

# WHAT TO OBSERVE,

AND

# HOW TO REPORT IT.

BY

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For the Instruction of Non-Commissioned Officers  
in Reconnaissance.

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SIXTH EDITION, REVISED.

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WAR DEPARTMENT  
ADJUTANT GENERAL'S OFFICE  
MILITARY INTELLIGENCE DIVISION  
NOTIFICATION

WHAT TO OBSERVE  
HOW TO REPORT IT

For want of a nail the shoe was lost,  
For want of a shoe the horse was lost,  
For want of a horse the rider was lost,  
For want of a rider the battle was lost.

“The most important events depend on the most trifling circumstances.”—NAPOLEON.

## NOTE TO THE FIRST EDITION.

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THE following pages contain the notes of a course of Instruction in Reconnaissance through which, at the request of Lieut.-Col. Miller, 13th Hussars, then Commanding the Cavalry Detachment at Shorncliffe, I took during the year 1872 some of the Non-Commissioned Officers under his command. I have strung the notes together in a readable form, and they will, I hope, serve as a cheap and accessible guide to an elementary knowledge of Reconnaissance for N.-C. Officers of all branches of the service. Capable of any amount of expansion, they may also be found useful as texts for discourses—practical and theoretical.

Should any of my brother Officers undertake the instruction of their N.-C. Officers in reconnaissance, I can only hope that they will be as amply repaid as I was by the zeal, attention, and anxious desire for knowledge displayed by the N.-C. Officers of the 3rd Dragoon Guards and 19th Hussars.

L. A. H.

## NOTE TO THE SIXTH EDITION.

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THE alterations which will be found in this Edition have been made in order to bring the contents of the Pamphlet into thorough conformity with the recently issued Text Book of Military Topography. This was necessitated by the acceptance of the Pamphlet as an Official Publication.

L. A. H.

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## SECTION I.

A *Reconnaissance* is an expedition to obtain information concerning the country through which a march is to be made, the ground in the vicinity of a position or post, or the position of the enemy's troops. The party making the expedition may consist of one man only, of several men, or of a large body of troops. Whilst so employed they are said to "reconnoitre," and are called "reconnoiters," or a "reconnoitring party." Information about country is called "topographical information."

Maps of a country give some of this information, but a great deal of it cannot be obtained except by personal enquiry and by observation on the spot itself. N.-C. Officers and soldiers of all branches of the service may at any time, but especially when on outpost duty, find themselves called upon to reconnoitre, or to assist their Officers in performing the duty. The different kinds of information sought for on a reconnaissance may be equally important. For example:—Two cavalry soldiers come to the picquets from the front, the first reporting that the enemy are encamped close at hand, and can be easily surprised by a road leading across a ford through a stream; the nature of the ford he in his hurry however forgot to notice. The second has not seen the enemy, but he remarked that the water became very muddy as he crossed the ford, showing that after a little traffic

it will be no longer passable, and is therefore quite unfit to be used as a means of approach to the enemy. A similar case may happen with Infantry. A patrol sent out from a picquet reports the advance of a hostile force of Infantry. The picquet is posted on the far side of a river, to defend a bridge. There is said to be a ford three quarters of a mile down stream; another patrol returning from this direction has ascertained that the ford is practicable for cavalry only, and moreover that it is commanded from the near bank, which is the higher of the two. The information brought by the second patrol enables the picquet to arrange satisfactorily for the defence of the bridge, without detaching any large force to the ford as would otherwise have been necessary.

The highest and most soldierly qualities are necessary in all employed in reconnoitring. A reconnoitrer frequently finds himself alone in a strange country, surrounded perhaps by enemies; none of his officers near to see whether he behaves well or ill, and his sole chance of obtaining and returning with the required information depending on his own intelligence and his ability to frame expedients for escape out of difficult situations. If acting with others the lives of the whole party will perhaps be sacrificed if he does not carry out successfully the part allotted to him.

If a cavalry soldier, then on his horsemanship, and the care he takes of his horse the result may to a great degree depend. The chances are, therefore, that any man who does not possess courage, intelligence, self reliance, smartness, and discipline to a very high degree, will fail as a reconnoitrer before an

enemy. Experience also is required for the proper performance of the duty. Practice in time of peace will furnish this to a considerable extent.

No man can reconnoitre properly unless he knows both what to observe and how to report it. The object of this pamphlet is to teach this; and in so doing, it will be convenient to explain, first, the different kinds of reports; then, what is to be observed; and lastly, how the observations are to be recorded.

Reports are of three kinds:—1st, verbal; 2nd, written; 3rd, drawn. Sometimes a report is a combination of any two or of all of these. The kind of report to be made depends on the orders received, and the time at disposal for making it. Before starting to collect information, the reconnoitrer must understand exactly what information is wanted. If he is told to look for a road over the mountains and he spends his time trying to find one for carriages, whereas one for infantry only is wanted, much of his labour will be thrown away.

A verbal report is one made by word of mouth. If the person who collects the information reports it himself he can be questioned, and a good deal more that what he himself at first reports can thus be learnt about the matter; but if he sends his reports verbally through others, this questioning cannot take place; and, moreover, it is highly probable that in passing through other people the message will get altered, and that when it arrives at its destination it will not be the same as when it was despatched.

In giving or receiving verbal reports, two or three rules should be remembered:—

1st. Do not be, and do not speak, in a hurry when reporting.

2nd. Before you make your report settle in your own mind exactly what you are going to say. If you are not sure on this point your report will be confused.

3rd. If you have made a mistake in what you have said, or see that the person to whom you are reporting misunderstands you, say so at once.

4th. Before you go to make your report, say to yourself "What questions should I ask a man if he brought me this report?" Your report will then be clear, and you will not be put out by being asked questions on matters you had not thought about. On the other hand, if you are receiving a report from another man, do not flurry him; but let him tell his story in his own way. Ask your questions quietly so that he may keep his head clear and not get confused. Before taking a verbal message the messenger should repeat it aloud to you. He should also be told what the time is when he sets off with it. Be sure that he knows the way he is to go; and impress on him, and remember yourself, that the value of information very often depends on its being quickly delivered, as information which might have been of use at one time may perhaps be valueless a couple of hours later.

And because it is so difficult to ensure accuracy in the transmission of a verbal message, it is desirable that when possible the message should be put down in writing; no matter how small or untidy the scrap of paper used, it is better than nothing. This converts

the verbal report into one of the second kind, viz.—written. The written report is also used when the amount of information collected is large, or when it must be kept for reference at some future time. The different forms of written reports will be spoken of hereafter, but certain rules must be remembered, no matter what form be adopted.

1st. Write clearly.

2nd. Read over what you have written, aloud if possible; you will thus detect any mistake you have made.

3rd. Sign your name with your rank and regiment.

4th. Put down the minute, hour, day, month and year at which the report is despatched; for a statement which is true one month, or even at one hour, may be incorrect at another. Thus, in June you report a river fordable; in January it is a roaring torrent. At 6 a.m. you waded through it on foot: at 12 noon, the tide has risen, and even mounted you cannot cross; the place from which the report is sent must also be noted on the report.

5th. Write down on the paper the names of two or three men who are with you, so that if you are killed or taken prisoner, the officer may know who is likely to be able to give information in your stead.

6th. If time permit keep a copy of the reports you send.

7th. Never try to make a grand or formal letter of your report. Put down just what you have to say and nothing more. Your report may be one out of very many which have to be read by the same person.

8th Do not leave out anything merely because you are too idle to note it down and have persuaded yourself it is of no importance; remember the missing nail in the proverb on the back of the title page of this pamphlet.

The third kind of report is a drawing or picture of the country. Without such help it is sometimes difficult to explain the position of roads, houses, woods, or bodies of troops in regard to each other; so, on a piece of paper, marks representing these different objects are placed in the same relative positions as they occupy on the ground. A church is represented by one particular mark, a house by another, and so on; these marks are called "conventional signs" (*Pl. 5*), and in order that these reports may be easily read it is absolutely necessary that all reconnoiters from the same army should use the same signs.

In making reports of any kind be perfectly accurate and truthful. If in crossing a stream you see boats the number of which you guess to be about 35, but you have no time to count them, do not write down "there are 35 boats at this point," but "estimated number of boats at this point, 35." If you are informed that there is a bridge at a place you have not time to visit, do not write down "there is a bridge at—," but, "I am informed that there is a bridge at—." There is no shame in not knowing everything, but in *pretending* to know *anything* there is great shame. "Vagueness" is also to be avoided. If a road be reported as "wide" or "narrow," the report is of little use as it is "vague." What one person thinks wide another calls narrow. So a "large" or "small"

body of troops is a vague description and useless. Give the width of the road exactly in feet, and the number of troops as nearly as you can judge.

Having said thus much about reports generally, the next matter to consider is "what to observe."

## SECTION II.

The reconnaissance of a country is usually carried out by persons proceeding along the main roads, reconnoitring the roads and the country on both sides of them. In the succeeding paragraphs are stated the objects to be reported on, and the information to be given with respect to each.

### *The Road itself—*

(1). *Name the principal places connected by the road*, and the distance of each from the point at which the reconnaissance commences.

(2). State the exact *Width of the Road* in feet, as on this depends the amount of traffic which can pass along it at any one time. Where there are footpaths along the road, these must be included in the width of the road; but the width of the paths themselves must also be stated, as also whether the paths are on the same level as the road or not. All the alterations in the width must be noted down as they occur. A roadway 9 ft. wide will admit the passage of infantry in fours, or of a single line of guns and waggons. A width of 15 ft. will suffice for cavalry in sections.\* A width of 18 ft. is enough for a double line of guns and waggons.

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\* *i.e.*, four abreast.

(3). Next, the *Gradients*, that is, the ascents and descents. It is difficult to measure these accurately by the eye, so "vagueness" is permissible, and they are called "gentle" or "steep;" the distance the gradients continue being recorded. On maps or in reports, gradients are sometimes given in the form of a fraction, thus,  $\frac{1}{7}$ , or of a number of degrees, thus,  $8^\circ$ . If on a map is seen a gradient marked  $\frac{1}{7}$ , the meaning of this is, for all practical purposes, that at that point the ascent or descent rises or falls, as the case may be, one foot in every seven feet, or, what is the same thing, one yard in every seven yards of its length. When gradients are marked by degrees, the meaning is that here the slope contains, with an imaginary line drawn horizontally from the foot of the reconnoiterer, an angle of that number of degrees. If a road falls or rises one yard in every twenty yards, this slope would be marked either  $\frac{1}{20}$  or else  $3^\circ$ . A slope steeper than  $\frac{1}{7}$ , say  $\frac{1}{6}$ , would, even on a very good road, prevent this part being used ordinarily for military carriages. Heavy waggons cannot ascend such slopes without extra horses, but guns can, for a short distance, be taken up a slope of  $\frac{1}{4}$ , or  $15^\circ$ .

(4). *Condition*. Is the road in good or in bad repair? If dusty in summer it is probably muddy in winter. Roads are generally reported as better than they really are. Military traffic is more severe than ordinary traffic. Are there any heaps of stone or other material at hand for its repair? Where are the nearest quarries or places where material for this purpose can be obtained. Make a special note of any

*very bad portions*, and state whether they could be avoided by using another road for a short distance, or by turning off the road on to the country.

(5). *Drainage*. Note whether there are ditches at the sides into which the water flows quickly off the road, or whether the water lies on the road and soaks in; also the small arched passages or "culverts" as they are called, by which the water sometimes is carried under the road.

(6). *Level, as regards the country*. If the road is in a cutting, give the length, depth and width at top of the cutting. If on an embankment, then the length and height of this. If level with the country say so.

(7). *How enclosed*. Are there hedges, ditches, banks, walls, or palings at the sides of the road? On the two last named points (7) and (8) will depend whether troops can pass easily on and off the road in case of attack. Are there trees alongside or near the road?

(8). *Surrounding country*. Note whether it is quite open or is intersected by hedges or ditches; if much cut up thus, the troops will be obliged to restrict their march to the road, which ought to be kept for artillery and wheeled vehicles.

*Parallel roads*, which are those running in the same direction as the main roads, must be noted. Report their distance from the main road and their general condition; whether in good repair or otherwise; but do not go into further details about them unless ordered to do so. State also how, and where, they are connected with the main road.

*Cross roads* are those branching off to the right or

left. Note exactly where they leave the road; to which side; the general direction they go in; the places they go to; and the distances of these places. If a cross road leads both to a village near and to a town far off, note the distances of both. Note the general character and condition of these roads; copy all the information on sign posts and mile stones. A cross road to a farm close at hand is called an "accommodation road."

Any *Village or Town* on or near the road must be reported on:—

(1). Its *Position* as regards the road.

(2). Its *Situation*, whether in a valley, on a hill, or on level ground.

(3). *Construction*. Are the houses of brick, stone, or wood? are the roofs thatched? has it been prepared for defence? is it open, or enclosed by walls?

(4). *Population*. Note the number of the population and their occupation (if agricultural labourers they will be good with pick and shovel); also the number of houses.

(5). *Resources*. Note the number of butchers, baking ovens, horses, waggons, carts, forges, wheelwrights, and corn-mills. The existence of any large stores of food or forage must be noted. Is the water good? Whence and in what quantities is it obtained? How many feet of water are there in the wells? How far is it from the mouth of the well to the surface of the water? Are the wells easily exhausted?

(6). *Accommodation for troops*. This is estimated by taking an average sized house, and after reserving the upper floor for the inhabitants, measuring the

remainder of the rooms; the result multiplied by the number of houses gives the available accommodation. In rooms 15 ft. wide and under, there will be one man to every yard of length; in rooms from 15 to 25 ft. wide, two rows of men; in rooms over 25 ft. wide, three rows of men. A horse will occupy 5 ft. of length in barns and outhouses, but a double row should not be placed in buildings less than 24 ft. wide. This allowance of space would be insufficient for a prolonged stay. Another plan for finding out roughly the accommodation has been recommended; it is as follows:—Pace along the front of the building or buildings; if only one room deep, allow one man per yard; if two rooms deep, two men per yard, and multiply by the number of the stories.

A few houses together without a church may be called a "hamlet." If there is with the houses a church, they form a "village." In a "town" the houses are numerous and of a substantial character. The name "city" shows the presence of a cathedral.

*Detached Houses and Farms.* Note the material of which these and their roofs are constructed; their position, situation, accommodation, and stores of forage; are they easily accessible from the road, so that a picquet could find shelter there?

*Rivers, Streams and Canals* form another group of objects.

(1) *General Character.* Report where they rise; their direction, depth, and breadth where you come across them; note whether wider or more shallow at different seasons; do they ever overflow, and when?

Does the overflow water subside quickly? Does the tide come up to this part of the river?

(2). *Velocity.* Drop a cork in the centre of the stream and see how long it takes to float down 100 yards; this gives the pace or velocity of the stream.

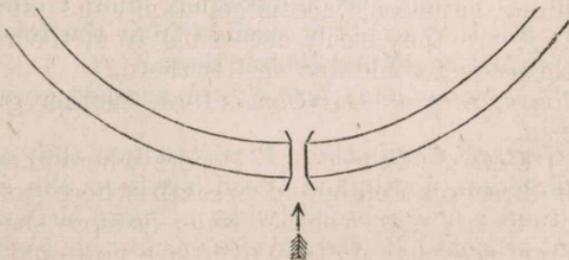
A stream with a velocity of  $1\frac{1}{2}$  ft. per second or 1 mile per hour is "sluggish."

A stream with a velocity of 2 or 3 ft. per second or 2 miles per hour is "swift."

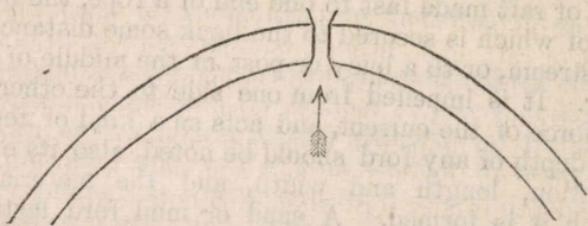
A stream with a velocity of 3 to 6 ft. per second or 3 miles per hour is "rapid."

A stream with a velocity of 9 ft. per second or 6 miles per hour is a "torrent."

(3). *Banks, and points for crossing.* Are the banks marshy, shelving, or rising abruptly from the water? Which bank is the higher of the two? Remember that the right bank of a river is that which would be on the right hand of a person in the middle of the river and facing towards the mouth, the other is the left bank. Does the road cross the stream where the latter is straight, and in a "reach" as it is called, or does the road cross in a re-entering bend, thus



or in a salient bend, thus? Does the river wind about



much? Are there any islands or sandbanks in the river? Are there any trees or brushwood on them, or are they bare? Is the bottom of the river mud, sand, rock, or gravel? What boats are used at this part? state their number, size, and the number of persons they carry. Where a canal goes through a cutting or an embankment, give all the necessary information about these.

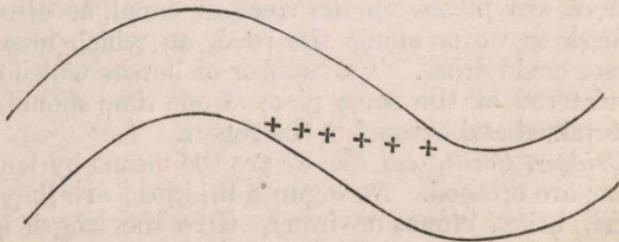
(4). *Locks.* Are there any locks near at hand on the canal? How many boats can pass through at one time? How long do they take going through? What is the width and condition of the towing paths?

(5). *Watering Places.* It is desirable to take a note of any places on the river or canal, as also of springs or water along the road, at which men or horses could drink. The number of horses which can be watered at the same place at one time should be ascertained and entered in the report.

*Bridges, Fords, and Ferries* are the means by which rivers are crossed. As regards Bridges; are they of wood, brick, stone, or iron? Give the length and breadth, also the number of bays, that is, the intervals

between the points of support. What roads lead to the bridge on both sides of the river? (A flying bridge is a boat or raft made fast to one end of a rope, the other end of which is secured to the bank some distance up the stream, or to a buoy or post in the middle of the river. It is impelled from one side to the other by the force of the current, and acts as a kind of ferry). The depth of any ford should be noted, also its exact direction, length and width, and the material of which it is formed. A sand or mud ford lasts no time. Note the velocity of the current, and also whether the depth of the river varies much or suddenly, as is the case in hilly countries. Do the banks require cutting down or preparing to render the ford easily accessible to troops of all arms?

Cavalry can pass through 4 ft. 3 in. depth of water; infantry 3 ft. 3 in.; artillery 2 ft. 6 in. In depths greater than these respectively either horses cannot keep their footing, or there is a risk of wetting the infantry or artillery ammunition. In a reach, a ford will often be found in a sudden widening of the river or "flash" as it is termed. When the river winds it will often be found in the direction shown by the crosses.



Tracks or footpaths leading into the water, and houses on the opposite sides of a stream without any visible means of communication between them, are indications of the existence of fords.

As regards a ferry, note the exact size of the boats, the number employed, the number of people or horses that can be taken over at one journey, and the time each journey lasts; is the boat worked by steam, or hauled, punted, or rowed across?

*Marshes, Lakes, and Ponds.* Note their size and depth; how formed, whether by springs or drainage; or are the ponds "dewponds?"\* Are they ever dry? Note by what means they are crossed, and whether the paths across the marshes are available at all times, and in all weathers.

*Railroads.* When these are met with, note the names and distances of the principal places connected by them; the nearest and also the nearest most important station on each side, with their distances. Find out if there are any engines or carriages kept at these stations, and the length of any side lines, called "sidings," into which trains can be run off the main lines. Is the station level with the country, above or below it? Is there an up as well as a down line—that is, is the "track" double or only single? What distance apart are the rails on each track? This distance, which is measured from the inner edge of the upper surface of one rail to the inner edge of the upper surface of the other rail, is called the

\* Dewponds are excavations in the chalk, lined with clay. They are seldom dry even in the hottest weather, and it is believed that they are replenished simply by the dew. Horses should not water at these ponds as the clay coating might be injured and the pond destroyed.

“gauge.” Broad gauge is 7', narrow gauge is 4' 8 $\frac{1}{2}$ ". These are the two gauges usually met with in this country. Note whether the railroad is in a cutting or on an embankment, and the dimensions of them, and also how the road passes from one side of the railroad to the other. If over by a bridge, or under through an arch, note down the necessary information about them.

*Telegraphs* usually run alongside the railroads and main roads. Note the principal places connected by them, the nearest telegraph station, and the number of the wires.

*Plains and Heaths.* Note if there be any wood or water on them, as on the presence of these depends chiefly whether they can be used as camping grounds. Mention any villages on them and their distance and direction from the road. Note any marks, such as steeples, &c., by which the villages can be recognized, or distinguished from each other. Note also the distance and direction of any conspicuous landmark, such as a group of trees, an oddly shaped or high hill.

*Woods, Forests, and Copses:* their size, the kind of trees; are the trees near together, or could cavalry or guns pass between them? is there any underwood? is it too thick to allow any one to pass through, or only thick enough to conceal troops? what roads and footpaths lead through the wood?

*The Configuration and Shape of the Country.* Is it flat, hilly, or mountainous? Does the road cross a chain of hills or run along a valley, or does it go over a level piece of high ground which would be called a “plateau.” Give the position and direction of any

valleys or ranges of hills near the road. When the road runs through a valley, give as near as possible the breadth of the valley and the height of the sides above the road. If the high ground on both sides draws in towards the road so as to enclose it in a narrow passage, this is called a "defile," as is the deep narrow opening by which roads sometimes pass from one side of a range of hills to the other. The length and breadth of the defile should be stated, as defiles affect the march of an army to a very great extent.

*Sea Coasts* would have to be reported on as regards facilities for landing and also for successfully resisting any attempt to land; but inasmuch as such information could be obtained only by those thoroughly trained by previous education, and having a special knowledge of the subject, it will suffice for the reconnoitrer to report on the character of the coast; whether rising gently from the sea or precipitous; the supplies of fresh water obtainable in the vicinity, and the nature and number of roads leading from the shore inland. Any lighthouses or lights in view may be mentioned.

It may be necessary also to obtain information as to the *Available Resources of the Country*, that is the cattle, horses, pigs, sheep, waggons, carts, and forage obtainable; and also respecting the *Cultivation of the Country*, and the nature and extent of the crops.

In practising reconnaissance during time of peace the reconnoitrer will, of course, not seek for information, the collecting of which might cause annoyance to the inhabitants, such as that respecting accommodation and the number of cattle, horses, &c. The

stacks of forage can, however, always be counted; the number of sheep and cattle in the fields can be roughly determined; and, from the size of the farm-houses and their outbuildings, the accommodation available can be estimated. Practice of this kind is very valuable; for when men reconnoitre in a foreign country, and are ignorant of the language, they cannot make direct inquiries, but must trust solely to their powers of observation.

Not only on active service, but also during peace manœuvres, the other kind of reconnaissance, viz., that of an enemy's troops, may have to be carried on simultaneously with, or independently of, topographical reconnaissance. The following hints will serve as guides for men employed seeking out the enemy:

When infantry are marching the dust is low and thick; with cavalry the dust is higher, the upper portion being thinner and rapidly disappearing. Artillery and waggons raise clouds of dust unequal in height and disconnected. If at night the flames of camp fires disappear and reappear, something is passing between the observer and the fires. If smoke as well as flame be visible the fire is near. The extent, number and brightness of the fires should be noted. The uniform worn and arms carried by the troops in view should be carefully noted, as from this may be learnt the disposition of the enemy's troops. Tracks or footmarks on the ground should be noticed, as these show the direction of the march and the character of the troops who have passed along. These are a few of the principal indications by which the enemy's movements and positions may be ascertained.

Unless ample time were allowed for the reconnaissance it would be impossible to make inquiries and to note down information concerning every one of the points enumerated in this section. The rule is to do as much as possible in the time. Whether the reconnaissance is to be executed rapidly, or is to be carried out so as to collect all the foregoing items of information will be determined by the officer ordering it. He may, perhaps, say that, on some particular subject, roads, accommodation, bridges, or the enemy's movements, for instance, he is in most need of information. But when no such special subject is to be reported on, the reconnaissance should be, *on all points*, as thoroughly complete as time permits.

### SECTION III.

The next matter to be considered is the manner in which the information obtained is to be put down on paper. As has been already mentioned, some reports are drawings of the country; how these are made will be explained in the next section. There is, however, a good deal of information which cannot be drawn but must be written, such as the accommodation furnished in the villages, the resources of the country, the exact description of the roads, &c. This information is sometimes written down on the same piece of paper as that on which the drawing is made, as will be described hereafter, and sometimes on a separate piece.

The form in which, when possible, the information is to be put on paper is given at the end of this

pamphlet. This is the form the authorities consider best suited for the purpose, and it is the form used by officers. But N.-C. Officers in commencing to practise Reconnaissance will do well to begin by learning first merely to use their eyes, noting down on paper at the same time what they think they see. In the latter case the most simple mode of proceeding is to write down in the plainest possible language, and without any attempt at fine writing, each piece of information as you come to it on the road, taking especial care not to use too many words. Thus, instead of writing, "and then after leaving the village I arrived, after proceeding 300 yards, at a clump of trees on the right hand side of the road, after which the road descended gently for a quarter of a mile and then was level," write "quitted the village; at 300 yards clump of trees on right hand side, gentle descent thence for  $\frac{1}{4}$ -mile, thence level." Keep a quarter margin on the left of the paper for marginal references; thus, a description of a village will fill perhaps half a dozen lines: write in the margin opposite the first line, "Village of——." Opposite the description of a bridge write the word "Bridge," and so on. By doing this you enable the officer who receives your report at once to form a general idea of its contents, and also to lay his finger upon any particular matter about which he requires information. The information may be entered first into a pocket book and afterwards copied out fair on a sheet of foolscap or other paper; but it is far preferable for reconnoiters to get into the habit of writing the report fair at once on the ground, so as to lose no time in copying. I recommend cavalry

soldiers to follow the plan adopted by Major Barrow, C.M.G., 19th Hussars, formerly Commandant, School of Instruction, Auxiliary Cavalry Aldershot, and now Brigade-Major of Cavalry, at Aldershot, and which he finds well suited for field service.

On a piece of stiff cardboard, 9" x 6", fitting into the sabretasch, are fastened, by pins or brass paper-fasteners, several sheets of paper of this same size. When in use the cardboard can be suspended by a piece of string from a button; the same precaution should be taken with the pencil, otherwise this will be dropped or lost. As each sheet is filled up it is removed and put away.

Remember that time and distance are all important in military operations, and therefore be very particular to enter in your report the distance that bridges, villages, bye-roads, &c., are from each other or from the starting point. It is not at all a bad plan to draw a line right across the paper as soon as you complete a mile, and to write on it the words "one mile;" when you get to the end of the next mile, whether you have found meanwhile anything to report on or not, draw a second line similarly, and write on that, "two miles," and so on.

The next step will be to put down the information in a more orderly form, in a more business-like manner, and so getting nearer gradually to the authorised form. A form of report which will be found useful for this practice is given below.

The figures in the left-hand column are the distances, in yards or paces, of the objects opposite to which they are placed, from the commencement of

each mile. It will be noticed that in the second mile Sergt. Smith did not find anything worthy of report excepting the road itself and the country through which it passed. It is well always to keep information about roads separate from the other items; to search through a report for scattered bits of information on this most important subject involves much trouble and time.

*Report on the road from Milton to Braston, reconnoitred 22nd June, 1870, by Sergt. Smith and Private Johns, 8th Dragoon Guards. Total distance 5 miles.*

Yards. 750	Village of Westware. On both sides of road, defensible; 53 houses, chiefly brick and tiled; accommodation for 400 men and 70 horses; water good from a stream running along west side of village; 70 horses could be watered at one time; population 340, agricultural labourers; 1 oven baking 750 lbs. of bread in 24 hours, 1 wheelwright; 1 forge.
1,000	Village terminates.
Road. 1st Mile	Macadamized, bad condition, ill-drained; 15 feet wide, except through village, where 21 feet wide; thin and low hedges, country on both sides open; heavy growing crops of roots and corn; gentle ascent to village, level through village, gentle descent thence.
Road. 2nd Mile	Level, no other alteration; country marshy and barren.

200	River Stor flows slowly west to east; crossed by stone bridge, 3 yards wide, 60 feet long, 3 arches; muddy ford used for light carts 30 yards up stream west of bridge; informed that there is a stone bridge 2 miles up stream and a wooden foot bridge 3 miles down stream.
670	Bad road to right to Appleton, market town 7 miles; market for cattle and sheep first Monday in every month.
1560	Bavin's wood, oak; dense underwood; the wood is traversed by a few footpaths only and no roads; it stretches for 1 mile to east and $\frac{1}{2}$ mile to west of road.
Road. 3rd Mile	The road narrows gradually to the bridge, and is about 12 feet wide thence to Appleton turning, whence it is 21 feet wide, rising with gentle ascent and improving in condition; country open and swampy.

Although without a considerable amount of practice no one can become a successful reconnoitrer, yet when once the habit of making a good report is acquired, a very little practice is all that is necessary to ensure a continuance of efficiency. So much labour and trouble is involved in making a good report and sketch, that to avoid disgusting officers and men with the performance of this important duty, it should, *merely as a drill*, not be exacted from them more often than necessary to keep them thoroughly up to the mark. But if the reports and sketches are to be few in number, it is absolutely essential that those which

are sent in should be minutely examined and corrected. A thorough and complete criticism of one report and sketch teaches more than hasty and superficial remarks on a dozen, the mistakes in which are passed over and the inaccuracies not exposed.

There is one error which reconnoiters under instruction are liable to fall into, and against which it is necessary to guard them. They are apt to assume that the officer, whose duty it is to examine the report, knows the country so thoroughly that it is unnecessary for them to make their report as full and detailed as would be the case were it addressed to a stranger. Thus we have known the important seaport town of Folkestone described simply and solely as "a large town with billeting room for 10,000 men." Such modes of reporting save the reconnoitrer much trouble it is true, but they never should be permitted, as leading to great slovenliness and overlooking of detail. Every one who is practising reconnaissance should imagine that the officer who is to read the report is an entire stranger to the locality.

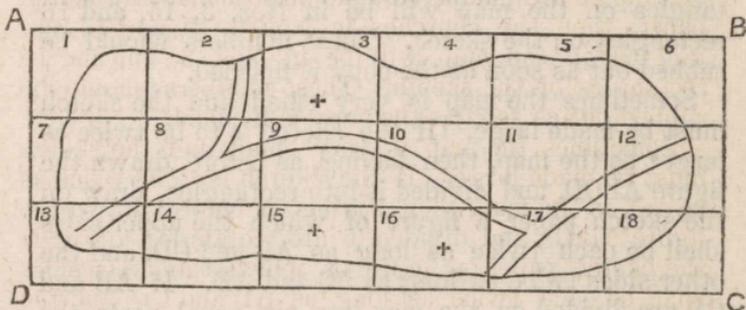
It may also be mentioned that no difficulty in collecting information in this country in time of peace will be experienced if the persons seeking it wear the uniform of the service and are courteous in their manner to those whom they are addressing.

#### SECTION IV.

A written report should, if possible, be accompanied by a sketch or drawing of the country. Any sketch, however rough, is better than none at all. The most

simple mode of providing the sketch is by tracing it off a map; if not traced, it may be copied in the following manner:—

Enclose the piece of road or ground to be sketched with four straight lines at right angles to each other.



Thus in the figure, the wavy line indicates the country to be sketched; AB, BC, CD, DA, are at right angles to each other. Divide AB into any number of equal parts, say six, and through these points draw lines parallel to AD and BC. Divide AD into any number of equal parts, say three, and through these points draw lines parallel to AB and CD across the figure, which is now divided into small rectangles. If it be not permissible to draw lines on the map, then a very thin transparent piece of paper must be placed on the map, and the lines drawn on it instead, care being taken that the paper is kept exactly in one position until the copy is completed.

On the paper on which the sketch is to be made, and which we will call the sketch paper, draw a

figure the exact size and shape of ABCD, and divide it in precisely the same way. Then copy by eye the contents of each rectangle of the map into the corresponding rectangle on the sketch paper. If the rectangles are numbered alike on both map and sketch paper, then the churches in Nos. 3, 15, and 16 rectangles on the map will be in Nos. 3, 15, and 16 rectangles on the sketch. These numbers should be rubbed out as soon as the copy is finished.

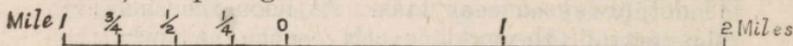
Sometimes the map is very small and the sketch must be made large. If the sketch is to be twice as large\* as the map, then having, as before, drawn the figure ABCD, and divided it into rectangles, draw on the sketch paper a figure of which the upper sides shall be each twice as long as AB and CD, and the other sides twice as long as BC and AD. If AB and CD are divided on the map into six equal parts, the upper and lower sides of the figure on the sketch must be each divided into six, and similarly the right and left sides into the same number as AD and BC are divided into. Then, when the lines are drawn across, and up and down the figure on the sketch paper, the number of rectangles on both map and sketch will be the same, and the contents of each rectangle on the map must be copied rather larger into the corresponding rectangle of the sketch. Similarly if the sketch is to be made smaller than the map, say on  $\frac{1}{3}$  the size, the sides of the sketch figure must be  $\frac{1}{3}$  the size of those of the map figure.

Maps and sketches cannot be understood unless

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\* That is, on a scale twice as large

what is called the scale of the map or sketch is known, that is to say, what distance on the paper represents a certain distance on the ground. Thus on a map, the scale of which is one inch to a mile, objects which are actually one mile apart are placed one inch apart. If the scale is two miles to the inch, then two churches one mile apart would be half an inch apart on the paper. If the scale is one mile to six inches, or six inches to a mile, as it is generally called, then the churches would be six inches apart on the paper. The scale should be drawn and placed at the bottom or side of the sketch; to make it, draw a straight line, along which mark off two or more of the distances, which represent one mile of the sketch; divide the left hand division into four parts to show quarter miles, and put figures as shown here. The distances



*Scale 1 mile to 1 inch.*

apart of places shown on the map can now be measured. Still the sketch will be incomplete if it does not show which part of it is the north, south, east, or west. Therefore in a road sketch for instance:— if the road runs due north, parallel to it is drawn an arrow with the head pointing in the same direction; if it runs due south the arrow is reversed and points in the opposite direction; if it runs due east the arrow points across the road towards the left side of the road. On the government or ordnance maps, the scales of which, it may be mentioned, are either one inch to the mile or six inches or twenty-five inches to the mile, the names are usually printed from west to

east, so that a line drawn at right angles to any name points to the north and south.

In most printed or engraved maps the upper part of the paper is the north, but in road and reconnaissance sketches the upper part is quite as often the south, east, or west, because in making the sketch we commence from the bottom of the paper and work upwards towards the top.

If, however, no map of the country can be obtained from which to make a tracing or a copy, a sketch of the road and the country on both sides must be made as the reconnoitrer goes along. It is necessary to ascertain, before the sketch is commenced, the direction of the north, south, east, and west, or cardinal points, as they are termed, of the horizon; this is not always an easy task. At noon the sun is in this part of the world exactly south; at night the north may be found by following the course of an imaginary line passing through two stars of the group known as the "great bear," until it strikes a conspicuous star called the "pole star," as shown in the diagram.



But these means are not always available. The needle of a magnetic compass is the best guide, and no reconnoitrer should be without such a compass in his pocket. If the compass is not near iron, the needle points always in one direction, which, in England at the present time, is a little under a quarter of a quarter of a circle, that is, one-sixteenth of a circle, to the left of the north point. The spot to which the needle points is called the "magnetic" north, to distinguish it from the other, which is called the "true" north.\* If we look across the needle at right angles to it, to the left hand, we shall be looking to the magnetic west, which is a little less than one-sixteenth of a circle to the left of the real west. Similarly, the south end of the needle would not point to the sun at noon, but to the left of it. It is very necessary to bear this in mind. If, for instance, on an ordnance map a village A is exactly in a straight line with and directly above another village B, it is evident that A is due north of B; but if a person start from B and go in the direction to which the needle points, he will pass by A and leave it on his right.

On some sketches two lines are drawn, crossing each other; that with a star pointing to the right hand shows the true north, the other with an arrow head shows the magnetic north; the word "magnetic" is written close to and parallel to the latter.

It is further necessary that a reconnoitrer should

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\* The needle does not point exactly in the same direction in all parts of the world. The difference between the directions of the true and the magnetic north, is called the "variation of the compass."

find out by actual trial how many paces he takes in a hundred yards, and how many his horse takes at a walk, trot, canter, or gallop, in a quarter of a mile ; he should also know his own rate of walking at his ordinary pace, and the time his horse will take to walk, trot, canter, or gallop a certain distance. It should be remembered also that the report of a gun or any other noise travels about 370 yards a second.

On the scabbard, or rifle stock, should be marked a length of one or two feet, subdivided into inches.

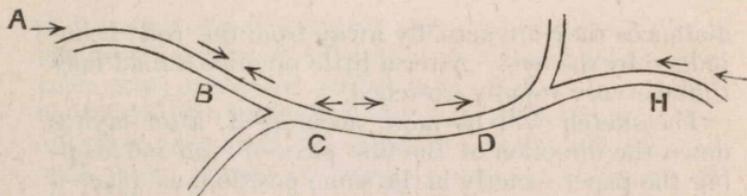
The sketch may now be proceeded with. Placing the paper before him, so that its greatest length may lie in the general direction of the line along which he is going, the reconnoiterer, beginning at the bottom of the paper, draws the road on it in the direction in which it runs so far as he can see it. He then proceeds along the road as far as it continues in this same direction, not taking into account insignificant turnings and twistings, and counting his paces as he goes. When the direction of the road changes, he marks on the road he has already drawn the distance he has gone ; thus, if he has paced 800 yards from the starting point, and the scale of the sketch is that usually adopted for road sketches, viz., 2 inches to a mile, he would make the road on the paper a little less than 1 inch long. If the road now turns sharp to the right he draws it on the paper with a sharp turn to the right also ; if it turns gently he draws it with a gentle turn. Any houses or other objects, such as woods, &c., on his right or left, are placed on the paper in their proper positions according to scale ; the

distances they are actually away from the road being judged by the eye. After a little practice a road may thus be very rapidly sketched.

The sketch will be more accurate if, after laying down the direction of the first piece of road and keeping the paper exactly in the same position, we place a compass on the paper and draw a line for future use parallel to the needle, about 3 or 4 inches long, marking the ends, north and south; this line we will call the magnetic line. On arriving at the first change of direction the paper is held so that the magnetic line is parallel to, and points in the same direction, as the needle of the compass, which is again placed on the paper; and in laying down the direction of this new piece of road we draw it so that it will lie in the same direction with regard to the magnetic line as the new piece of road itself makes with the needle of the compass.

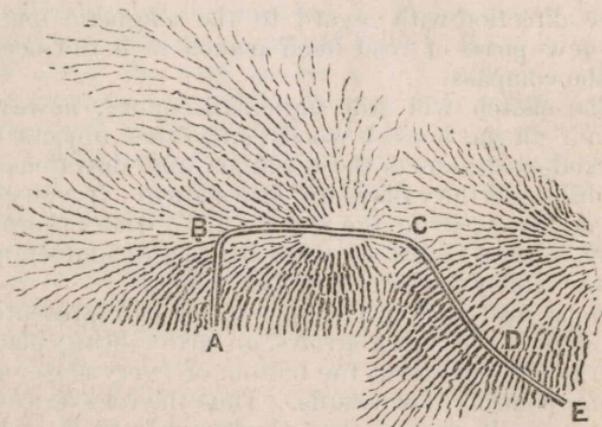
The sketch will still be unsatisfactory, however, even if all the houses, woods, and other objects are marked on it, unless the positions and directions of the hills and the valleys are also shown. If you cannot do better, write the word "hill" where there is a hill, with a figure to show its height in feet, and write "valley" where there is a valley.

On a road sketch a simple mode of representing the slopes is by using arrows, an arrow being placed both at the top and at the bottom of every slope, and *always* pointing downwards. Thus the road descends from A to B, reascends to C, descends to D, and is level to H.



On the maps of a country the hills are shown in various ways. The method adopted on some of the Ordnance Survey Maps, drawn on the scale of 1 inch to 1 mile, is that called "vertical hachuring."

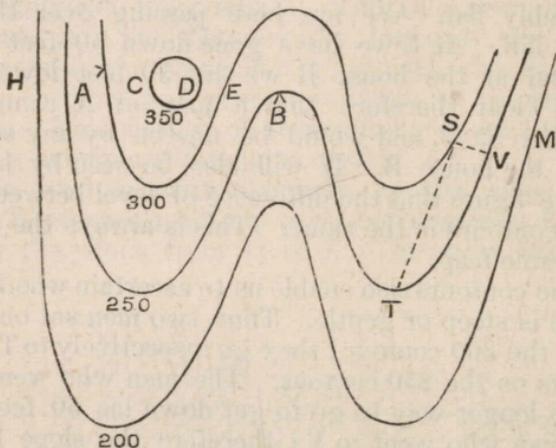
The slopes are shown by short lines or "hachures," drawn in the direction in which water would run down them. Thus, in the example the road goes from A obliquely up the face of a hill to B, turns to



the right along a hill top to C, is then level along a hill side to D, and descends obliquely to E. The

hachures are drawn thicker and nearer together at the top of the hill than at the bottom.

On some maps, as for instance some of the new series of Ordnance Survey Maps, the form of the ground is represented by contours. It is not recommended that any one should make use of this method without first receiving practical instruction in it, but it is necessary that every N.-C. Officer should understand ground so represented.



A contour on a plan is a line broken, or continuous as in the figure; it indicates that the ground over which it is marked on the map, and all objects on that line are exactly on the same level, so that a person walking along the ground marked by any one contour neither ascends nor descends as he goes along. The numbers against the contours show the difference of level between them, and how much one is higher or

lower than another. In the example the contours are traced 50 feet apart: the 50 feet is not measured along the face of the hill, but each contour is so traced that a man would have to rise or descend 50 feet vertically before he gets to the next. Thus, in going from the house A to the house B we ascend 50 feet to C; again, we come to the same contour at D, and, as we have not crossed any other since C, it shows that the piece of ground from C to D is tolerably flat. We are here passing over the top of a hill. At E we have gone down 50 feet below D, and at the house B we are 50 feet lower still. It is clear therefore that a man at A cannot see another at B, and would be unseen by any sentries near the house B. It will also be seen by looking at the figure that the difference of level between any two contours is the same. This is always the case in the same map.

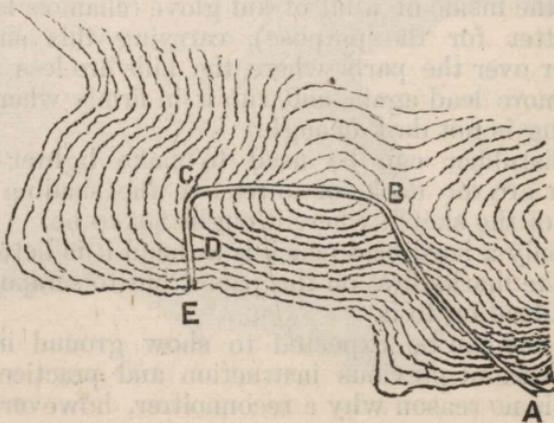
The contours also enable us to ascertain whether the slope is steep or gentle. Thus, two men set out from S on the 300 contour; they go respectively to T and V points on the 250 contour. The man who went to T has a longer way to go to get down his 50 feet than the man who went to V; therefore the slope from S to T is more gentle than that from S to V. When the contours are near together the ground is steeper than when they are far apart. Again, if a heavy load has to be taken from H to M, it will evidently be easier to the horses if the load is taken along the line marked by the 200 contour, although this seems roundabout, rather than in a straight line from the one point to the other, inasmuch as by taking the latter

road we have to ascend just 150 feet to the top of the hill, then descend at least 100 feet to B, and cross over another hill before we get to M, the last part of the road being steep.

On maps drawn on the 6-inch scale, the contours are usually drawn 20 feet apart (*Pl. 1*).

The space between the contours is sometimes filled up with "hachures" (*Pl. 2*), drawn parallel, or nearly so, to the contours. In these cases it is often difficult to distinguish the contour. The thickness of each hachure and the distance the hachures are apart, varies with the slope of the ground, the hachures being thickest and nearest together on the steepest slopes. This method of representing ground the following example will help to explain.

The road ascends obliquely up the slope from A to B, crosses a hill top to C, and descends directly down the slope from D to E. On these hachured



plans numbers marking the heights will generally be found. Besides the numbers marking the contours, others are usually placed on the tops of knolls or isolated points.

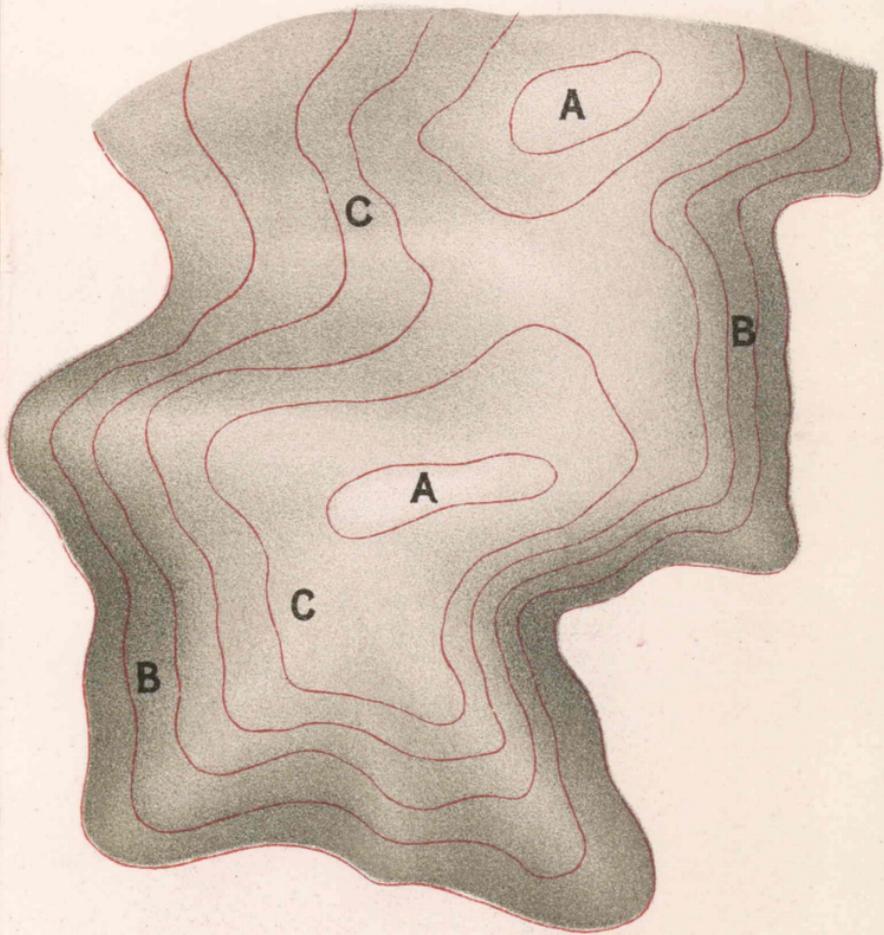
Sometimes to plans of ground shown by contours is added shading with chalk or blacklead in what is called *mezzotint*, as in the example on the opposite page; this is the authorised manner of showing ground. The tops of the hills as at A are left untouched; steep slopes as at B are covered with a dark shade; gentle slopes as at C with a shade of a lighter kind; whilst level ground lying low receives a very light shade only.

To shade a contoured plan in this way, first mark the contours strongly with a continuous line of red or crimson colour; then with a pencil, the softer the lead the better, make some marks about those parts where the hills are steepest; rub these marks firmly with the inside of a bit of kid glove (chamois leather is better for the purpose), carrying this shading lighter over the parts where the hills are less steep. Use more lead again, and rub it in firmly where the shading is not dark enough.

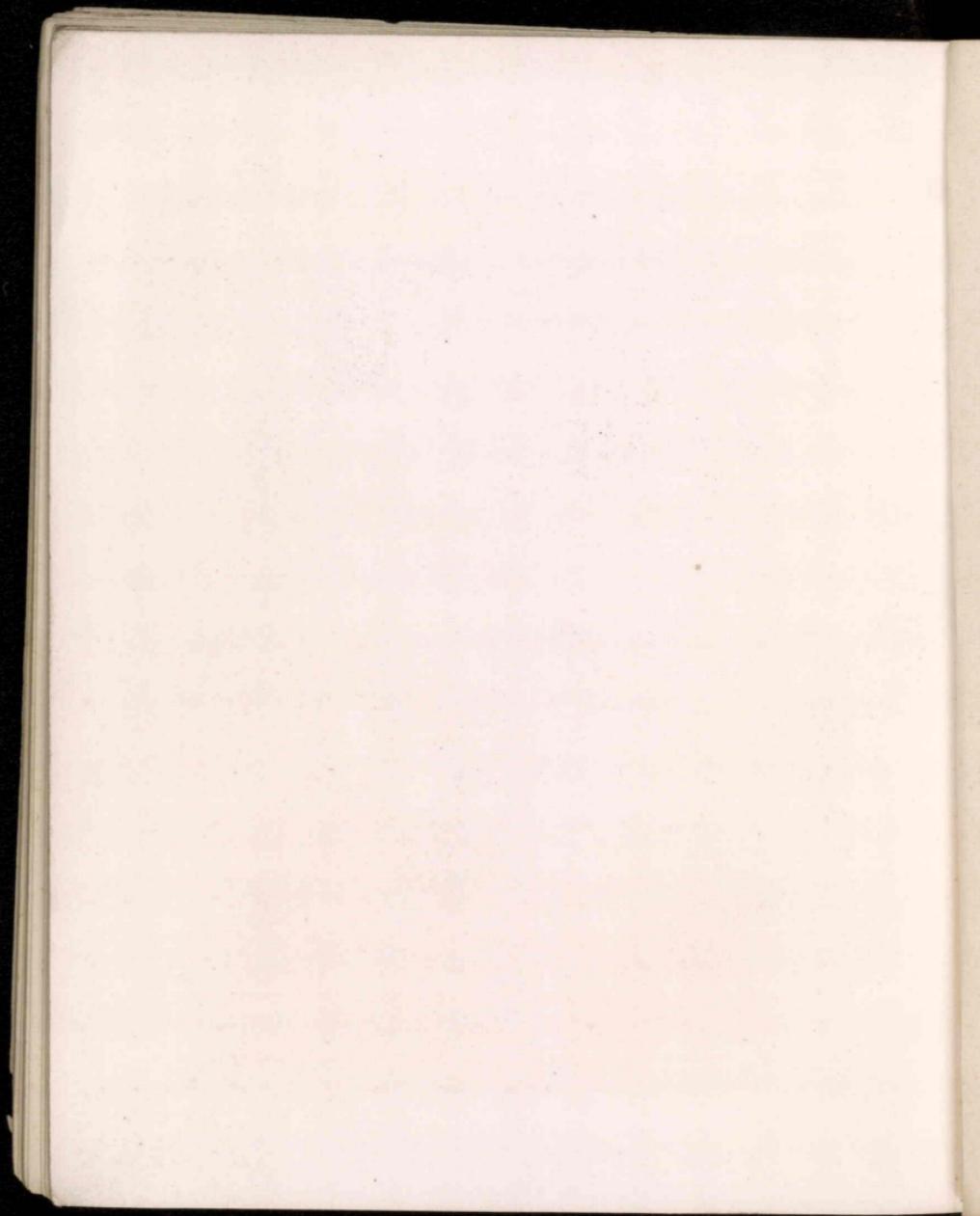
Indiarubber can be used to make lighter parts which are too dark, or to remove the shading from parts of the sketch where it ought not to be.

If only a hard lead pencil is at hand it is better not to make marks first on the paper, but to scrape some of the lead on to it.

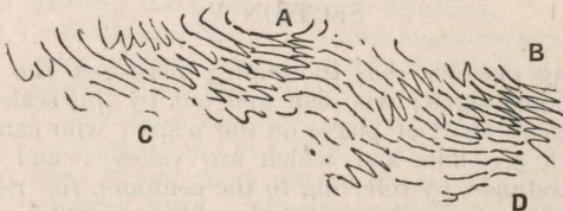
No one can be expected to show ground in this way without previous instruction and practice; but there is no reason why a reconnoitrer, however little



DANGERFIELD, LITH. 22, BEDFORD S'



accustomed to draw, should not try to show in some way or other the hills, and the direction in which the slopes of the hills run. Thus any one can, at a pinch, show hills as in the example by a few rough scratches, A B being the top of the hill, the side of which slopes down towards C D.



In the last section it was mentioned that sometimes the written information is entered on the sketch itself. An example of this, kindly furnished by Major Barrow, is given on *Pl. 3*. The sketch paper, which in this instance is 9 in. by 6 in., is ruled into squares of two inches wide, so that there is room on the paper for a sketch of a piece of country four miles long by three broad. The sketch may be drawn in the manner already described, and the information entered as shown in the example.

This combined written and drawn report will be found very useful for practice before going on to the authorized form of sketch and report. N.-C. Officers must not be deterred from using the authorized form because the sketch of the road is more than they can do; if they cannot do better they can at all events

draw a couple of parallel lines half an inch apart up the centre of the paper to represent the road.

A reconnoiterer should always endeavour to draw accurately and neatly, and to keep the paper clean; but time must never be wasted over drawings.

## SECTION V.

Any one who has thoroughly mastered the conventional signs; who can find out by the scale the distances apart of places on the map\*; who can tell which are hills and which are valleys; and who understands, by referring to the contours, the rise or fall of the ground, is said to be able to "read" a map. This is a most desirable accomplishment for all military men, but especially for cavalry. It is stated that much of the success of the German cavalry in the late war was due to their thoroughly understanding map reading. With a fair map, and able to read it, a man is at home even in a strange country; he knows exactly which turning to take in going from one place to another; he recognises a town or village, or forest as soon as he sees it; and he knows along which road his progress is most concealed from observation. As he proceeds, however, constant reference to the compass is necessary. Placing the

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\* On some maps, however, the scale is indicated thus, 1 : 80,000 or  $\frac{1}{80000}$ . The meaning of this is that 80,000 inches on the ground are represented on the paper by 1 inch; the scale is therefore rather more than  $1\frac{1}{2}$  mile to 1 inch. Similarly  $\frac{1}{63360}$  means a scale of 1 mile to 1 inch.

map so that the arrow showing the direction of true north may point to the right of the needle, he compares the direction in which he is going with the direction of his road, as shown on the map. Unless these directions are the same he is not on the road he imagined himself to be. The compass will also prevent him mistaking one village for another, which perhaps lies in the opposite direction.

Maps are, however, sometimes very inaccurate, and reconnoiters must be on their guard against errors arising from this source. A man leaves the village of A; his instructions being to ascertain if the enemy is visible in the hamlet B. On the map, B is 5 miles from A, and there are no houses shown on the road between them. After proceeding  $4\frac{1}{4}$  miles, the man finds in front of him some buildings; not having accurately estimated the distance he has gone, he assumes the buildings to be B. He sees no enemy, and, returning, reports accordingly. What he called B was, however, C, a hamlet built since the map was made. The enemy really are at B, and the result of the error may be very serious.

In the foregoing pages have been placed before the N.-C. Officers and soldiers of the British service some of the elementary lessons of reconnoissance. The practice of this most necessary part of outpost duty has also the advantage of rendering much of our ordinary routine work, such as route marching, interesting. In journeying through a country, whether on horseback, on foot, or by rail, we learn to regard every object in a new light, observing how it may affect military operations.

All instruction will, however, be useless, and all the time spent in study thrown away, if each and every one of us who are seeking to learn our profession do not follow loyally and zealously the admirable advice laid down by a general, whose knowledge of the subject of these pages is well nigh perfect.

“Those,” he says, “however, who wish to learn are especially recommended to think out in their own minds all they have heard, they should ponder over it; they should question and talk to each other regarding it when they are together, for instance, when they are on guard, in the barrack room, when they go out for a walk; in fact they should never rest until they have a clear and distinct conception of what has been told them and of what they have read.”\*

## SECTION VI.

No N.-C. Officer of Cavalry can be considered thoroughly efficient for Outpost duty unless he can do fairly everything mentioned in the following list, which may also be taken as a rough syllabus of practical work in practising reconnoissance.

1. Reproduce and identify from memory the conventional signs.
2. Measure distance on a map by scale, and give

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\* Von Mirus.

- the bearings of various points from each other; judge distances on a map, the scale of which is known, but is not immediately available.
3. Explain the physical features of a country by looking at a map, giving, where contours are shown, the relative heights of various points.
  4. Write out, by reference to a map, clear directions sufficient to enable a stupid man to find his way from one place to another shown on the map.
  5. Enlarge or diminish a map.
  6. Rapidly identify out of doors, villages, farms, hills, &c., shown on the map.
  7. Judge to a quarter of a mile the distance of places and objects visible within several miles of himself.
  8. Find his way from one place to another by the use of a map incorrect as well as correct.
  9. Make a written report on a road with or without a sketch copied from a map.
  10. Make out of doors a fair sketch of a road, and of the ground, one mile on both sides. The hill sketching (if any) expected from N.-C. Officers, should be of the roughest and most elementary character.
  11. Correct an incorrect map.
  12. Fill in the cross roads to a sketch or map which shows only the main roads.
  13. On return from a ride make out a report and sketch from memory without the aid of notes.

To some persons this programme may appear high flown, but experience has convinced me that a large number of our cavalry N.-C. Officers are fully capable of mastering it.

The plates at the end of the pamphlet will furnish exercises for much of the instruction required.

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I. The Road.		
II. Bridges.		
III. Rate of Marching.		
IV. Towns and Villages.		
V. Water.		
VI. The Country.		
VII. Rivers.		
VIII. Halting places.		
IX. Camping grounds.		
X. Positions.		
XI. Lateral Communications.		
XII. Railways.		
XIII.		

Signature  
Date

*The bottom of the sketch to be level with this.*

*The right of the sketch to be attached so that the length of the road may be parallel to this line.*

Information as to routes, to be given under  
the various headings.

Army Form K. 1305.

I. The Roadway, metalled or not, width of metalled portion; present condition; whether level or hilly, the steepest gradients to be stated in the latter case. Details as to any part that constitutes a defile, such as hollow ways or village streets. Nature of the fences by which bounded.

II. Bridges. Full details; fords near the bridges.

ROAD REPORT.

III. Anything that might tend to retard the usual rate of marching.

From

To

IV. Towns and Villages. Material of the houses, inflammable or otherwise. Defensibility (Statistics, if required, are to be given in a separate form).

Executed by

Date

V. Water to be found near the road fit for drinking, or for watering horses.

VI. Character of cultivation: nature of the fences. View, whether much restricted by wood, &c. Possibility of movement across country, or parallel to the road. Surface of the ground.

VII. Rivers; depth, width, rapidity, nature of banks and bottom; boats, passages, command of one bank over the other.

VIII. Halting places and shunting places where part of the column could pass from rear to front.

IX. Camping or bivouac ground, force for which suitable (when such information is required).

X. Positions (according to the instructions); positions favourable for the enemy; points whence the road can be observed.

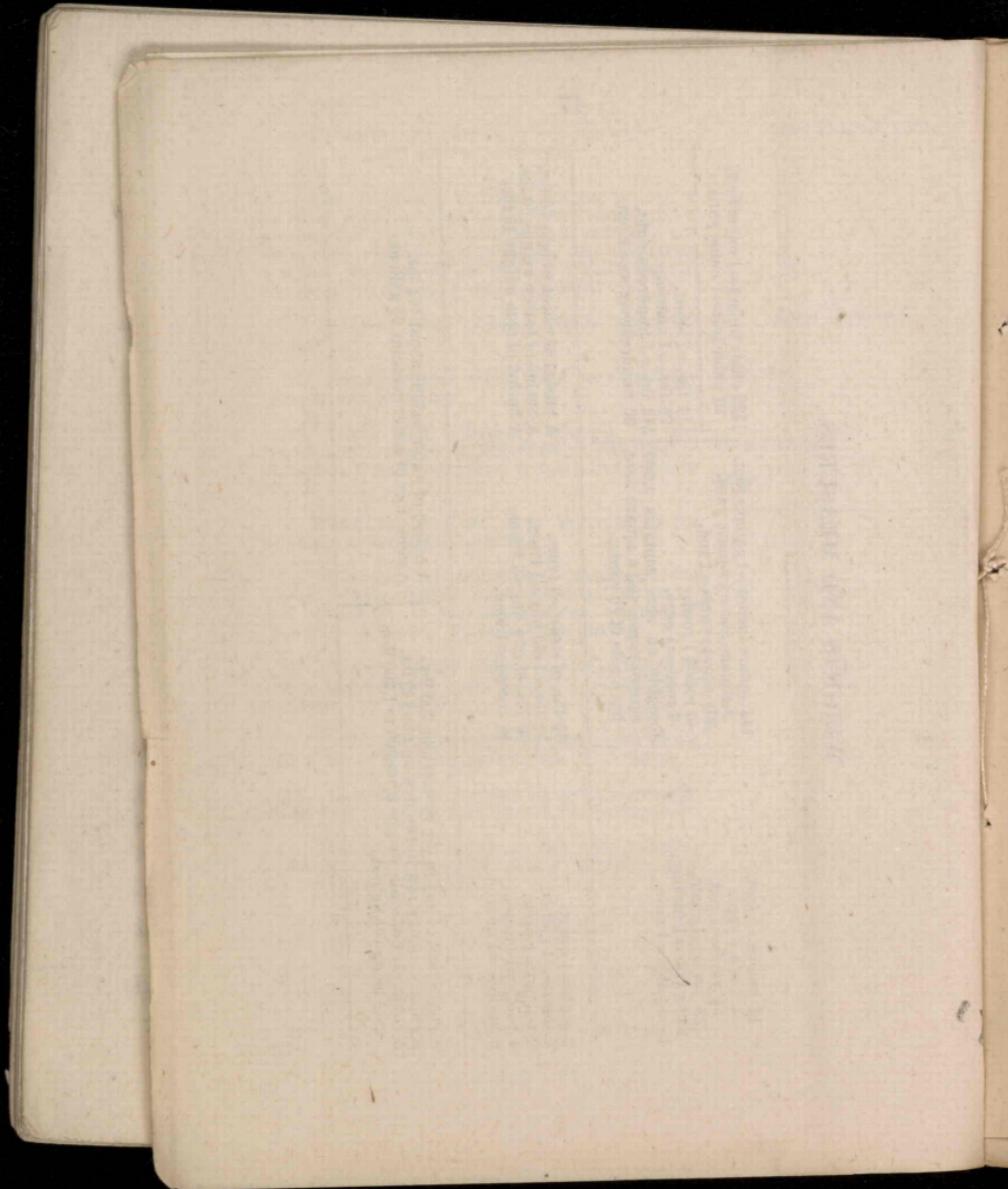
XI. Roads, or tracks crossing or joining the road; construction, width, condition.

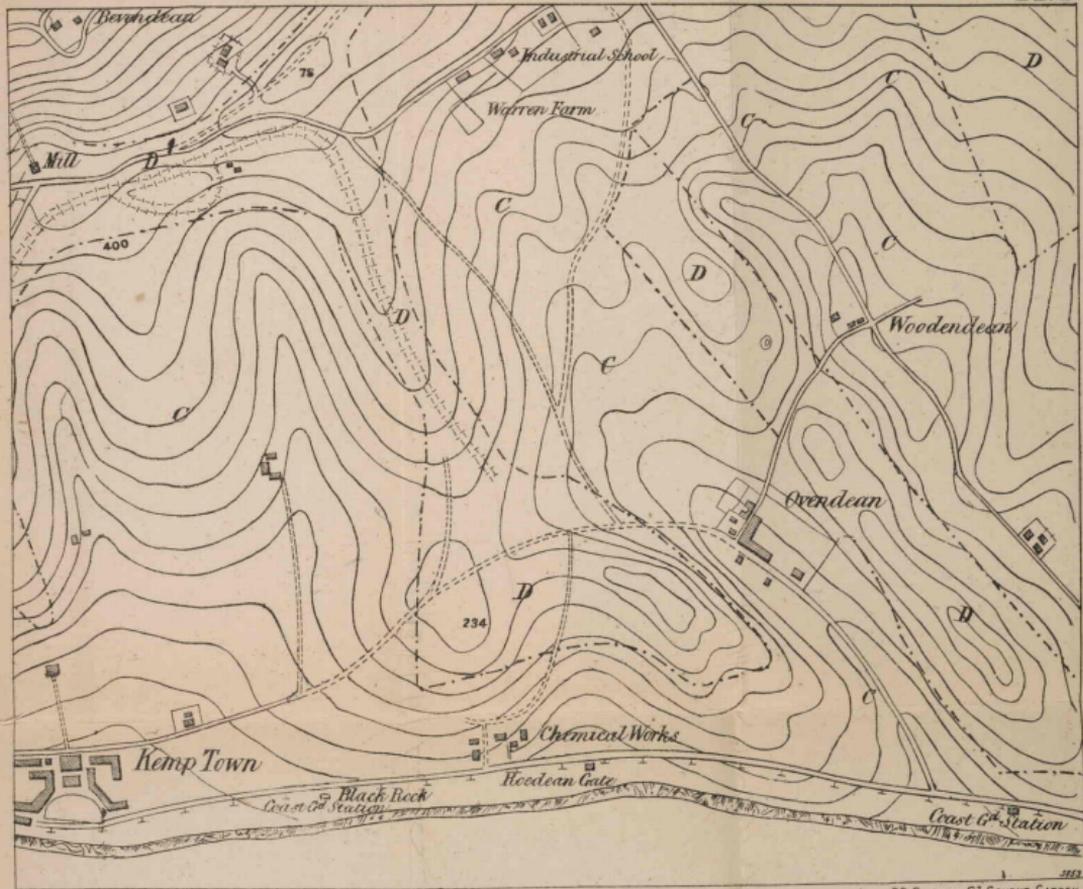
XII. Railways; gauge, single or double. Stores and rolling stock, if such information is required.

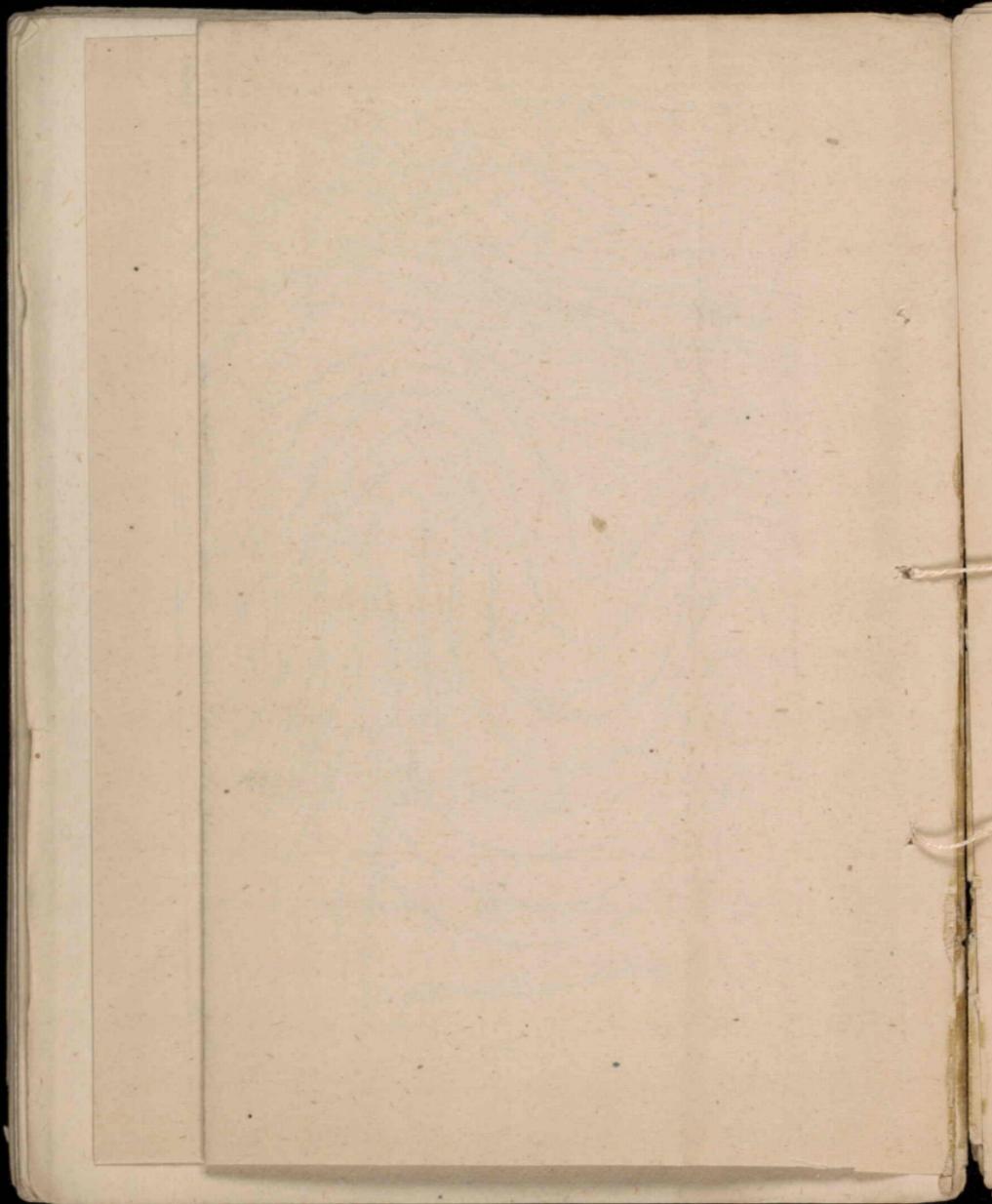
XIII. Any other information likely to be useful.

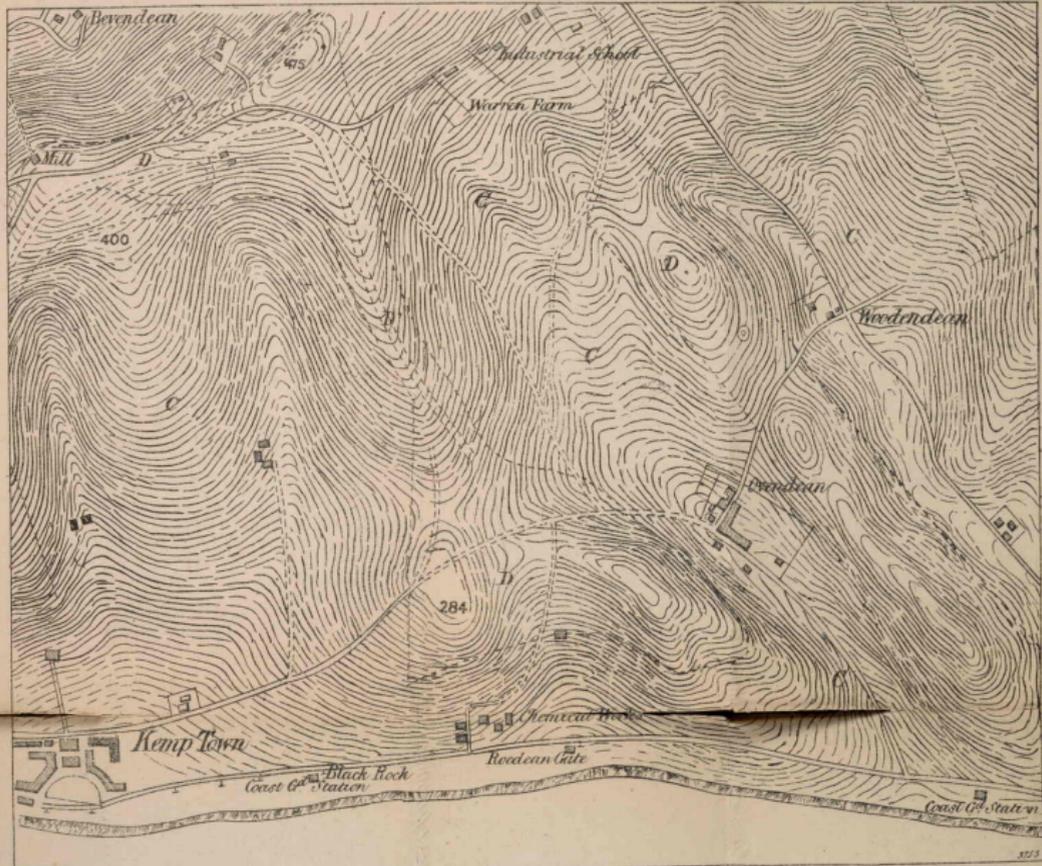
## WEIGHTS AND MEASURES.

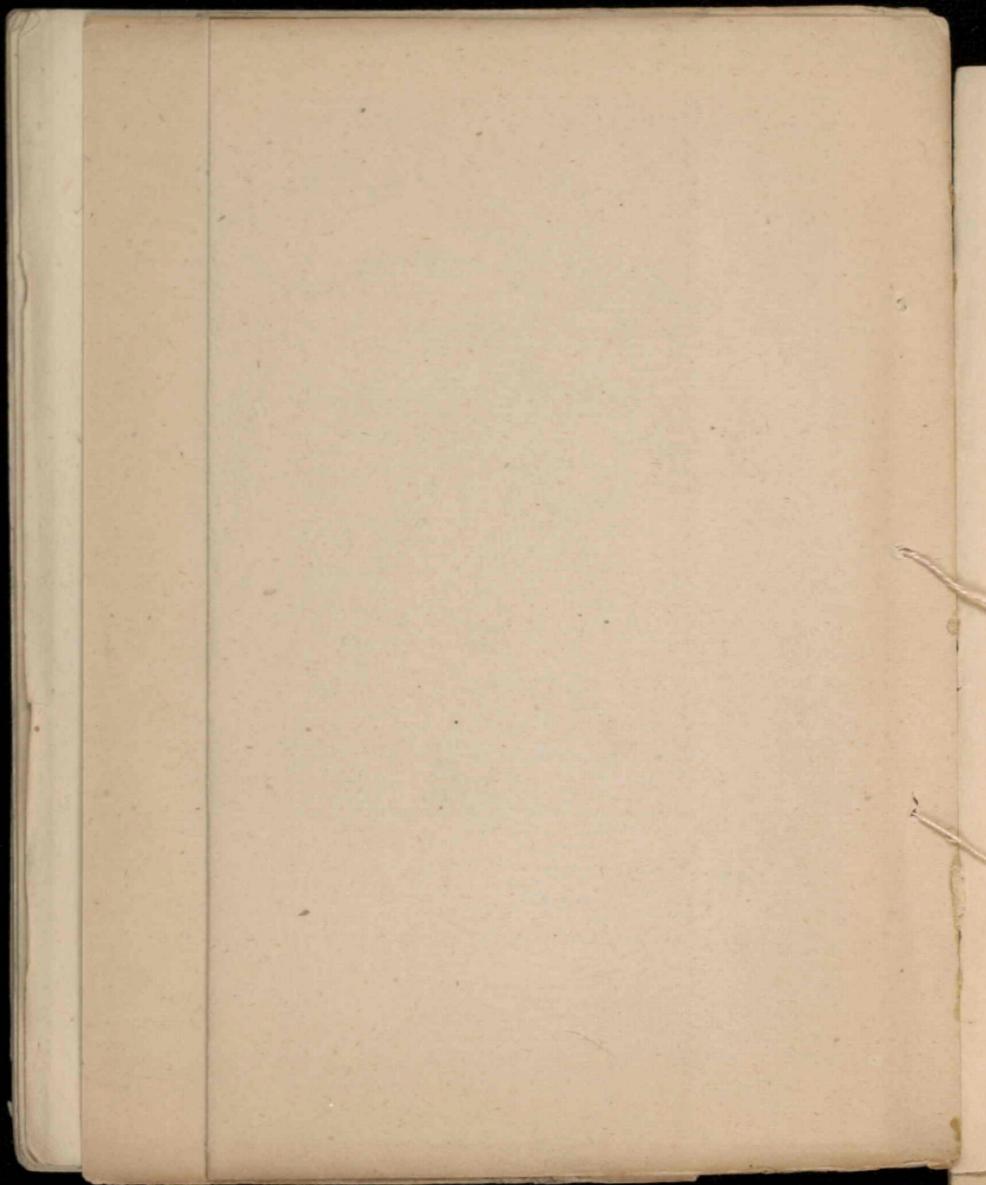
12 inches = 1 foot. 3 feet = 1 yard. 5½ yards = 1 rod. 22 yards = 1 chain. 220 yards = 1 furlong. 1760 yards = 1 mile.	144 square inches = 1 square foot. 9 square feet = 1 square yard. 30½ square yards = 1 rod. 40 rods = 1 rood. 4 roods = 1 acre. Roughly an acre contains 4,900 square yards, and a square acre has a side of 70 yards.	1728 cubic inches = 1 cubic foot. 27 cubic feet = 1 cubic yard. <hr/> 14 lbs. = 1 stone. 28 lbs. = 1 quarter. 112 lbs. = 1 hundredweight. 20 hundredweights = 1 ton.
2 pints = 1 quart. 4 quarts = 1 gallon. 2 gallons = 1 peck. 4 pecks = 1 bushel. 8 bushels = 1 quarter.	36 lbs. of straw = 1 truss. 56 lbs. of old hay = 1 truss. 60 lbs. of new hay = 1 truss. 36 trusses = 1 load.	A bushel of wheat weighs 70 lbs. A bushel of barley weighs 60 lbs. A bushel of oats weighs 45 lbs.
A cubic yard of hay in the rick weighs 200 lbs. A cubic yard of straw in the rick weighs 140 lbs. A cubic yard of grain weighs from 900 to 1,300 lbs., oats being the lightest.	A gallon of water weighs about 10½ lbs. A cubic foot of water contains 6¼ gallons.	



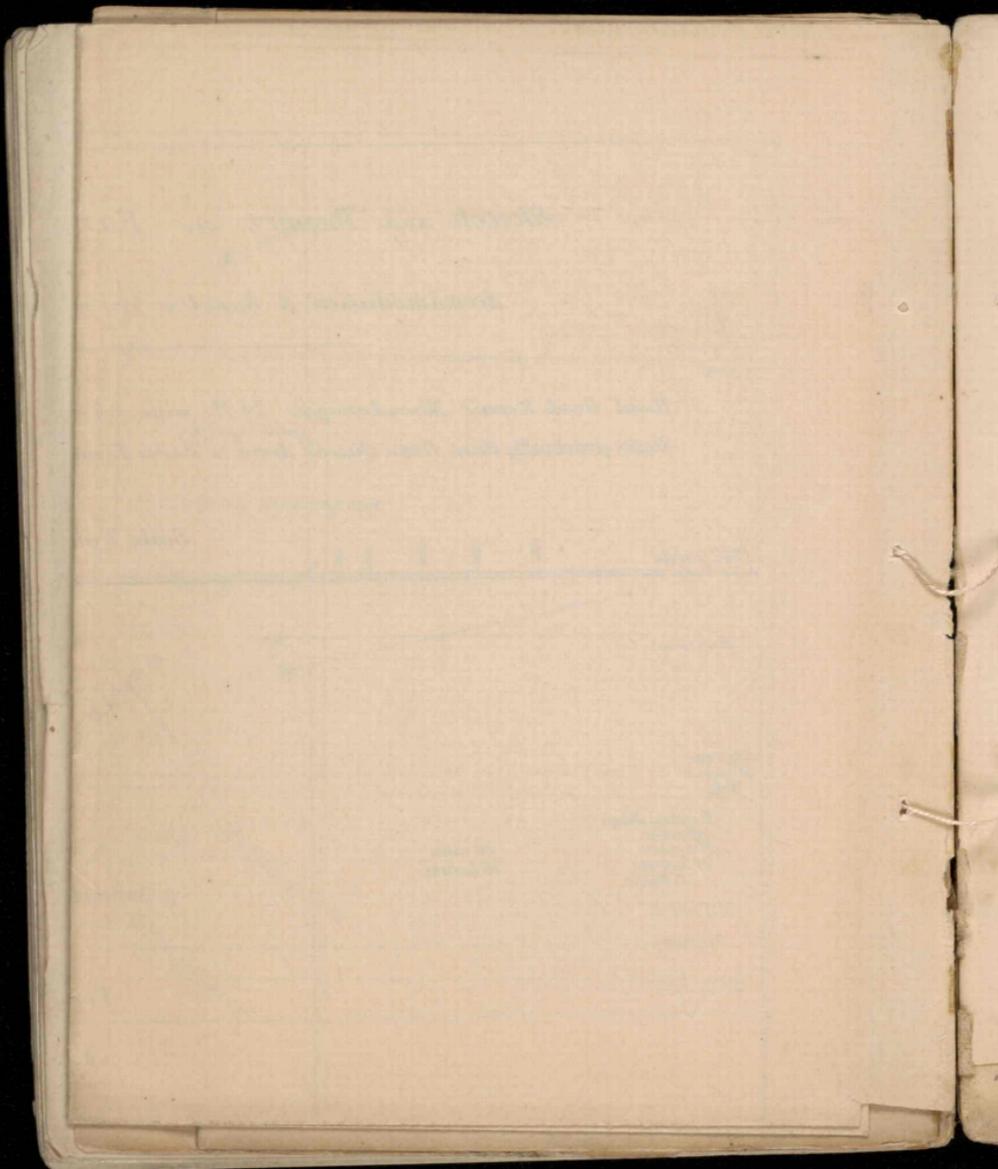










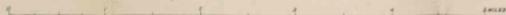


MAP OF GROUND ROUND ALDERSHOT

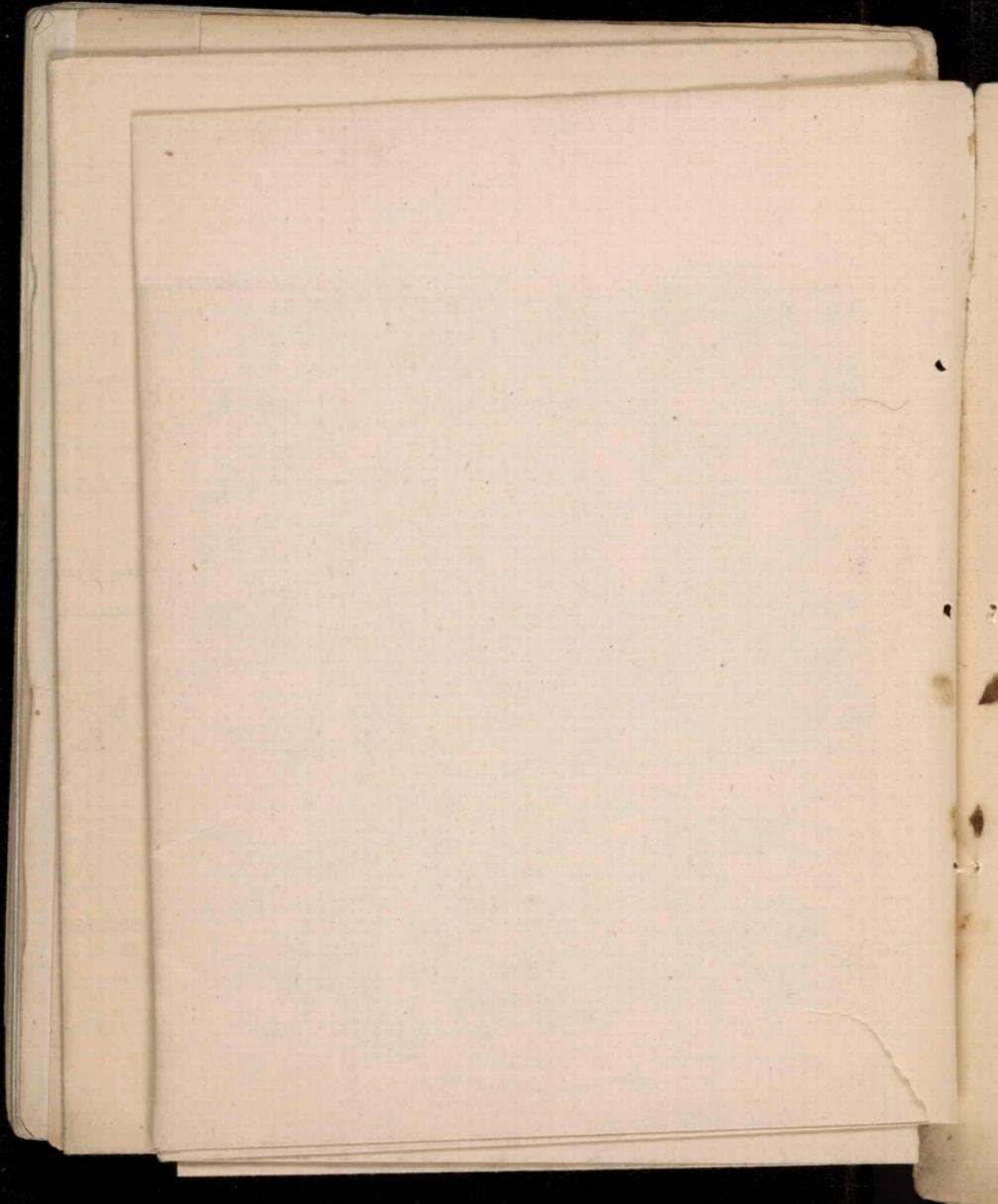
PLATE IV

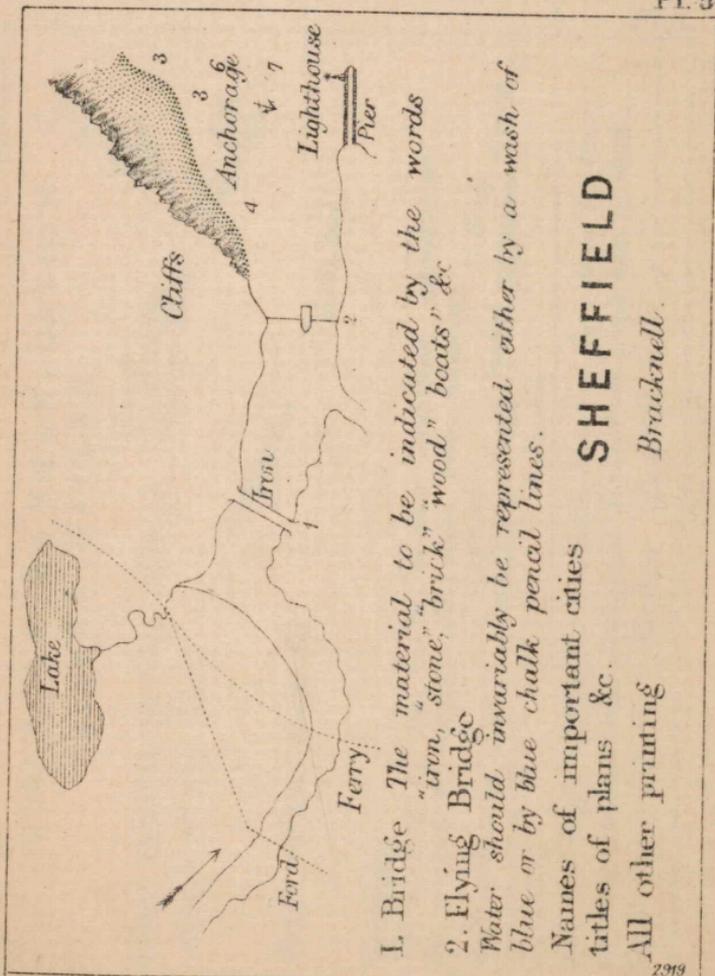


Scale. One Mile to One Inch.



Photographed at S.M.S., Chatham.





1. Bridge The material to be indicated by the words  
 "iron, stone," "brick" "wood" boats" &c

2. Elyng Bridge  
 Water should invariably be represented either by a wash of  
 blue or by blue chalk pencil lines.

Names of important cities  
 titles of plans &c.

All other printing

**SHEFFIELD**

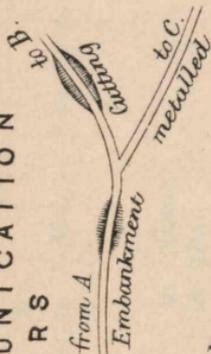
Brucknell.

2919

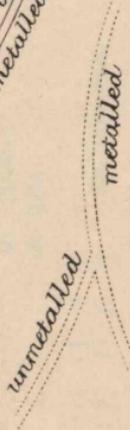


LINES OF COMMUNICATION  
AND RIVERS

Road enclosed by fence ditch or  
obstacle of any kind.



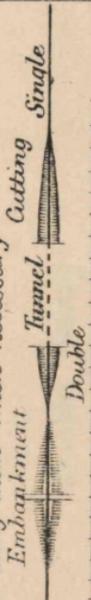
Road without fence &c



Footpath

The nature of the roads whether metalled, unmetalled  
&c, should be written along them when necessary

Railroads to be repre-  
sented by a thick  
Red line.



The word "Single" or "Double" to be written here and there along the lines,  
the transverse lines which distinguish double from single lines in black.

Canal  Lock  Electric telegraph 



TROOPS & C.

Scale 6 inches to 1 Mile. 3 inches to 1 Mile.

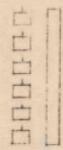
Field Artillery

Battery



Infantry

{ 500 men in 6 Co's  
two deep.

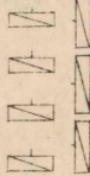


in column  
in line

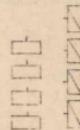


Cavalry

{ 500 men in 4  
squadrons



in column  
in line



Support



Sentry



Double Sentry



Vedette



Double Vedette



Direction of a Patrol



The first part of the book is devoted to a general history of the world, from the beginning of time to the present day. The author discusses the various civilizations that have flourished on the earth, and the progress of human knowledge and industry. He also touches upon the political and social changes that have shaped the modern world.

The second part of the book is a detailed account of the history of the United States, from its early settlement to the present. The author describes the struggles of the colonists for independence, the growth of the young nation, and the various conflicts and events that have marked its history. He also discusses the political and social developments that have shaped the American people.

The third part of the book is a history of the world from the beginning of time to the present. The author discusses the various civilizations that have flourished on the earth, and the progress of human knowledge and industry. He also touches upon the political and social changes that have shaped the modern world.

The fourth part of the book is a history of the world from the beginning of time to the present. The author discusses the various civilizations that have flourished on the earth, and the progress of human knowledge and industry. He also touches upon the political and social changes that have shaped the modern world.



Day Sentries, vedettes, and patrols coloured red.  
 Night ditto uncoloured.



Baggage

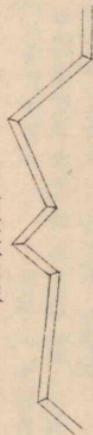
Clearances or demolitions



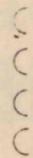
Entanglements or abattis



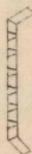
Intrenchments



Rifle pits



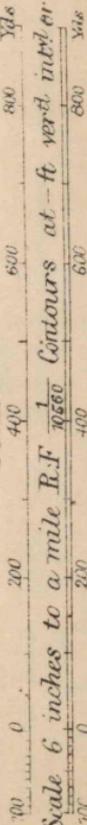
Battery

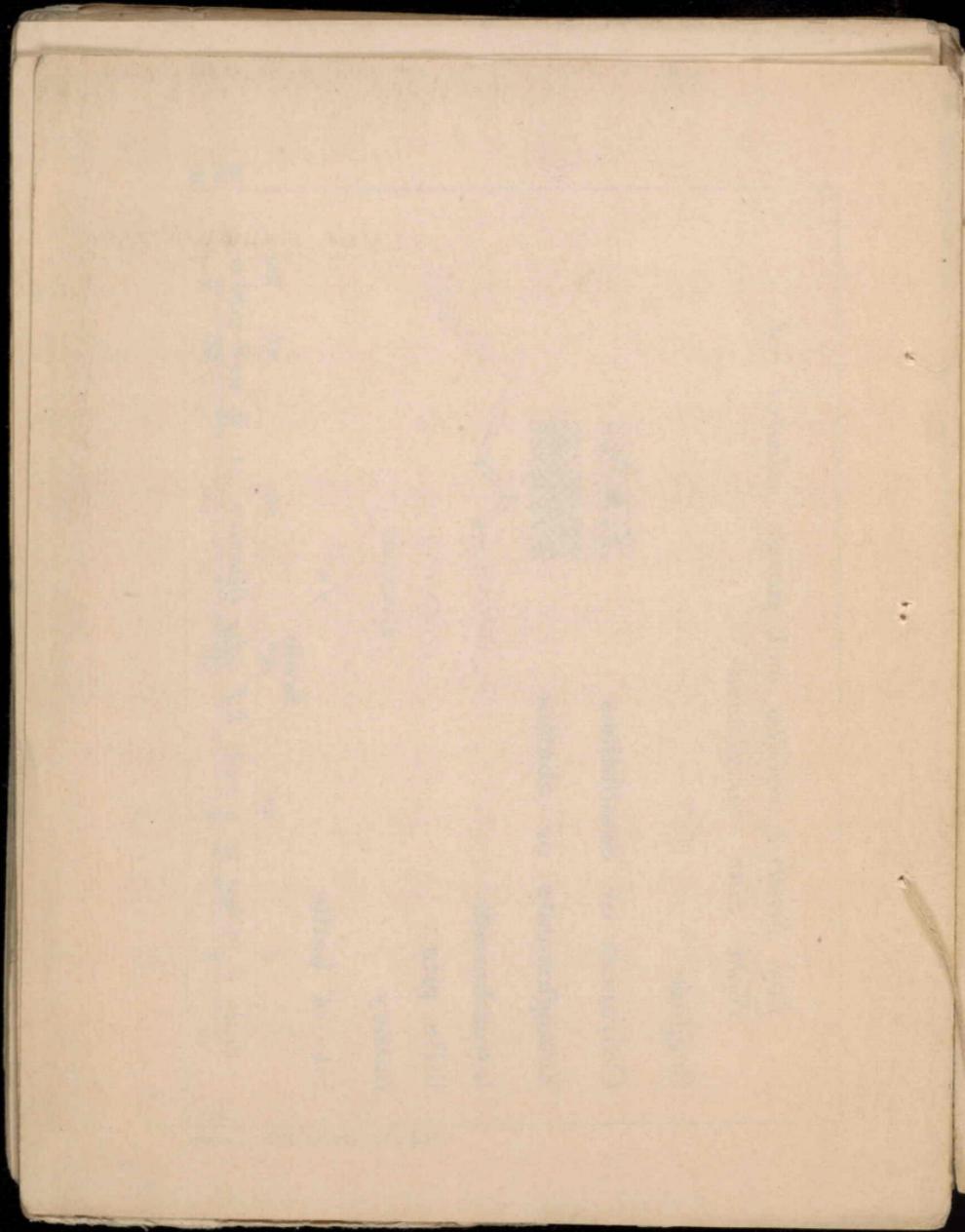


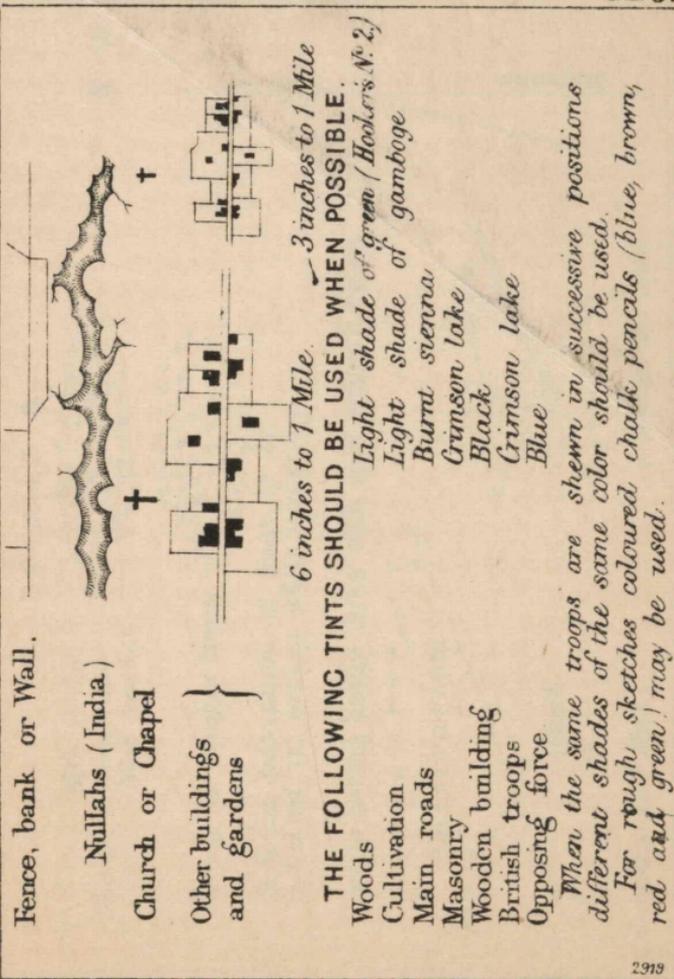
Site of battle



Scale.







Fence, bank or Wall.

Nullahs (India.)

Church or Chapel

Other buildings  
and gardens

6 inches to 1 Mile.

3 inches to 1 Mile.

THE FOLLOWING TINTS SHOULD BE USED WHEN POSSIBLE.

Woods

Light shade of green (Hooker's No. 2.)

Cultivation

Light shade of gamboge

Main roads

Burnt sienna

Masonry

Crimson lake

Wooden building

Black

British troops

Crimson lake

Opposing force

Blue

When the same troops are shown in successive positions different shades of the same color should be used.

For rough sketches coloured chalk pencils (blue, brown, red and green!) may be used.

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