *Signals, the following are the Authorized Signals, "Extend."*—Both arms extended horizontally in line with the shoulders.

126. *"Close" Signal.*—Both arms raised as for the *Extend* and then lowered to the sides.

127. *"Advance, or Forward, or Reinforce" Signal.*—Arm swung from rear to front, finishing with the hand pointing to the front.

128. *"Retire" Signal.*—Arm with weapon circled above the head.

129. *"Halt" Signal.*—Arm raised perpendicularly.

130. *"Incline" Signal.*—Arm extended horizontally in the required direction.

131. *"Change Direction" Signal.*—Circular movement of extended arm in line with the shoulder in the required direction.

In order to prevent the *Change direction* being mistaken for the *Advance*, it is important that the hand should be kept level with the shoulder in the former signal.

132. *"Quick Step" Signal.*—Arm raised, elbow bent, wrist in line with the shoulder.

133. *"Double" Signal.*—Clenched hand moved up and down, between thigh and shoulder.

134. *"Lie Down" Signal.*—The open hand lowered a few times, from the height of the waist, towards the ground.

135. *"Rise" Signal.*—The *Advance* signal.

Any of the above signals made with the head-dress held in the hand will apply to the enemy.

136. *"Enemy in sight" Signal.—In small numbers.*—Sword or rifle held horizontally over the head.

137. *"Enemy in sight—in force"—Signal.*—As in 12, but weapon raised and lowered frequently.

138. *"No Enemy in sight" Signal (also a negative signal).*—The rifle or sword held up perpendicularly at the full extent of the arm.

139. *"Running short of Ammunition" Signal.*—Two men crossing weapons.

140. *When Whistles are to be used.*—Whistles are to be used only to attract attention to orders or signals about to be given. To this order there is but one exception, *i.e.*, a long shrill whistle is the signal for discontinuing any description of fire, after which each section commander will give the command "Cease Fire" or "Commence" as the case may be.

CHAPTER III.

ACTION AGAINST CAVALRY & ARTILLERY; FIRE DISCIPLINE, &c.

Action against Cavalry.—D. and F.

141. *Meeting Attacks by Cavalry.*—Extended troops will be practised in receiving Cavalry as described in Part I., Section 54, Infantry Drill, the supports will act as described in Section 73.

142. *Duties of the Reserve.*—The reserve, or troops in close order, will act on the principle that the most suitable formation is that which brings the greatest number of rifles to bear on approaching Cavalry.

143. *Infantry v. Cavalry on open ground.*—On open ground a foot soldier has nothing to fear from a single trooper, and on broken ground the advantage is on his side provided he remains calm and collected.

144. *Groups of Infantry v. Cavalry.*—Groups of well-disciplined Infantry on broken ground or with their backs to banks, hedges, or any obstacle, may defy relatively larger numbers of Cavalry.

145. *Immediate presence of Cavalry.*—The immediate presence of bodies of Cavalry may demand a closer formation than that of the extended line; in such cases the men of the section may be ordered to form round their leader. At drill, this will be signified by the command *Cavalry*, when the men will double to their commander, form round him, fix bayonets, and turn towards the direction in which the Cavalry is advancing. If possible the commander would select ground whence effective fire can be brought on the approaching cavalry.

146. *When threatened by Cavalry in force.*—When Infantry is threatened by Cavalry in force, formations suitable to the moment will be adopted; it will usually be sufficient in open ground to throw back the threatened flank of a firing line, and the unmolested flank may, if desirable, be advanced. A company, in case of necessity, may be formed as laid down in Para. 1, Section 73, Infantry Drill. In either case the men will move by word of command of the captain.

147. *Individual Action against Cavalry.*—If the soldier is attacked by a swordsman, he should try to keep on the left side of the mounted man; a blow on the side of a horse's head often renders it unmanageable, but if the soldier endeavours to bayonet his adversary's horse, he should strike it in the flank, never in the chest.

Action against Artillery.—D.

148. *Action against Artillery.*—A good effect can be obtained by Infantry fire on batteries of Artillery up to 1,500, and, in some cases, even up to 1,700 yards; Infantry exposed to Artillery fire, at a range a little beyond that of rifle fire, should be advanced to within effective rifle range; when both arms are equally well trained (even when the intervening ground is open) it should be difficult for Artillery, unaided, to prevent Infantry in extended order from advancing to within long ranges, but with Infantry in masses it can cope single-handed.

149. *At what range Artillery first opens fire on Infantry.*—When engaged with Infantry, Artillery, will, if it has the choice, at first take up a range exceeding 1,700 yards; but in the course of the action, it may, for some special reason, push on here and there to within that range; unless supported by Infantry, Artillery can however, rarely, and never without extreme risk, advance nearer than this to unbroken Infantry; but on the defensive, or against troops disorganised or engaged with the other arms, Artillery may fight at the very shortest ranges.

150. *Infantry employed alone against Artillery.*—When it is necessary to employ Infantry alone against Artillery, it must be borne in mind that if the latter is free to devote

the whole of its attention to the former, a larger force will be necessary than if the Artillery is also under Artillery fire.

151. *When Artillery forms the best Target, &c.*—When Artillery is in motion, is unlimbering or limbering up, the teams form the best target, at other times the gunners; should guns attempt to advance into position within range of Infantry, the latter, if still intact and not engaged with Infantry, should be able to throw the Artillery into disorder before it can unlimber; Artillery on the move is much more vulnerable than when in action, as it then offers a large target.

152. *A small force of Infantry against Artillery.*—If it is necessary to employ a small force of Infantry (say 50 men) against Artillery in action against other troops, the Infantry fire should be concentrated on one gun at a time. The windward gun should be attacked first, as it is the most free from smoke, and from that flank the observation of fire is conducted. When individual gunners can be noticed, those bringing up ammunition should be fired at first, as on their movements the rapidity of the fire depends.

Escort to Guns.—C.

153. *Infantry as Escort to Guns.*—Batteries as a rule will be escorted by Cavalry, exceptionally only by Infantry, or the escorts may be composed partly of Cavalry and partly of Infantry.

154. *Position of the Escort.*—When it is necessary to have an escort with a battery, it should take up its position on the most exposed flank, keeping well to the rear under cover.

155. *Escort moves with the Battery.*—When the battery moves, its escort moves with it.

156. *Cover to be occupied by Escort.*—If there is near a battery, any cover in which the enemy's skirmishers could lodge themselves, it should be occupied by the escort.

Escort to a Convoy.—A

157. *Convoy to be provided with capable Escort.*—Every convoy should be provided with an escort capable of ensuring the safety of the march.

158. *Strength, &c., of Escort to a Convoy.*—Its strength and composition will be determined by the value of what is being conveyed, the chances of meeting the enemy, the extent of the convoy, the distance to be traversed, and the friendliness or hostility of the natives.

159. *Convoy Escort mainly composed of Infantry.*—As its chief business will be to beat off attacks of the enemy, the escort will be mainly composed of Infantry; sufficient Cavalry would be added for extensive reconnoitring, and a party of Engineers for repairing passages and removing obstacles; guns would be sometimes also added.

160. *Advanced Guard, &c., indispensable.*—An advanced guard, a rear guard, and flanking parties, are indispensable, and the main body would usually furnish a small party of Infantry for the immediate head and rear of the column.

161. *Infantry at head of Convoy.*—The head of the convoy being a very vulnerable part, from the block that would ensue if the leading waggons were to be arrested, a small body of Infantry would be posted there to meet a dash of the enemy's Cavalry; a similar disposition would be made for the rear.

Fire Discipline.—D., F., G. and M.

162. *Fire Discipline, and what it means.*—Fire discipline means strict attention to all orders from the commander, control of the amount and direction of fire, ensures careful adjustment of the sights, teaches the power of remaining under fire without replying to it, and in the din of battle, when casualties amongst officers and non-commissioned officers removes all superior control, enables the soldier to continue to deliver his fire in the best direction with coolness and deliberation.

163. *Advantages of strict Fire Discipline.*—The physical strength and endurance of the attacking force are highly tried by the fatigue inseparable from a long advance under fire, and the assault is consequently delivered under difficult conditions. These can only be counterbalanced by absolute obedience to orders and strict fire discipline.

164. *Remarks on Firing.*—As Infantry fire within decisive ranges is all important, the attacking force before opening fire should always try to get as close to the enemy as possible, consistent with its not suffering undue losses.

165. *When Volley and Independent Firing are used.*—Volley firing will be maintained during the development of an attack, until the captain orders independent firing. The number of rounds to be fired every time the extended line makes a halt will depend very much upon the ground and actual conditions. The advance must not be delayed by halting oftener or for longer than is absolutely necessary to rest the men, for it must ever be borne in mind that the actual occupation of the enemy's position is the object of the fight. Volley firing is usually employed during the attack at extreme, long and medium ranges, and on the defensive at all ranges.

166. *Independent Firing at Decisive Ranges, &c.*—Independent firing is, as a rule, only advisable at decisive ranges, but when a favourable target offers, such as gun teams, or Infantry in close order coming within medium or even long ranges, independent fire may be usefully employed. Magazine fire will, as a rule, be only employed when sudden or close contact with the enemy takes place, such as immediately before an assault is delivered, or when repelling an enemy's assault, or a Cavalry charge; it may, however, be used at medium, and in rare cases at long ranges where a body of troops is exposed to view for a short time. Independent firing is used in the last stages of the attack.

167. *Concentration of Fire.*—Commanders would endeavour to concentrate fire on certain portions of the hostile position, for by this means alone can a superiority of rifle fire be obtained; they would cause their men not only to aim at such of the enemy's troops who may be facing them, but also at times on those to the right and left, for oblique fire is very effective.

168. *When there is a choice of Targets.*—When there is a choice of targets preference should be given to that which from its size is likely to suffer most from rifle fire.

169. *Efficient Infantry fire only sure preparation for success.*—In all Infantry combat an efficient fire is the only

sure preparation for success; the employment of this fire must, therefore, be so regulated from the beginning in accordance with the progress of the engagement, that it may gradually augment in power up to the final stage, when it should require the fullest necessary development.

170. *Fire Discipline defined, &c.*—Fire discipline, or the execution of fire, may be defined as:—nothing but the unhesitating habit, developed in the men by instruction and training, of commencing, or ceasing, or relaxing the fire, or of concentrating it upon a defined object, in obedience to the deliberate will of the commander.

171. *Habits of method, &c., to be practised.*—The habits of method and steadiness required can only be looked for in time of war by being steadily practised during peace.

172. *Three Rules for the Soldier.*—Three golden rules for the soldier should be—

(*a*) Not to fire at all unless the order has been given by his commander.

(*b*) Never to fire when in motion.

(*c*) To cease firing immediately when so ordered.

173. *Collective Fire.*—The essence of a collective fire is control, so as to get the greatest effect out of it; in order to control Infantry fire, and allow it to be effective, there must be pauses in it, during which the smoke is allowed to clear away, the effect of the fire watched, orders and information transmitted as to the objects to be fired at, the ranges and sights to be used, &c., &c.

The Supply of Ammunition.—D.

174. *The Supply of Ammunition in the Attack.*—All troops detailed to attack must be supplied with extra ammunition. (*See* para. 52, page 32.)

175. *Rounds per Rifle.*—The amount of Lee-Metford rifle small-arm ammunition taken into the field for Infantry, is as follows:—

Rounds, per rifle, on first taken into the field—

100 carried by the soldier.

65 { in four small-arm ammunition carts and on two mules accompanying the battalion. } Battalion Reserve.

20 in the battalion baggage waggons.

185

77 in the divisional ammunition column.

60 in the ammunition park.

322

176. *Responsibility of Officers.*—Commanding officers of battalions are responsible for the 185 rounds per man in battalion charge, and they must take every opportunity of replacing expended ammunition from the divisional columns.

177. *Position of Reserve of Ammunition, &c.*—The position of the battalion reserve ammunition is decided by the brigadiers; general officers commanding settle the position of the divisional ammunition columns and ammunition parks on the line of march, and commanding officers keep themselves informed where those columns are.

178. *Ammunition Carts and Mules.*—As a rule two small-arm ammunition carts and two mules follow immediately behind each battalion, the rest of the small-arm ammunition follows the brigade.

179. *Superintendence of Battalion Reserve Ammunition.* Before going into action the commanding officer of each battalion details the adjutant or other selected officer to take charge of the battalion reserve ammunition, the sergeant-major and pioneers being detailed to assist; the officer so detailed superintends the issue of ammunition from the battalion reserves to the company carriers, and arranges for its conveyance to the firing line.

180. *Ammunition Carriers.*—The captain of every company on service details one non-commissioned officer and two privates to act when required as ammunition carriers (if the company is strong, three privates would be detailed);

only men of proved courage, strength and activity are selected for this duty, the importance of which cannot be overrated.

181. *Battalion arrangements for issuing extra Ammunition.*—Whenever a general action is anticipated, the whole of the ammunition reserves will be brought up to the front as far as possible, fifty rounds per man will then be issued from the baggage waggons and small-arm ammunition carts.

182. *Battalion arrangements for filling the Men's Pouches.*—When a battalion is about to attack, the officer commanding will order the issue of extra ammunition, so that, if possible, every man shall carry 150 rounds on his person; this ammunition will be distributed by the carriers, assisted by pioneers and supernumeraries. After the issue the carriers will join the battalion ammunition reserve. If for any reason the battalion ammunition reserve is not close at hand, the companies of the first line will be furnished with two extra packets per man from the other companies. This will be replaced as soon as possible from the battalion reserve.

183. *Position in Action of Battalion Reserves.*—The position in action of the battalion reserves will be: one small-arm ammunition cart and one mule immediately in rear of each half-battalion, and the other two small-arm ammunition carts close at hand in rear of the centre of the battalion.

184. *How Communication is kept up.*—During the action communication will be kept up between the carts and the firing line, partly by means of the mules, and partly by means of the non-commissioned officer and the privates detailed by the captain of each company to act as carriers. These carriers bring the ammunition from the mules (or from the carts) in bags, and distribute it to the men in the ranks. The bags, which are specially made for the purpose, form part of the equipment of the ammunition cart.

185. *How Battalion Reserve Carts are filled up.*—Immediately after those extra issues have been made, the battalion reserve will be filled up by drawing from the nearest divisional ammunition column. The officer in charge will use his own discretion as to the time when he should

send forward the carriers of the companies engaged with two packets for every man of their companies. The loads are not to exceed 600 rounds to each carrier, and when advisable the carriers will be led up to the troops in action by a selected non-commissioned officer.

186. *If more Ammunition is required.*—When more ammunition is required by the firing line it will be taken forward under command of the officer in charge by the pioneers, band, or any men at hand from the main body, acting as carriers; these carriers moving direct to the companies for which they are destined.

187. *On arriving at the Firing Line.*—On arriving at the firing line, carriers distribute the ammunition to the supernumerary rank, and remain with their companies unless otherwise ordered.

188. *Duties of the Supernumerary Rank.*—It is the duty of the supernumerary rank in the firing line to make sure that not more than a few rounds are taken to the rear by an efficient soldier, who may be sent back; and that all ammunition from the killed and wounded is collected and distributed to the firing line it supports and reserves.

CHAPTER IV.

ADVANCED, REAR AND FLANK GUARDS, AND FLANKING PARTIES.

Composition and Formation of Advanced Guards.—D.

189. *Advanced Guards, imperative.*—Every body of troops moving in a hostile country, or where it is possible that an enemy may be encountered, must have an advanced guard.

190. *General duties of an Advanced Guard.*—The general duties of an advanced guard are:—

(1) To search for the enemy and guard against surprise.

(2) When the enemy is met, to push back his advanced troops, and prevent the march of the force from being interrupted.

(3) If the enemy is met in superior force, to check his advance so as to enable the necessary dispositions for opposing him to be made.

191. *Sub-division and Composition of the Advanced Guard.*—The advanced guard is subdivided into two parts, the *vanguard* and the *main guard.* The *vanguard* is always composed of Cavalry when available, with a body of Infantry as a support. The *main guard* comprises the remaining troops of the advanced guard. It is only when the advanced guard is very large that guns are attached to the vanguard; advanced guards pay no compliments.

192. *Duties, &c., of the Vanguard.*—The special duty of the vanguard is looking out for the enemy. This work usually devolves on the Cavalry. The Infantry forming part of the vanguard is meant to be an immediate support to the Cavalry in case of any sudden check or reverse.

193. *Cavalry Patrols with Vanguard.*—Cavalry push out a number of small patrols to ascertain that none of the enemy are within striking distance, and also along the front and flanks in the direction in which the enemy may be expected to be found; their duties then are to insure that the line of march is clear of the enemy and also to ascertain where the enemy is.

194. *Duty of Main Guard.*—As the special work of the vanguard is reconnoitring, so the special work of the main guard is fighting. The troops forming the main guard therefore march in that order in which they are required to come into action. But guns should never move at the extreme head; they should always be preceded by some Infantry.

195. *When Advanced Guard fight.*—As long as the enemy is not met in superior force it will be the duty of the advanced guard to attack and drive back any hostile troops it encounters.

196. *Advanced Guard meeting Enemy in Force.*—If the enemy is found occupying a position in superior force, the commander of the advanced guard acts in accordance with any instructions he may have received; should the enemy be met advancing in superior force, the most favourable ground at hand would be at once occupied with a view to checking that advance, but for how long it remains in that position depends on whether the commander of the force intends to move up in support or decides to fight on some position in rear; should the latter be the case the advanced guard would fall back, fighting and delaying the enemy's advance.

197. *Advanced Guard's movements regulated by the Force it covers.*—An advanced guard is closely bound to the body of troops it covers, its movements will be regulated by the way in which the force it is covering would be effected by its action; independent enterprises on its own part are outside its province.

198. *How Strength of Advanced Guards is regulated.*—The strength of an advanced guard will be proportionate to the strength of the force it covers and further influenced by the nearness or distance of the enemy, the larger the force,

the larger may be the advanced guard, its strength being mainly regulated by the work it has to perform, the strength usually being from a fourth to an eighth of the main body.

199. *If the Force is large.*—If the force is large, detached bodies of cavalry will usually cover the main body.

200. *If the Force is small.*—If the force is small, or Cavalry for scouting purposes are not available, the work will be done by the advanced guard; in all cases it is responsible for the security from surprise of the body of troops it covers.

201. *Organization and Composition of Advanced Guards.*—The organization of an advanced guard provides for the double duty of reconnoitring and fighting, it should therefore, when possible, be composed of all three arms.

202. *Proportion of Troops of each Arm.*—The proportion of each arm in an advanced guard depends on the nature of the work to be done, and the character of the country to be traversed. The number of Cavalry should be at least adequate for reconnoitring. In an open country, the number of Cavalry and guns is proportionately much greater than in a close or mountainous country. The bulk of an advanced guard is usually composed of Infantry.

203. *What Troops as a rule furnish the advanced Guard.*—As a rule the advanced guard is furnished by the battalion, brigade, or division that heads the line of march.

204. *What mounted Infantry will be used for in the Advanced Guard.*—When mounted Infantry is attached to an advanced guard, it will be most profitably used in moving rapidly to seize or hold special points, such as bridges, defiles, &c., where it may be necessary to forestall the enemy, or by the occupation of which the further movements of the advanced guard may be facilitated. Mounted Infantry may also be usefully employed in support of the reconnoitring Cavalry, by holding points on which the Cavalry may have to fall back, or otherwise helping to cover its retreat. But mounted Infantry should never be used for reconnoitring when Cavalry is available.

205. *Disposition of Advanced Guard on the March.*—The main guard of the advanced guard follows the vanguard at a distance depending on the strength of the whole, if the

advanced guard is small the main guard will be proportionately nearer the vanguard; the main guard's duty is, by timely support, to enable the vanguard to continue its work of exploration, the distance therefore between these two bodies is regulated by this requirement.

206. *Obstacles to Advance of the Column, and how they are to be moved.*—All minor obstacles to the advance of a column would be removed as far as possible by the advanced guard, but such work as repairing bridges, roads, &c., usually requires special parties detailed from the force in rear; a party of Engineers is usually attached to the advanced guard for the purpose of removing obstacles that require skilled labour.

207. *Distance of advanced Guard from Main Body.*—No fixed rule can be laid down to regulate this, its primary duty being to protect those in rear from surprise; the main guard would, therefore, be sufficiently far in advance to enable the troops they cover to form up to receive the enemy should he drive in the advanced guard; this distance varies with the length of the column, but should always be sufficient to give the column time to form for battle.

208. *Connection.*—This would be maintained by different parts of the advanced guard either by connecting links or signallers as is found most convenient. Cyclists, on good roads, are useful for this purpose, and for keeping up communication with the main body in rear.

209. *At points where it is possible the Column may take a wrong Route.*—At cross roads or points where it is possible that the column may take the wrong route, a couple of men should be dropped by the advanced guard to point out the correct route to follow.

210. *Advanced Guard during a Retreat.*—It is always advisable to have a small advanced guard to a retreating force. Its special duty is to clear away obstacles that would delay the march of the force. But it should observe all precautions against surprise, and should always be provided with some Cavalry for scouting. A strong party of engineers should be attached to it for the removal of obstacles, restoration of bridges, &c., for it is important that the force should not be compelled to halt or fight in a disadvantageous position.

211. *A Company forming the Advanced Guard.*—When a company forms the advanced guard it is divided into two parts. The leading part, termed the advance party, sends forward two or more files to the front, and, when the country is open, similar small parties to the flanks. The duties of these parties are to look out for, and give notice of, the presence of an enemy.

212. *What follows the Files.*—The advance party follows the files on the road at a distance of not less, as a rule, than two hundred yards. The remainder of the company in support follow at a distance of from two hundred to three hundred yards. The support will have a connecting file with the advanced party, as well as with the main body in rear.

213. *Buildings to be examined.*—All buildings in the immediate neighbourhood of the line of march should be examined by the leading files to ensure that no enemy is concealed in them. Large dwellings, or important buildings at a distance from the road, should be examined by a special party detached for this purpose.

214. *Villages not to be entered by Advanced Guard.*—Villages should not be entered by the advanced guard until it has been ascertained that they are not occupied by the enemy. The leading files at the head of the advanced guard should cautiously approach and move through the village while the flanking parties move round the outskirts; while this is being done, the remainder of the advanced guard halt at some distance from the village.

215. *How Defiles must be examined.*—A defile enclosed by heights will not be entered until those heights have been examined by flanking parties; this done, the leading files of the advanced guard will go through the whole of the defile, if a short one, before the support enters; if the defile is long the remainder of the advanced guard follows at such distance and in such formation as may be advisable.

216. *Ground capable of concealing an Enemy to be examined.*—All ground, such as a wood, &c., within reach of the line of march capable of concealing an enemy, will be examined before the advanced guard passes it.

217. *In case of Attack.*—In case of attack the leading files at first hold their ground; as a rule an enemy on a road has to advance on a very narrow front; the advanced party then either goes forward to support those leading files, or takes up a position on either one or both sides of the road to cover the retirement of the leading file if required to fall back.

Composition and Formation of Rear Guards.—D. and F.

218. *Two kinds of Rear Guards.*—Rear guards are of two kinds, *i.e.*, one to a force advancing, and one to a force retiring.

219. *Rear Guard to a Force advancing.*—A rear guard to a force advancing is chiefly employed in collecting stragglers, guarding baggage, keeping off marauders, and generally covering the rear of the column. It is usually composed of Infantry, with sometimes a few Cavalry added for watching the flanks.

220. *Duties of a Rear Guard in Retreat.*—A rear guard to troops retreating is essentially a fighting force. Its duty is to enable the main body to conduct its retreat in good order, and without being molested by the enemy. It should be lightly equipped and unaccompanied by baggage, its mission being to retard the pursuit of the enemy and to interpose between him and the main body on the march; the very best and freshest troops should be selected for the duty.

221. *First thing required by a Defeated Force.*—The first thing a defeated force requires is to be relieved from the pressure of a too close pursuit. This is done by detaching a portion of the force to make head against the enemy's advance while the remainder continues the retreat. The remainder of the force is thus enabled to gradually recover order, and continue its movement in comparative safety, and if compelled later to fight, the delay obtained may have allowed time for reorganization.

222. *When Pursuit is not close.*—When the pursuit is not close, the disposition of a rear guard on the line of march will closely resemble that of an advanced guard reversed;

Cavalry would form the extreme rear watching the country by which the enemy could advance; the remainder of the rear guard moves in the order in which it can most readily come into action; as a rule, there would always be some Infantry between Artillery and the enemy when on the march.

223. *The manner in which a Rear Guard acts to give time to the remainder of the Force.*—The manner in which a rear guard carries out its mission of gaining time for the remainder of the force to retreat in good order, is by compelling the enemy's troops to halt and deploy for attack as frequently as possible. This is usually effected by taking up a succession of defensive positions which the enemy is compelled to make dispositions for attacking or turning. When these dispositions are complete, the rear guard moves off and repeats this action on the next favourable ground. All this consumes time, and time is what is most needed by a retreating force.

224. *Two important Points to be observed.*—In occupying positions of this kind, two important points have to be observed; one to show as strong a front as possible to the enemy, the other to make sure of good lines of retreat.

225. *Object of Rear Guard.*—The object of a rear guard is to compel the enemy to deploy a considerable portion of his force before venturing to attack, and then to move off before the attack is pressed home. It can therefore place the greater part of its force in the fighting line from the outset, retaining a proportionately small part in reserve.

226. *Counter Attacks.*—These would seldom be resorted to except for some urgent purpose; it cannot be hoped to inflict an appreciable defeat on the enemy who is being constantly reinforced by troops in rear, and it is of more importance to save one's own men for the arduous duty assigned than to inflict a loss on the enemy that he can quickly make good.

227. *When to Retire.*—An important point for the commander of the rear guard is to judge the proper time to retire; if he retires too soon, the work required by the rear guard would be only partly carried out, if holding on too long, the retreat of the rear-guard may be endangered, and

it might be driven back in disorder; in leaving a position, part only of the force generally moves at a time, that part first moving off occupying the next favourable ground to cover the retreat of the remainder.

228. *Patrols on the Flanks.*—A rear guard would keep patrols as widely as possible to its flanks (*see* Para. 231), thus early information will be obtained of any attempt of the enemy to pass between the rear guard and the main body; as a rule the rear guard would move concentrated, ready to fight with its full strength, keeping scouting parties well out to its flanks and rear to obtain information.

229. *Too Great Distance between Rear Guard and Main Body to be avoided.*—Too great a distance should not intervene between the rear guard and the force it covers, for every moment a rear guard halts to fight it is further separated from the main body, whereas with a pursuing force each moment brings its reinforcements closer.

230. *Delaying the Enemy's advance.*—In delaying the enemy's advance every expedient which may hinder and annoy him will be adopted, roads will be broken up, bridges blown up or destroyed, &c.; no war material that could be useful to the enemy should be allowed to fall into his hands during a retreat; if hardly pressed, standing corn and provisions would be burnt, villages, even on the line of route must be burnt to retard pursuit.

Flank Guards.—F.

231. *What Flank Guards do.*—When small parties are on the march, detached parties furnished by the advanced and rear guards patrol on the flanks, this completes the circle of defence within which the main body advances in safety.

232. *Organization of Flank Guards.*—Flank guards are organized on much the same principle as advanced guards, their strength and disposition depend on the character of the work laid out for them, and on the nature of the country in which they have to act.

Flanking Parties.—D.

233. *How Flanks are watched, &c.*—The flanks of the line of march will be watched to a wide extent by mounted patrols. The safety of the line of march depends on this patrolling. When properly performed, ample warning is afforded of the presence of an enemy.

234. *In a mountainous Country.*—In a mountainous, close, or intricate country, special precautions must be taken to cover the flanks of the line of march.

CHAPTER V.

FIELD FORTIFICATION.

Working Parties.—I.

235. *Detail of Working Parties.*—Too much pains cannot be taken in the preliminary detailing of working parties, so that they may arrive at the site of their work ready provided with tools, their tasks clearly defined, and the men in such formation as will admit of their ready distribution on the work; delay and noise is thus avoided, and the chance of confusion during night work reduced to a minimum.

236. *Receiving Tools.*—A party of the necessary strength for the work in hand, including a reserve of $\frac{1}{10}$, having been demanded, would be detailed from a company, battalion, &c., and not formed of detachments from different companies and corps.

237. *Taking up the Tools.*—The party would be then marched to the park and get their tools, which should be ready laid out, according to the details of the several parties, either in rows (Fig. 1, Plate V.) or in heaps (Fig. 2, Plate V.), the men in the former case filing on the rows and taking up a pick in the left hand and a shovel in the right, or filing between the heaps, and receiving the tools in the same order in passing.

Fig. 1. PLATE V.

TOOLS LAID OUT IN PAIRS FOR SHELTER TRENCH DRILL.

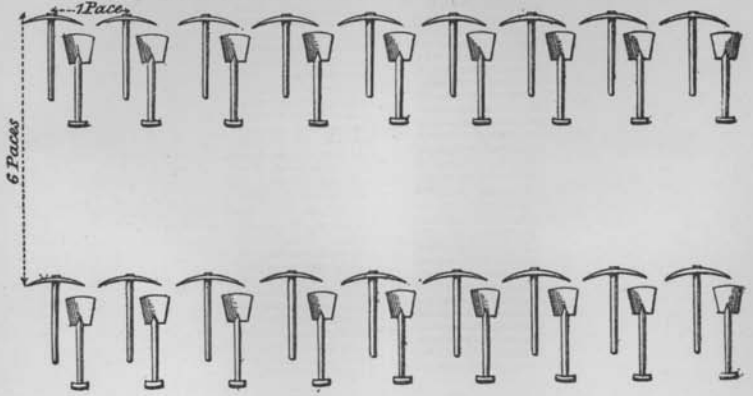
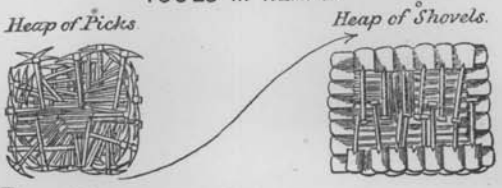


Fig. 2.

TOOLS IN HEAPS.



ARRANGEMENT OF TASKS.

Fig. 3.

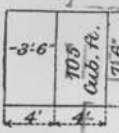


Fig. 4.

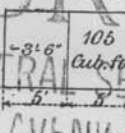


Fig. 5.

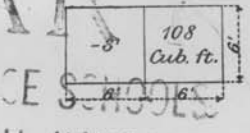
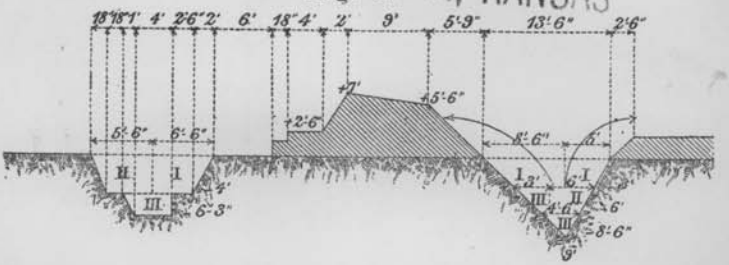


Fig. 6.



238. *Carrying Tools.*—Picks and shovels are carried at the trail, the former in the left, the latter in the right hand, iron to the front and vertical.

239. *Distribution of Working Party.*—No work must be commenced till the distribution of the whole party is complete, as it is difficult to remedy mistakes, when the work has once begun.

240. *Tasks and Relief.*—The extent of trench which can be excavated in a given time varies with the nature of the soil and the facilities for turning natural cover to account; but in determining the number of men to be employed, it is calculated that, in ordinary cases, an unskilled labourer can excavate one cubic yard (27 cubic feet) per hour, working for at least four consecutive hours; also, that the distance between the diggers would not be less than two paces (5 feet); the hours of relief are influenced by the nature of the work, hours of light and darkness, &c.; as regards work, six hours reliefs are the best.

241. *Use of Tools.*—Men can work as close together as four feet, but five feet is a safer front for a task; the pick must be used, working *front* and *rear*, and never *across* the task; the shovel is used right or left-handed, according as the right or left hand is on the tee-head; in shovelling in loosened earth, it can be pushed into the soil with the flat part of the thigh, just above the knee, acting on the back of the hand holding the tee-head; in throwing earth from the shovel, the left (or right) hand must be allowed to slide freely up the handle, otherwise the earth will scatter; if not under fire, the earth first excavated should be furthest thrown.

242. *Arrangement of Tasks.*—Figs. 3, 4, 5, Plate V., show sizes of tasks, which nearly correspond to the four yards rule, the depth being 3 feet 6 inches in the case of Figs. 3 and 4, and 3 feet in Fig. 5; Fig. 6 is an example of the arrangement of tasks for three successive reliefs in constructing the face of a field redoubt with a pointed ditch glacis, and rear trench; it will be noted that in the first relief in the ditch there are two rows of diggers, one throwing on to the parapet, and the other on to the glacis; also that the size of tasks diminishes in the second and third reliefs, as the labour of throwing the earth increases.

243. *Responsibility of Officers.*—Superintending officers lay out the work, adjust the tasks, conduct the distribution, and generally supervise the execution; it is the duty of company officers to see that the wishes of superintending officers are complied with.

Hasty Intrenchments.—H. and I.

244. *Hasty Intrenchments.*—The hasty intrenchments by which the natural defensive features of a position will have to be supplemented are, as a rule, three-fold:—

(*a*) Cover for skirmishers, *shelter pits* and *rifle-pits.*

(*b*) Cover for shooting line, support and reserves, *shelter-trenches*, *breastworks*, and *épaulements.*

(*c*) Cover for Artillery, *gun-pits*, &c.

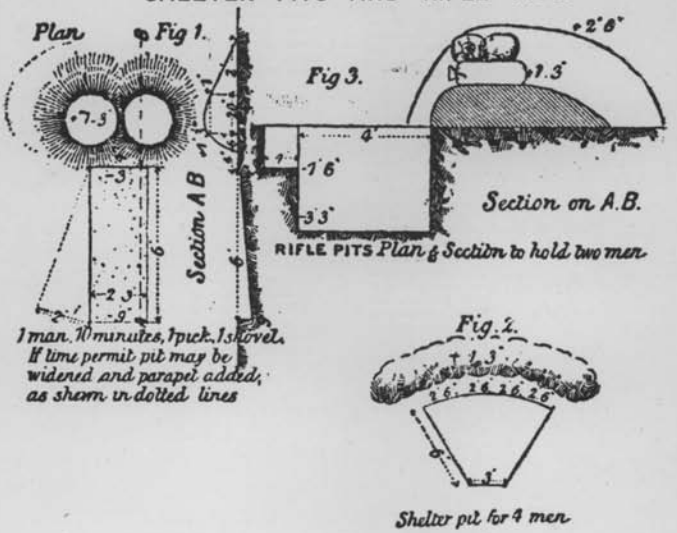
245. *Shelter Pits.*—Figs. 1 and 2, Plate VI., give the plan and section of a shelter pit for one man, which can be made in about ten minutes; in this pit a man fires lying on his stomach, in which position his legs are usually inclined to the left; if, to admit of this, the pit be first made at an angle to the line of fire, the legs are exposed, but when made direct, as in plan, the legs are protected, and if time be afterwards available, it can be improved as shown by dotted lines to suit the inclined position; a short length of trench of similar section is suitable for groups of two or more men, allowing 2 feet 6 inches per man.

246. *Rifle-pits.*—A rifle-pit is a circular hole 4 feet deep and $4\frac{1}{2}$ feet in diameter at the top, and $2\frac{1}{2}$ feet at the bottom, the earth excavated is heaped up to a height of 18 inches at the sides, but of only 6 inches in front, the additional cover for the man firing being provided by four sandbags, arranged to form a loophole, with a step 18 inches deep and 18 inches in tread, on one side of the pit, which facilitates exit and entrance, and serves as a seat as well. Time: one man, one hour (Fig. 3, Plate VI).

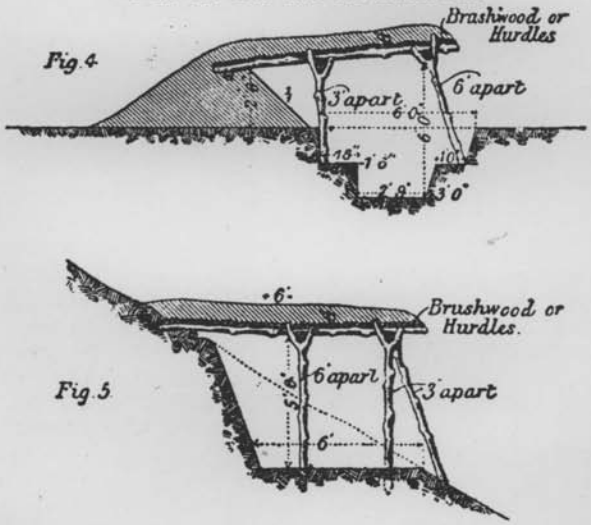
247. *Cover for the Shooting Line.*—For the shooting line cover must almost always be provided, and it should fulfil the following conditions:—

1. It must be something that can be thrown up quickly.

SHELTER PITS AND RIFLE PITS.



COVER FOR SUPPORTS AND RESERVES.



SHELTER TRENCHES

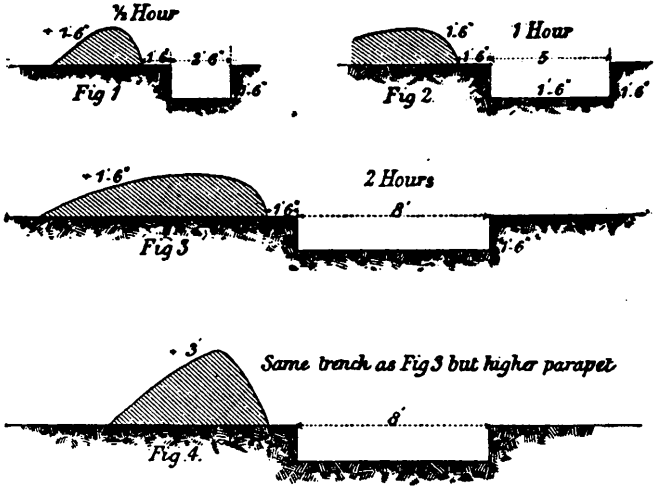


Fig 1. Fig 2. Fig 3. Fig 4.

ONE HOUR TRENCH IMPROVED

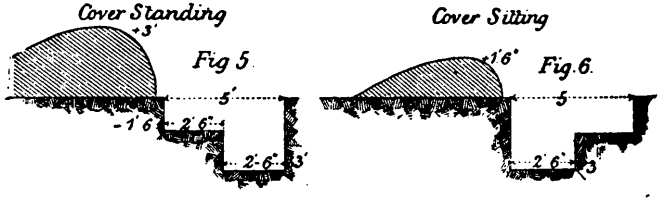


Fig 5. Fig.6.

4 HOUR BREASTWORK.

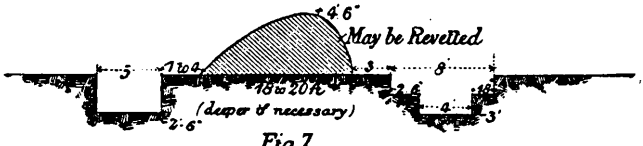


Fig.7.

2. It must give good protection against shrapnel and musketry fire.
3. It must admit of the effective use of their rifles by the men.
4. It must present no obstacle to the advance of any troops over it.

248. *Cover for Supports and Reserves.*—The supports and reserves to the shooting line will nearly always find cover behind undulations of ground, reverse slopes of hills, cuttings, &c., &c. But artificial cover may sometimes be required for them, especially for the supports, and then some form of shelter-trench (usually the 1 hour trench) will generally give the best protection that can be prepared in a short time. If more time admits, these trenches may be deepened with advantage, and in exposed situations, covered over and converted with field casemates.

Construction of Shelter-Trenches and Rifle-pits.—H. and I.

249. *The common Shelter-trench.*—The various conditions stated in the last paragraph are all met by the common shelter-trench, the various types and developments of which are all given in Plate VII.

250. *Advantages of Shelter-trenches.*—These are as follows:—

(*a*) They are the simplest and quickest way of getting cover.
(*b*) They afford hardly any mark to the enemy.
(*c*) They are no impediment to an advance in line.
(*d*) The fire from them is grazing and effective.

251. *Disadvantages to Shelter-trenches.*—The disadvantages are:—

(*a*) Only men actually in the trench are under cover.
(*b*) They offer no obstacle to an assault.
(*c*) The view from them is very limited.
(*d*) In wet weather the ditch becomes a quagmire.

252. *Shelter-trenches.*—In executing all the trenches shown on Plate VII., the working parties are supposed to be extended to two paces (5 feet) interval.

253. *Half-hour Trench.*—Fig. 1, Plate VII., known in the service as the half-hour trench, gives cover to a single rank of men kneeling; a rear rank must find cover by lying down on the reverse of the trench.

254. *One hour Trench.*—Fig. 2, Plate VII., shows the enlargement of the trench to afford cover for two ranks kneeling, necessitating another half-hour's work.

255. *Two hour Trench.*—Figs. 3 and 4 show a further widening of the trench, the result of an additional hour's work, which gives cover to men lying down in single rank.

256. *Modifications of one hour Trench.*—Figs. 5 and 6 show how standing and sitting cover can be obtained by deepening, instead of widening the one hour trench; Fig. 6 presents but a small mark to hit; Fig. 5 gives good communication in rear of the firing line.

257. *Positions for Shelter-Trenches, &c.*—The positions of shelter-trenches will usually be at the top of the steepest slopes; boughs of trees, leaves, grass, &c., should be scattered over the earth, thrown out so as to make it resemble the surrounding surface.

258. *Four-hour Breastwork.*—When more permanent and solid cover is required than that afforded by a simple trench, two rows of diggers can be used, and a front ditch excavated as well as a rear trench; Fig. 7 gives a specimen of a breastwork of this nature which would take four hours to execute.

259. *Cover for the Head.*—Head-cover should always be provided for men firing from a trench; bullet proof logs may be laid on the crest supported by bricks, &c., so as to leave a space below through which to fire, or sand bag loopholes may be constructed.

260. *Rifle-pits.*—Rifle-pits have been fully described in Para. 246.

Construction of Obstacles.—I.

261. *Requirements of Obstacles.*—Obstacles should fulfil the following conditions:—

(*a*) They must be placed under the effective fire of the defender (usually between 100 and 300 yards), they should afford no cover to the enemy, and, if possible, be sheltered from his Artillery fire.

PLATE VIII.

OBSTACLES.

Fig. 3.
ABATIS

Abatis in Vshaped Ditch.

Fig. 4.

Fig. 5.

Fig. 6.

Tools for making Abatis

Axes, felling, Axes hand, Saws, hand, Bill hooks, Mallets, Drag Ropes.

MILITARY PITS.

Shallow Pits

Plan. Fig. 1 + 18'

Section Fig. 2.

1 Man can make 10 Shallow Pits in 8 Hours.

(*b*) They should be difficult to remove or surmount, and will be most effective, if special appliances, not usually carried by troops, are required for their removal.

(*c*) They should, if possible, be so placed as to come as a surprise to the assailants.

(*d*) This must not interfere with counter-attack.

262. *Military Pits.*—Military pits are useful in open ground where no more formidable obstacle can be provided; they are of two kinds, viz.: shallow and deep.

263. *Shallow Pits.*—Shallow pits (Figs. 1 and 2, Plate VIII.) are generally covered by a glacis formed from the excavated earth; in making them, the row C D furthest from the glacis should first be excavated, and they must be placed chequerwise towards the enemy; a pointed picket is driven into each pit; shallow pits are not in themselves much of an obstacle, and they should, if possible, be supplemented by a wire entanglement. (Fig. 2, Plate VIII.)

(*Time.*—Ten men should excavate 100 pits in eight hours.)

264. *Deep Pits.*—"Deep pits" are 6 feet deep, 6 feet in diameter at the top and 1 foot at the bottom, into which a sharp stake is driven, its top flush with the ground; these are impassable by Cavalry, and a good protection against a night attack; they, however, involve considerable labour, and are apt to give shelter to the enemy; their value is much increased if they can be inundated.

(*Time.*—One man can make a pit in five hours.)

265. *Abatis.*—"Abatis," formed of limbs of trees firmly secured and interlaced, with the branches turned towards the enemy and pointed, form the best of obstacles.

Plate VIII., Fig. 3, shows an "abatis" placed in advance of a work and covered by a glacis.

Plate VIII., Fig. 4, shows an "abatis" at the bottom of a ditch, the branches placed vertically.

Plate VIII., Fig. 5. Trees half sawn through; this is the best form, when the trees are found in the necessary position, and would be used at the edges of woods, orchards, for blocking roads, &c.

Plate VIII., Fig. 6, shows the method of forming an "abatis" from small branches; several rows are used, the

excavated earth being replaced after the branches are secured.

Wire is always a useful adjunct to abatis; the tools used are axes, saws, billhooks, ropes, and mallets.

266. *Entanglements.*—"Entanglements" are formed by cutting trees, brushwood, &c., half way through, at a height of about three feet, and interlacing or securing the branches by pickets to the ground; they make a formidable obstacle; good entanglements can be formed in hop gardens and vineyards.

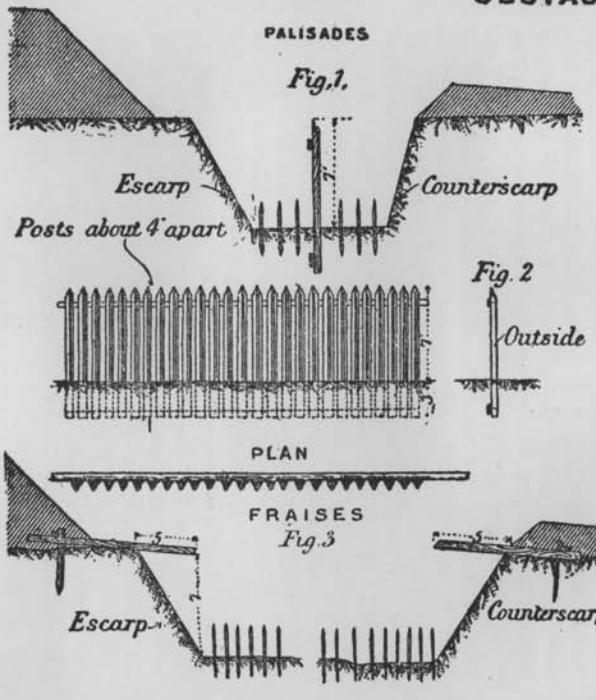
267. *Low Wire Entanglements.*—A low wire "entanglement" is formed by stout stakes driven into the ground about 6 feet apart, in rows arranged chequerwise, their heads being connected by strong wires twisted round them, and crossing diagonally about 1 foot or 18 inches above the ground (Fig. 4, Plate IX.) No. 14 B. W. guage wire, weighing 90 lbs. to the mile, is a convenient size of wire; roughly, one foot of wire is required for each extra square root of ground covered with the entanglement.

268. *High Wire Entanglement.*—"A high wire entanglement" is shown in Fig. 5, Plate IX.; the stakes in this case are 4 feet above the ground, the head of one being connected with the foot of another diagonally opposite by stout wire, these again connected by horizontal wires, thus forming a net very difficult to cross; roughly, one yard of wire is required for each square foot of this form of entanglement.

269. *Barbed Wire.*—The employment of "barbed wire," (Fig. 6, Plate IX.), increases the efficiency of this entanglement; Fig. 7, Plate IX. shows a method of using it.

270. *Palisades.*—Ditches are sometimes defended by "palisades," and they are also used for closing the rear or gorges of partially enclosed works; they are made of timbers about 10 feet long, arranged so as to form a stout open paling, and pointed or spiked at the top (*see* Figs. 1 and 2, Plate IX.), the timbers may be round, split or sawn to a rectangular or triangular section; they should be 6 to 8 inches wide, and are placed upright about 4 inches apart, and spiked to two ribands about 1 foot from either end, the butt ends being sunk 3 or 4 feet deep into the ground; the top riband should be on the defenders' side of the

OBSTACLES.



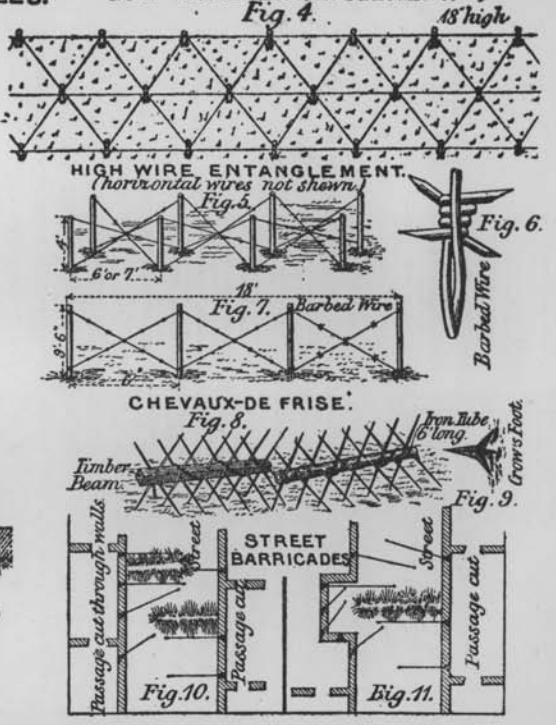


PLATE IX.

palisade; they are most conveniently made and placed in lengths of 10 or 12 feet, the ribands being arranged so as to overlap.

271. *Fraises.*—"Fraises" are palisades placed horizontally, or nearly so (Fig. 3, Plate IX.), they should point downwards if placed on the defenders' side of the ditch, and upwards on the enemy's side; both ribands are buried, the one nearest the points being placed underneath, the other on the top; the points should, if possible, be 7 feet above the bottom of the ditch.

272. *Pickets.*—"Pickets" or stakes pointed and placed vertically in the bottom of a ditch (see Figs. 1 and 3, Plate IX.) are useful adjuncts to its defence; being well covered they will generally remain intact to the last, and are a great hindrance to a storming party.

273. *Chevaux-de-frise.*—A pattern of "chevaux-de-frise" forms an article of store; the barrel consists of a hollow iron tube 6 feet long, with holes through it at intervals for the spears, which are 12 in number and 6 feet long, and pack inside the barrel; a double line of chevaux-de-frise is a formidable obstacle; in placing them, the lengths must be connected together with a chain or wire and the slotted holes in the barrels placed downwards, otherwise the spears can be readily withdrawn; they will generally be found in stores in fortresses, but would seldom be carried in the field; they can be improvised with beams of wood, hop-poles, gas-pipes, iron railings, &c. (*see* Fig. 8, Plate IX).

274. *Crows' feet.*—"Crows' feet" (Fig. 9, Plate IX.), are formed of four iron spikes 3 inches long, welded together or joined by a central moulding in such a manner that however placed, one spike is always pointing upwards.

275. *Barricades.*—"Barricades" (Figs. 10 and 11, Plate IX.), used to close streets, roads, and bridges, can be made of any materials at hand; they should not, as a rule, completely close the road to traffic, but be made in two overlapping portions, *see* Fig. 11, or be placed where a house standing back from the general line of building allows a passage round the barricade; the defenders should be able to fire over them, and if placed in a street, they should be flanked both in front and rear by the fire from adjacent houses.

CHAPTER VI.

DEFENCE OF POSTS.

Defence of Banks, Ditches, Hedges and Walls.—I.

276. *Defence of Embankments and Cuttings.*—Embankments, according to whether they may be narrow or broad, can be treated as shown in Figs. 1 and 2, Plate X.

277. *Either side of a Cutting can be Defended.*—Either side of a cutting can be defended according to circumstances (Fig. 3, Plate X.); the rear side gives the best obstacle, the front side best for a subsequent advance.

278. *Defence of a Road.*—Fig. 4, Plate X., shows a method of defending a road, the fence or hedge on one side being converted into an obstacle, and on the other used as cover.

279. *Defence of Hedges.*—Hedges act as screens, but are of no use to resist projectiles unless banked up with earth.

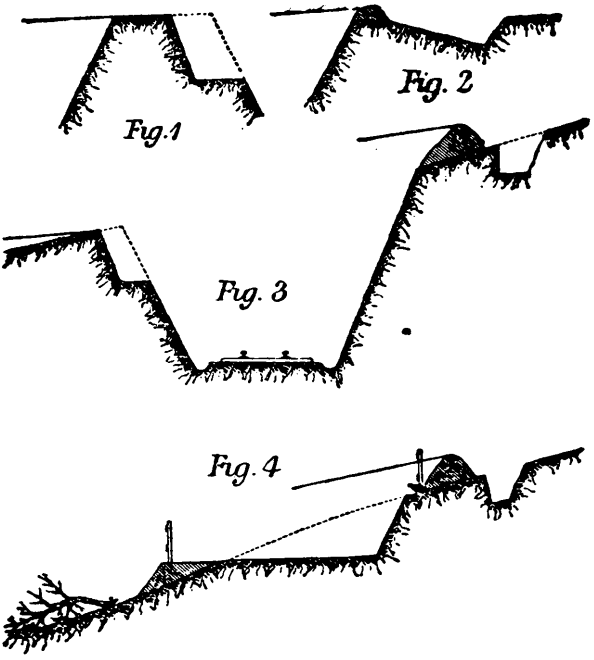
280. *Hedge with Ditch on Defender's side.*—Fig. 1, Plate XI., shows an example of a hedge with a ditch on the defender's side; this can be used as it stands, the ditch being widened and improved if necessary.

281. *Hedge with Ditch on Enemy's side.*—Deepen the ditch, and if possible throw earth to defender's side to give cover; if not possible, scatter it about and dig a trench in rear (Fig. 2, Plate XI.)

282. *Hedges with Ditches on both sides.*—Deepen the ditches on the enemy's side, and use the earth to obtain cover (Fig 3, Plate XI.)

283.—*Hedge on Sloping Ground.*—Gain cover by a small trench in rear, and scarp away the ground in front (Fig. 4)

CUTTINGS AND EMBANKMENTS.



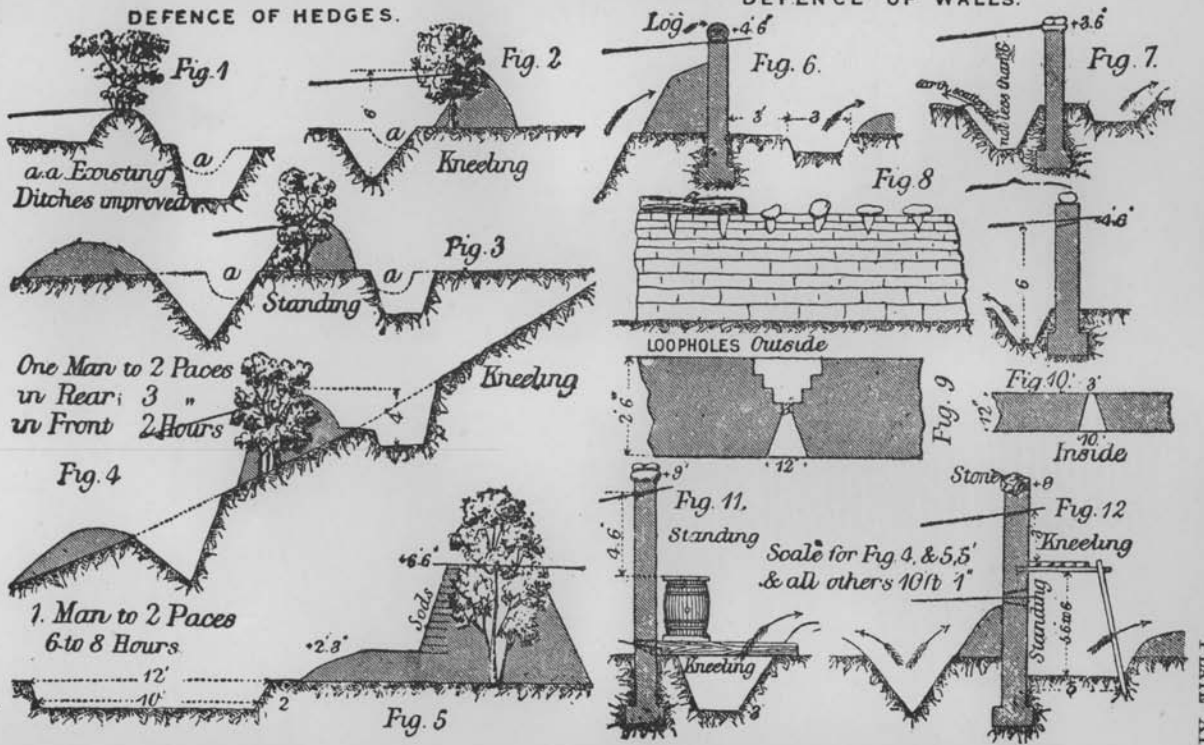

DEFENCE OF HEDGES.
Fig. 1
a a Existing Ditches improved
a
Fig. 2
Kneeling
Fig. 3
Standing
One Man to 2 Paces in Rear 3 " in Front 2 Hours
Kneeling
Fig. 4
1 Man to 2 Paces 6 to 8 Hours
Sods
12'
10'
Fig. 5
DEFENCE OF WALLS.
Log
Fig. 6.
Fig. 7.
Fig 8
LOOPHOLES Outside
Fig. 9
Fig 10.
Inside
Fig. 11.
Standing
Kneeling
Scale for Fig 4, & 5, 5' & all others 10 ft 1"
Stone
Fig. 12
Kneeling
Standing

PLATE XI.

Plate XI.); weak places in hedges should be made up with boughs, stakes, wire, &c., as a strong hedge, in addition to being a screen, forms a very efficient obstacle; or when high and strong hedges occur, and time is available, they may be treated as in Fig. 5, Plate XI., especially if the additional command enables the ground to be better seen into.

284. *Defence of Walls.*—Much the same principles apply to walls as to hedges; the great thing to do is to render them useless to the enemy should he manage to close with them; this can be done either by placing obstacles in front, or by sinking a ditch outside, which shall keep the enemy six feet below the top of the wall, or the bottom of the loop-holes, so that he will be unable to fire over the one or through the other; although the enemy will be thus temporarily debarred from delivering his fire from the wall, it will still give him cover; walls should therefore be flanked when possible.

285. *Wall between 4 and 5 feet high.*—A wall between 4 and 5 feet high can be used as it stands; head cover should be provided, and if there is time, a ditch about two feet deep may be dug outside, strewing the earth in front; a trench in rear may be provided to give complete cover (*see* Fig. 6, Plate XI.)

286. *Wall less than 4 feet high.*—Should a wall be less than 4 feet high, a small trench can be sunk on the inside to gain additional cover. (*see* Fig. 7, Plate XI.)

287. *Wall between 5 feet and 6 feet high.*—Between 5 feet and 6 feet in height a wall can be notched; it is well to stuff sandbags, sods, &c., into the tops of the notches. (*See* Fig. 8, Plate XI.)

288. *Wall above 6 feet high.*—Above 6 feet in height, either a banquette must be raised inside to enable men to fire either over the wall or through the notches, or the wall must be loopholed.

289. *Loopholes in Walls.*—Loopholes should not be closer together than 2 feet 6 inches from centre to centre, 3 inches wide in front, and splayed to about 10 inches in the inside in a 14 inch wall (*see* Figs. 9 and 10, Plate XI); if, however, the wall is thick, the small part may be in the middle of the wall, and the loophole splayed to the front

and rear (Fig. 9, Plate XI.); in this case the front splay should be notched in order that bullets striking it may flatten and not glance; this is not difficult to do in brickwork; loop-holing would be done in the fields with crowbars, chisels, and hammers, or with pickaxes; loopholes can also be made in brick walls with the Infantry bayonet without injuring it; they should be commenced from the *inside*, otherwise there will be a tendency to splay them the wrong way; a notch can be made in about 5 minutes, a loophole in 15 to 20 minutes.

290. *Double tier of fire in the Defence of Walls.*—Figs. 11 and 12, Plate XI.; suggest methods of preparing walls for a double tier of fire, suitable for flanking purposes.

The Defence of Woods.—H. and I.

291. *Main object in the Defence of a Wood.*—The main object in the defence of a wood, must be to hold the edge of the wood strongly, and prevent the assailants from getting a footing in it.

292. *Defence of Woods.*—The natural defence of a wood is an abatis or entanglement along the edge; if time does not admit of the whole front being so defended, the salients should be first prepared, and the flank of the abatis turned back for a short distance into the wood; roads entering the wood should be barricaded by a detached abatis and the communication preserved.

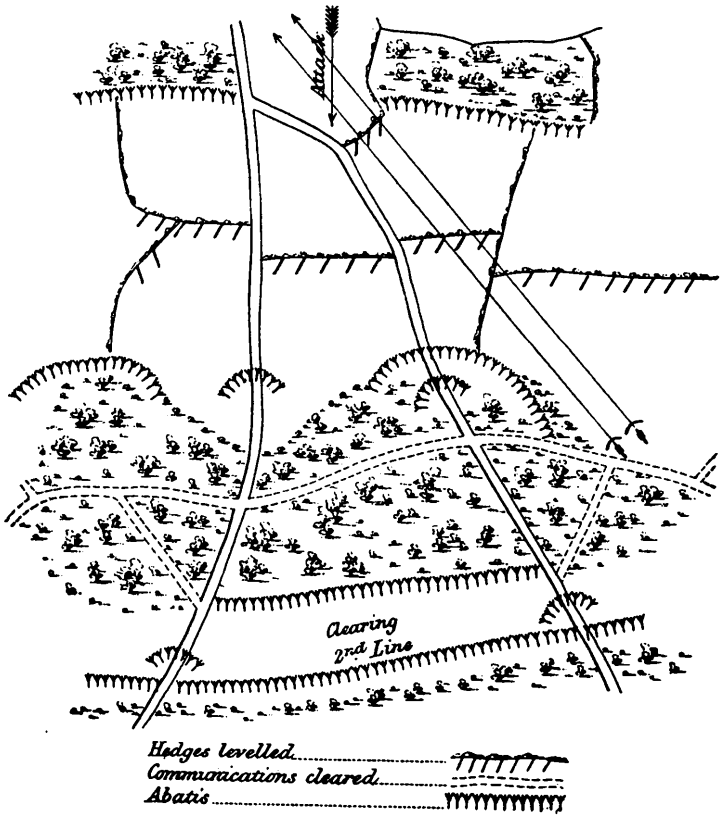
293. *Large Woods.*—In a large wood the communication, both lateral and front and rear, should be carefully prepared and duly defined, otherwise troops are apt to lose their way, and portions thus left undefended.

294. *Second and Third Line of Defence in a Wood.*—Second and third lines of defence can be prepared as occasion offers; clearings are good places for the purpose.

Plate XII. illustrates the arrangements described above.

295. *Trench digging in Woods.*—Trench digging is difficult in a wood on account of the roots, cover would generally be obtained behind natural features; the trees, unless large and closely planted, do not afford absolute protection against Artillery fire.

DEFENCE OF A WOOD.



296. *Woods within range of the Line of Defence.*—Woods too far to the front to be occupied should have an abatis constructed on the near side to hinder the enemy's egress from them.

The Defence of Houses.—I.

297. *Defence of Houses.*—Buildings, unless of a very solid nature, cannot well be occupied under Artillery fire, but they can be effectively held against subsequent Infantry attack, and should be carefully prepared as a Second Line of defence or keep, a First Line being taken up on the flanks or at a minimum distance of forty yards to the front, this distance being the least that will give defenders immunity from the splinters caused by shells striking the building.

298. *Estimating garrison of a House.*—The garrison of a house may be estimated at two men to each window, door, or loophole, with a reserve of one-fourth, tactical unity being in this and all similar cases adhered to as much as possible.

299. *Steps to be taken in hastily preparing a House for Defence.*—The following are the steps which must be taken in hastily preparing a house for defence :—

(*a*) Clear away cover in the vicinity as far as time and means will allow.

(*b*) Remove inhabitants and also easily combustible materials; provide water.

(*c*) Barricade doors and accessible windows,—barricades to be bullet proof if possible; mask inaccessible windows and remove all glass; to barricade doors, boxes, chests or cupboards filled with earth or bricks, may be placed against them; a wall of bricks, &c., may be built up against the wall inside, and supported by another door taken from an inner room.

(*d*) Make loopholes in doors, shutters, and walls, and in the eaves of a sloping roof, by removing tiles or slates; loopholes in a house will ordinarily be about 4 feet apart, and always 6 feet clear of the ground on the outside.

(*e*) Open up communication throughout, and prepare a means of retreat.

N.B.—If the house is large and strong, and is to be held to the last, arrange for storage of provisions and ammunition, set apart a place for a hospital, and prepare latrines; arrange for a step by step defence, by loopholing partition walls and upper floors, and providing barricades to cover the retreat from one part of the building to the other; if the house is liable to be attacked by Artillery, it may be of some use to shore up the floors and to spread three inches of earth on the boards.

Figures 1 and 2, Plate XIII. illustrate most of the arrangements above described.

The Defence of Posts generally.—C.

300. *Defence of Posts, their object, &c.* — The object generally for defending a village, house, &c., is first to render it, in a rough way, as much like a regular fortification as possible; the post would be examined before being occupied, this done the men would be distributed along it as they are intended to stand, each company or section being given a space to prepare for defence; cover for the men which will enable them to fire with effect, the strengthening of portions of the work so as to prevent the enemy entering it, and the approach to the post made as difficult as possible; are all points to be considered.

301. *The Reserve.*—While the party placing a post in a state of defence is thus engaged, the reserve will be employed in opening out communication, and strengthening any central building where the wounded could be taken during the action; the reserve would be as much as possible screened from fire, so that it may be ready to charge the enemy in any direction where he may have forced an entrance.

DEFENCE OF A HOUSE.

Fig. 1.
PLAN OF GROUND FLOOR

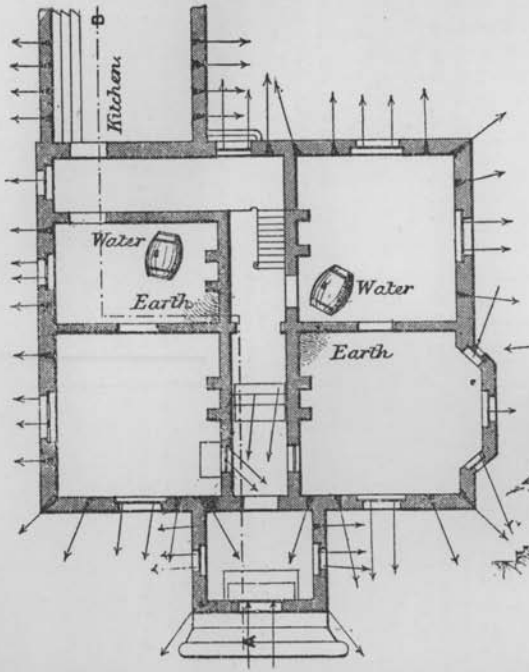


Fig. 2.
SECTION A.B. *(Fig 1)*

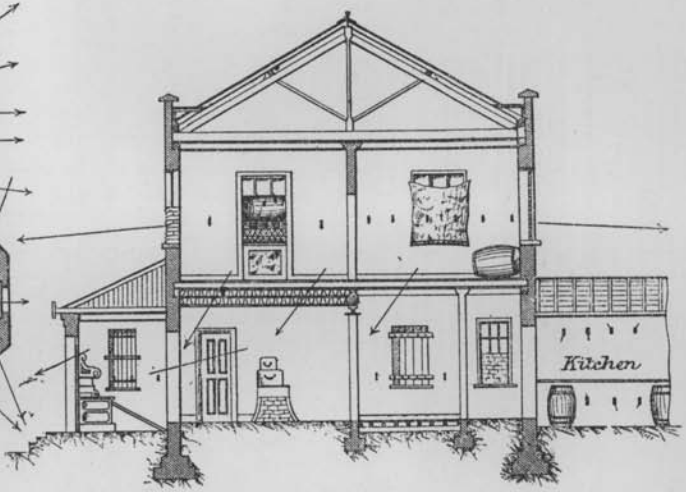


PLATE XIII.

CHAPTER VII.

RECONNOITRING, AMBUSCADES, &c.

Reconnoitring, Information desired, &c.—A. and E.

302. *Ample and accurate Information.*—Ample and accurate information about the enemy is the basis on which every commander should frame his plan of action; for effective action it is essential to know how the enemy is prepared to meet that action; good information, therefore, about the enemy's force, positions and movements is the first step towards victory.

303. *Enemy to be prevented getting Information.*—In addition to the importance of obtaining information about the enemy, it is of scarcely less moment that he should be prevented from obtaining similar information on his side; the force to be employed to obtain information should also form a screen through which the enemy would be unable to penetrate.

304. *Reconnoitring divided into two heads.*—Reconnoitring may be divided under two heads:—

(*a*) Reconnoitring in small parties.

(*b*) Reconnoitring in force.

With the latter we are not here concerned.

305. *Small Reconnoitring Parties.*—Small reconnoitring parties will be used for the following objects:—

(*a*) To search for the enemy, discover his movements, estimate his numbers.

(*b*) To approach close to a position an enemy is known to occupy, and examine it in detail.

(*c*) To explore a limited area of country, and ascertain if the enemy is occupying it.

306. *Composition of Reconnoitring Party.*—Reconnoitring parties will usually be composed entirely of Cavalry, adding Infantry would impede their movements; a party of Infantry may be pushed forward to hold special points, such as a bridge or other defile through which the Cavalry may have ultimately to retire; if the country be so intricate as to be unsuitable for Cavalry, the reconnoitring is done by the Infantry.

307. *Business of Reconnoitring Party.*—A reconnoitring party should see as much as it can without being seen, and avoid capture, which would render its mission useless; the smaller the party, therefore, the more chance of effecting its object; for Infantry from 50 to 100 is the usual strength.

308. *How Reconnoitring Party should be formed.*—The party should be formed with a view to guard against surprise.

309. *Engagements should be avoided.*—All engagements should be avoided unless the object in view cannot otherwise be attained; should, however, an inferior detachment of the enemy occupy a point that debars the reconnoitring party from carrying out its purpose, it should be attacked; if the enemy is met with in superior force, the party should fall back to some distance at once, throwing out flankers to guard against being cut off.

310. *Points of importance to note in reconnoitring an Enemy's Position.*—The points to observe in connection with reconnoitring an enemy's position are:—

(*a*) The strength and composition of his picquets.
(*b*) Whether posted on a plain, on a ridge, in covered ground, and if entrenched.
(*c*) If the approaches are open or barricaded.
(*d*) If the outposts appear vigilant.
(*e*) If there are guns to enfilade special points.
(*f*) If the chain of sentries is complete and all points watched.
(*g*) If the main body appears to be bivouacked close at hand or at a distance.

311. *Reconnaissance of a Road.*—Generally the primary object of a road reconnaissance will be to facilitate an advance by collecting information as to its breadth, condition, gradients, &c., and the nature of the country traversed by

it; but a secondary object of the reconnaissance may be to ascertain particulars about supplies and water procurable *en route*, or to find along it camping grounds, bivouacs, positions for advanced guards, &c.

312. *Reconnaissance of a River.*—The reconnaissance of a river may be undertaken to find some way of crossing it, there being no existing bridges; or regarding it as an obstacle, to collect information upon which the best way of guarding and defending it may be determined.

313. *Reconnaissance of a Village.*—The object of the reconnaissance may be the occupation of the village for defence, or simply to see what accommodation and supplies it can afford.

314. *Reconnaissance of a Wood.*—The shape and extent of a wood must be defined; the roads and paths leading through it must be shown, also any streams, &c., intersecting it, and any glades, clearings, &c., inside it. The nature, and size, of the timber must be noted, and whether any undergrowth exists or not. Also, whether there are any outlying clumps, their size and distance from the main wood. Landmarks, or anything that will serve to guide the march of troops, should be carefully pointed out; and finally, the reconnaissance should embrace the ground not only in front of the wood, and on its flanks, but also in its rear.

Conduct of Patrols, by day and night, in varying Country.—A. and L.

315. *Precautions to be taken when Patrolling.*—While employed on the duty of patrolling men must neither talk or smoke, they must take care their arms and accoutrements do not rattle or clash, must note any peculiarities of ground which might be useful to them in falling back, and if necessary, in order to be certain of finding their road again when returning, they must mark it in some way.

316. *Movements of Patrol by day.*—During the day, patrols will move along hedges and walls, and if possible, by hollow roads and ravines or water-course lines; should there be absolute necessity for a short halt, a place should be selected not too close to habitations and affording an easy

retreat in case of necessity; it should by day be on high ground but well under cover.

317. *Patrol should not enter a Building.*—The patrol should never as a body enter any building or its surroundings, nor should the men halt in its immediate neighbourhood longer than to make necessary inquiries.

318. *Patrol halting by Night.*—An ordinary patrol halting at night should do so in low ground so as to bring the advancing force against the sky-line, the patrol remaining securely in the shade.

319. *The Patrol in a Close Country.*—In a close country the advance of a patrol is beset with difficulty from the outset, as the patroller is exposed to the chance of an enemy behind every obstacle he encounters; the men must therefore move with the greatest circumspection and from one point to another, where they should halt and carefully reconnoitre; the patroller must look sharply about him and take care that he discovers the enemy's presence before the enemy discovers his.

320. *Main body to Scouts or Patrols.*—The main body of the party would be held collected at some point of junction of the different roads along which his scouts are acting.

321. *If Enemy's Infantry be met with.*—If the enemy's Infantry be met with, the scouts must at once retire out of fire; they must also fall back if his Cavalry be met with in superior force.

322. *Object of all Scouting or Patrolling.*—The aim and object of all scouting is:—

(*a*) To *seek* for and *obtain* information of the enemy's whereabouts, force and movements.

(*b*) To rapidly *send back* that information to the person ordered to receive it.

(*c*) To prevent the enemy from gaining information.

323. *Patrol in an Open Country.*—In an open country, if the danger of surprise is less, the difficulty of concealment becomes greater; the patroller must, therefore, be still more cautious, so as to avoid being detected by the enemy.

324. *Advantage of Cover to Patroller.*—He must take advantage of the smallest extent of cover, neglecting nothing that may prevent his being seen, and must the more carefully

examine places where the enemy might lie concealed as they are fewer in number.

325. *Patrol at lateral Roads.*—When a patrol comes to a branch road, two men, one in advance of the other, should push rapidly up until they come to the first turn in its general direction; from this point they can generally see some way up the road; if nothing is in sight they return, but should they see anything suspicious, one man runs back to stop the patrol's advance along the main road, while the other, hidden at the turn of the branch road, continues to reconnoitre.

326. *Business of Scouts or Patrollers.*—The business of scouts is to see and report; all attempts to make prisoners, or the pursuit of hostile scouts, would therefore be prohibited.

Reconnoitring Villages, Woods, Defiles, &c.—D and C.

327. *Reconnoitring Woods.*—The points to be considered in reconnoitring woods, are their nature, extent and shape; the kind of trees composing them, whether adapted for abatis or entanglements, whether the trees are wide apart, permitting Cavalry to penetrate, or thick and difficult to traverse, the number of troops they are calculated to hold. Single trees, or other conspicuous objects, should be noted, as they may serve to give directions to a column; the nature and direction of roads through the wood should also be noted, and whether it would be an advantage or a hindrance in case of taking up a position near it.

328. *Reconnoitring a Village.*—Information on how villages are situated, if they are open or fortified, all that is known as to their powers of resistance and the means of attacking them, if they are commanded from without, if open, their capability of defence, the general nature of their buildings, the number of their houses, water-supply, how situated, nature of the outskirts, &c.

329. *Reconnaissance of a Defile.*—The points to be noted in the reconnaissance of defiles are : their length, whether their gorges are open or narrow, mode of occupying them to cover a retreat, how to distribute troops both to attack and defend them, whether they can be turned, if strongly occupied. In reconnoitring a defile, if the sides or heights

bordering the defile can be examined without too much loss of time, these should be examined before the leading man enters.

330. *Reconnaissance of a River.* — Rivers should be examined with a view to reporting on their general direction, breadth, depth, nature of their bottoms, banks and beds; if navigable, between what points, position of ferries, and bridges, their length, breadth, &c.

Flanking Patrols.—F.

331. *What Flanking Patrols are for.*—Flank patrols furnish from the advanced or rear guard (*see* para. 231) might be sent to reconnoitre and advance along a parallel route to the column, or to examine special places, such as farmhouses, woods, or defiles some distance away on the flank.

332. *Flanking Patrols, a detached Body.*—A flanking patrol would be considered as detached upon a specific duty whatever it might be, with orders to rejoin whenever it was accomplished, or to fall in again with the main body at a fixed place of rendezvous; it would generally march along a parallel route as far as the ground would permit.

Ambuscades and Surprises.—C.

333. *Ambuscades at Night.*—At night, ambuscades on the side of the road, in a field, or behind a fence, should be arranged; a few men judiciously placed, and well-handled, suddenly opening fire by volleys upon an advancing force, even of considerable numbers, will so disconcert an enemy that he may often be driven back in disorder, with but little or no loss to those in ambush.

334. *Special men to be selected.*—The party selected for ambuscade duty would be specially chosen for their coolness and intelligence; no fires or smoking would be allowed.

335. *Precaution against Night Surprises.* — The best protection, next to a watchful look out, are obstacles, either natural ones, such as rivers, marches, &c., or artificial ones; all parties thrown out to the front and all sentries in front of them again must be similarly protected.