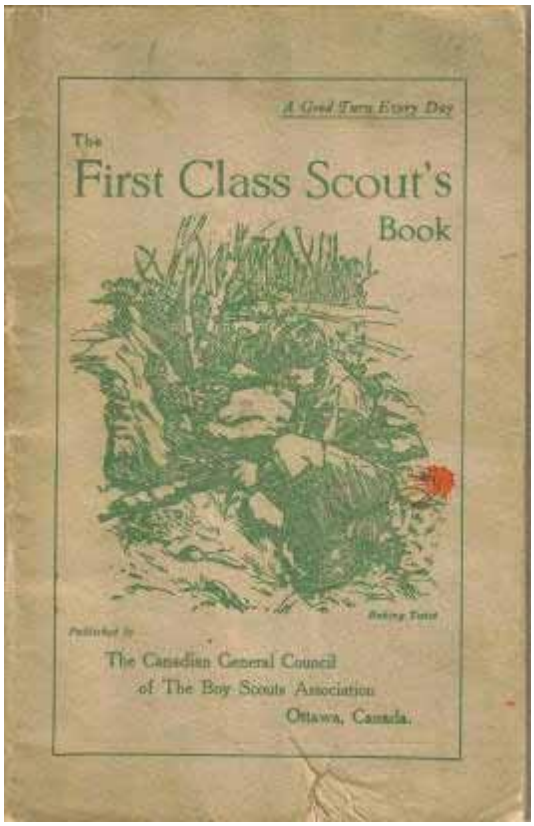


The
First Class Scout's Book

On my honour I promise that I will do my best,
To do my duty to God and the King,
To help other people at all times,
To obey the Scout Law.

Published by
THE CANADIAN GENERAL COUNCIL
OF THE BOY SCOUTS ASSOCIATION
1931
OTTAWA,CANADA

Editor's Note:

The reader is reminded that these texts have been written a long time ago. Consequently, they may use some terms or express sentiments which were current at the time, regardless of what we may think of them at the beginning of the 21st century. For reasons of historical accuracy they have been preserved in their original form.

If you find them offensive, we ask you to please delete this file from your system.

This and other traditional Scouting texts may be downloaded from The Dump.

TO QUALIFY AS A FIRST CLASS SCOUT, A SECOND CLASS SCOUT MUST: –

1. Have at least one year's service as a Second Class Scout.
2. Swim 50 yards or Pass a King's Scout Badge test.
3. Have at least one dollar in a Savings Bank.
4. Pass an advanced test in Semaphore or Morse Signalling.
5. Pass an advanced test in First Aid.
6. Pass an advanced test in camp cooking.
7. Read and draw a rough sketch map.
8. With an axe fell or trim timber; or produce a work of carpentry, or a model of machinery.
9. Pass a test in judging distance, height, etc.
10. Make a journey, write a report of observations, etc.
11. Recruit and train a Tenderfoot Scout.

To the Boy Who Would Be a First Class Scout

YOU have heard the term "noblesse oblige." Originally it meant all those superior qualities expected in a Knight, because of his noble birth and training, – courtesy, helpfulness, courage, intelligence; everything that constitutes the character of a true gentleman. A true Knight always lived up to these obligations. "Noblesse oblige" would not permit him to do anything else.

To-day, Boy Scouts have the same standard to live up to. Things not looked for in other boys are expected of them – and especially of First Class Scouts and King's Scouts.

If someone is hurt in a street accident, and if there is a Scout present, people expect him to know what to do. If someone is drowning – "Call a Scout!" If there are people in a burning house, and the firemen have not arrived – "Where is there a Scout? He will know how to get them out!" – An automobile party has lost its way – "There's a Scout! He can tell us!" A boy runs to help an old lady across a busy street – "Thanks, my boy. You must be a Scout!"

This is what is expected of Scouts, – and particularly of First Class Scouts, and King's Scouts. It is the "noblesse oblige" of Scouting.

So Be Prepared to live up to it. Prepare for every First Class test, not merely to pass it, but so that you know the subject, and it with a true Scout's thoroughness.

It was to help you meet this "noblesse oblige" of Scouting that information beyond the mere requirements of the First Class tests was included in this, your own First Class Scout's Book.

Be a real *first class* FIRST CLASS SCOUT!

First Class Scout Tests

Before being awarded the badge of the First Class Scout, a Second Class Scout must pass the following tests to the satisfaction of at least one independent and qualified examiner approved by the Local Association or, where there is no Local Association, by the Troop Committee.

TEST No. 1.

Have at least one year's service as a Second Class Scout.

This test requires that the candidate for the rank of First Class Scout shall have put in at least one year's active service in his troop as a Second Class Scout.

TEST No. 2.

Swim fifty yards; or if a doctor certifies that bathing is dangerous to the boy's health, or in case where the Provincial Commissioner considers that water for the purpose is not within reasonable distance of the Troop, pass one of the King's Scout Badges; such badge not to count toward the King's Scout rank.

The Swimming Test

It will be noted that this is not a speed test. No time limit is fixed within which the fifty yards must be covered. The Scout may use any stroke desired, and may change stroke during the test, so long as his feet do not touch bottom. He should finish the distance with plenty of reserve strength, such as he would need should he swim that distance in order to aid some person in distress.

Where the test is taken in a swimming pool or tank the length of the tank must be measured carefully, and the Scout must swim as many times its length as will equal fifty yards. In doing so he must not touch the sides or bottom of the pool. He may dive at the start.

Every effort should be made to qualify with the swimming test, not only for the Scout's own benefit and safety, but that he may Be Prepared to rescue others from drowning.

The Benefits of Swimming

Swimming makes strong bodies. It exercises muscles without the risk of bumps, bruises, or strains. It washes away poisons thrown out through the pores of the skin. Swimming contributes to right living, developing self-reliance, will power, courage, the willingness and ability to help other people.

Every Scout should learn to swim because –

1. Swimming is a splendid recreation.
2. Swimming is the best known form of exercise.
3. It is every Scout's duty to BE PREPARED to save life.

Learning to Swim

Swimming is not a difficult art. The first and chief necessity is confidence. This will come readily through learning how easily the body will float. Take your first lesson in water nearly up to the armpits. Sink on the knees until the water reaches the chin. Throw the

head back until the water covers the ears. Extend the arms to the full extent behind the head, palms up, slightly hollowed. Take a deep breath, swell out the chest, throw yourself backward and give a slight push off the ground with both feet. Hold body and legs stiff. Separate the legs. Throw the head well back and raise the chin. Do not be afraid of a little water rippling over the face.

The beginner usually will be surprised to find how easily he can float, so long as he keeps the body stiff, the head well back and the chest raised.

Having thus gained confidence, the beginner can take his first lesson in swimming. One of the best strokes with which to start is the breast stroke.

Stand in water up to the chest; bring the hands together on the surface in front of the chest, thumbs and forefingers touching, palms downward and slightly hollowed, elbows touching the sides.

Keep the feet together, and give a sharp push off the bottom with both of them, at the same time shooting the arms forward to the full extent. Turn the thumbs down until the backs of the hands incline inwards. Now slowly sweep both arms outwards and backward, until the hands are opposite the shoulders, elbows stiff and both hands at the same angle. Then bend the elbows, drawing the hands downwards and inwards in a semi-circle towards the body. As the elbows come back to their original position against the bottom ribs, turn the palms of the hands together, and bring them forward until the hands meet in their original position, ready for another stroke.

As the elbows begin to bend, and the hands are circling back to the starting position, draw up the knees well under the body. As the legs come into this position, the hands should have met under the chin in front of the breast. Without a pause, kick the legs as far apart as possible, straightening the knees, at the same time depressing the heels and turning both feet out at right angles. Keeping the legs rigid, bring them together again, completing the motion. As the feet come together, shoot out the arms and continue the movement as before.

Hold the head back. Exhale through the nose as the arms are brought back to the body, and inhale through the mouth when the hands are extended in front.

Another Method

There is another excellent method for learning to swim, the "confidence method," which will be found especially helpful to the boys who have a dread of the water. It was developed recently by a Y. M. C. A. swimming expert, Mr. B. D. Brink, and has been declared a great success by Canadian Scout leaders who have used it.

THE CONFIDENCE SWIMMING METHOD

As a rule there is but one reason which prevents the average boy from learning to swim, and that is fear. Possibly he has at some time been frightened by having been ducked, or pushed into the water, or has read about or been in some water accident which left a vivid impression upon his imagination. Perhaps he is just naturally timid and lacking in confidence. Whatever the cause, it is absolutely necessary to eliminate fear before a boy can hope to swim well himself and be prepared to help others in the water in case of need.

The aviator in part imitates the bird, and he flies.

The swimmer in part imitates the fish, and he swims.

The Scout who is about to learn to swim is going into a new element, and he must be prepared to feel absolutely at home in that element, just as the bird is at home in the air, and the fish in the water.

Confidence is the first requisite for swimming, diving and life-saving. Remember, it is practically impossible to sink when the lungs are full of air, because the body, buoyed up by air, is lighter than the water. There is nothing difficult about swimming unless it is made hard. If you really try, you can learn to swim a short distance in one lesson.

The Method

Right breathing is absolutely essential in swimming. In the water the usual breathing process is reversed. The swimmer takes air into the lungs through the mouth and exhales it through the nose. The more expert the swimmer the more the head is carried *face down* in the water. It is possible to get more air into the lungs by swallowing it in "big chunks" than by snuffing through the nose.

Breathing

Enter the water waist deep, and face the shore.

1. Bend forward, placing the hands on the knees.
2. Turn the head sidewise and grasp lungs full of air.
3. Turn the head face down and exhale through the nose.

Repeat, keeping time as in music, one, two, etc. Gradually lower the face until you are blowing bubbles through the nose.

1. Gasp the lungs full of air and gently place the head down in the water.
2. Raise the head, still keeping the face down, and open the mouth wide. This will allow any water forced into the nose cavities to run out of the mouth instead of into the stomach. If the swimmer remembers this one thing he will never "ship" the water.

When you are able to do the above without hurrying, place the head face down in the water. Remove one hand from the knee, open the eyes, count the extended fingers, raise the head, and say aloud the number counted. Pebbles or other objects may be counted instead of the fingers. The object of the counting process is the rousing of interest and *confidence.*

Proper Balance

Most of a Scout's waking hours are spent sitting, standing or moving in an erect position. The fish moves lying down, and the swimmer must accustom his nerves and muscles to work in the position of the fish, in whose element he is learning to make himself at home.

To get the sensation of balance, imitate a floating turtle. Stand in water waist deep, hands on knees.

1. Bend knees until water reaches the chin.
2. Turn head and gasp lungs full of air.
3. Bend the head down on the chest, slide the hands down on the shins, slowly pull the feet from the bottom and up against the chest. In this position you can do a realistic imitation of the comfortably floating turtle. As long as you hold your breath you cannot sink.

To regain balance, release the legs and drop them to the bottom. in front of body. At the same time raise the head, face down, sweep the hands up and out, bringing them together, arms extended, mouth open.

Relaxation

The jelly fish will serve as an example of relaxation, or flabby looseness. The ordinary swimmer tires easily because his muscles are kept tense and hard. The experienced swimmer imitates the easy muscular looseness of the jelly fish.

1. Bend the knees and gasp lungs full of air, as before.

2. Extend arms in front, with head held down between them.

3. Give a vigorous shove or push-off from the bottom and float face down, body held loosely, legs apart, arms extended and hands limp. Do not allow arms to sink below the body. Regain position as before.

The Scout has now learned that: –

1. The water is a friend, and that it is easy to feel at home in the home of the fish.

2. He cannot sink so long as his body is relaxed and his lungs full of air.

3. Given a push, his body will float in the direction of the push.

4. He can regain his balance by standing and pushing back against the water with his hands.

5. He will not feel nauseated if on taking his head out of the water he keeps it face down, mouth open.

Being now on friendly terms with his new element, having confidence in himself and the water, able to balance and relax and breathe, the rest is easy. The next task is to make his legs and arms do "team-work."

Leg Exercise – Team Work

1. Lie down on your back in shallow water near the shore, and facing it, raise the knees on a level with the chest. Turn the toes in, and kick the legs alternately up and down, letting the feet come out of the water on each kick. In this kick there is little or no hip motion. The movement can be practised while lying over a bench, chair, or the edge of a pool.

2. Go into water about waist deep. Bend knees, breathe, place head, face down, between extended arms. Push off with both feet from bottom, or if in swimming tank, with one foot from side. Float, and then start kicking legs. Kick with arms extended. Play steamboat. If the water is clear, the swimmer should open his eyes. He will realize with delight that he is moving ahead under his own power. He is swimming!

Arm Exercise – Team Work

This may be learned in the water or on land. Stand with feet apart. Bend at waist until body is parallel to water. Extend left arm forward, palm down, right arm back, palm up. With a rolling motion of the body imitate a windmill. One hand enters water in front as the other leaves it in the rear. This motion should be in full arm circles. Keep the fingers together. More water can be dipped up with a spoon than with a fork.

Bend knees, breathe, push off hard, face downward between extended arms, and as the body glides forward repeat the windmill movement, thus pulling the body forward. Let the legs trail behind like the cow's tail.

Leg and Arm Exercise

Bend knees, breathe and push off. Before the body stops gliding forward, start the steamboat kick, and after two or three kicks begin the windmill motion with the arms.

Continue for half a dozen strokes.

Breathing, Arm and Leg Team Work

Now add all together the knowledge you have acquired. Bend knees, breathe, push off. Take a few strokes, slowly blowing the air out through the nose, under water. When forced to breathe, roll the body and turn the face up to the side, quickly. Gasp in a full supply of air. Turn the face down and continue stroke.

As soon as the leg and arm movements and breathing become easier, the leg drive should begin at the hip, with a loose snapping movement.

Make Progress

Having learned to swim a few strokes, make it a point to swim at least one stroke farther each time you go into the water. If you can swim five good strokes to-day, plan to swim six to-morrow, seven the next day, and so on. This is a table of progress demanded by one of the best Canadian Scout swimming instructors.

Artificial Aids

Cork belts, water-wings, etc., are of doubtful utility in learning to swim. When used they should be secured in position with the greatest care. Otherwise they may become a serious danger through slipping out of place.

Remember that the ABILITY TO SWIM is the BEST LIFE PRESERVER EVER INVENTED.

Teach other Scouts. Work for the two objectives: –

EVERY SCOUT A SWIMMER and EVERY SCOUT A LIFESAVER!

Swimming With the Clothes On

Many excellent swimmers have lost their lives through suddenly finding themselves in the water fully dressed, and becoming excited because of the weight and the binding of their wet garments. Therefore every Scout should learn to swim with his clothes on.

Like swimming in all other conditions, it is merely a matter of KEEPING COOL. If you are wearing a coat, use the breast stroke. Bubbles of air will work into the shoulders of the coat and add to your buoyancy.

When practising the removing of your clothes in the water, start with the shoes. If wearing suspenders, do not remove the coat first; the suspenders may slip off, and give you trouble with your trousers. After the shoes are off, remove the coat, then the trousers. The latter will come off easily, with a little kicking and thrusting.

Cautions

For growing boys, while the brief "morning dip" should never be omitted, prolonged swimming before breakfast is not to be recommended.

Never enter the water directly after a meal; wait at least an hour and a half. Otherwise you will be liable to cramp.

Never enter the water when fatigued.

On entering the water, immerse the whole body immediately, head and all, either by diving, or ducking under; or throw water over the head and body with the hands.

In case of cramp, KEEP COOL, turn on the back, and rub and stretch the affected limb. If seized in the leg, turn up the toes, straighten the limb and stretch the muscles, and rub, or kick the surface of the water until relieved.

A plan of the Indians for guarding against cramp may be remembered. Before entering the water, rub the pit of the stomach vigorously with the dry palm of the hand for a minute or so, dash cold water on the stomach, rub for another minute and then plunge.

In unknown water beware of holes, weeds, and swift currents, eddies or undertows.

It should be unnecessary to warn Scouts against calling "Help!" unless they really need it.

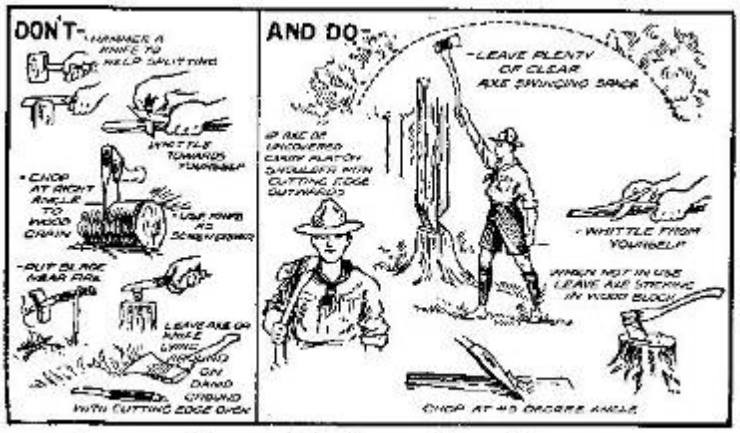
Diving

While not included in the swimming test, every Scout swimmer should learn to dive. It greatly adds to confidence in the water; and may prove necessary in making a rescue. The timid boy will find in diving a splendid means for developing nerve and courage. It must be tackled boldly. The more boldly a diver hurls himself into the water, the better dive he will make.

The first dive should be taken from a bank or plank a few inches above the water. The feet should be placed together, the stomach drawn in, and the body bent slightly forward, the arms hanging straight, a little in front of the hips.

Bend both knees, and swing the arms to the rear, to get an impetus. Throw the body forward and downwards at an oblique angle, head first, by quickly stiffening the knees, at the same time shooting forward the hands to the full extent of the arms, over the head, palms horizontal with the water, with the toes give the final kick-off, which tends to throw the legs upward. The legs should be kept rigid, and the knees should not be bent.

After the first dive, confidence will rapidly increase. Never attempt to dive unless the water is known to be deep enough for the purpose.



AXE AND KNIFE "DO'S" AND "DONT'S"

TEST No. 3

Have saved and paid into a Savings Bank Account, a sum consistent with his opportunities of saving, minimum amount $1.00.

No Scout will regard this test simply as an "admission fee." It must represent money earned, and saved – a proof that you are living up to the 9th Law. It means developing the habit of saving against a time of need, or to help put you through an agricultural or other college or business school, or to create a "nest egg" toward starting you in business when older.

Remember – many young men are unable to start college or to take advantage of excellent business opportunities because they lack capital (often but a few hundred dollars) which they might easily have possessed had they learned to serve when boys.

TEST No. 4

Send and receive a message either in Semaphore, at the rate of four words (twenty letters) a minute, or in Morse at the rate of three words (fifteen letters) a minute. The Scout must also understand the use of calling-up signs, including RU (an unknown station), the preparatory sign, VE; its answer K (go ahead) or Q (wait a minute); the General Answer, A in Semaphore and T in Morse; the end of the message sign, AR, and its answer R; the Alphabetical Check for numerals, and the Erase signal (the reverse of L in Semaphore and eight dots in Morse).

NOTE: – The procedure signals above have been slightly altered, to correspond with the latest Imperial Headquarters signalling manual, and the new Canadian badge pamphlet, The Scout Signaller.

This test must be a genuine demonstration of flag-reading and sending, with the signallers at a considerable distance from one another. A second Scout should be designated to act as Writer and Caller-off for the Scout taking the test.

The examiner first should send the Scout a number of indiscriminately mixed letters, at the required speed, the Scout calling them off to his Writer.

As a boy often is nervous at first, he may be allowed to read two groups of letters, and the best of the two taken. Although no percentage of accuracy is laid down, it is strongly urged that 95 per cent perfection be asked, as in the test for the Signaller's Badge.

The reading-speed test completed, the examiner will have the Scout send a similar mixed-letter group, the Writer now acting as Caller-off, and the examiner reading and judging the speed.

Style and accuracy in sending are of great importance, and no boy should be passed who does not realize a high standard in these details.

For the message test the examiner will send the Scout a short message freely interspersed with figures, and calling for the use of VE, K, the General Answer, AR, R, the Alphabetical Check, and the Erase signal. He may also test the boy's knowledge of these signals by verbal questions. The Scout will then be given a short message to-send.

Procedure Hints

Suppose your station call is AB, and that your message is for Station CD. You signal as follows: CD CD V (signature call follows) AB.

The distant station replies: AB V CD.

You return the preparatory sign VE, and the other station replies with K (go ahead), or Q (wait a minute).

Note: With the Semaphore flags the preparatory letters VE are made separately, but with the Morse flag, flash, etc., the letters VE are run together as one combination ( ).

When calling up an unknown station the letters RU (Who are you?) are repeated:

RU RU V AB.

The unknown station replies:

AB V and its own call letters (JS for example).

You return: VE.

JS replies: K.

And you proceed with your message.

The General Answer is used as an acknowledgment of each word or group of letters or figures received.

The Erase signal is used only when sending, and is sent immediately a wrong letter or word has been made. For instance, if you started to spell the word HANDY, and sent HAD you would immediately make the Erase signal, and start the word again. "Erase" cannot be used after a second word has been sent.

The Alphabetical Check (A for 1, B for 2, etc., I for 9 and K for O) is used when receiving, as a brief way of repeating back figures. For instance, if the distant station signals 290, you would respond with BIK.

The Flags

In flag signalling, attention must always be given to securing a proper background, or to using the flag that will best be seen against the background. That is, a dark blue flag will be used for a light background, such as a hill top, or an open field, and a white flag with a blue horizontal stripe for a dark background, such as trees, dark building, or a hillside.

Signalling flags are made in two sizes and two colours – one blue, the other white with a horizontal blue stripe. The smaller flag, which is 18 in. square, is large enough for most Scout signalling in either code. The blue horizontal stripe on the white flag is 2½ in. wide. The large flag is 24 in. square and the blue horizontal stripe on the white flag 3½ in. wide.

The pole for both flags is 3 ft. 6 in. in length ¾ in. at the butt, tapering to ½ in. at the tip.

Next – The Signaller's Badge

The First Class Scout will not be satisfied with a knowledge of signaling sufficient merely to carry him through the above test. He will now have graduated from elementary short distance signalling to the always interesting "real thing" out of doors – to wigwagging from the breezy sky-line of a high hill to the edge of a wood three miles away; or blinking messages with a flash lantern from his attic window to the home of a brother Scout a mile out in the suburbs (greatly to the mystification of the neighbourhood). Probably also he has become interested in reading the dot-and-dash code by sound; by whistle, or bugle, or by the telegraph sounder, or the fascinating "zzz zzz zzz" of wireless. In any case he will now be anxious to go farther and qualify as a full-fledged signaller, entitled to wear the Signaller's Badge.

TEST No. 5

Pass the following tests in First Aid:

1. Be able to explain the functions of the principal organs of the body.

2. Knots the positions of the main arteries (names unnecessary) and be able to stop bleeding.

3. Know how to apply First Aid to fractures.

4. Know how to restore the apparently drowned by Schafer's Method.

5. Understand the treatment of fainting and unconsciousness.

6. Know the proper method of dealing with the following accidents: – Fire. Drowning. Runaway horse. Gas suffocation. Frost bite. Fits. Sunstroke. Ivy poisoning. Object in the ear. Substance in the throat. Electric shock. Breaking through the ice.

In all tests the first and chief point must be that the Scout "keep his head," and act correctly and promptly.

Principal Organs of the Body

Bones. – The framework.

Brain. – The "control."

Nerves. – For carrying messages between the brain and the various parts of the body.

Stomach and Bowels. – For digesting food and removing waste substances from the body.

Pancreas. – For supplying strong digestive juices.

Liver. – For storing food for the muscles.

Heart. – For pumping blood through the body.

Splean. – For destroying old blood cells.

Lungs. – For supplying the blood with fresh oxygen from the air.

Kidneys and Bladder. – For removing and temporarily storing the waste fluids of the body.

As a whole the human body may be compared to a motor car or Steam engine, *i.e.*, an assemblage of different parts fitted together and working together as one machine. The framework is held together by joints which can be bent or moved by the muscles. This permits us to move about and do things. The muscle system therefore may be considered as the engine which drives us along.

All engines require fuel. The fuel of the human engine is food.

When we eat our breakfast our teeth chew (or should chew) the food into small pieces and mixes it up with saliva from the mouth. We then swallow the chewed mouthful, and it descends into the stomach, which is just like a small churn. Here the food is all mixed up, digestive juices are added, and the "breakfast" gradually changes into a creamy fluid like condensed milk. At the lower end of the Stomach is a small ring-like valve. This valve opens, when the food is properly churned, and allows a small portion to pass into the first part of the intestine, or small bowel. The bowel is like the inner tube of a bicycle and there are 22 ft. of it, all curled up inside our tummy. Here the food is further digested by strong juices from an organ called the pancreas, and absorbed into the blood. Round the bowel are hundreds of small blood vessels into which the food is taken to be carried to the muscles, brain, bones and all the other parts of the body.

After the small bowel absorbs all the good from the food, the waste materials pass into the large bowel, which is about the size of a motor car inner tube, and 6 or 8 ft. in length. The waste material is still in a watery condition, and in the large bowel it is dried and left in a solid state like soft clay. This material is then passed out of the body.

All the water which the large bowel collects is taken by the blood to two little organs called kidneys, and a lot of waste products of the liver and the muscles also go to the kidneys. These organs are like two clever little filters. They know just what substances to keep back in the blood and what substances to collect and pass down through two small pipes to the bladder. When the bladder is full, a message is sent up to the brain by the nerves, and another message is sent from the brain to the bladder telling it to empty itself.

We all know that a fire will not burn without a gas called oxygen, which is present in the air. In the same way, we cannot burn, the fuel in our muscles or digest the food in our tummy without oxygen, so we draw air through our nose down the windpipe into our lungs. Lungs are like very fine sponges, into the little cells of which the air goes. Round these cells are fine blood vessels in which flow small disc-shaped red blood cells. These little cells take up oxygen and become a bright red colour; this is why fresh blood in the arteries is such a bright red.

You will have seen by now that the blood has to carry all sorts of things round and round the body, just as railway trains carry things all over the country. The blood is kept circulating by the heart, a hollow muscle divided into four chambers by valves which only allow the blood to pass one way. Blood passes from the lungs into the top left chamber of the heart, from there through a valve into the bottom left chamber, and from there it is forced by the heart muscle into one big artery, which divides into many more which go all over the body, – to the brain, muscles, bones, stomach, bowels, etc. The arteries keep on dividing and getting smaller, until they are tiny little pipes called capillaries. The blood now returns, first through the small venous capillaries, then by little veins which all join up into larger veins, and finally into one great big vein which is connected to the top right chamber of the heart. From this chamber blood passes into the bottom right chamber and from there is pumped through the lungs and then back to the top left chamber, ready to begin all over again. The right and left chambers of the heart work together, the left side pumping blood to the body at the same moment as the right side is pumping blood to the lungs.

Each pump causes a wave to pass along the arteries. This is what we feel at the wrist when we "take the pulse."

New blood cells are always required to replace old ones, which are removed in passing through an organ called the splean. The splean is located in the left side of the abdomen, at the top jxist behind the stomach. The iron from the dead red blood cells goes to the liver, where it is stored and used again.

Now a motor car running along the road without anyone steering it would soon smash itself. Likewise our body without a brain to control it would quickly be in trouble. The brain is placed inside a very strong bony box called the skull, which protects the delicate brain cells from harm. From the brain the spinal cord passes down inside the bones of the spinal column. From the brain and spinal cord, millions of nerves pass like telephone wires to every single organ and part of the body. Messages continually pass along these nerves. When we walk or eat or laugh or think, or stand still doing nothing, these messages still go to and from the brain. Even during sleep this wonderful telephone system is in operation, regulating our breathing and our heart, and keeping all our internal organs in proper working condition.

Memory, thought and will-power also have their seat in the brain, but we know little or nothing of the exact location.

How to Stop Bleeding

Bleeding from an ordinary cut usually may be stopped by digital pressure, that is, pressure with the thumb or fingers directly over or on either side of the cut until the blood has coagulated and sealed the wound. A suitable bandage is then applied (as learned in the Second Class tests).

POSITION OF THE ARTERIES

Arterial bleeding, however, is a much more serious matter, and may call for pressure at a certain "pressure point," or the use of a tourniquet. A severed artery is indicated by bright red blood coming in spurts with each beat of the heart. Immediate action is necessary. First apply pressure with the thumb or fingers directly on the bleeding spot (except where there is also a bone fracture). Use the free hand to make a firm pad, with a clean handkerchief or other piece of linen, and place the pad beneath the thumb, being careful in doing so not to release the pressure. Tie the pad snugly with a handkerchief or narrow bandage, and place the limb in an elevated position.

Where this treatment is not effective in stopping bleeding, use pressure above the wound; that is, on the side nearest the heart.

The illustration on above shows the location of the main arteries and the points at which pressure may be effectively applied. It will be noted that there are only a few points at which the arteries can be reached and pressed against the bone. In other cases it will be necessary to use a tourniquet bandage encircling the limb.

The tourniquet should be loosened slightly every twenty minutes or half hour, in order to let a little fresh blood into the affected part. Otherwise the limb below the tourniquet will turn dark, and gangrene may set in. Limbs and even lives have been lost through failure to observe this work a tourniquet should never be tightened more than momentarily.

Fractures

Fractures are nothing more nor less than broken bones. There are four principal kinds. A fracture is *simple* when the bone is broken with but slight injury to the surrounding flesh. It is *compound* when it includes a flesh wound, with or without the broken bones protruding. When the broken ends are jammed together end to end the doctors tell us it is an *impacted* fracture. When the bone has been crushed into several or many pieces, such as may happen when a person has been struck by a street car or a falling tree, we have a *comminuted* fracture. A fifth kind of fracture with which Scouts may have to deal with is the *green stick* fracture. This occurs in children. Their little bones are not brittle, and therefore are cracked or bent without being completely broken by injuries which would cause ordinary fractures in grown-up folks. A fracture is said to be *complicated* when it is accompanied by an internal injury, such as piercing of the lungs, the brain, or an artery or vein by a fragment of broken bone.

Signs and Symptoms of Fractures. When a Scout finds a person who has fallen or who has been struck by a vehicle, or in some other manner come to grief, he must do his best, of course, to find out whether any bones have been broken. If the ends of bones have come through the flesh of

course he will know he has a compound fracture on his hands. Otherwise the Scout must look for the following signs:

1. Pain. – If the patient is conscious he will complain of pain in one spot.

2. Uselessness of the Limb. – The limb cannot be put to its proper use.

3. Alteration in Shape. – The limb may be bent, twisted, or shortened, so that when compared with the sound limb, it appears of an unnatural shape.

4. Swelling. – This is generally present very soon after the muscles, which makes the bones override.

5. The patient usually complains of having heard or felt some thing give way with a snap.

6. Unnatural mobility – This means that when the limb is handled (which should never be done unnecessarily) it gives way where, if uninjured, it would not be movable.

7. Crepitus. – The Scout should know about this sign but should never try to obtain it for fear that in so doing he will aggravate the injury. The word means "crackling" and refers to the gritting which may be felt or heard when the broken ends of the bone are rubbed across each other.

Signs 6 and 7, of course, will not be present in cases of impacted fractures, because the bones will be wedged forcibly together. This happens when the patient has fallen straight on an outstretched limb – as, for instance, when he has landed squarely on his feet, or on his outstretched arm.

Apparatus for First Aid Treatment of Fractures. In the treatment of fractures the doctor uses **splints**, which are supports made of various materials adapted to fit the limbs and applied so as to render the injured parts incapable of movement.

When surgeon's splints are not available, substitutes may be improvised from the following or similar articles: pieces of wood, walking sticks, umbrellas, folded newspapers, cardboard, corrugated packing paper, Scout staffs, etc. These should be padded by wrapping them with clothes or other soft material, the object being to avoid their hurting the patient when put into place. To fix the parts, if bandages are not readily at hand, the following may be used temporarily, viz., handkerchiefs, belts, neckties, braces, shoe laces, scout neckscarfs, or any piece of String or strip of cloth,

GENERAL RULES FOR TREATING FRACTURES

Fractured Arm Bone

1. Send for a doctor.

2. Treat doubtful cases as fractures.

3. When there is bleeding, attend to it first and think about splints afterwards.

4. Do not move the patient until splints have been firmly fixed,

5. Prevent further injury by supporting the limb and applying rough and ready splints.

6. Reduce shock by keeping the patient

7. Do not apply a splint over a wound if it can be helped.

8. Tie all knots on the splint.

9. In case of compound fracture, dress the wound before applying splints.

Fractured Arm Bone. – All the usual signs of a fracture, outlined above, would be present in cases of fractured arm bones. Pending the arrival of the doctor, who should be sent for at once, the arm should be fixed with two splints, one being placed on the inner side, extending

from the arm-pit to the elbow, and the other on the outer side, extending from the shoulder to the elbow.


Fractured Forearm

Secure the splints in position by carrying a narrow bandage round them **above** the fracture and tying securely. Then carry another bandage round them below the fracture. When this is done apply a small arm bandage as described above, care being taken to have the elbow **unsupported**, so that the weight of the arm may tend to overcome the overlapping of the two ends of the broken bone which is apt to occur.


Fractured Jaw

Fractured Forearm. – There are two bones in the forearm whereas there is only one in the upper arm, and both of them may be broken. When both bones are broken, the deformity is easily seen, but when only one bone is fractured there may be no deformity visible, although some irregularity may be made out by passing the hand gently over each bone separately. There is no alteration in length when only one bone is affected, but when both are broken, the forearm will be shortened.

In treating a fractured forearm, the broken member should be placed across the chest and supported so that the band is a little higher than the elbow, and the thumb pointed to the chin. Fix the injured part between two splints, one on the inside extending from the elbow to the tips of the fingers, and the other on the outer side, extending from the elbow to just below the wrist. Support the arm in a large triangular sling, the hand being slightly higher than the elbow.

Fractured Jaw. – Special symptoms some or all of which will probably be present in this accident are (a) inability to open or close the mouth, (b) inability to speak plainly, (c) saliva, mixed with blood, running from the mouth, (d) the teeth uneven and the mouth fixed and partly open.


Bone
Fractured Collar

There are at least half a dozen good first aid treatments which might be applied in broken jaw cases, but every Scout should know the triangular bandage method. In using it, first place the hand under the jaw and gently raise it to its natural position against the upper jaw. Then apply the centre of a narrow bandage under the chin, carry one end over the head, cross the ends at the angle of the jaw, take the long end around the chin and tie both ends at the side.

Fractured Collar Bone. – The collar bones can be felt on either side beneath the skin at the lower or front part of the neck as narrow curved rods about the thickness of a finger. Their inner ends rest upon the upper part of the breast bone, and their outer ends join with the shoulder blades, their purpose being to keep the shoulders thrown back. A fracture would generally occur near the middle of one of the collar bones. The shoulder would droop forward, the patient would be noticed to incline his head toward the injured side and would probably support the injured arm with the hand of the opposite side in an effort to alleviate the pain. On passing the fingers gently over the bone, the fracture would be felt projecting under the skin.

Tightly roll a bandage, a cap, or any piece of paper or cloth into a firm pad a couple of inches thick, and place it close up under the arm-pit. Then gently bend the forearm and apply a bandage as follows: carry it across the forearm, round the arm, through between the arm and body, and back again, after crossing the bandage in front. Now carry it behind the trunk and holding the end in front of the body firmly, gently pull on the end behind the body and secure both ends with a reef knot below the hand. Care should be taken to avoid moving the arm about any more than is absolutely necessary. Like all other fractures this, of course is a case for the doctor, and he should therefore be called as soon as possible.

Fracture of the Leg. – As in the forearm, either one or both bones may be broken. If only one is fractured there may be no deformity and there will be no shortening of the limb. But on passing the finger over the painful spot, a slight irregularity will be felt. If both bones are broken, the usual signs will be present.

After sending for the doctor, fix the legs in two splints. One should be placed on the outside, extending from well above the knee to the foot, and the other on the inside, extending from the knee to the inner ankle. Splints should be fastened above and below the break, around the ankles (both feet being tied together) and above the knee. Both knees should also be tied together and all knots should be tied over the outside splint.

Fracture of the Thigh. – The thigh bone may be broken at its neck, anywhere in the shaft, or close to the knee. It is often difficult to distinguish such a break from a severe bruise of the hip, but if the patient cannot, when lying on the back, raise the heel from the ground, the bone is broken. A prominent sign is the position of the foot, which as a rule will lie on its outer side.

Treatment. – First steady the limb by holding the ankle and foot, then gently draw down the foot and bring it into line with the other foot. Apply a splint on the outer side from the armpit beyond the foot, and one on the inner side from the top down to the knee, then secure the splints by bandages, thus:

FRACTURE OF THE THIGH.

1. Around the chest just below the armpits.
2. Around the pelvis on a level with the hip joint.
3. Above the fracture.
4. Below the fracture.
5. Around the leg.
6. Around both ankles and feet, and tie below the
7. A broad bandage around both knees.

Reviving the Apparently Drowned

If possible send immediately for medical assistance, blankets, and dry clothing. As soon as the victim is clear of the water, quickly feel with your fingers in his mouth and throat, and remove any foreign body, such as tobacco, false teeth, etc. If the mouth is tight shut, pay no more attention to it until later.

Instantly Proceed to the Restoration of Breathing

Place the patient face downwards, with the arms extended. (Do not take time to loosen or remove the clothing.) Bend one arm at the elbow, turn the face to one side, and rest it on the hand of the bent arm, as on a pillow. This will keep the mouth out of the mud, dust or dirt. In case of drowning, if possible have the victim's head slightly inclined, so that the water forced out will ran away from the body. (See Fig. 1.)

SCHAFER'S METHOD OF RESUSCITATION

Kneel, straddling one or both legs of the patient, your knees a few inches below the hip bones. Place your hands on the small of the back, one or either side, thumbs parallel (Fig. 1).

Swing forward slowly, arms straight, so that the weight of your body is gradually but not violently brought to bear upon the patient. The movement should occupy the time necessary to say slowly, "Out water!"

Fig. 1.

FIG. 2.

Swing backwards, relaxing the pressure, but without lifting the hands, saying slowly, "In air."

Repeat deliberately, without any marked pause between the movements, making a complete respiration in four or five seconds. The movements may be timed with your own breathing.

Now, while continuing the breathing movement, have someone loosen any tight clothing about the patient's neck, chest or waist. If procurable, have dry, warm covering placed over the patient, and apply hot water bottles, or hot bricks, or stones wrapped in flannels, between the thighs and to the armpits and feet. The movements of artificial breathing must not be interfered with, however.

Artificial respiration must be carried on uninterruptedly until the victim breaths, or rigor mortis (stiffing of the body) set in. This may mean four hours, or longer.

Do not move the patient until he is breathing normally. If it is absolutely necessary to move him, have him placed on some hard surface, such as a door, or the floor of the conveyance used, artificial respiration not being for an instant interrupted.

When natural breathing has fully resumed the patient should be allowed to lie in a natural position, on his right side, and treatment begun for the promotion of warmth and circulation.

Treatment After Natural Breathing Has Returned. – While disturbing the patient as little as possible, remove the wet clothing, wrap him in warm blankets or other covering, dry the hands and feet, and proceed to promote circulation and warmth by rubbing the limbs upward (that is, toward the heart). Do this with a firm, grasping pressure, under, or outside the covering. The object is to drive the chilled blood along the veins toward the heart.

When the patient can swallow, administer small quantities of hot coffee, tea, milk or broth, or other light warm nourishment. Keep the patient in bed, and encourage him to sleep.

Appearances Which May Accompany Death. – Breathing and the heart's action cease entirely. The eyelids generally are half closed, and the pupils dilated. The jaws are relaxed (not clinched), and the hands partly open. The lips and nostrils are covered with a frothy mucus. Coldness and pallour of the skin increase.

General Cautions. – Prevent unnecessary crowding of persons around the body.

Avoid rough usage.

Under no circumstances hold the body up by the feet.

Do not place the body in a warm bath unless under medical direction, and even then it should only be employed as a momentary excitant.

Spirits are on no account to be given without direct medical orders as alcohol may lead to fatal results.

Fire

First warn the occupants of the building.

Send in a fire alarm, by telephone, or from the nearest alarm box. If the latter, have someone remain at the box until the arrival of the fire apparatus, to direct the firemen.

The arrival of the firemen on the scene probably will end the opportunity for usefulness on the part of the Scout. He, however, if he sees an opportunity, should offer his services to the Fire Chief. Nothing should be done without an order from the Chief.

In places where there are no fire brigades, or where it takes the firemen some time to reach the fire, much can be done by Scouts, especially by a properly organized Patrol.

The first move is to rescue any people who may be unable to escape from the building. This accomplished, try to put the fire out, or prevent its spreading. Get ladders, blankets, etc., from the neighbours.

When a ladder is not available to reach persons on a windowsill, a jumping-net should be improvised out of a strong blanket or several layers of strong blankets or sheets. Scout Patrols will do well to practise this. As many Scouts as possible should hold the net, standing at equal distances, and each holding very firmly, arms at full length, body leaning backward, feet toward the centre of the net. A mattress, loose bed-clothing, hay or straw, should be placed on the ground beneath the net, when possible.

Instruct the jumper to leap with relaxed muscles, elbows out knees slightly bent. The centre of the net should not be more than six feet from the house wall.

Entering a Burning House. – Care must be taken in entering a burning house. If available, a wet blanket should be thrown over the head, so as completely to coyer the body. In any case mouth and nostrils should be covered with a wet handkerchief.

It should be remembered that even in dense smoke there usually is breathable air close to the ground, or the floor.

To Rescue an Unconscious Person. – To rescue an unconscious person from a smoke-filled room, one method is as follows: Tie a bowline round the victim's waist, bring the rope over the head, and tie another bowline there. Turn your back to the victim, and tie another bowline about your own neck. Crawl out on all fours.

In case there is not time or opportunity to act as above, grasp and throw one of the victim's wrists over your shoulder and drag. Another method, in the case of a man, is to pull the coat, or shirt, up over the head, and drag; or pull the coat out beneath the head (to protect the head), and drag out feet foremost. Other ways of handling particular cases will suggest themselves to the cool-headed, resourceful Scout.

Where time and smoke conditions permit, the Fireman's Lift can be used, provided the victim is not too heavy.

To Lower a Person from a Window. – If it is necessary to lower a person from a window, place some cloth on the window-sill under the rope, to prevent the rope cutting through against the sharp edge of the sill.

THE FIREMAN'S KNOT.

After lowering the rescued person, to escape yourself by the same rope, tie the rope-end about the leg of a bed or other heavy piece of furniture, by means of a Clove Hitch, or Fisherman's Bend (preferably the latter), then climb down the rope, facing the wall, feet against it. Do not slip straight down the rope, as this may result in severe burning of the hands from friction. If unable to reach the wall with your feet, control your speed of descent by catching a turn of the rope about one foot, and pressing this foot against the other.

HOW USED.

A good knot for lowering a person from a window is the Fireman's Knot, or Chair Knot. To tie this, first make a double Overhand Knot, pull the loops through, one loop about two to three feet, and the other three to four, according to the size of the person to be rescued. Then over

each loop pass a Half Hitch, exactly as in the Sheepshank, and slip the hitches down on the knot. (See illustration.) The smaller loop is placed under the person's armpits, and the larger one just above his knees. This knot should be made in the middle of the rope if possible, so that someone on the ground can guide the person safely down by means of the rope end.

To improvise ropes, tear up sheets, along the warp; that is, the long way. The warp is usually made of the strongest thread. Tie the pieces together with a reef knot.

Fireman's Lift. – Turn the person face downward. Standing at the head, advance your right foot, draw back the left, lean forward and place the hands under the armpits (Fig 1). Raise the body to its knees, and leaning against your right knee (Fig. 2). Now stoop lower, interlace the fingers behind the victim's back, and lift the body to its feet. At the same time bring your left foot up to the right, grasp the right wrist with your left hand, the back of the hand uppermost, arm extended in line with the shoulder. Step back with the left foot, right knee slightly bent, and the body against you, supported by your right arm (Fig. 3).

Throw the body slightly from you, duck smartly down under the right arm, place your right arm between the victim's legs, and let the body fall across your shoulders (Fig. 4). Come to an upright position, and transfer the right wrist to your right hand (Fig. 5).

FIREMAN'S LIFT.

The Bucket Line. – Where fire apparatus is not available, a bucket line should be formed to the nearest water supply. Scouts in localities lacking fire fighting apparatus should practise the forming of bucket lines, and the rapid passing of pails of water in one direction, and the empty pails in the other. The throwing of water from a pail also should be practised, in order to throw the water accurately. This is not by any means easy, especially if a wind is blowing.

In winter, snow sometimes can be used effectively. A story is told of an army officer who put out a fire in a small western Ontario village by the use of snow and a little military discipline. He arrived on the scene to find everything confusion and excitement and nothing

being accomplished by the water thrown hurriedly from pails and buckets. "Here, you men and boys! Fall in! Line up!" he ordered. "Now throw snowballs as fast as you can throw them!" The crowd obeyed, the officer directing the "attack," and presently the fire was conquered.

Picture yourself and your Patrol, or Troop, doing the same thing – or similarly "using your heads."

To Prevent the Spread of Fire. – Clear away all inflammable material in the path of the fire including small buildings, if necessary – and possible. This work should be done at a proper distance from the fire, because if there is not sufficient time to clear the path thoroughly, the labour will be lost, and a fresh start will have to be made farther on. If not possible to clear away surrounding objects, keep them well soaked with water. Blankets spread on the roof and kept soaked with water make effective protection for adjoining buildings. When fighting ground fires do not try to stamp out with your shoes. Leather burns very easily. Use a shovel, an old sack partly filled with wet leaves, or green boughs, etc.

An Example – Here is a suggestion from a newspaper item: "Timely arrival of a number of Boy Scouts who were on a hike visiting the farm of Doug Smith probably saved considerable loss in valuable wood property when they extinguished a fire yesterday on the outskirts of the farm. While some of the boys secured pine branches and beat the fire out, others dug ditches and prevented the fire sweeping up an embankment to the woods."

Fire in Your Own Home. – Should a fire break out in your own home, first give the alarm, then close all windows and "doors, to prevent the flames being fanned by the wind. Throw a blanket or rug over the fire, if possible, and pour water over the blanket. If the fire cannot be covered by a rug, throw water.

Clothing an Fire. – The victim of this accident usually is a woman, or a girl, or a small child. The first thing you must do is get the victim down on the floor, *instantly.* Never permit the person to run. If a rug or loose carpet is within reach, wrap this tightly about them, and roll them on the floor. If a rug or carpet is not immediately at hand, roll them about, and endeavour to choke the flames in the folds of their clothing, or beat it out with your hands.

Ignorance of what to do in such a case once resulted in a boy causing his mother's death, while he was trying to help her. The mother's clothing caught fire at the stove. "Run out and roll in the snow, Mother!" the boy cried. His mother ran across the room, down the hall, across the veranda, down the steps, and threw herself in the snow. She put the fire out – but died from the burns. The flames, fanned by her running, had done their work before she reached the snow.

Very probably had the boy thrown his mother to the floor immediately, he could have saved her.

So remember – *Get the person on the floor, instantly!* .

Treating Burns. – As soon as possible cover the burns from the air. For a small burn a piece of clean white paper applied firmly and bound in place will give relief. For larger burns apply oiled dressing. This can be made of clean linen soaked in oil, or a mixture of olive oil, linseed and lime water. Apply strips to the burn, or scald, cover with cotton wool or flannel, and bandage firmly, but not tightly. Do not break blisters.

In serious cases do not pull the clothing from affected parts. Soak the clothing with oil, and await a doctor. If necessary to remove clothing, however, use scissors or a sharp knife.

How to Rescue Animals. – As a rule horses or other animals are so terrified by fire that they will do nothing to save themselves, and will resist efforts to lead them to safety. Blindfold them with a bag or blanket, and lead or back them out.

Drowning Accidents

Rescue Practice., – Every Scout swimmer should practice life-saving. With training, it is not difficult. A moderately strong swimmer can save a drowning person, if he knows how to go about it. In fact it is possible for a small Scout, who has practiced, to save a grown man.

The secret of success in life saving is to make the water carry the weight. A very slight effort in the water will suffice to keep either yourself or another afloat, and the body of an unconscious person can be brought up to the surface with comparatively little effort.

The First Step. – As a first step in learning life saving the Scout should acquire a special back-swimming leg stroke, with the legs kept well beneath the surface, to avoid kicking the person being saved. In practicing this stroke the arms should be folded across the chest, and the legs from the knees down kept in continuous motion, with short, sharp, semi-circular kicks, that never bring the legs actually together. When you have mastered this way of swimming, practice with the arms outstretched before you, trailing on the surface, and with the head well raised. Then try supporting someone.

To do this, place a hand on either side of the subject's head, the hollow of the hand over the ears, the fingers extended along the point of the jaw. (See Fig. 1, page 24).

Remember that to tow a person is not enough. You must keep his nose and mouth above the surface. Your subject will cease to struggle if he finds himself progressing shoreward, and his nose and mouth above water.

Another way to support a person when swimming on your back is to grasp him under the biceps, as in Fig. 2, the fingers gripping the upper arm muscles, palms up, thumbs out; or under the armpits, as in Fig. 3. Fig. 5 shows an excellent one-arm hold, in which the rescuer passes an arm over the victim's left shoulder, across the chest, and grips him beneath the right arm.

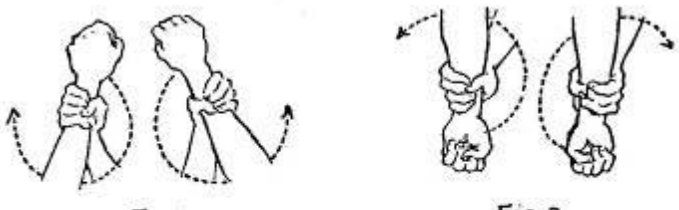
By any of these methods the drowning person is held in such a position that lie cannot reach you; and should he struggle unduly, it is easy to get clear of him until he takes in enough water to render him more easily handled.

Helping Another Swimmer. – Where another swimmer has become exhausted or is attacked by cramps, but remains cool, he may be helped as in Fig. 4. Direct him to lie on his back. Face him, and have him place his hands lightly against your shoulders, close to the neck. Then simply swim shoreward, using the breast stroke. This is the easiest method of rescue, where the coolness of the. subject makes it possible.

When Clutched. – If care is used in approaching a frightened or drowning person in the water there is little danger of being clutched. The Scout's life saving practice, however, should include the breaking of "death grips."

It should be borne in mind that a drowning man grasps what he can see above the surface of the water.

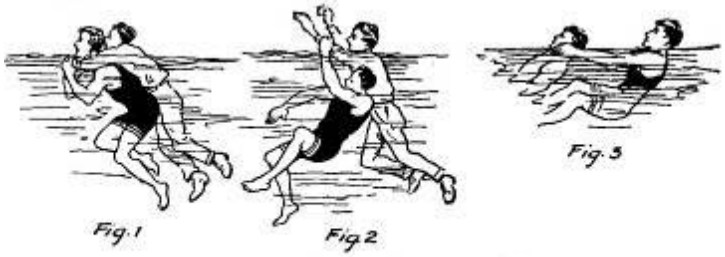
If Clutched by the Wrists, throw both hands above your head, then bring them sharply down, outward and up, against the other's thumbs. (See Figs, l and 2.)



BREAKING A WRIST CLUTCH.

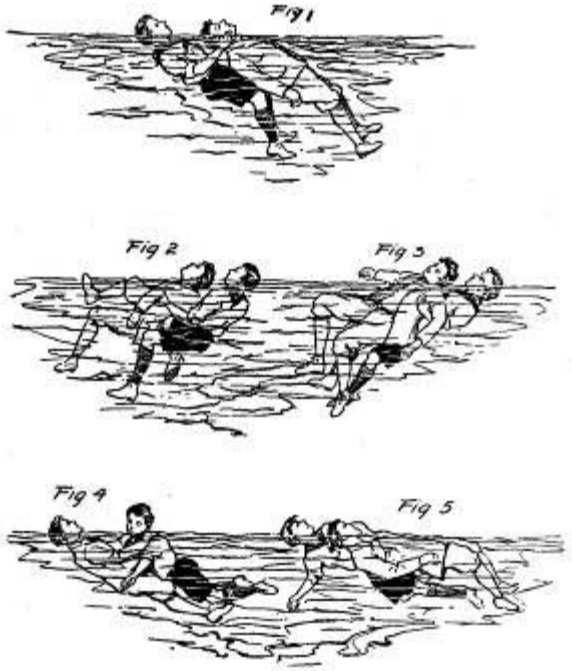
If Clutched Around the Neck From in Front, take a deep breath, lean well over the drowning person, place your left hand in the small of his back, and with the right hand over his chin, drive his head back with all possible force.

If Clutched About the Body, lean well over, place the left hand in the small of the drowning person's back, at the same time lifting your right knee and placing it as high as possible against the drowning person's stomach. With a strong and sudden push drive the arm and leg straight out and throw the weight of your body backwards.



BREAKING A BACK STRANGLE HOLD.

The Back Strangle Hold is the most difficult one to deal with, and must be broken without an instant's delay, or you may yourself need help. Grasp the holder's wrists, arch your back against his body, and throw your head sharply backward against his nose (See Fig. 1). As the drowning man releases his grip, slip out under his arm. (Fig. 2.). Retain your grasp on his arm until you can secure a safe carrying hold (Fig. 3).



Rescue Carries

BREAKING A FRONT NECK HOLD.

To break a front neck hold place the flat of the right hand over the holder's nose and chin. With left hand under his right elbow, lift, and at the same time press the right hand against the right side of his face. This will throw him into a carry position. Begin to swim at once, keeping the victim's head well up.

Save your Strength. – In all cases the Scout rescuer should save his strength. Where there is a current, or tide, you should not struggle needlessly against it with your burden, but swim with it, and gradually make shoreward; or wait until a boat, or other aid reaches you.

Diving Rescue. – Where a drowning person has disappeared in quiet water, the location of the body will be shown by rising bubbles. If there is a tide or current, you must dive at the spot where the person went down, and look along the bottom, swimming with the current,

Use Discretion. – You should never plunge into the water to make a swimming rescue if the rescue can be effected in a safer way. When a person has fallen from a bridge or a dock, a line or buoy often can be utilized without placing other lives in danger. At other times a boat or canoe can be used to advantage. The help of logs or planks also should not be overlooked. Where possible, you should practice throwing a life buoy. After such practice you must always leave the line properly coiled and the buoy in position for instant use.

(For Reviving the Apparently Drowned see p. 18).

Fainting and Unconsciousness

Loosen all tight clothing, and keep the patient in a reclining position. If the face is pale, keep the head low and elevate the limbs. Give smelling salts and bathe the face and hands with cold water.

If the face is flushed and the head hot, elevate the head and apply wet cloth or an ice pack, and sprinkle the face with cold water or use a fan. Hot water bottles or hot bricks or stones may be applied to the feet, to draw the blood away from the head. Keep the body warm, and give the patient plenty of air. Give no stimulants.

Runaway Horse and Carriage

The best method for stopping a runaway horse and carriage is to start running before the carriage has reached you, run alongside, place one hand on the shaft, and with the other seize a rein, and pull the horse's head around with all your strength. In case of a runaway team, climb into the vehicle from behind, secure the reins, and where there is swerving room, pull hardest on the one line. Where there is not room, endeavour to guide the horses until you reach a clear corner. Then pull with all your might on the turning line. If the reins of a runaway team are trailing, the only way to reach them may be to climb out along the wagon tongue. This should only be attempted when the team must be stopped at all costs – as in case of its dashing down a busy street.

Gas Suffocation

Get the patient into the open air as quickly as possible, loosen the clothing from the waist up and give artificial respiration.

To enter a room in which a person has been overcome by illuminating gas or coal gas, first tie over the mouth and nose a dampened handkerchief or towel. In the room, keep low (the above named gases being light gases), move quickly and breath as little as possible. Open or break a window if necessary to get a quick circulation of fresh air; if gas, turn off the jets; if a coal stove or furnace, open the draughts. Then deal with the victim.

In the case of carbon monoxide poisoning in a garage, monoxide being a heavy gas, throw wide the doors before entering. Walk erect to the side of the victim, and holding your breath, stoop quickly, seize and drag to the outer air. Call for help, send for a doctor, and begin artificial respiration at once.

Frostbite

Bathe with cold water or apply snow or ice until circulation is restored.

Fits

Place the patient on the ground, clear of anything he may strike; loosen the clothing. Do not restrain his movements. Roll your handkerchief about a small piece of wood, and place it between his back teeth. When the patient becomes quiet, allow him to sleep.

Convulsions in Children. – Place up to the waist in a hot bath to twenty minutes, and apply cold water to the head. Beware of scalding the child. Convulsions usually are caused by constipation, and can be prevented by proper attention to the movement of the bowels.

Sunstroke

Loosen the clothing, and remove the patient to a cool spot, keep the head and body raised. Fan vigorously, and apply cold water or ice to the head, neck, and spine. When consciousness has returned, give water to drink.

Poison

Every Scout should know the Poison Ivy. It may be identified by its three leaves (or more properly, leaflets), with a few notches; frequently there is but one notch in each leaflet. In size the leaves may be small, or up to six inches in length where the plant is growing in a cool, shady spot. Young leaves are likely to be shiny copper colour, but when older turn a dull green. In the autumn they become a brilliant scarlet. The flower and berry are of a dirty white or greenish colour; never red.

Poison Ivy is not always a climber. When grown from seed, it creeps over the ground, looking for something up which to climb. Near the seashore it grows erect in the sand.

The poison, which causes an intense inflammation of the skin, is an oil, covering the leaves and stems of the plant. It is carried even by the pollen blown from the flowers by the wind. That is why persons susceptible to ivy poisoning are affected simply by passing near the vine.

Treatment. – A thorough washing of the hands with naphtha soap and water immediately after touching poison ivy is often of considerable service in preventing infection. If inflammation does occur, bathe with salt water or baking soda, to relieve the irritation. In severe cases a doctor should be consulted. Here is an effective application that any druggist can make up for you: carbolic acid, ½ gram; zinc oxide, ½ oz; lime water, 1 oz. Shake well and apply every hour until

the inflammation disappears. If the skin becomes too dry, change to Vaseline or cold cream. A woods remedy said to be effective is a wash made by boiling the leaves of the cinquefoil.

The safest "treatment" is to watch out for and avoid Poison Ivy, even though it has not previously affected you.

Object in the Ear

As a rule make no attempt to treat a person with an object in the ear, if a doctor can be reached. An unskilled attempt to remove the object may have very serious consequences. If the object is an insect, fill the ear with olive oil, when the insect will float, and can be reached and removed. Never syringe or probe the ear. If the person cannot be induced to keep his fingers from the ear, tie his hands.

Substance in the Throat

Loosen the collar and try to remove the obstruction with the forefinger, the handle of a spoon, or something similar. Sometimes the object may be dislodged by two or three blows on the back, or by holding the patient upside down. If a small object has been swallowed, give castor oil; if sharp objects, like pins, give crusty bread to eat. If the substance is in the windpipe send for a doctor at once.

Electric Shock

Before touching a victim of electric shock, discover whether he is still in contact with the charged wire, or other metal. If still in contact, it is as dangerous to touch him as it is to touch the source of shock. First endeavour to push him clear with a dry board, or other piece of dry wood, if available. Where wood is not at hand, or cannot be used for any reason, the victim may be freed by the use of the following materials, as covering for the hands, or to stand upon: India-rubber sheets, or gloves (without holes), several thicknesses of dry paper, dry glass, dry bricks, dry stones, etc.

Conductors of high voltage electricity include metals of any kind, water, or other liquids (except oils); damp cloth, damp paper, wet pavement, wet wood. These conductors should be looked for and avoided.

Resuscitation. – The same as for drowning. Before commencing work see that the patient's neck is free from tight clothing, and that the tongue is not blocking the throat. If necessary the tongue should be drawn out and held by an assistant.

Breaking Through the Ice

If you yourself should break through the ice, in the first place *"keep your head."* If the ice is thin, do not try to climb back upon it, but spread your arms out over the surface, and wait for assistance.

To rescue another person, if possible procure a rope, tie it around your body, and secure it to something on shore, or have someone hold it. Push a ladder, board or pole across the break in the ice, then crawl along it and if necessary help the person to pull himself upon it. Where the ice is thin, or weakened, do not walk upon it, but crawl on your stomach, in order to distribute your weight over as great a surface as possible.

If the rescued person is conscious, get him to shore quickly and keep him running until he reaches some place where his clothes can be removed. Get him to bed, and restore circulation. Give hot drinks, and keep warm with hot water bottles, etc. If the patient is unconscious, treat as for drowning.

If compelled to cross dangerous ice in order to reach a person some distance from shore, carry a long pole, if procurable. Should you break through, this will prevent your sinking beneath the surface of the water, and will assist you in climbing out.

When crossing snow-covered ice always watch out for "airholes," or "breathers." Frequently they are indicated by small, circular "humps," or by an icy crust above the hole – the result of water rising through the opening.

Some General Precautions

Always remember – *Safety First Begins at Home!*

Pick up pins and needles; they cause the death of many babies.

A thoughtful Scout will not leave anything on the stairs that may cause others to trip and fall.

Scalding water from a pot placed too near the edge of the stove may cause a fatal accident to a small sister or brother.

Sharp knives should be kept out of reach of small children.

Rugs should lie flat. Serious falls come from tripping over turned-up rugs.

Keep your yard free from broken glass, rusty wire, and projecting nails.

See that matches are kept in a safe place. Where small children have learned to play with fire, you should recommend the use of safety matches.

A Scout sometimes does his Good Turn by warning someone against the use of kerosene or gasoline when lighting a fire.

Remember that curtains and woodwork are sometimes ignited by unprotected gas jets.

See that the chimneys are examined twice a year, and the flues kept clear.

Sixty per cent of all dwelling-house fires start in clothes closets cellars, or attics. Keep yours clean and free from accumulations of rags, paper, etc. Burn greasy or oily rags and paper immediately after using.

A Scout will not carry a lighted match or candle into a clothes closet. The open flame may touch some inflammable clothing, or even cobwebs, and result in a fire.

See that fire-escapes and halls are kept clear of obstructions.

Experimenting or playing with the electric wiring of a house is dangerous; and may result in fire from broken insulation and crossed-wires.

ELECTRIC WIRES.

Safety First!

It is dangerous to handle loose ends of wire hanging from poles or trees, especially during or after a storm. They may be live wires, carrying a deadly voltage.

Report all broken wires to the proper authorities.

Caution small boys against flying a kite near wires, or throwing a string or wire over a trolley or other high power wire. A serious accident has resulted from a boy throwing a wire clothesline over a trolley wire. A wet string also will carry a high power current. Also prevent other boys throwing stones or shooting at glass insulators on telegraph or other poles. A broken insulator may put a telegraph or telephone line out of working order when it is urgently needed. .

RAILROAD TRACKS AND YARDS.

Safety First!

Warn other boys against playing around railroad stations, on the tracks, on turn-tables, and particularly on railroad bridges. Trains may come unexpectedly; and a fast train will travel a hundred feet before a boy can jump six. A large percentage of the serious accidents to railroad men occur in railroad yards.

Before crossing a railroad track, "Stop, Look and Listen." Never run around lowered crossing gates, or crawl under them. *You* may get through safely, but your example may be followed by someone else not so active, who may be killed.

A Scout plays safe, as much for the other fellow's sake as for his own. Set a good Scout example by obeying all danger signals

SOME REMINDERS. –

Many sleigh accidents due to "hitching on behind" vehicles result in deaths and maiming every winter. Warn children against it.

Never set the example of coasting down a hill on a much travelled road, or across car tracks.

Slingshots, air guns, etc,, should not be used carelessly. They have put out eyes, and have even caused death.

THINGS A FIRST CLASS SCOUT CAN DO AT SCHOOL. –

If needed, assist your teacher or principal in organizing a Safety Patrol among the older boys of the school. The following are some duties of a Safety Patrol: –

Post bulletins of advice to pupils regarding Safety First precautions.

Guard nearby street intersections as the smaller children come to school and return home.

Guide small children over busy crossings.

Notify the principal of any dangerous conditions, such as open manholes, blocked hallways and fire-escapes, protruding nails or boards in floors, etc.

Draw attention to any school doors which do not open outwards, or which are not equipped with "panic bolts."

Make reports of accidents, with suggestions for prevention.

In Case of Panic

In case of a fire panic at a large assembly, Scouts, by remaining cool and acting promptly, may help to save many lives. There usually is time for people to get out of a building if they do not rush, and block the exits. Standing on chairs, or in other conspicuous places, Scouts should assure the crowd that there is no need of rushing, and direct them to the nearest or least crowded exits.

TEST No. 6

Cook satisfactorily over a camp-fire in the open: porridge, stew: rice, pancakes and a "damper" of half a pound of flour, or a "heist" baked on a thick stick; as an alternative for stew, skin and cook a rabbit, or pluck and cook a bird, or clean and cook a fish.

When taking your test go about in an orderly fashion. See that you have a sufficient supply of fuel (dry hardwood if procurable) and fresh water. Make a small, neat fire, placed so that the smoke will blow away from you and the food you arc cooking. Then unpack your raw materials, and lay out in a tidy manner; not anywhere and any how.

Recipes

Porridge. – For each person allow one pint of water, 2 ozs. of rolled oats or oatmeal and a quarter teaspoonful of salt. Bring the water to a boil, add the salt, then sprinkle in the oatmeal, stirring all the time. Allow to simmer for half an 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, containing water, with a few pebbles in the bottom to keep the two vessels apart.

Hunter's Stew. – Cut some lean meat or game into small pieces, brown it with fat in a frying-pan, shuffling the pan so as to sear, but not burn, the surface of the meat. Then drop the meat into a kettle of boiling water and set it to one side or hang it high over the fire so as to simmer. Later add potatoes, onions, rice, and salt and pepper. It is essential that the water should not boil hard, but merely simmer after the meat and vegetables are put in. The time varies according to materials used; cook until tender. Do not use any fat meat.

If a thick stew is desired, rub up a little flour into the grease left in the frying-pan, and add water, stir, and let the mixture boil a little; then stir this thickening into the stew a short time before it is ready.

Almost any meat, vegetable and cereal, can be used in a stew.

Rice. – For each person allow one half pint of water, one ounce of rice and one-eighth teaspoonful of salt. Bring the water to a boil, add the salt, then sprinkle in the rice, stirring all the time. Allow to boil for twenty minutes. Stir frequently to prevent burning, if not using a double-boiler. (An efficient double-boiler can be extemporized by placing a billycan on a few small stones in the bottom of a dixie, the dixie containing two or three inches of water.)

Pancakes. – Mix one-half cup flour, one-half teaspoonful of baking powder, one-third teaspoonful salt and one tablespoonful of sugar. Beat one egg and mix it with one cup of milk. Add the milk and egg to the flour mixture and stir until smooth. Drop by spoonfuls on 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 people.

Damper. – Use $1^1/_2$ pints flour, $1^1/_2$ heaping teaspoonfuls baking powder, $^1/_2$ heaping teaspoonful 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 powders also vary, 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 (which may be lard, cold pork fat or drippings) until there are no lumps left and no grease adhering to the bottom of the pan. This is a little tedious, but it does not pay to shirk it; complete stirring is necessary for success.

Now add the water, and stir with the spoon until the result is a rather 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 a wind is blowing), or on hot stones.

Twist. – Work the 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 sharpen the other and stick it into the ground, leaning toward the fire. When the sap simmers, wind the dough spirally around the peeled end. Turn occasionally while baking.

Bread enough for one man's meal can quickly be baked in this way, or on a stick held over the coals.

Skin and Cook a Rabbit. – A rabbit (cottontail, jack rabbit, or hare) is a meal very likely to come the way of a Scout, so every Scout should know how to prepare and cook one. First place the rabbit on its back. Cut off the legs 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 inexperienced, it will aid you to have someone hold the hind legs during the skinning.) You may require a sharp knife to free the skin in spots. Next slit the carcass down the middle of the belly, from the ribs, and clean out the entrails. Wash well in warm water. If there is time, rub well with salt and soak for several hours in water. Cut up, first removing the legs. Make a stew similar to hunter's stew, adding an onion and several pieces of lean bacon. Cook for an hour and a half. If desired thick, mix a little flour and cold water, and add.

(Note: A rabbit is good eating only in the fall or winter.)

Pluck and Cook a Bird. – If it is desired to pluck a fowl, this can easily and quickly be done after first scalding. To scald, hold the fowl head down, by the legs, and pour the scalding-hot water through the feathers close to the body. Give particular attention to the wings.

Plucking is not necessary, however, where roasting is desired. First remove the entrails and wash the inside, then plaster the fowl over with a mixture of clay, earth, ashes, etc., and place in the middle of the fire, covering with ashes and hot coals. With a good fire, an hour and a half to two hours, depending on the size of the bird, will complete the cooking. The feathers will come off with the baked coating of clay, and disclose a delicious meal for a group of hungry Scouts.

Fish and meat may be cooked in practically the same way, the meat being first wrapped in two or three thicknesses of wet paper. The cooking of a bird or a large fish will be hastened if a stone of suitable size and shape is heated nearly red hot and placed inside. The same idea will help the roasting of a bird or fish on a grid or spit over the fire.

One of the Best Cooking Fires is made between two green logs. Preferably these should be beech, eight to ten inches in diameter, six feet long, placed side by side a few inches apart, and fixed in position by stakes driven into the ground; the tops then flattened with a hatchet. Coffee pot, frying pan and other utensils will stand across the opening, and small cooking fires of dry wood can be placed beneath each utensil. For better draft, one log may be raised slightly on stones, or small holes may be scraped on the windward side of the logs.

With this "forest range" you can cook almost anything, and frying-pan cookery is particularly convenient.

Excellent Camp Bread can be made of prepared flour. Mix to a thick stickiness, use plenty of bacon grease in the pan, and have the grease hot when you dump in the dough. When nicely browned on one side, put in a little more grease, turn over and cook on the other side.

Potatoes peeled, cut into quarter-inch slices, and fried in very hot fat are fine.

When boiling potatoes, use lots of salt in the water. A strong brine gives the best results. Always boil the potatoes in their skins; and please don't dig out the eyes, or in any other way mutilate the murphies. They don't like it; it makes them wet and soggy. When a fork can easily

be thrust through them, pour off the water, and allow them to steam off dry over the log range. They will then be snow white, dry and mealy, and altogether "fit for the King."

When Frying Fish, use plenty of fat, and have it very hot at first. The heat should be reduced a little afterward.

Boil Coffee only three minutes by the watch. Coffee made in a small tin pail, with a tight-fitting cover, is better than coffee made in an ordinary pot. To settle coffee, dash in a little cold water, or stand the pail or coffee pot to one side, away from the direct heat.

When in the woods *never waste a drop of grease;* and keep separate the grease used for frying fish. Condensed milk cans make fine grease holders.

Excellent Toast can be made in a frying pan over the log range. Use just enough grease to keep the bread from sticking, and be sure not to burn it. Bread dipped in condensed milk and fried also makes a mighty nice addition to breakfast.

Prunes or Dried Apples or Peaches, soaked over-night and boiled with sugar until tender, should be used constantly in the woods. Prunes are tasty with a bit of lemon added; and are also good medicine.

Hot Water. – In a permanent camp whenever the fire is burning always have a full kettle of water over it. This means a quickly made hot drink, if needed. Also it assures hot water for washing the dishes – a matter very frequently overlooked until it is time to do the washing.

Putting Out the Fire. – It should not be necessary to remind the First Class Scout to make absolutely certain that his fire is dead before leaving a camp. If the ground is of a loose peat-like nature especial care should be taken to see that the last spark has been drowned out.

When laying in your camp supplies do not confuse Baking Powder and Baking Soda. The difference has spoiled many a Scout's dream of a tasty meal. It is BAKING POWDER you take with you for making damper, biscuits, etc. Baking Soda is used only in combination with cream of tartar or sour milk.

TEST No. 7.

Read the conventional signs of a map correctly, and draw an intelligible rough sketch map. Point out a compass direction without the help 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.

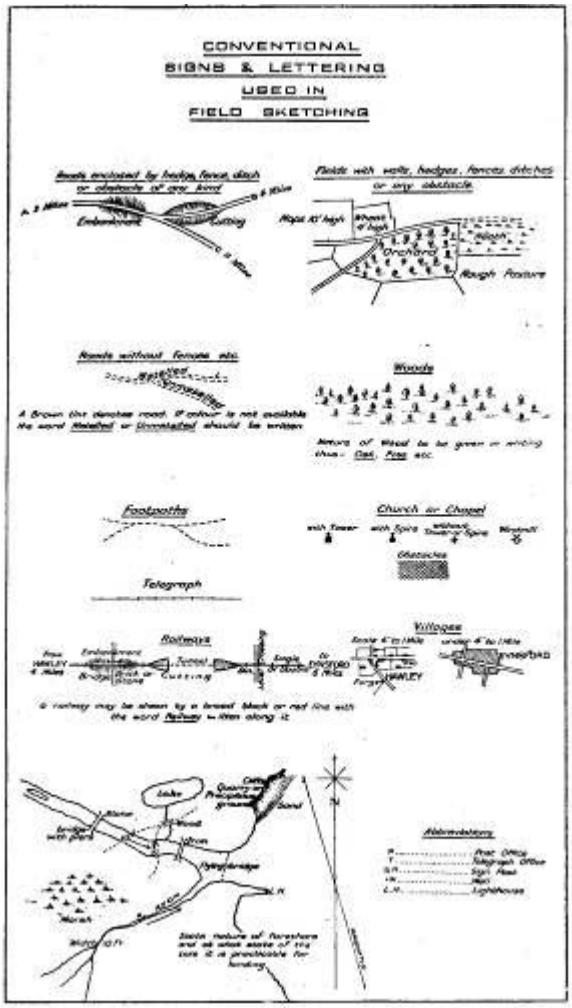
The Scale. – One of the first things which a Scout must note, in order to understand a sketch map, is the "scale" to which the map is drawn. By the term "scale" is meant the relation which the distances on the map bear to the actual distances of the country shown on the map. Thus, the scale may be "ten inches to a mile," which would be indicated by a rule divided into ten sections, and the key, "10 inches – 1 mile." In this case a road ten inches long on the map would in reality be a mile long, and villages five inches apart on the map would be a half mile distant 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 in the illustration on page 33. It is important to note the variations between the "True North" and the" "Magnetic North"; that is, the difference between the Geographical North, the actual centre of the "top of the world." and the North toward 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 has 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 southwestern 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."



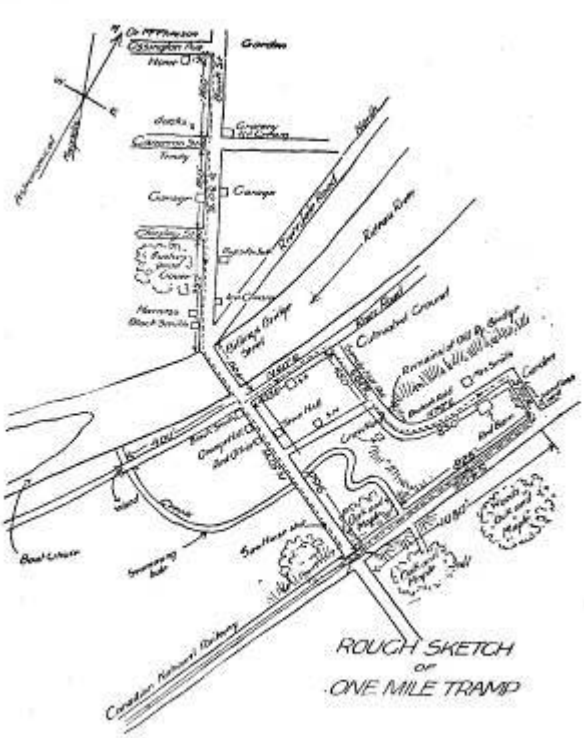
Using a Map. – In order to use a map out of doors, as for finding your way when on a hike through unfamiliar country, you must know how to "orient" it. This means simply to stand and hold the map so that the road you are following is exactly in line with the road as shown on the map; and houses, trees 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. These will be found in the illustration above. They are known as "Conventional signs."

Making a Map. – The sketch map which you are to make is of great importance, as it will demonstrate your ability to judge distances, and in general observation. It should be drawn from notes and from a first rough sketch made as you are travelling over the route or section of country you are mapping. Many Scouts combine this test with a part of the journey of Test No. 7.

Before setting out to make this map you should measure your stride, or double pace; that is, every step with the right foot. Do this by pacing a known distance of 100 or 200 feet, counting the strides taken, and dividing into the distance. The average Scout will take 20 strides in 100 feet, or 5 feet to the stride. Pedometers or other counting devices 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.



SKETCH MAP INCLUDING SOME GENERAL "JOURNEY" OBSERVATIONS

Taking Bearings. – If possible you should secure some preliminary instruction in taking bearings with a pocket compass reading degrees, not points. Most Scout compasses are marked from zero to 90 degrees in each quadrant (or quarter of the circle). North and South are the zero points, East and West are marked 90.

On such a compass a bearing 30 degrees West of North is read thus: N. 30 W. (not 30 N. W. nor N. W. 30). A bearing of 46 degrees in the Northeast quadrant would be read N. 46 E.; a bearing of 68 degrees in the Southeast quadrant S. 68 E.; a bearing of 14 degrees in the Southwest quadrant, S. 14 W.

Some Scout compasses are graduated continuously around from zero to 360 degrees. North is zero, East is 90. South is 180, and West is 270. On such a compass a bearing is read simply by the number of degrees. A Scout using such a compass, however should learn how to convert his readings into the customary form given above. For instance, a reading of 160 degrees would be equivalent to S. 20 E.; a reading of 290 degrees would be read as N. 70 W.

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 mark.

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

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 you 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 cross-roads, or a bend in the road. Take bearings of 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 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 bearings of 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.

Inaccessible buildings 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 time-saving. Care must be taken to have the two bearings intersect each other at a reasonably wide angle.

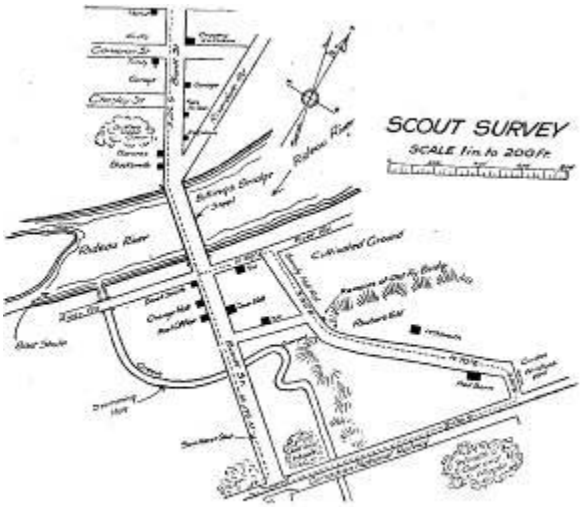
The Final Map

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 at from 5 cents up.



THE SKETCH MAP COMPLETED

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.

Errors 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 (¼ to ½ 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 field measurements to locate the mistake.

Lettering. – Print (do not write) names of villages, roads, streams, etc. Give bearings and distances of courses of your traverse circuit, also bearings taken to distant houses and other principal objects. In the lower right hand 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.

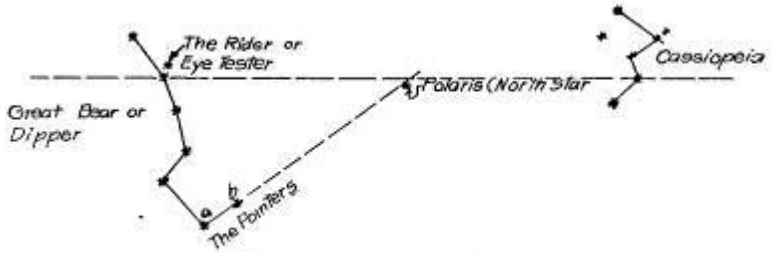
Pointing Out a Compass Direction

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 of the compass. He may use any of the various methods shown in the Handbook.

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.

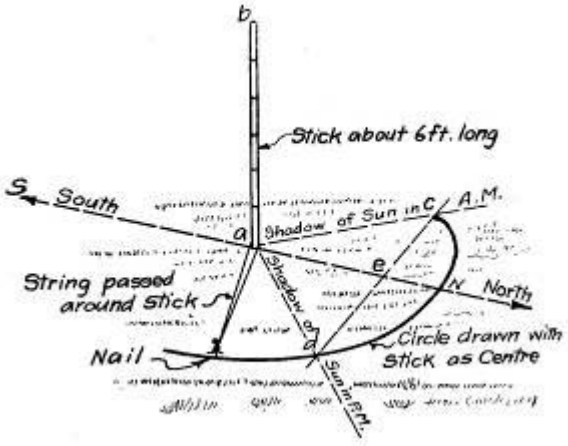


FINDING THE POLE STAR.

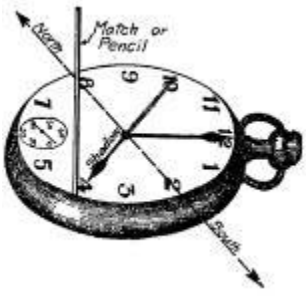
Finding the North by Shadows

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 Scout 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 (a c) 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 d c, that is the point e, and draw a line from e to the base of the pole (a). The line a e will be the North and South line. The North end is always on the same side of the pole as the circle.



The Watch Compass. – Your watch also can tell you the North. Place it fiat on your hand 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. 8

Demonstrate proper use of an axe for felling and trimming light timber; or, as an alternative, produce an article of carpentry or joinery, or metal work, made by himself satisfactorily; or make a working model of any kind of machinery in metal or wood.

Felling and Trimming Timber

Care should be taken to secure the permission of the owner before a tree is felled. A dead tree should always be chosen when it can be found.

Before using the axe the Scout should be familiar with every word on the subject of axe work as given in the Handbook.

Two Scouts may demonstrate on the same tree. After one has cut it down, the other may meet his requirements by demonstrating the proper method of trimming. This consists of cutting off the branches, which should always be done by chopping toward the top of the tree. In trimming a tree see that no branches, however small, are in the way of your "swing." Many serious accidents have resulted from a slight deflection of the axe blow.

In felling a tree, cut a notch half way through the trunk in the side facing the direction in which you wish the tree to fall. Then cut a notch on the opposite side of the tree, a little higher than the first notch. As soon as the tree begins to waver, step well to one side.

Never stand behind a tree when it is falling. It may kick back. Experienced woodsmen have lost their lives through the unexpected kicking back of a tree as it fell.

Never leave an axe lying around on its flat side. Someone may stub his foot against it, and receive a bad cut. Stick it into the top of a stump, or into a log, or even into the ground if necessary. Be sure the head of the axe is on firmly.

(NOTE: *See illustration page 9.)*

Optional Tests

Designs and instructions for making of various pieces of furniture may be found in magazines, including THE SCOUT. Books on the subject also may be had. Articles to be made of metal may include flower-pot racks, knife racks, match and bottle holders, ash trays, crumb trays, etc.

After the article is made, the test is passed by explaining the methods used to another Scout. In case of a large chair, bookcase or similar object, an examiner may go to the Scout's home for its inspection. The article must be complete and finished when submitted; that is, articles lacking final varnishing, painting or sand papering should not be accepted.

TEST No. 9

Judge distance, area, size, number, height and weight, with reasonable accuracy.

How far it is across the river? How many acres are there in the field? How high is the building? How many people are there in the crowd? How high is this bridge above the water? How much does this parcel weigh?

These are questions one hears frequently – and seldom hears answered correctly; for the majority of people are very poor judges of distance, height, numbers and weights. The 9th Test was adopted so that a First Class Scout, when asked such questions, should not fail to make good the First Class Scout's reputation for general wide awake efficiency and "knowing things."

Judging Distance

A general rule to bear in mind is that one is apt to underestimate the distance of an object distinctly seen, and to overestimate the distance of an object seen indistinctly. Especially deceptive is the distance of an object seen across a stretch of water, or snow; 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; when you are lying down, or kneeling; when there is a heat haze over the ground. 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 background and object are of different colours; when the ground is level, or when covered with snow; when looking over water, or a deep chasm; when looking upwards or downwards; when the object is large 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.

How to Learn. – In learning to judge distance it will greatly help you if you check up your estimates by pacing. The first necessity is to learn exactly the length of your pace.

This established (as described under "Making a Map," in Test No. 7), go to a field, or commons, or a quiet road, and begin by judging short distances, then pacing off to check up your "guess." Increase the distances gradually, up to several hundred yards. Do this in the company of several other Scouts; you will find it very interesting.

Remember that distance is judged in a direct line from the eye to the object, and does not allow for irregularities of the ground.

To aid you in short measurements you should know exactly the span of your hand, the breadth of your thumb, the measurement from your elbow to the top of your middle finger, your reach with both arms outstretched, and the length of your foot.

You also should have notches cut in your Scout staff showing inches and feet.

Here are some measurements of an average man:

Nail joint of forefinger, also breadth of thumb	1 inch.
Span of thumb and forefinger	7 inches.
Span of thumb and any other finger	8½ inches.
Wrist to elbow	10 inches.

(This will be the same as the length of your foot.)

Elbow to tip of forefinger (a "cubit") 17 inches.

Your own reach will nearly equal your height.

Some Further Hints

At 800 yards a man looks like a post; at 700 yards the head is not yet visible; at 600 yards the head is visible as a dot; at 500 yards the shoulders of a man appear bottle shaped; at 400 yards the movement of the legs can be seen; at 300 yards a face can be seen; at 200 yards buttons and details of clothing become visible; at 100 yards the eyes and mouth of a person can clearly be seen.

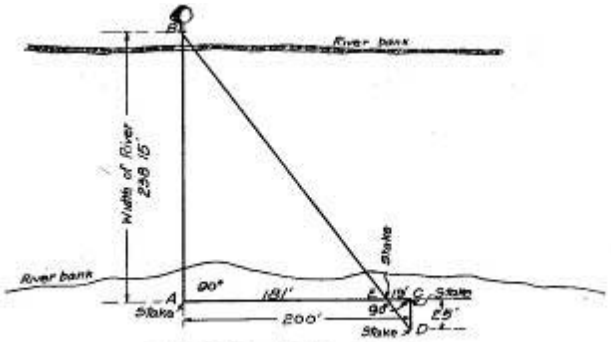
To estimate greater distances estimate the farthest probable distance to the object, then the nearest possible, and "split the difference."

All the foregoing rules are for good light and level ground. You will remember that in bad light, in mist, when looking across a valley, or when lying down, the tendency is to overestimate distance.

Judging Distance by Sound

Distance also can be judged by sound. If you see a gun fired, and count the number of seconds between the flash and the report, you can tell how far the sound has come, if you remember that sound travels at the rate of 360 yards in a second.

During a severe thunder and lightning storm you will often be able to quiet nervous people by pointing out to them the time between the flash of the lightning bolt and the report, proving to them that the bolts, although sounding near, are in reality striking three or four miles away.



To Find the Width of a River

To Find the Width of a River

If like, Polly Wolly Doodle, you have "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 (see illustration), just opposite a tree (or other prominent 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, run a base line (A to C), making it any length you like. In the diagram it is figured at 200 feet. Drive another stake.

Run a right angle line, as from C to D, also any length desired. The diagram shows it as 25 feet.

Now have another Scout stand behind the stake at C while you stand behind the stake at D. He will sight at A, you will sight at the tree, and a third Scout, according to instructions, will put a stake in the ground at the intersection of the lines A C and D B, that is at E.

Now measure the distances E C and C D, and to be sure you had better measure A E.

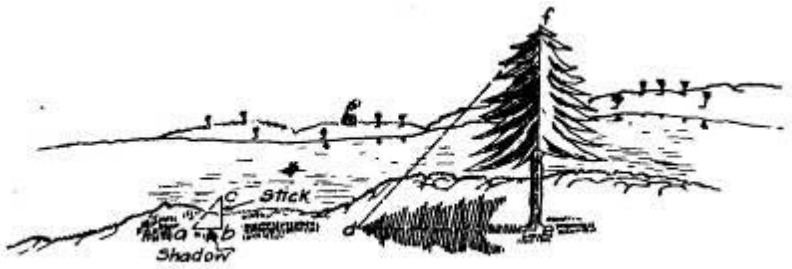
Multiply the distance A E by the distance C D and divide the result by the distance E C. The answer will be the length required. In the diagram the distance shown was 238.15 feet. Check over the figures used in the diagram, to see whether you thoroughly understand it.

Judging Height

A Scout must also be able to estimate height, from a few inches up to three thousand feet or more. That is, he must be able to judge the height of a fence, the depth of a ditch, or the height of an embankment, of a house, tree, tower, hill or mountain. The ability will come readily through practise; it is a difficult subject to teach by book. The readiest way to estimate the height of a building is to calculate the height of a story, and multiply that by the number of stories.

First Method: By Means of Shadows.

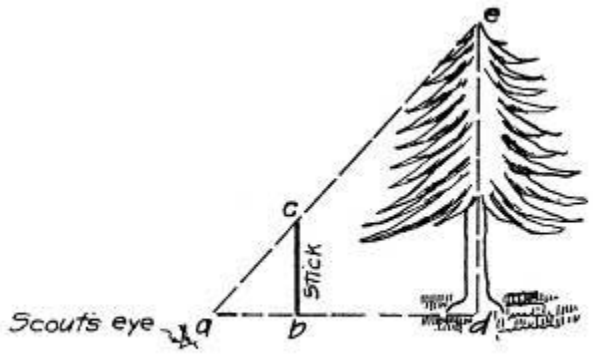
For this you will need your Scout staff, or some similar straight stick. You will, of course, know the length of the stick; if it is your staff, you will have feet and inches notched on it.



Stand your staff (b c) upright in the sun and carefully measure the length of its shadow (ab). Measure the length of the shadow of the tree. Multiply this by the length of the staff, and divide the result by the length of the staff's shadow. The answer will be the height of the tree.

Second Method: When the Sun is Not Shining.

Have a brother Scout lie on his back on the ground at the point "A", which is about as far away from the tree as the tree would seem to be tall. Now have a second Scout take a Scout Staff, and walk toward the tree, moving the pole back and forth until it is in such a position that the Scout lying on the ground says that the top of it is in line with the top of the tree. The distance from the Scout's eye to the foot of the tree multiplied by the length of the stick and divided by the distance from the Scouts eye to the stick gives you the height of the tree.



JUDGING HEIGHT, SECOND METHOD.

Judging Weight

You must also know how to estimate weights – the weight of a letter, or a fish you have caught, or a potato, a bag of grain, or a load of coal; also the probable weight of a man.

An excellent practise is to discover from time to time the exact weight you can raise and hold at arm's length, at right angles to the body. Remember that a gallon of fresh water weighs ten pounds and a cubic foot of water about sixty-two and one half pounds. Salt water weighs a little more.

Judging Numbers

Scouts should be able to judge numbers; for instance, to tell at a glance about how many people are in a group, or on a street car, or in a big crowd; how many sheep there are in a flock, or cattle in a herd; how many marbles on a tray, and so on. One of the best ways to estimate large numbers is to count the number in a small group or section, and apply this unit to the whole.

Judging Capacity

Capacity may be estimated approximately by making yourself familiar with the ordinary units of measurement, such as a pint, a quart, a gallon, a cubic foot, a cubic yard, etc., and then applying the unit to the larger bulk.

Judging Area

The same plan may be applied to area by using the units of a square foot, a square yard, an acre, a small field and a quarter section. Remember that a square acre measures a little over 208 feet on each side.

TEST No. 10

Go on foot, or row a boat or paddle a canoe, alone or with another Scout, to a point seven miles away and return, preferably by another route: or if conveyed by any vehicle (railways or automobiles not allowed), or animal, go a distance of at least fifteen miles and back (mileage in city not counted). Make a sketch map of your journey and write a short report (not an essay) showing observation, self-reliance and initiative. He should take at least twenty-four hours over the journey, spending the night in bivouac or tent, and should cook at least three meals. This test should be taken after passing Tests 1 to 9 inclusive.

The purpose of this test is to prove whether you have "First Class Scout ability" to take care of yourself "on the trail," as an Indian frontiersman, or trapper would look after himself. The ideal test – and the one you would most enjoy, of course – would be by canoe up some strange river, or through the woods along an old Indian or trapper's trail, fishing and hunting by the way, sleeping on pine boughs in a lean-to, making your meals of flapjacks and bacon, or hunter's stew (of rabbit, or partridge .... Ummm-yummm!!), or fresh-caught, fresh-fried trout.

Such a journey is not within the reach of all Scouts; but even if you live in one of the older, settled sections of Canada you will be able to plan a trip by boat, canoe, bicycle, horseback or afoot, that will give you a real taste of "frontier days," and that will prove whether you can look after yourself as well as some of your favorite boy heroes of history or fiction.

In case of continued heavy rain, where it is not possible to make a weather-proof lean-to, and you are not possessed of a small tent, you may pass the night under any hospitable roof, rather than run the unnecessary risk of a severe cold.

When two Scouts take the test together, they should make separate notes, and write separate reports. The reports should describe the character of the country seen, the birds and wild animals noted, and should briefly relate all the interesting details and happenings of the journey. Scouts taking this test should not be accompanied by a leader or other Scout who has previously taken the journey.

TEST No. 11

Recruit a boy and train him in the points required to pass the Tenderfoot Scout Tests. (This may be postponed if recruits are not immediately desired, but must be carried out within three months of its being required, or the badge is given up.)

This test will amount to very little if it means merely giving lessons in knot-tying to some boy who has been waiting to join the Troop, and hearing him recite the Scout Law, perhaps with some prompting. Such a "test" would fail both for the other boy and for yourself.

So think seriously of this test. Think well before you decide on the boy, and then think very seriously of all you wish to make him understand. For it is not merely a matter of knowing the flag, the knots and the Law that you must pass on to him.

The boy decided upon, go to him and have a good talk on Scouting. Outline the tests he will pass when qualifying as a Tenderfoot Scout, a Second Class and a First Class Scout. Tell him all the fun of it, and the hard work of it – to make sure he does not entertain the idea that becoming a Scout is only a question of learning a few easy things, repeating certain words, and then wearing a uniform and having a jolly good time out in the woods. Inform him regarding the different Scout ranks and badges; and how if he makes good he may some day become a Second, a Patrol Leader, a Troop Leader, and finally, when old enough, perhaps even a Scoutmaster.

Tell him something of what people expect Scouts to know and to do. Explain (so that he may if necessary explain to his parents) that Scouting is not "soldiering" but that only sufficient drill is used to handle a Troop properly when on parade. Explain also that Scouting does not care what church a boy belongs to, so long as he attends its services regularly and conscientiously performs his religious duties.

Tell him that on being accepted as a Scout he will become a member of the greatest organization of boys in the world; that there are Boy Scouts in practically every country on the globe, all pledged to keep the Scout Promise and Law; that should he ever travel in a foreign country, any Scout seeing his Scout Uniform or button will welcome him as a brother Scout.

Finally you must impress strongly upon him that when he makes the Scout Promise and puts on the Scout uniform he will shake the responsibility of maintaining the good name of Boy Scouts everywhere; that should he at any time act improperly he would hurt the name of all Scouts.

When you are satisfied that he has the right idea of what Scouting means you may begin his instruction. Of course you first will make sure that you have forgotten nothing of the history of the flag, that you know the knots thoroughly, and that you can explain fully the meaning of every word of the Scout Promise and Law.

And when your candidate has been admitted to the Troop, make sure that you set him a real First Class Scout's example in Scoutcraft and Scouting.

NEXT ---------A KING'S SCOUT!

Every First Class Scout will be anxious to go still higher, and become a KING'S SCOUT. Here are the qualifications:

In addition to having passed all the First Class Scout Tests, the candidate for the rank of KING'S SCOUT must earn four of the following proficiency badges (of which that of Pathfinder is compulsory): Ambulance, Cyclist *(or Horseman)*, Marksman, Pathfinder, Signaller, Fireman, Rescuer, Interpreter, Public Health Man.

Fire Without Matches

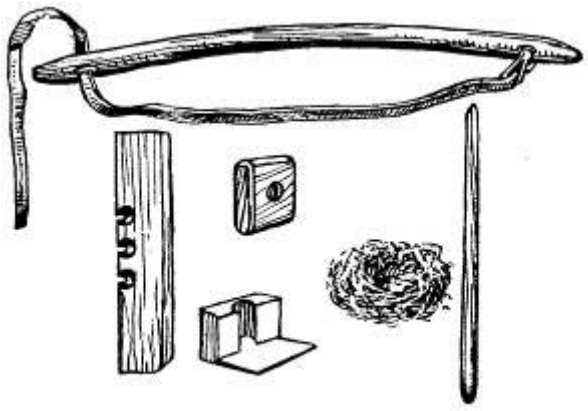
MAKING FIRE WITH A FIRE BOW—FIG. 1.

Although fire making with a fire-bow or fire-drill is not a First Class Scout test, every First Class Scout should be able to make a fire in this way. If close attention is given to details, it is not difficult. Fig. 2 shows the various parts of a fire-bow set – the bow; and, from left to right, the fire-board, to catch the smouldering coal of wood dust; the hand-block, by which the drill is held; the bird's-nest of tinder in which the coal is placed, and the spinner or drill.

How It Works

There are several slightly different methods of holding a fire-board and bow. Fig. 1 shows the method used by one Canadian expert. (Note: In the picture the fire-pan was omitted, in order not to conceal the notch in the fire-board.)

In operation, the drill, whirling in the hole, first heats and grinds up a brown wood powder, which works out into the v-shaped notch. By the time the notch is filled, the increased heat has ignited the dust, which begins to turn black, and smoke. The movement of the bow is continued until the smoke has increased to a considerable volume. The fire-pan is then carefully lifted and the ember deposited in the bird's-nest. This is picked up in the hand, the hand is loosely closed, with the fingers a little apart, and swung briskly backwards and forwards. The heat will indicate the time at which the nest should be put down. A few puffs of breath will then bring the flame.



Fire Bow Set—Fig. 2.

The Wood Used

Friction fire cannot be made with any kind of wood. Some woods grind up too easily, developing little heat; others are too hard and will make little or no powder, while a resinous wood "polishes," and discontinues sufficient friction, as soon as it develops heat.

It is a theory that in every section of country a native wood can be found that will make fire. Testing of this theory offers a field of most interesting experimenting for Scouts.

The production of smoke under friction is not necessarily a sign that a certain kind of wood will make fire. Some woods will produce heavy smoke, and yet refuse to develop a spark. The best wood test is the powder it produces under the fire drill. This must be fine and soft – not gritty.

The varieties of Canadian wood with which the Scout is most likely to succeed are basswood, cottonwood, soft maple, red and white cedar, elm, balsam-fir, hemlock, tamarack, second growth white pine, and willow root.

All wood should be well seasoned and dry.

Among fire-making experts there is a difference of opinion as to whether the fire-drill and fire-board should be of the same wood. This also is a matter offering Scouts an interesting field for investigation.

Making a Fire Bow Set – The Bow

The bow (see Fig. 2) may be made of any stout wood, and from 20 to 36 inches in length. The longer bow will give a longer spin of the drill with each stroke, and perhaps greater speed; the shorter is easier to control, and is more convenient for carrying.

The thong should be of strong, pliable leather, one quarter inch in width, and should be secured to the bow in such a manner that it can readily be tightened from time to time.

Strung to the bow, the thong should be of such a length that when twisted around the drill it will grip snugly, yet run freely.

The Drill

The drill may be round or octagonal in shape, should be not more than ¾ inch in diameter, and preferably 9 or 10 inches in length. The shape of the friction end is important. It should not be pointed, but rounded, like the half of a marble; the purpose being to secure as much grinding surface as possible. The shape of the other end is not important, except that it must fit easily into the hole in the hand-block.

The Hand-Block

The hand-block needs little describing. It should be of a size to be grasped firmly in the palm, and at the same time prevent any part of the hand touching the drill. The hole in the hand-block should be kept greased, to reduce friction at the top of the drill. Some fire-makers fit a metal or stone socket into the block.

The Fire-Board

A convenient size for the fire-board is 4 by 12 inches, and ¾ inch in thickness. To complete the fire-board cut a notch (or number of notches) three eighths of an inch wide and of the same depth. At the tip of the notch cut a shallow hole, or cup, of a size that will neatly take the end of your drill; the outer edge of the hole being within a quarter inch of the edge of the fire-board.

The Fire-Pan

The fire-pan, or fire-chip, is placed under the notch, to facilitate the picking up of the coal. While the fire-pan as shown has advantages, in the woods a small flat chip will serve as well, if handled carefully.

Tinder

The tinder bird's-nest may be made of fine dry shavings, dry grass, moss, or leaves, rubbed up fine in the hands. The best tinder however, is cedar bark fibre, or fibre made by shredding soft pine or cedar between stones. The latter was the Indians' preference. Of course tinder may be moistened with kerosene or gasoline; but no true Scout would do anything so unwoodsmanlike.

To Operate

Twist the bow thong around the middle of the drill, so that the drill is on the *outside* of the thong – not on the inside, against the bow.

Kneel on the right knee, and place the left foot firmly on the fire-board. (It is very important that the fire-board be held immovable. See Fig. 1.) Hold the hand-block so that the drill is perpendicular, and adjust yourself so that your left wrist is pressed firmly against your left knee. Hold the bow as shown in Fig. 1, precisely at right angles to the drill. Now press down on the hand-block, and, with a rapid, even motion, drive the bow backwards and forwards.

Continue until the notch is well filled with powder, and the powder is smoking freely.

Being very careful not to move the fire-board (which might result in breaking up the little dust-ember), lay aside the bow and drill. With the hand gently fan the ember into brightness.

Place your right hand on the fire-board, to steady it while you remove your left foot. Carefully hold the fire-board with the left hand, and with the finger tips of the right hand give the board a light tap (to break the coal from the sides of the notch). Tip up, and remove the fire-board. Carefully pick up the fire-pan, or chip, and drop the lump of smouldering dust into the centre of the bird's-nest. Pick up the nest, close your hand about it loosely, and swing it rapidly in the air. You will feel the heat almost immediately. As soon as the "nest" is uncomfortably hot, place it on the ground, blow it into flame – and build up your fire.

The fire may be brought by placing tinder over the coal on the ground, and blowing directly upon it, but the hand-coaxing method generally is surer, and the flame, when it comes, is much stronger. While the "nest" is being held in the hand, the increasing temperature of the coal further dries and heats the tinder, so that the moment the flame comes, the tinder flashes into full blaze. The advantage of the hand method during wet weather is obvious.

If when beginning operations smoke does not come within a minute, it is useless to continue. Examine the end of your drill. You probably will find it is "polishing." Perhaps it has developed a point, and is only grinding the bottom of the hole. With your knife pare the drill-end until it fits the hole snugly. If it again fails (where the wood is known to be suitable), drop a little dry dust *into* the hole.

The Time Required

Your first attempt to make fire may fail. Keep at it, each time give careful attention to every step and detail. When you have caught the "knack," practise until you can get your flame within the minute.

The next step is to leave matches behind, stick a leather thong in your pocket, take a hatchet, go out into the woods, and find the necessary material and make your fire-set on the spot. When you have done this, and made your fire – then you may call yourself a real woods Scout.