

TEST NO. 10

Be able to recognize and name from life, any 12 common trees and/or shrubs and any six common birds.

In your Second Class Test No. 7, you started to learn how to recognize trees and shrubs. This test is intended to extend your knowledge along this line. It also serves to introduce you to bird life. It should not be difficult to be able to increase your recognition of trees or shrubs from the six you learned as a Second Class Scout to the 12 you require for this test.

Around your own home you will be able to see enough birds for the purposes of this test. There are few parts of Canada where you will not find sparrows, robins, swallows, crows, starlings, and many other common birds. Get to know what they look like, how they fly, their songs, and their mating and nesting habits. You'll be surprised how your interest in nature is awakened as you increase your knowledge of the plant and bird life of your own district.

TEST NO. 11

Using improvised apparatus, such as a Scout stall, estimate three distances up to half-a-mile, and three heights up to 100 feet. In each case the estimate must not vary more than 10% from the actual measurement.

Such questions, often asked and seldom answered by the average person, are expected to be answered and with some degree of accuracy, by a First Class Scout. And such ability at estimation has many useful applications in life.

Incidentally, practice in estimation can add interest to hikes, -contest in guessing the height of trees, church steeples, etc., and proving by Scout-staff checking who was nearest; how far to the next hill, then pacing it off. And so on.

Judging Distances.-A general tendency to keep in mind is that one is apt to underestimate the distance of objects seen distinctly and over-estimate those seen indistinctly. Especially deceptive is the distance of an object seen across a stretch of water, snow, or the level prairie; or when viewed uphill, or downhill.

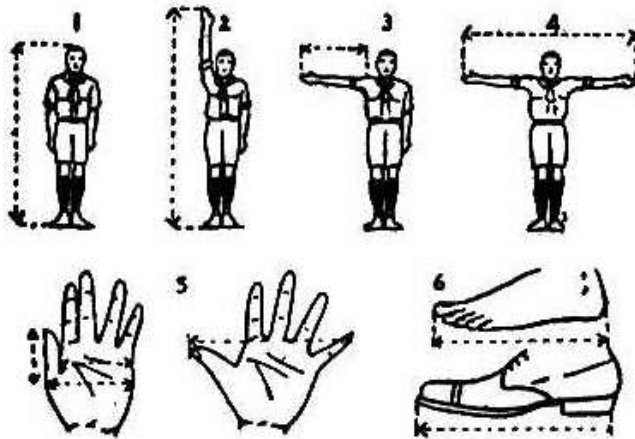
Objects appear farther off when in the shade; when across a valley; when the background is of the same colour as the object; when you are lying down or kneeling; when there is a heat haze.

Objects appear nearer when the sun is behind the observer; when the air is especially clear, as on a bright sunny day after a rain; when object and background are of different colours; when the ground is level or when covered with snow; when looking over water or across a deep chasm; when looking upwards

or downwards; when the object is large when compared with its surroundings, as in the case of a tall monument, a large church, or a mountain.

At night visible points usually appear nearer than they do by day.

Learning to Judge Distance-As a means of checking your estimates, learn the exact length of your pace. If fairly tall, learn to pace an exact yard, heel to heel.



On a quiet road, in a field, or out on the prairie, begin judging short distances to various objects, then pacing to check your "guess." Gradually increase the distances. Do this in competition with several other Scouts and you'll find it an interesting game.

Remember that the eye measures distance as in an air line," from eye to object,

and does not allow for irregularities of the ground. In other words, ground distance may be greater than visual distance.,

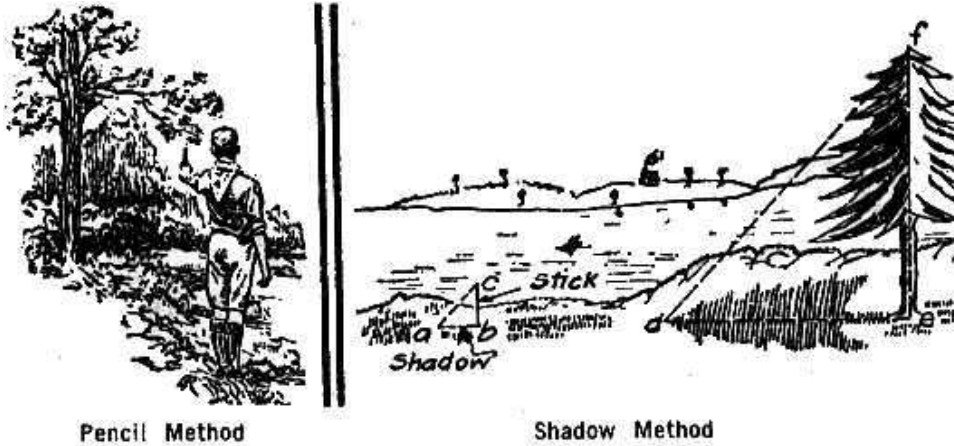
As an aid in making short measurements you should know a number of your Personal Measurements. Your known hand-span will often be particularly useful. If fully developed your measurements will be close to this: Breadth of thumb, and nail joint of forefinger, 1 inch. Span of the thumb and forefinger, 7 inches. Span of thumb and any other finger, 8 1/2 inches. Wrist to elbow, 10 inches. Elbow to tip of forefinger (the cubit of the Bible), 17 inches. Your reach, arms outstretched, will nearly equal your height.

Some Further Hints.-At 800 yards a man looks like a post. At 700 the head is not yet visible. At 600 the head is visible as a dot. At 500 the shoulders appear bottle shaped. At 400 movements of the legs can be seen. At 300 the face can be seen. At 200 buttons and details of clothing are recognizable. At 100 eyes and mouth can be seen clearly.

To estimate greater distances, judge the farthest probable distance, then the nearest possible, and "split the difference."

Judging Height-With practise you will be able to estimate height up to 3,000 feet or more. A simple method measuring the height of trees and ordinary buildings is the Pencil Method illustrated. Standing some 75 feet from the tree, with a pencil or stick upright in the fully extended hand, first move the thumb up the stick until the exposed length covers, to your eye, the lower six feet of the tree (the height of a man). Now move hand and pencil up in six-

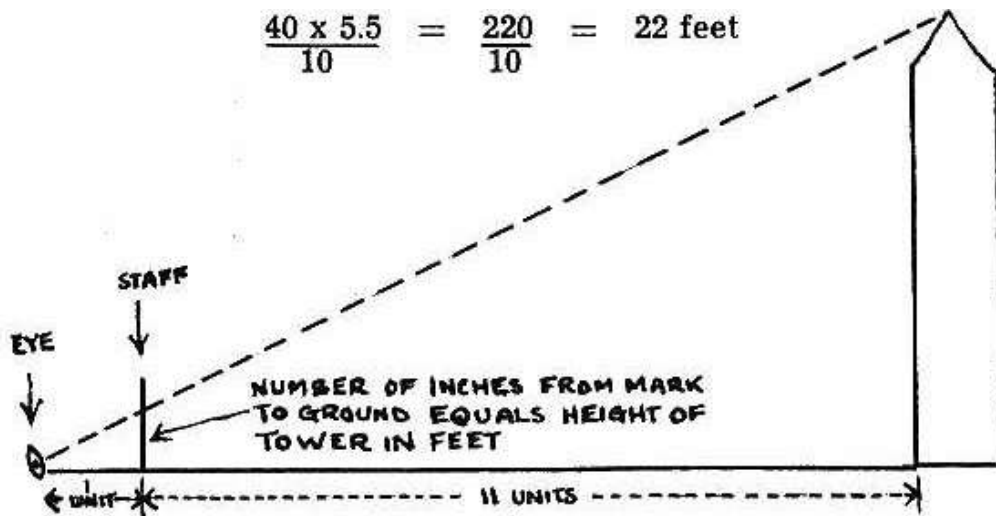
foot jumps till the top is reached. Multiply the jumps by six and add any odd feet left at the top. To get the Height of a Building a rapid method is to calculate the height of a storey, and multiply by the number of storeys.



Height by Shadow.-For this you need your Scout staff, notched in feet and inches; or a straight stick of known length (measured by the spread of your fingers). Proceed thus (see illustration): Stand the staff (bc) upright in the sun and measure the length of its shadow (ab). Measure the length of the shadow of the tree. Multiply by the length of the staff. Divide by the length of the staff shadow. The result is the height of the tree.

For example, say the length of the tree's shadow is 40 feet, the staff's shadow ten feet and the Scout staff is the normal length of 5 feet 6 inches, the formula will be as follows:

$$\frac{40 \times 5.5}{10} = \frac{220}{10} = 22 \text{ feet}$$



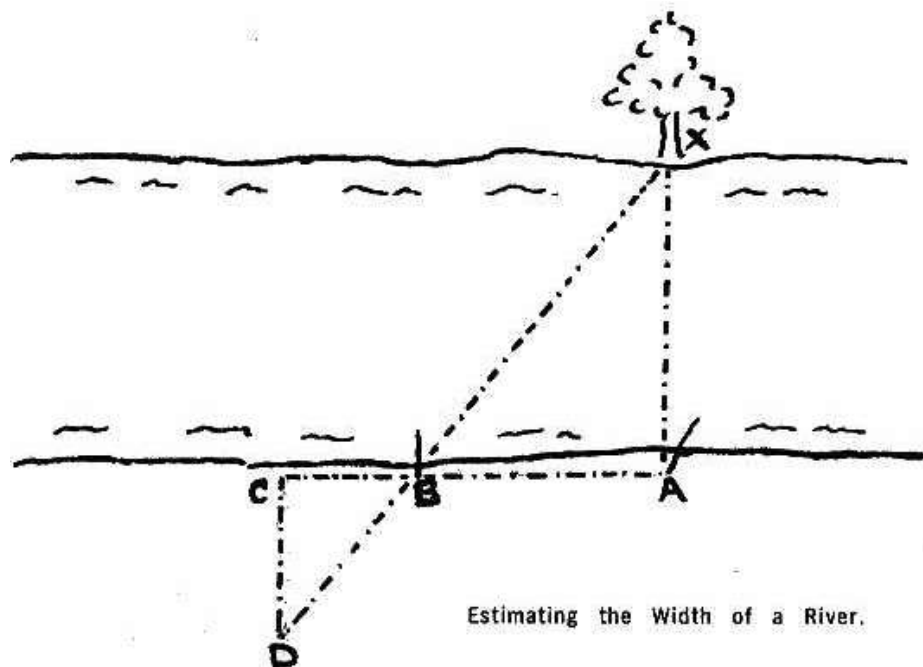
Inch to the Foot Method or One in Twelve-Here you start from the base of the object which you are measuring, mark off eleven units of any length, say eleven staff-lengths, here set up a Scout staff with a companion to

hold it. Measure off one more unit beyond the upright staff and there, getting your eye as close to the ground as possible, sight the top of the object. Where that sighting line cuts the staff have your companion make a mark on the upright staff, then measure the number of INCHES from that mark to the ground. This will equal the height of the object in FEET.

Judging Area.-Lone Scouts in particular may find it useful to be able to judge area,-the acreage of fields, orchards, wood lots, etc. Begin by making yourself familiar with a square yard,-four square yards, eight, sixteen,-a quarter acre, a half acre, an acre. Remember that a square acre measures a little over 208 feet, or approximately 70 yards on each side. This is not a First Class Test.

Judging Numbers.-This is another ability that may be most practical value to a Lone Scout,-that is, for judging the number of sheep in a flock, cattle in a herd, chickens or turkeys in a flock, etc. For practise, "guess" at a glance the number in a small portion of a flock or herd, then check by actual count. When you can estimate closely to this extent, practise applying your small-portion guess to the whole flock, or herd, and multiplying by the number of "portions."

The system can be used to estimate quickly the number of people at an entertainment, hockey or football game, etc. This is not a First Class Test.



The Width of a River.-If, like Polly Wolly Doodle, you "come to a river and cannot get across," here is one way of discovering just how far you must swim: Pick out a point A (illustration) just opposite a tree, X (or other promi-

ment object) on the other side of the river, and drive a stake in the ground. At right angles to the imaginary line across the river make a base line AB, any convenient length, say 40 yards, here place a stone or push a stick into the ground. Continue along in the same direction for half the first distance you measured, to point C; CB will be 20 yards. At point C turn at right angles and walk inland until you bring your marker and distant tree in line, stop at this point, D. Now measure the line CD. This will give you half the distance from A to X. Double that and there's your answer.

Judging Distance by Sound.-Distance can sometimes be judged by sight and sound. If you see a gun fired, for instance, and count the seconds between the flash and report, you can tell how far the sound has come,— if you remember that sound travels at 365 yards a second.

During a thunder and lighting storm you may be able to quiet nervous people by pointing out to them the time between the flash of lightning and the roll, or crash of a bolt, -this proving that the bolt in reality struck several miles away.

TEST NO. 12

Demonstrate the following: back and eye-splice, fireman's chair knot, manhar-ness knot, rolling hitch, par-buckling.

This test is provided to help you increase your knowledge and usefulness with rope. As these requirements are unfolded for you in the following paragraphs you will readily see how useful they can be to you on many occasions.

Back Splice.-This is a method for pointing a rope, and is much superior to whipping, especially on "hawser laid" ropes, that is, ropes which have three or four strands.

Start with a Crown Knot as illustrated on opposite page.

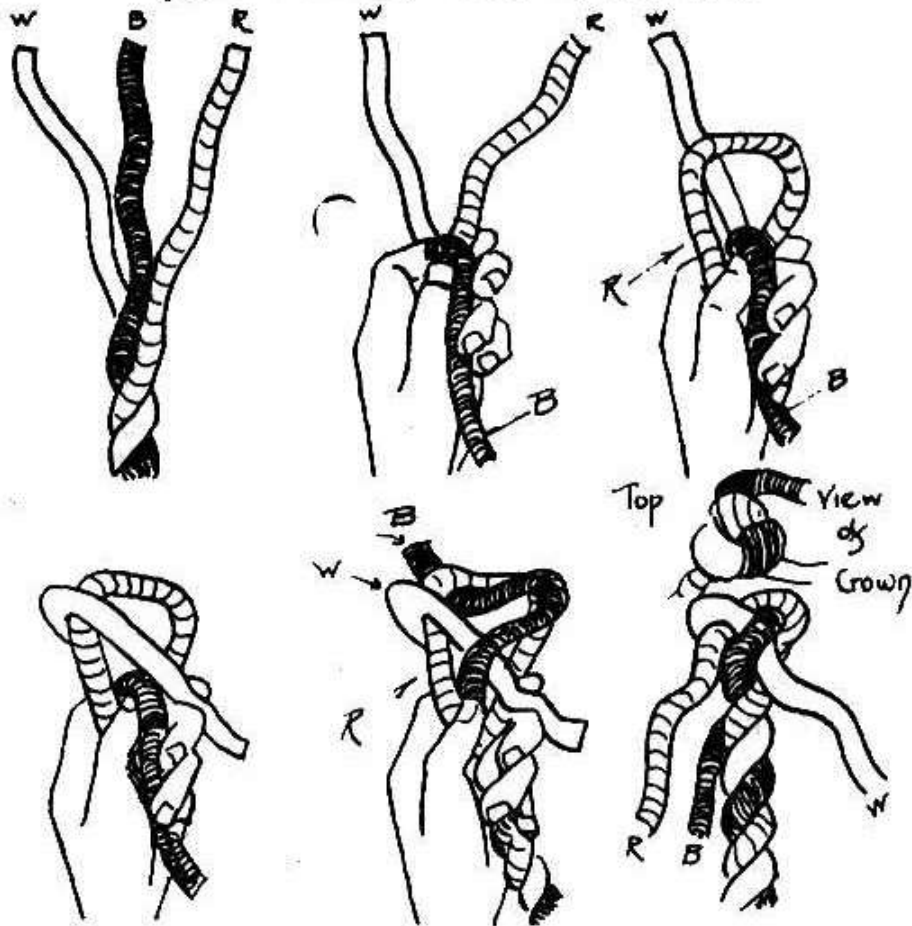
Then pass each strand in turn from left to right, that is against the lay, over one strand and under one. It will be noted that each strand passes under itself. Repeat the process until the ends are used up. The splice may be made neater by cutting away half of each strand after the first interlacing. See cut.

Eye-Splice.-An Eye-Splice is used for placing a permanent loop at the end of a rope.

To make an eye splice in three stranded rope, unlay the strands for a short distance and bend the rope to form an eye of the desired size, placing two end strands across at right-angles to the lay of the standing part of the rope and the other strand behind (A).

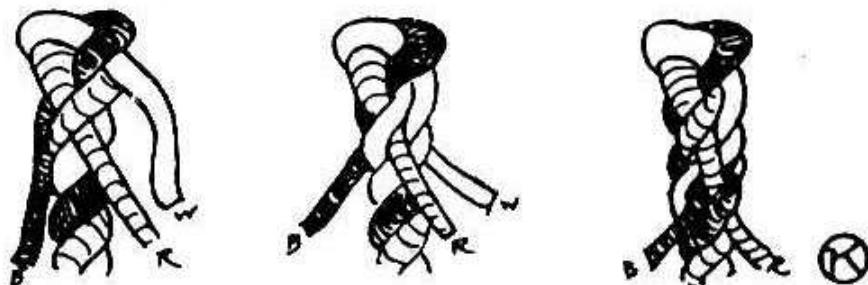
Take then centre strand under the nearest strand of the standing part (B). Take the first end strand under the next strand, going in where the second

BACK SPLICE

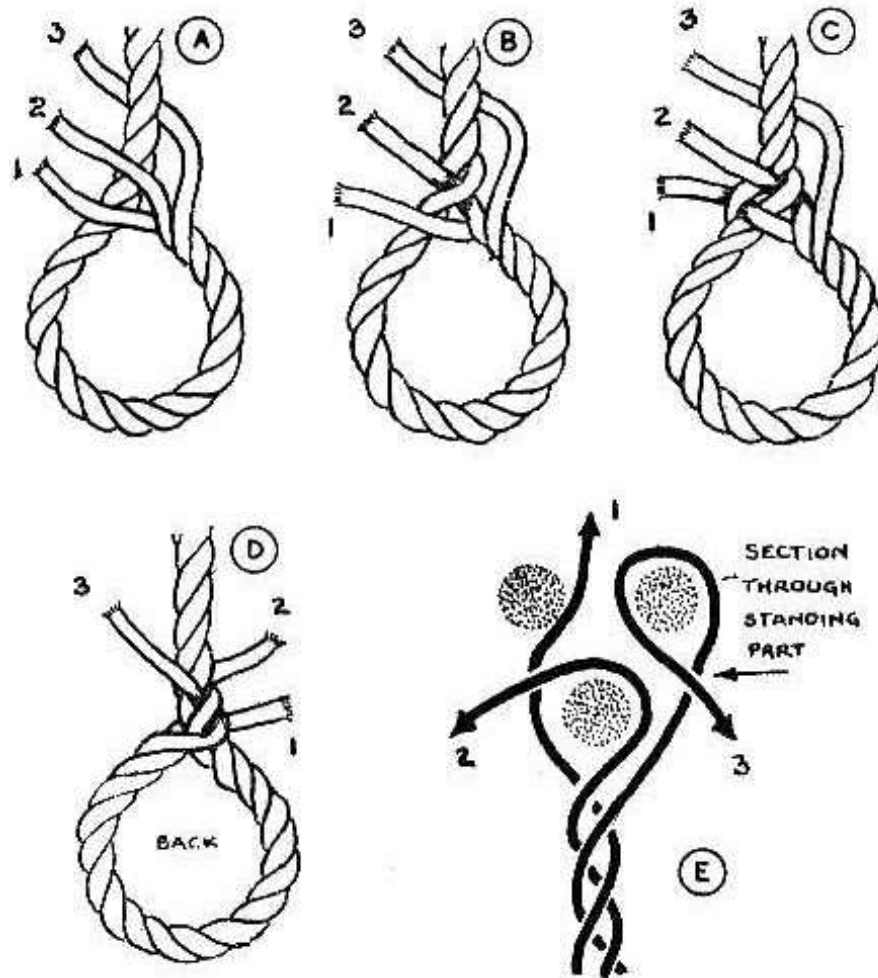


TUCKING.

Strand R only All Strands once All Strands Twice.



strand came out (C). Turn the rope over and tuck the third strand under the remaining strand of the standing part, going in where the first strand comes out (D).



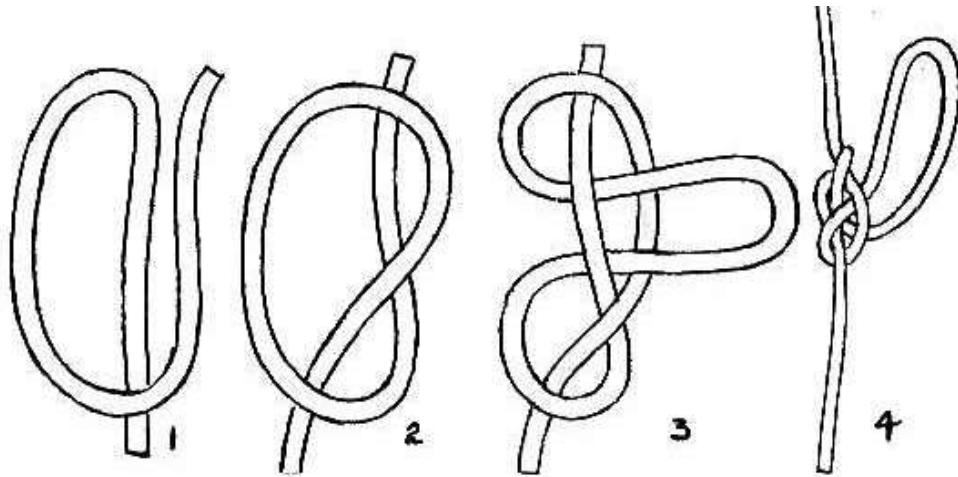
There should now be an end strand projecting from each space of the standing part (E). This completes the first tuck. Tuck each strand in turn “over and under one”, making three full tucks and two taper tucks. The taper tuck is made with the strand thinned down by scraping away some of the fibres. To complete the splice, roll it underfoot, then stretch it and finally cut off surplus ends of strands.

Fireman’s Chair Knot.-You will find a description of this knot and an illustration under First Class Test No. 6.

Manharness Knot.-This knot or hitch is used to make a loop in the middle of a tow-rope, which will not slip, so that a Scout towing may put it over his shoulder and add his weight.

This knot is best made by laying the rope on the ground; it can also be done by holding the loops over the hand. The illustrations explain the simple method of making.

Rolling Hitch.-This hitch is somewhat similar to a Clove Hitch which you learned way back as a Tenderfoot, but is less likely to slip under a sideways pull. It is useful for attaching a rope to another rope which has a strain on it.

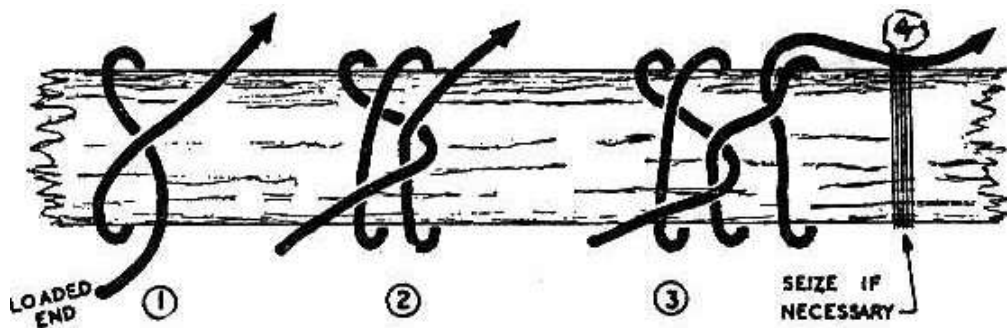


Start with a half-hitch as in Fig. 1. Then take a round turn, round standing part and larger rope, as in Fig. 2.

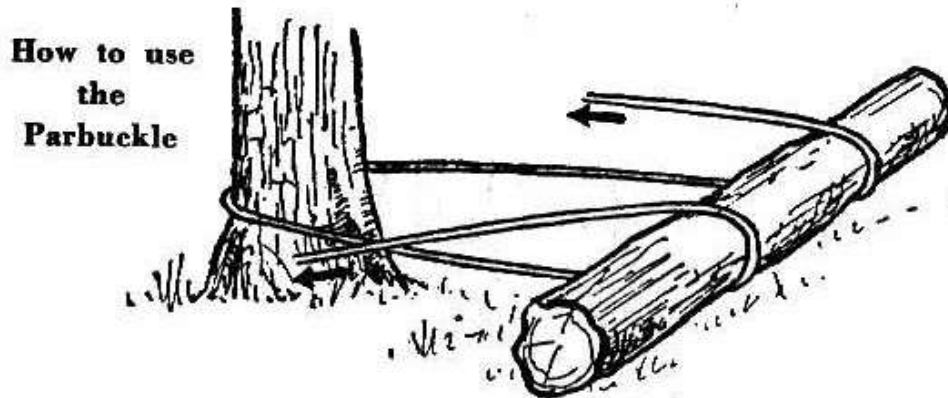
Then a half hitch on top similar to the first one as in Fig. 3.

To make doubly sure, twist the running end round the fixed rope, in the opposite direction to that in which the hitches have been made, and stop it down, as in Fig. 4.

Parbuckling.-Have you ever tried to lug a big log up a hill or over rough ground? Well, parbuckling will show you just how easy and with what little effort this can be done. Of course you can use it for moving other cylindrical objects such as barrels, by the same method.



The rope is bent in two and the loop hitched round a tree stump, post or other firm anchorage. Both ends of the rope are then passed under the log, round behind, and over it and are brought back in the direction of the anchorage- exactly as shown in the illustration.



If the ends of the rope are held taut or slackened together the log may be moved, raised or lowered with comparative ease. If the strain upon the two ends is not equal the direction of the log may be changed slightly, but if a short object-such as a cask-is being moved, it may readily slip out of the parbuckle.

TEST NO. 13

Demonstrate the proper use of an axe for felling and trimming light timber; or if this is impracticable, make a "Pioneer" model such as a bridge, a derrick, etc., of a type approved by the Examiner. If a Sea Scout, make a model boat or deck model; help repair Troop Craft.

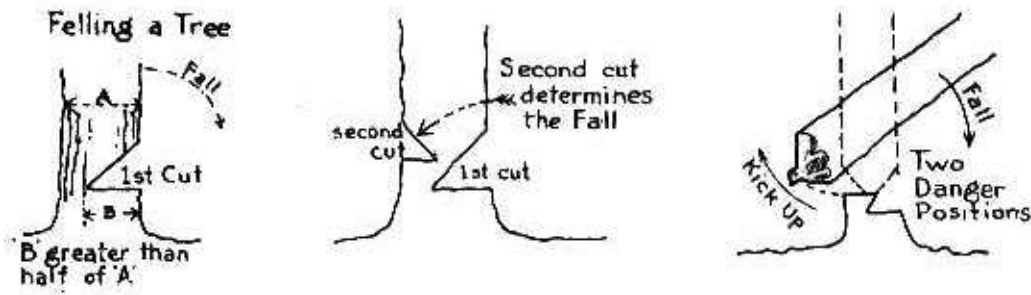


This test may be considered as combining a review of the axemanship demonstrated for your Second Class Badge, and an exhibition of your further improved skill with an axe. As a First Class Scout you should be able to tackle any axe job on hike or at camp with sure moves and efficiency.

This finished axemanship will be shown, in the present test, chiefly by your skill in trimming the tree you have felled, the deftness of your strokes; the lopping off of smaller branches with one clean cut, and your selection of safe footing for your chopping "stances" on the ground or on the tree trunk itself.

Tree Felling.-The illustration explains the felling' cuts. and the lower notch, or kerf on the side to which it is desired to "lay" the tree.

Before beginning to cut, clear away all underbrush and hanging branches within reach of your full swing. A comparatively small branch may catch your axehead and deflect your stroke.



Spectators, if any, should be at least two axe lengths away -an axe length being the distance from the armpit to the head of the axe.

Make sure you have a firm footing.

Never stand behind a tree when it falls. It may violently kick back as its branches hit the ground, or if it swings, or lodges in another tree.

As the tree begins to crackle or sway, give the traditional lumberman's cry of "Timber!" and spring well to one side. In trimming, always work upwards from the butt.

TEST NO. 14

Send and receive a message out-of-doors, either in Semaphore, at 20 letters a minute, or in Morse at 15 letters a minute. (Sea Scouts will use Morse). He must also understand the alphabetical check for numerals. Where it is desired to pass the test in Morse by buzzer, the test may be taken- indoors provided the sender and receiver are out of sight of each other.

In your Second Class signalling test you have learned the fundamentals of signalling, the code and procedures. It is well to point out here that while there are other miscellaneous signals in use, Scouts use those originally outlined in "Scouting for Boys". This test aims to make you more proficient in the use of signals and able to send with greater speed.

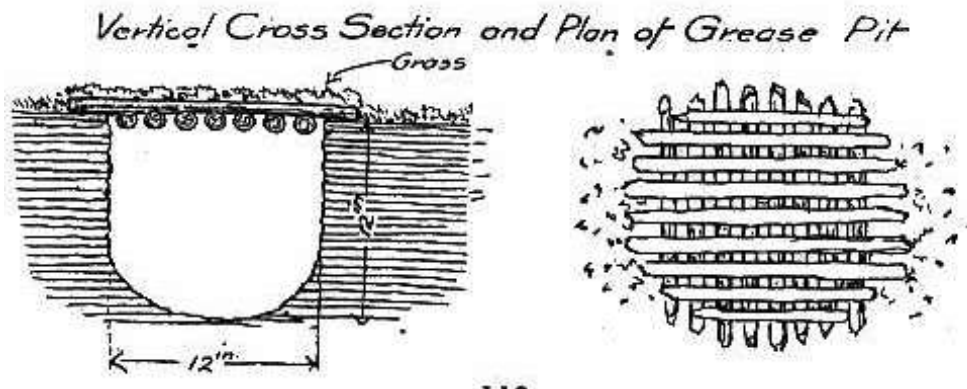
The development of speed in signalling can only be attained by practice. Read again the instruction given in Second Class Test No. 10. Here are a few special reminders.

When you have contacted your station and your message is under way, respond to each word with the appropriate signal when receiving ("T" in Morse, "A" in Semaphore), to show that it has been received. At the end of the message, if sending, signal "AR" to indicate end of message, and, if receiving "R" to indicate complete message received. If a numeral appears in the message you are receiving, respond to each numeral individually with the letter check indicated in Miscellaneous Signals on Page 61.

Should you make an error and recognize it in the sending, send a series of "E's" (EEEEEEE) to denote the error and then send that word over again. Occasionally in sending figures you may wish to use a decimal. In Semaphore you change to alphabetical and send the word "DECIMAL". In Morse send AAA, as shown in the table of Miscellaneous Signals on Page 60.

TEST NO. 15

Make a ramp kitchen with open fire and other necessities and prepare therein (a) two of the following dishes: porridge, rice, pancakes. (b) a "damper" of half a pound of flour or a "twist" baked on a thick stick. (c) a stew. (As an alternative for the stew, skin and cook a rabbit, or pluck and cook a bird, or clean and cook a fish).



When taking this test you will be expected to go about the job in an orderly manner. Make sure that you have a sufficient supply of suitable firewood (including dry hardwood if procurable), and fresh water. Make the usual Scout small fire, placed so that the smoke will blow from you and the food you are cooking.

A Full Scout-size Bridge.-Here is a bridge building job that every Troop should aim some day to achieve.



Top:Placing the ramp timbers. Length depends on shore line.

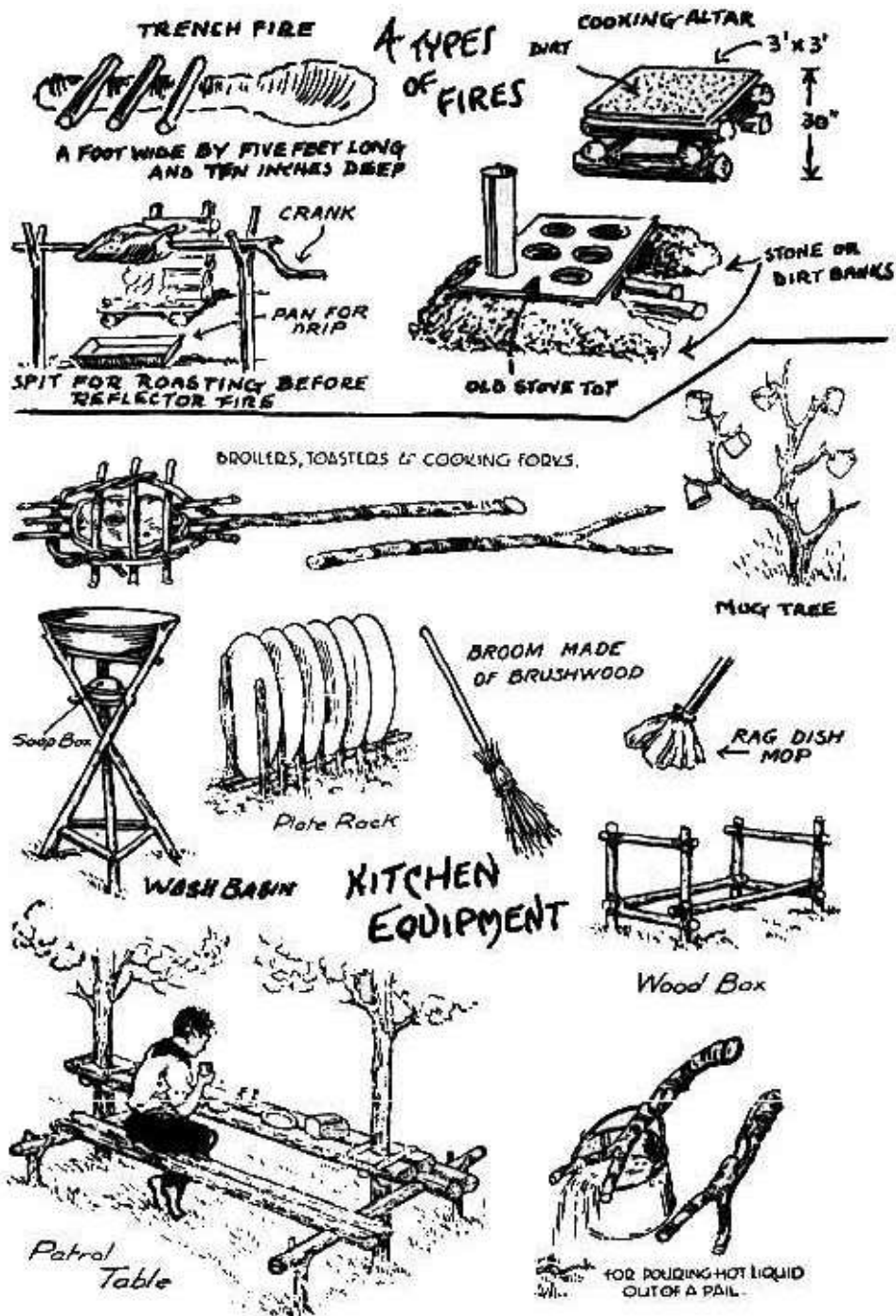


Middle: Finishing the floor. The first bottom floor piece was square-lashed to the ramp timber.

Remaining cross pieces, working upward, are being secured with a turn round the ramp. They finish at the top with the square lashing.



Bottom:Ready for Troop, trek cart, or any reasonable traffic.



Recipes.

Porridge.-For each person allow one pint of water, 2 ozs. of rolled oats or oatmeal, and a quarter teaspoon of salt. Bring the water to a boil, add the salt, sprinkle in the oatmeal, stirring as you do so. Allow to simmer a half hour. (Coarse oatmeal will take an hour.) Stir frequently to prevent burning.

A double-boiler is the surest method to prevent burning. One may be improvised by placing a small pot inside a larger one containing an inch of water, with a few pebbles in the bottom to keep the two vessels apart.

Rice:-For each person allow one half pint of water, one ounce of rice and one-eighth teaspoon of salt. Bring the water to a boil, add the salt, and sprinkle in the rice, stirring. Boil for 20 minutes. Continue to stir frequently to prevent burning (if not using a double-boiler.)

Pancakes.-Mix a half cup of flour, a half teaspoonful of baking powder, a third teaspoon salt and a tablespoon of sugar. Beat one egg and mix it with one cup of milk. Add the milk and egg to the flour and stir until smooth. Drop by spoonfuls on your hot, greased frying pan. When puffed, full of bubbles and cooked on the edges, turn and cook on the other side. This makes enough pancakes for two persons.

Damper.-Use 1 1/2 pints flour, 1 1/2 heaping teaspoons of baking powder, 1/2 heaping teaspoon of salt, 1 heaping tablespoon cold grease, 1/2 pint cold water or sweet milk. The quantity of water or milk may vary with the quality of the flour. Too much liquid makes the dough sticky and prolongs the baking. Baking powder also varies, and directions on the can should be studied.

Mix thoroughly with a big spoon or wooden paddle, first the baking powder with the flour, and then the salt. Rub into this the grease (lard, cold pork fat or dripping) until there are no lumps left, and no grease adhering to the bottom of the pan. This is tedious, but it does not pay to shirk it. Complete stirring is necessary to success.

Now add the water, and stir with the spoon until the result is rather a stiff dough. With a clean, round stick roll out the dough at once to a half-inch thickness, and bake in a frying pan (covered if the wind is blowing), or on hot stones.

Twist.-Work damper dough into a ribbon two inches wide. Get a stick of sweet green wood (birch, poplar, maple or sassafras), about three feet long and three inches thick. Peel the large end and hold over hot coals, or sharpen and stick into the ground, leaning over the fire. When the sap simmers, wind the dough spirally round the peeled end, and turn occasionally while baking.

Hunter's Stew.-Cut lean meat or game into small pieces, brown with fat in a frying pan, shuffling the pan so as to sear but not burn. Drop the meat into a kettle of boiling water, and set to one side or hang high over the fire, to simmer. Later add potatoes, onions, rice and salt and pepper.

It is essential that the stew should not boil hard, but merely simmer. The time will vary according to the materials used Cook until tender.

If a thick stew is desired, rub a little flour into the grease left in the frying pan and add water, stir, and allow the mixture to boil for a few minutes. Stir

this into the stew a short time before it is served.

Skin and Cook a Rabbit.-A rabbit (cottontail, jack rabbit or hare) is a meal likely to come the way of a Scout from time to time, so you should know how to prepare and cook one.

To prepare: Place the rabbit on its back. Cut the legs off at the first joint. Slit the skin down and between the hind legs, and “peel” toward the head,- that is, turn the skin inside out. (If your first time, have someone hold the hind legs.)

Your Scout knife (sharp) may be required to free the skin in spots.

The skin removed, slit the carcass down middle of the belly, and remove entrails.

Wash well in warm water. If there is time before the feast, rub well with salt and soak for several hours.

Now cut up, first removing the legs; and make a stew similar to Hunter’s Stew, adding an onion and several pieces of lean bacon. Cook for an hour and a half. (Note that rabbit is good eating only in Fall and Winter.)

Pluck and Cook a Bird.-For easy plucking, first scald a fowl by holding it head down and pouring scalding hot water through the feathers close to the body.

For “Scout roasting” it is not necessary to pluck. Remove the entrails and wash the inside, then plaster with clay and place in the middle of your fire, and cover with hot coals and ashes. In an hour and a half to two hours the bird will be cooked, and the feathers will come off with the baked clay coat.

Fish and meat may be cooked in the same way, the meat being wrapped first in several thicknesses of wet paper. But the real way to cook a Scout-caught fish is to broil it on a plank.

TEST NO. 16

Have a general knowledge of the Highway Code of his Province and be able to answer questions and give demonstrations in relation to any part of it; and, if a Sea Scout, know the rules of the road at sea.

As a Second Class Scout you learned the Highway Code, and special rules relating to cyclists and pedestrians. This test broadens your knowledge and you must learn those details related to other traffic. You should know how properly to turn a corner, how to pass oncoming traffic or traffic proceeding in the same direction, or parked. You must know when and when not to pass other vehicles, which means you must be able to recognize highway signs and interpret them.

While much information may be obtained from the booklets issued by your Provincial Highway Department, perhaps your Scouter will be able to gather the essential information in more concrete form.

TEST NO. 17

Demonstrate the methods of controlling traffic, both vehicular and pedestrian.

Boy Scouts in many parts of Canada have done excellent work in traffic control in many fields. Hundreds of Scouts are members of School Safety Patrols in larger centres. Yeomen service was rendered by Scouts in this field during the visits to this country of members of the Royal Family, and in several disasters.

To give efficient service in traffic control the prime necessity is a clear and cool head. The Scout who gets easily rattled is not going to be of much value.

Instructions in this test should come from a member of the local Police Force. In communities where no Police Force exists Provincial Police or Royal Canadian Mounted Police will be glad to assist.

Just one or two reminders. Scouts should never try to take traffic control out of the hands of constituted authority. They should assist when asked by police, or in the absence of police might direct traffic in the case of an accident until the arrival of the police.

Fall fairs in rural communities offer excellent opportunities for Scouts in those areas to assist in traffic control.

TEST NO. 18

If he has the use of a bicycle, demonstrate that he is keeping it properly maintained and that he is able to effect all reasonable repairs.

This test simply assures that what you learned as a Second Class Scout about your bicycle and its maintenance is being continuously carried out. For the purposes of this test, your Scoutmaster may at any time inspect your bicycle, and question you on your knowledge of its operation and repairs. In the Second Class test you are expected to effect "minor" repairs. In this test you should be able to make almost any kind of repairs which do not require the use of machine shop equipment. For instance you would not be expected to weld a broken frame, but you would be expected to replace a brake or three speed cable. To make sure that you fully understand the vital parts of your machine and how to keep them in good condition read over once again the instruction given in Second Class Test No. 13.

If you are not using your bicycle in the winter time your Scoutmaster may expect that you would have it properly stored against the weather, and not just leaned against the wall of the garage or some other out-building.

TEST NO. 19

Understand the procedure for reporting accidents.

It is a law in many Provinces that if you are a witness to an accident you must report it to the police. Now if you had the opportunity to listen in on a traffic accident case in a police or civil court you would be surprised at the many versions of an accident that will be given in evidence. Some are right and some are wrong, and yet it is not necessary to think that someone is giving false evidence. So few people are really trained to make accurate observations that a tremendous amount of confusing evidence results.

A Scout, of all people, and because he is a trained observer should be able to report accurately on an accident. To train yourself, take any given happening that you may see and make a mental report of it.

If you were someday to become a cub reporter on a newspaper the first thing your editor would tell you is that every story must answer five questions-Who? What? Where? When? Why? If you train yourself to answer those five questions in everything you witness, you'll soon become an expert.

An accident: Who was involved? What happened? Where did it happen? When did it happen? Why did it happen? It might not always be easy to answer the last question, and if you cannot answer it, it is better to leave it to the police to figure that out.

It is a good idea to practice this at Patrol Meetings or in your Patrol Instruction period. Plan a "mock" accident, and then have each Scout report on it, giving an answer to the five questions listed above.

The essentials in reporting accidents are:-

1. Call doctor or ambulance if necessary.
2. Call the Police.
3. Make careful note of your observations as outlined above.
4. See that where possible, conditions are left as they are so that Police may easily reconstruct the accident.
5. See that crowds do not erase wheel or skid marks which might assist police in their work.
6. Should there be glass or other debris from an accident on the highway, a Scout should, as a Good Turn, clear this away to prevent distress to others. This of course would be done after police investigation is completed.

TEST NO. 20

Read and be able to use a topographical map, and if a Sea Scout, a navigation chart. Point out a direction b1, day and night without the use of a compass.

Reading a Map.-Reading a map means more than simply pointing out certain signs and symbols, and telling the examiner what they represent. The Scout must be able to tell just what kind of country is indicated, the direction in which the streams flow, the kind of roads, paths, etc.

The Scale.-One of the first things a Scout must note, in order to understand a topographical map, is the “scale” to which the map is drawn. By the term “scale” is meant the proportion a distance on the map, bears to the actual distance on the ground. When the scale is one inch to the mile, one inch on the map represents one mile on the ground and on topographical maps is usually shown in a scale of inches and also in this manner, which is known as the representative fraction:-

$$\frac{\text{Distance on map}}{\text{Distance on ground}} = \frac{1 \text{ inch}}{63360 \text{ inches}}$$

Thus a distance on the map of five inches would represent five miles on the ground, and two villages shown three inches apart, would be three miles apart actually.

The North Point.-After acquainting himself with the scale, the Scout should locate the north side of the map. The symbol correctly indicating this is shown on some maps, but not on topographical maps. Where the symbol does not appear it is assumed that the top of the map is north. True north may also be recognized by the points of longitude marked at the top and bottom of topographical maps.

It is important to note the variation between “True North” and “Magnetic North”; that is, the difference between Geographical North, the actual centre of the “top of the world”, and the North towards which the compass needle points- which is not the True North.

The reason the compass needle does not point to the True North is that the earth is a great magnet, and like any magnet, as a magnetic North Pole and magnetic South Pole and these poles are not located anywhere near the geographic poles. For some reason still unknown they are slowly but constantly shifting.

The Magnetic North at present lies in the south-western corner of Boothia Peninsula, a large barren projection of the Canadian mainland, about 700 miles from the True North Pole.

So always keep in mind the compass “variation”.

Orienting.-In order to use a map out of doors, as for finding your way when on a hike through unfamiliar country. you must know how to “orient” it. This means simply to stand and hold the map so that the road you are following is exactly in line with the road as shown on the map; and houses, trees and fields shown on the map are actually seen by you in their true direction from the point on the map at which you are standing.

Conventional Signs.-Since each individual person would have a different way of showing the various things on a map, such as houses, roads, trees, etc., certain signs, or “symbols,” are used. Names of roads are written in from left to right and from bottom to top. Conventional signs used on Topographical maps are illustrated on opposite page.

Making a Map.-While not a required test, every Scout should learn to make a Sketch Map, in preparation for the Route Map of his First Class Journey. The Sketch Map should be drawn from notes and a rough sketch made as you tramp over the route or section of country selected. (See also A Plane-Table Sketch Map, page 131).

Before setting out to make this map measure the length of your double pace; that is, every step with the right foot. Do this by pacing a known distance of 100 or 200 feet, counting the paces taken, and dividing into the distance. The average Scout will take approximately 20 double-paces in 100 feet, or about 5 feet to the pace. Pedometers should not be used. Most professional map makers do their own counting, and Scouts should do the same.

You will find it helpful in judging distances to learn the regulation measurements or distances between certain familiar objects. For example, telegraph poles usually are 150 feet apart; a standard roadway is 66 feet wide (1 chain); fence rails are 18 feet long; steel rails are 30 feet in length. If you are a bicycle Scout you have in your bicycle a ready-made means of measuring miles-either by cyclometer, or by a piece of red cloth tied to one of the spokes of the front wheel.

Taking Bearings.-If possible you should secure some preliminary instruction in taking bearings with a pocket compass reading degrees, not points. Bearings are always given in three figures 003°-045°-135°

Compasses are graduated continuously around from zero to 360 degrees. North is zero, East is 090, South is 180, and West is 270. On such a compass a bearing is read simply by the number of degrees.

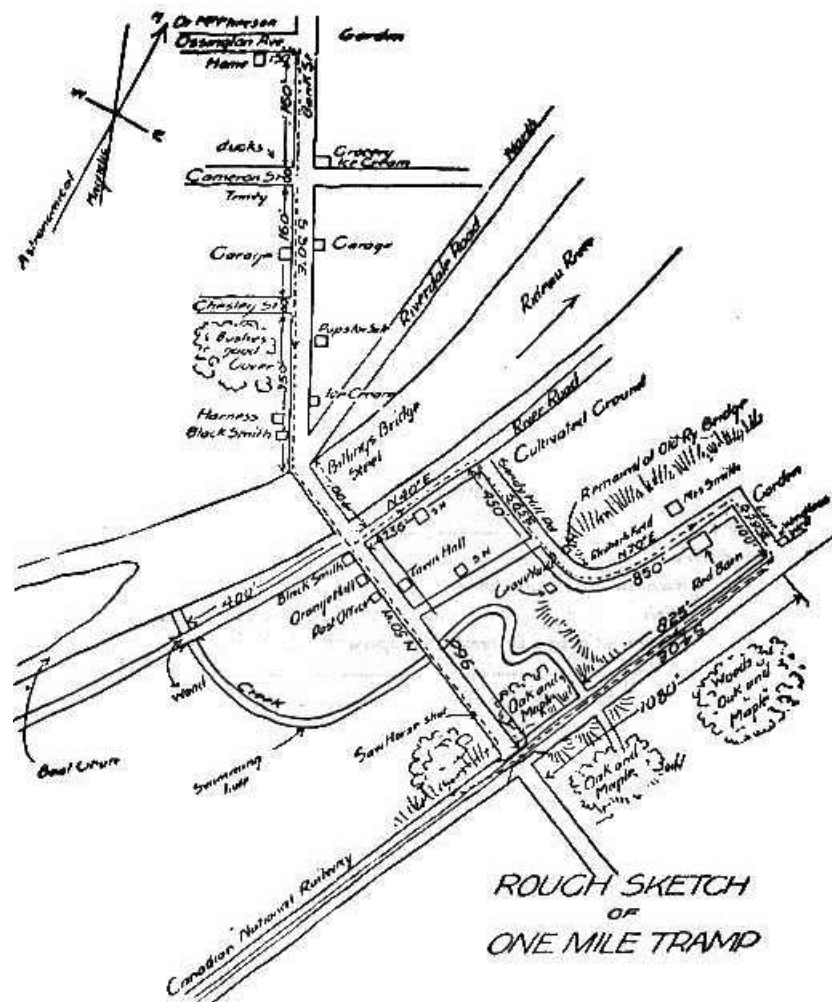
Simplest Way to Take Bearings.-The simplest way to take a bearing is to stand facing in the direction to be determined, compass in both hands, about breast high; then turn the box until the N. is under the North end of the needle. Sight over the pivot and read the degrees on the far side of the box. A pencil may be held upright on the rim to assist in marking the place. Most compasses are marked in two-degree spaces. Read the nearest two-degree

Never stand on or near a wire fence, a car track, electric light or power line, an automobile, or any steel structure. The needle is strongly deflected by such metallic bodies.

Equipment Needed.-A Scout compass; a large note-book or better, a sheet of paper fastened to a piece of cardboard; a pencil and a soft rubber eraser.

The Field Sketch.—The Scout should draw as he goes a rough field sketch, and on it record all bearings and distances.

Choose a section of country, away from city or town, that will give a circuit of about a mile. Part of it should be by road and part cross-fields, preferably along fences. The line along which you will walk is called the Traverse Line. The complete circuit (ending at its starting point) is called the Traverse Circuit, or the Traverse.



How to Proceed.-Select for a starting point a crossroads, or a bend in the road. Take a bearing on the stretch ahead. Note this on the field sketch (always standing with the map held in the direction in which you are going). Begin pacing. Suppose at 40 paces you come to the middle of a small bridge. On your sketch draw the sign for a bridge. Opposite it mark 200 feet (provided your stride has worked out at 5 feet to the stride). Show the stream under the bridge. Mark the direction of the stream's flow with an arrow. Resume pacing and counting. At 62 paces you arrive opposite a house on the right. Make a square mark for the house, and opposite it 310. Resume pacing and counting.

At 84 paces you arrive opposite a house on the left. It is a short distance from the road. Estimate the distance, if not over 300 feet. If over this distance, pace it. Show the house on the sketch, with the distance paced to the point opposite (420), and with the estimated distance of the house from the road. Resume pacing and counting until you reach the bend in the road. Mark on your sketch the paces to this point. Take bearing on the next stretch of the road and continue as before; also sketching in streams, trees, fields, fences, crops, etc. with their proper symbols. Continue in this manner until the circuit is completed. If you wish to note on your map certain objects not visible from any point on the Traverse Circuit, run a new Traverse Line across the interior of the Traverse so as to touch the objects desired,-as inaccessible building or other objects too far away to be easily located from a bend in the road; or from some other definitely located point on the Traverse Circuit. This method is accurate, and timesaving. Care must be taken to have the two bearings intersect each other at a reasonably wide angle.

The Final Map

The Scale.-Draw the map to a fixed scale. A scale of 400 feet to the inch will be found convenient. Distances may be measured, or "plotted", with a foot rule divided into inches, half and quarter inches. The better way for the Scout, however, is to make a plotting scale by copying the divisions from a foot rule on a strip of paper, and subdividing at least one quarter inch into ten equal spaces (by eye). Each of these little spaces will represent a 10-foot distance on the ground.

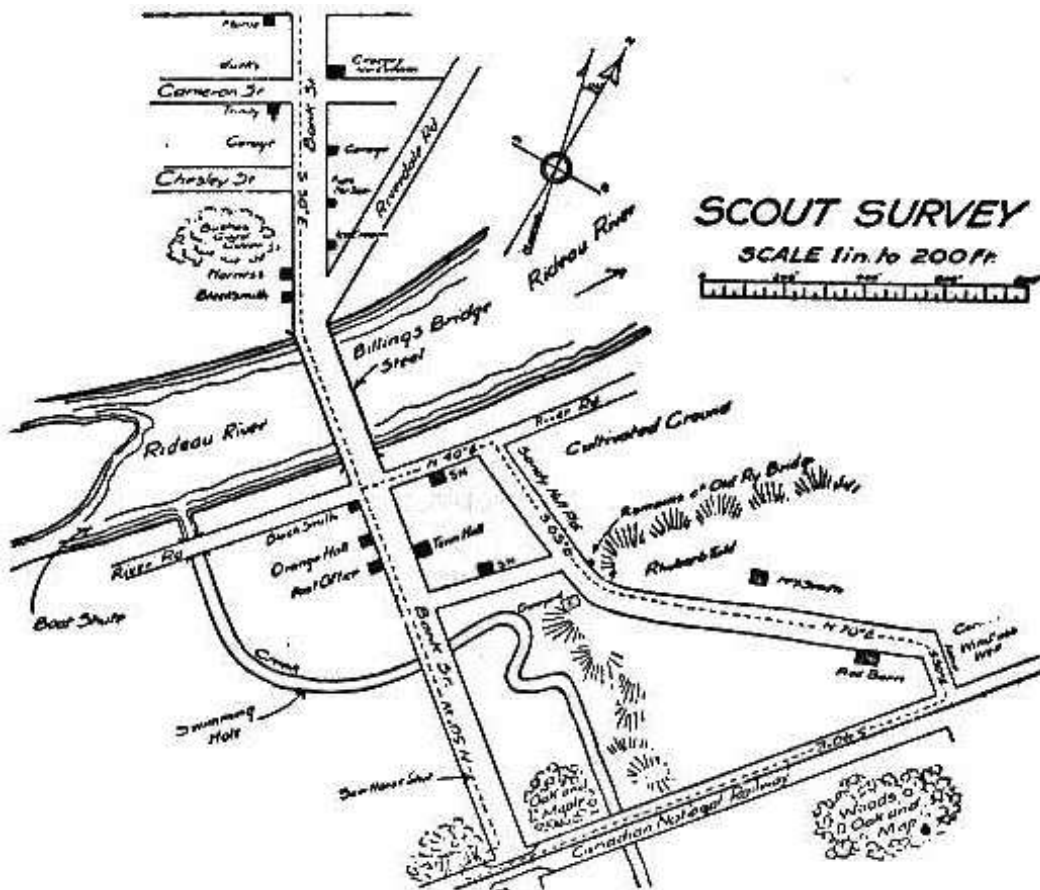
Draw the final map at home. Use a sheet of heavy white paper approximately eight by ten inches in size. Allow a margin of at least one inch. Use a medium hard pencil, well sharpened; and make neat, firm lines. (If it is a route or hike sketch, indicate the route followed by a dotted line in red ink.)

The Protractor.-Bearings will be plotted with a protractor (a half circle divided into 180 degrees). Cardboard, celluloid, or metal protractors may be bought cheaply.

To plot a bearing, first draw through the point from which it was taken, a

line in the direction of the Magnetic North. Place the protractor on this line, centre it on the point, and mark off the proper number of degrees. Connect this point with the first, and the line will represent the direction determined.

Error of Closure.-Plot the traverse circuit first and do not plot houses or other details until you are satisfied that the main traverse is correct. There is bound to be a small discrepancy; that is, the last course, when plotted will not bring you back to the starting point. This discrepancy is called the Error of Closure. Do not be ashamed to show it. Every Survey, no matter how carefully done, has an error of closure. An error of 100 to 200 feet (1/4 to 1/2 inch) is allowable. If the error is larger than this, there probably is a mistake. You may have read a bearing wrong, or dropped 100 paces in your count. If necessary, repeat some of the old measurements.



Lettering.-Print (do not write) the names of villages, roads, streams, etc. Lettering should be from left to right and bottom to top. Give bearings and distances of courses of your traverse circuit, also bearings taken to distant houses and other principal objects. In the lower right corner print the map title, and under it your name, Troop number, and date. Also show the direction of the Magnetic North as determined by your compass, and the scale of the map in words, or in a fraction, and always in the form of a divided bar.

The Scout Plane-Table Sketch Map

There is nothing complicated in the making of a Sketch Map. It is 90 per cent simple sense, it is always interesting fun, and when finished you have something that you can be a bit proud of.

Material Required.-A smooth board some 24 inches square a suitable piece of any light coloured paper, a few thumb-tacks, a medium soft pencil with rubber, a ruler, an ordinary compass, and several Scout staves, or sticks secured on the spot.



The Map “Theory.”-The theory of the Sketch Map is, first the fixing on your map board of the positions of several landscape features, or landmarks, then filling in the details or landmarks between.

Procedure.-Choose two landmarks (a big tree, say and a knoll topped by a large bush) a good distance apart, but visible from each other, and from each of which most of the other features of the landscape can be seen.

The line between these two selected landmarks is your Base Line.

Decide where on your board you may reasonably mark the two ends of the Base Line, keeping in mind the extent of the area you wish to cover in your map.

Now with your ruler draw the Base Line on the board, and mark one end A and the other B.

Fix a Map Scale.-Pace off the distance from landmark A to landmark B in feet. (Do it twice, combine the results and divide by 2, and you’ll be pretty close.) Divide the ground distance by the length of the Base Line on your board, and that will be your Map Scale, it may be: 1 inch equals 60 feet.

“Ray” Lines.-Carry your board to landmark A, and set it up on a Scout staff tripod (as pictured). Adjust the board so that a sighted line over A and B on the map covers landmark B.

Now, without moving the board, look towards the other landmarks you wish to locate, and from point A draw a light pencil line-or ray line-in the direction of each such land mark. (Lightly label these lines, so you can identify them later.)

Move your board to landmark B, and “orient” it so that a sighted line over B and A on the map covers A landmark. Again draw ray lines to the selected

landmarks.

The point of intersection of the two sets of ray lines will indicate the correct location of the various landmarks on the map.

Now the Details.-Rub out the ray lines, leaving only the landmark points. Change the landmark points into Conventional Map Symbols (see page 129) and letter in. Remember that lettering is horizontal, except for rivers, railways and canals.

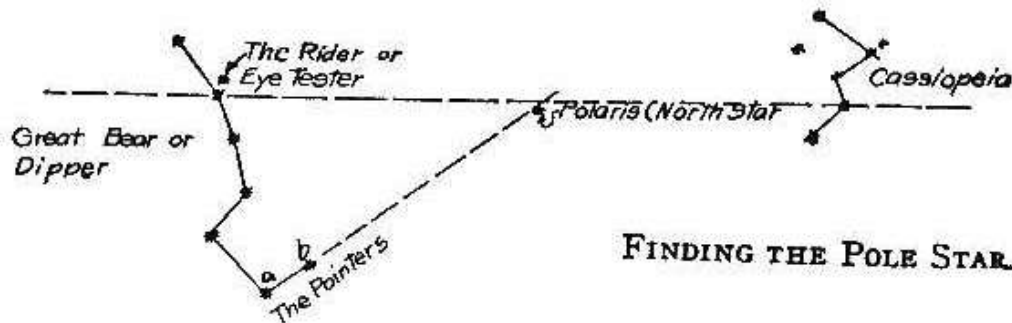
The next step is to wander round the area with the map in your hand and fill in details between the landmarks,- trees, streams, ponds, fences, buildings, roads, trails, bush-land, swamp, knolls, etc.

Finally indicate the direction of North by an arrow in a corner of your map, and mark the Scale used. And your Rough Sketch Map is completed.

Pointing Out a Compass Direction

The last part of the test is not as simple as it might appear. It does not mean that a Scout shall stand in his Troop meeting place and point out any direction asked for. It means that he shall be able to stand in the open, and either by studying the stars at night, or the sun in the day time, locate the North, and other points in the compass.

One of the most satisfactory tests is taken at night, out in the open, away from familiar buildings, or other objects. The Scout is blind-folded, turned about several times, those present also changing their position; then his eyes are uncovered, he looks skyward, and finds "where he is"-and where the North is-solely by the stars. This is good fun, and a real test.



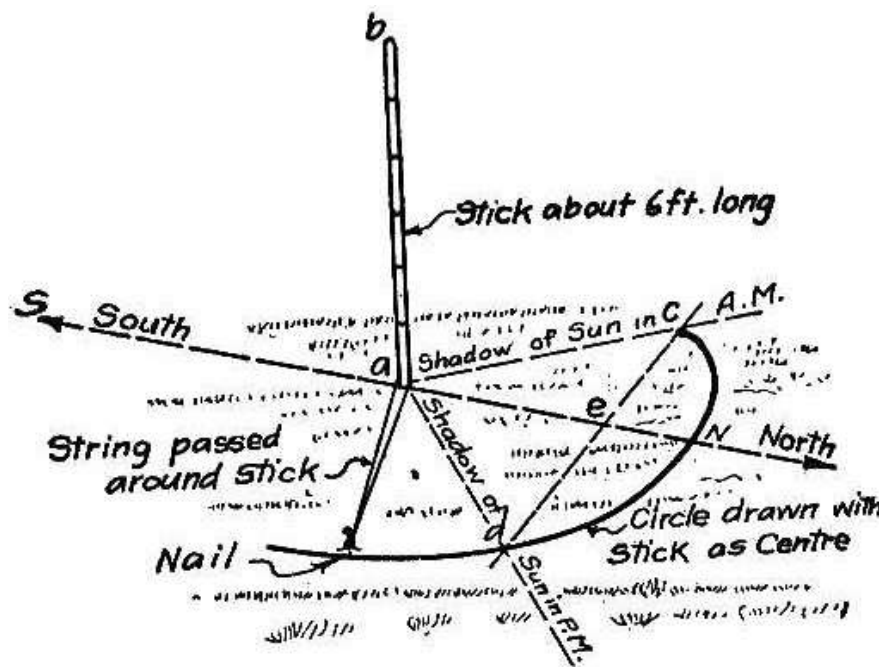
Should you be able to see the Dipper, but not the Pole Star itself, you will be able to locate the Pole Star's approximate position by following out the line indicated by the two Pointers for a distance of five times the space between the Pointers.

Finding the North By Shadows

Another way of finding the North is by means of the shadow of a pole. This

is a very slow method but a very good one. Let us suppose that your Troop is in camp, and that you have been asked to locate the True North. Proceed as follows:

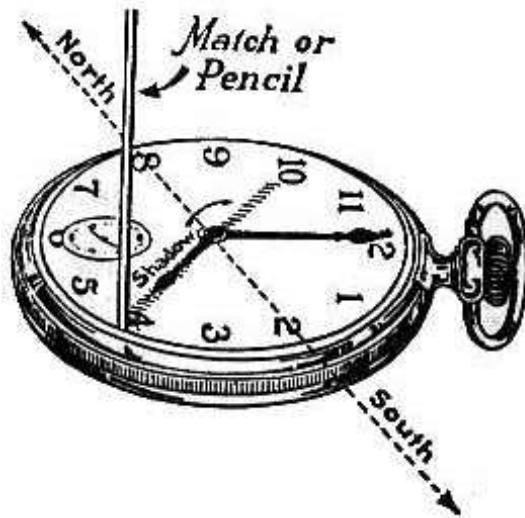
On a level piece of ground stand a 6 or 8 foot pole (a b) in an upright position. At about ten or half past ten in the morning tie a piece of string loosely around the bottom of the pole (a) and hold the other end of the string at the end of the pole's shadow. (c) Now, imagining that the bottom of the pole is the centre of a circle and the shadow (ac) the radius, on the ground draw a half-circle. (If you cannot scratch the ground to show the circle, indicate it by bits of sticks or small stones.) In a few minutes you will notice that the shadow has left the circle and is getting shorter. You, of course, know that the shadow of the stick will be shorter at noon than at any other time, and that it then begins to lengthen again. Watch it until it stretches out and once more strikes the circle at (d). Mark the point right away, and draw a line from (d) to (c). Now find the middle of the line (dc), that is the point (e), and draw a line from (e) to the base of the pole (a). The line (ae) will be the North and South line. The North end (in Canada) is always on the same side of the pole as the circle.



The Watch Compass.-Your watch can also tell you the North. Place it on a flat surface and stand a lead pencil or small stick over the end of the hour hand. Turn the watch until the shadow of the pencil falls along the hour hand. Now a line drawn half way between the end of the hour hand and 12 o'clock runs North and South; and between 6 a.m. and 6 p.m. the North will lie on the side of the watch on which the hour hand is farthest from 12 o'clock.

Now you will want to know what to do in case the sun is not shining. On almost any cloudy day you will be able to use the watch method if you will take a piece of white paper and place it over the face of the watch, and hold the pencil at the end of the hour hand, close to but not touching the paper

Under the point of the pencil you will notice a very small shadow. One side of the shadow will have a sharp or well defined edge, and the opposite side will be rough and indistinct. The sharp edge is the side from which the light of the sun is trying to come; therefore turn the hour hand in that direction, or until



you think the little shadow, if produced backward, would pass through the centre of the watch. Sometimes the day will be so dark that it will be difficult even to see the shadow under the point of the pencil. In that case use a stick about half an inch square and not sharpened. Practice will show you that no matter how dark the day you can always get a shadow and that the shadow will have a sharp edge and a rough edge. The sharp edge is the side toward the sun.

TEST NO. 21

Go on foot, preferably with a companion, a 24 hour journey of at least 14 miles outside city, town or built up area. In the course of the journey, the Scout must cook his own meals, one of which must include meat, over a wood fire in the open.; find his camp site and camp for the night. He must carry out the instructions given by his Scoutmaster as to things to be observed en route. He must hand in, on his return, a log of the journey, including a sketch-map of his route. A Sea Scout may make his journey partly by water and partly by land. (In abnormal circumstances or to meet exceptional cases, the District Commissioner may permit modification of the requirements of this section). THIS TEST SHOULD BE TAKEN LAST and where practicable should be conducted by the District Commissioner or his appointee.

The purpose of this test is to prove whether you have 'First Class Scout ability' to take care of yourself on the trail, as would a frontiersman, trapper or prospector. The ideal test would be by canoe up some, strange river, or through the woods along an old Indian trail, fishing and hunting by the way, sleeping in a lean-to, making your meals of flap-jacks and bacon, hunter's stew of rabbit, partridge or fresh caught trout (in season).



In the event of your running into continued heavy rain, and where it is not possible to make a good weather-proof lean-to, and you are not possessed of a hike tent, you may pass the night under any hospitable roof or comfortable barn, rather than run the unnecessary risk of a severe cold or other ill-effects.

When two Scouts take the test together they should make separate Journey logs, and write separate reports. The reports should describe the character of the country, birds and wild animals seen, and briefly relate all the interesting observations and happenings of the hike.

Scouts should not be accompanied by a leader or another Scout who has previously taken the Journey.

Note:- Normally Test 21 should be the final one taken for the First Class Badge.

The Badge of the First Class Scout is a combination of the Scout Badge and Second Class Badge. It is granted on the recommendation of the Scoutmaster. It is embroidered on cloth, and is worn on the left arm between the shoulder and elbow, in the place of the Second Class Badge.

The Bushman's Thong

Having reached the goal of First Class Scout, you will want to “go the extra mile” and attain the top insignia of Scout woodcraft, the Bushman's Thong, -a thong, worn over the right shoulder with which various uses can be made in the woods, including the stringing of a fire-bow.

The Bushman's Thong may be worn by First Class Scouts who hold the Camper Badge and one each of the following Proficiency Badge groups:

- (a) Naturalist, Stalker, Tracker;
 - (b) Forester, Starman, Pioneer, Weatherman.
- These Badge requirements follow:-

Camper (Compulsory)



- (i) Must have camped out a total of thirty nights, either in bivouac or under canvas.
- (ii) Take part in a hiking, camping, or canoeing trip of not less than three days' duration.
- (iii) Submit a satisfactory menu and list of provisions, utensils and kit required for a Patrol of Scouts for a three day summer camp.
- (iv) Must have cooked thirty camp meals.
- (v) Know how to select and lay out a camp for (1) a Patrol, (2) a Troop of 32 boys; and how to make necessary kitchen, rubbish pits or incinerators, latrines, etc.
- (vi) Demonstrate how to pitch and strike a bell or other standard tent, and how to carry out ordinary repairs on tents.
- (vii) Demonstrate an understanding of the correct use and care of an axe.
- (viii) Know the precautions to be taken against forest or prairie fires, or both.
- (ix) Know the precautions to be taken to avoid the danger of contaminated drinking water.
- (x) Present himself for inspection correctly clothed and equipped for a three-day camp, and demonstrate his ability to pack properly against wet weather and transport this equipment on his back.