ORGANIZATION OF THE CALIFORNIA CADET CORPS
Chapter 4

The following is the organization and chain-of-command for the California Cadet Corps: (fill in the blanks with the correct names and ranks in pencil)

GOVERNOR _____

ADJUTANT GENERAL _____

EXECUTIVE OFFICER _____

ASSISTANT EXECUTIVE OFFICER _____

REGIONAL SUPERVISOR, AREA ____; _____

SCHOOL BOARD

SCHOOL PRINCIPAL _____

CADET COMMANDANT _____

ASSISTANT CADET COMMANDANT _____

CADET BATTALION COMMANDER _____

CADET COMPANY COMMANDER _____

CADET PLATOON LEADER _____

CADET SQUAD LEADER _____

ASSISTANT CADET SQUAD LEADER _____

INDIVIDUAL CADET

INSIGNIA OF RANK; OFFICERS AND NONCOMMISSIONED OFFICERS
Chapter 5

The following are the insigna of rank for cadet officers:

COLONEL
(silver)

LT. COLONEL
(silver)

MAJOR
(gold)

CAPTAIN
(silver)

FIRST LIEUTENANT
(silver)

SECOND LIEUTENANT
(gold)

The following are the insigna of rank for cadet noncommissioned officers and P.F.C;

MASTER SEARGEANT

FIRST SERGEANT

SERGEANT FIRST CLASS

SERGEANT

CORPORAL

PRIVATE FIRST CLASS

RIFLE MARKSMANSHIP

"The weather was fine at Camp Perry. Er, take this thing out and bury it...."

Leatherneck Magazine

INTRODUCTION
Chapter 1

The purpose of the following chapters on rifle marksmanship is to give the student the basic instruction necessary to teach him to be a good shot. Shooting ability is not an inherited trait. It is a kskill which the individual cadet must develop by continual practice, observation, and following the right procedures. Anybody can learn to fire a weapon if he is of average intelligence and has use of good facilities. Rifle marksmanship training is divided into four main steps: (1) sighting and aiming, (2) position exercises, (3) trigger-squeeze exercises.

PREPARATORY RIFLE INSTRUCTION
Chapter 2

The following is the step by step procedure used in preparatory rifle instruction:

First Step:

The first step in preparatory rifle instruction is the sighting and airing. A traing aid called the sighting device is used to show the cadet the correct sight picture when he fires a weapon.

The correct sight picture is when the pole or stick is directly in the center or midpoint of the circle. The little ball must be exactly on top of this pole, so that it is not to one side, or up or down to far. Which one of the pictures below is the correct sight picture?

Another method of sighting and aiming is triangleation. This form of sighting and aiming is done in the following manner:

The rifle is placed in a rifle rest and pointed at a blank sheet of paper mounted on a box. The rifle rest and the aiming box on which the marker sits should each be weighted with a sandbag or rocks. Taking a prone position and looking through the sights without moving the rifle or rifle rest, the pupil directs the marker by moving his arm-and-hand in the desired direction to move the disk until the bottom of the bulls-eye is in correct alinement with the sights. He then commands: MARK. The marker, without moving the disk, makes a dot on the paper with a sharp-pointed pencil inserted through the hole in the center of the bulls-eye. The marker then moves the disk to change the alinement. Themarker should hold the disk by pressing the handle against the box with the fingers of one hand, the thumb of the hand resting on top of the box. The other hand is used to move the disk.

The pupil, without moving the rifle or right rest, repeats this operation until three dots, numbered one, two, and three, respectively, have been made. These dots form the shots group. The pupil's name is writeen under the shot along with his unit designation so that when the paper is removed from the box the triangle can be discussed. The triangle formed should be able to be covered by a dime, when the distance between the box and rifle is 50 feet.

Second Step:

The second step in preparatory rifle marksmanship is the four positions. Instruction in all four positions include the use of the sling, holding the breath while aiming, and aiming itself. A properly adjusted sling is of great assistance in shooting. It helps to steady the rifle and should be adjusted to give firm support without discomfort to the soldier. To hold the breath, draw in a little more air than in an ordinary breath, let out a little, and keep the remainder by closing the throat in such a manner that the rest of the air in the lungs presses against the closed throat. Do not hold the breath with the throat open or by the muscular action of the diaphragm. The correct holding of the breath makes the rifle steadier during the final check of the aim and in the process of squeezing the trigger. Avoid holding the breath too long, as this will cause you to quiver and shake.

Each position must be steady and must require a minimum of muscular effort for its maintenance during prolonged firing. To accomplish this, the rifleman's frame supports the rifle; that is, the bones and not the muscles support the rifle. When the rifleman assumes a position, there is some point at which the rifle aims naturally and without effort at the center of the target. If this point is not the center of the target, the whole body must be shifted so as to bring the rifle into proper alinement. Otherwise the rifleman will be under a strain because for each shot he will be pulling the rifle toward the target by muscular effort.

The right hand grasps the small of the stock. The right thumb may be either around the small of the stock or on top of the stock; it should not be placed alongside the stock. The left hand is against or near the stock ferrule swivel, wrist straight, rifle placed in the crotch formed by the thumb and index finger and resting on the heel of the hand. The elbow is directly under the rifle or as nearly in that position as it can be placed without appreciable effort. For untrained men, this will initially require strenuous effort.

The trigger finger is in contact with the trigger at the most comfortable point between the tip and the second joint, the remainder of the forefinger being out of contact with the stock. The exact part used depen s on the size of the rifleman's hand and the length of his arm. It is desirable that there be no contact between the trigger finger and the stock. This insures that trigger pressure will be straight to the rear and that all pressure will be applied on the trigger and not partly on the stock. The cheek is pressed firmly against the stock and placed as far forward as possible without strain to bring the eye near the rear sight. The butt of the rifle is held firmly against the shoulder. Left-handed men who have difficulty with the right-hand position will be allowed to use the left-hand position.

Prone Position:

In assuming the prone position, the body should lie at an angle of about 30° to the line of aim with the spine straight. The exact angle of the body to the line of aim will depend upon the conformation of the firer. The legs should be well apart, the inside of the feet slat on the ground, or as nearly so as can be attained without strain.

Elbows should be well under the body so as to raise the chest off the ground. The right hand grasps the small of the stock. The left hand should be near the stock ferrule swivel, as far forward as is comfortable and convenient for the individual firer, wrist straight, rifle placed in the crotch formed by the thumb and index finger and resting on the heel of the hand. The cheek should be firmly pressed against the stock with the eye as close to the rear sight as is possible, without straining the neck muscles. The sling should be just sufficiently tight to offer support, but not so tight as to have a tendency to pull the left elbow to the left. The right thumb may be over the small of the stock or on top of the stock; it should not be placed alongside the stock.

The exact details of the position will vary, depending upon the conformation of the individual firer. However, the firer must secure a position that will not be changed by the recoil of the weapon. When the correct position has been attained it will be found that upon discharge, the muzzle will move slightly up and very slightly to the right, and that it will then settle back close to the original aiming point.

Sitting Position:

The firer sits half-faced to the right, feet well apart and well braced on the heels, which are dug slightly into the ground. Body is leaning well forward from the hips with the back straight. Both arms resting inside the legs and well supported. Cheek pressed firmly against the stock and placed as far forward as possible without straining. Left hand near the stock ferrule swivel, wrist straight, rifle placed in the crotch formed by the thumb and index finger and resting on the heel of the hand. Because of unusual conformation, some men cannot take the sitting position described above. The vast majority of such exceptions are men with unusually long legs and relatively short arms and body. These men are physically unable to place their elbows in the prescribed position. In such cases, the instructor may authorize the soldier to modify the prescribed position, using either the cross-legged or the crossed-ankle positions. Each case is decided by the instructor on its merit; in no circumstance will these modified positions be adopted at random by the riflemen.

Kneeling Position:

The firer kneels half-faced to the right on the right knew, sitting on the right heel. The left knee bent so that the left lower leg is vertical. The left arm is well under the rifle and resting on the left knee with the point of the elbow beyond the knee cap. The right elbow above or at the height of the shoulder. Cheek pressed firmly against the stock and placed as far forward as possible without strain.

Standing Position:

The firer stands half-faced to the right, feet from 1 to 2 feet apart, body erect and well balanced, and left elbow well under the right. The left hand is in front of the balance, wrist straight, rifle placed in the crotch formed by the thumb and index finger and resting on the heel of the hand. The butt of the piece is high up on the shoulder and firmly held. The right elbow is approximately at the height of the shoulder, and the cheek is pressed against the stock and placed as far forward as possible without strain. When squeezing the trigger in this position, relax the stomach and leg muscles to prevent jerking the trigger. A position with the left hand against or under the trigger guard and with the left upper arm supported against the body is not a practical field position.

Third Step:

To become proficient in rifle marksmanship there is one requisite that exceeds all others in importance. The ability to squeeze the trigger properly. With his sights kept properly alined on the target, the firer, in squeezing the trigger, applies such a steady increase in pressure that he realizes that the rifle has been fired only after the bullet is on its way. No attempt is made to fire the rifle the instant at which the sights are alined. The rifle is held steadily and is discharged only when the sights are on the bulls-eye. Should they get slightly out of alinement, the pressure on the trigger is held until the sights are again in line. This method of trigger squeeze applies to both slow and sustained fire. The increase of pressure on the trigger is timed identically in both. Particular attention should be given to the proper application of correct trigger squeeze in all simulated firing, or the value of the practice is lost. The difference between poor shots and good shots is measured in their ability to squeeze the trigger properly.

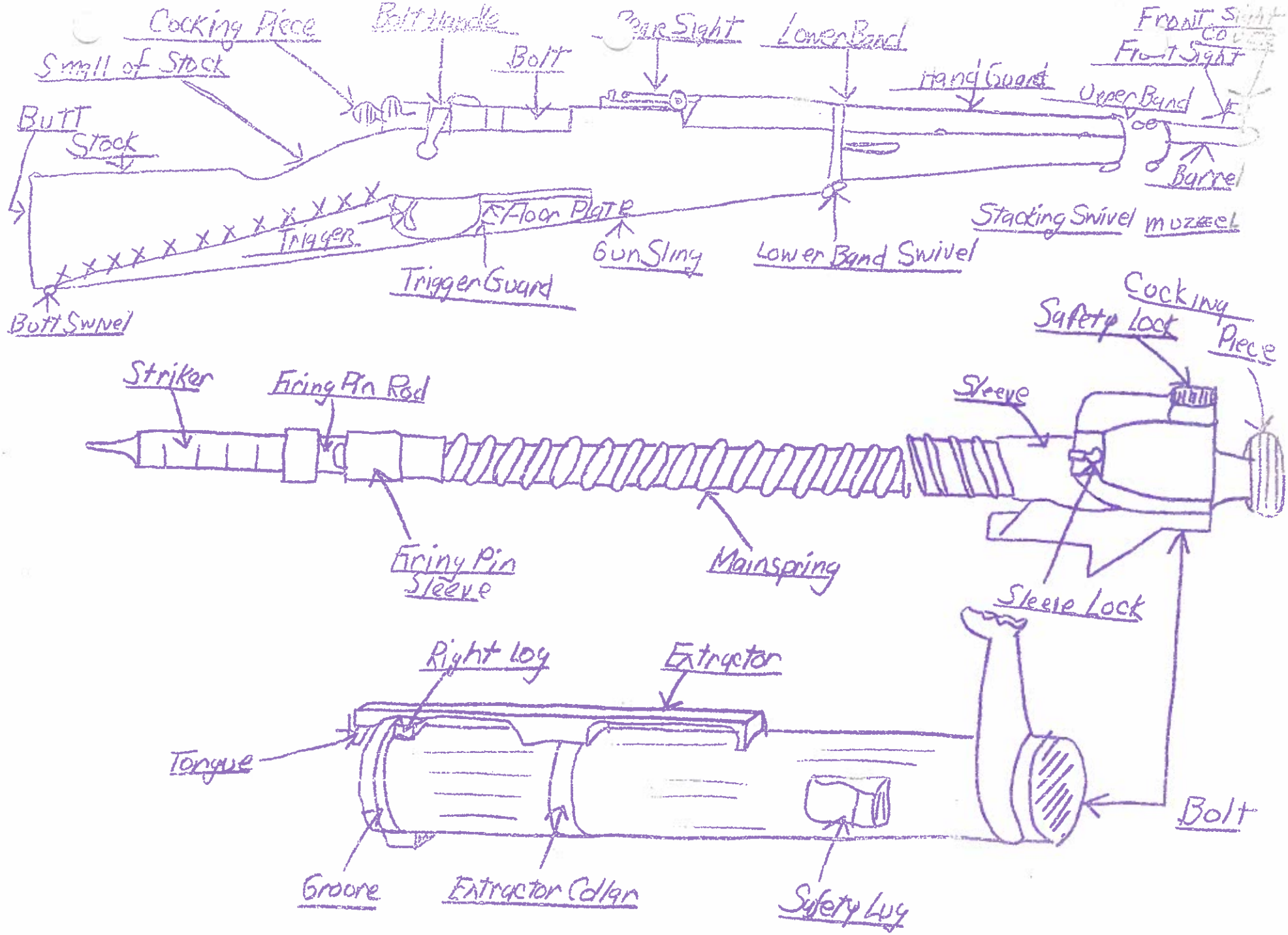
SAFTY RULES
Chapter 3

The following are the safty rules that should be follow anytime you're around weapons, loaded or not!

1) I will cock my gun and pull the trigger only when I am aiming at the target which I intend to shoot.
2) I will unload my gun and open the action as soon as I finish shooting and before I move from the firing line.
3) I will immediately make sure that any gun I handle is not loaded.
4) I will shoot only regular approved targets, or, if hunting, only at legal game.
5) I will unload and open my gun before I climb a tree, fence, or similar obstacle.
6) I will remember that a .22 caliber bullet will travel for a mile, or through nine inches of ordinary board, and that it will recochet (glance) a long way across water.
7) I will "play safe" at any time when I am in doubt of the proper action.
8) I will see that everyone around me obeys these rules for safty and good of all.
9) I will give my help to any less skillful shooter, and will seek the advice of better marksmen for myself.
10) I will do my part to make America once again "A Nation of Riflemen."

Other rules just as important when around weapons:

1) The Range Officer and his assistants will be in direct charge of the range at all times when firing is being conducted, and ready to give assistance to any shooter in need of help.
2) The breech of every rifle on the range will be kept open at all times except when actually on the firing line ready to shoot.
3) All rifle, regardless of type, will be used as single loaders and the magazines will not at any time be loaded.
4) No cartridge belts will be worn. Loading will be only from loading blocks or from the regular cartridge box.
5) No rifles will be loaded until the command "Load" is given, and no shots fired before the command "Commence Firing".
6) All rifles will be immediately unloaded and breeches lift open upon the command "Cease Firing".
7) No shooter, at any time, except under the order of the instructor, will move any portion of his body in advance of the firing point, and then only after all rifles are unloaded and all breeches open.
8) No person except those actually firing and the coaches and instructors will at any time be in advance of the Ready Line.
9) In cleaning or policing the range, any unfired cartridges which may be found will be immediately turned in to the Range Officer. They will not be thrown into the trash can.



U.S. Rifle, Caliber .30 - Model 1903 (Chapter 4)

MAP READING

"I can't figure this thing out!
It always points at me..!"

F. Zeillemaker

MAP READING

"I can't figure this thing out!
It always points at me..!"

F. Zeillemaker

MAP READING

INTRODUCTION
Chapter 1

Why learn to read a map? In civilian life it is possible for a stranger to find his way around a large city or town by merely asking directions. Map reading is essential to the trainging of all personnel of the Cadet Corps, or any other phases of the military field. The movement of personnel and supplies of a mobile army, in peacetime training or in war, is based upon military maps. These maps will furnish you the information you need to know. Learn to read them as you may have to rely upon them.

At times you may be entirely alone in a strange part of the country and a map may be your only guide. The value of map reading was proved during World War II. Thousands of soldiers escaped capture or were able to get back to their own lines because of their ability to read a map. Unfortunately, hundreds of soldiers were captured because of their inability to follow the information contained on their maps. If a unit takes a wrong turn the result isn't always pretty. Of course, a wrong turn on the open road is not always disastrous, but a wrong turn in enemy territory nearly always means destruction or capture. You should not only have possession of a map, but you should know how to read it. You should learn to read and understand the language of a map. It is a simple and clear language. You will use it very often when you are in a tight spot. If you learn to use it correctly, it won't let you down.

What is a map? A map is a picture of the land and the things people have built on the land, as taken from a vertical air view. It isn't a puzzle and it isn't hard to read. There are really only two things about a map which make it a little strange to read. In the first place, a map is flat and when we look at it we are looking at a picture of the ground from a spot high in the air. That view is different from the one we have looked at all our lives, from one point on the ground to another point on the ground. So the first thing we must do is to understand where we stand when we look at a map. To give us an idea of what happens when we look at something from above, watch a football game and see what happens when we look at it from different angles. The player's bench, the grandstand, in a blimp above the edge of the stadium, and a blimp directly over the playing field give us views from different angles. Remember, maps are views of things from directly above.

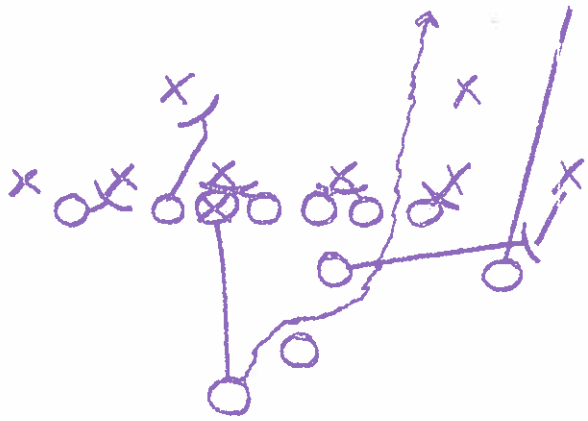
Take good care of your map. Fold it small enough to slip into your shirt to protect it from rain. Fold it in such a way that you can see the part of the map that your using. When you mark your map, mark it lightly. It may have to last you a long while. Many marks on it will confuse you, and if you erase any heavy lines, it will smear and make it difficult to read. Try to avoid soiling it with mud or other matter.

Keep your map from the enemy. Any marks on it may give him valuable information. If in danger of capture, burn it. If you can't burn it, tear it into small bits and scatter them widely. If you can't do either, fold it as small as possible and bury it.

CONVENTIONAL SIGNS
Chapter 2

What's on a map? A map is a picture, but it is not a photograph. It is a drawing in ink on paper, and the big difference between a map and a photograph is that the map has signs and symbols instead of photographs of objects. We do the same thing with a football game. For example, below is a diagram, or map, of a football play. It may look like a puzzle, but it really isn't, and it is very simple. The "X's" stand for the players on one team, and "O's" stand for the players on the team having the ball, and the lines are the paths the players take in the play. A little study of this diagram, and it is easy to figure out that it illustrates an off-tackle play and shows each man's job. A map is not much different. On a map there are signs, like the "X's" and "O's" which stand for things on the ground, just as the football symbols stand for the players on the ground.

To read a map, then, we have to learn what these various signs mean. Map signs all look something like the actual thing they stand for. All the signs are simple to draw and are easily recognized. For example, the sign for a mine is a pick crossed with a sledge-hammer. These two tols are used in mining. Another example is the sign for a school-house, a blank block with a flag flying from it. Most schools have a flag on a flagpole, and the sign gives you the idea of a school.



The following are the basic conventional signs used on most maps:

1. mine

2. school

3. buildings

4. church

5. hospital

6. cemetery

7. cultivated fields

8. grassland

9. swamp

10. orchard

11. woods

12. lakes & ponds

13. roads

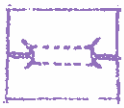
14. trails

15. cut (railroad)

16. fill (railroad)

17. stream

18. pass over railroad



19. tunnel

20. telephone lines

21. barbed wire

22. basic symbol for an army unit

23. command post

24. field artillery

The size of a unit is also shown by signs. A squad is shown by a single dot, a section by two dots, and a platoon by three. A company is shown by a single, straight line. The following list shows you these signs, in order, as the unit gets bigger:

Squad.....
Section.....
Platoon.....
Company.....|
Battalion.....||

Regiment.....|||
Brigade.....X
Division, or command of Air Force...XX
Corps or Air Force.....XXX
Army.....XXXX

How high is it? So far, everything on our map is flat. We must now find a way to learn something about the different ground levels. It means something to us to know that a hill is in a certain place, but we would further like to know how high it is. A picture of a hill taken from above will not show us this, but there is a way for our map to give this information. Since a hill is broader at its base than it is at its top, let us take an object which is like a hill, a cone, for example, and see what we can do to a picture of it from above to let us know how high it is.

First suppose there are two boulders on the side of the cone, as in figure 1 below. When we look at this from above, we can tell which boulder is higher and how high the boulder is. Next, let us suppose that we walked up this cone until we were 10 feet higher than the base. Now let us walk around the cone, marking it as we go with a bag of flour. Finally, we will come back to the place we started from. Now, what do we know about this mark as we look at it from above? We know that anything on it is 10 feet higher than the base of the cone. Notice that on of the boulders is right on this line; therefore its elevation, or height, is 10 feet. If we mark another 10 feet off, we will know that anything on it will be 20 feet from the base of the cone. The second boulder is about in the center of both lines, therefore its elevation is 15 feet. In this way we can tell the elevation of objects.

These lines tell us still more. They tell us that the cone is round, for example. If the object were not round, an object other than a cone, these lines can tell us that, also. For example, suppose we stretch one side of the cone so that it looks like figure 2 below. If we do our flour-bag stunt again, from above, the lines look like they do in the figure. We find, then, that these lines can tell us two things: elevation and shape. Maps have many such lines, and if you understand them, they are easy to read and very helpful. On maps these lines are called contours or contour lines.

Elevation above what? It may be noticed that the elevation of the base of the hill in figure 3 below is 300 feet rather than 0 feet. The reason for this is, elevation on all maps is figured from sea level. In other words, we compare the elevation of all land anywhere to the average level of the sea. Although the hill is far from the sea, the base of the hill on the land is 300 feet above sea level. Sea level is the zero fro the elevation measurements.

These contour lines are very helpful things to have, and they can help us in other ways. For example, suppose we have a high spot of ground that breaks off suddenly and becomes a cliff. From the ground, as in figure 4-a below, it is easy to tell this. When a hill or cliff is steep, the contour lines appear close together. Figure 4-b and 4-c below show other kinds of ground forms.

fig. 1

fig. 2

fig. 3

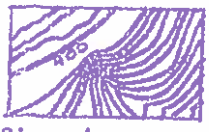


fig. 4-a
(cliffs)

fig. 4-b
(saddle-2 mountains)

fig. 4-c
(valley formed by a stream)

SCALES
Chapter 4

How far is it? We have now put a map together and looked at many of its parts, so that at this point we can learn a good deal about a region by reading a map. There are still more things which a map can tell us. One of these things is: How far is it from one place to another? Distances on a map can be measured. The reason for this is that a map is a true picture of the land. A distance is measured on the map, and then the map tells you how much smaller this distance is than the actual ground, by means of a number found in the bottom margin of the map, about in the center. This number is called the SCALE. The scale number may be shown in two ways, both meaning the same thing. It may be written as a fraction: 1/25,000; or it may look like this: 1:25,000. In either case, it is the same as saying that 1 inch on the map is equal to 25,000 inches on the real ground.

Another method for finding distances is by the use of the Graphic scale. This method is even easier to use than the one we have just explained. Just below the notation of scale, 1/25,000, is something which looks like a ruler. It is a ruler, a special one made just for that particular map. This special ruler is called a graphic scale. (fig. 1 below) It is used with a map in the following manner: First, a straight strip of paper is placed on the map alongside the distance you want to know. We then place marks on the paper at both ends of this distance. The paper is then placed alongside our graphic scale. This will show you how long the distance really is on real ground. There is another thing to notice about this scale. It has two parts. From the zero mark to the right it reads in large numbers, 500 meters apart. From the zero mark to the left it breaks down this large distance into smaller distances, 100 meters apart, so that we can measure more accurately.

figure 1.

Coordinates:

Where is it? In a town or city, it is easy for us to tell someone that the church is at the corner of 1st Avenue and 1st Street. Or if you make a date with someone at the corner of 6th Avenue and 3rd Street, you could be pretty sure that both you and your date would be able to find the place. In a military unit, however, we are faced with a different problem. We must be able to give someone else the location of a lone tree in the middle of a large field, or a machine gun or sniper in a woods, or a guard along a stream. There are no streets in those places, but our maps have a system of letting us tell someone else where these points are.

This is done by placing on the face of the map a series of lines in the form of squares. These squares are used somewhat like the street system in a city, and every point on the map is near some "street." All we have to do is tell someone to go to one of these corners, just as we do in town with a real street. This is called a grid system, and the pattern is called a grid. The streets in a grid all have very simple names. They are all numbers. Before we can use these numbers, however, we must learn a few rules about them. In the first place, each square gets its name from the numbered lines which meet at its lower left-hand corner. The name is made up of two numbers separated by a dash. The rule is "READ RIGHT UP." For example, if your platoon leader tells you to meet a patrol on the path at (47-33) on a map, first you read right along the numbers at the bottom until you come to 47. Then you read up this line until you come to the line marked 33. Read Right Up.

HOW TO USE A COMPASS AND ORIENTATION
Chapter 5

On the ground and on the map, the army has an easy way to point out the directions of things. This same way is used in the Cadet Corps. It is easy because the same idea is used wherever we are. The idea is simply this: We suppose that wherever we happen to be at any given moment, we are in the center of a circle which has "avenues" running off in all directions. The circle is marked off into 360 avenues. Each of the 360 spaces is called a degree and each avenue has a name called an azimuth. This azimuth is just a name for direction line; each of these direction lines has a number, depending upon which of the 360 avenues it is.

We can march off on one of these avenues, or azimuths, starting at the center of the circle. The avenues all start where you are, whether you are in a jungle, on a hill, or on a highway. You can think of a soldier in the center of the circle with 360 avenues or azimuths running out from him like the spokes from the hub of a wheel. Every 10th avenue is numbered to make it easy to find those in-between.

Now there are two important things to remember about this circle of avenues: FIRST: The zero avenue must always point NORTH. SECOND: The avenues are numbered CLOCKWISE. That means we number them in the direction that we number hours on a clock.

With this knowledge, let's put this circle to work for us. You are told that there is a sniper in a tree in the orchard at Furlough Farm, and also told that if you crawl along up the creek to where the railroad crosses it at the foot of the hill, you can see the sniper's tree on the azimuth of exactly 60°. You find where the railroad crosses the creek and go there. You remember that the center of the circle of azimuths is right where you are. The first thing to do is to point the zero mark on the circle at north. (You will learn how to do this with your compass later in this chapter). Now it is easy to see which tree is on the avenue or azimuth marked 60° on the circle. That is the address of that tree, using the azimuth system. You take a bead on the sniper and knock him from the tree with your first shot. You move cautiously up to the tree, examine the fellow carefully, and find he is dead. You walk back to the railroad where it crosses the creek.

Now, what azimuth did you walk back on? Was it 60°? No, it wasn't. It was 240°. A straight line, going forward and then backward, equals 180°. So, all you do, is to add 180° to the 60° you already have, and you get 240°. You have both a forward azimuth and a backward azimuth. The back azimuth is an important thing to know about, because if you know how to use it, it will take you back to your starting point. If you are sent on a mission to a point in strange country and at night, for example, your back azimuth will show you the direction in which you return.

We come now to the compass, that usefull item which finds north for us and finds our azimuth for us. The compass has on it the circle of numbered avenues or azimuths which we have been explaining to you. In other words, the compass is our direction finding tool, and it has everything on it to help us find our way. There are several types of compasses, but the one which we shall use here is called the lensatic compass.

Let us look now at figure 1. for a good look at the lensatic compass. The most important thing about this compass is that no matter how you turn it, as long as you hold it level, the white arrow always points in the direction of north. It won't let you down if you remember one thing: never use it near any metal object if you can help it. Metal objects will make the compass needle point in the wrong direction. Whenever you use a compass then, make sure you are well away from such matel objects as your helmet, rifle, truck, a wire fence, or any metal object which will bother your compass needle.

Besides the compass needle which points north, there is another important part of the compass. That is the numbered circle of avanues or azimuths right on the face of the dial. Everything else on the compass is designed to help you line up your compass with things on the ground and on your map and to help you read the avenue or azimuth numbers.

Compass reading is easy, if it is done correctly. For example, it is important to hold the compass correctly. Remember to point the compass in the general direction you want to go before you try to use it, and hold it level. Hold the compass so that it is steady and that is is held with the eyepiece close to the eye. You look at an object through the slit in the eyepiece and through the slit in the cover with the hair line in it. The glass eyepiece is used only to read the azimuth numbers on the dial. It is there only so you will be able to glance down and read these numbers at the same time you line up an object with the compass.

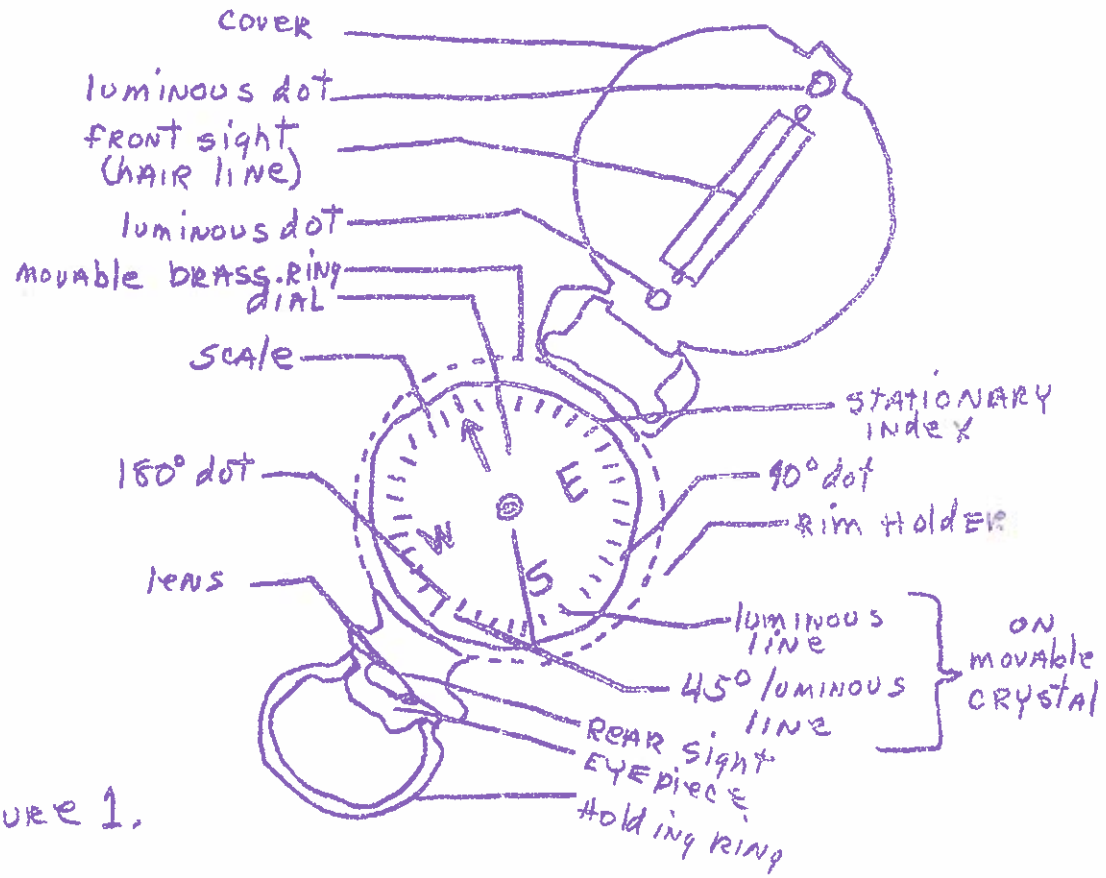


figure 1.

Orientation:

Before the compass and the map are ready to work together, the map must be placed in a position so that the directions on the map are lined up with the directions on the ground. There are two ways to do this, one of them without aid of a compass and the other with the help of a compass or of some other way of finding north. This act of lining up your map with the ground is called orienting the map.

BY INSPECTION. The first way of lining up your map is called "by inspection" which simply means "by looking at the ground with the map in front of you. This can be done when you have found objects on the ground which you recognize on your map and which you can see. Hold your map so that the objects on the map line up with the objects on the ground in front of you. Your map is then oriented.

BY COMPASS. Another way to line up your map is by using the compass. The compass needle points to magnetic north. The difference between magnetic north, grid north, and true north, is shown on your map as in figure 1. by a declination diagram. The prong with a half arrow represents magnetic north. The line marked "Y" is grid north, parallel to the vertical grid lines. The third prong on the declination diagram represents true north and is marked with a star. The three lines are not always in the same positions shown in figure 1. Which is in the middle and which are to the right and left differ on maps in various parts of the world. The angle between grid north and magnetic north is called the G-M (grid-magnetic) angle. The numerical value of this angle is printed beside the declination diagram, as in figure 1.

The way to use this angle and a compass to orient your map with the ground is as follows: Lay your map on a flat surface. Place the open compass so the hairline on the cover coincides with a vertical grid line. Read the G-M angle on the declination diagram and note whether magnetic north is right or left of grid north. Turn the map until the compass needle points to the right or left of the stationary index by the amount of the G-M angle. If the declination diagram shows magnetic north right of grid north, then the map should be turned until the compass needle points right of the vertical grid line.

Note. Before you use a map, ask your platoon leader or commander to make sure you are orienting your map properly.

How to find north without a compass:

Even without a compass, however, you can orient your map with a north line. There are ways to find north without a compass.

declination diagram

figure 1.

BY DAY. North Temperate Zone. In the north temperate zone, one way to find north is with an ordinary watch in good running order. Simply point the hour hand at the sun. Halfway between the hour hand and 12 o'clock is due SOUTH. Directly opposite from south is NORTH, of course. The only tricky thing about this is that the watch should read on sun, or standard time. If your watch is running one hour ahead (such as on daylight-saving time), use the 1 O'clock number instead of the 12 o'clock number.

South Temperate Zone. In the south temperate zone, we use the watch too, but a bit differently. In this case you point the 12 o'clock on the watch at the sun. Halfway between 12 o'clock and the hour hand is due NORTH. Again, be sure it is standard time. If your watch is on daylight saving time, use the 1 o'clock number on the watch instead of the 12 o'clock number.

AT NIGHT. Northern Hemisphere. At night we must use another way to find north without a compass. We do this by means of the stars. In the northern hemisphere one way to use the stars is to find the Big Dipper. The Big Dipper is made up of seven fairly bright stars in the shape of a dipper with a long curved handle. If you can see the Big Dipper, use as pointers the two stars which form the side of the cup farthest from the handle. These point in the direction toward which you would pour from the dipper. These pointers aim at a bright star which is about five times the distance between the two stars of the Dipper cup. This bright star is the North Star, and is directly over the North Pole.

Southern Hemisphere. In the southern hemisphere you can find true South in relation to the Southern Cross. Two bright pointer stars in the vicinity of the Southern Cross serve as locators to help pick out the right group of stars. There are five stars in the Southern Cross. The outer four are fairly bright and form a cross. Imagine this cross as the frame of a kite. Put a straight tail on the kite four and one-half times as long as the length of the kite itself, using fingers' widths for a measuring stick. The end of this tail will be close to a position directly over the South Pole. Usually you won't be able to see a star in that immediate vicinity because no bright star appears directly above the South Pole.

There is another way to find the approximate location of the South Pole without measuring the four and one-half distance along the kite tail of the Southern Cross. Imagine a straight line perpendicular to the center of a line between the pointers. This perpendicular line intersects the extension of the Southern Cross kite tail. The point in intersection is approximately above the South Pole.