LANDSCAPE SKETCHING

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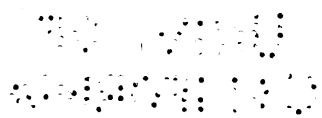


WAR DEPARTMENT,
WASHINGTON, *August 8, 1917.*

The following pamphlet on Landscape Sketching is published for the information of all concerned.

[062.1, A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

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

OFFICIAL:

H. P. McCAIN,
The Adjutant General.

LANDSCAPE SKETCHING.

THE CONTOURED MAP IS INDISPENSABLE IN MANEUVERING TROOPS.

The panoramic or landscape sketch is the means par excellence for target designation. It is also of great military value in illustrating a reconnaissance, making outpost sketches and range cards. Bridges, fords, forks in the road, and other features shown on topographical maps may be quickly identified by using marginal sketches.

30. **Photography** has been tested with elaborate devices as a substitute for landscape sketching. The results are fairly satisfactory when taken under propitious conditions of light and atmospheric conditions. But the camera can not select details. Useless features in the immediate foreground are emphasized, while essential details more distant are scarcely perceptible. Views of the same terrain taken from different angles are seldom possible in battle reconnaissance.

The delay caused by combining and analyzing the results will usually render the photographs of little service in that particular engagement. For the quick work and immediate results demanded by battle reconnaissance there seems very limited use for photography and the maximum demand for rapid free-hand sketching.

A landscape sketch shows the terrain graphically and requires no study or training to comprehend. The horizon is always of military importance. This is always shown, as well as intervening crests, woods, houses, fences, etc.

A great French authority states: "It is as necessary for an officer to know how to draw as to know how to write, for often with two lines he can tell more and tell it better than with two pages of writing, inasmuch as a few strokes of the pencil are made more quickly and easily than a report is composed, and secure and classify details for a report much better than do the memories which we preserve from a long reconnaissance."

Drawing is the educator of the eye, par excellence.—It teaches one to judge ground rapidly by developing that instinct which

gives to the sight a power, and certainly not acquired otherwise than by the habit of studying the landscape in detail and in its various aspects. It engenders an accuracy of observation which mechanically notes the form and aspect of things, even though the mind be occupied with other matters.

The habit of sketching gives to the memory a faculty that might be called intuitive, that of grasping, in spite of one's self and in spite of mental distraction, the form and color of objects seen.

The ability to estimate distances and see military features of the terrain is admittedly an indispensable part of military training. There is no surer or quicker method of educating the eye for ground and distances than actual practice in sketching.

This work, done from the terrain in the perspective, has a terror for most officers and men. It seems customary to state, "I am not an artist," and give up without an honest attempt to attain proficiency.

The making of route and position sketches is required as a matter of routine knowledge throughout the Army. Many an officer and enlisted man points with pride at such sketches he now makes with little effort, where in the beginning he viewed with alarm the possibility of ever being called upon to map a road or outpost position.

When attacked in earnest, landscape sketching will be found to be no more difficult than topographical mapping and far easier to many.

An item that may appeal to some is that the landscape sketch is made without the sketcher moving from one spot, and is usually executed while seated.

Military positions are located on the sketch by the angular deflection, measured in mils, from a reference point. The range, determined by measurement or estimation, and the deflection together locate the target, etc. The deflection of each end of troops in line is shown, thus furnishing the necessary data for determining the hostile strength.

As the reference point is chosen for its clear definition, it will seldom be exactly in the hostile position. The peak may be 20 miles beyond, the house or tree chosen may be nearer or more distant than the lines of enemy troops.

This position of the reference point with reference to the place from which the sketch was made and the deflection of targets was determined must be considered in advancing to a position illustrated by a landscape sketch.

The deflection in mils and the lateral arrangement of features is accurate only for the position from which the sketch was made. As soon as the observer moves from that position changes occur in the deflection due to parallax. This fact must be considered in apportioning the target between companies, platoons, etc.

The paper used by a patrol will usually be a notebook or the back of a field message blank. The length of the sketch will seldom exceed 8 inches, which includes a visual angle of about 30°. A pad especially prepared for sketching is furnished for this work at the School of Musketry.

When landscape sketches are made on the back of the field message blank (Signal Corps, 217, A), held 20 inches from the eye, each inch of the rule printed at the top of the sheet subtends 50 mils; at 10 inches, 100 mils; at 15 inches 1½ inches on the paper subtends 100 mils.

TARGET DESIGNATION.

31. The landscape sketch presents graphically the location of the target and other data necessary to fire direction and control.

The landscape sketch portrays graphically a sector of the terrain from the position of the observer to the horizon, including the targets. The reference point, an easily recognized feature of the terrain, is identified on the sketch by an arrow head. Targets are indicated by use of conventional signs for Infantry, Cavalry, Artillery, and machine guns. The deflection of the target from the reference point is given in mils and the range in yards, both entered along the upper margin of the paper along with any explanatory data advisable. An error in deflection should never exceed 10 mils. The manner in which the ranges are determined—by measurement or estimation—is noted on the sketch.

The deflections locate the flanks of the target and permit a division into sectors, selection of aiming points, preliminary instruction to range estimators, etc., before arriving at the point from which the sketch is made.

ILLUSTRATION OF RECONNAISSANCE REPORTS.

32. By means of landscape sketches a patrol leader can render his report clear, accurate, brief, and comprehensive.

A reconnoissance patrol may travel many miles and discover many items of military importance in the terrain covered. Landscape sketches made at happily chosen places, identified on his route sketch, will reproduce the terrain in a familiar aspect. A few lines and explanatory remarks will convey graphically and accurately much valuable information otherwise difficult to describe. A report of a hostile position is of the greatest importance; the same report illustrated by a sketch showing graphically the flanks and location of the position with reference to the neighboring terrain permits small opportunity for error. Such a sketch, locating the hostile disposition with reference to easily recognized features of the terrain, showing crest lines and possible firing positions, may be made from the concealment offered by brush, rocks, etc.

The position of the observer and the direction illustrated by a landscape sketch are located on the route sketch thus:

The number corresponds to that on the landscape sketch and the arrow points in the direction illustrated.

A battle reconnaissance patrol is sent out just preceding or even during an engagement. Reports must be brief but comprehensive. Panoramic sketches made from possible firing positions will portray graphically the targets presented by the hostile lines.

OUTPOST SKETCHES.

33. A landscape sketch portraying the terrain in front of an outpost position presents a graphic picture to higher commanders of the country under observation. Sketches on which the ranges and directions to different points are noted are of great value when this information is transmitted on changing reliefs.

RANGE CARDS.

34. Ranges are determined to various objects on the terrain in front of a position prepared for defense.

This information is placed on sketches of the terrain, or range cards. These sketches are always graphic representations of the object indicated, drawn plainly to facilitate ready identification by troops called upon to oppose the enemy.

Range cards made as landscape sketches permit easy and accurate identification of the ranging points.

MARGINAL DRAWING.

35. Small marginal drawings of fords, bridges, forks in the road, landmarks, etc., add immeasurably to the value of the topographical sketches or maps. There is often delay in identifying the road crossing, bridge, ford, etc., on the ground with the map. This difficulty is eliminated if a small sketch of the crossing, bridge, etc., appears on the margin of the map. (See plate 1.)

PANORAMIC OR LANDSCAPE SKETCHING.

Landscape sketching presents the terrain as actually viewed by the observer. Proficiency is acquired by practice. Conventional signs are limited to those representing troops. Other military data is written on the sketch.

36. Military landscape sketching requires a certain knowledge of the general principles of drawing, including the elements of perspective, which are its foundations. This knowledge, however, may be acquired during actual practice while sketching from nature.

Military landscape sketching differs in important characteristics from purely artistic work. The effect and harmony of the sketch is entirely secondary to the delineation of the military features to be portrayed. Accuracy, simplicity, the elimination of details not of military importance, a correct generalization of the background, and, above all, an easy comprehension at a glance, these are the essentials of a military landscape sketch.

Landscape sketching presents the country in elevation instead of in plane. It is not necessary to be an artist to produce a useful sketch. It is often better that the artistic sense be absent, and that instead of idealizing a landscape, it should be looked at with a cold, matter-of-fact military eye.

The beginner will at first be confused by the mass of detail in the landscape before him. He must ignore all but the outline of the features presented. Omit even prominent details in the immediate foreground that are not of value in the sketch, such as telegraph poles, trees, etc. He must learn to leave out unimportant details. The fewer lines used the clearer the sketch and the less time required to make it.

A difficulty will be met in drawing the houses, trees, etc., as they are seen in the landscape. Absolute accuracy in the details of their appearance is not essential. The sketcher first reproduces the outline of the important military points, as skyline

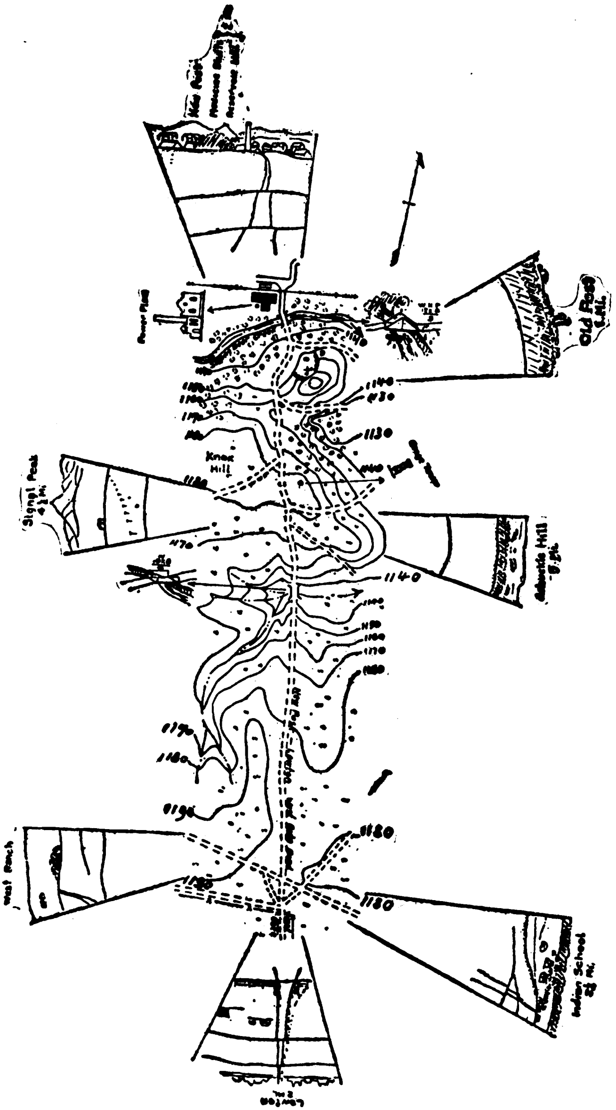


PLATE 1.

and crests, then fills in other details with the fewest lines possible. Use bare outlines and leave general shading alone. Unnecessary shading in a landscape sketch tends to confuse and distracts from its clearness.

The beginner will do well by first copying other landscape drawings. By so doing he will learn to handle his pencil and gain confidence in himself. Then make several sketches of the same country at different times. The ability to sketch will come with surprising facility.

The chief difficulty experienced by the beginner is in producing the receding effect in his picture, the perspective. To overcome this, note carefully the size of the objects. Looking at the landscape, as objects are placed farther off, they appear smaller. Make them so in the drawing.

The comparative dimensions of objects near and distant may be noted by holding a pencil at arm's length before the eye and defining the limits of the object between the thumb and end of the pencil. Heavy lines will be used in depicting the foreground, medium lines objects in the middle distance, and the background sketched by fine strokes with a hard pencil.

A careful study of the ground before commencing to draw will assist greatly. Field glasses will define accidents and details not plain to the eye.

First draw the sky line, then work toward the foreground, gradually thickening the strokes. It may be advantageous for a beginner to use three pencils of varying hardness, as an H for the foreground, 3 H for middle distance, and 5 H for background. Commercial pencils, Nos. 2 and 3, pointed and used with care, produce the same results and are always available. Several pencils should be carried pointed and ready for use.

To put in woods, sketch the outline of the tree tops with a succession of short curves, then draw a broken line to show the near edge of the woods if in relief and fill the space between with diagonal shading. This is the only shading required in the entire landscape sketch, the result being that trees stand out among other details.

It will be noted that woods are of great value for indicating depressions and defiladed areas. A tree on a plain or slope in full view will show a portion of the trunk. Trees partially concealed by ridges show only the rounded top. Draw only the silhouette or outline of the tree, do not attempt detail of branches.

All roads are shown by two unbroken lines representing the edges which get closer together as the road recedes until they unite forming one line.

Do not show unimproved roads and trails by dotted lines as on contoured sketches; use solid lines, and place any explanatory data in the T-section at the top of the paper.

Draw only the outline or silhouette of buildings.

PRACTICE IN LANDSCAPE SKETCHING.

37. (*a*) A beginner in landscape sketching should first copy some typical sketches. He will thus learn how to handle his pencils, the relative weights of the lines in foreground and distance, and the extremely small size of the few conventional signs used to represent troops. He will also appreciate the importance of a sharp point to his pencils, and keep several always ready for use.

(*b*) The next step should be drawing imaginary landscapes. This is excellent practice. Skylines and intermediate crests can be drawn, and troops of all arms placed in position.

(*c*) Select a sector convenient to quarters, and sketch the same landscape at least once a day until the result is satisfactory.

(*d*) Select other landscapes for practice.

(*e*) Allow 10 minutes for the completion of a sketch.

THE SCHOOL OF MUSKETRY SKETCHING PAD.

38. A pad of specially ruled paper has been designed for use in landscape sketching at the School of Musketry. (See plate 2.)

The sheets are 8½ by 5½ inches. Vertical lines in light blue cross the paper. These vertical lines are of value as guides in dropping features of the landscape located over the top of the paper down to the sketch strip.

The intercept between these vertical lines equals the 50 mils division of the musketry rule. A cord run through the metal eyelet set in the center of the backing near the top and knotted at 15 inches is used to insure the paper being held at the same distance from the eye each time the pad is oriented. With this length of cord the interval between the vertical lines subtends 50 mils.

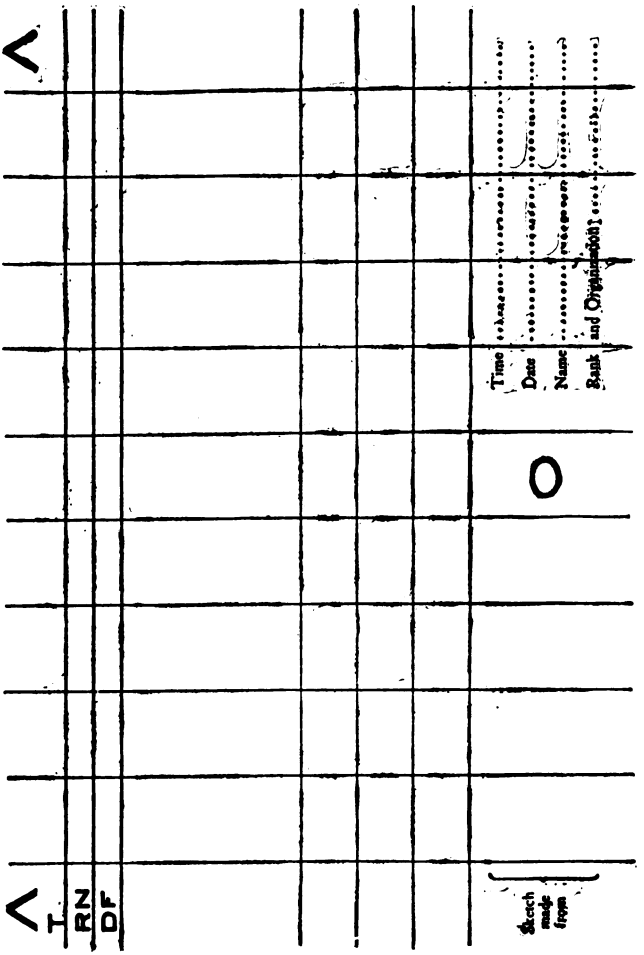

T.
RN
DF
Sketch made from
Time
Date
Name
Rank and Organization

PLATE 2.

Four horizontal lines, also in light blue, at half-inch intervals are drawn just below the center of the sheet, the four inclosing a strip 1½ inches in width. This strip marks the vertical limits of the sketch.

At the top of the paper are two heavy orientation marks and three horizontal black lines defining divisions marked for the target, range, and deflection.

Below the picture strip on the left is a place for a description of the position from which the sketch was made. In the center is a circle to contain the number of the sketch and indicate its position. By the side of this circle an arrow with one barb is drawn to show the magnetic north. On the right are spaces for the time, date, name, rank, and organization of the sketcher.

MAKING THE SKETCH.

39. 1. Hold the sketching pad in front of the eyes, facing the sector, upper edge of paper horizontal, the cord knot in the teeth.

NOTE.—To use the vertical lines as a mil scale, this distance of 15 inches must be accurate. A cord threaded through the cardboard backing and running over the top of the pad at the center, knotted at 15 inches, will insure this distance.

2. Close one eye, and move the paper laterally until the sector desired is included between the two orientation marks. The paper is now oriented.

NOTE.—If the sector desired is too broad to be included between the orientation marks, the field may be covered by making two sketches or by holding the pad closer to the eye. In the latter case the vertical lines will subtend more than 50 mils, and the deflection must be determined with the musketry rule.

3. With the paper thus oriented, the points or objects in the sector are visible along the upper edge, appearing in their proper relative positions, horizontal and vertical.

4. With a pencil place a mark near the upper edge of the paper opposite the most prominent points or objects in the sector. Marked features on the skyline are located first, as they aid materially in placing other points in the drawing.

5. The lateral location of points on the skyline being thus determined, place the paper on the knee or other convenient support and transfer the marks from the upper edge to the "sketch section" of the paper. Commence with the mark opposite the highest point, which is placed *on* the first blue line.

This determines the highest part of the sketch. The marks locating other features are transposed in their relative vertical and horizontal positions.

6. Draw the skyline, lightly, by connecting the transposed marks. This will give the horizon in profile.

7. Other points, crests, targets, etc., are now entered in the same manner, reorienting the paper when necessary. With practice the other features of the landscape may be drawn in without reorientation, once the skyline has been located on the sketch.

8. The immediate foreground is indicated by a very heavy line above the circle. This may be made by using the side of the pencil point.

By this method the lateral proportions of the sketch will be fairly accurate. The vertical should be slightly exaggerated. No effort need be made to effect this, since most sketchers will do so unconsciously.

Relative vertical proportions may be determined with accuracy by moving the pad laterally until the highest point on the horizon is just visible past the right edge of the paper. Hold the uppermost horizontal blue line on this highest terrain feature and mark with a pencil the points where lower terrain features appear along the edge of the paper. Transfer these elevations to their proper places in the sketch.

In addition to the skyline, important crest lines and other features will be sketched in, especially within the area of advance. The position of fences, roads, walls, and woods of possible military value must be included. Features of the foreground are omitted unless of military importance.

No effort should be made to obtain purely artistic effect.

Avoid detail. Show buildings, woods, trees, and other features only in the outline of the silhouette.

Shading is used only in denoting woods, cliffs, and embankments.

MILITARY DATA.

40. 1. **A reference point** is selected from the prominent terrain features of the sector. This must be an object easily recognized by another person using the sketch.

The reference point is identified on the sketch by a vertical line drawn from near the top of the paper, stopping just above the point or object. An arrow head is drawn at the lower end of this line and a zero (0) is bisected in the deflection (DF) section. Even when the enemy is very distinct a reference point is designated as the enemy may move or disappear.

2. In the **T-section** at the top of the perpendicular is entered the *name* or description of the reference point and all other objects identified, including the letter denoting the nature of the target (I, A, C, MG). Conventional names such as "May," "June," "July," may be assigned to important terrain features in the absence of known names.

When features on the horizon or terrain are beyond 6,000 yards, estimate the distance in miles and enter same below the name of the feature in the T-section as—

Mount Scott
11 miles.

3. Targets are accurately located on the sheet by the use of conventional signs.

In addition to these conventional signs, the location is emphasized by a perpendicular dropped from the "T" line. At the top of this perpendicular, the abbrevation I., C., A., or M. G. further indicates the nature of the target.

In case the target or position shown has marked linear dimensions, as infantry deployed, a perpendicular is dropped to each end of the line occupied.

4. Information concerning the target and *nothing else* is written vertically upon the sketch along the perpendiculars in the broad space between the sketch and the DF^1 line.

For example, on perpendiculars headed—

I.

4 Plat. col. advancing.
Entrenched.
Column, moving east.

C.

Led horses.
Moving north.

A.

4 guns in position.
Limbered.

M. G.

4 guns in position.
Moving west.

Infantry	(I)	
Cavalry	(C)	
Artillery	(A)	
Machine Guns	(M G)	
Infantry Detachments	(I)	
Cavalry Detachments	(C)	

CONVENTIONAL SIGNS FOR TROOPS

PLATE 3.

7498°—17——8

The note on the perpendicular should state the strength, formation, and whether in position or in motion; if the latter, the direction taken.

Give the length of target or enemy line in mils. This measurement should be accurate within 10 mils.

Do not assign organizations to the enemy, as company, battalion, troop, etc., unless positive this information is correct. State the arm and give length of line observed in mils.

5. **Range.**—Estimated or measured, is entered in the RN space, across the perpendicular indicating the target or object. The method of determining the range is written after RN—"Estimated" or "Measured."

6. **Deflection.**—The deflection in mils from the reference point is determined either by use of the vertical lines on the pad or by means of a mil scale and entered in the DF space across the perpendicular indicating the target or object.

This deflection should never be in error more than 10 mils. Place a reference point on each sketch. Do not carry the deflection across several joined sketches. The sketch containing the first reference point may be lost, and thus make the others valueless. Each sketch must be complete in itself.

7. **The location** of the sketcher is described by using the name of the ridge, knoll, etc., or by giving the direction and distance from a known point, as—

"Evans Knob," or

"Ridge 400 yards west of Apache Gate."

This data is entered in the lower left-hand corner of the sketch.

8. The sketches are numbered serially within the circle at the bottom of the pad. The location and direction illustrated on a route sketch are identified by the corresponding number in a circle with an arrow indicating the terrain sketched.

9. The **compass bearing** is shown by an arrow with one barb, drawn beside the circle. To determine its direction, orient the sketch in a horizontal position with the "vertical" line marking the reference point pointing toward the reference point. Then draw the arrow parallel to the compass needle, barb toward the north.

10. **The time, date,** and **signature** entered on right of the circle completes the sketch.

NOTE.—**Distance of pad from the eye.**—The pad designed for use at the School of Musketry is ruled with vertical lines sub-

tending 50 mils when held 15 inches from the eye. This interval was selected as a matter of convenience to the student, conforming to the divisions of the musketry rule.

If preferred, the paper can be oriented by holding the sheet about 12 inches from the eye and by moving the paper back and forth until the orientation marks coincide with two selected terrain features preferably on the sky line. In this case the deflection in mils must be determined by use of a mil scale, and the vertical spacing on the paper be ignored when entering deflections from the reference point. The value of the intervals in mils (50) is correct only when the pad is held at the proper distance from the eye (15 inches).

In making a hasty sketch on any paper at hand, the deflection in mils is ascertained with a mil scale, or approximated by using the gun sight, fingers, or the trigger guard of a pistol. In infantry and machine-gun companies and battalions, the following individuals should provide themselves with a mil scale as part of their field equipment:

(*a*) Battalion commanders.
(*b*) Adjutants and reconnaissance officers.
(*c*) Company commanders.
(*d*) Leaders of platoons, sections, and squads.
(*e*) Seconds in command and platoon guides.
(*f*) Scouts and agents of communication.

Also, any other individual who aspires to any of the positions above enumerated, should provide himself with a mil scale and seek to perfect himself in its use.

JOINING SKETCHES.

41. Several sketches will often be made from one position for the purpose of showing more terrain than can be included on one sketch.

Whenever two sketches are to be joined, the same terrain feature must appear on each—near the left edge of one and the right edge of the other. The procedure is as follows, when given a terrain too wide to be included in one sketch:

Make a complete sketch, including the terrain from the left, for example, as far as the paper will permit toward the right, noting an object approximately beneath the right orientation mark and preferably on the sky line. The next sketch will commence with its left orientation mark over the feature noted

on the right of the preceding sketch, this feature appearing on both sketches. This repeating of a feature on two adjacent sketches is continued until the required sector of terrain is covered up to a complete panorama of 360°.

A series of seven sketches may be made, for example, from one position, giving a panorama of 180°. If this panorama extends from the east through the north to the west, the arrow on the first sketch indicating the magnetic bearing will lie parallel to the bottom of the paper pointing to the observer's left, the arrow on the fourth sketch (looking north) will lie at right angles to the lower edge of the paper, pointing toward the top, and the arrow of the last sketch (looking west) will lie parallel to the lower edge of the paper, pointing to the observer's right. The arrows of the second and third sketches will occupy intermediate positions with reference to the lower edge of the paper between those of the first and fourth sketches, and the arrows of the fifth and sixth sketches intermediate positions between the fourth and seventh. (See plate 4.)

In assembling to form a panorama the sketches are placed in order on a flat surface with all the arrows parallel. In the above example, a panorama extending through 180°, the sketches form a semicircle. (See plate 4.)

In "joining" two adjacent sketches, the corner of the right sketch (for example), folded under in a line through the center of the common feature. (The fold usually strikes the lower edge of the paper about an inch from the corner and the right edge about one-half inch from the top.) Place the folded sketch over the other, so that half the common feature will be visible on each sketch, and with this common feature as a pivot turn the right sketch until the arrows of both sketches are parallel. The crests and other features of the two sketches should meet approximately along the edge of the fold. The section of the right sketch folded under will depict the identical terrain it covers on the left sketch. (See plate 5.)

As landscape sketches are made rapidly and with a free hand, some adjustment of data will usually be necessary to secure unbroken lines where the sketches meet. The joining should be checked on the ground and corrections made without hesitation.

When several joined sketches are necessary to show the location of related targets, each sketch should be complete in itself with reference points, deflections, etc.

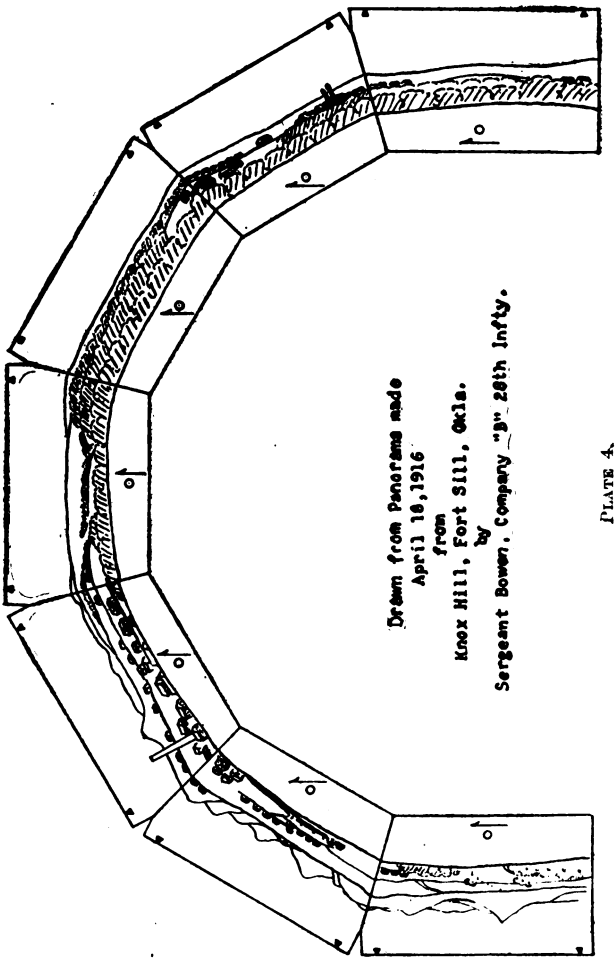
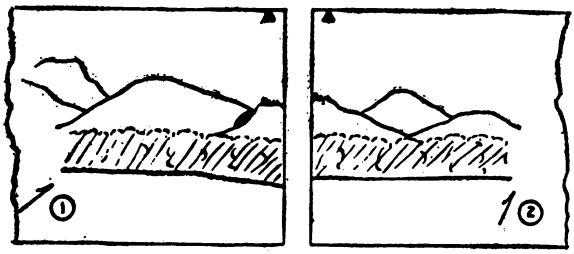
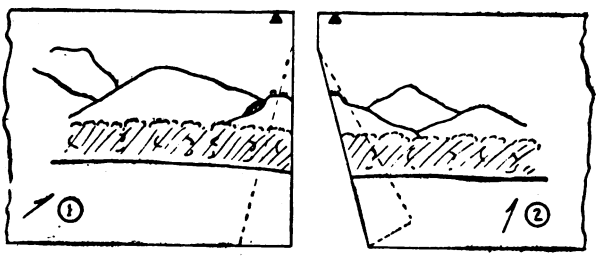

Drawn from Panorama made
April 16,1916
from
Knox Hill, Fort Sill, Okla.
by
Sergeant Bowen, Company "B" 28th Infty.

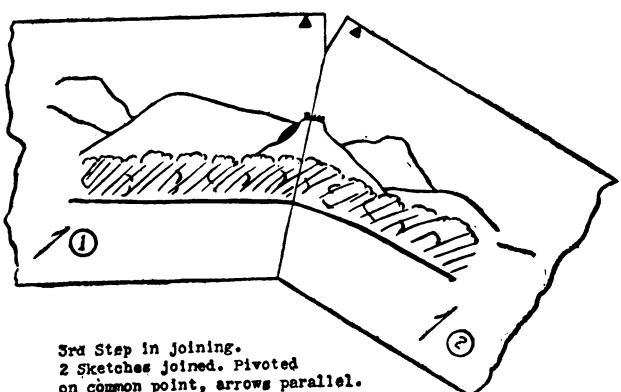
PLATE 4.



1st Step in joining. Two sketches showing same terrain feature near adjacent edges.



2nd Step in joining. Corner of sketch on right folded through center of reservoir hill preparatory to placing over sketch on left.



3rd Step in joining.
2 Sketches joined. Pivoted on common point, arrows parallel.

PLATE 5.

The sketches will be joined as chords of a circle and not arcs. This is because the successive sketches are drawn on flat surfaces and between straight horizontal lines. A panorama will therefore consist of a series of sketches joined by slight angles. This will be found to interfere little with the accurate representation of the terrain.

In the following pages plates 6 to 11, both inclusive, illustrate the manner of depicting various features, such as skylines, roads, woods, pole lines, fences, railroads, buildings, and villages. Plates 12 to 18 are illustrative of finished sketches.

MECHANICAL AIDS TO LANDSCAPE SKETCHING.

42. There are several other methods used in the instruction of beginners in landscape sketching. Many of these require special apparatus not always available for use in the field.

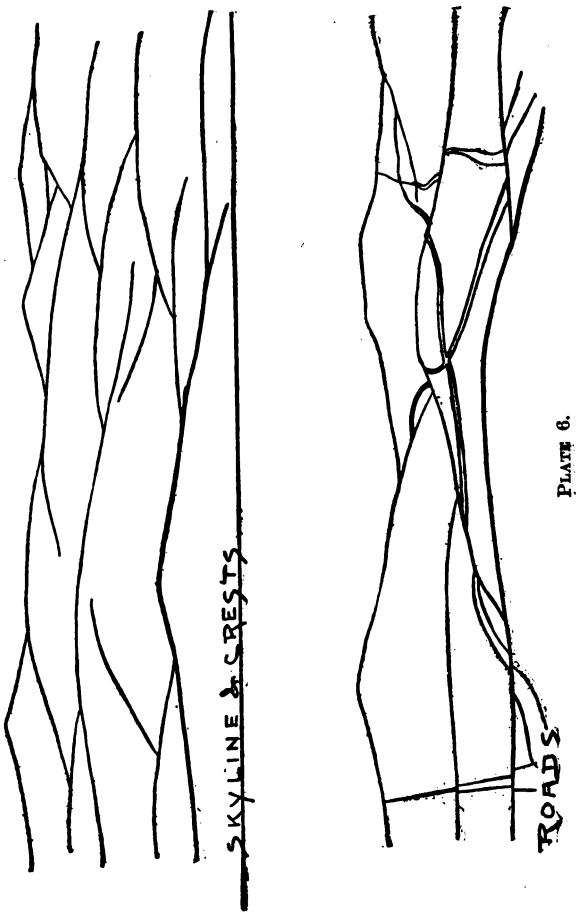
One system requires a frame bearing a number of vertical and horizontal cross wires which is placed in the ground at such a distance before the eye as to intercept the sector to be sketched. The paper used is ruled in rectangles corresponding exactly to those intercepted by the wires of the frame. This method is accurate but in practice has been found to develop a tendency toward filling in each rectangle with minute details. This results in slow, painstaking work instead of the rapid free-hand sketching essential in reconnaissance.

Another method of use in learning to sketch is the following: A piece of wire gauze of mesh large enough to admit the point of a pencil is cut exactly the size of the paper used. To locate the critical points of the landscape on the paper, hold the gauze out before the eye, orienting it on the main reference point or other selected features of the landscape. Place the pencil point in the gauze at the feature to be recorded, lay the gauze on the paper, thus locating this point. Do the same for the other prominent features of the terrain. It will be found advisable to locate the points along the skyline and complete this portion of the sketch first. Then locate and sketch in the features of the middle and foreground. The gauze must be carefully oriented every time a point is located for transfer to the paper. For this purpose permanent orientation marks should be placed on the gauze. A string attached to the center and held in the teeth will help in reorientation. This method will be of assistance to men who find difficulty in transferring points from the upper edge of the paper to the proper place

in the sketch. The principle is very simple, and the result should be an accurate sketch. This scheme does not demand specially ruled paper and no apparatus beyond the gauze.

These two methods are mentioned as of possible interest to encourage men who find landscape sketching difficult at first. The confidence engendered by the results attained from the use of these or similar aids to sketching will soon enable a man to draw with no assistance other than pad, pencil, and eye. Any method is satisfactory that will produce results.

The system of landscape sketching described in detail in this pamphlet has been carefully considered and tested. It is believed that little difficulty will be encountered in its use. The pads prepared for use in this work at the School of Musketry are designed for men first attempting this important and heretofore neglected item in the military education of the professional soldier.



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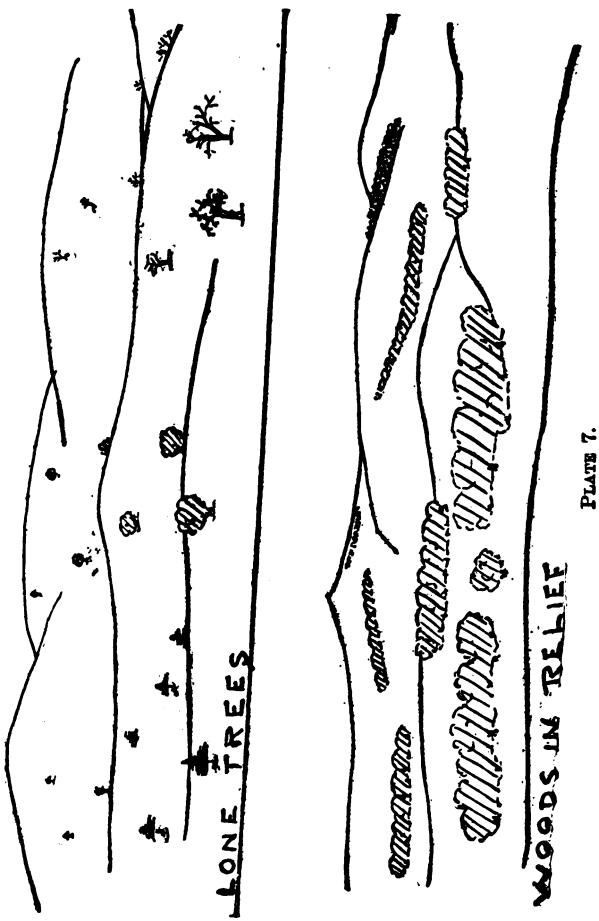

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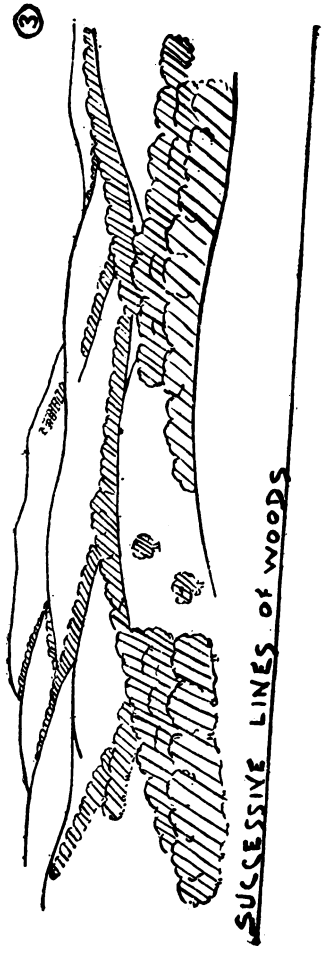

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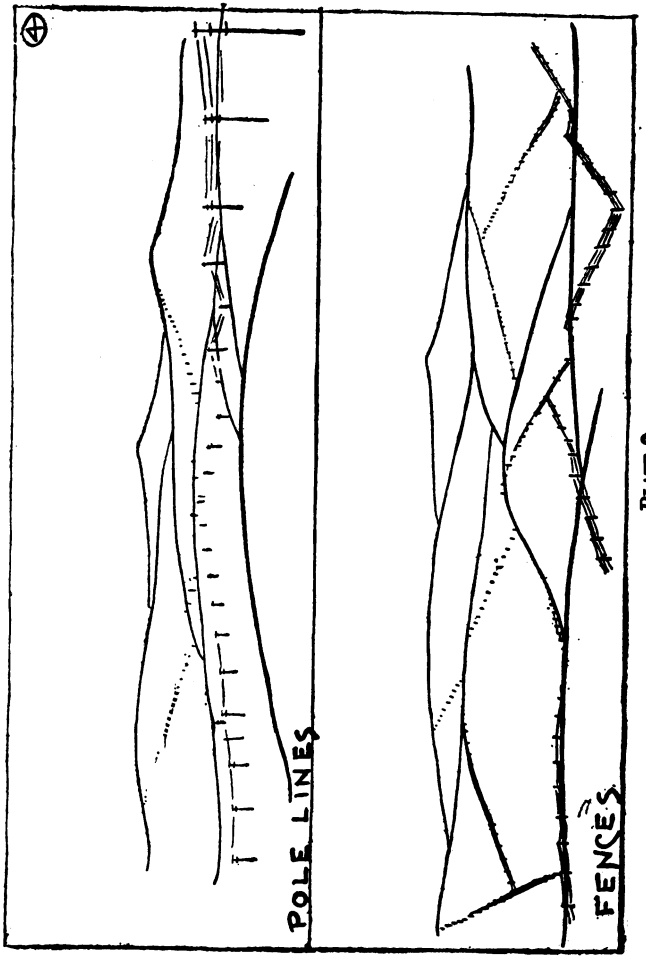

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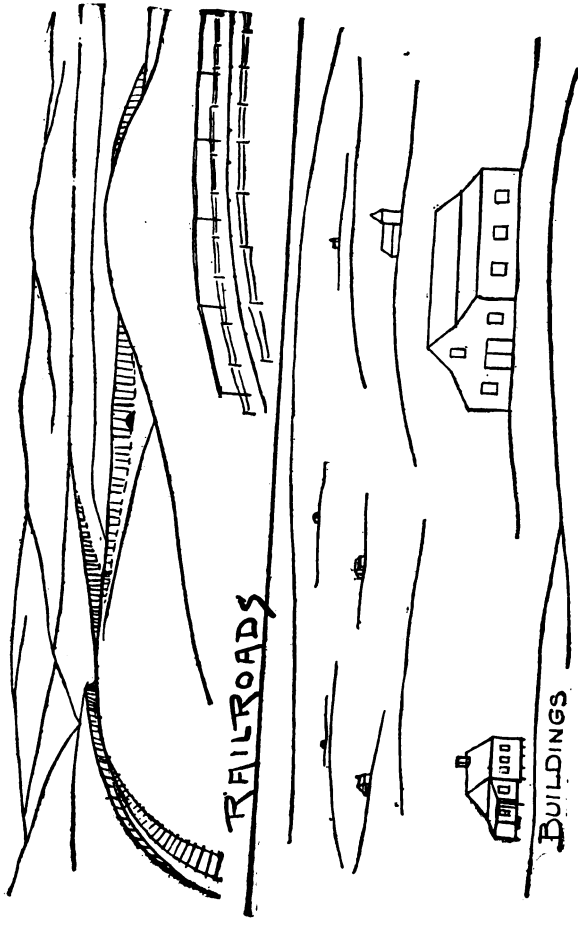

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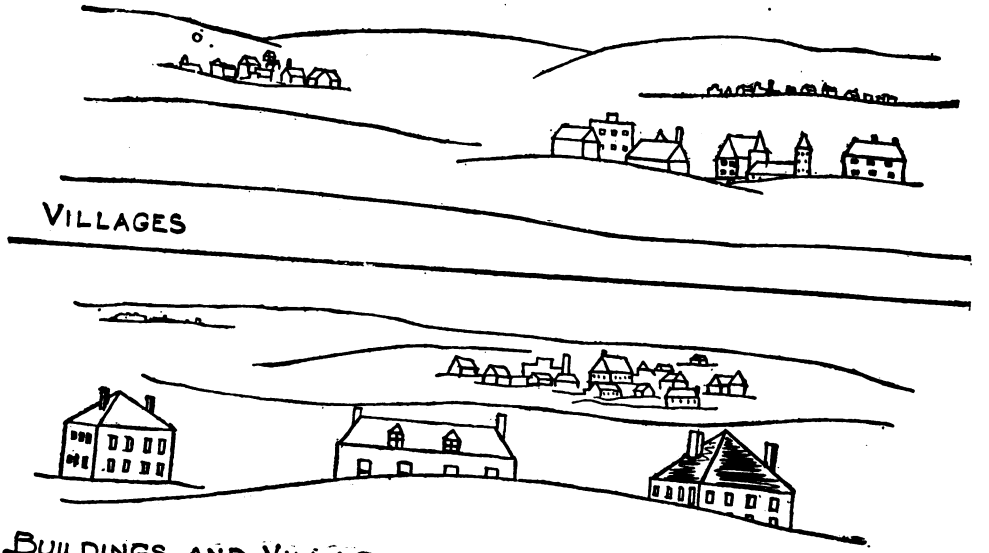

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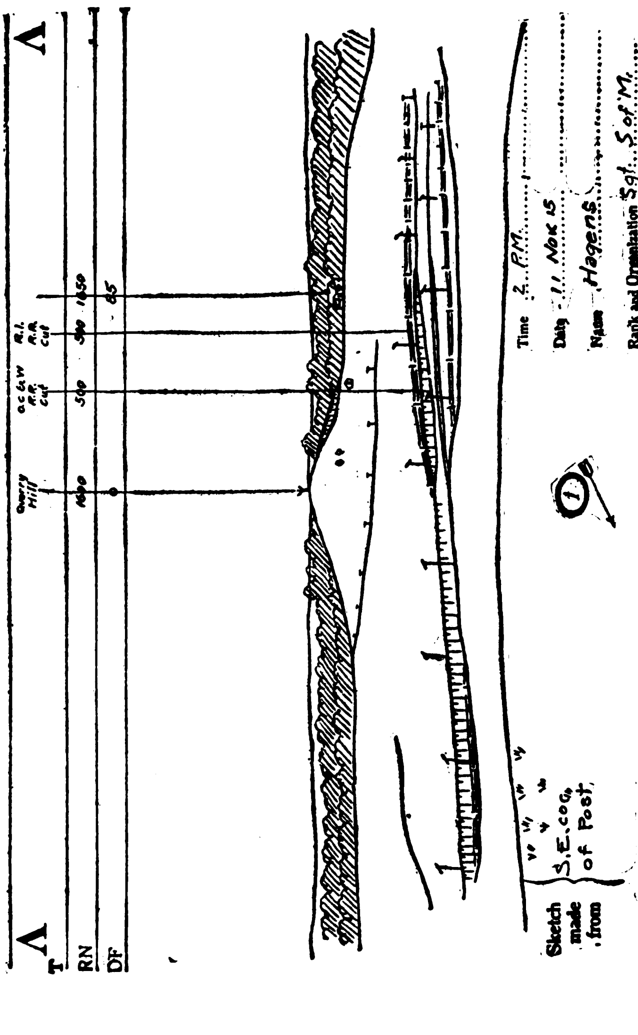
T
RN
DF
Quarry Hill
1650
R.R. Cut
500
R.I. R.R. Cut
590
1650
85
Time 2 P.M.
Date 11 Nov 15
Name Hagens
Rank and Organization Sgt. S of M.
Sketch made from S.E. cor. of Post
Form No. 5 R. of M. Nov. 10, 1915. 650.

PLATE 12.

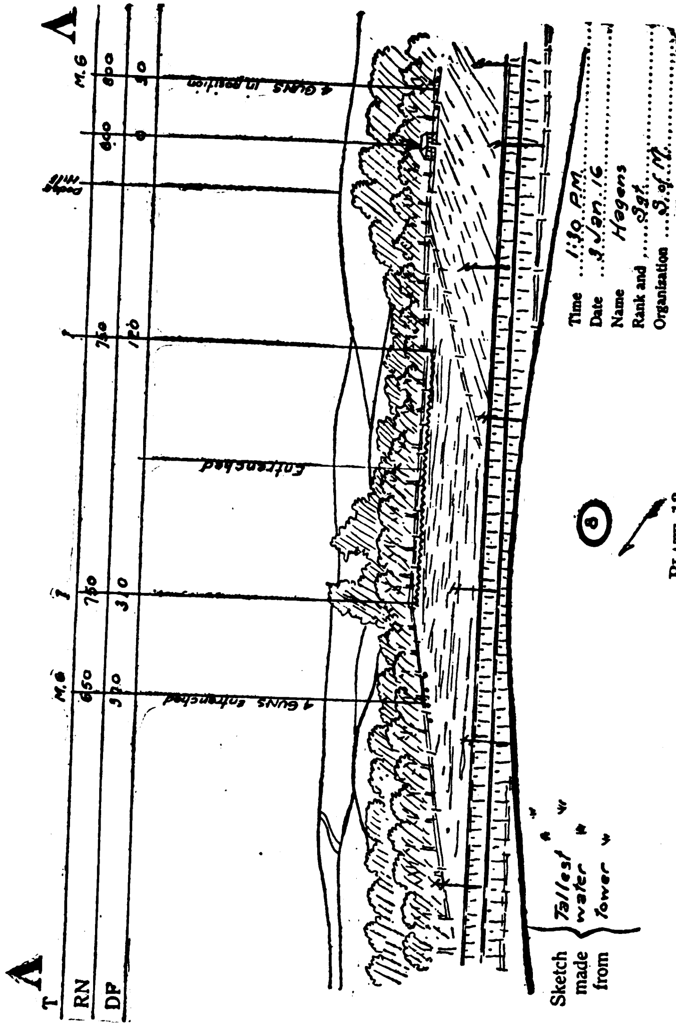
T
RN
DP
M.G
650
370
4 GUNS Entrenched
750
310
Entrenched
750
120
600
M.G
800
4 GUNS in position
Sketch made from
Tallest water tower
Time 1:30 PM
Date 3 Jan. 16
Name Hagens
Rank and Sgt.
Organization S. of M.

PLATE 13.

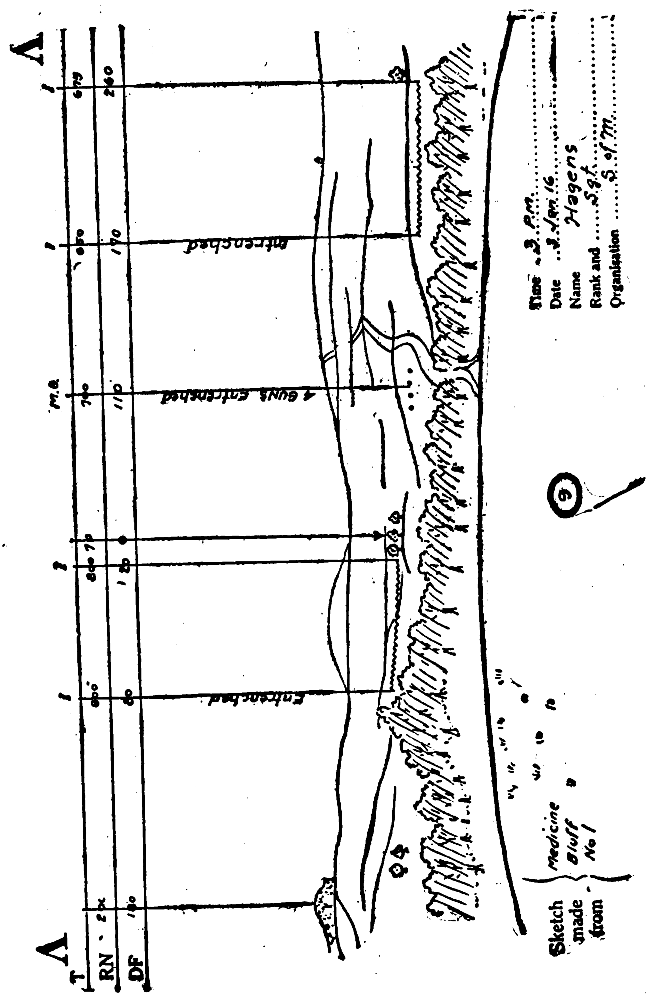
T
RN
DF
M.B.
Entrenched
4 GUNS Entrenched
Entrenched
Time 3 P.M.
Date 3 Jan. 16
Name Hagens
Rank and Sgt.
Organization S. of M.
Sketch made from Medicine Bluff No 1

PLATE 14.

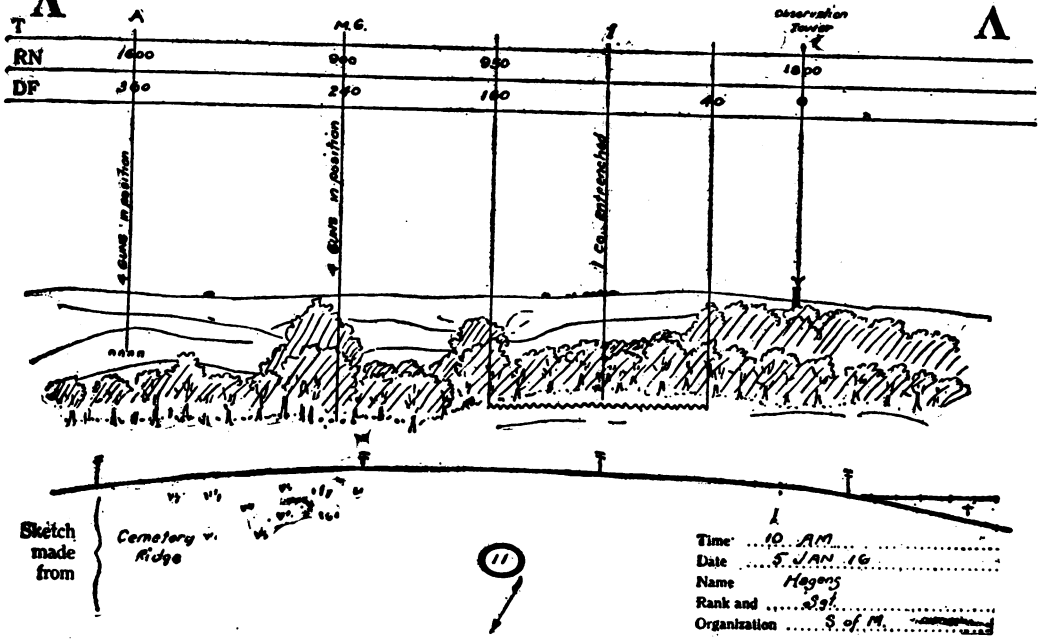
A
T
RN
DF
A
1600
300
M.G.
900
240
950
140
1
40
Observation Tower
1800
A
4 guns in position
4 guns in position
1 Co. entrenched
Sketch made from
Cemetery Ridge
11
Time ....10 AM....
Date ....5 JAN 16....
Name Hagens
Rank and ....Sgt....
Organization ....3 of M....

PLATE 15.

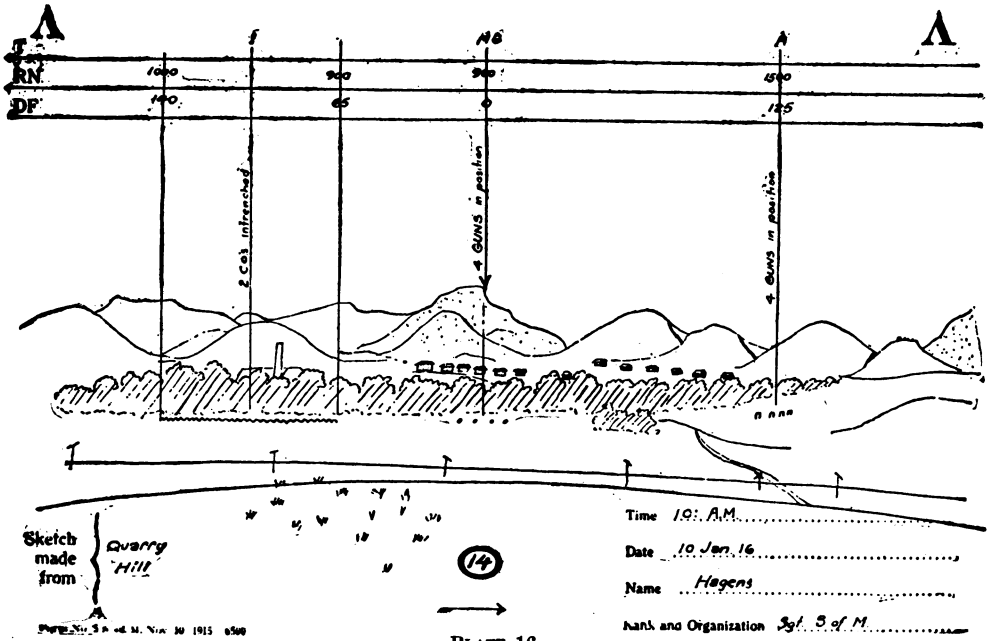
A
A
RF
RN
DF
1000
900
900
1500
140
65
0
125
2 Cos intrenched
4 GUNS in position
4 GUNS in position
Sketch made from
Quarry Hill
A
14
Time 10: A.M.
Date 10 Jan. 16
Name Hagens
Rank and Organization Sgt. 5 of M.

PLATE 16.

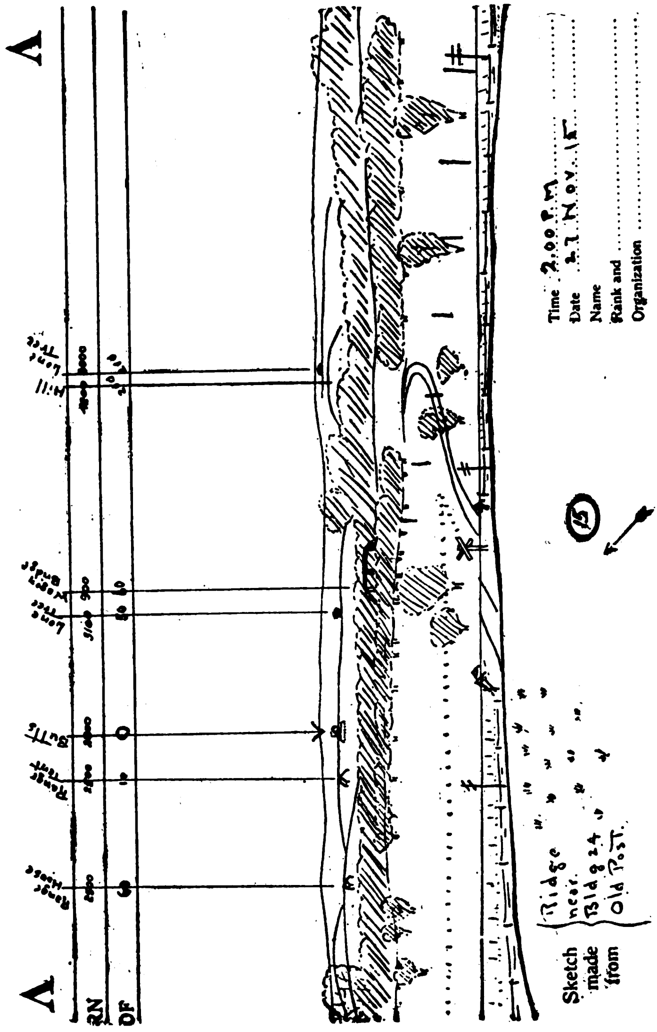
Time 2.00 P.M.
Date 21 Nov. 15
Name
Rank and
Organization
Sketch made from
Ridge near Bldg 24 Old Post.

PLATE 17.

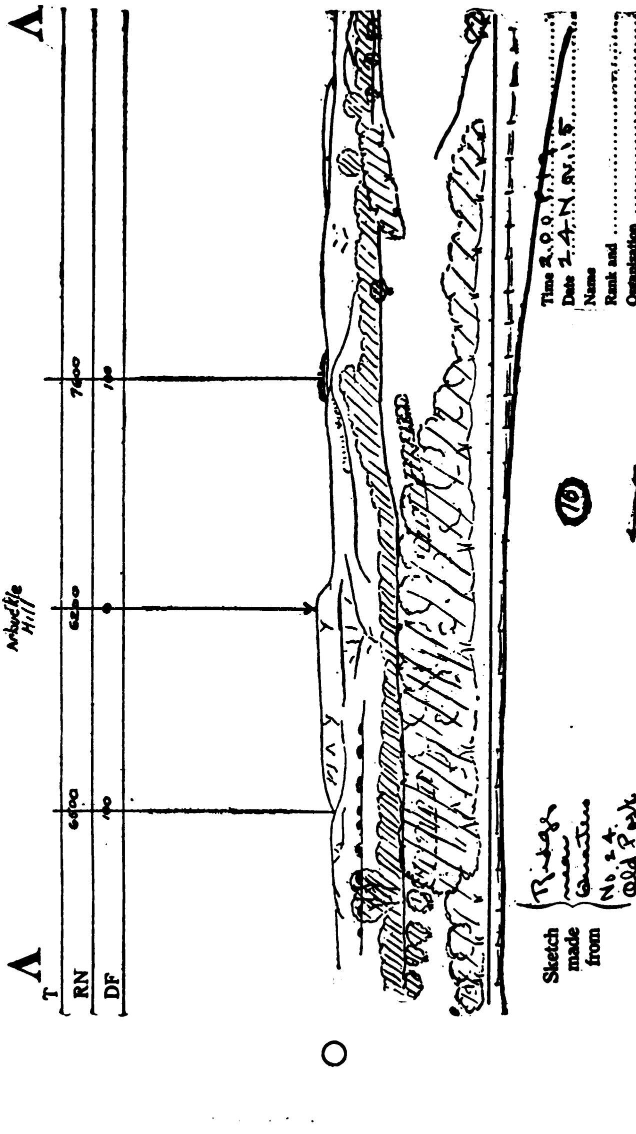
T
RN
DF
Arbuckle Hill
6600
6250
7600
Time 2.00
Date 14 Nov. 15
Name
Rank and
Organization
Sketch made from
Ridge near Quarters No. 24 Old Post
16

PLATE 18.