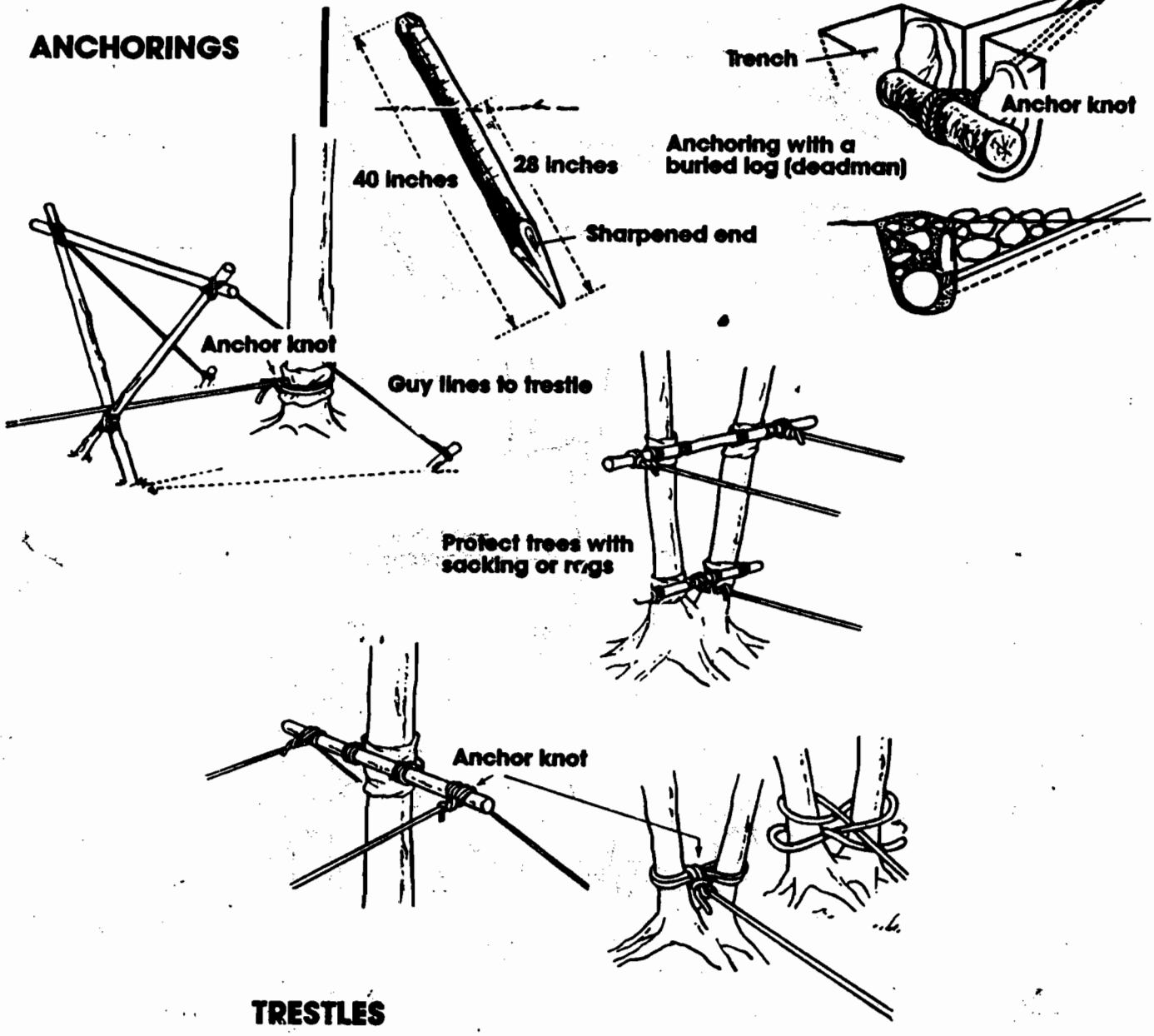
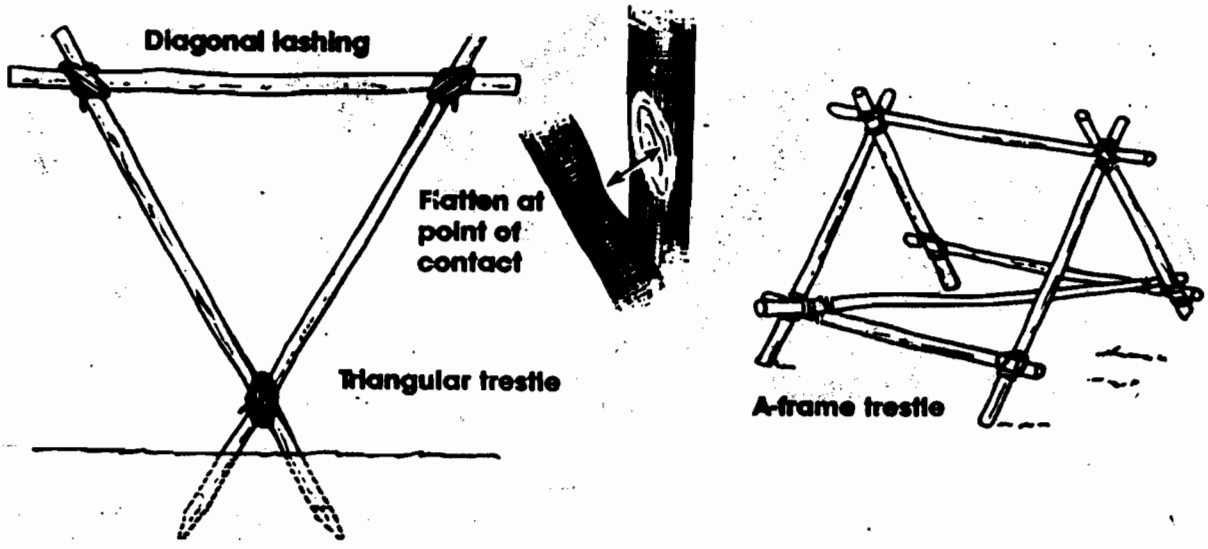
ROPE

Building a Rope Bridge

ANCHORINGS



TRESTLES



Three teams work at the same time.

Team A: Trestle on bank number 1.

Team B: Trestle on bank number 2.

Team C: The rope bridge on bank number 1.

The Trestles: The most efficient is the triangular trestle. Three poles are carefully lashed. Take care with the angle of the 'V' (refer to our illustrations for the proportions).

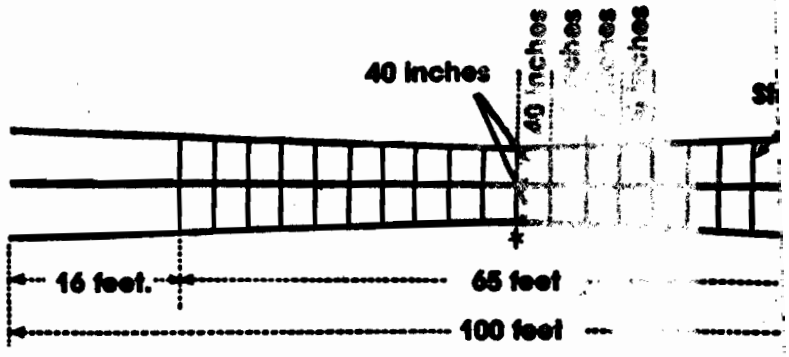
The trestles can be replaced by anchoring to trees. (This is quite common.) In this case two poles lashed to trees will do nicely. Don't forget to protect the trees. Be careful of the elevation of the main support. This should be at least 5 feet above the water. (If not, you'll get wet feet.) This will determine the dimensions and placement of the trestles. Install their anchors with great care.

The Rope Bridge: The bridge is constructed flat on the ground. Unroll the ropes and lay them parallel to each other.

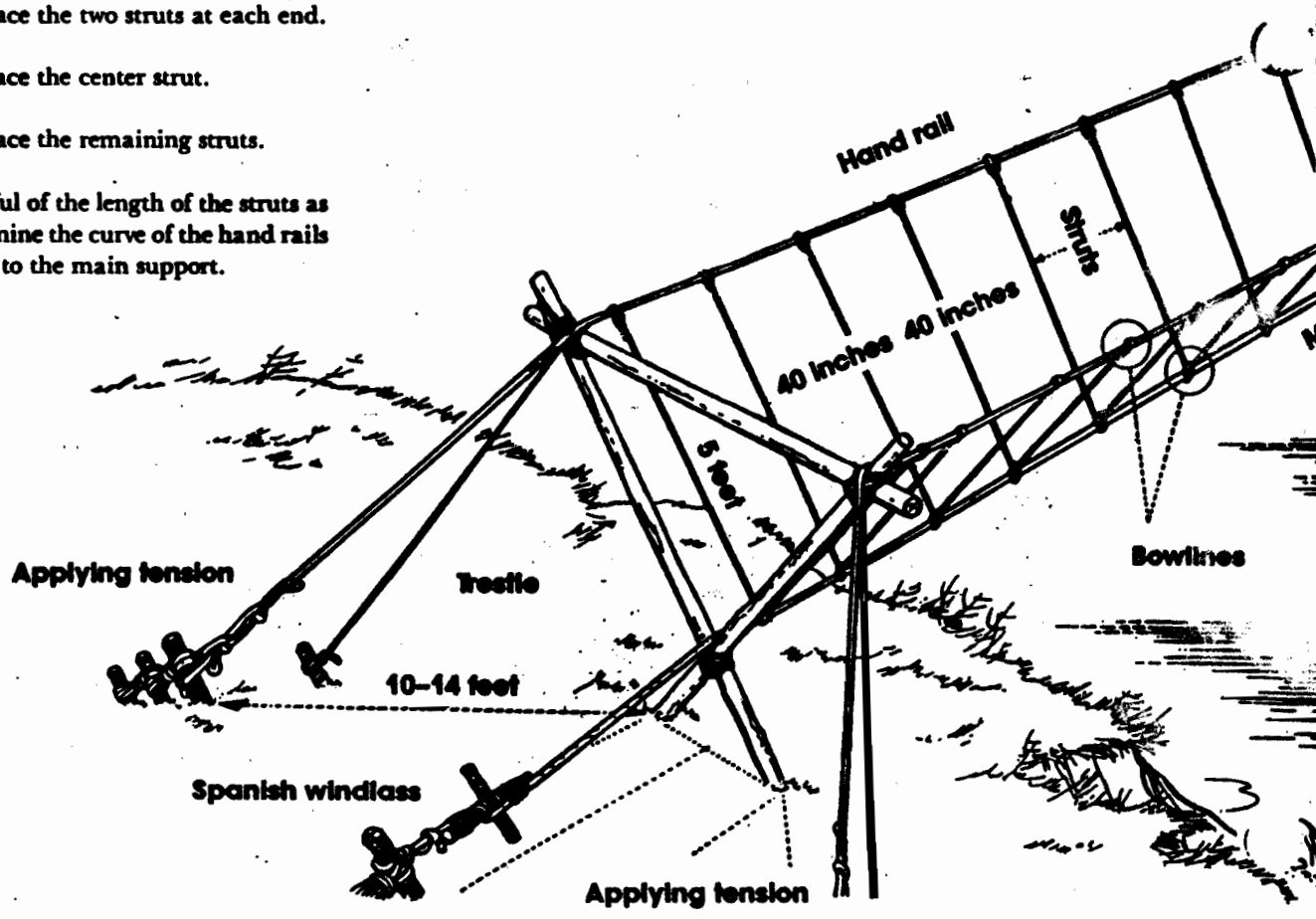
1. Place the two struts at each end.
2. Place the center strut.
3. Place the remaining struts.

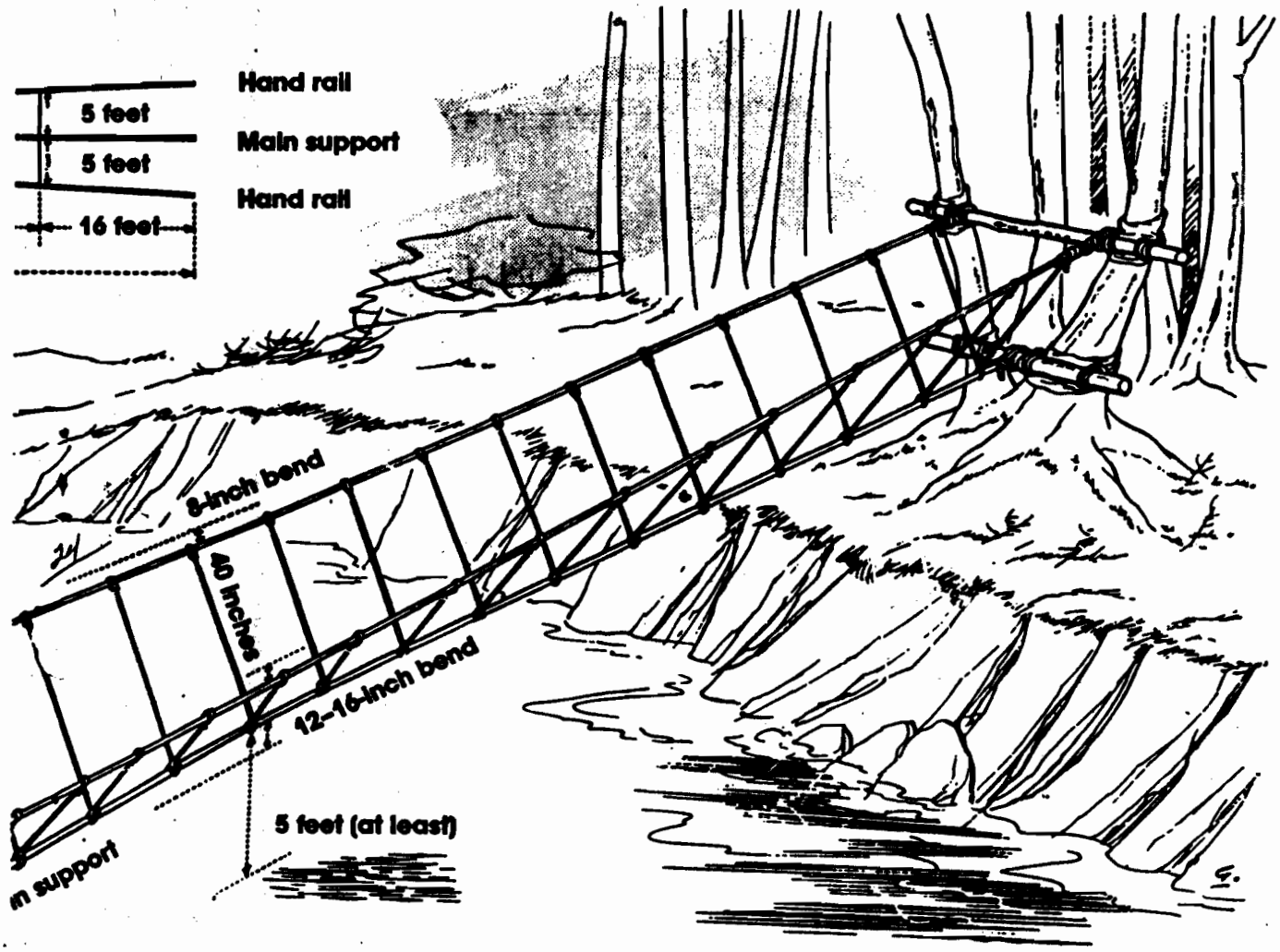
Be careful of the length of the struts as they determine the curve of the hand rails in relation to the main support.

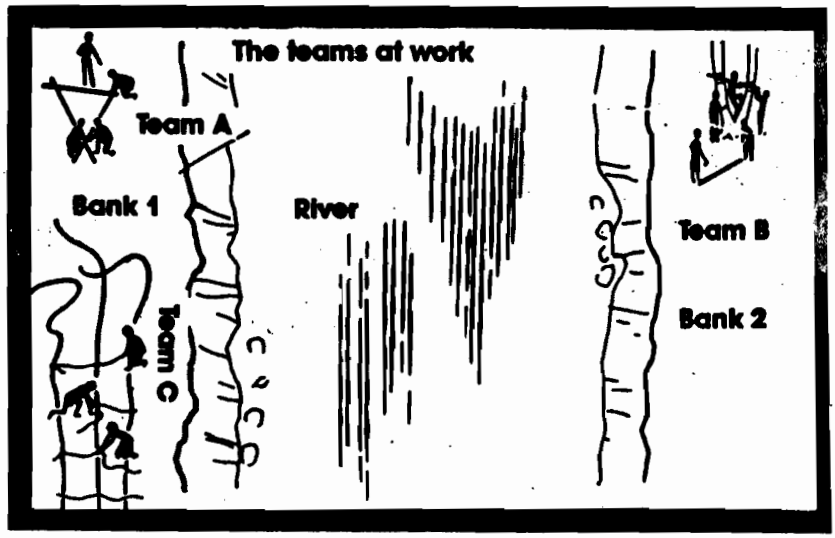
CONSTRUCTION



THE FINISHED BRIDGE




Hand rail
5 feet
Main support
5 feet
Hand rail
16 feet
8-inch bend
40 inches
12–16-inch bend
5 feet (at least)


The teams at work
Team A
Bank 1
River
Team B
Bank 2
Team C

Good work requires that the free ends of the bowlines on the struts be finished with a whipping.

1. When the bridge is complete, Team C ties together one end of the main support and hand rails to the fourth rope.

2. Meanwhile, Team A fastens the end of the ball of string to a stick and throws the stick across the stream.

   Attention: Watch the wind direction and throw with it. Should the stick fall into the water the team on the opposite side can fish it out by throwing a weighted string across it and drawing it to shore.

3. The other end of the string is fastened to the fourth rope and Team B now hauls the bridge across the stream by drawing in the string, the top, and then the bridge itself. Team A lets the bridge out over the top of the trestle and holds back when necessary to keep the bridge from touching the water.

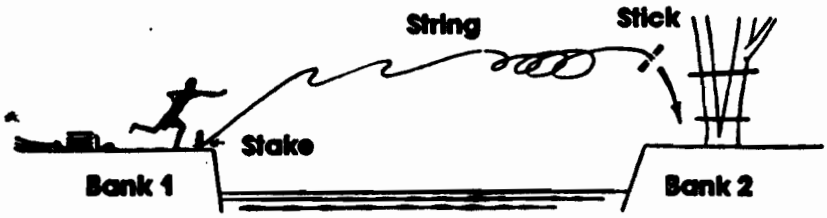
4. When the bridge is finally across, Teams A and B anchor their respective hand rails. One uses the anchor knot, the other the tension knot (sheepshank) with a half hitch and bowline. All anchorings must be solid and secure.

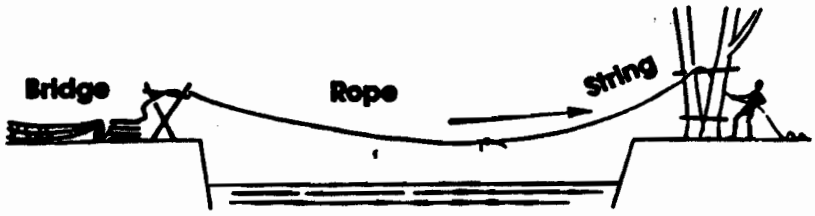
5. The main support which is still lying across the top crosspiece of the trestle is now slipped under it and solidly moored. Put an anchor knot at each end and a Spanish windlass on one end. When the tension is applied, the main support should then get its classic upward curve.

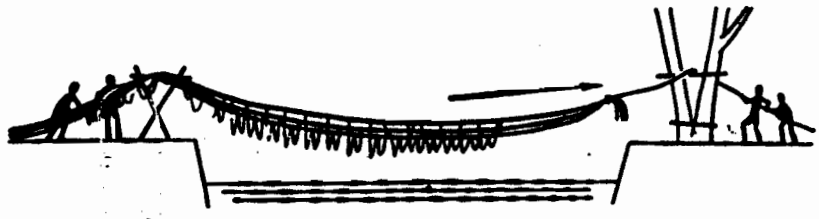
If adjustments need to be made to the struts, then Team C proceeds across the bridge and makes the necessary finishing touches.

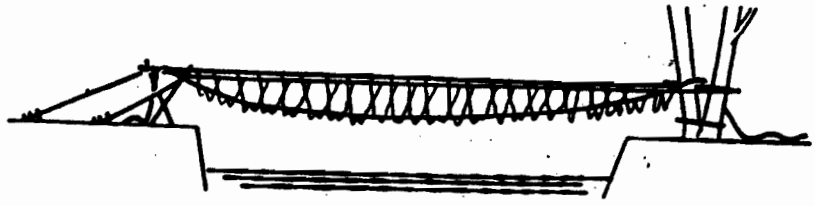
A trained troop (directed by an experienced leader who can supervise and coordinate the work) should complete this bridge in 3 hours.

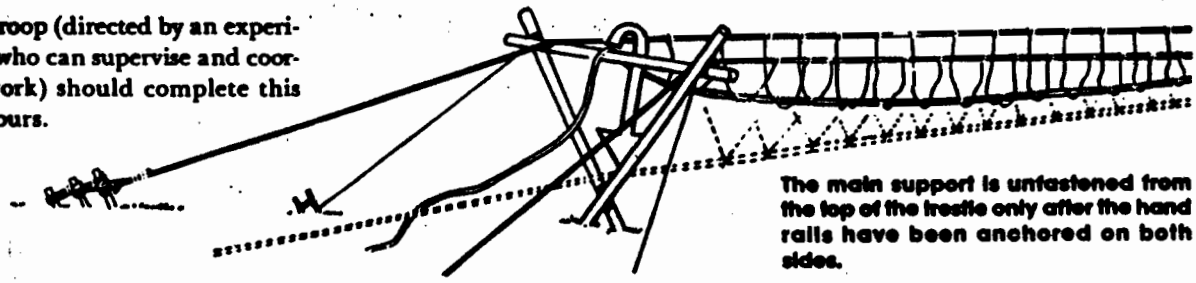
LAUNCHING



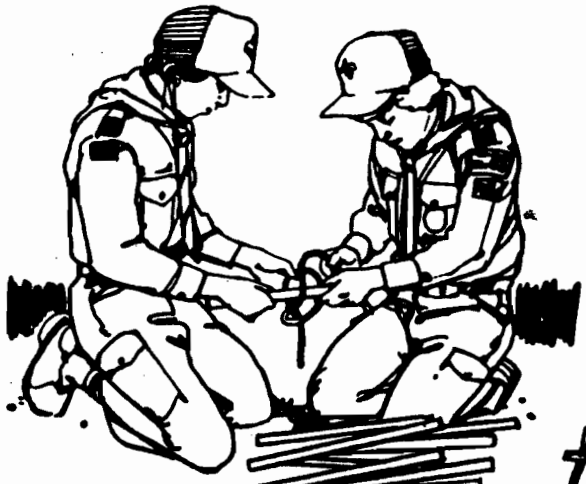




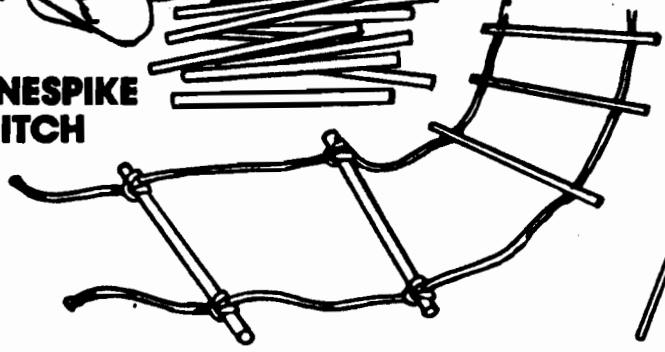




The main support is unfastened from the top of the trestle only after the hand rails have been anchored on both sides.

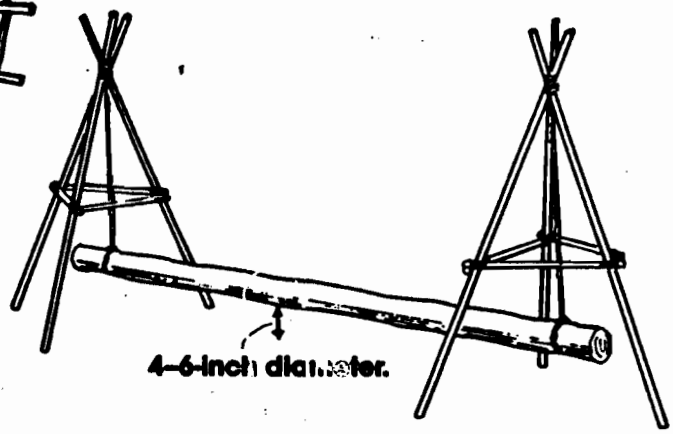


MARLINESPIKE HITCH



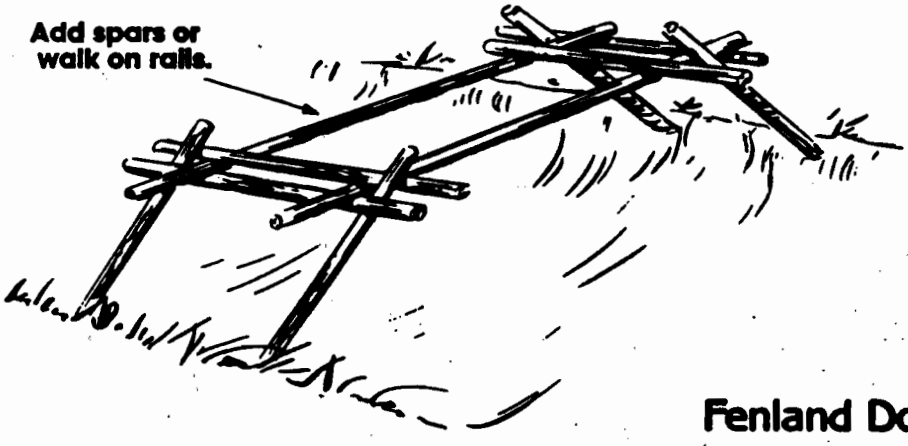
Log Walk Challenge

Construct the "Log Walk Challenge" illustrated here. To do so one Scouter, perhaps from your staff, will be asked to cut the spars you have provided, to specific lengths. Others can then be involved by having them build two tripods. Be sure the bottom of the tripod legs are braced well. Next, suspend the log, at least 4-6 inches in diameter, as shown in the illustration. The object is to walk the length of the log. This can be readily judged if part of the bark is peeled away from each end of the log. The walker must walk from bare wood to bare wood.



Camp Tabletop

For a folding tabletop in camp, use the slats and cord. Attach slats with marlinespike hitch. In camp, lash a simple frame and put the tabletop on it.



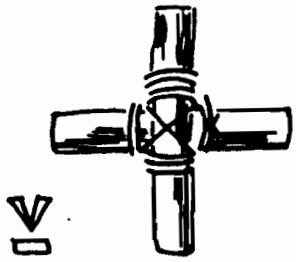
Fenland Double-Lock Bridge

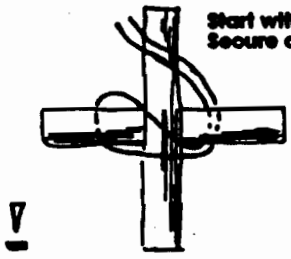
Make a Fenland double-lock bridge. Use spars 3-4 inches in diameter. If your meeting place won't allow for a full-size model, try making a small one. You will need some weights for the smaller one. Either one will take at least two sets of hands.

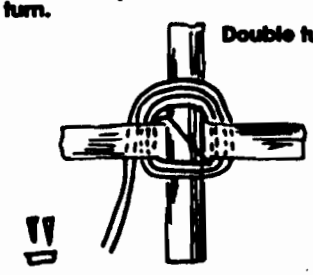
Japanese/Norwegian Square Lashing

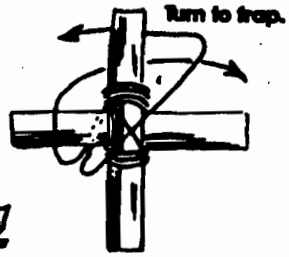
Experienced Scouters know how to tie a square lashing. This is a twist, sometimes called the Japanese square lashing, but if you're from Norway, it may be known as the Norwegian square lashing. More important though, it's simple and effective.

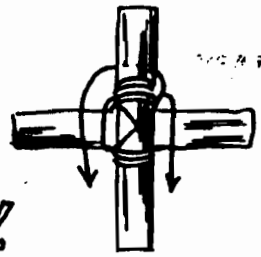
1. Start with a double rope. Secure and turn.
2. Double turn.
3. Turn to frap.
4. Complete the frap.
5. Finish with a clove hitch.







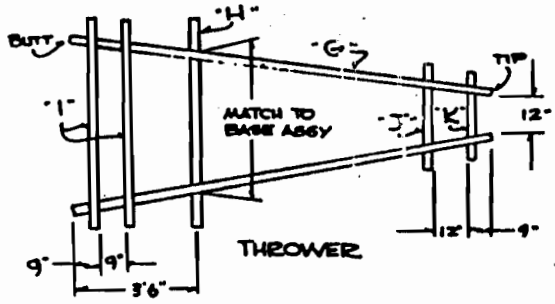


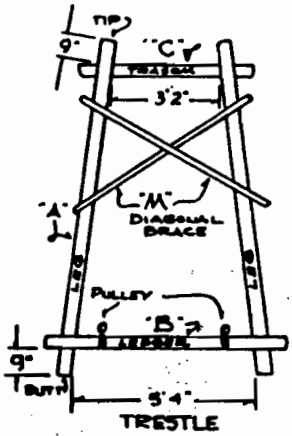


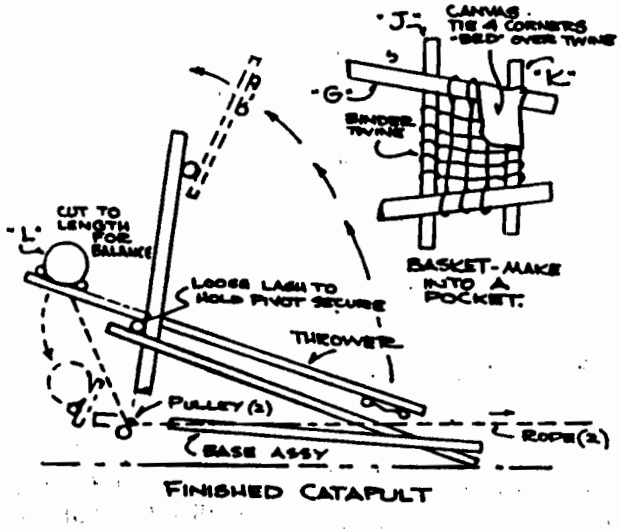
Catapult

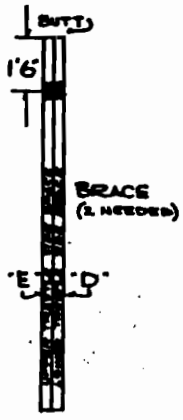
There are two keys to successfully constructing this catapult:

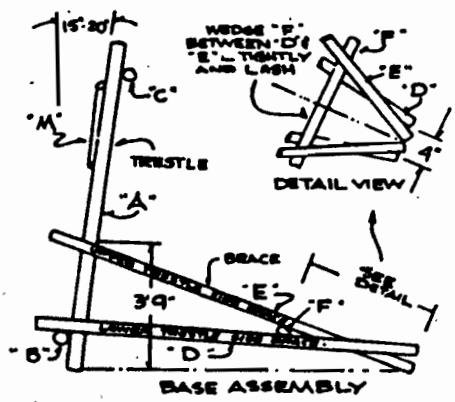
- Make all lashings proper and tight.
- Follow all directions and dimensions.











*Must be green hardwood and at least 2" diameter at the tip.

Catapult Parts List

Quantity	Part	Size
2	A	5" diameter x 10' long
1	B	4" diameter x 7' long
1	C	4" diameter x 5' long
2	D	4" diameter x 11' long
2	E	3" diameter x 10½' long
1	F	3" diameter x 5' long
2*	G	3" diameter x 12' long
1	H	3" diameter x 6' long
2	I	3" diameter x 6' long
1	J	2" diameter x 3' long
1	K	2" diameter x 2½' long
1	L	18" diameter x 2' long (Approximate length. Cut to balance.)
2	M	2" diameter x 6' long

Learn to Tie Knots

Learning to tie knots doesn't have to be dull. Demonstrate the following knot-tying games or others you are comfortable with.

- Using string, transport a paper cup of water from one table to another at least 6 feet away. The cup may not be punctured or touched by anything other than the string.

- Package wrapping. This may sound too simple. But, when the package is a basketball or soccer ball, the task takes on a new challenge. Use twine and newspaper. Each package is wrapped by two people, using only one hand each.

- Knot races. Depending on the size and age of a troop, some knot games may not be practical. But, the following list should cover any level of knot-tying skill.

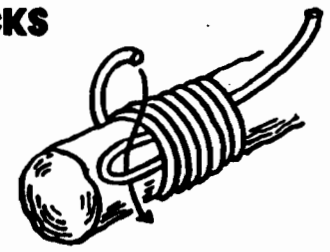
  1. Hold a relay with each member tying the same knot at one end of the room and returning to the other end of the room to tag the next patrol member.

  2. Each patrol, working as a team but with each member tying only one knot, ties all the knots required for Camping skill award.

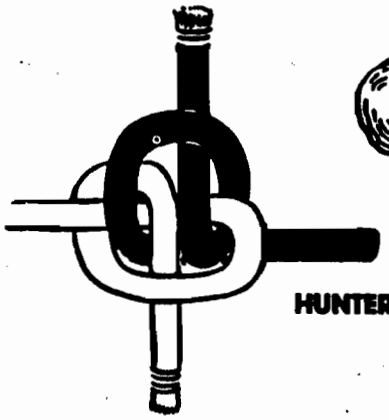
  3. Tie the same knots as above, but behind your back.

  4. Two Scouters must work together to tie a clove hitch around a tree or a pole. The twist is that each can put only one hand on the rope and cannot let loose of the rope until the hitch is secure.

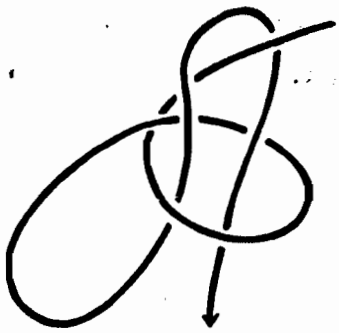
KNOT-TYING TRICKS



ROPE WHIPPING

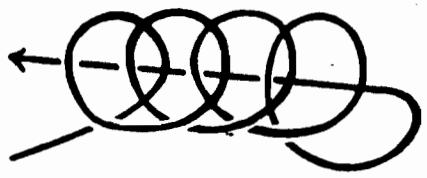


HUNTER'S BEND



EASY BOWLINE

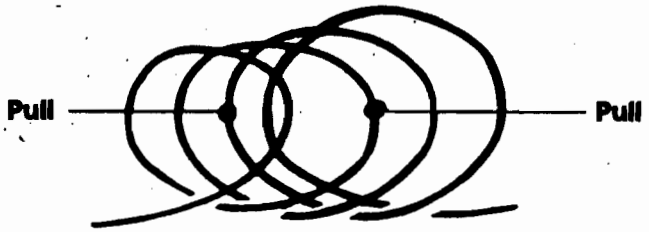
Pass bend up through hoop and over loose end. Pull tight.



KNOT LADDER

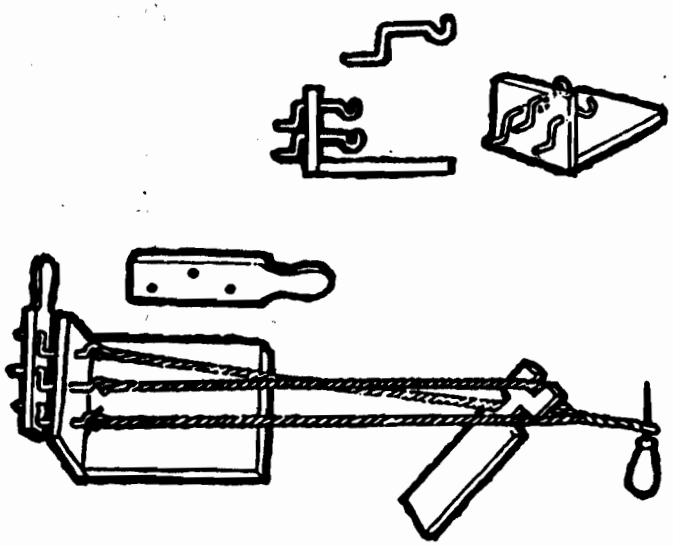
Make one overhand loop, followed by a series of underhand loops. Position loops one over the other. Pass free end through all loops and pull. A series of overhand knots will result.

SHEEPSHANK WITH A SQUARE KNOT IN THE MIDDLE

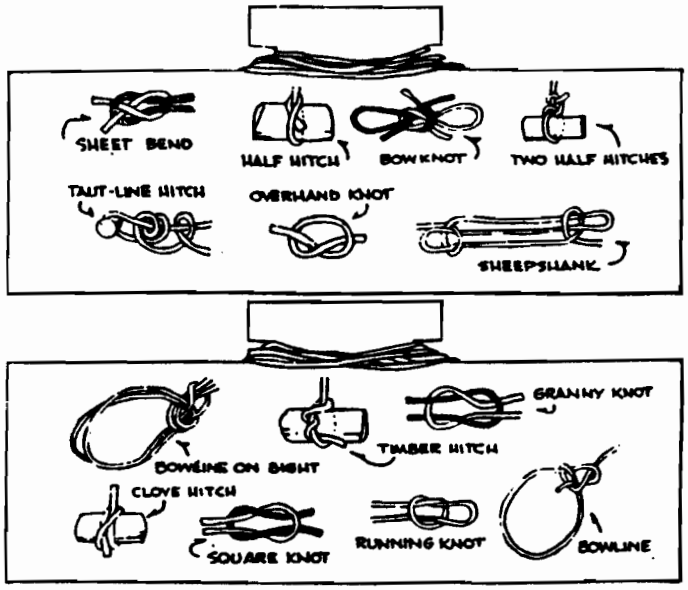


One overhand loop, followed by three underhand loops, each overlapping the first. Count three strands from left and right and pull through in both directions.

ROPE-MAKING MACHINE



PRACTICE KNOT BOARD



Demonstrate a "Tucked Eye Splice." If possible have enough lengths of rope so each Scouter can try his hand at it, too. Here's how to do it:

1. While holding a rope in both hands twist the right hand away from you and the left hand toward you, thus opening the lay of the rope. With the lay open, press your hands together. This causes the three strands to spring outward.

2. Arrange the loops in their natural order (see illustration) and pass the short end of the rope down through the loops.

3. Repeat the unlaying process on the short end and pass the longer length of rope down through the resulting loops.

4. Pull the two sets of loops together to tighten the eye.

TUCKED EYE SPLICE

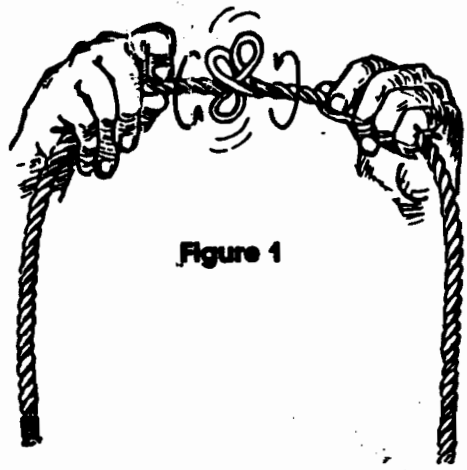


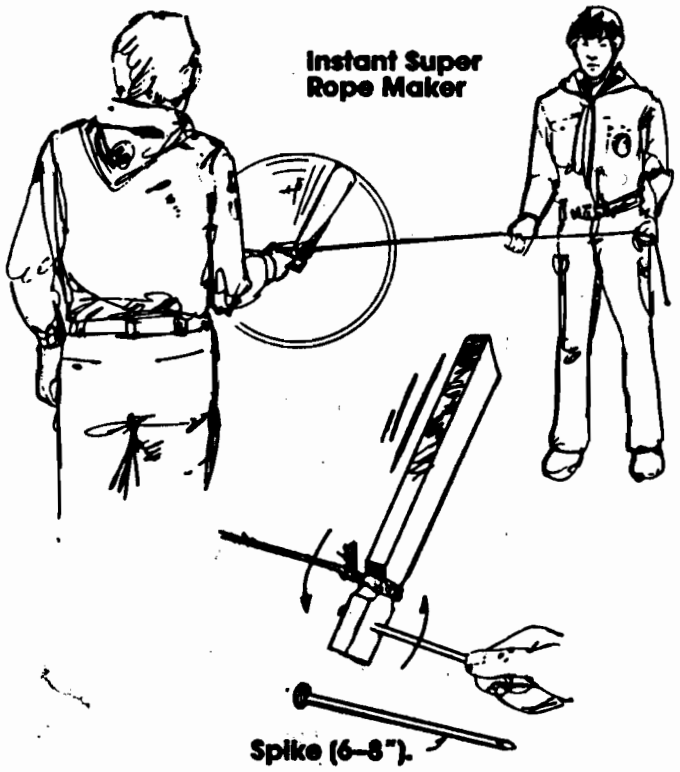
Figure 1

Figure 2

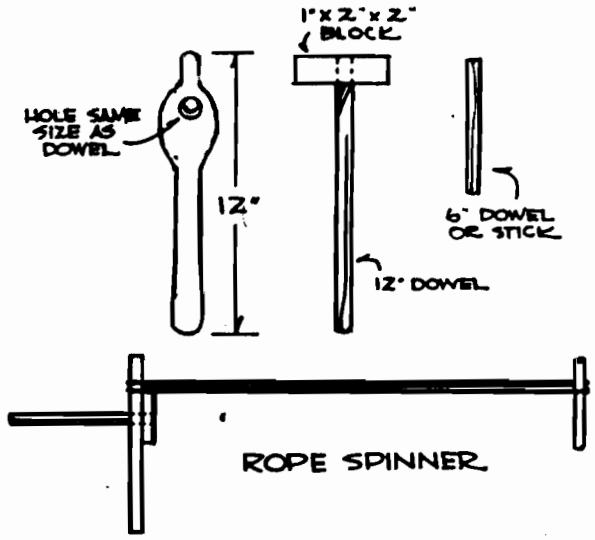
Figure 3

Figure 4

ROPE GADGETS



ROPE SPINNER

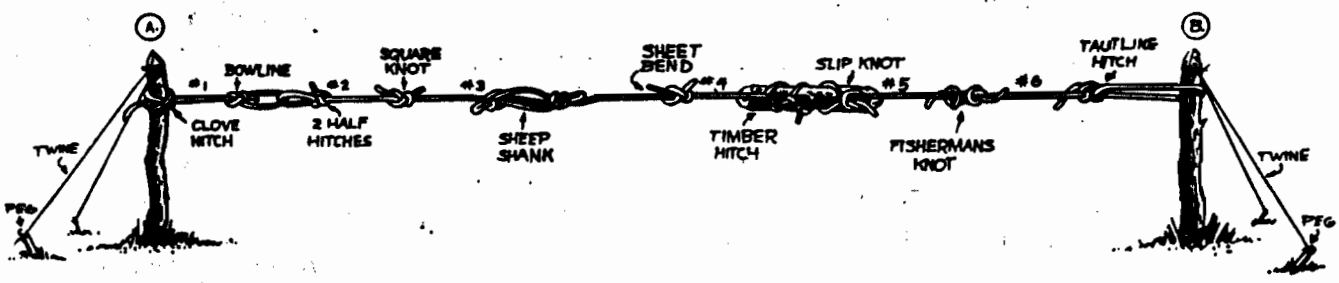


Tie a loop on each end of a long piece of binder twine or heavy cord. Attach the twine to the spinner as shown in the diagram so that you have 3 strands. Spin the spinner in a clockwise direction. When the twine is wound tight triple it again. A third person should do this so that the line can be stretched and held. Otherwise it will kink badly. Spin the spinner counterclockwise until rope is wound tight. Take the rope off the spinner, whip the ends, and it's ready to use.

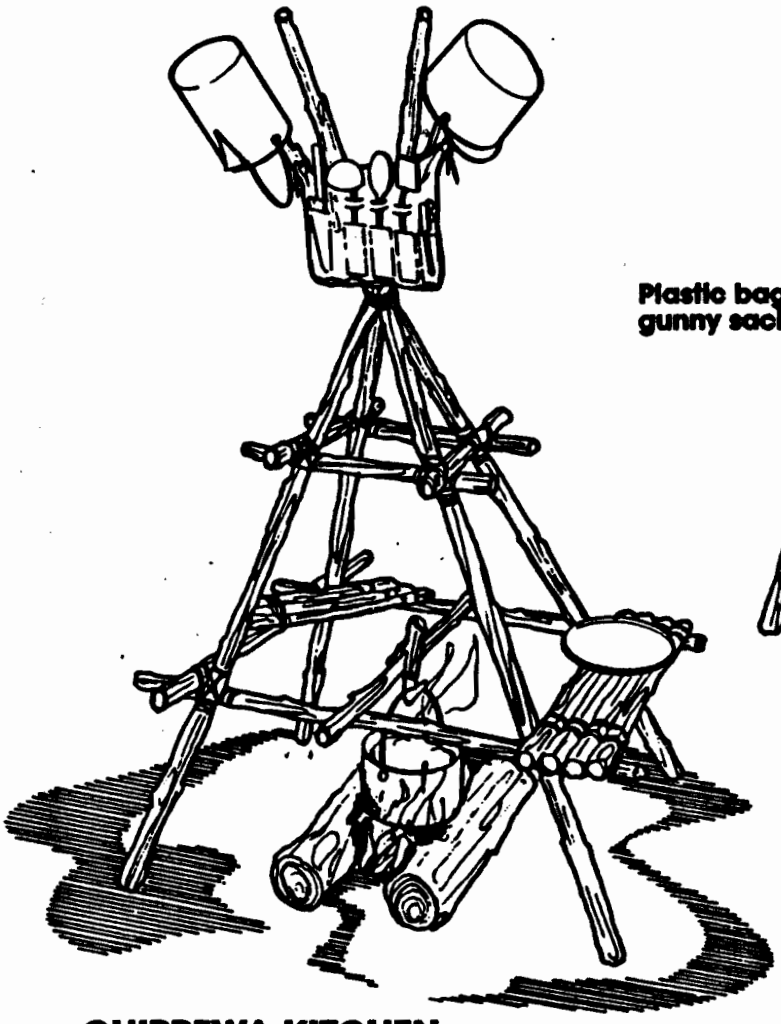
Drive two stakes into the ground about 30 feet apart. If played indoors, two heavy chairs may serve as stakes.

Run like any relay. Scout No. 1 ties rope to stake with clove hitch and ties bowline in other end. No 2. ties a rope to bowline with two half-hitches. No. 3 ties on the third rope with a square knot. No. 4 uses a sheet bend to tie third and fourth ropes together (the sheepshank comes later). Scout No. 5 ties the fourth rope to a log on the ground with a timber hitch. Scout No. 6 ties the fifth rope to the other end of the log with a slip knot. Scout No. 7 ties the fifth and sixth ropes together with a fisherman's knot, Scout No. 8 ties the sixth rope to the other stake using taut-line hitch, leaving it loose. The patrol leader then shortens the third rope with a sheepshank. Finally, the log is lifted off the ground by working the taut-line hitch.

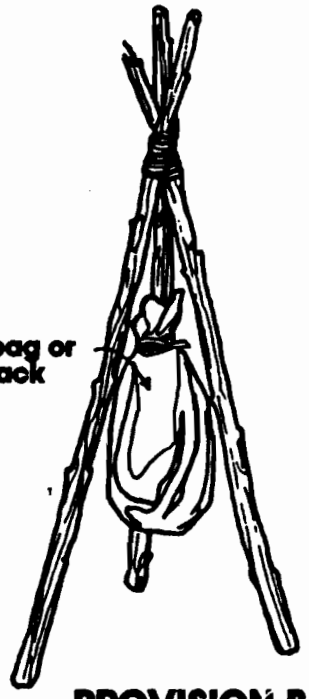
KNOT-TYING RELAY



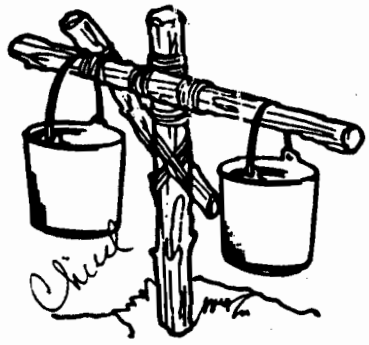
Constructing Camp Projects



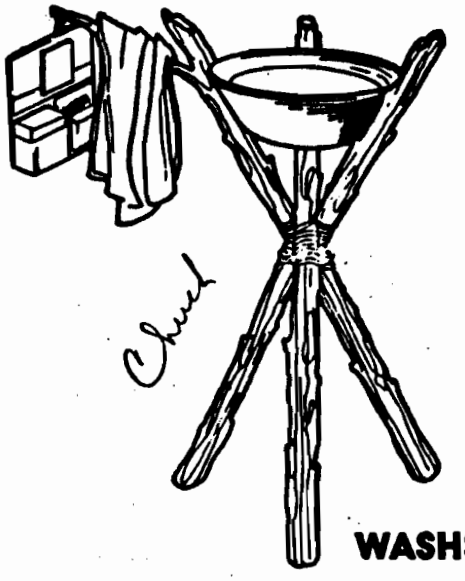
CHIPPEWA KITCHEN



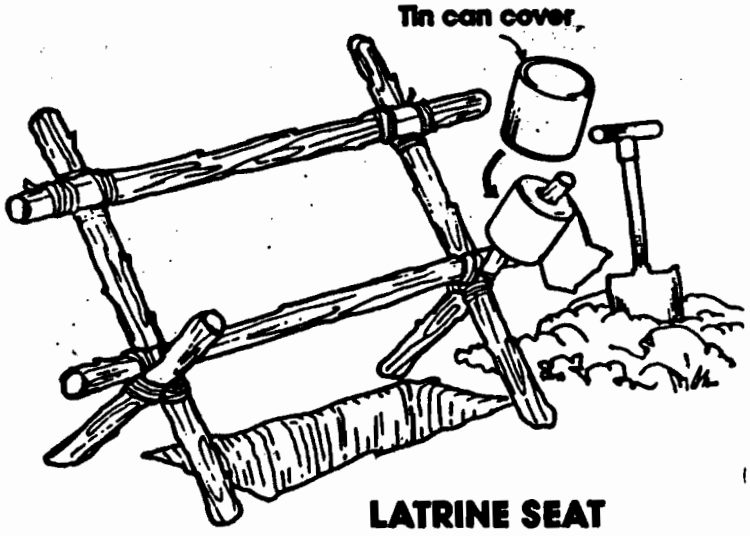
PROVISION BAG



FIRE BUCKET RACK

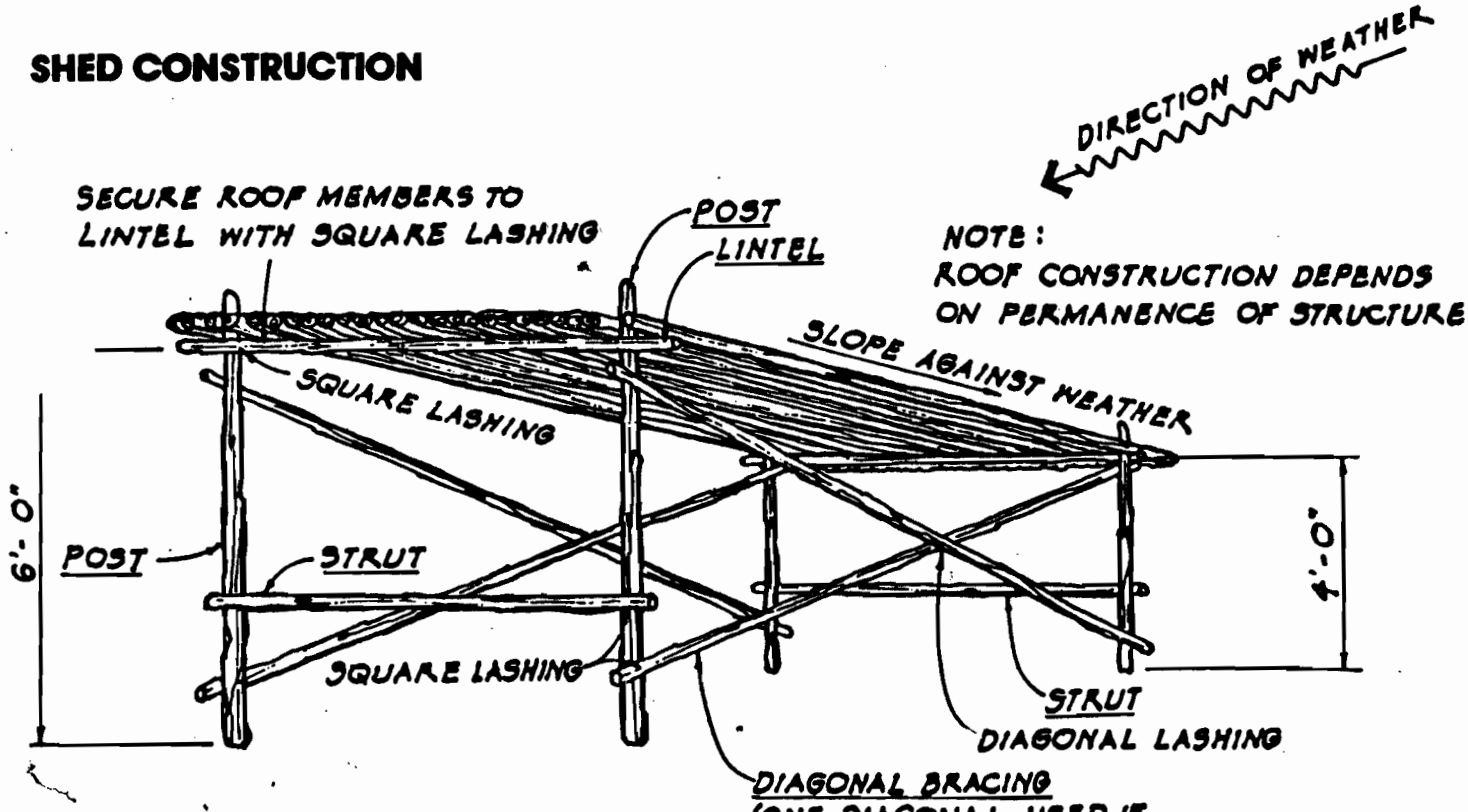


WASHSTAND



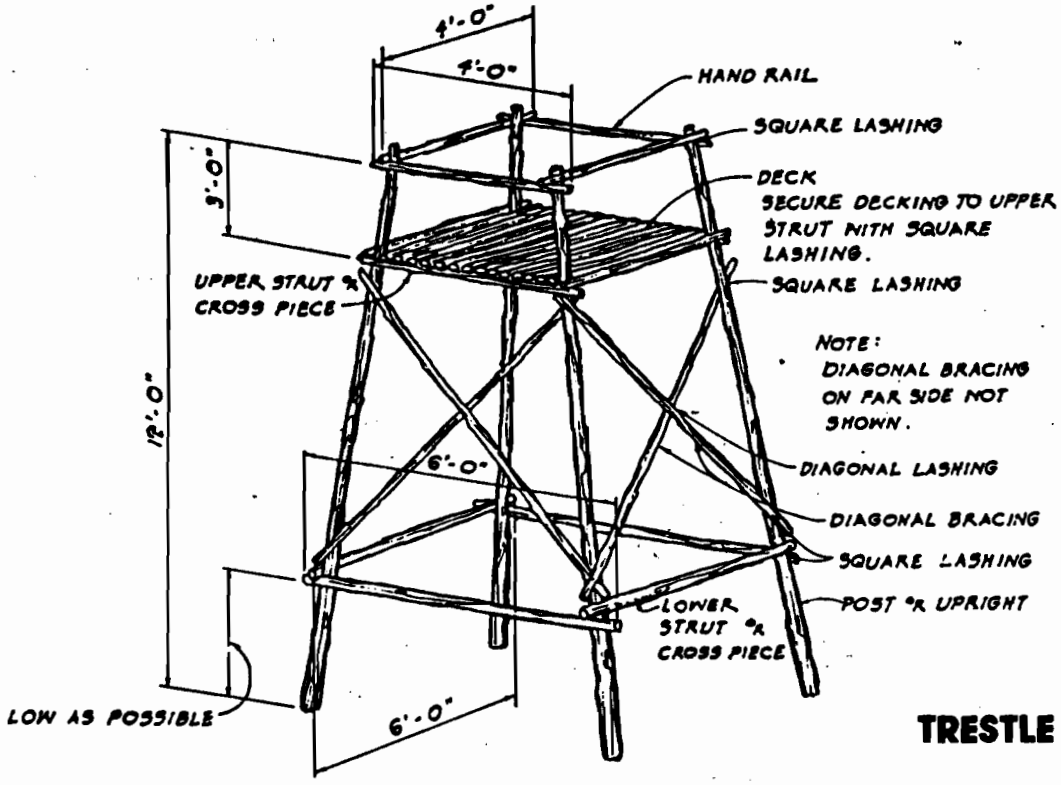
LATRINE SEAT

SHED CONSTRUCTION



Secure roof members to lintel with square lashing. Direction of weather. Post. Lintel. Note: Roof construction depends on permanence of structure. Slope against weather. Square lashing. Post. Strut. Square lashing. Strut. Diagonal lashing. Diagonal bracing (one diagonal used if post is securely driven into ground).

You're the architect! Your project shed need not be constructed as illustrated above. Follow good lashing methods and practices.

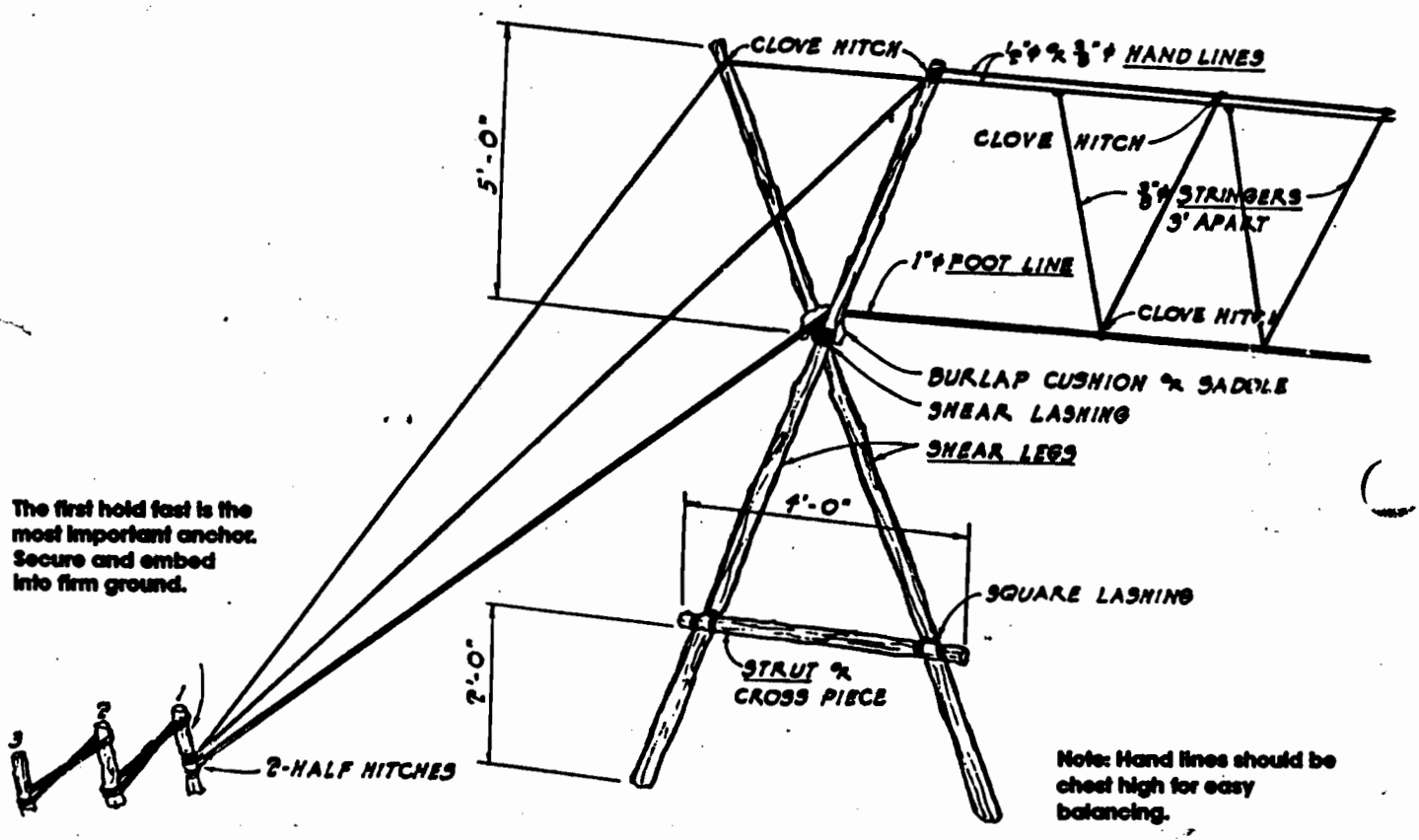


TRESTLE TOWER

MONKEY BRIDGE CONSTRUCTION

Logs required:

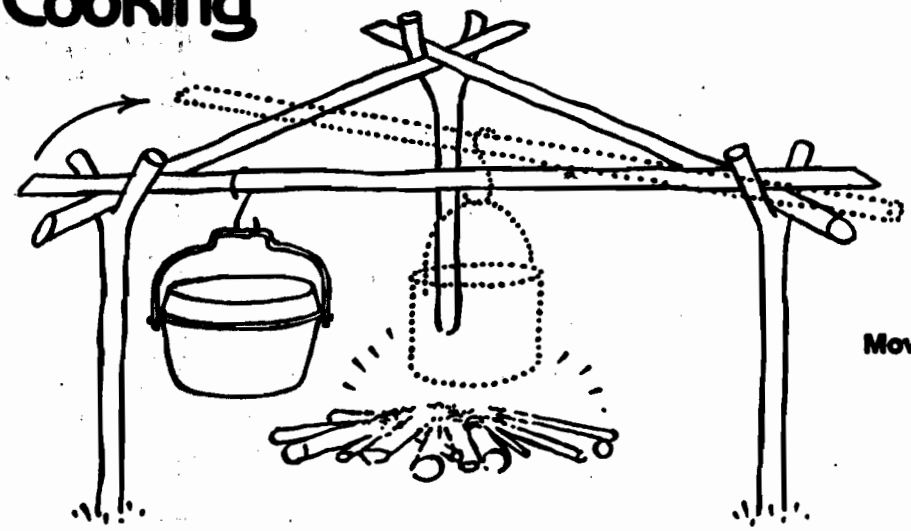
- **4–12' long, approximately 4" butt shear legs**
- **2–4' long, approximately 2"—struts hand lines**
- **6–3' long, approximately 2"—hold fasts Clove Hitch.**
- **Rope and lashing as required ⅜" stringers, 3' apart.**



The first hold fast is the most important anchor. Secure and embed into firm ground.

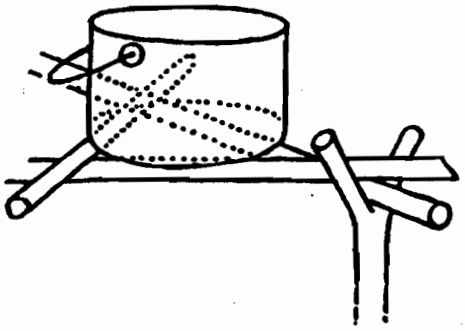
Note: Hand lines should be chest high for easy balancing.

Cooking



Move any stick over

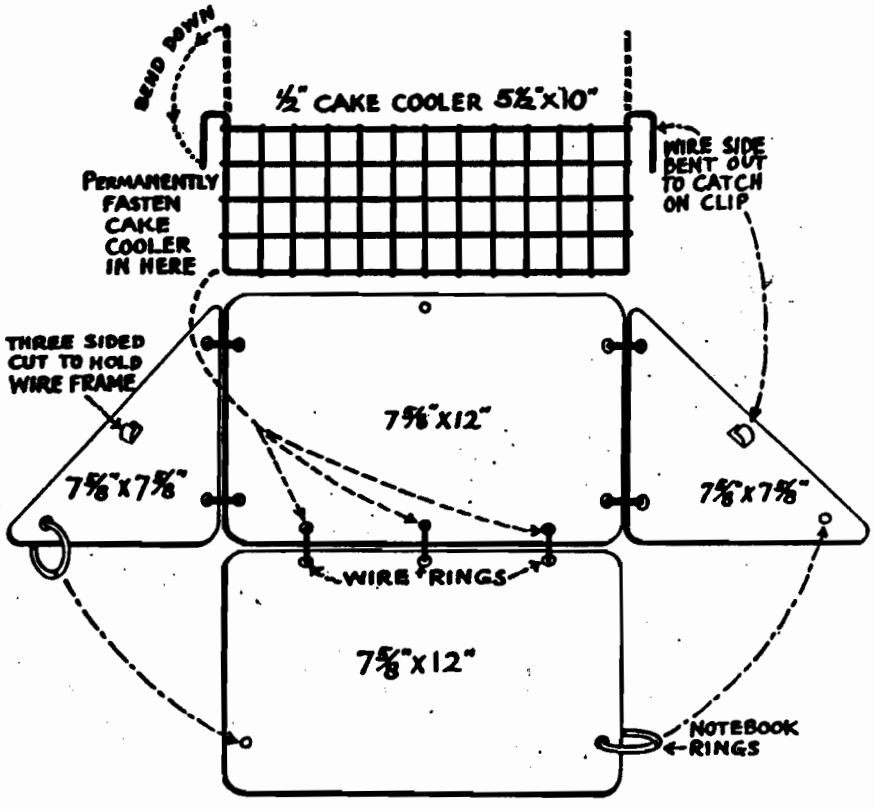
The Bangor Dixie Crane



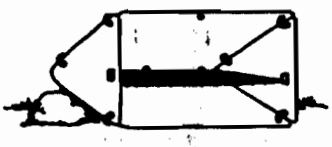
Rarely seen today, the Bangor Dixie Crane is the best of them all, say the veterans.

As the dotted "ghost" lines show, any of the top suspension sticks can be moved, so that dixies and billies can be moved over any part of the fire, for boiling or simmering. Also, utensils can be placed on other sticks, laid across as shown.

Rodgers Reflector Oven



This reflector oven folds flat, and is light weight.



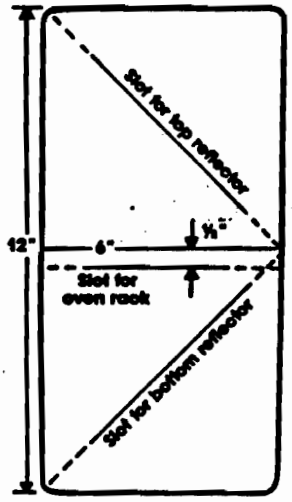
Backpacker's Oven

When you must carry all of your equipment, ounces and space become important. Here are two ovens, each fit into an envelope and weigh only 15 ounces. One oven fits together by sliding the reflector and rack tongues into the slots of the sides—this oven is rigid. The other model features a hinged back that lets you reposition biscuits in comfort from the back. Aluminum is sold in 36 by 36 inch sheets—enough for three ovens. Of course, if you prefer larger ovens you can make only two.

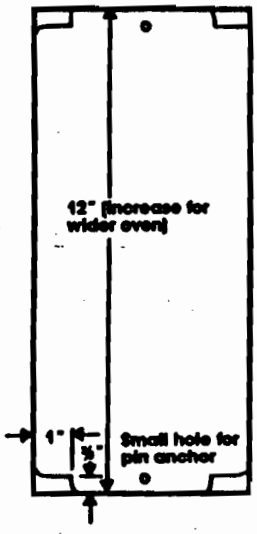
1. Make a fray jig for the side pieces. The jig should extend beyond the bench and be large enough to clamp securely to the bench. Frame the sides with lath or scrap plywood, but leave an opening in the front for a saber saw. Drill holes for the saw blade and cut slots in the jig. Make stop marks on the frames for the saw guides.

2. The top reflector pivots on a threaded rod that is rolled into the top edge. When the oven is taken apart, thread the nuts on the rod. The walls, trapping the tongues in the slots, are not needed because they can be replaced by small pointed sticks.

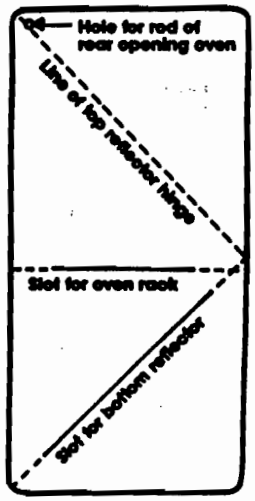
3. The rigid oven has no moving parts. If you must change the position of a biscuit, you must either move the oven or work close to the fire. There are no small parts to pack.



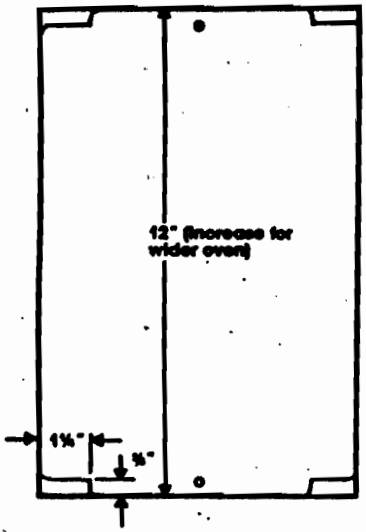
Side of reflector oven (two needed for rigid oven)



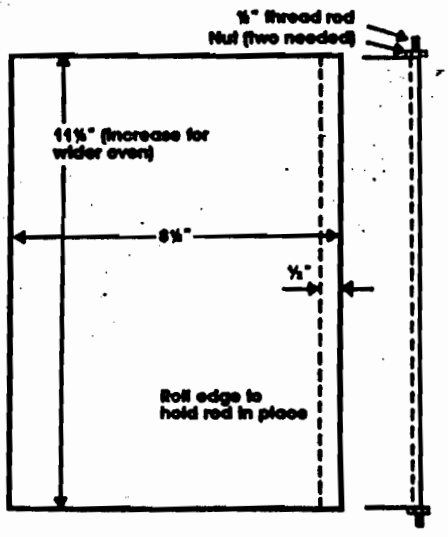
Oven rack (one needed)



Side of rear opening oven (two needed)

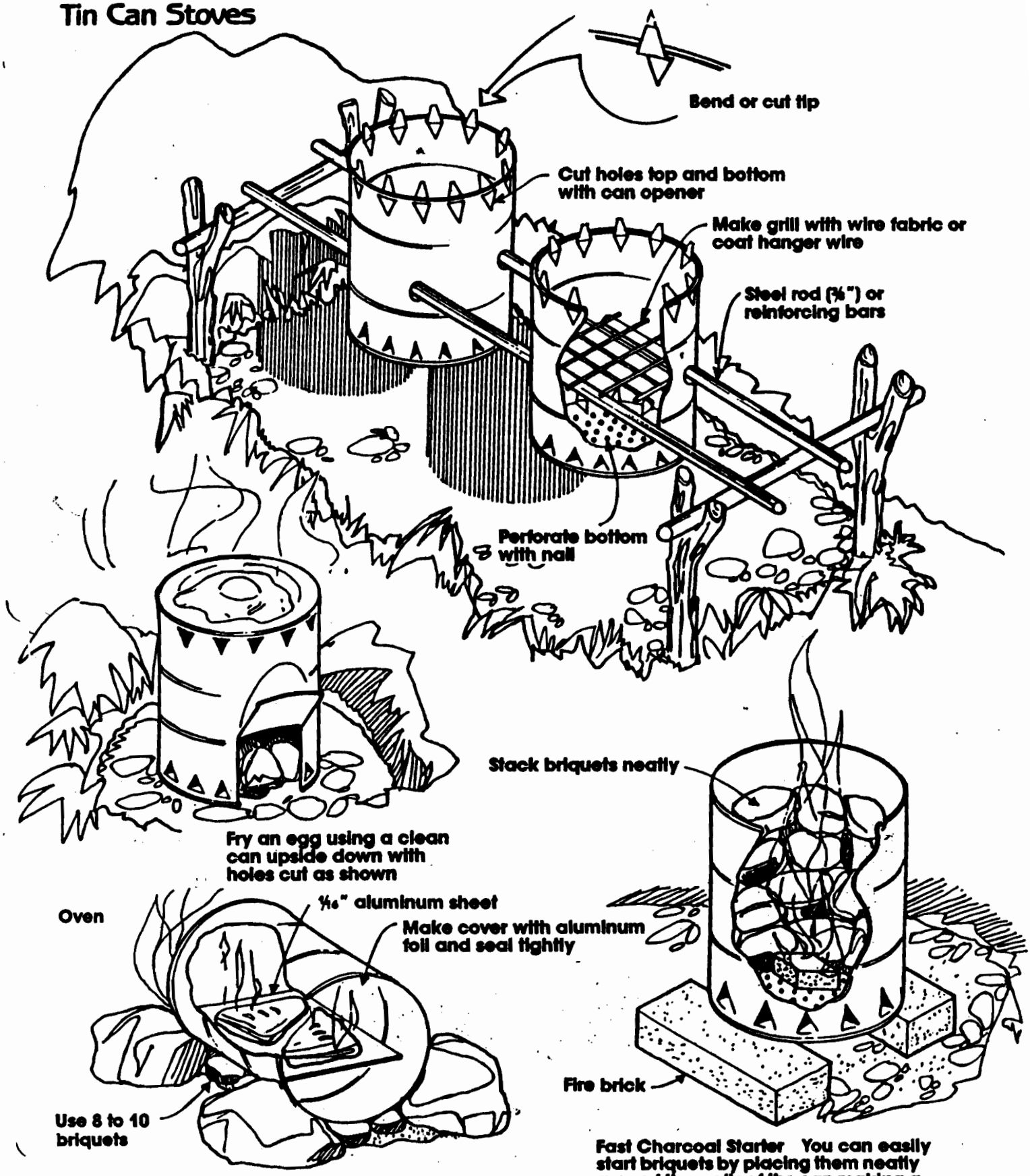


Top and bottom reflectors (Two needed for rigid ovens) or Bottom reflector (One needed for top hinged ovens)



Top reflector (one needed for rear opening oven)

Tin Can Stoves



Bake turnovers or muffins using can as oven over rock cradle.

Fast Charcoal Starter You can easily start briquets by placing them neatly around the walls of the can making a "hollow" in the middle. Place a fire starter and light. (See page 00 for fire starter instructions.)

Camp Can Craft

The sketches show some of the uses of the different size tin cans for camp can craft. Although only one sketch is given, some of the devices shown have several uses, depending upon the size of the can chosen and how it is used. Always be careful to crimp or file edges smooth. Handle carefully.

You can make everything you need to cook with on a patrol hike or troop camp and a lot of other interesting and useful gadgets to boot. No, it doesn't cost a thing—just a little thought, planning, and time. Sure, you can still get them! It depends on the kind you want as to where you look. The number 10s and the 5-gallon squares you can get from a restaurant, hotel, or filling station; the big round ones from a fish store or a bakery; the little ones you can have your boys bring from home. All you need is a can opener, a pair of tin snips, a pair of pliers, a little wire, a nail for a punch, a metal file, emery cloth, and an old pair of gloves to protect the hands. Be careful of sharp edges. Crimp edges over with a pair of pliers and pound them down, or strike the edges with a file and round them off with emery cloth.

Uses for the 5-gallon square (1):

- Troop or patrol water can (1)
- A simple reflector oven (2)
- An improved reflector (3)
- A dishpan, sterilizing basin, or a footbath (4)
- A stove (5)

Uses for the No. 10 and associates (38):

- Charcoal stove (using triangular can opener)
- Stove (inverted) (36)
- Nesting pails save space (37)
  - — Water bucket
  - — Stew kettle
  - — Fire bucket (painted red)
- Double Boiler (34)

Crimp an edge and choose size (35):

- Coffee pot
- Tea pot
- Water pitcher
- Milk pitcher
- Syrup pitcher

Cut it down to size:

- Stew pan (25)
- Cereal bowl (25)
- Saucer (25)
- Sugar bowl (26)
- Plate (27)
- Serving dish (26, 20)
- Pot cover (27)

By special design:

- Frying pan (24)
- Griddle (27)
- Skillet (24)
- Grill (from opened side of No. 10) (16)

Jobs for the No. 2½ and No. 3 (9):

- Cup (10)
- Dipper (11)
- Dipper (12)
- Potato masher (9)

From a flat piece:

- Pancake turner (17)
- Grater (19)

When both ends are still in:

- Tray (20)
- Serving dish (20)
- Cutlery holder (20)
- (Finger bowl?) (20)

With a small can (13):

- Biscuit cutter (14)
- Broom holder (23)
- Salt and pepper shaker (15)

A job for the long ones (6):

- Sconce (7)
- Rolling pin (8)
- Stove pipe (5a)

A vote for the 11th point of the Scout Law:

- Patrol wash can (32)
- Soap dish (33)
- Shower (29)

Special devices:

- First Aid Can (contains band-aids, Unguentine and antiseptic right where a boy can get at it for minor scratches and burns) (31)
- Troop or patrol mailbox (30)
- Shower (29)
- Strainer (29)
- Flour sifter (29)
- Sterilizer—(when it contains cutlery to dishes and dipped in larger can of boiling water) (29)
- Sundial (28)

Specialized design:

- Bucket stove (same as 36, made from an old bucket)

Introducing the fish can—(not shown in sketch):

- Dish pan
- Dish sterilizer
- Bread can
- Refrigerator—when weighted at edge of stream

By their size ye shall know them:

- Sugar scoop (18)
- Flour scoop (18)
- Dirt scoop for latrine (18)

At night they serve:

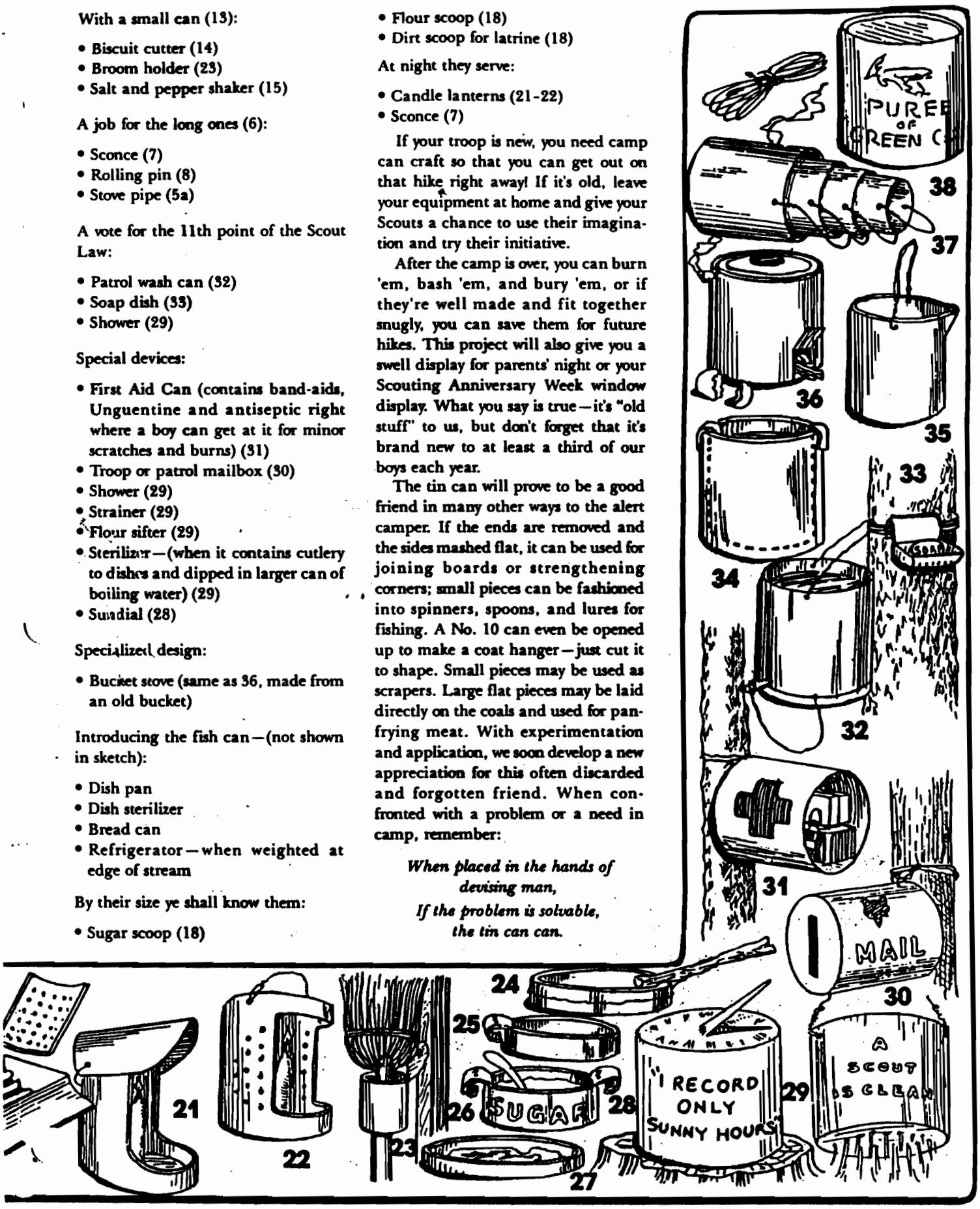
- Candle lanterns (21-22)
- Sconce (7)

If your troop is new, you need camp can craft so that you can get out on that hike right away! If it's old, leave your equipment at home and give your Scouts a chance to use their imagination and try their initiative.

After the camp is over, you can burn 'em, bash 'em, and bury 'em, or if they're well made and fit together snugly, you can save them for future hikes. This project will also give you a swell display for parents' night or your Scouting Anniversary Week window display. What you say is true—it's "old stuff" to us, but don't forget that it's brand new to at least a third of our boys each year.

The tin can will prove to be a good friend in many other ways to the alert camper. If the ends are removed and the sides mashed flat, it can be used for joining boards or strengthening corners; small pieces can be fashioned into spinners, spoons, and lures for fishing. A No. 10 can even be opened up to make a coat hanger—just cut it to shape. Small pieces may be used as scrapers. Large flat pieces may be laid directly on the coals and used for pan-frying meat. With experimentation and application, we soon develop a new appreciation for this often discarded and forgotten friend. When confronted with a problem or a need in camp, remember:

When placed in the hands of
devising man,
If the problem is solvable,
the tin can can.



Temperature Chart

Determine the approximate temperature of a fire by the number of seconds you can hold your hand over the coals. Be careful not to burn yourself.

Approximate Temperature	Type Fire	Seconds
250-325 degrees	Slow	6-8
325-400 degrees	Medium	4-5
400-500 degrees	Hot	2-3
Over 500 degrees	Very Hot	1

Paper Cup Hard-Boiled Egg

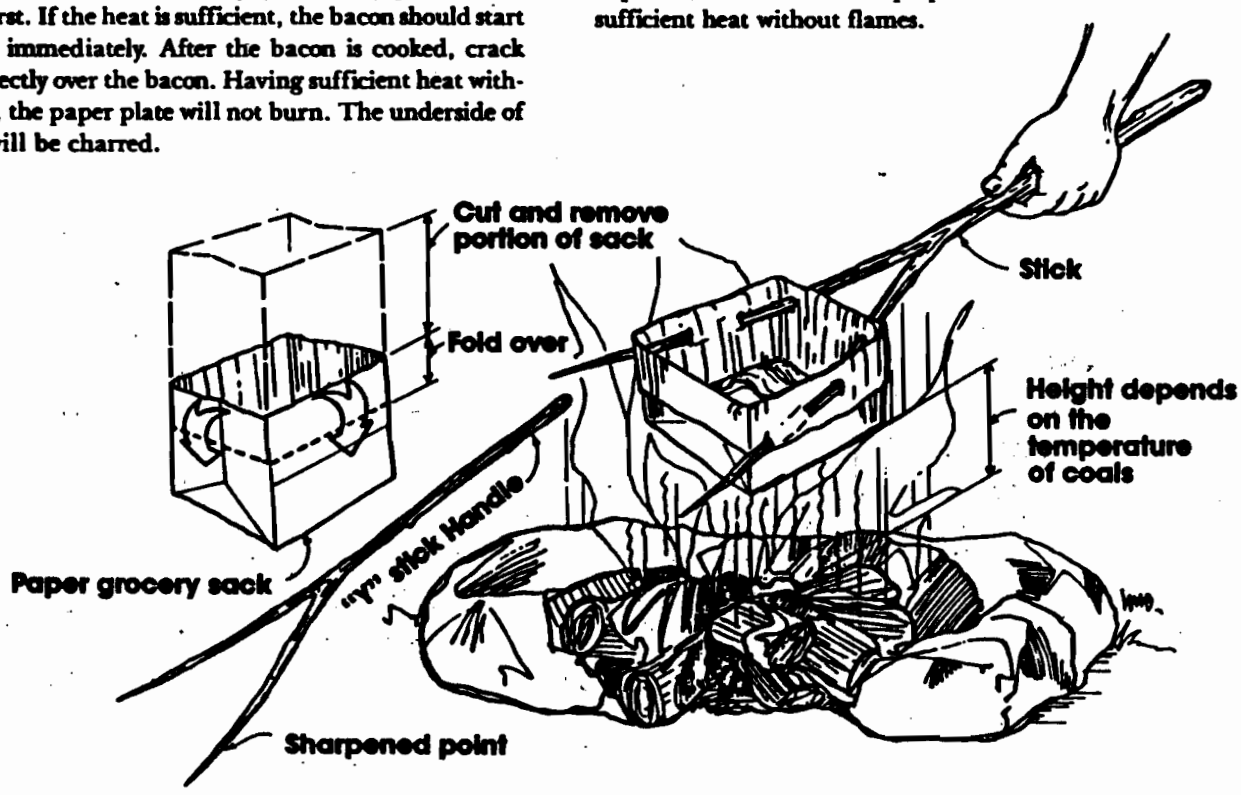
Fill unlined, unwaxed hot paper cup with water (¾ full). Allow water to boil. Place egg into cup. You may use aluminum foil to cover cup but be sure to puncture the foil to vent steam. Use caution when removing egg. A pair of metal tongs should be nearby.

Paper Plate Bacon and Egg

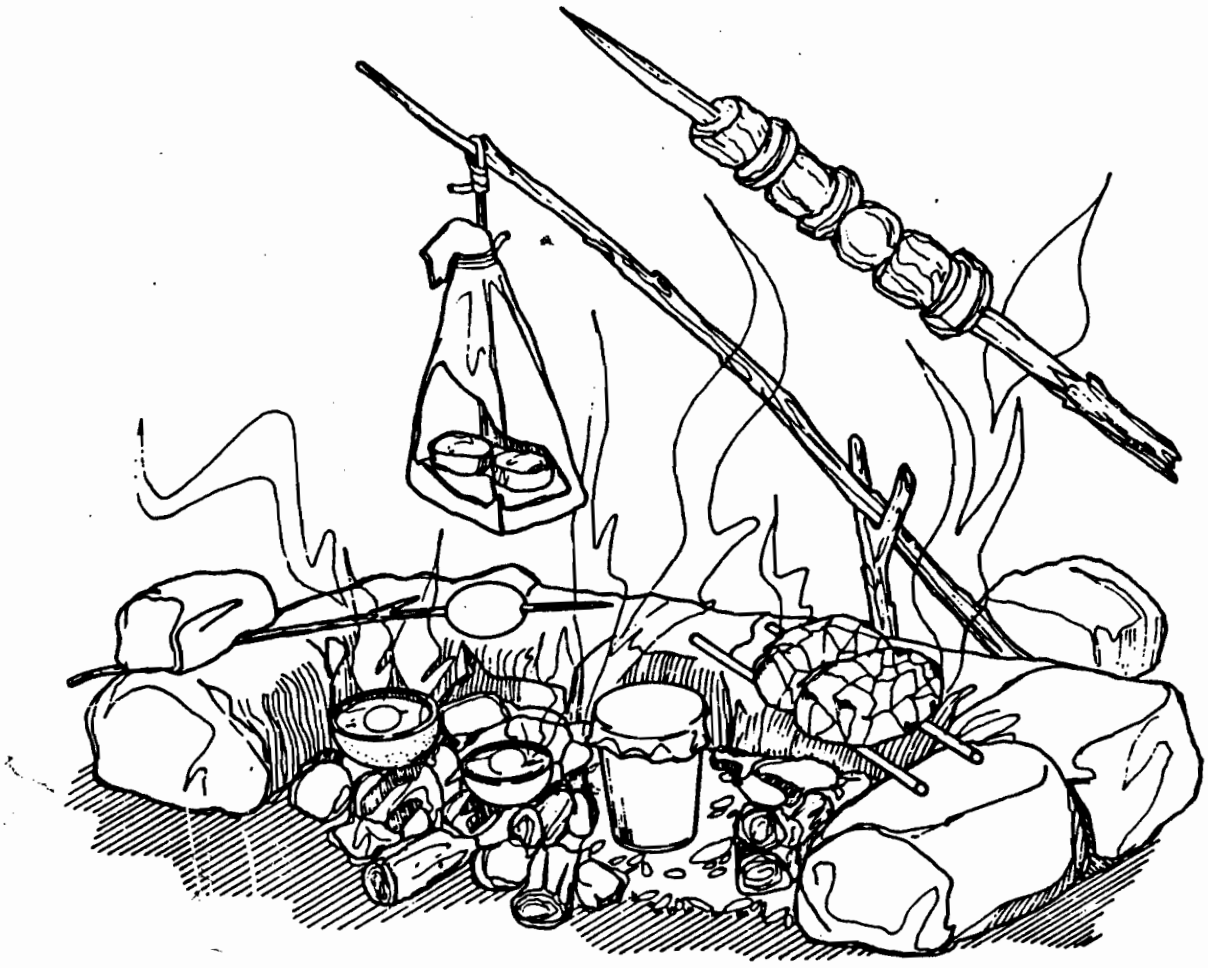
Using an unlined, unwaxed paper dining plate, place bacon in first. If the heat is sufficient, the bacon should start simmering immediately. After the bacon is cooked, crack the egg directly over the bacon. Having sufficient heat without flames, the paper plate will not burn. The underside of the plate will be charred.

Grocery Sack Bacon and Egg

Prepare and fold the brown grocery sack as shown. Be sure the sack is clean and empty. Find a suitable "handle" and make a pan as shown. Place the bacon in the sack first. Cook the bacon and then place your egg. Cooking time depends on the heat of the prepared coals. Be sure to have sufficient heat without flames.



BREAKFAST OVER HOT COALS USING PAPER GOODS



Brown-Bag Biscuit

Saturate bottom and sides of paper bag with cooking oil. Place prepared dough in bag and heat. Bag should hang high enough not to burn but low enough to receive good heat.

Egg on a Stick

Pierce small holes in egg and pass stick through egg. Heat over coals. Be sure the stick is from a nonpoisonous plant. Avoid holly, yew, elm, or laurel.

Kabob

Skewer 1-inch cubes of meat. Sear meat until brown. Remove from stick. Then add onions, green pepper, and tomatoes between meat. Broil over coals. Turn occasionally until done.

Orange or Onion Shell Eggs

Cut orange in half and remove meat of same. Crack egg into peel and place directly on coals. Do the same using a hollowed onion for onion flavored eggs.

Paper Cup Rice

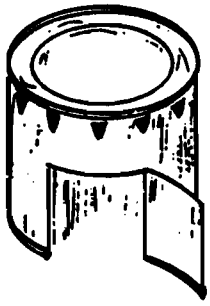
Rinse half a cup of rice and add water just below top of cup. Seal top with aluminum foil and place close to coals but not directly on the coals. Use unlined, unwaxed hot cups.

Hot Potatoes

Wrap cleansed potato in aluminum foil and place over strong heat. Bake approximately 1 hour, turning side to side occasionally. Stick a knife or fork into potato to check doneness.

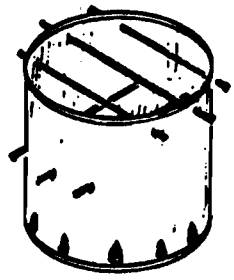
More Things to Make for Camp

HOBO STOVE

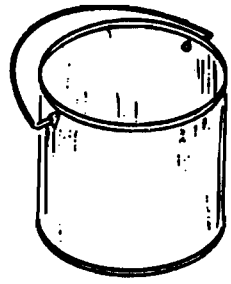


Punch out with triangular beverage can opener.

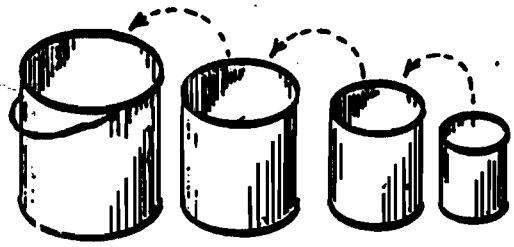
TIN CAN CHARCOAL STOVE



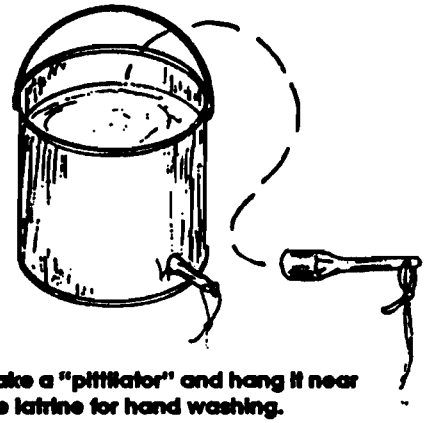
Use coat hanger wire through holes punched with nail.



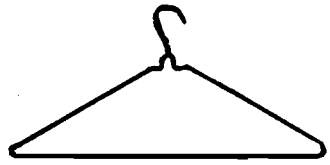
Holes punched in cans and fitted with coat hanger wire bails make good camp pots.



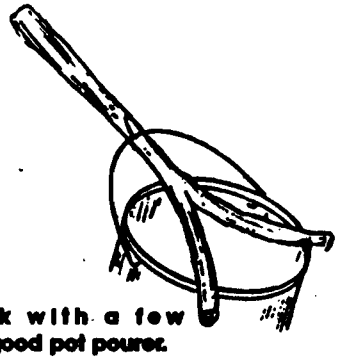
NESTING TIN CAN POT SET



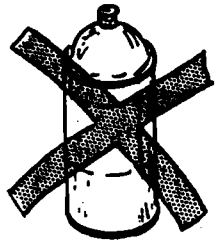
Make a "pittiator" and hang it near the latrine for hand washing.



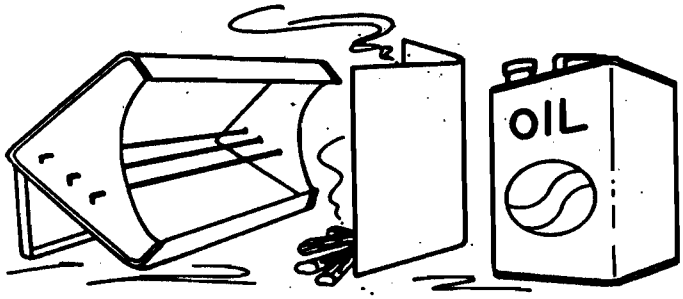
Coat hanger wire has endless use around camp.



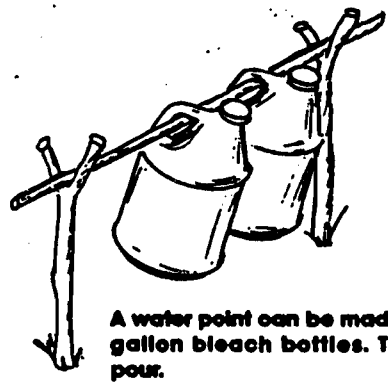
A forked stick with a few notches makes a good pot pourer.



Don't use insect spray or spray repellant in camp. It'll take the waterproofing out of the tents!

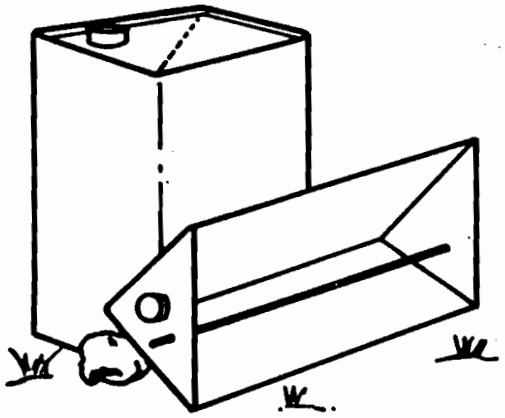


Reflector oven and windbreak from one 5-gallon tin.

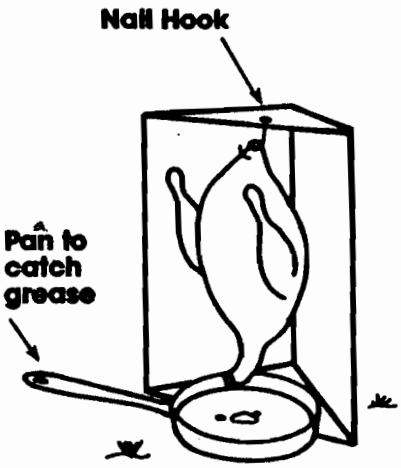


A water point can be made from 1½ gallon bleach bottles. Tip 'em to pour.

Tin Can Cookery



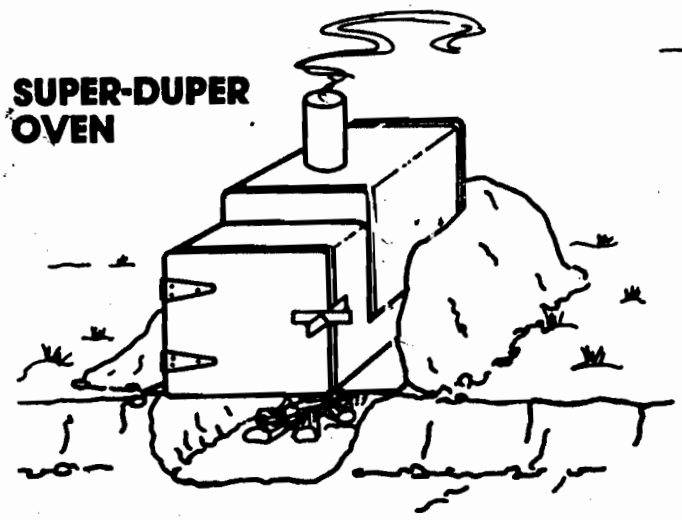
TWO-WAY REFLECTOR



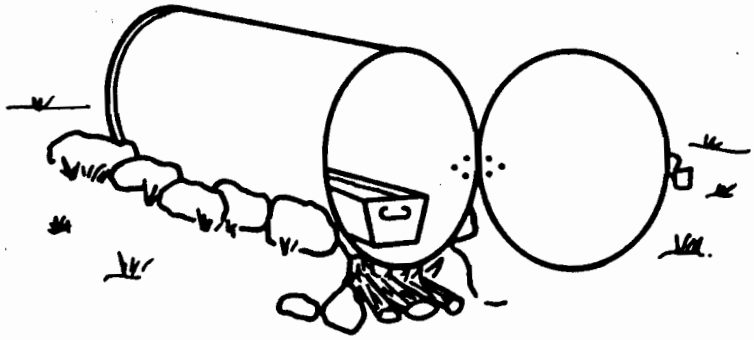
BUCKET STOVE

This bucket stove is so efficient you only need small kindling wood and pencil-size sticks.

SUPER-DUPER OVEN

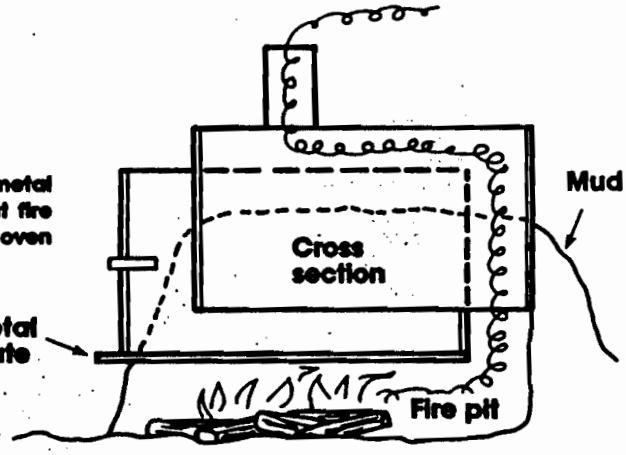


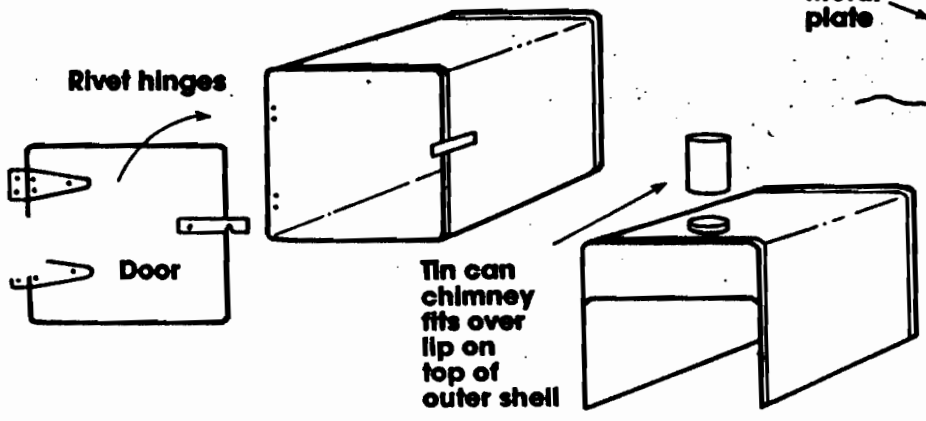
Made from two 5-gallon oil cans with a tin can chimney.



CIRCULAR TIN CAN OVEN WITH HINGED LID

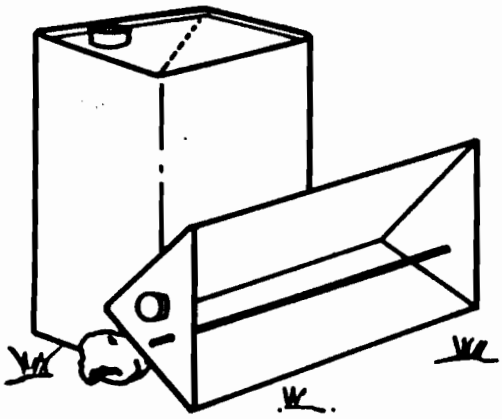
Works best if fire pit is dug into small bank. Place metal plate over pit and place oven on top to prevent fire from direct contact with oven. Pack mud around oven to make air tight.





Top surface can be used for cooking.

Tin Can Cookery



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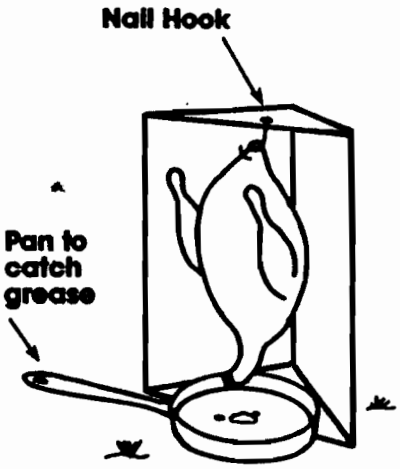

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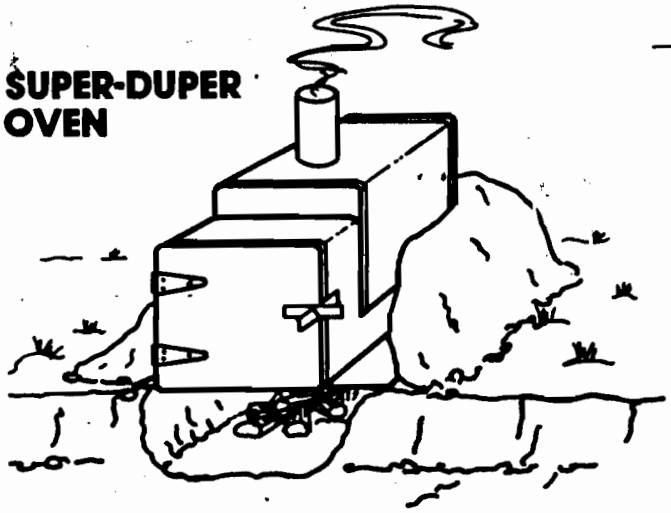

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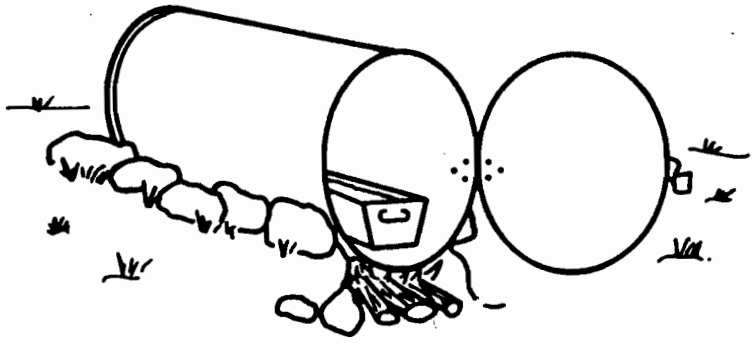

CIRCULAR TIN CAN OVEN WITH HINGED LID

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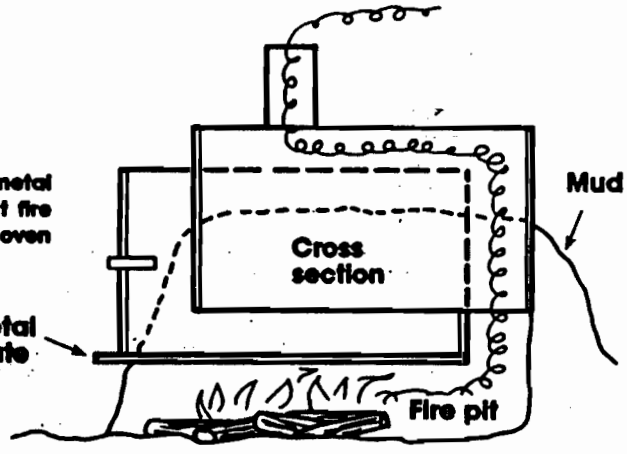
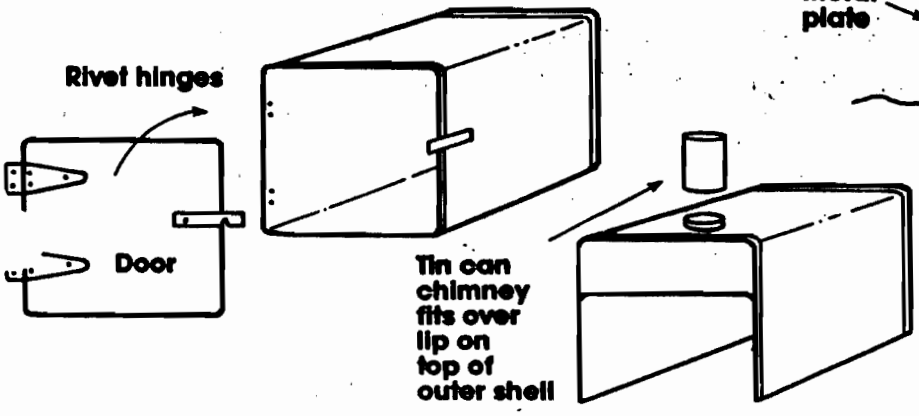




Top surface can be used for cooking.

Box Oven Baking

Box oven cakes are fun to make and delicious to eat in the out-of-doors. You don't need to wait for a special occasion to make one.

Materials

Cardboard box, approximately 12" x 16" x 14" deep for large cake; 12" square for smaller cake.

Aluminum foil

Scotch or masking tape

Knife

4 to 6 empty 12-oz beverage cans

Charcoal

Plastic roasting wrap (optional)

Cake pan

Cake mix and/or ingredients

Canned frosting

Decorator frosting with fancy tip, tube or push-button can

Directions

For a 9-inch by 13-inch cake, cut the top flaps off a large box. Line the inside of the box with aluminum foil, bringing the foil around the edges and down the outer side about 4 inches. Anchor with tape. If you want to watch what is happening in your oven, cut a square hole in the solid top of the oven box and tape clear plastic roasting wrap tightly over the hole.

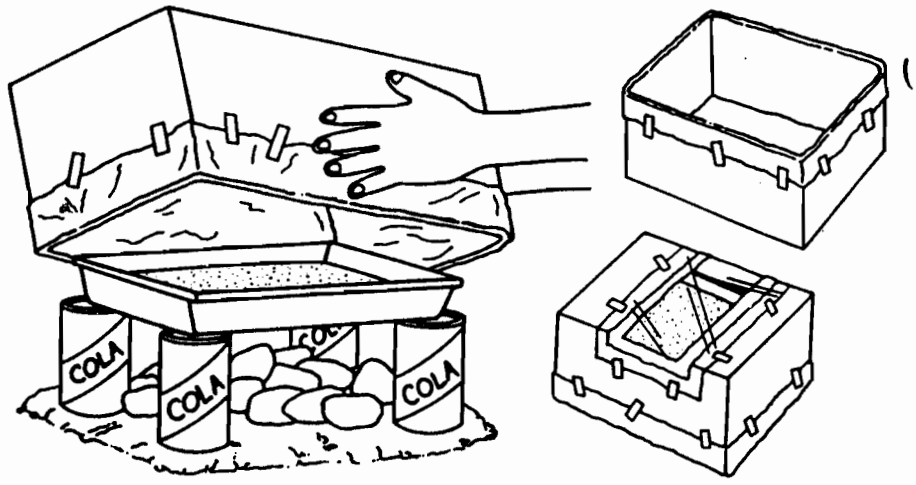
Fill four empty beverage cans about half full with sand or dirt, place them in the charcoal pit so each can will support a corner of your cake pan.

Light 14 pieces of charcoal; then mix your cake.

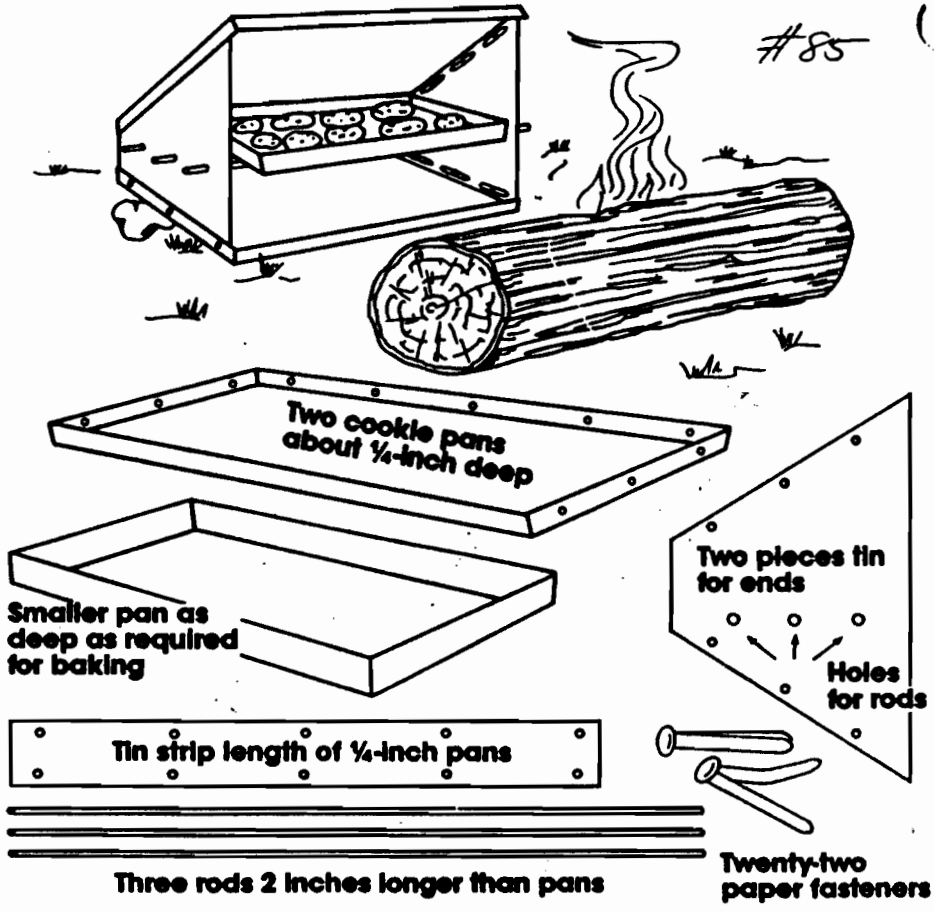
When the charcoal is giving off even heat, spread the coals, set cake pan on the beverage cans and place cardboard box oven over the pan. Make a small gap for air at each end of the oven by scraping some dirt away. Air circulation is needed to keep the charcoal burning.

Bake cake for the length of time specified in the recipe. Do not peek! Lifting the box will cause the oven to lose heat.

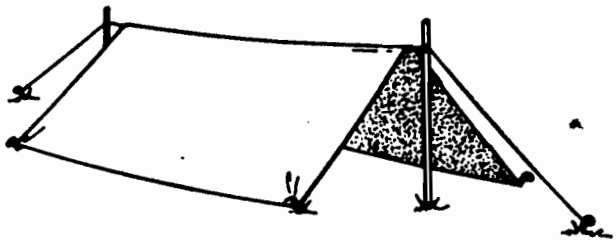
If you use an 8-inch square pan and a 12-inch square box for the oven, light only 12 pieces of charcoal.

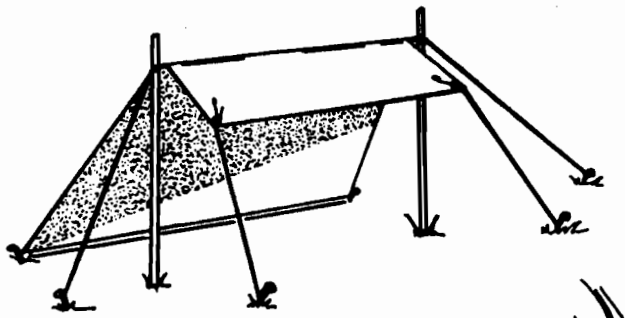


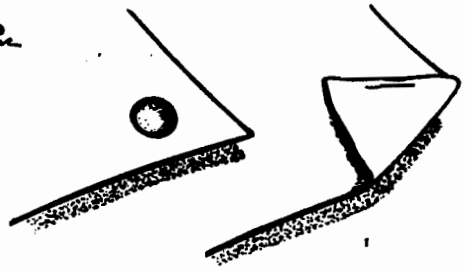
COOKIE PAN REFLECTOR OVEN



Odds and Ends

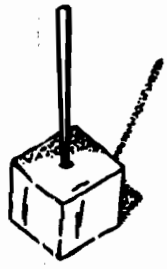




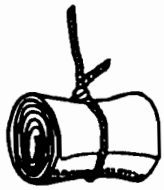


Builder's plastic can be used for ground cloths and to improvise tents and flies. Tie a small stone in the corner with the tent rope. It won't easily rip out.

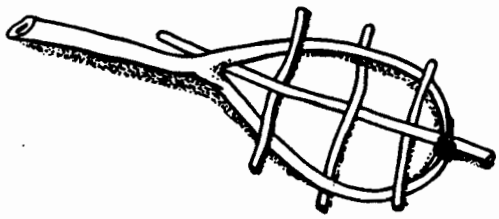
Film cans make good personal salt and pepper shakers. Close the top with tape—stick it on the side when in use.



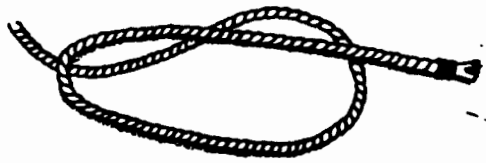
Dip with tooth pick.



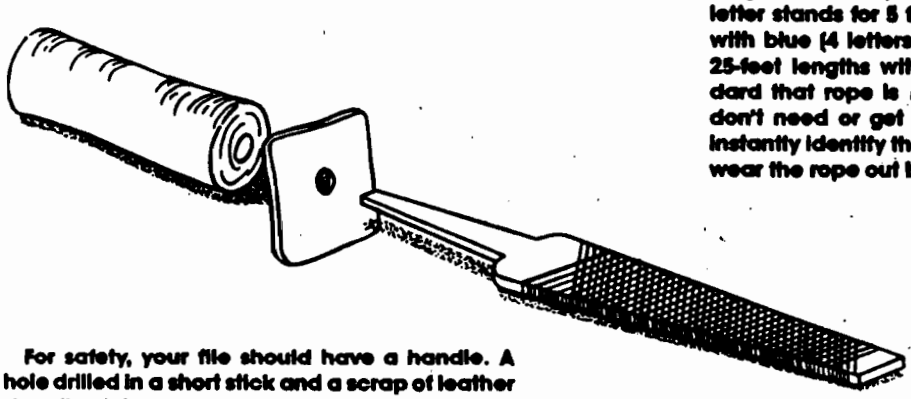
Cubes of Celotex or short rolls of newspaper dipped in paraffin make good fire starters. Use a match to light. Warning: Use a double boiler to melt paraffin to prevent fire.



A "tennis racket" broiler is a great way to broil a small steak or fish.



Rope is expensive and here's how to conserve it. Cut rope into 15-, 20-, and 25-feet lengths. Whip the ends. Paint the whippings on the 15-feet lengths with red paint. Three letters in red—each letter stands for 5 feet. Paint the 20-feet lengths with blue (4 letters x 5 feet is 20 feet), and the 25-feet lengths with green paint. Set the standard that rope is *never* cut—tuck in what you don't need or get a shorter piece. Scouts can instantly identify the lengths and you'll probably wear the rope out before it's all cut up!

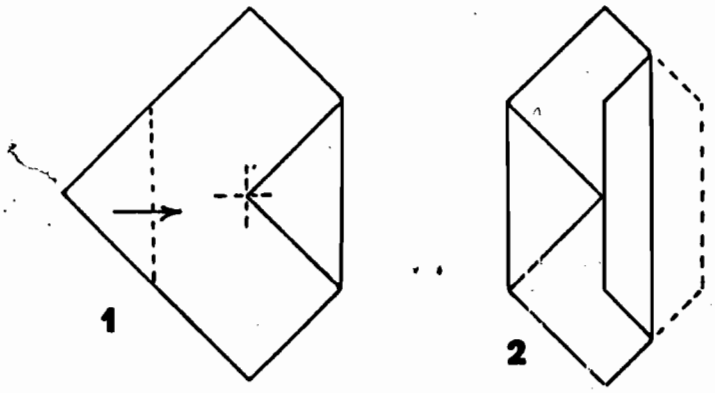


For safety, your file should have a handle. A hole drilled in a short stick and a scrap of leather do a fine job.

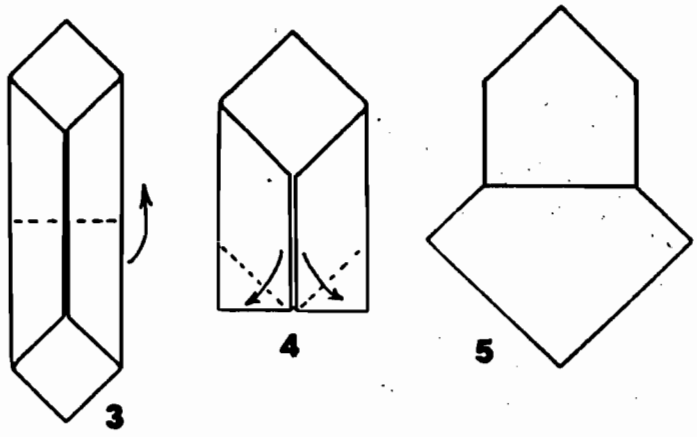
Prefabricated Aluminum Foil Cooking Utensils

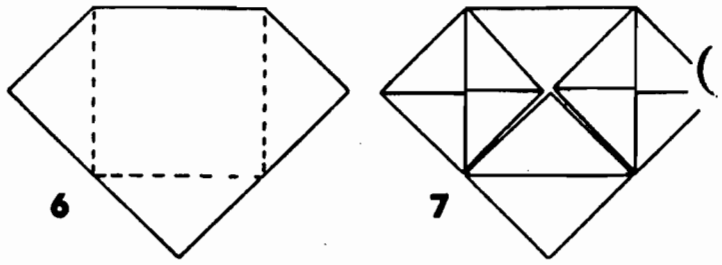
Here is a cooking utensil that can be made on the spot or of which a number can be prefabricated and carried flat in a pocket ready to open out when required. Made from a piece of foil 12-inches square, the utensil is large enough to boil two eggs or make a cup of tea for one. A piece 18-inches square will hold 1½ pints but will need a flat bed of embers to seat nicely. All foil cooking utensils are better made from a doubled sheet rather than a single piece.

Here is a project that can be perfected during that odd quarter of an hour between more strenuous activities in the winter program.

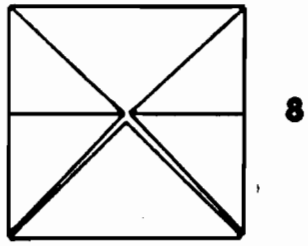


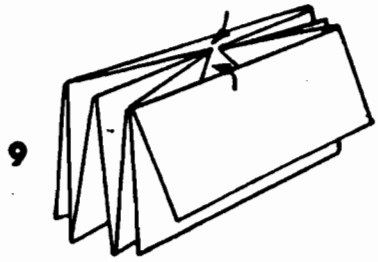
Cut a square of foil, say 12" x 12", then (1) Fold two opposite corners to the center; (2) Fold each of the folded parts in half to the center; (3) Fold in half as indicated; (4) Insert forefingers in the pockets formed and ease out; fold the upright edges against the bottom edges to produce the creases; (5) Carefully pull down both pockets; (6) Turn over and repeat on the other side; (7) Fold the three corners to the center, turn over and repeat 6 and 7 on the other side; (8) This is what it should look like.

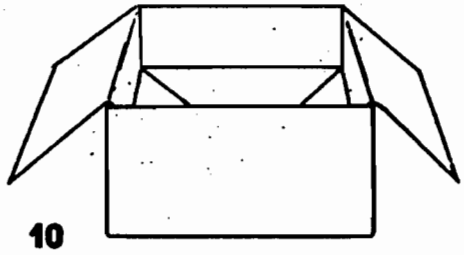




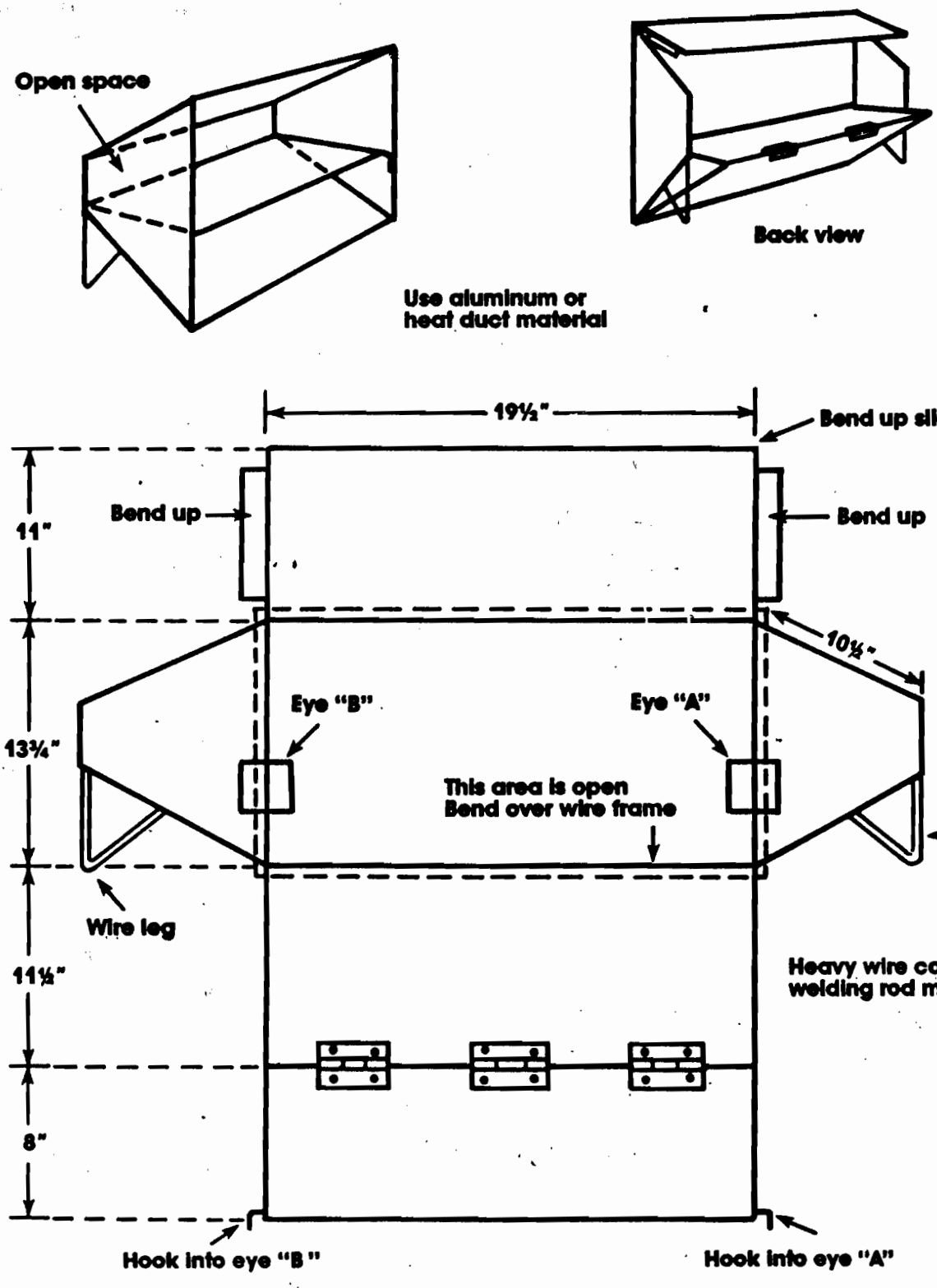
(9) Fold in half; (10) Insert the forefingers in the opening indicated by the arrows and gently open out to give you your foil cooking container, complete with two "handles."







Reflector Oven

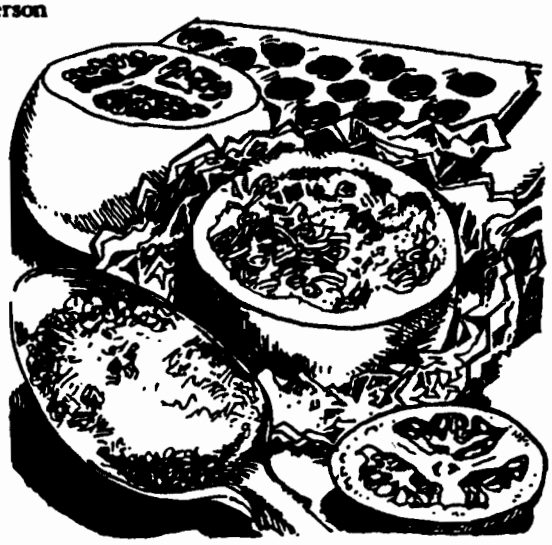


More Backwoods Cooking Recipes

Stuffed Tomatoes

You will need:

- One large tomato per person
- Approximately three tablespoonfuls of grated cheese per person



Method:

- Cut the top half inch of the tomato off and place to one side.
- Scrape out the center of the tomato and mix this flesh with grated cheese, adding salt and pepper as required.
- Place the mixture into the tomato, replace the top, wrap it in two thicknesses of foil and put into hot embers for 5 minutes.

Variations:

Tasty alternative fillings could include cooked minced beef, baked beans, flaked fish, prawn in tomato sauce, tuna fish, and so on.

Cowboy Dinner

You will need (quantities are per portion):

- One small potato
- A few green beans

- Four slices of bacon
- One small onion
- About 2 oz of minced beef

Method:

On a piece of foil, approximately 10 inches square, lay two strips of bacon about 1 inch apart.

- Place some of the green beans across the bacon and add thick slices of onion.
- Next, place two slices of potato, the minced beef, some more onion and then the remainder of the potato.
- Fold any ends of bacon over in order to cover the sides of the food "pile" and carefully slide the whole dinner into a foil bag.
- Place in hot embers, cook for 15 minutes on each side.

Fish in Newspaper

You will need:

- One fish (cod, haddock, and so on) per person
- Greaseproof paper
- Newspaper
- String

Method:

- Prepare the fish (remove the innards and discard) and place on a sheet of greaseproof paper, which is folded to completely surround the fish.
- Take six sheets of newspaper and make up a parcel with the fish in the center, tying it all up securely with string.
- Place the parcel in a bowl of water until the paper is soaked through.
- Remove the package from the water and squeeze excess water out gently.
- Place the damp parcel on hot embers, turning every 5 minutes. The fish should be cooked by the time the paper begins to char.

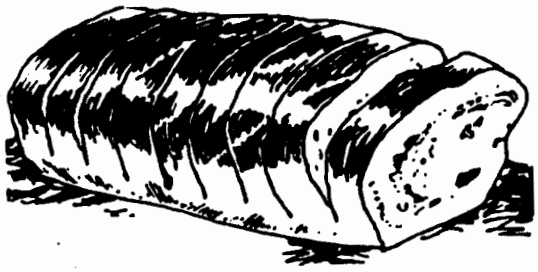
Garlic Bread

You will need (quantities are per portion):

- A 6-inch length of French bread
- 1½ oz of butter or margarine
- Half a crushed clove of garlic or a pinch of powdered garlic or garlic salt

Method:

- Cut the bread into thick slices, making sure that you do not cut through the bottom crust (see illustration).



- Mix the butter with the garlic and spread generously onto both sides of each slice.
- Press the slices back together and wrap loosely in two thicknesses of foil.
- Place on hot embers for about 15 minutes. Turn regularly.

Variation:

1 oz of grated cheese could be mixed with the butter before it is spread onto the bread.

Burgers in Leaves

You will need:

- Cabbages
- Hamburgers or ground beef.

Method:

- Place three layers of cabbage leaves directly onto the hot embers and put the beef patties on top of them.

- After approximately 10 minutes, turn the meat over, putting onto three new cabbage leaves. Repeat this process until the meat is cooked.

Note: Cabbage leaves can replace aluminum foil in many instances when using backwoods cooking recipes. It is important that on no occasion should rhubarb leaves be used, as these contain a highly poisonous resin.

Baked Eggs

You will need:

One egg per person

Method:

- Find a thin stick, approximately 30 inches long, and, using a sharp knife, strip about 2 inches of the bark off the thinnest end.

- Using the point of the knife, tap the egg carefully at both ends until you have a hole large enough for the thin end of the stick to go through.

- Push the skewer through the egg and place over hot embers. Support the skewer upon two forked sticks if necessary.

- Cook for 10 minutes. Turn occasionally.

Note: It is important that the egg does not fit too tightly onto the skewer, as air will not be able to escape during the cooking and the egg might explode.

Instant Oven

You will need:

- A piece of foil about 5 feet long

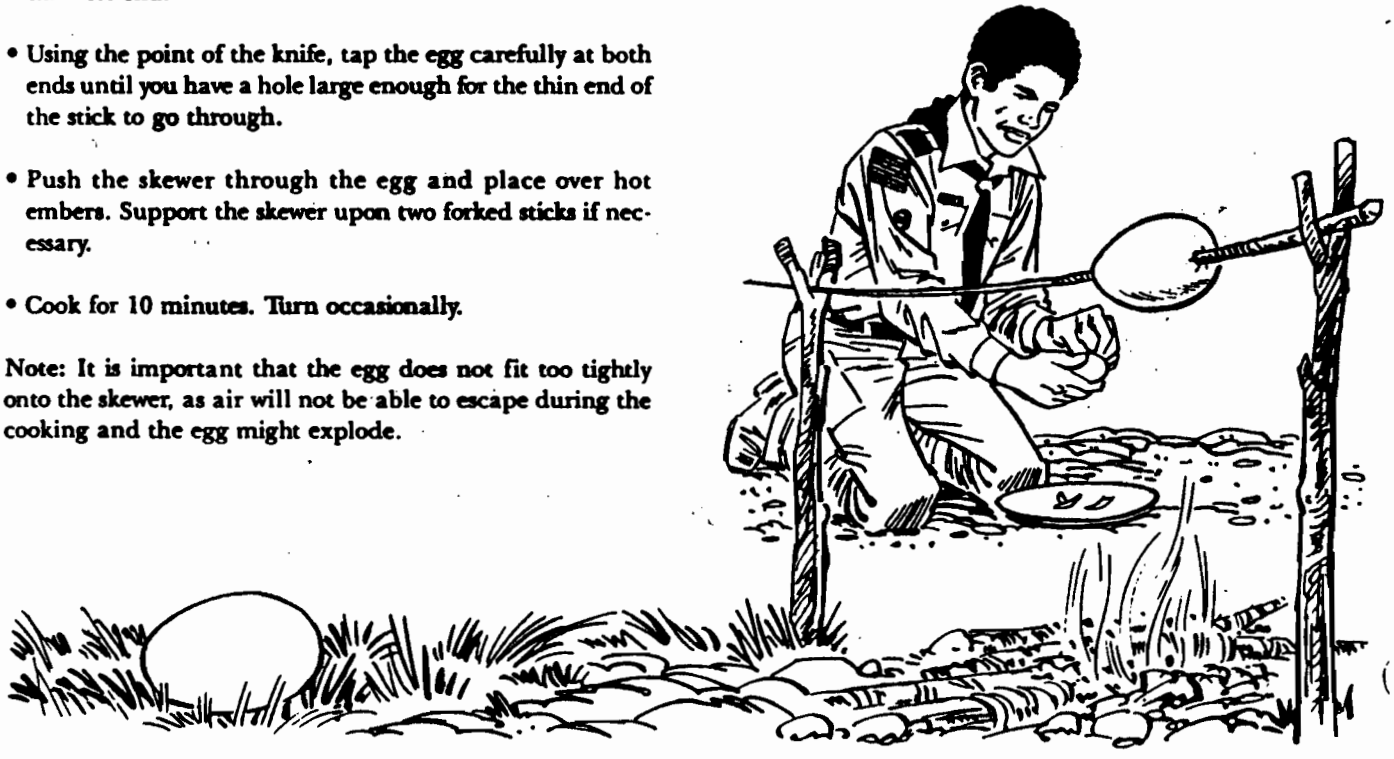
- Two sticks 12 inches long

Method:

- Fold the sheet of foil in half and peg one end to the ground with the bottom of a stick in each corner at this end.

- Fold the foil in half and bring the free end up, attaching it to the top of the two sticks, at a 45 degree angle, as shown.

- Place the food on the bottom half of the foil and light your fire by the open end of the reflector oven.



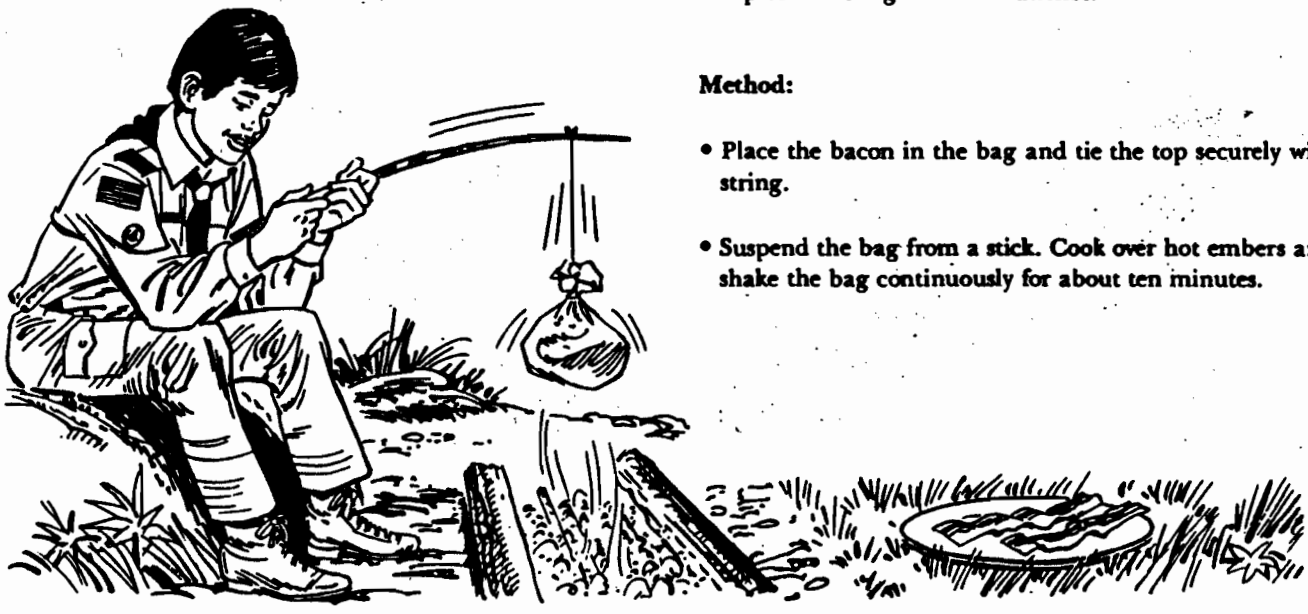
Hot Cross Buns

You will need (quantities are for eight buns):

- 8 oz self-raising flour
- 2 oz brown sugar
- 2 eggs
- 2 oz butter or margarine (melted)
- 2 oz dried fruit or chopped apple
- 1 pinch of mixed spice
- 1 cup of milk

Method:

- Mix the dry ingredients together.
- Add the beaten eggs, milk, and melted butter, mixing to result in a smooth batter.
- Using a smooth rock as a mold, make eight foil dishes. Grease them well with butter or margarine.
- Divide the mixture into the dishes (they should not be more than a third full).
- Cut thin slivers of apple, with the skin on, and make a cross on the top of the buns.
- Bake in your camp oven for about 20 minutes.



Vegetable Kebabs

You will need (quantities are for six servings):

- 12 new potatoes
- 12 small onions
- 12 button mushrooms
- 1 red pepper
- 1 green pepper
- 12 small tomatoes
- Butter or margarine
- Salt, garlic, and pepper to taste

Method:

- Prepare six thin green sticks from ash, hazel, or willow (not holly or yew). Skewer the cleaned and prepared ingredients as desired onto them. Leave the tomatoes to one side.
- Melt some margarine or butter with some salt, pepper, or garlic as required, and brush it over the kebabs.
- Support the kebabs over glowing embers and cook for about 5 minutes. Turn occasionally. After 5 minutes, add the tomatoes and cook for 5 more minutes.

Bacon-in-a-Bag

You will need:

- A paper bag
- A piece of string
- Two slices of bacon
- Patience!

Method:

- Place the bacon in the bag and tie the top securely with string.
- Suspend the bag from a stick. Cook over hot embers and shake the bag continuously for about ten minutes.

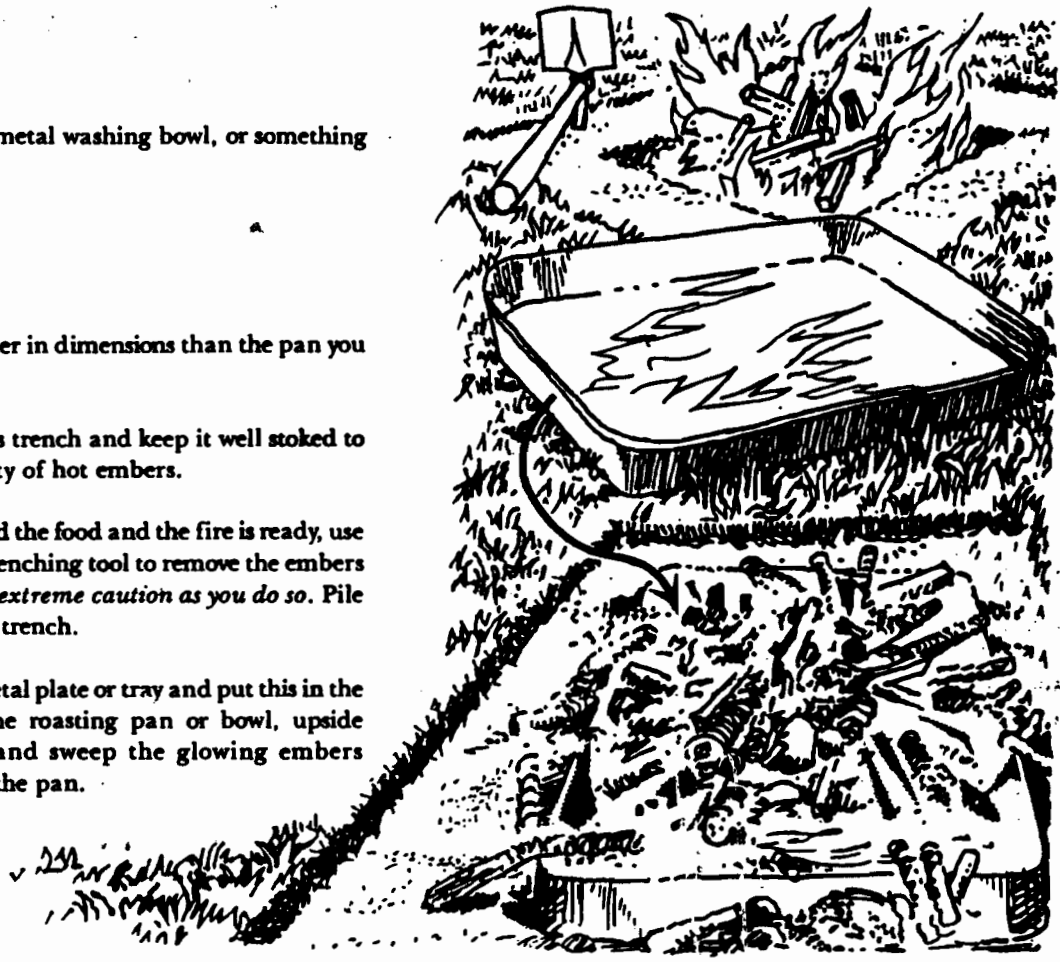
Camp Ovens

You will need:

- A metal roasting pan, metal washing bowl, or something similar
- A metal plate or tray

Method:

- Dig a hole slightly smaller in dimensions than the pan you are to use.
- Build a large fire in this trench and keep it well stoked to produce a good quantity of hot embers.
- When you have prepared the food and the fire is ready, use sticks, stones, or an entrenching tool to remove the embers from the hole. *Exercise extreme caution as you do so.* Pile them by the side of the trench.
- Place the food on the metal plate or tray and put this in the trench. Then, place the roasting pan or bowl, upside down, over the food and sweep the glowing embers around, and on top of the pan.



Note: You will need to check on the food every 15 minutes or so and you may need to stoke the fire if it is in danger of going out. After a bit of practice, you will know how long it takes to cook certain meals using this type of oven.

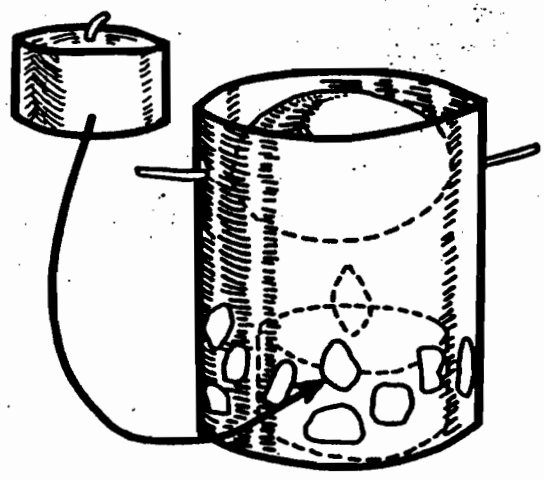
Egg-in-a-Can

You will need:

- An empty standard-size food can
- One egg
- A night-light or small candle
- Some wire (not plastic-coated)

Method:

- Pierce a series of large holes in the side of the can close to one end. These will act as air holes for the candle.
- Cut the bottom off the can to leave a cylinder.
- Tap a small hole in both ends of the egg with a sharp knife and thread the egg onto the piece of wire.
- Cook for at least 5 minutes. Turn occasionally.



Spit Roast

You will need (quantities are for eight servings):

- One 5 lb turkey or large roasting chicken
- ½ lb stuffing
- 8 small potatoes
- Chopped herbs
- Oil or butter
- One cup apple juice

Method:

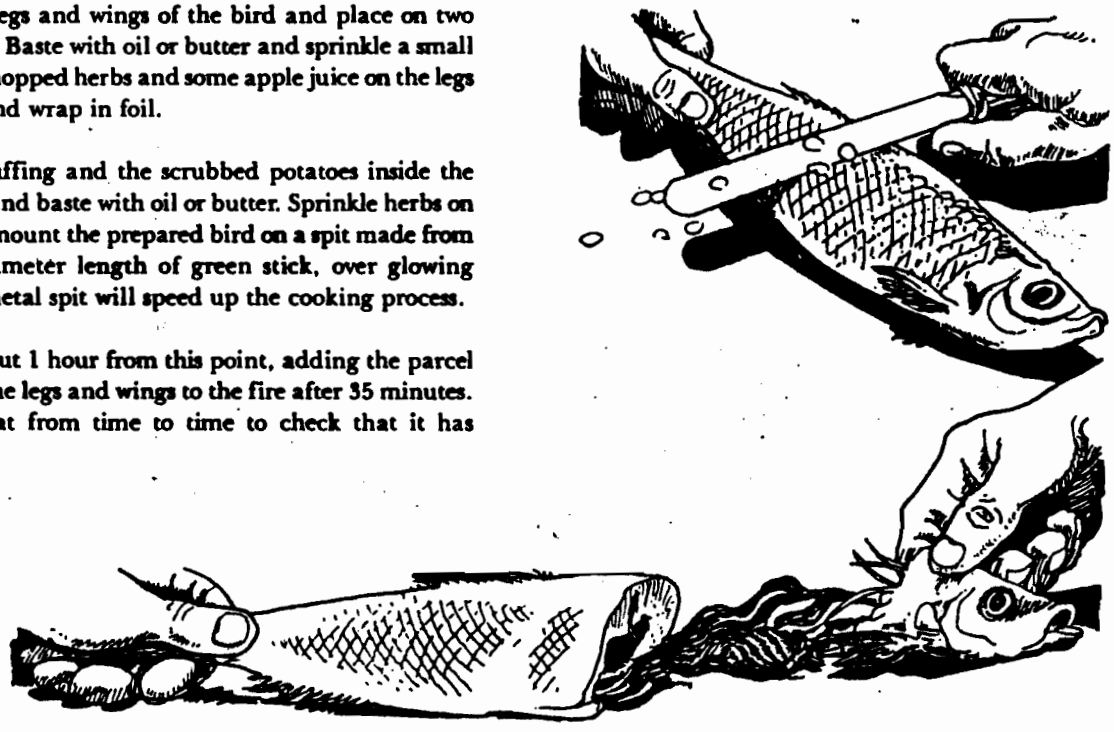
- Wash the bird well, inside and out, removing the giblets.
- Cut off the legs and wings of the bird and place on two layers of foil. Baste with oil or butter and sprinkle a small amount of chopped herbs and some apple juice on the legs and wings and wrap in foil.
- Place the stuffing and the scrubbed potatoes inside the body cavity and baste with oil or butter. Sprinkle herbs on the top and mount the prepared bird on a spit made from a 1-inch diameter length of green stick, over glowing embers. A metal spit will speed up the cooking process.
- Cook for about 1 hour from this point, adding the parcel containing the legs and wings to the fire after 35 minutes. Test the meat from time to time to check that it has cooked.

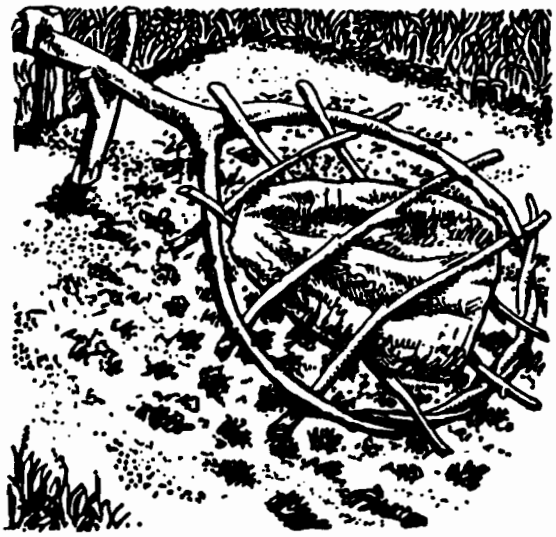
Preparing Fish

Before you cook freshly caught fish, it is important that you clean and prepare them properly. The following procedure is straightforward and requires only the use of a sharp knife and a clean, firm cutting surface—plus a bit of courage!

Method:

- Wash the fish thoroughly in clean water.
- Remove the scales by scraping with the back of the knife (that is, not the sharp edge), working from the tail toward the head.
- Cut the spine at the point just behind the gills and tear the head off with a steady, slow, forward motion. If you are careful, the fish's innards will come out with it.
- Slice the belly open from tail to gills and thoroughly clean the inside.
- Finally, cut off the fins and tail and cook as desired





Broiled Fish

You will need:

- A supply of green sticks
- One fish per person

Method:

- Prepare the fish as shown on page 79.
- Strip the bark off the green sticks you are to use and seal them by placing them briefly over hot coals.
- Find a large Y-shaped green stick (ash, hazel, or willow are suitable, not holly or yew) and weave it into a tennis racket shape as illustrated.
- Open out the gutted fish and place it upon three sticks laid lengthways on the "racket."
- Lay a further three or four sticks across the top of the fish, at right angles to the other sticks, tucking the ends underneath the sides of the "racket" as shown, to keep the fish in place.
- Prop the broiler a short distance above glowing coals and cook for about 20 minutes. Turn occasionally.

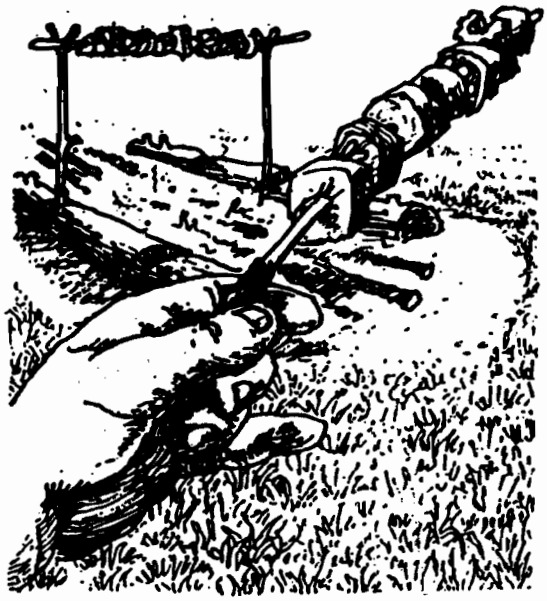
Shish Kebabs

You will need:

- Lamb (the shoulder cut may be the most suitable)
- Peppers, onions, apples, tomatoes, cucumber, celery

Method:

- Cut the meat and vegetables into 1-inch cubes.
- Prepare a green stick to act as a skewer by removing the bark from the end on which the food is to go (the thinnest end) and sealing it by placing over the hot embers briefly.



- Thread the ingredients, as desired, onto the stick and place it over glowing embers. Turn occasionally. It is advisable to manufacture some form of support at either end of the skewer in order to keep it in position—and to prevent your hands getting burned!

Egg in Orange

You will need:

- One large orange per person
- One egg per person

Method:

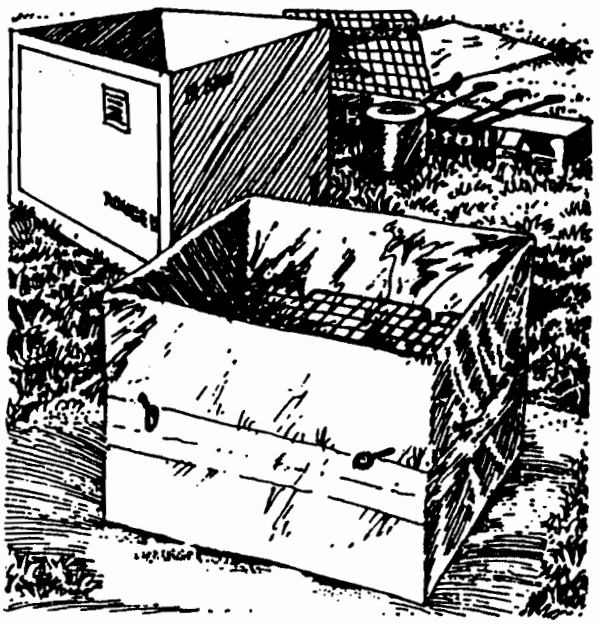
- Cut the top third off the orange and carefully scoop out (and eat) the flesh of the orange from the bottom section.
- Break the egg into the orange and place in amongst hot embers until you can see that the egg is cooked.

Variation:

Preparing the food in the same way, use a green stick, with the bark removed, as a spit by inserting it through either side of the orange, near the top. You will find that it will be easier to retrieve the cooked egg using this method.

Cardboard Oven

Although not strictly a backwoods item of equipment, this oven is great fun to make and use.



You will need:

- Wire cake-cooler (or something similar)
- One strong cardboard box (such as that which previously contains wines, as these are very rigid).
- Masking tape.
- A roll of wide cooking foil.
- Four metal tent pegs
- Lots of patience

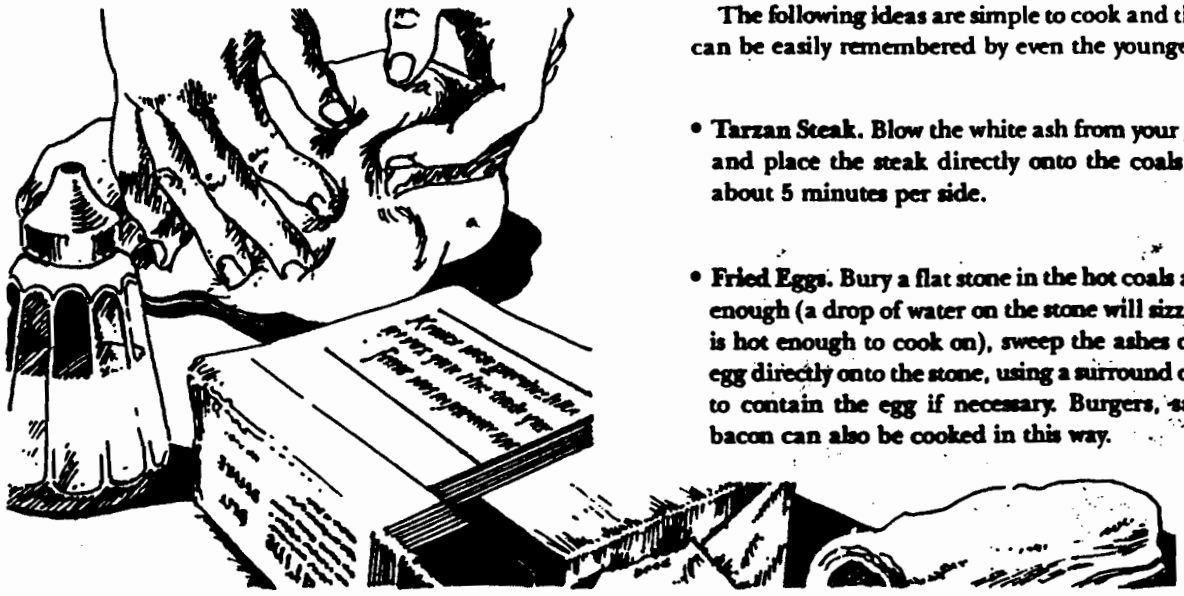
Method:

- Remove the top and bottom of the box, using a sharp knife.
- Taking a lot of care, completely cover the inside and outside of the box with foil. Use masking tape on the outside to secure it. To do this, you will need to lay your strips of foil on the inside so that 6 inches of foil sticks out at the top and bottom of the box. Fold the foil over and fix in place on the outside of the box.
- Cover the cardboard lid with foil.
- Make a shelf by pushing the four metal pegs through the corners of the box (as shown) and then rest the wire cake cooler upon these supports. The shelf should be supported about 6 inches above the ground.
- Dig a shallow pit with the same width and length as the box, and light a good fire in it—or use charcoal for best results.
- When the glowing embers form, place the oven above the coals. Position your food on the shelf inside it. Put the lid on top, securing it in place with stones.

Pastry

You will need:

- 1 cup plain flour
- ½ cup shortening or margarine
- Pinch of salt
- Water (scant)
- 1 lb sugar if pastry is for sweet items



The following ideas are simple to cook and the techniques can be easily remembered by even the youngest Scout!

- **Tarzan Steak.** Blow the white ash from your glowing coals and place the steak directly onto the coals, cooking for about 5 minutes per side.

- **Fried Eggs.** Bury a flat stone in the hot coals and when hot enough (a drop of water on the stone will sizzle if the stone is hot enough to cook on), sweep the ashes off. Crack an egg directly onto the stone, using a surround of green sticks to contain the egg if necessary. Burgers, sausages, and bacon can also be cooked in this way.

Method:

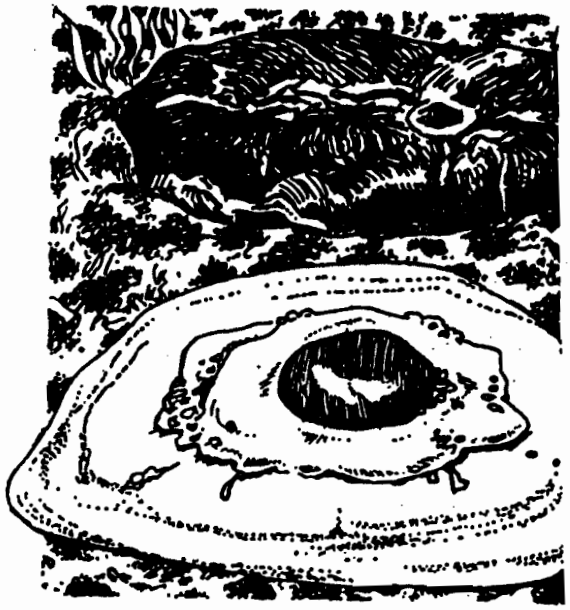
- Cut the shortening into the flour using a pastry cutter, 2 knives, or a fork. Add sugar at this stage if required.

- When the mixture resembles bread crumbs, add water a spoonful at a time, mix lightly with fork and press into a ball. Over mixing causes pastry to become tough.

- Use this pastry to make sausage rolls or various sweets, as outlined in other Backwoods Cooking recipes.

- **Twists.** Mix flour, water, and a pinch of salt together to form a thick dough. Take a piece of this dough and roll it into a snakelike length, wrapping it around a stick (with bark removed). Support over embers, turning occasionally until the outside turns brown. Serve with butter and/or jam. Add raisins and cinnamon to the dough for a deluxe version.

Simple Recipes



- **Instant Hot Dogs.** Lay sliced onions on a small, double thickness of foil, add a sausage and wrap up sealing the ends tightly (and making sure that there is a fair amount of air left inside the package). Place on embers for about 7 minutes, onion side down so that the sausage does not stick to the foil) and when cooked, pop the meat and onions into a bread roll for a quick and easy hot dog.

- **Baked Potatoes.** Encase a medium-size potato in a 1-inch-thick layer of mud or clay and place on hot embers for about an hour. Turn occasionally.

- **Simple Kebab.** Remove the bark from a thin green stick, and onto it, spear slices of bacon, mushrooms, sausage, carrot, and peppers. Support the skewer over glowing embers. Turn occasionally. Remove when it is crisp and golden brown.

- **Pineapple Pud.** Slice the top off a fresh pineapple using a sharp knife. Use a spoon to carefully remove center of fruit. Fill this with a mixture of raisins, pineapple (discard fibrous core), sliced apple, and grated chocolate. Replace the top of the pineapple, securing it in place with two sticks, and bury in hot embers for about 30 minutes.

Backwoods Cooking

Cooking without utensils, called backwoods cooking, is not only great fun—it also cuts down on the washup!

Hot Embers

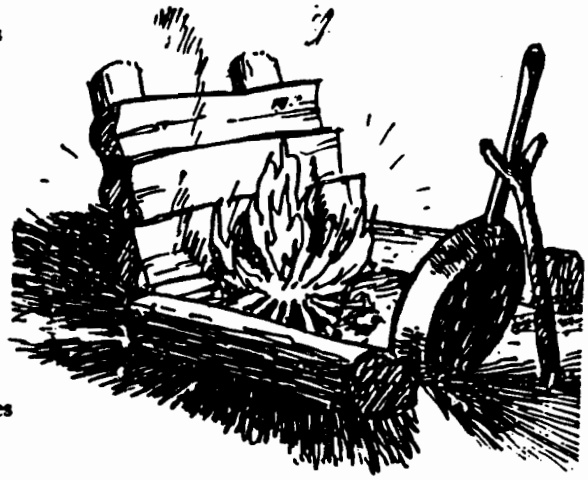
Begin by building the fire with fairly large pieces of wood. Let them burn through to leave you with a bed of hot, glowing embers. This is nearly always the best type of fire for backwoods cooking. Remember, however, open fires are not allowed in many areas, and BSA policy encourages low-impact camping.

Skewers. Many types of food can be cooked on wooden skewers. Find a thin, green stick—one that bends but does not snap. Any wood will do except yew, holly, elm, and laurel which are poisonous.

Peel the bark off and make a point at one end. The skewer can then be pushed through the food and hung over the fire or laid with one end on the ground and the other on the back of a reflector fire. Or you could simply sit and hold it, turning the food as it cooks.

Use this method to cook

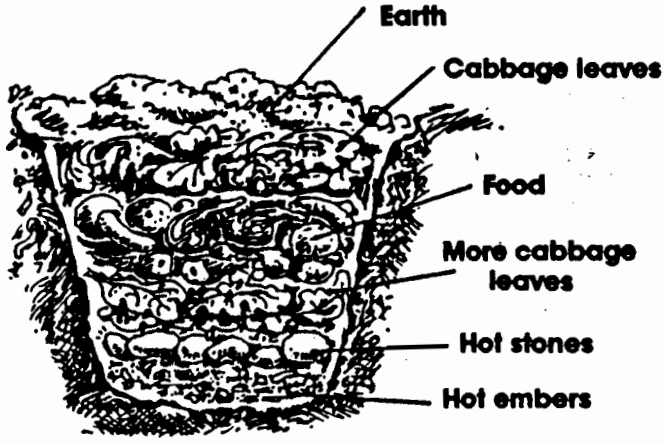
- Sausages
- Twists
- Chops
- Apples
- Toast
- Bacon
- Tomatoes
- Onion



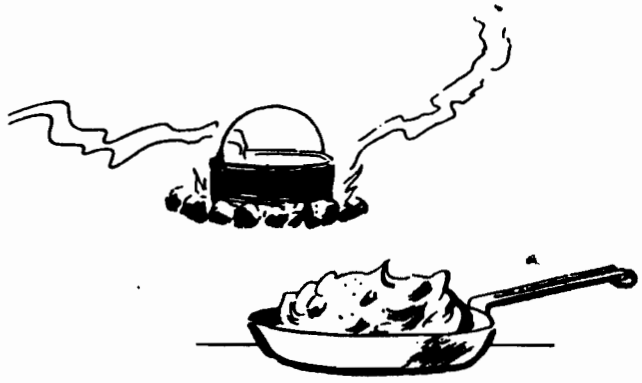
Potatoes. Cut off the top of a potato. Scoop out the inside—but don't take too much or you might break the skin. Crack an egg into it or put small pieces of cheese inside. Replace the top and fix it in place with thin pieces of wood. Cook it in the embers for about an hour.

Reflector Fire. This type of fire is especially good for backwoods cooking because you can direct the heat straight at the food. Use logs or large stones (but not flints) behind the fire, held up with wooden stakes driven into the ground.

Take care not to sit opposite the reflector or you will be baked as well.



Fiji Oven. Dig a hole in the ground and build a fire at the bottom. Get it going well and put several large stones (not flints) on top. When the stones are really hot, lay some large leaves (such as cabbage leaves) on them. Next, pile in the food—sausages, chops, potatoes, and other vegetables—then cover with another layer of leaves. Finally cover well with earth and leave to cook for about 6 hours.



One-Potters

- To 2 cups instant potatoes, add a can of corned beef and a package of dehydrated vegetables.

- Use 1 cup instant rice, chipped beef (or canned tuna or canned chicken), dehydrated mushroom soup, a dab of butter, onion flakes, diced celery or celery flakes, green pepper flakes. Mix soup, butter, onion, celery, and green pepper flakes. Add water. When water starts to boil, stir in instant rice. Add meat and heat. Follow cooking directions on rice package.

- Potatoes au Gratin are tasty. Ingredients: dehydrated potatoes, onion flakes, cheese. Cook potatoes according to directions, add onion flakes and hunks of cheese. Heat until cheese is soft enough to whip into potatoes.

- Noodle soup is simple. Use dehydrated vegetable soup, bouillon cube, and noodles. Cook noodles according to directions, add soup mix and bouillon cubes. Cook until the longest recipe time says "done."

Campfire Pizza Pies

For a post-campfire treat, try this recipe:

You will need:

English muffins

Canned pizza sauce

Hamburger or sausage

Mozarella cheese

Method:

Let the campfire burn down to a hot bed of coals. Slice the muffins, spread on pizza sauce, then sprinkle on hamburger or sausage and cheese to taste. Put the pizzas on a pie tin for easy removal and place it in a Dutch oven and heat for 10 minutes.

Baked Fruits

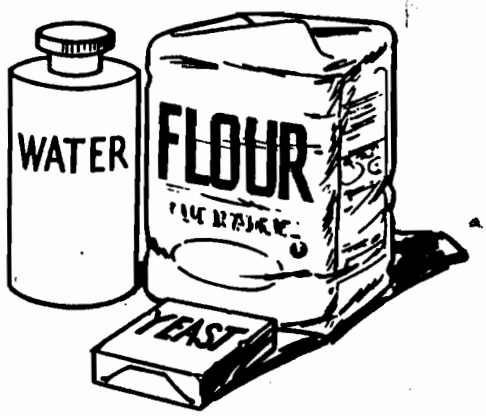
These are good treats to distribute to your audience at a "happy birthday" campout. Cut the top from an apple, remove the core, and sprinkle in a teaspoon of sugar. Wrap in foil and bake on coals for 30 minutes. Or, wrap unpeeled banana in foil and bake 10 minutes.

Peach Cobbler

Place Dutch oven over hot coals to preheat slightly. Pour peaches into oven. Hold out some of the juice so cobbler won't become mush. Mix 2 cups biscuit mix and roll out dough to ½ inch thickness and to size of Dutch oven lid. Place dough on top of the peaches and sprinkle lightly with sugar. Place lid on oven, cover it with hot coals, and bake until crust is golden brown. (see April 1986 *Boy Scout Program Helps* for hot oven).

Sourdough Biscuits and Pancakes

For the flavor of the Old West, make sourdough "starter" by dissolving a packet of dry yeast (or ½ cake yeast) in 2 cups of white flour and enough water to make a smooth batter. Put the mixture in a warm place until bubbles are all over it. Leave it in the refrigerator overnight in a glass jar (the acids will pick up a metallic taste if it's in a metal container).



Several hours before cooking, pour the "starter" into a bowl and add 2 more cups of flour and more water. Set this in a warm place again, until it is bubbly. Save half of it for permanent "starter" mix and use the rest to make biscuits or pancakes. Each time you want pancakes or biscuits, add flour and water to the "starter" and then use half of it for your baking and save the rest.

For great biscuits try this recipe:

1 cup sourdough starter

¼ tsp soda

1 egg

1 tsp melted fat

Enough flour to make a stiff dough

Mix ingredients until they're blended into a dough that you're able to knead. Roll dough flat on a floured surface such as foil or board. Cut into biscuit-size pieces. Let rise for an hour or so, then bake in your Dutch oven, reflector oven, or greased skillet.

Mexican Tortillas

1 cup cornmeal

1 cup boiling water

1 tsp salt

Slowly add the boiling water to the cornmeal. Add the salt and mix well. Shape into thin flat cakes and bake on an ungreased griddle. When brown, turn over.

Swedish Meatballs

½ lb lean pork, ground

1 lb round steak, ground

½ cup chopped onions

2 tb butter

1 whole egg

1 egg yolk

½ cup bread crumbs

2 cups milk

Salt and pepper

Mix pork and round steak in a bowl. Cook onion in butter; add it to the meat. Beat the eggs and stir them in. Add bread crumbs and milk and season to taste. Form into small balls and fry until golden brown.

Irish Stew

2 lbs mutton or lamb

6 medium-size potatoes, cut in quarters

6 medium-size carrots, cut in strips

6 small onions

1 small yellow turnip, diced

3 sprigs parsley

2 tsps salt

¼ tsp pepper

3 tsps sugar

Flour

Water

Cut mutton or lamb into 1-inch cubes. Cover with cold water, measuring the quantity of water used. Cover the kettle and bring to a boil. Add the potatoes, carrots, onions,

turnip, parsley, salt, pepper, and sugar. Cover and cook slowly about 1½ hours or until meat is tender. For each cup of water you used, measure 1 tblsp. of flour and mix thoroughly with cold water. Stir slowly into the stew and continue cooking about 15 minutes.

Hungarian Potato Soup

1 tsp butter

1 onion, chopped

4 cups stock or water

1 tb paprika

3 tb sour cream

4 large potatoes, diced

1 pimiento, minced

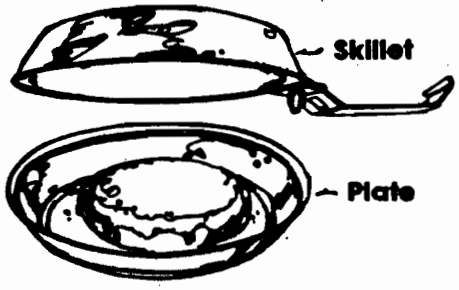
1 tb minced parsley

½ tsp salt

Melt butter in saucepan. Add potatoes, onion, and pimiento. Simmer slowly until the onion starts to brown, then sprinkle with the minced parsley. Add the hot stock or water, stir in the paprika, season with salt, and simmer about 30 minutes. Add 1 tbl of sour cream and cook for 3 minutes more. Remove from fire, add the remaining sour cream, and serve.

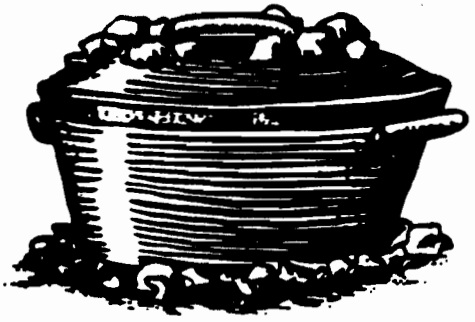
Pizza Goes Camping

Spoon your favorite pizza sauce on bread, top it with cheese, and put it in a plate of a patrol cook kit. Invert the kit's skillet over the plate. Place four to eight glowing charcoal briquets on top of the skillet for 10 to 12 minutes or until the cheese melts. You can use the same recipe with a trail chef kit or a Dutch oven.



Dutch Oven Recipes for Camp

Here are some ideas for patrol cooks from the roundtable of the Mid-Iowa Council, Des Moines.



Roast Beef

Sear a 4- to 5-lb. roast (arm, pot, or Swiss steak) with a little oil in the Dutch oven. Season the roast with salt and pepper and add enough water to half cover it. (Watch the water level during cooking—do not let it burn dry.)

While the roast is cooking, peel one or two potatoes, a couple of carrots, and an onion per Scout. When the roast has cooked 45 minutes, add the vegetables and cook 45 minutes more or until done. It is done when it becomes tender.

Remove meat and vegetables. Make gravy with the juices and two packages of gravy mix. For thicker gravy, add flour (mix with water before adding to avoid lumps), salt, and pepper.

Pork Chops and Rice

6 to 10 thinly sliced pork chops

1 lb rice

2 cans onion soup in beef stock

2 cans cream of mushroom soup

1 or 2 cans mushrooms (optional)

Brown pork chops in Dutch oven. Remove and place them on the lid. Mix rice, soups, mushrooms, and three soup cans of water in the Dutch oven. Lay the browned pork chops on top of this concoction. Bake in the Dutch oven 45 minutes. For a variation, substitute chicken or round steak.

Dinner in a Dutch

Put 2 lbs lean ground beef in a Dutch oven and put one or two sliced potatoes, one or two sliced carrots, and one sliced onion per Scout over the beef. Season as desired. Bake for 1 hour or until meat and vegetables are done.

Variations:

- Add a can of corn (drained).
- Add a can of tomato paste to the meat and mix before adding vegetables.
- Use stew meat instead of ground beef.
- Twenty minutes before cooking is finished, lay camp-made biscuits on top.

Polish Sausage and Cabbage

(serves 6 to 8)

2 large onions

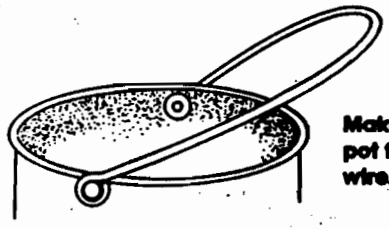
6 to 8 potatoes

1 medium cabbage

2-3 lbs Polish sausage

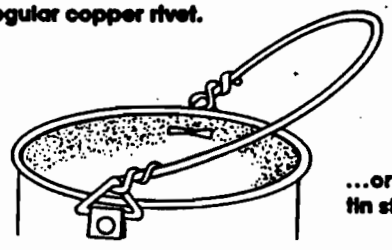
Salt and pepper

Slice onions and arrange to cover bottom of Dutch oven. Slice the potatoes, layer them on top of onions and cover with water. Add salt and pepper to taste. Cover and place on coals until water starts to simmer. Cut cabbage into wedges. When the water is simmering, add the cabbage wedges and sausage and return to heat. Simmer until potatoes are tender and cabbage is wilted.



Make a handle for your pot from clothes hanger wire.

Attach handle with a regular copper rivet.



...or use wire triangles, tin strips and split rivets.

Ham Loaf

1 lb ground ham

1 lb lean ground pork

1 lb ground beef

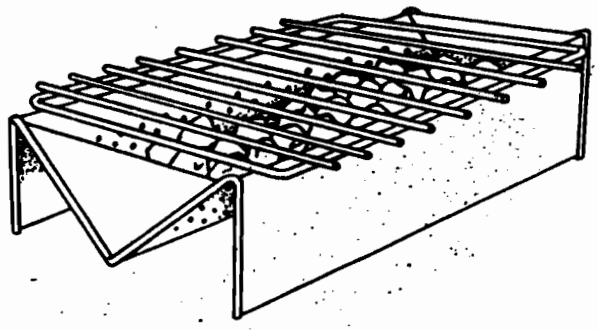
2 cups crushed graham crackers

1 cup milk

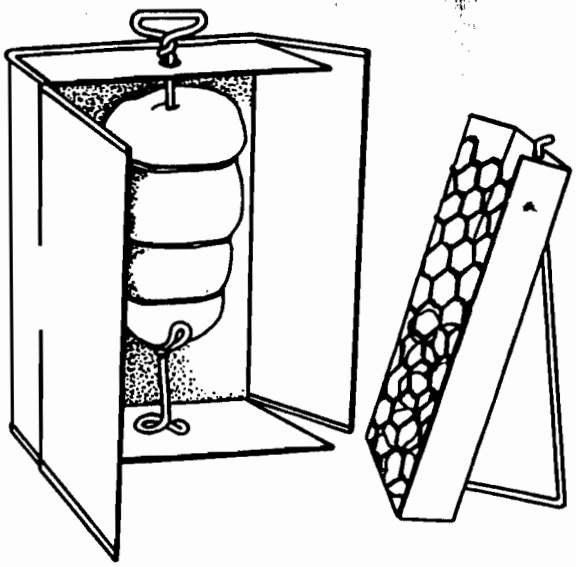
2 eggs

Mix ingredients, form into loaves, and place in small loaf pans. Place the pans on an inverted pie pan in the Dutch oven. Bake 1 hour or until done. For a sauce on top of the loaves, mix one can of tomato soup, 1/3 cup vinegar, and 1 cup brown sugar.

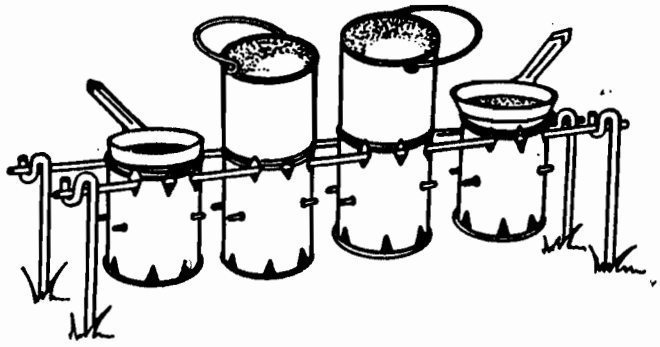
Stove is open at top to enable you to replenish charcoal.



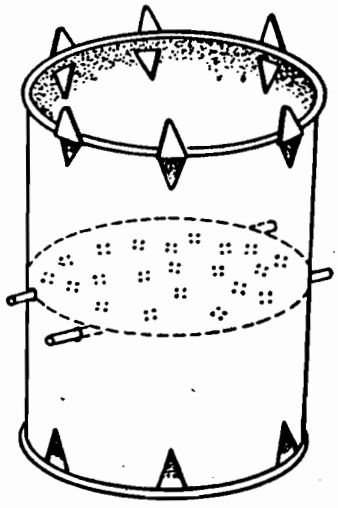
A five-gallon can cut and shaped like this makes an excellent charcoal stove.



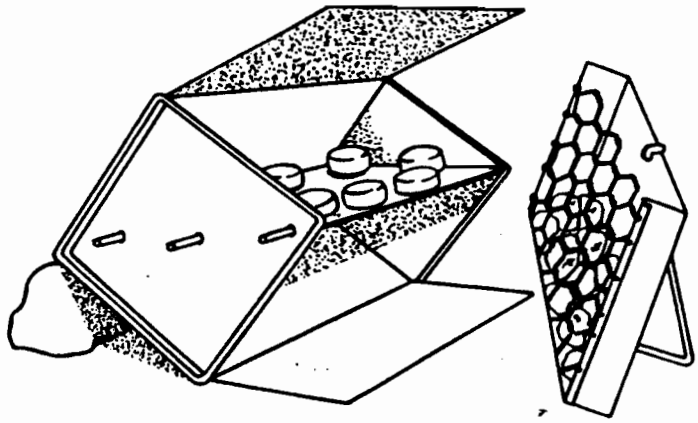
Roast beef in camp — yum-yum!



You can use iron rods for holding a battery of stoves.



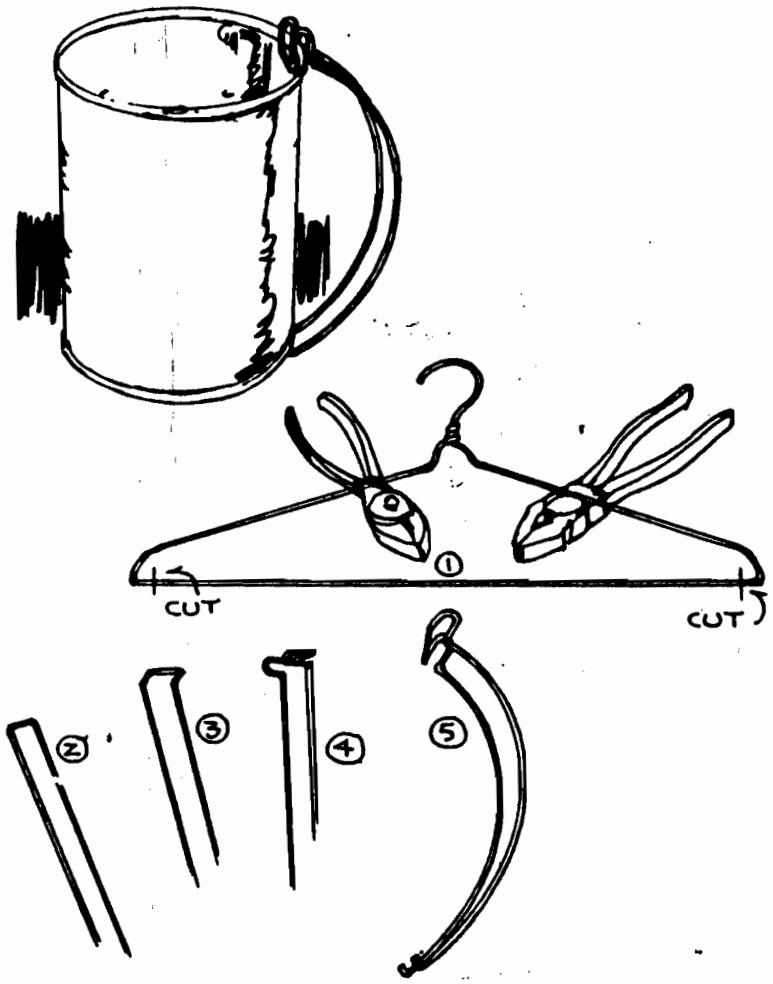
To save charcoal, put a grate in your stove.



Here's a good reflector oven for baking. The heat comes from burning charcoal in a shallow bake pan. Chicken wire holds charcoal in place.

CAMPING

Camp Gadgets



Camp Cup

Are you impatiently awaiting the day you leave for the national jamboree or your council's summer camp? Why not make a souvenir drinking cup to take with you? When you return home, you'll have a trophy to remind you of a memorable summer.

A clean tin can 3⅛-inch in diameter and 3⅛-inch high and a lightweight wire clothes hanger are all the materials you need. Use the wire to make a removable handle that clips on the top rim and snaps on the bottom.

To make the handle, follow these directions:

1. With pliers, cut off the straight length of wire at the bottom of the hanger.

2. Centering the wire in the jaws of the pliers, bend down each side at a right angle.

3. Now, grasping the center portion with pliers, about ⅛-inch from the first bend, bend down each leg separately, again at a right angle.

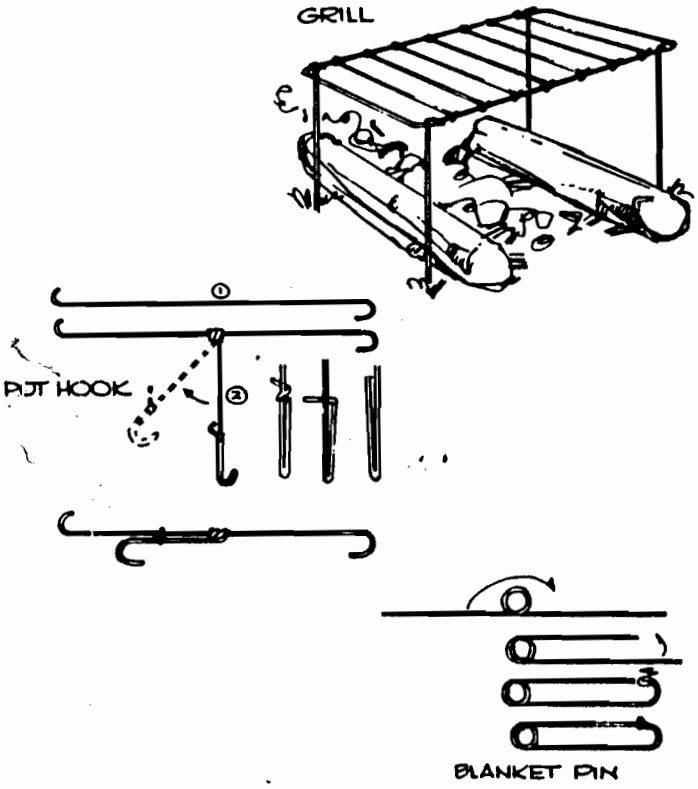
4. Using the combination pliers, continue bending each side until a U is formed to hook over the top rim of the can.

5. Now, holding the wire just below the U bend, and starting with another right-angle bend, carefully shape the wire into a smooth curve to form the handle. Test it on the can to determine where the bottom bend should be and make a sharp bend upward at that point. Do each leg separately, being careful to bend both legs to match.

You can leave the natural finish of bright tin or lacquer the can outside, using spray paint. Clean the metal before painting by immersing the can in a solution of vinegar and water, then rinse in clean water. Allow to dry before painting.

New Twists with Old Wire

Wire work is one of the most practical and at the same time, least expensive, of camp handicrafts. Few tools and little material are needed. Just a pair of pliers, round-nosed pinchers with wire cutter, maybe a flat file and several pieces of wire of various sizes depending on what is to be made. Wire coat hangers, wire barrel hoops, hay wire, or wire salvaged from crates, bundles of shingles, or an old radio aerial, provide the raw materials.



You might start on big blanket pins. They are always needed in camp and they are hard to find in the stores now.

To make a 3-inch blanket pin take a piece of stiff wire about 10-inches long and proceed as shown.

File the end to a point. Carefully bend the catch so the point is guarded. Smooth the point on a pocket whet stone.

Here's a pot hook that everybody will admire. Take two straight pieces of stiff wire, one about 30-inches long, the other 12 inches. Make a large hook on one end of the long piece (No. 1) and a small hook on the other.

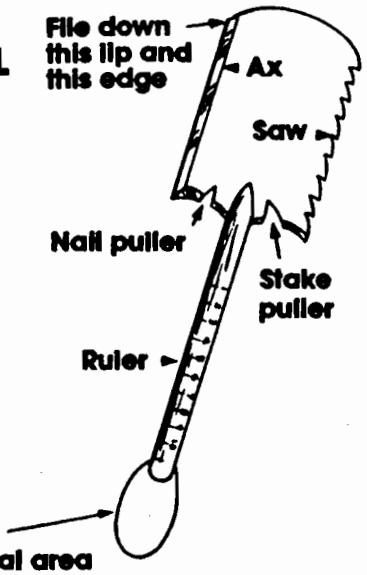
Coil one end of the shorter wire (No.2) twice around the center of No. 1. Ten inches from the coil bend the second wire sharply back on itself. Three inches from the loose end bend at right angles, and wind once around the main shaft and finish with a short hook as illustrated. Then make a large hook of the doubled wire end.

Adjust the angle of part two so that friction will hold it from slipping when the last made hook is hooked over part one, and will slide when hook is released.

The patrol shovel is a handy tool. But with a little Boy Scout ingenuity, and these simple modifications, any Boy Scout can come up with a multipurpose shovel.

Use it as a mini-ax, saw, nail puller, or tent-stake puller, and the handle becomes a handy ruler.

MULTIPURPOSE PATROL SHOVEL



Make sheath for metal area
Drill hole in handle
Insert leather thong for hanging

A Simple Camp Chair

Make this simple camp chair out of a couple pieces of scrap wood and some old remnants of canvas or carpet.

Cut and assemble the pieces of wood as shown in the illustrations and tack or nail the carpet to the top edge of each piece of wood. These may then be painted, stained, or otherwise decorated.

They make great stools for use in a patrol den or at troop meetings as well as on camping trips where you'd rather not have to sit on the ground. Position one in front of a tree and you'll even have a handy backrest.

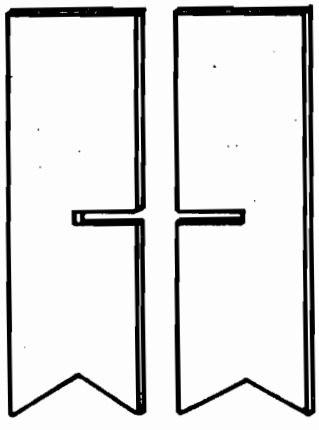
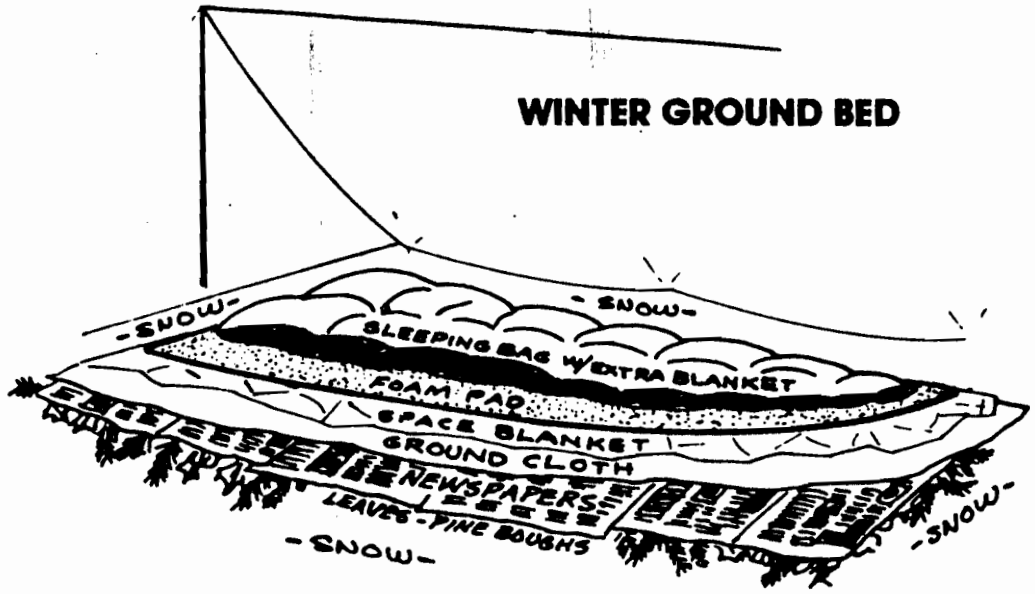


Figure 1

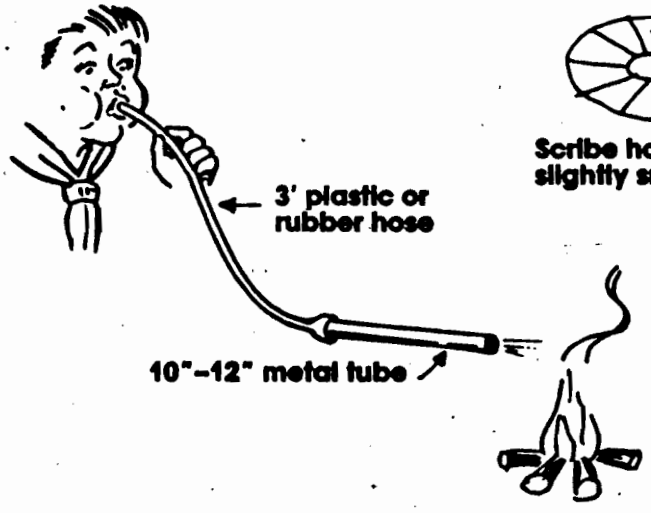
Figure 2



Building a Winter Ground Bed

To build a winter ground bed, first either clear away or pack down any snow that may cover the ground. Then build several layers of insulation between you and the ground. Remember in real cold weather snow itself can be an insulation against severe cold. The illustration depicts several suggested layers of insulation that form a ground bed.

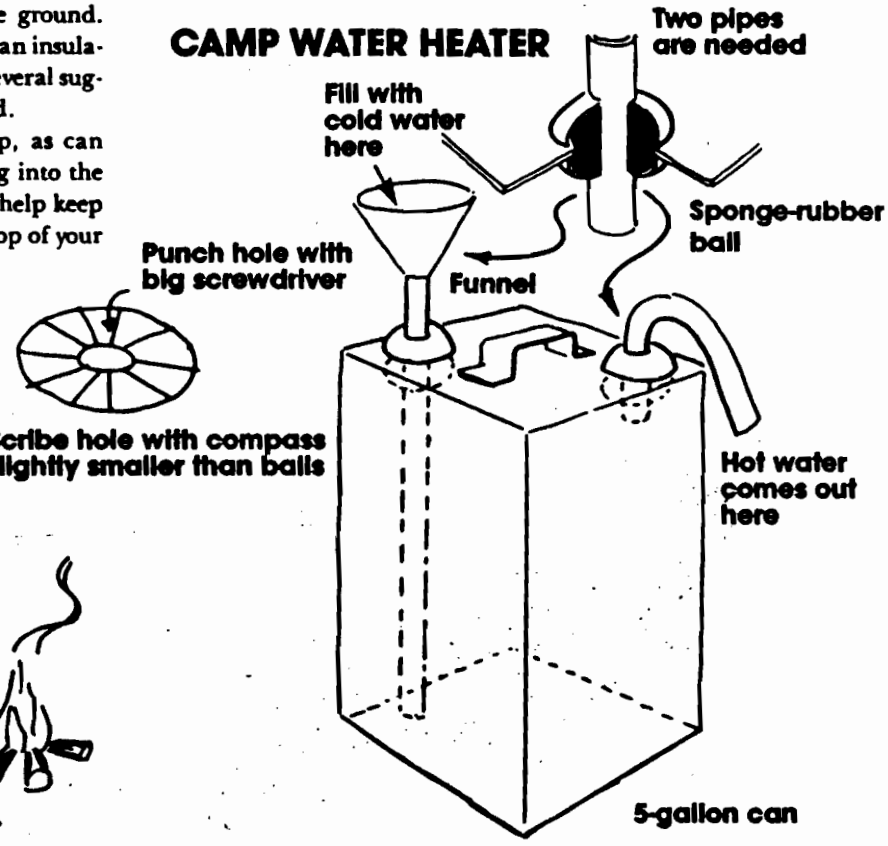
Extra blankets inside a sleeping bag can help, as can fresh long underwear donned just before climbing into the sack. A stocking cap or a hooded sweatshirt will help keep heat from escaping from your body, through the top of your head.



Left-Handed Smoke Shifter

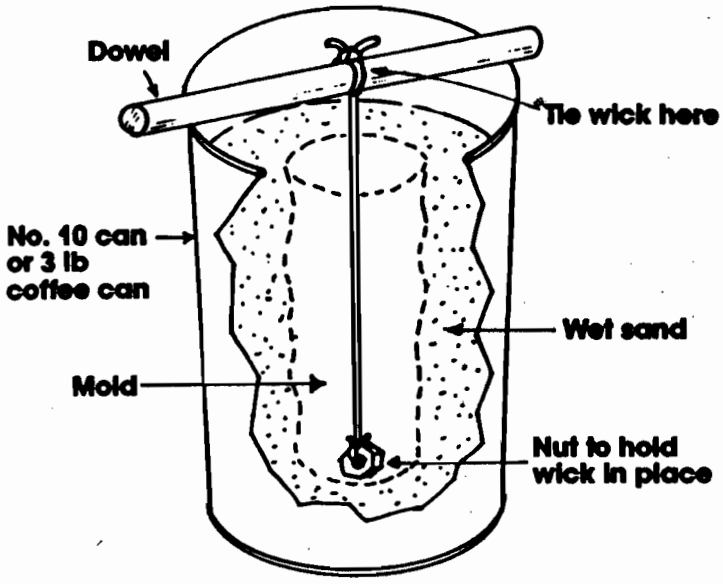
This is a great little gadget to have in a patrol chuck box. It'll help you get that ornery fire started by letting you put the wind right where you want it. Begin with 3 feet of plastic hose, ¼-½ inch in diameter. Insert a 10- to 12-inch length of metal tubing into one end.

Now simply point where you want the "wind" and blow. While this may hurt the old gag about sending a young Scout to get a left-handed smoke shifter, it can be used to backfire on a wiseacre older Scout.



Build a practical yet simple camp water heater. This particular design is inexpensive and a hit with most campers. When a cup of cold water is poured into the funnel, a cup of hot water comes out the hose.

SAND CANDLE



To make sand candles, you'll need:

- String or wick
- Sand
- A ladle
- Newspaper
- A dowel
- A pail
- Paraffin
- Hotplate
- Extension cord
- Double boiler
- Paper towels
- Screw, bolt, or nut

Fill the pail with wet sand. Make a mold in the sand by moving the sand around with your figures, a spoon, or a knife. Make any design you would like from a simple circle or square to a more intricate design like a paw print. Be sure the edges of the mold are clean and smooth.

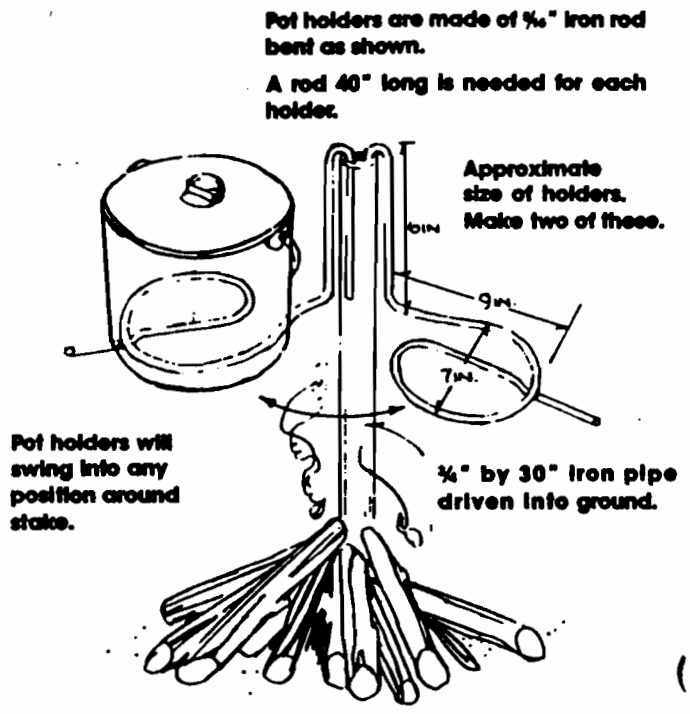
If you are using string for a wick, soak it thoroughly in melted paraffin.

Weight one end of the string or wick with a screw, bolt or nut and hold it so the weight just misses the bottom of the mold. Pour in melted paraffin. (Be sure to melt paraffin in a double boiler to avoid the danger of fire.)

In a few hours you can remove the candle from the sand. It may need a little cleaning, but you'll have a candle.

Grub Stake

This simple camp kitchen gadget can make the cooking chore much easier. Illustrated is a "Grub Stake" with two pot holders. Actually several may be installed around the iron pipe.



Build fire at one side of stake.

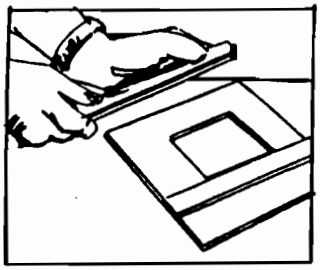
Star-Gazing Box

Here is a simplified version of a planetarium which will enable you to study astronomy right in your own room. The box itself consists of two 7"x12" sides which are laid over and screwed to two 6½"x12" sides so that the overall assembled measurement of the box is 6½"x12" (inside dimensions at the ends).

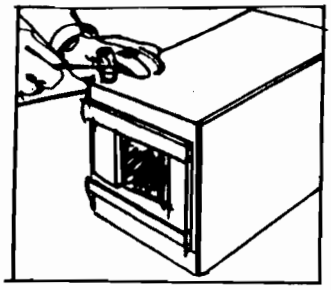
The top, into which your star map slides are inserted, should be made 6½-inch square to fit inside one end of the box snugly. Use screws to fasten it. The top has a 3-inch square opening cut into it. Dado grooved sticks at opposite sides allow your card slides to slip in smoothly. A stop block keeps cards from sliding right through.

With a test card in the opening, beam your flashlight into the box to find the best angle for reflecting light through the holes. In general, the best results seem to be obtained if the beams of the light strike the side of the box just below the corner of side and top. Now you can screw in your two holders so that the flashlight will be at the right angle.

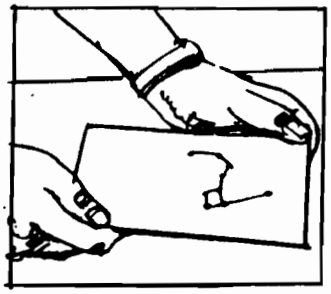
The top holder is cut out in a U-shape to fit your particular flashlight, the bottom one has a hole or inverted U big enough to allow the flashlight to slip in easily.



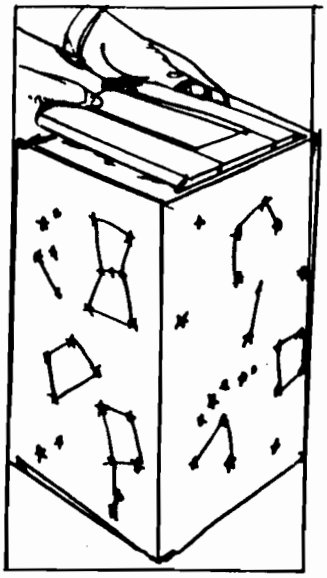
1. Cut a 3"x3" opening in the box top, slides fit grooves in side-boards.



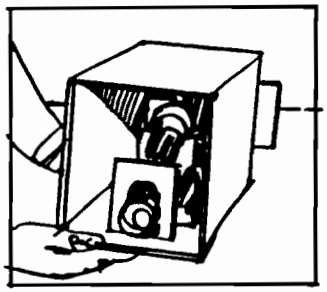
2. Assembled box is 12" long, 6½" square inside ends. Top fits snugly.



3. Make star cards on heavy paper by punching out all the constellations.



4. Slip star card in place. Experiment to get best angle for the flashlight.

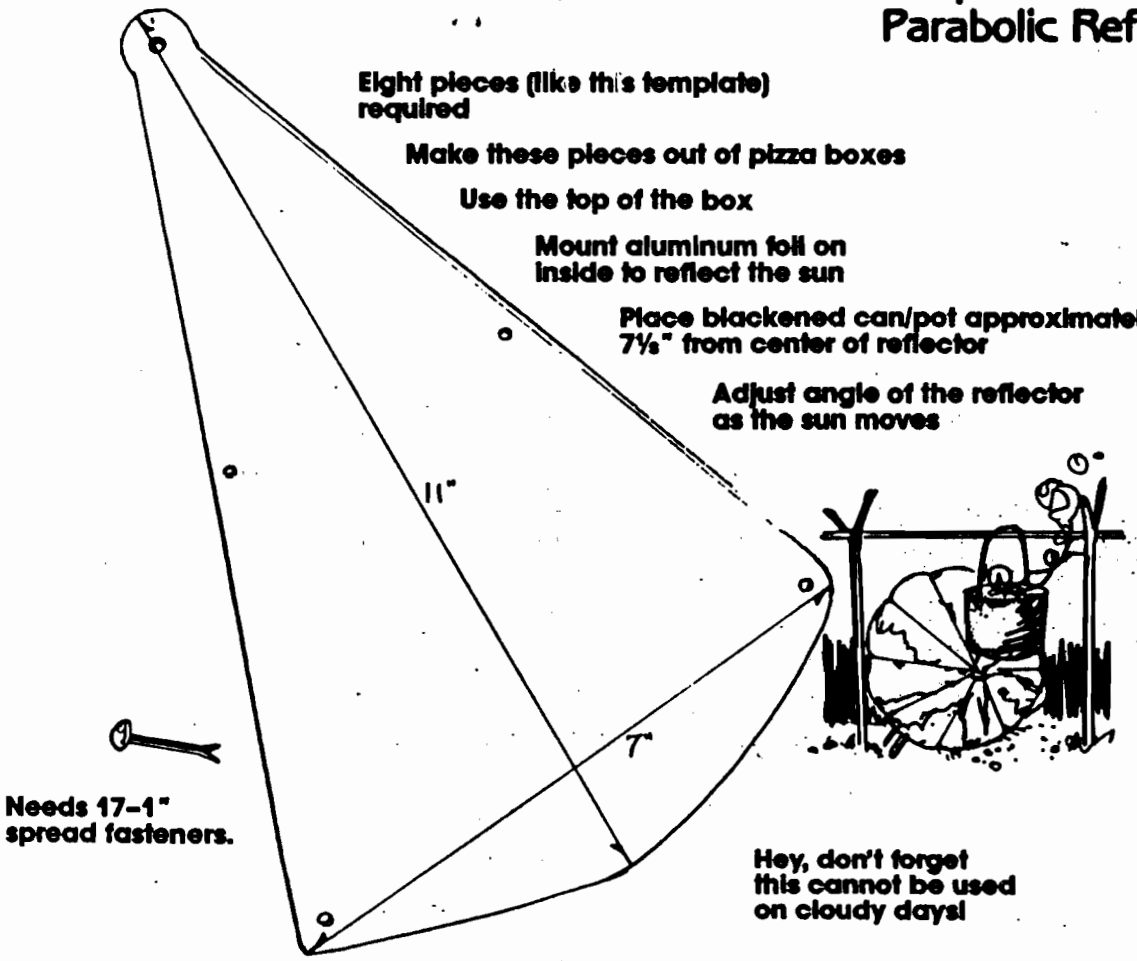


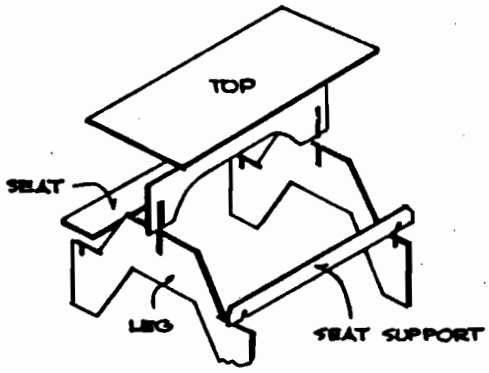
5. Two flashlight holders keep light source steady for projecting the stars.

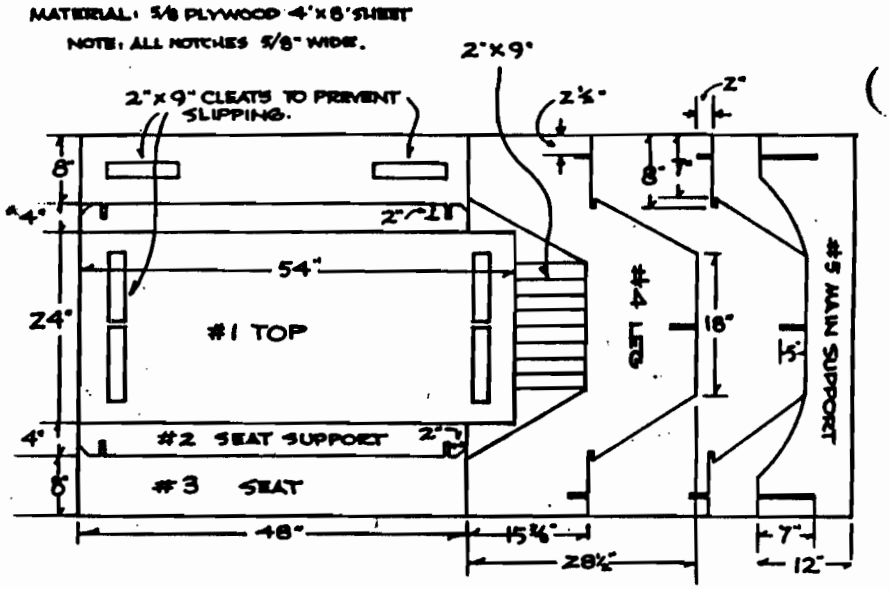
Each constellation is laid out on heavy paper in accordance with the diagram given in any book on astronomy. Punch a hole at each star location, trying to make holes larger or smaller as indicated on the relative brightness charts in your source book. The edges of the holes should be smooth so that the light beam can go through evenly. A high-speed drill with a ⅛" bit helps to make clean holes in thick paper.

The completed star-gazing box can be decorated by covering it with heavy wrapping paper on which you have drawn a variety of constellations or horoscope signs with India ink.

Sunpowered Portable Parabolic Reflector

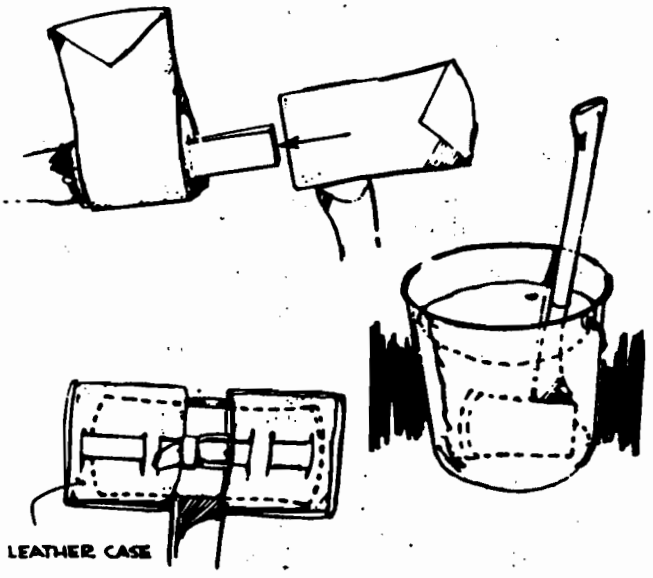






Handy Table

This table is ideal for a patrol corner, or for the Scoutmaster's corner. This is especially true if you are using limited space or space that must be shared by other groups during the week. The table can easily be disassembled for storage and reassembled when needed.



Ax Repair

Keep ax heads tight. Drive a new wedge alongside the older one if handle is loose. In an emergency, soak in water for half an hour.

Plastic Bag Mattress

Two plastic bags tied together with rubber bands or twine, and filled with 60-80 sheets of newspaper, proves to be great insulation as well as to add a certain amount of comfort to the hard ground.

Materials:

Two standard size plastic garbage bags

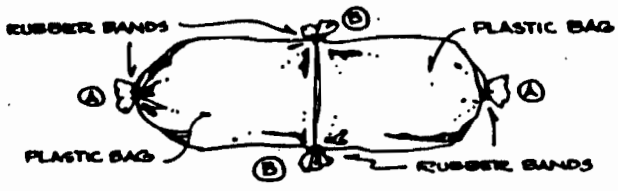
Four heavy rubber bands

60-80 sheets of newspaper

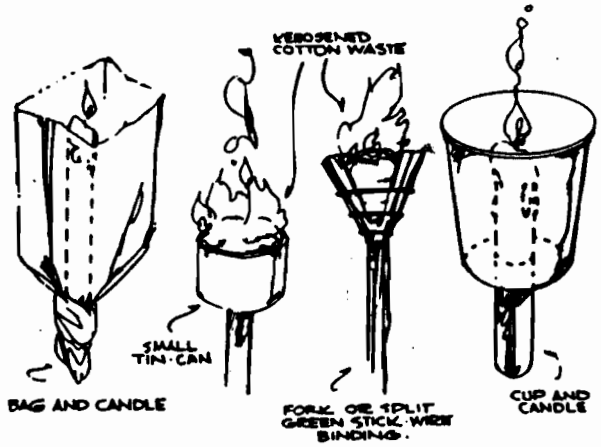
Procedure

1. Crumple each sheet of newspaper into a ball.
2. Put half the balls into each bag.
3. Fasten bags with rubber bands (A).
4. Join bags with rubber bands (B).

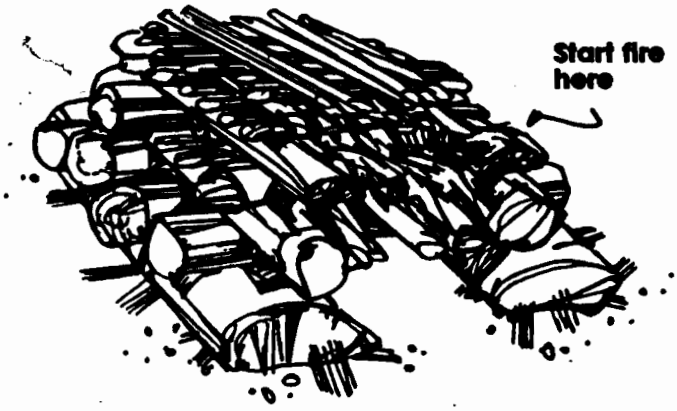
This camping mattress is good for winter camping.



Torches



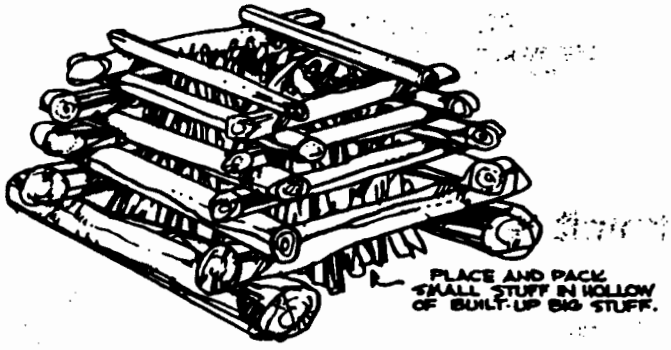
Campfires and Lighting

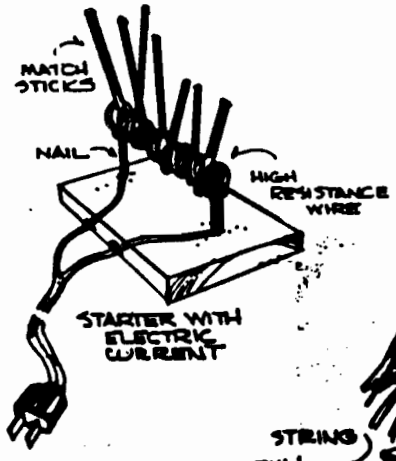


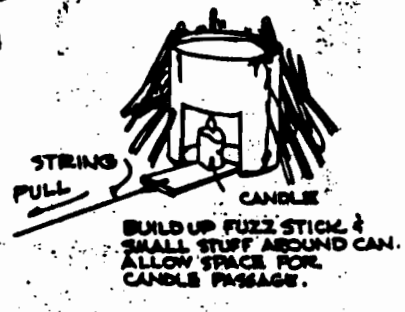
TOP LIGHTER FIRE

This is built up, course by course, in log-cabin style, but with no tinder at the bottom of the fire. Instead, the tinder course is laid on a solid bed of split hardwood at about the fifth course, as shown in illustration. Several courses of split hardwood are laid, log-cabin style, upon the tinder.

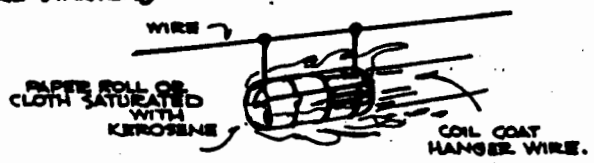
This creates a hot fire on the top of the stack. As the hardwood burns to embers, the fire burns downward instead of burning the whole layout from the bottom in a few minutes. It doesn't need a lot of wood to keep things going. This plan is very helpful where the supply of wood is limited; it is good conservation anywhere—try it!

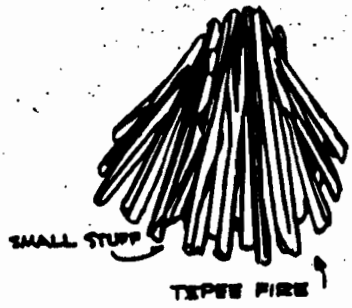


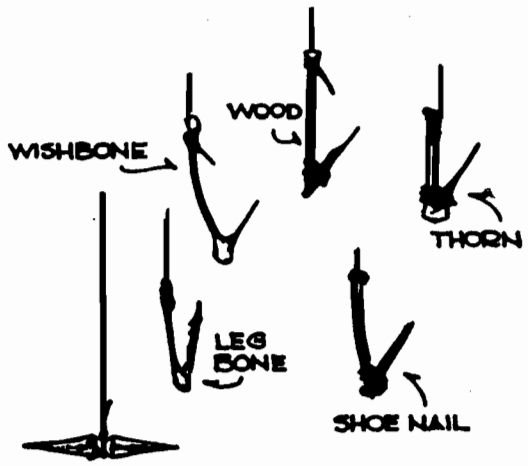




FIRE STARTERS





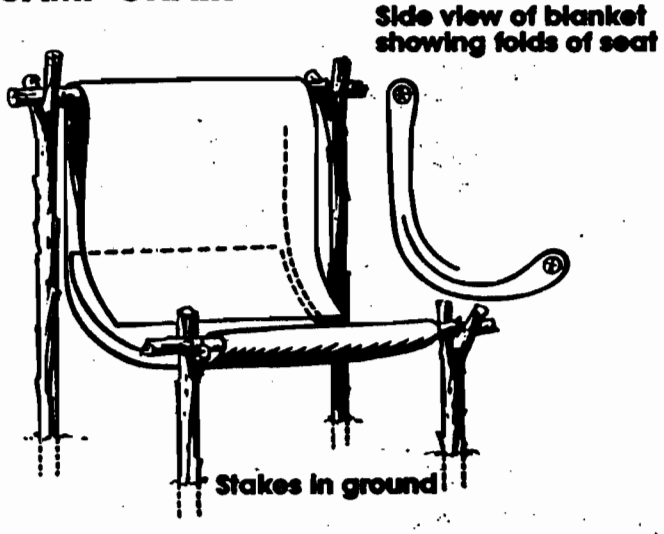


PRIMITIVE HOOKS
USE WOOD, BONES, THORNS. USE STONE FOR SINKER.

Primitive Fish Hooks

Veteran anglers among your Scouts may want to "tie one behind their backs" on your fishing campout by making and using hooks from natural sources.

CAMP CHAIR



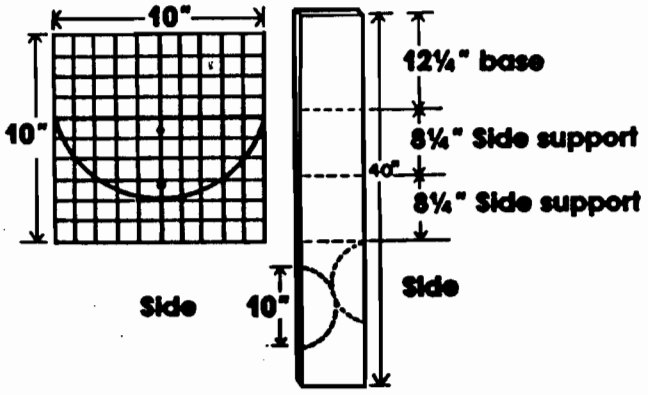
A handy camp seat

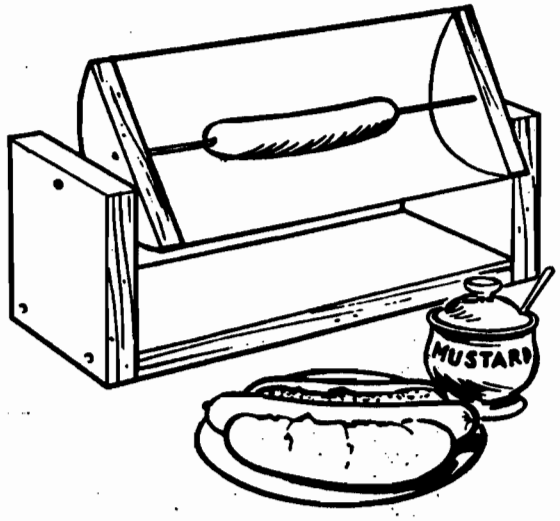
An interesting idea from the third edition of the *Boy Scout Handbook*, which was in use during the 1920s and 1930s. Unless the legs are driven deep into the ground, it would seem advisable to lash braces from the top of the front legs to the top of the rear legs.

Solar Hot Dog Cooker.

The first Saturday in October is Scouting Energy Day, and perhaps your troop will want to try an energy conservation project such as collecting newspapers for recycling. Or maybe some of the Scouts would prefer to make a Solar Hot Dog Cooker to harness the sun's power.

On heavy paper, draw grid as shown and duplicate the arc. Cut out the pattern and trace on wood. With jigsaw or coping saw, cut out two side panels and the base and side support pieces. In each of the side panels, drill two holes as shown. The hole at the top of the arc should be slightly





smaller than the diameter of the wood screws. The hole at the bottom should be slightly smaller than the 4-inch nails.

Nail base and side supports together. Then nail the sheet of aluminum to the side panels to make a "canoe." Polish the inner surface of the aluminum with steel wool and wipe it clean. Apply household cement to this aluminum surface and cover it with aluminum foil, shiny side out.

Push the long nails through the holes and fasten with a dab of cement. Clean the nails with steel wool and rinse with water. Mount the canoe on the support stand with the wood screws and washers.

To cook, skewer a hot dog or other food on the nails and aim the cooker toward the sun. In a few minutes, you'll have a well-done treat.

MATERIALS

40-inch-long piece of 1"x8" wood

1- x 2-foot piece of sheet aluminum, from hardware store

Two 4-inch nails

Assorted short nails

Two 2-inch wood screws

Two metal washers to fit screws

Steel wool

Household cement

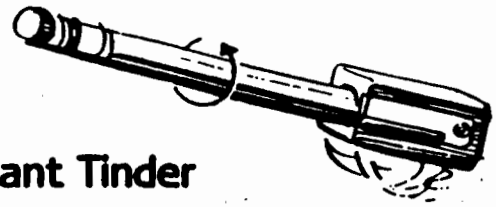
Aluminum foil

Foil Boot Liners

On a really cold day, you can keep your feet warm for a short time by wrapping aluminum foil over your socks and then putting on shoes or boots. Because the foil doesn't "breathe," this should be a short-time thing.

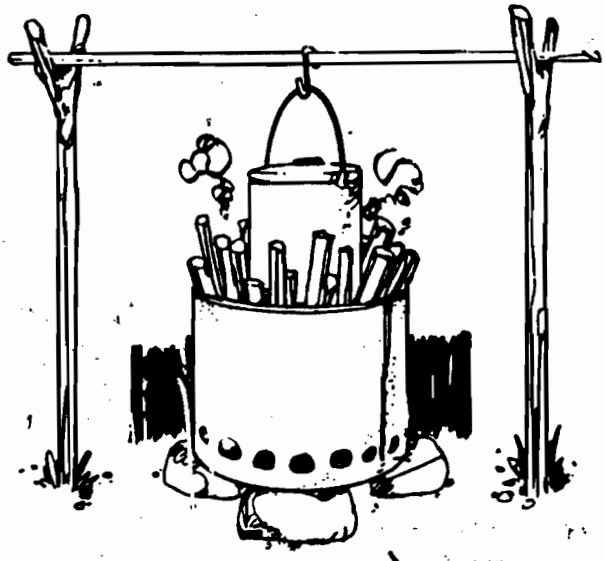
Sleeping Bag Tips

The BSA's medium-weight sleeping bags are designed to keep Scouts warm at temperatures of 25F to 30F. Heavier bags will be effective at much lower temperatures. Use a flannel sack inside your bag to keep it clean and extend comfort temperature. Wear stocking cap, long underwear, and wool socks for additional warmth.



Instant Tinder

You'll never be without tinder if you carry a couple of wooden pencils and a pocket sharpener.



Automatic Fire

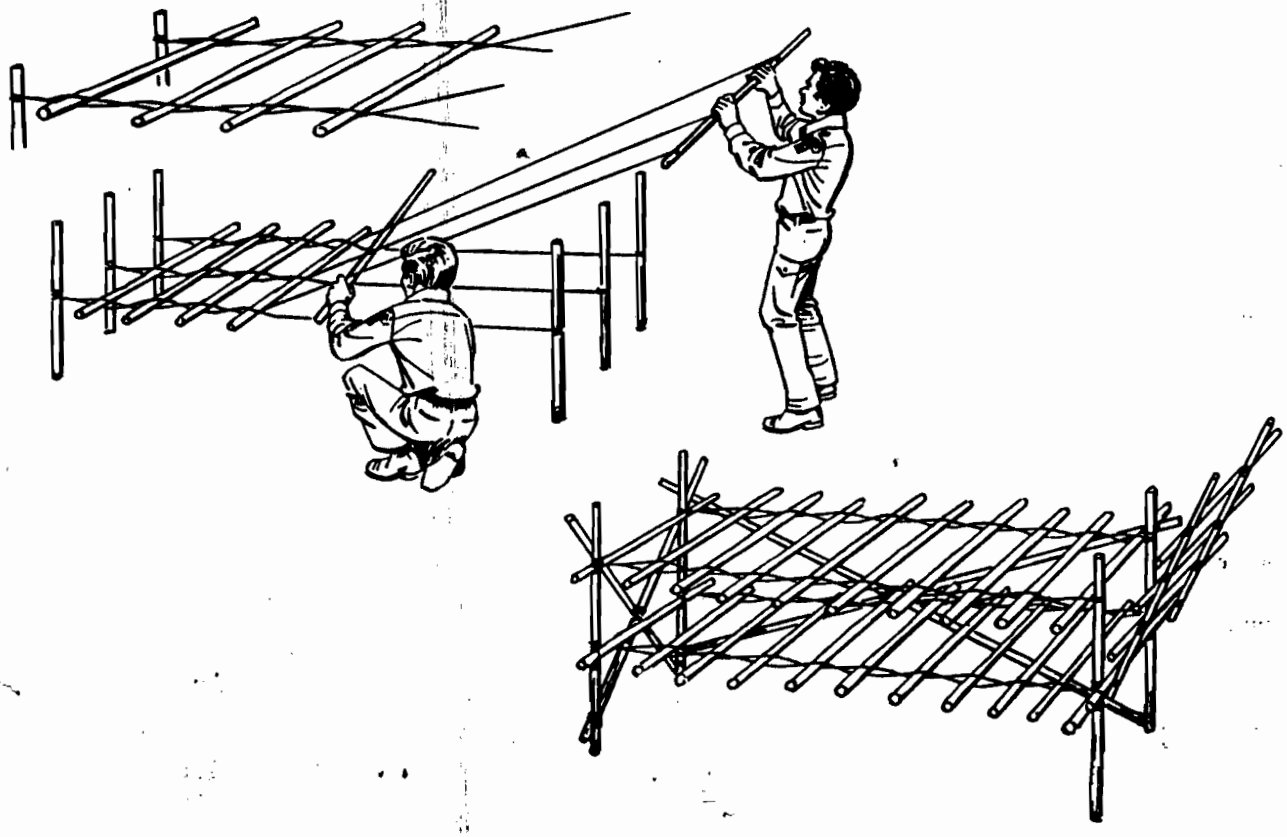
Automatic Fire

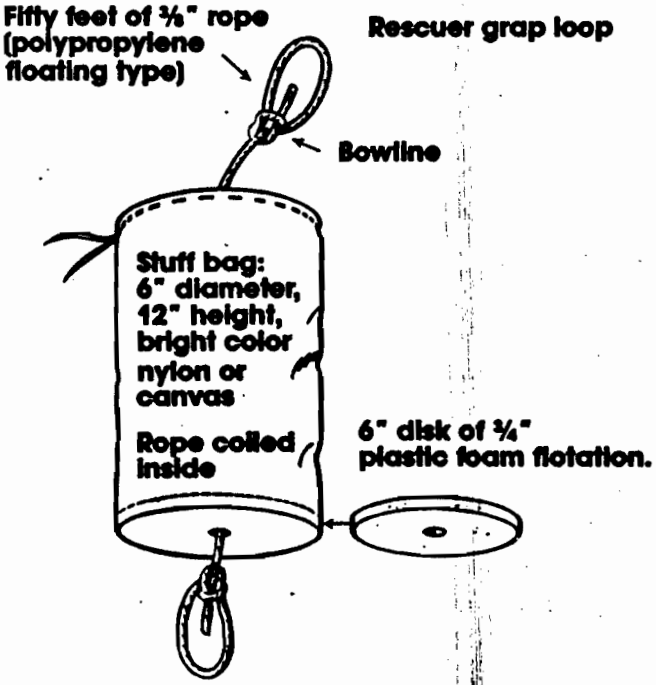
Punch ventilation holes around the bottoms of a large metal drum or bucket. Place it on three flat rocks to protect the soil. The fire is started in the usual way at the bottom of the drum and fed by standing small branches and large twigs on their ends. As the fire burns, the wood sinks into it, and more wood is added.

Camp Loom

Devices of this type have been used in camp since the earliest days of Scouting. A loom can be used to make table tops and shelving with sticks or to weave primitive mattresses

and lean-to roofs out of grass thatch, palm leaves, or similar materials.



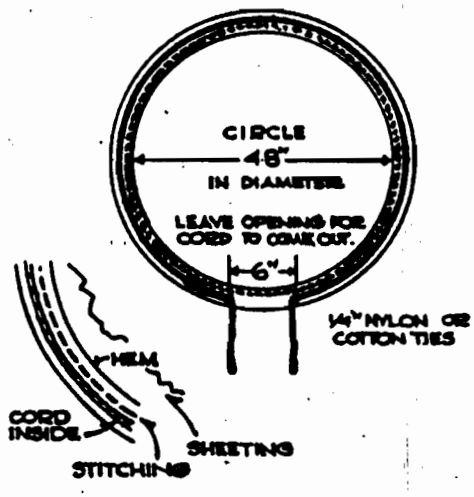


Stuff-Bag Rescue Rope

Conceived by the Navy during World War II, this device keeps 50 feet of line ready for rescues, is easily carried, and can be thrown successfully with little practice. Polypropylene ⅜-inch rope is best because it floats. Pass one end through the holes in the bottom of the bag and the flotation disk and tie an overhand knot inside disk. Tie bowlines in both ends for use as grab loops. Stuff the rope into the bag from the open end, permitting the rope to coil naturally inside the bag. Close the bag loosely with the drawstring to keep the rope from spilling out. Now you're ready for practice casts. It's best to throw onto water to get the feel. It also helps for second tries because water adds weight for better throws.

Blanket Roll Pack

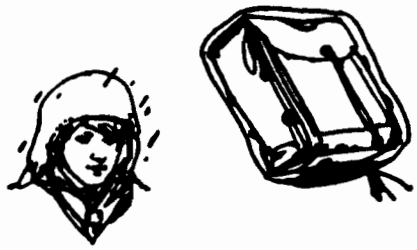
New Scouts who don't have a pack can improvise one with a blanket as the earliest Boy Scouts did. Spread ground cloth and blanket on ground. Lay extra clothes and personal gear along the center line and roll ground cloth and blanket as tight as possible. Tie with cords. Then bend into horseshoe shape, tie ends together and sling over shoulder.



Backpack Cover

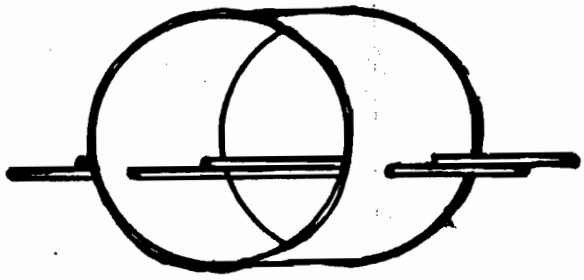
Use clear or colored polyethylene plastic sheeting four to six mils thick. Cut a circle about 48 inches in diameter. Lay strong, 14-foot cord around the edge and fold a 1- or 2-inch hem over cord. Stitch to sheeting. Be sure the cord will run freely through hem.

To use it, cover pack, pull cord fairly tightly, and tie ends. The cover also makes a usable wash basin, poncho, cover for firewood, and tablecloth.



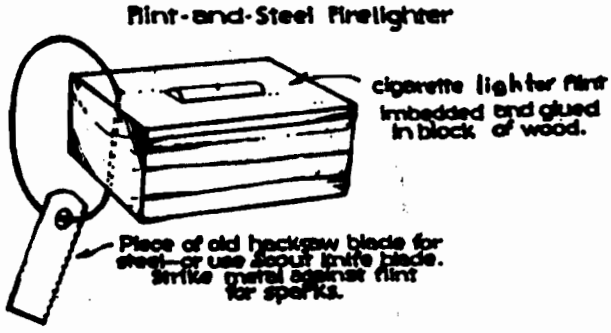
Tumpline

A tumpline eases the load of a heavy pack. Make from an old belt or leather strip and some rope. Set grommets in holes



World's Simplest Reflector Oven

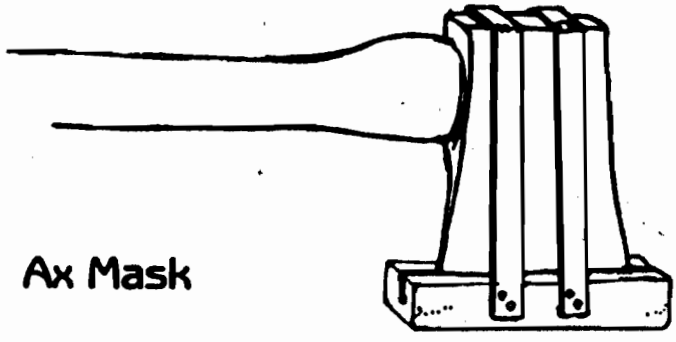
You need a large, clean tin can with shiny interior walls. (To find a suitable can, try restaurants and cafeterias.) Drill holes as shown to accommodate the rack, which is made of iron rods or very stiff wire. Put the oven in front of a small, hot fire and bake away.



Flint and Steel Firelighter

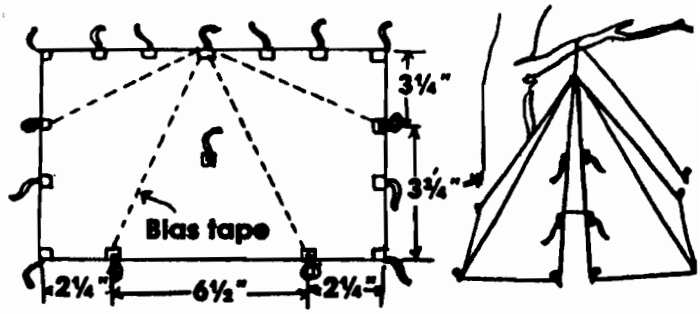
Cigarette lighter flint embedded and glued in block of wood. Piece of old hacksaw blade for steel—or use Scout knife blade. Strike metal against flint for sparks.

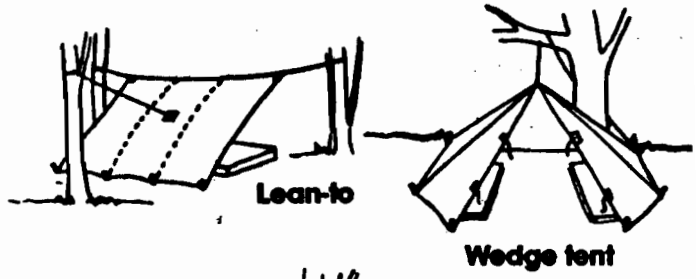
This flint and steel firelighter is a handy little sparker a Scout can carry to make a fire without matches.

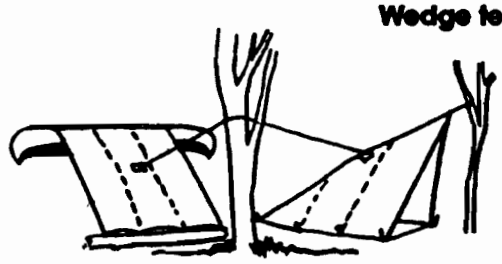


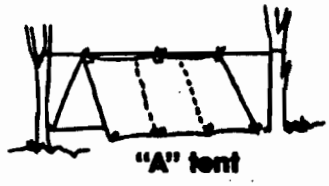
Ax Mask

Cut a groove in a wooden block and tack on two strips of inner tube as shown.



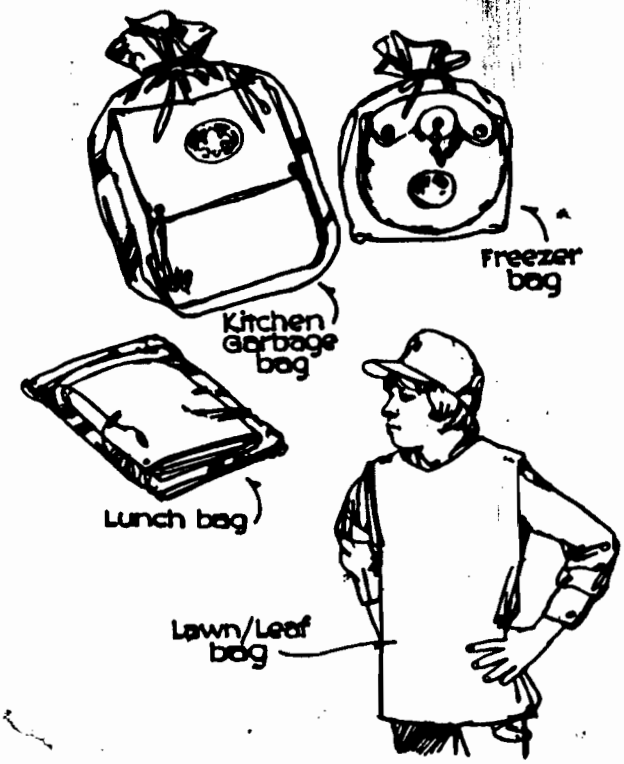






Versatile Tarp

With a 7- by 11-inch piece of canvas, patrols can make this versatile tarp. Stitch ties and tabs between canvas and reinforcing squares. For waterproofing, use sprays sold in most home-furnishings, hardware, and variety stores.

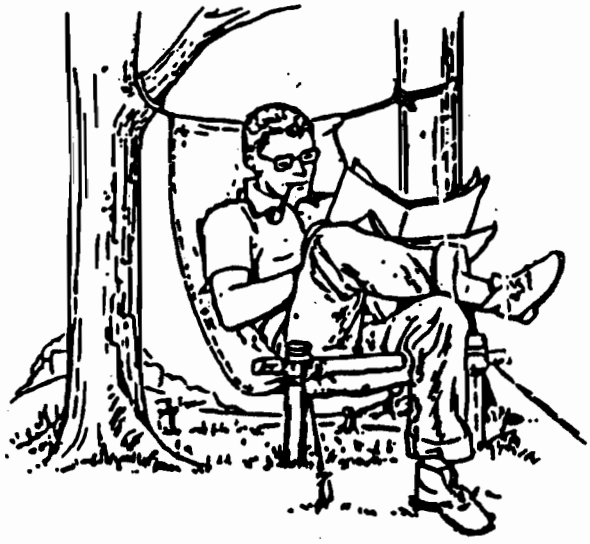


Plastic Bags in Camp

Bag Size	Use
Lunch bag	• Keep wallet or watch dry
	• Emergency cup
Freezer bag	• Store handbook, socks, underwear
	• Emergency canteen
	• Pillow (with stuffing)
Kitchen garbage bag	• Store dirty clothes and shoes
	• Tote litter bag
	• Pack
	• Bedroll
Lawn or leaf bag	• Ground cloth
	• Lean-to
	• Cover firewood, pack, bedroll
	• Make temporary poncho

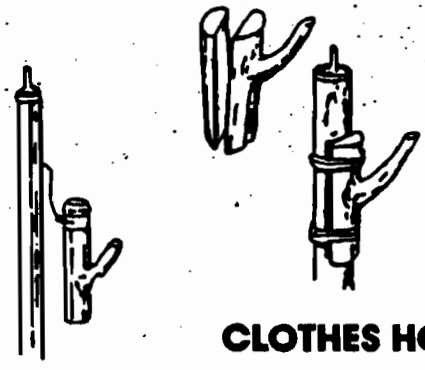
Film Can Shakers

Punch holes in the top of 35mm film cans and you have serviceable salt and pepper shakers. Cover the holes with tape when not in use; stick tape on the side when you're using the shaker. Film cans can also be used to carry wooden matches, if you cut them to fit.



SCOUTMASTER'S CHAIR

Make a comfortable "Scoutmaster's chair" from a piece of heavy canvas or a canvas hammock.

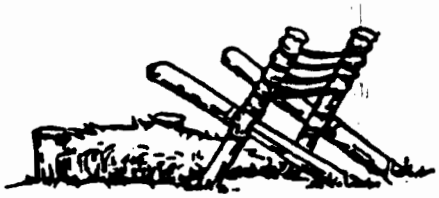


CLOTHES HOOKS

It is easy to make clothes hooks to lash to the tent pole.

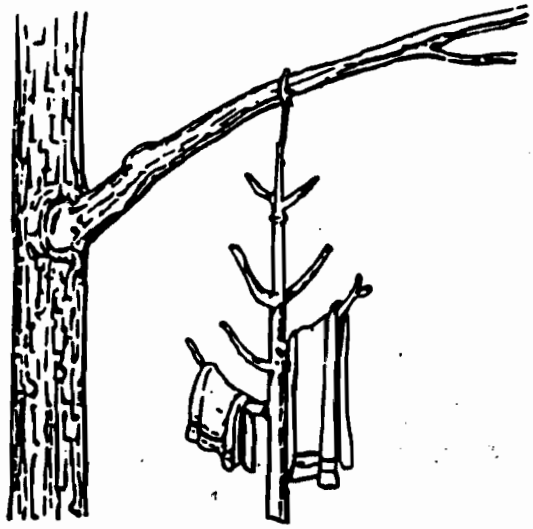
SHOE RACK

Keep shoes dry and off the ground on a simple shoe holder.



CAMP CHAIR

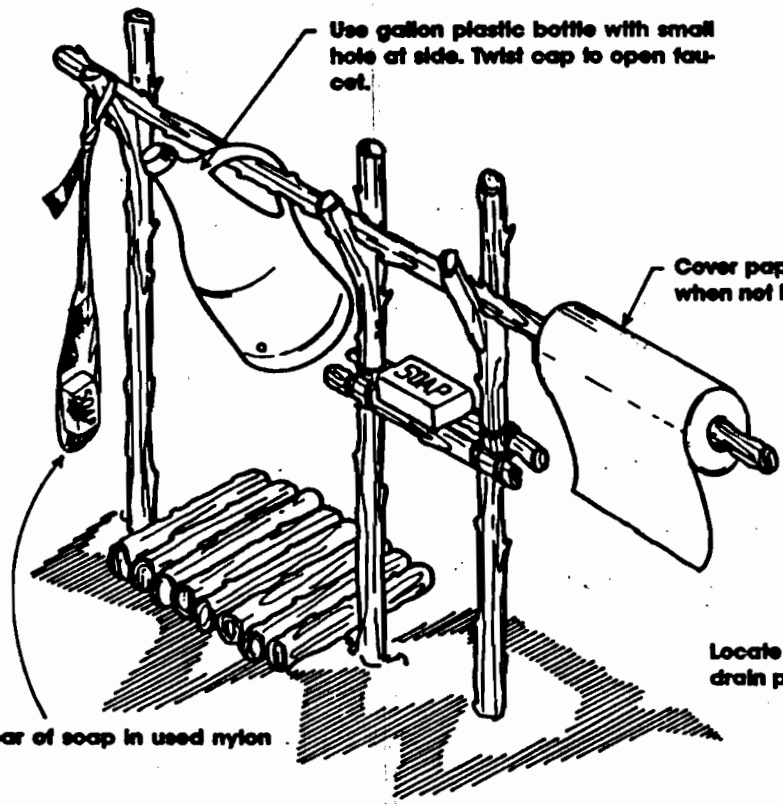
No rocking chair in camp but this Scouts chair will give you loads of comfort.



HANDY HANGER

Branch with short side branches solves problem of where to hang things.

Hand Washing Rack



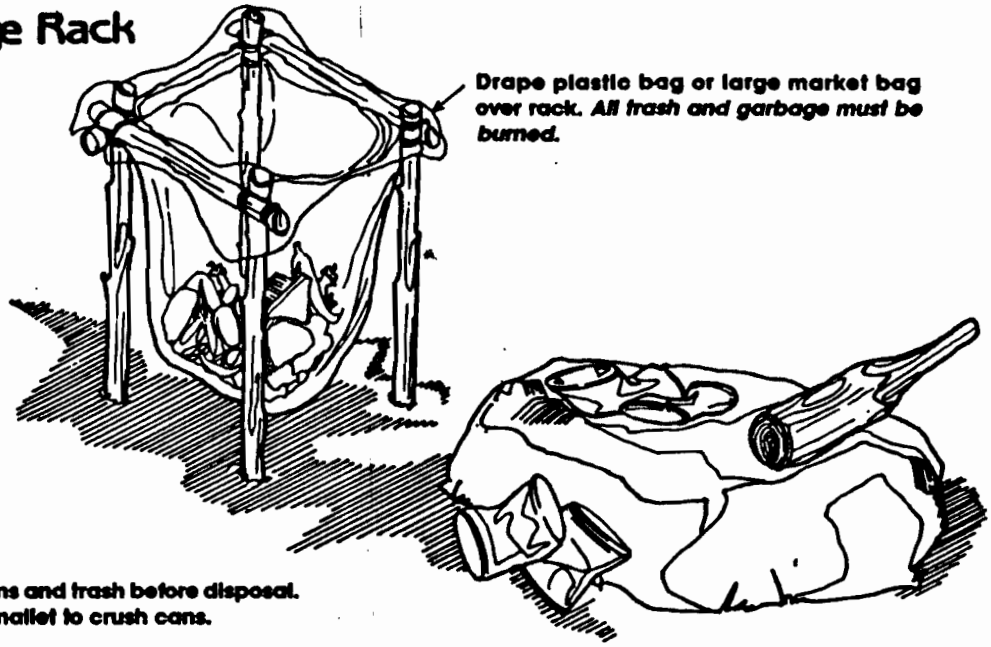
Use gallon plastic bottle with small hole at side. Twist cap to open faucet.

Cover paper towel with plastic bag when not in use.

Locate and construct wash rack to drain properly. Trench if necessary.

Suspend bar of soap in used nylon stocking.

Garbage Rack

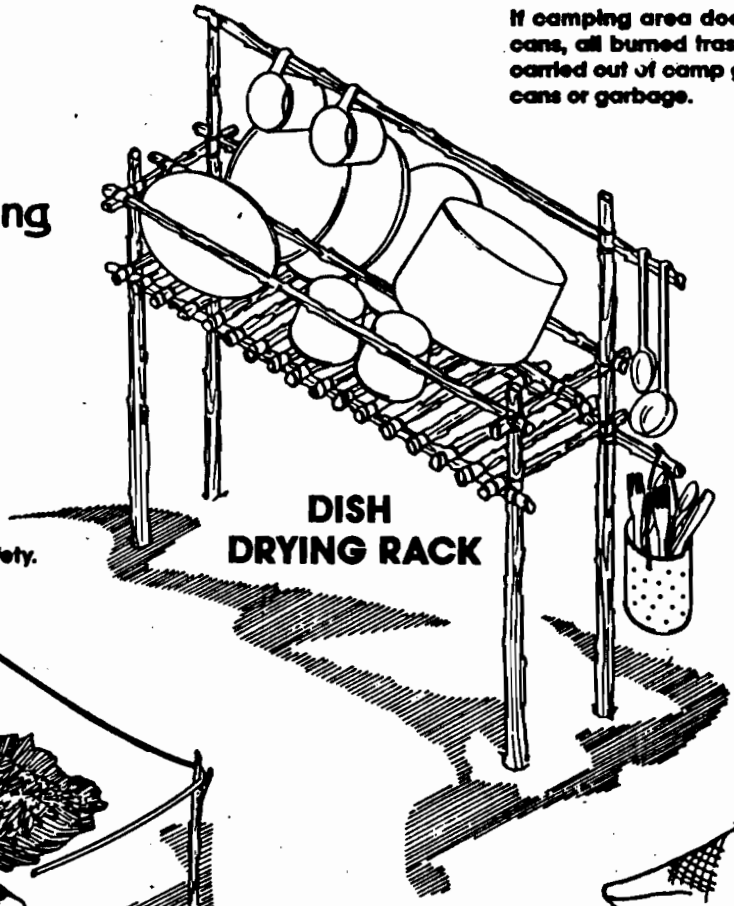


Drape plastic bag or large market bag over rack. *All trash and garbage must be burned.*

Burn all tin cans and trash before disposal. Use wooden mallet to crush cans.

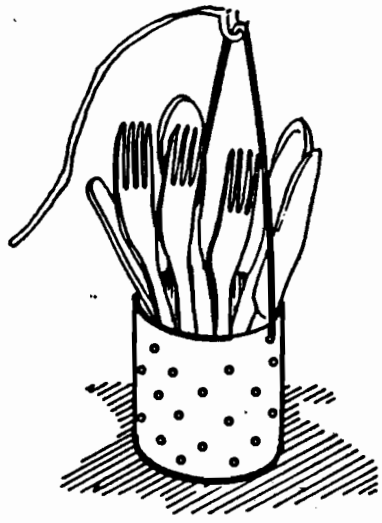
If camping area does not provide trash cans, all burned trash and cans must be carried out of camp grounds. *Do not bury* cans or garbage.

Dishwashing

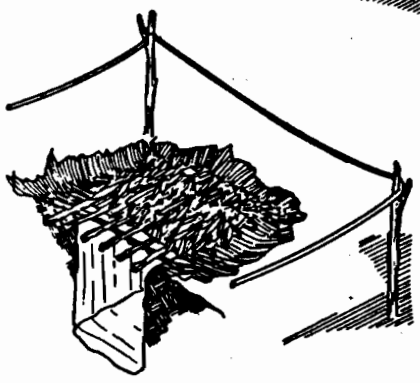


DISH DRYING RACK

Rope off pit for safety.

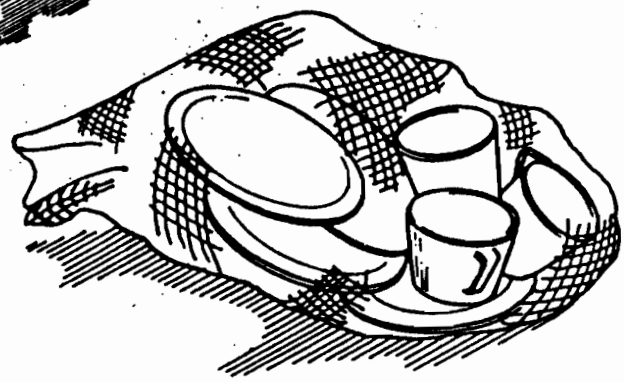


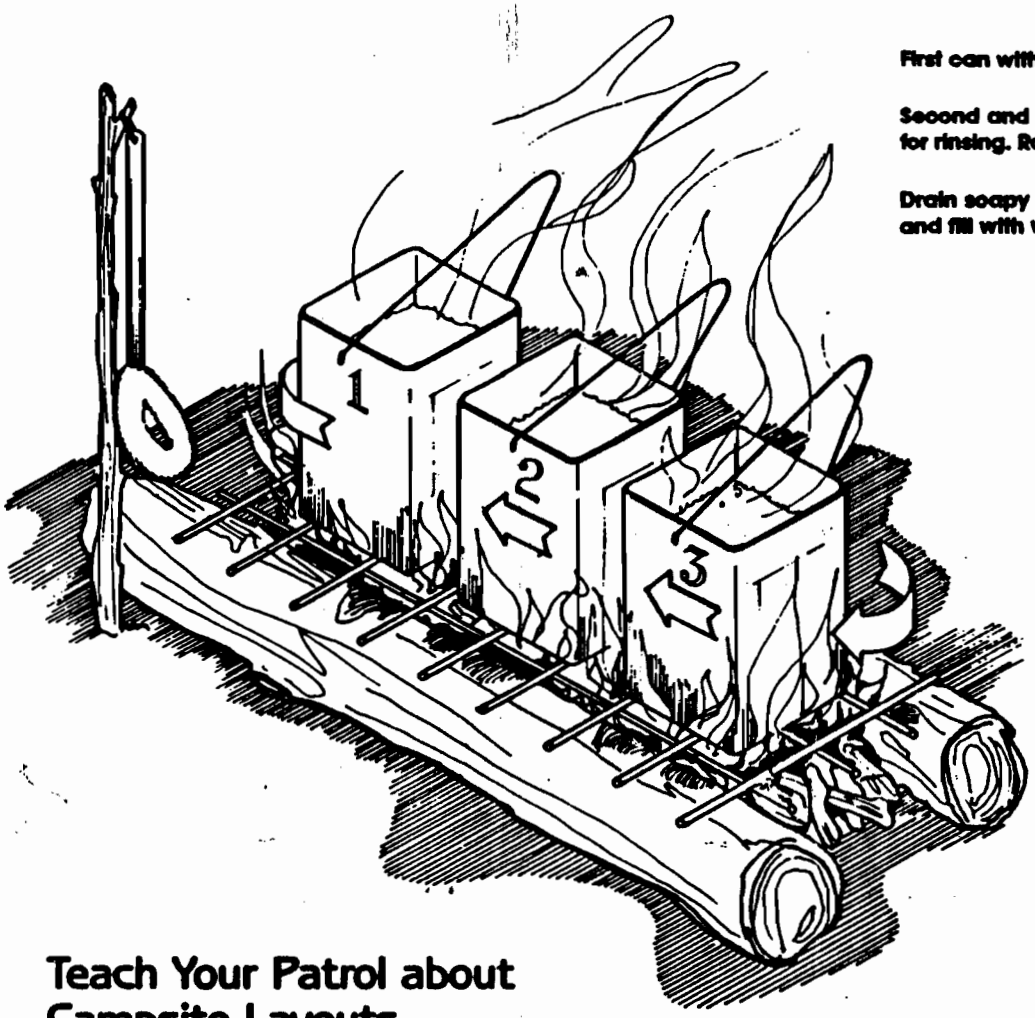
Nylon mesh bag for rinsing. Perforated can utensil rinse.



GREASE PIT

Dig approximately 12-inches deep and 8-inches square in width. Place twigs as shown and place pine needles or grass over to trap grease.





First can with hot water and detergent.

Second and third cans with boiling water for rinsing. Rotate cans after each meal.

Drain soapy water from first can, cleanse and fill with water and rotate as shown

Teach Your Patrol about Campsite Layouts

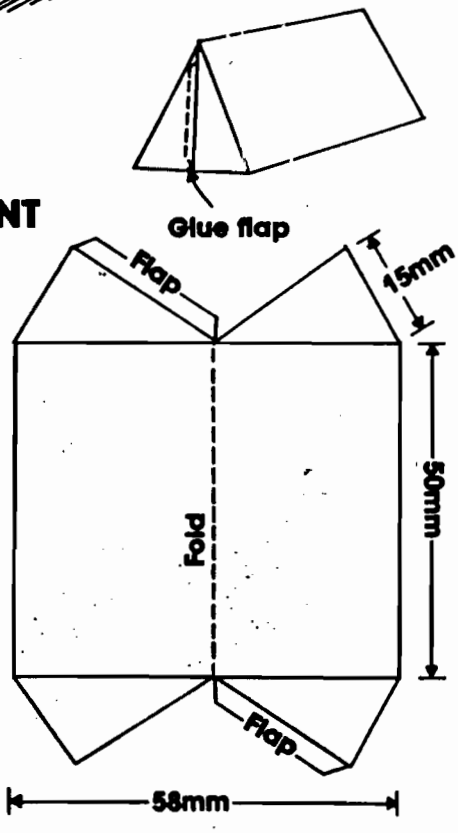
This is much more realistic and interesting if you can set up a model campsite. You can use a large tray with sand or soil to represent the ground, or better still, use the models and materials from a model railway such as model trees and people. If your site can have hedges and rocks and so on, this will enable you to discuss making use of shelter. Model brick or stone walls can also be useful. Use a strip of plastic for a river.

Below we have suggested some models you can make. We have only given the dimensions for the tent because you need to be able to get the shape of the ends right. The others you can make to an appropriate scale.

If you have time you can make model gadgets (such as a dresser)—and if you have the time and inclination you could make this part of your patrol/troop meeting. Give each patrol some dowl and string and spend part of the evening making gadgets for your model campsite.

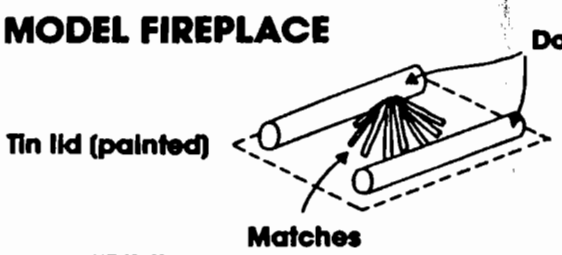
You will find it helpful preparation to read pages 24-25 (simple two-man campsite) in 'The Scout Badge and The Scout Standard', and pages 9-12 (what to look for in a site, choosing a site and camp kitchen layout) in 'The Advanced Scout Standard'" (both books by Steve Scholes and published by The Scout Association).

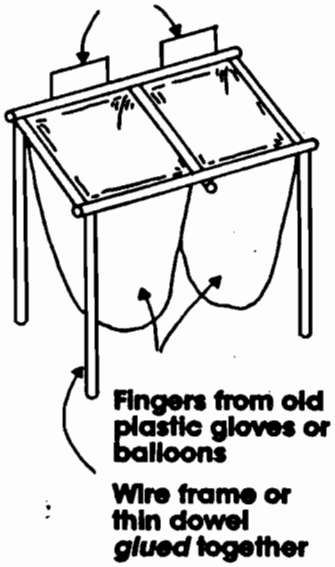
MODEL TENT



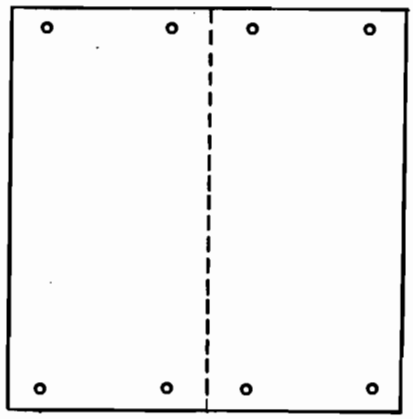
Make this out of light card stock. Alternative—Make one with the above measurements for a store tent and another with doubled measurements as a sleeping tent.

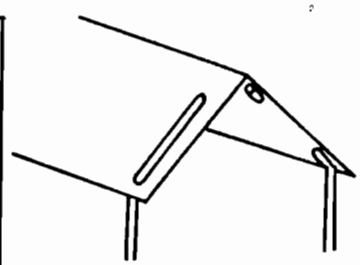
MODEL FIREPLACE

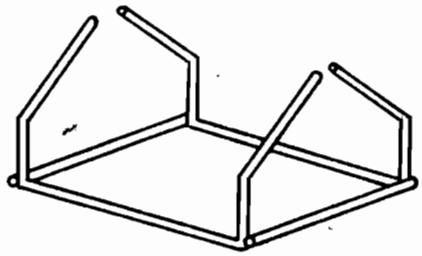




DINING SHELTER

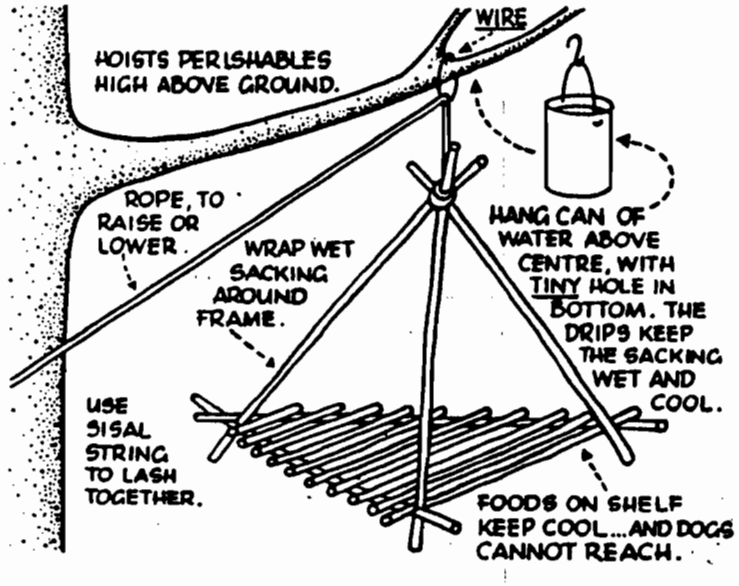


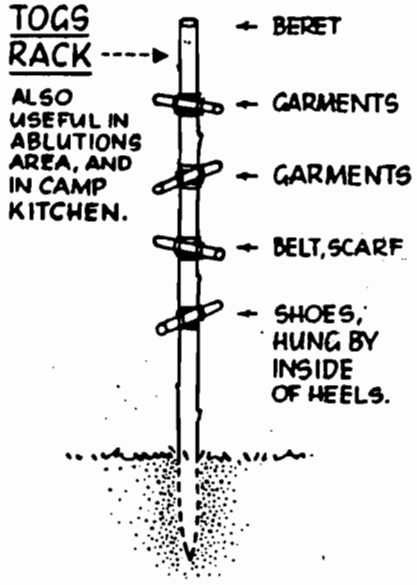


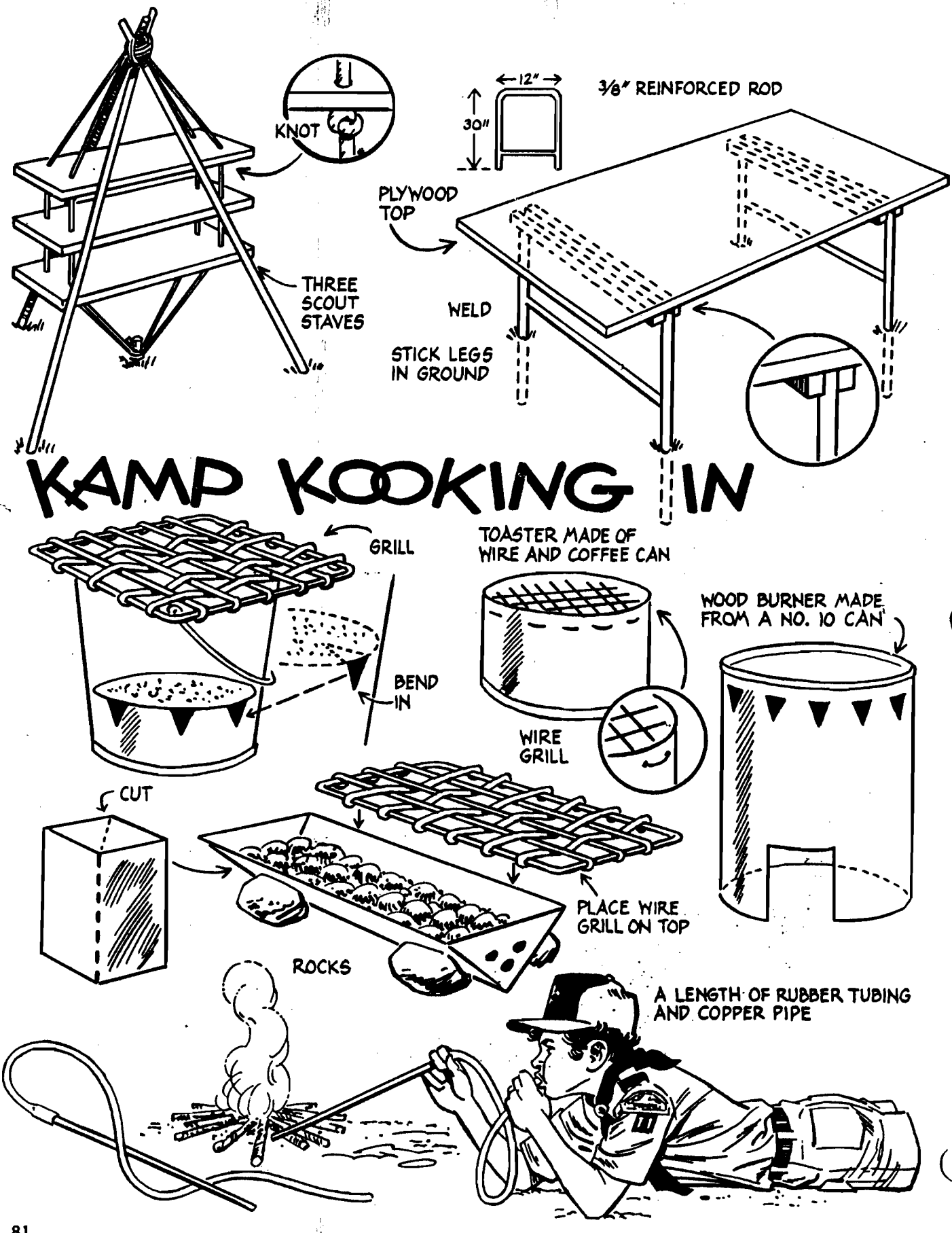


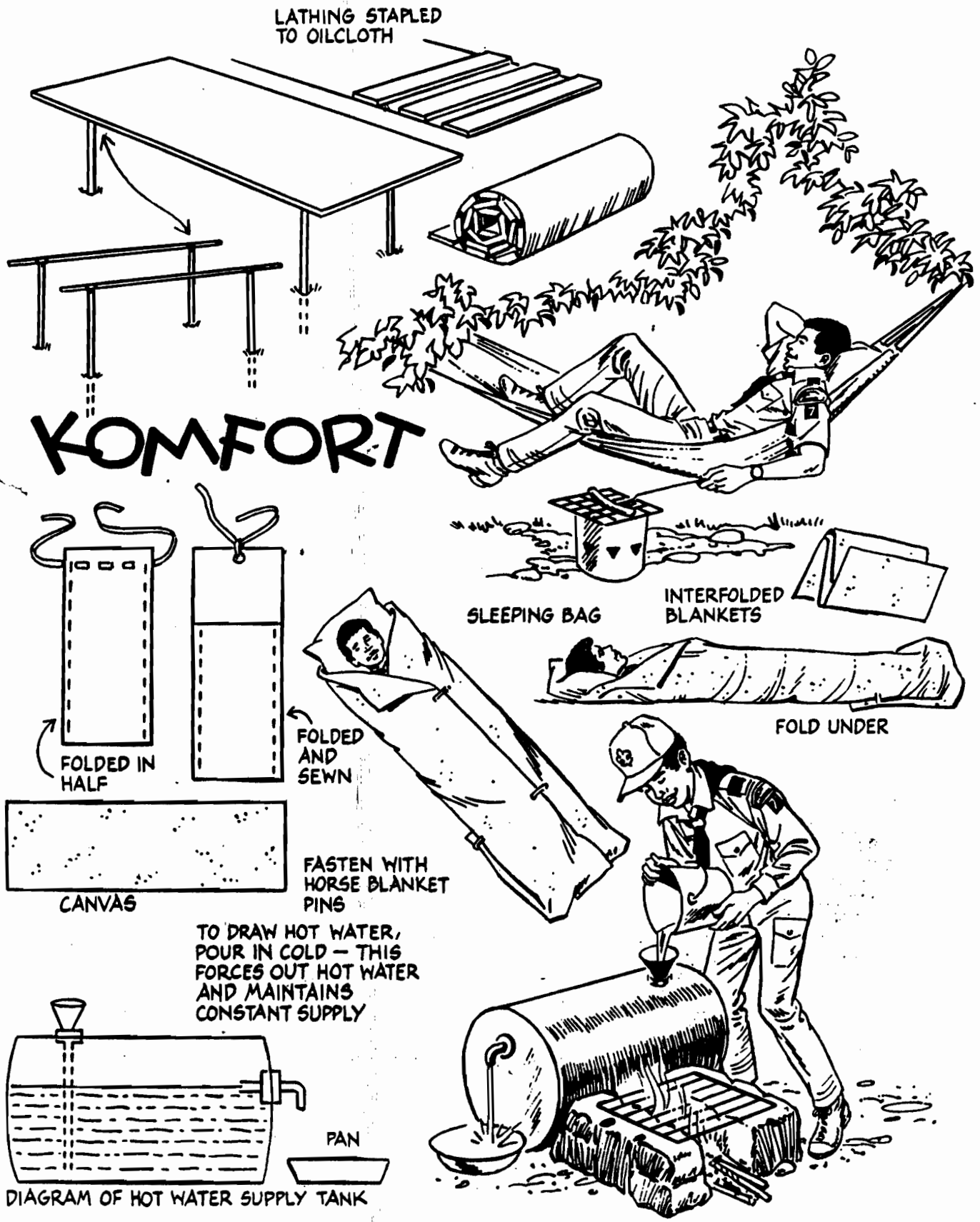
Use metal coat hanger wire

Tree "Fridge"

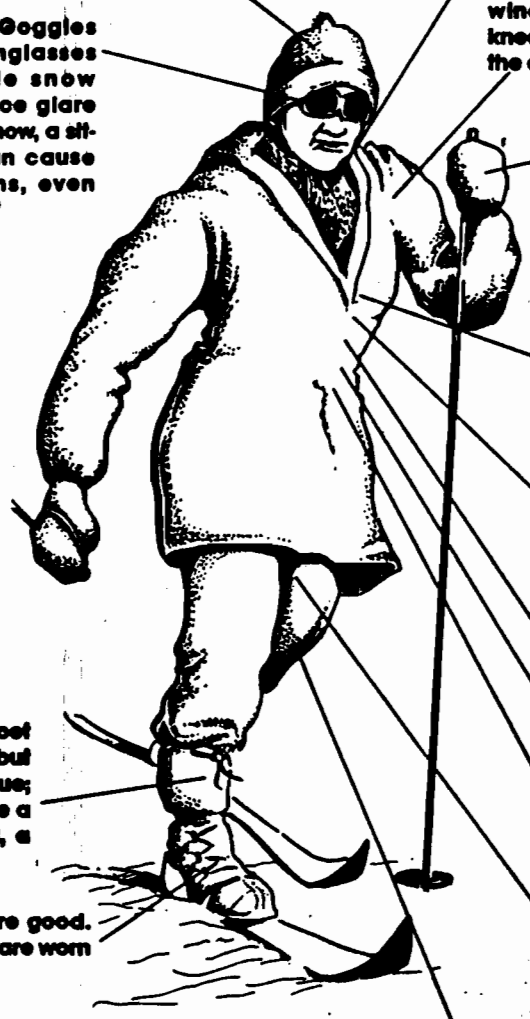





KNOT
THREE SCOUT STAVES
12"
30"
3/8" REINFORCED ROD
PLYWOOD TOP
WELD
STICK LEGS IN GROUND
KAMP KOOKING IN
GRILL
BEND IN
TOASTER MADE OF WIRE AND COFFEE CAN
WOOD BURNER MADE FROM A NO. 10 CAN
WIRE GRILL
CUT
PLACE WIRE GRILL ON TOP
ROCKS
A LENGTH OF RUBBER TUBING AND COPPER PIPE


LATHING STAPLED TO OILCLOTH
KOMFORT
SLEEPING BAG
INTERFOLDED BLANKETS
FOLD UNDER
FOLDED IN HALF
FOLDED AND SEWN
CANVAS
FASTEN WITH HORSE BLANKET PINS
TO DRAW HOT WATER, POUR IN COLD — THIS FORCES OUT HOT WATER AND MAINTAINS CONSTANT SUPPLY
PAN
DIAGRAM OF HOT WATER SUPPLY TANK

Your Clothing Is Your Key to Winter Comfort



Headgear. This is personal preference but it is always a good idea to have at least one stocking or knit cap for use under a parka hood or in the sleeping bag. Soft, insulated caps with ear flaps are good, but should be loose-fitting.

Eye protection. Goggles are best but sunglasses and homemade snow shields will reduce glare from sun off the snow, a situation which can cause painful problems, even "snow blindness."

Scarf. Wool or synthetic fiber makes an excellent cold weather protector, but make sure it is plenty long.

Parka. The anorak or pullover should be windproof, should reach almost to the knees, and be large enough to fit over all the other garments. It should have a hood.

Hand covering. This is a personal preference. Use any loose-fitting combination of the following: wool gloves, wristlets, wool mittens, foam mittens, dacron mittens, leather oven mitts, wind and waterproof expedition mitts.

Jacket. A lightweight jacket used in combination with other outer garments makes a better "layering" system than one thick, heavy jacket. A hood for extreme cold is a welcome addition.

Vest. This insulated garment keeps the vital organs—heart and lungs—warm. Best style has a flap in back to protect the kidneys. Detachable sleeves convert a vest to an insulated jacket.

Sweater. Use a wool or wool synthetic sweater to layer.

Shirts. Wear full-cut, loose wool, or wool-and-synthetic fiber shirts.

Long underwear. May be wool, wool and cotton, wool and synthetic fiber, and synthetic fiber. Keep a spare set for emergencies and to sleep in.

Pants. Wear full-cut, preferably with suspenders. In extreme cold, lightweight, windproof pants may be worn over everything.

Insulated chaps. Equipped with snaps down the inseam, they may be put on or taken off without removing the boots. Taken off, the legs may be zippered together to form a half-bag inside the sleeping bag.

Boots. Proper footgear is essential. A boot should fit somewhat loose for warmth, but the adage "cool is comfortable" is true; the feet should not sweat profusely. Use a combination of a light boot for travel, a thickly insulated boot for camp.

Socks. Wool, or wool and synthetic are good. Sometimes synthetic fiber stretch socks are worn next to the skin for added warmth.

Boot liner. A specially cut piece of 1-inch foam can be wrapped around the foot, held in place with a nylon "sock" and used with the mukluk in very cold weather. Also, quilted, synthetic liners are used and, sometimes, felt liners.

What keeps you warm?

When you really study what keeps you warm, it becomes clear that it is you! Your body produces all the heat you need. Your clothing is designed to hold in whatever heat you need to feel comfortable under a variety of conditions and activities. You will notice all our clothing is loose. That is because tight clothing constricts the flow of blood so the body heat cannot move around—just like when a faucet is turned off. That is why tight boots mean cold feet and a tight belt means cold legs.

COLD

C.O.L.D. That is an easily remembered key to keeping warm.

C. Keep yourself and your clothes *clean*. Dirt and body oils which build up on clothing destroy its insulating properties.

O. Avoid *overheating*. Clothing is designed to be taken off or added to in layers to maintain an even body heat.

L. Wear clothes *loose* and in *layers*

D. Keep *dry*. Wet clothing removes body heat 240 times faster than it will dissipate through dry clothing. Wet is trouble.

Ventilation

To regulate the amount of heat yet not get overheated and wet with perspiration, adjustments can be made to loosen up the waist, the cuff, and the neck opening, allowing more heat to escape.

Wet, windy, cold

This is the combination that spells danger to the winter camper. We avoid it by keeping dry, getting out of the wind when possible, and wearing the correct clothes.

Good clothing and equipment

Buy the best clothing and equipment you can afford, they are essential for your enjoyment of the outdoors in winter.

Fire

Nowhere in the winter clothing or sleeping systems will you see any provision for fire to provide body heat. Fire in the winter is a "false god" in regard to warmth. The body itself is like a big furnace. You stoke your furnace with good food; it burns the food and provides the heat which your heart circulates through your body. Layers of insulation determine how much of that heat is retained and how warm you will feel. Fire is useful for turning snow into water, for its cheerful glow, and for heating water in an emergency. Extreme care must be taken around an open fire not to get too close with synthetic fiber garments which can shrivel or melt just from reflected heat.

Winter

Short days, deep snow, and cold, clear, dry, air characterize deep winter. The beauty of snow-covered terrain and the hushed silence of frozen lakes provide unique setting for those who answer the call of winter camping. Learning to live in and enjoy the snow country is a challenge few dare to take. But once you have answered this call and have slept beneath the stars and the northern lights arrayed against a black velvet sky, or listened to the distant howl of a hunting wolf, snow camping will become an unforgettable experience which calls you back again and again.

Types of bags

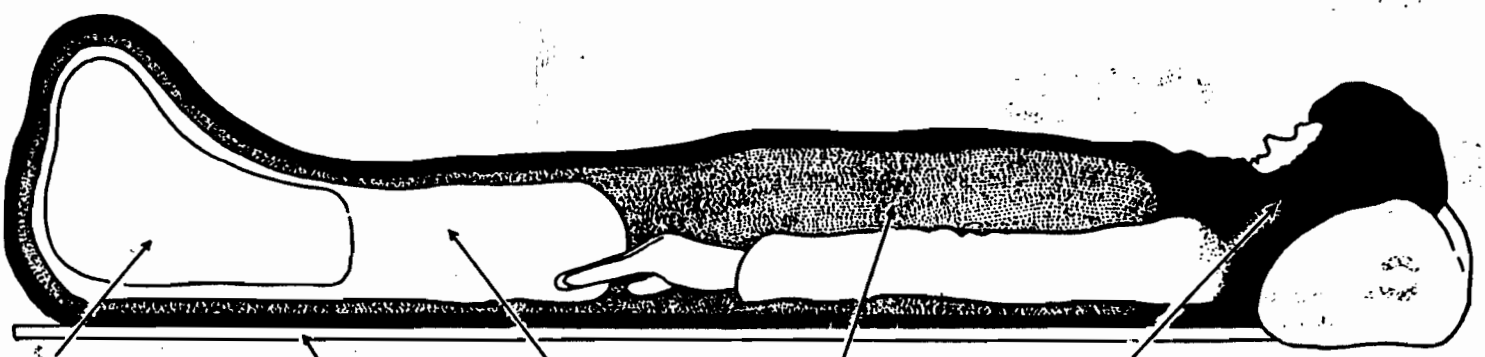
Inner bags and outer bags may be made of synthetic fiber which can be rolled up compactly for travel. These are particularly tailored for long-distance trips in the winter. The cold weather foam outer bag is warm and while somewhat bulky, can be laced down and compacted into a serviceable size for travel.

Temperature

Temperature indicates how much of the system you will need. In warming situations, only part of the system may be needed. The winter camper adds or takes away individual items to maintain personal comfort. In extreme cold, with the entire system in use, clothing, plus a knit cap, also add warmth inside the bags.

Your Sleeping System Is Designed to Keep You Warm

Essentially, you are sleeping in four layers of insulation with a fifth layer underneath you to insulate you from the frozen ground. It is important to first make sure the feet are warm, so the sleeves in your parka are built to unsnap so they can be pulled over your feet like boot liners when you crawl in for the night. The insulated chaps are unsnapped, converted from individual leg coverings to a single bag which further protects the feet and lower extremities in the sleeping bag. The third layer is the "three-quarter bag" which comes up to the armpits and has a drawstring which allows it to be tightened down slightly in order to capture heat. The outside layer is a hooded sleeping bag which covers the entire system from feet to head and which has a drawstring allowing the opening to be pulled snug around the face to prevent loss of body heat.



Sleeve unsnaps and becomes a foot bag.

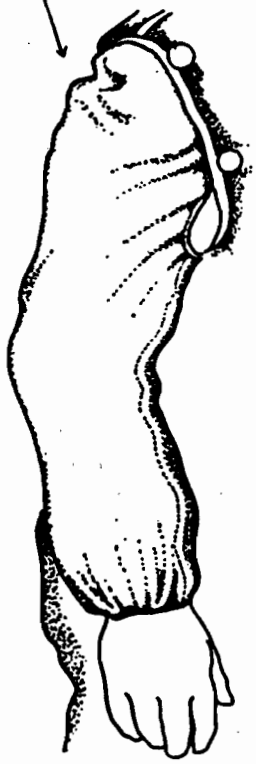
Foam pad stops cold from below.

Three-quarter bag, or bag liner.

Hooded outer bag covers everything.

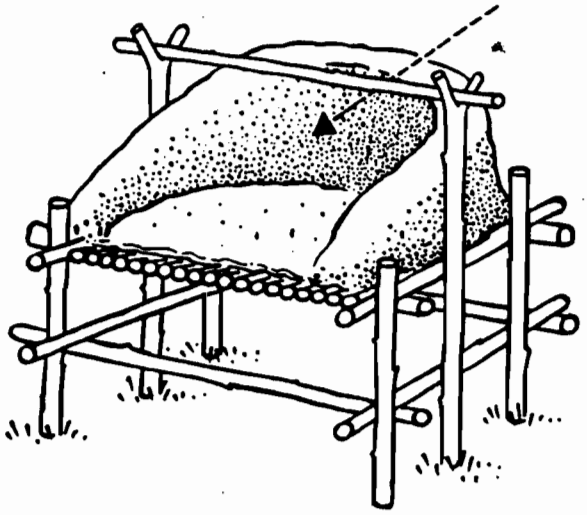
Sleeping pads. These are essential for insulating the body from the cold ground. They come in three types: 1) closed cell foam; 2) open cell foam, used with a closed cell pad; 3) insulated air mattress.

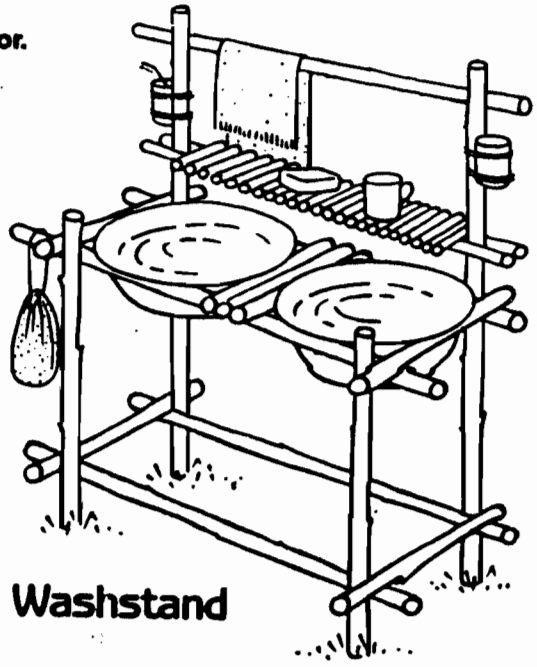
Insulated chaps snap together to form a half-bag.



YOUR SLEEPING SYSTEM WORKS BEST WHEN KEPT CLEAN AND DRY.

Altar Fireplace

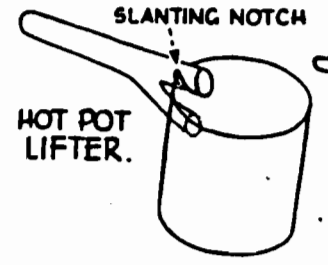


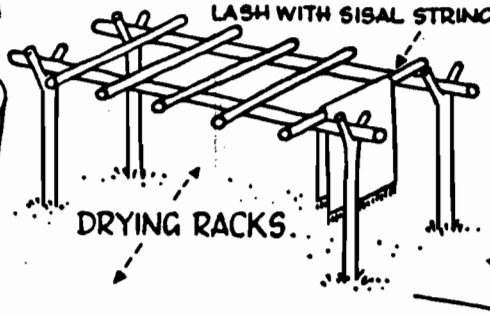


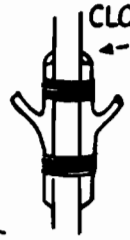
Washstand

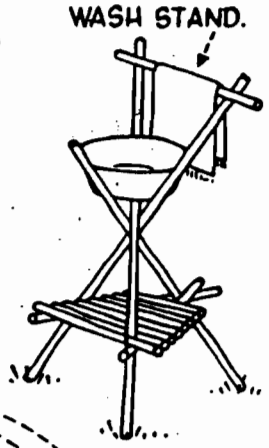
Lash with sisal string.

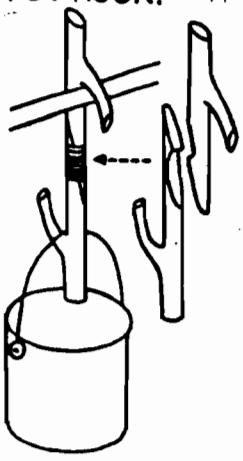
Some Traditional Camp Gadgets

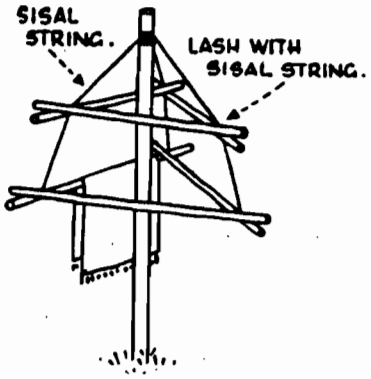


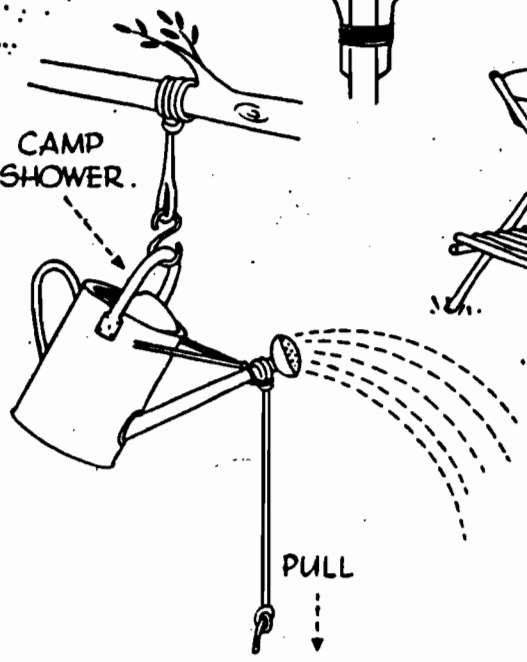




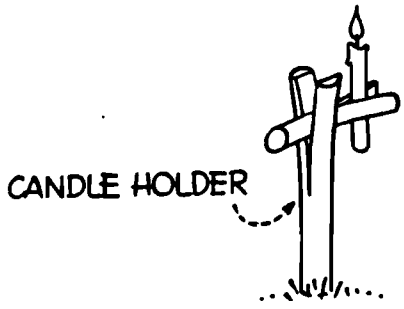


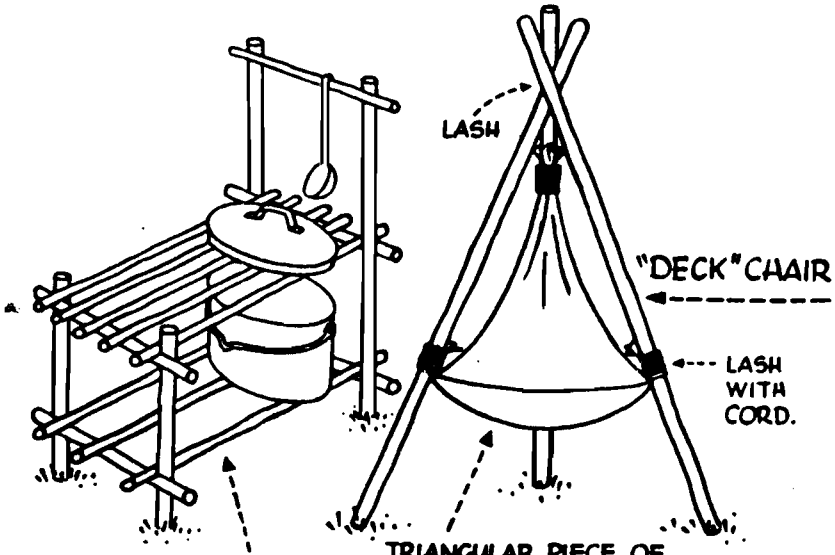


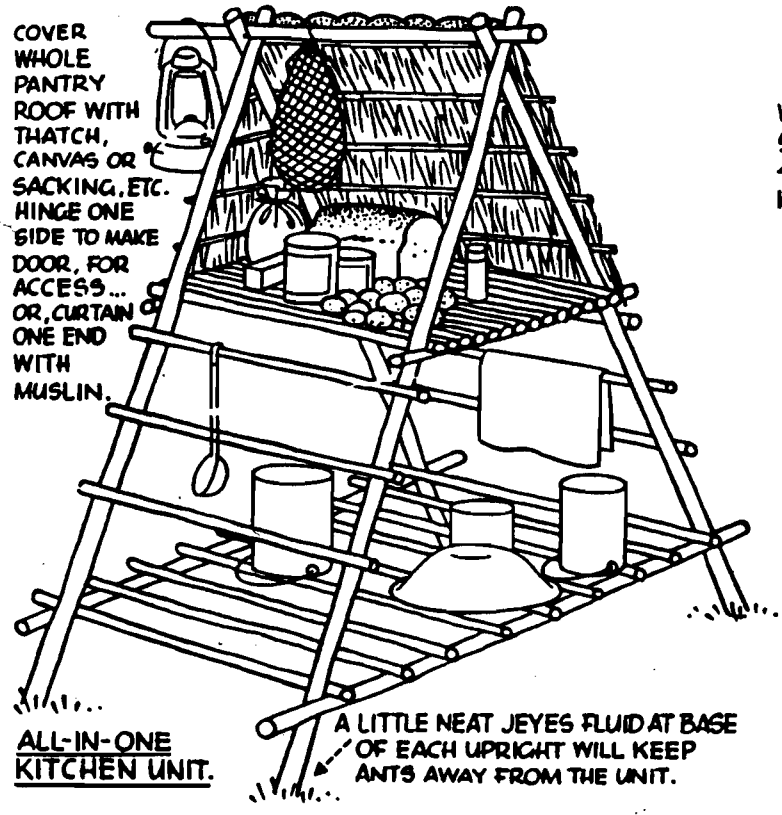




Gadgets Old and New

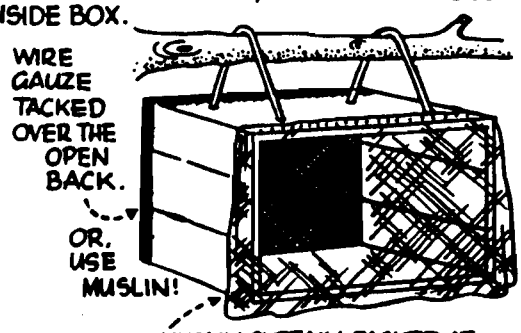


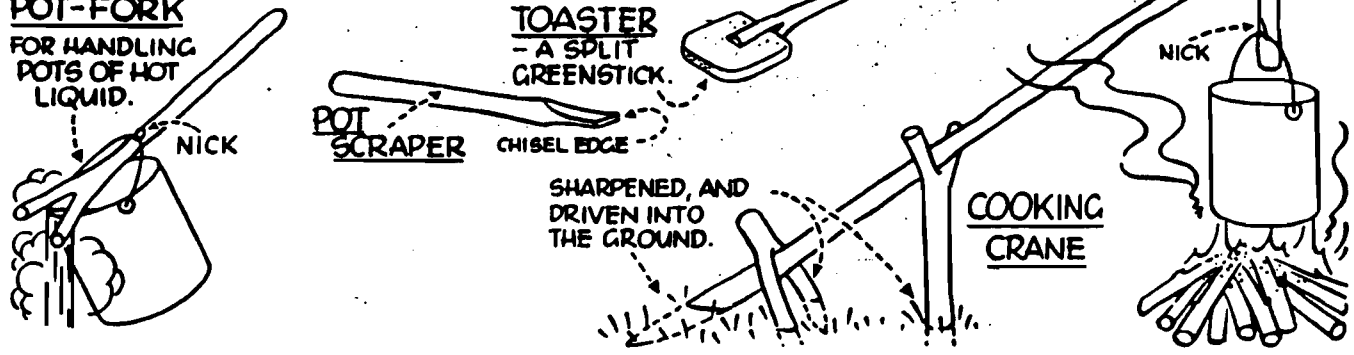




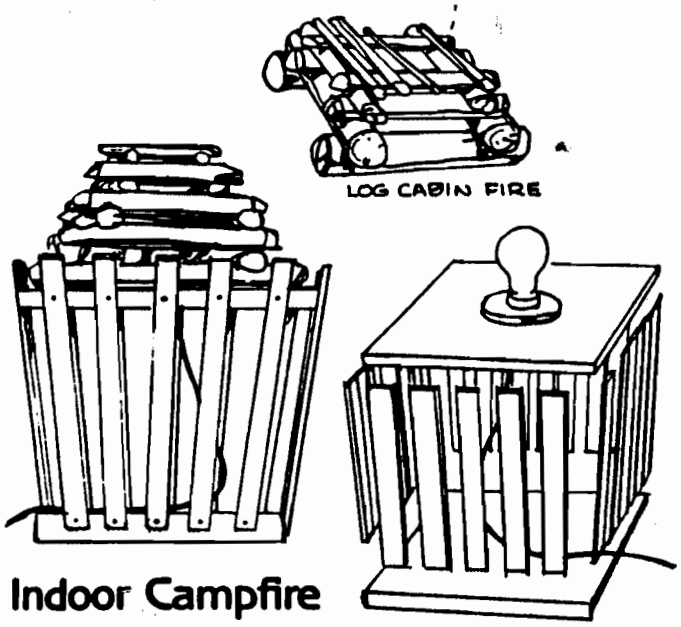
SUSPENDED BOX LARDER

WOODEN BOX, OPEN BACK AND FRONT, AND SUSPENDED BY TWO ROPES PASSED THROUGH 4 HOLES BORED IN TOP, AND HELD BY KNOTS INSIDE BOX.



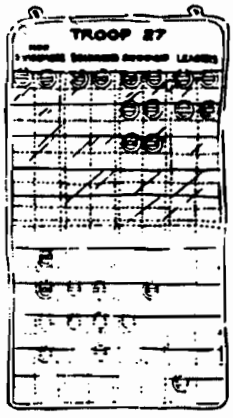


MISCELLANEOUS



Indoor Campfire

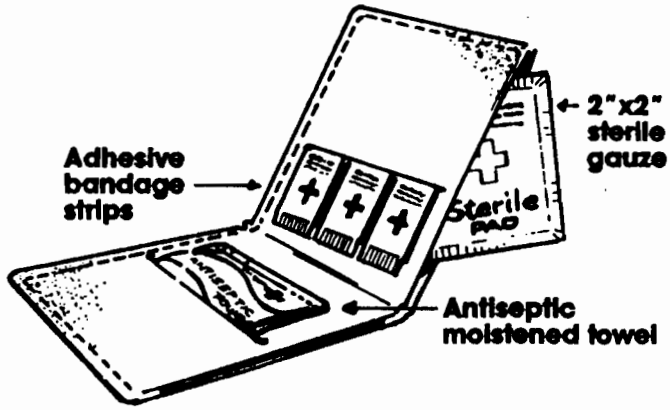
To make campfire, nail logs and sticks together. Place crisscross fire on light stand after red cellophane paper has been crumpled around bulb. Caution: Bulb should not touch cellophane.



Portable Plastic Buddy Board

The portable buddy check board shown here can be made and used by units at all swimming activities. The top section, used for the actual check-in procedure, can be constructed of red oilcloth or colored plastic. The bottom or tag-storage section is made of clear plastic. Clear plastic pockets are then sewn on both sections to enable easy reading of tags. Adaptable to all surroundings, this board can be fastened to a wall at the YMCA pool, a fence at the city pool, or a tree at the unit swimming hole. To carry, fold lengthwise down the center and carefully roll from bottom to ensure keeping tags in place.

Wallet First Aid Kit



Make a first aid kit for your wallet. Here's what you need:

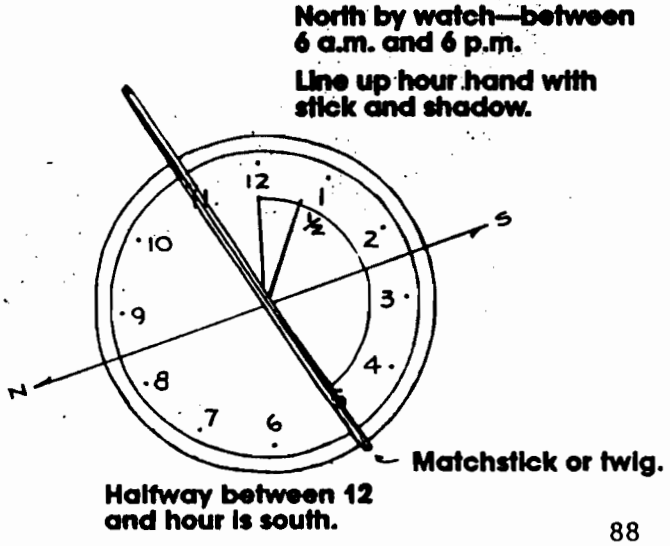
- Two or three adhesive bandage strips.
- One 2"x2" sterile gauze.
- Soap leaves (see directions below), or an antiseptic moistened towel.

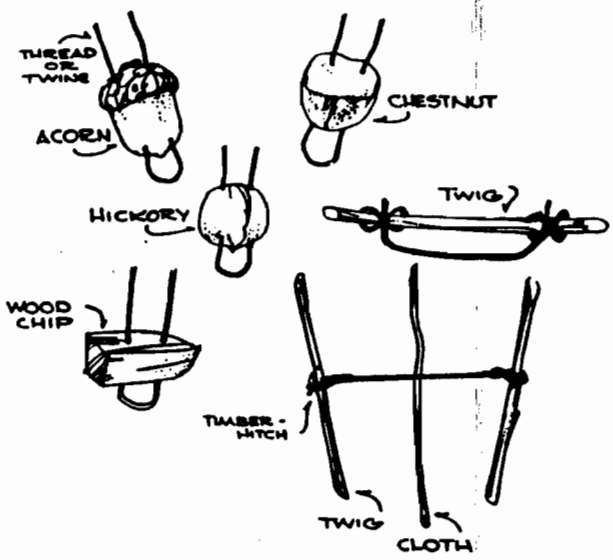
If you also carry a clean handkerchief at all times, you'll have a simple basic first aid kit.

Soap Leaves

Make soap leaves. This is a simple project. Merely soak a paper towel in a solution of 50 percent dish soap and 50 percent water. Lay the towel on a cookie sheet and allow to dry. Cut the paper towel into 2-inch by 3-inch strips and staple together. They can be used to wash up without having the messy wet bar of soap to put away. Simply pull a leaf from the pack and use it.

Wristwatch Compass

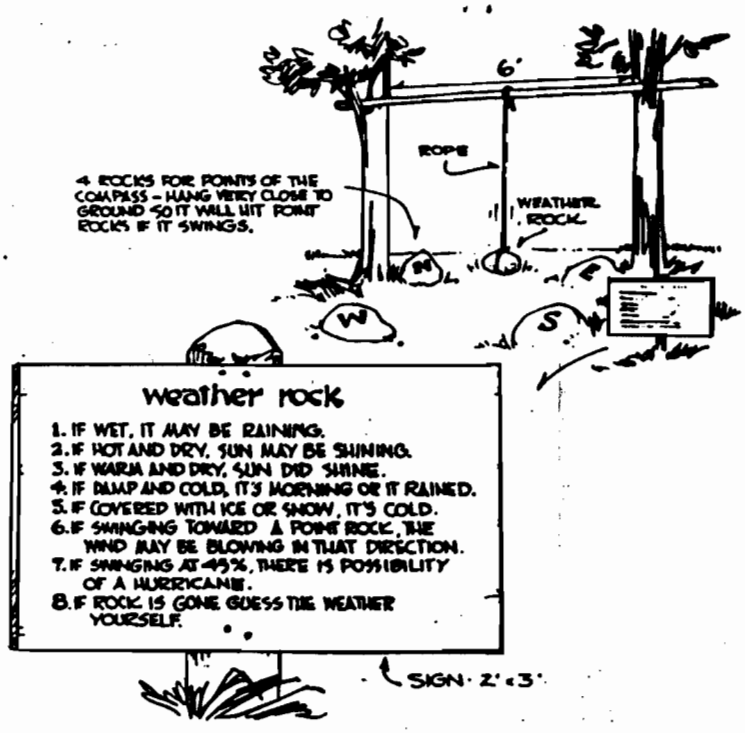




Button Button...

Ever have a button come off on a campout? It's really a pain to have to spend the rest of the campout, be it a day or a week, hassling without a button.

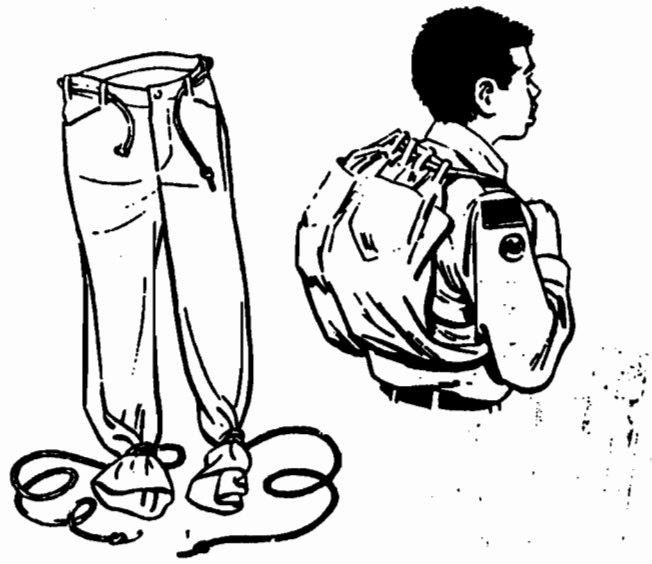
These illustrations show several ways to replace a lost or broken button using nature's own resources.



Weather Rock

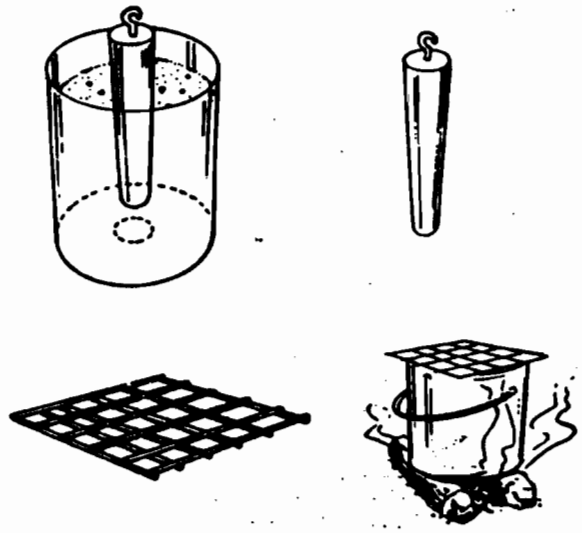
A weather rock is a fun device for camp or troop site.

Four rocks for four points of the compass. Hang very close to ground so it will hit point rocks if it swings. Make a sign listing directions for use.



Trouser Pack

It won't hold as much as a regular pack, but it will serve for a Scout who can't afford a pack.



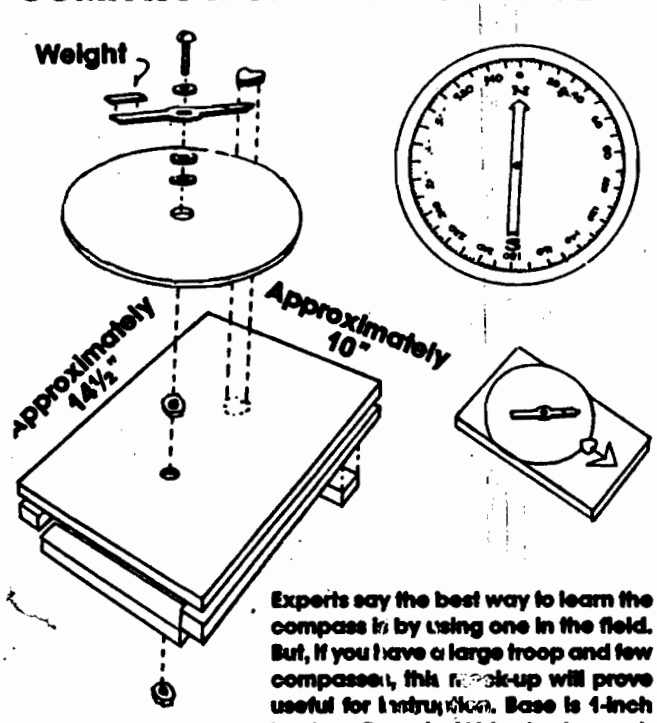
Sawdust Stove

Here's an efficient camp stove, if you can arrange to get sawdust from a lumberyard. A drum of sawdust will burn for 3 to 4 hours.

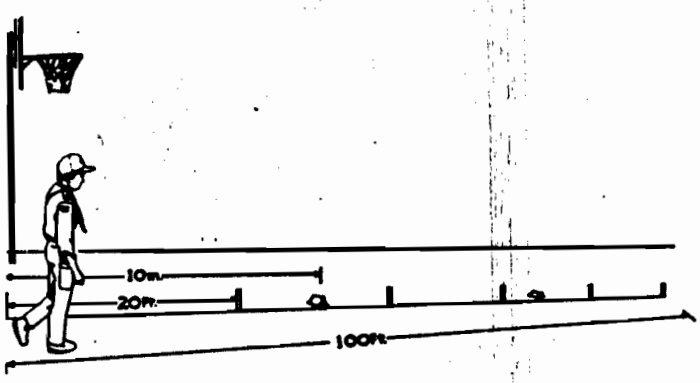
Cut a 2½-inch hole in the base of old 5-gal. can. Make tapered wooden peg 3 inches taller than the can. Taper peg from 3-inch diameter at top to 2½-inch diameter at the bottom. Pack sawdust tightly in can with peg in position in center. Screw peg out carefully. Set drum on bricks or flat stones. Light small fire under base hole to light sawdust.

Compasses

COMPASS INSTRUCTION DEVICE



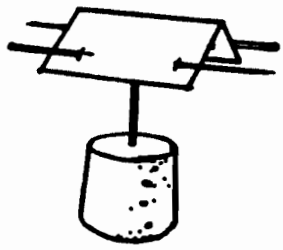
Experts say the best way to learn the compass is by using one in the field. But, if you have a large troop and few compasses, this mock-up will prove useful for instruction. Base is 1-inch lumber. Face is 1/4-inch plywood. Needle is weighted so that it points north when the device is held upright.



Step Distance Course

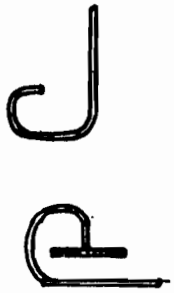
Use this Step Distance Course to determine the length of step or pace. (A pace is a double-step.) Have Scouts find their number of paces to cover 100 feet (30.48 meters) at normal walk. Once they have mastered this technique, measuring distances by pace with fair accuracy becomes easy.

TWO-NEEDLE COMPASS



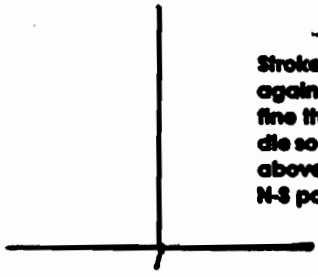
Magnetize two needles with a magnet—the head of one—the point of the other. Fold an inch-square piece of paper, insert needles as shown, and balance the paper on a third needle. The compass should swing north. (Mark north ends.)

PAPER CLIP COMPASS



Bend a steel paper clip as shown. Stroke the top of the J with a magnet. Balance the compass on a coin or smooth surface and it will line up north-south. (Mark north end with a felt-tip marker.)

WORLD'S SIMPLEST COMPASS

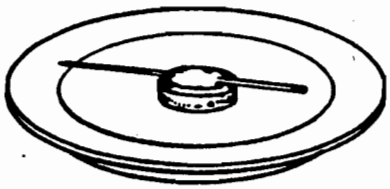


Stroke one end of a sewing needle against one pole of a magnet. Tie a fine thread in the middle of the needle so it balances. Hold thread a foot above needle which will swing to a N-S position. (Mark north end.)

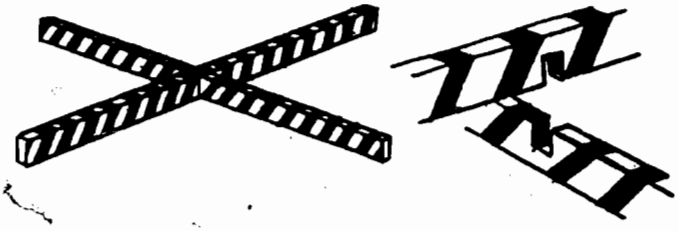
LEMON COMPASS

Push thin strips of copper and zinc into opposite sides of a lemon half and join them with copper wire. Float lemon in a bowl of water. Electrical current flowing through the wire will cause the lemon to turn until the copper points west and the zinc east.

ANOTHER EASY COMPASS



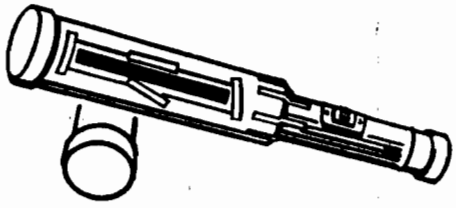
Magnetize a sewing needle with a magnet. Attach it with wax or chewing gum to a cork about 1/4-inch thick and float it in a saucer of water. (Color north end with a felt-tip marker.)



Rescue Cross

This simple device is an excellent safety measure for an ice-skating outing. It can be pushed ahead to a skater who has fallen through thin ice and will distribute his weight over a large area of ice while he is pulled to safety.

Ladders, planks, and long poles can also be used but they do not distribute the weight as widely.



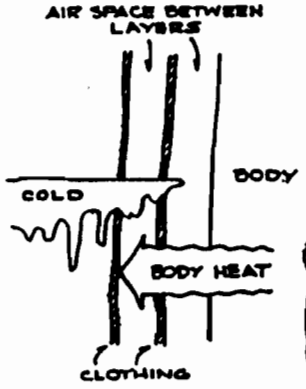
Night Signaling Gadget

This device can be used to send Morse code by the single-flag (wigwag) method at night. Cut a long slot down the length of a mailing tube and attach to the flashlight by tape. Glue red cellophane over the slot. In single-flag signaling, the flag or flashlight is swung to the sender's right for a dot, to his left for a dash. Holding it vertically indicates interval between letters. The Morse code is in *The Official Boy Scout Handbook*.

Casting Tracks in Snow

If you find animal or bird tracks in snow, and if the temperature is below freezing, it's not hard to make plaster casts of the tracks. Use an atomizer or spray bottle of some type to spray a mist of water over the tracks. When the water freezes, pour in plaster of paris.

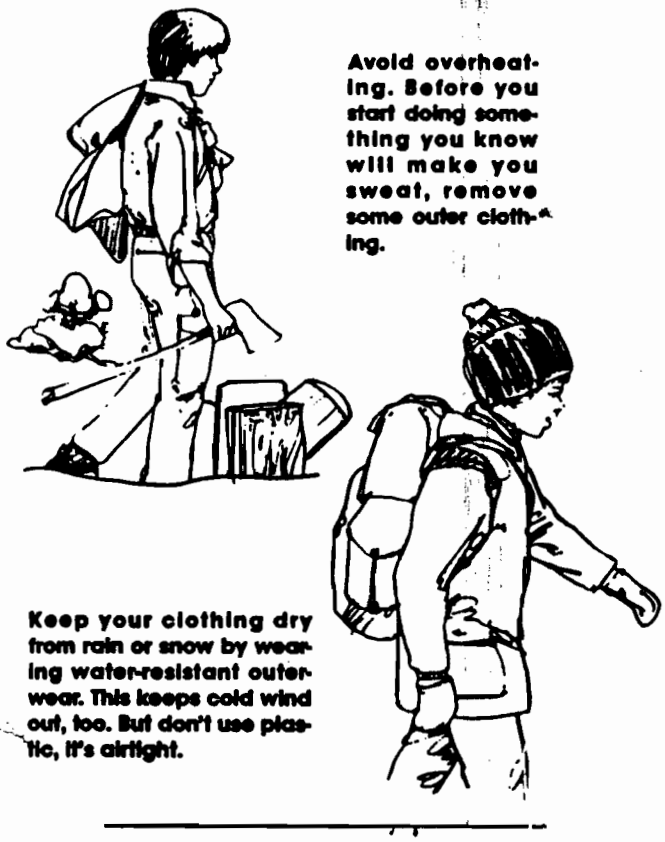
Six hints for keeping warm



Use air space between layers of clothing and between clothing and your body to keep body heat in and coldness out.

Keep your head warm, particularly your temples, to force heat to other parts of your body. Uncover before you start sweating.

Keep your torso warm with a long jacket that covers the thighs and sends extra body heat to other parts of your body.

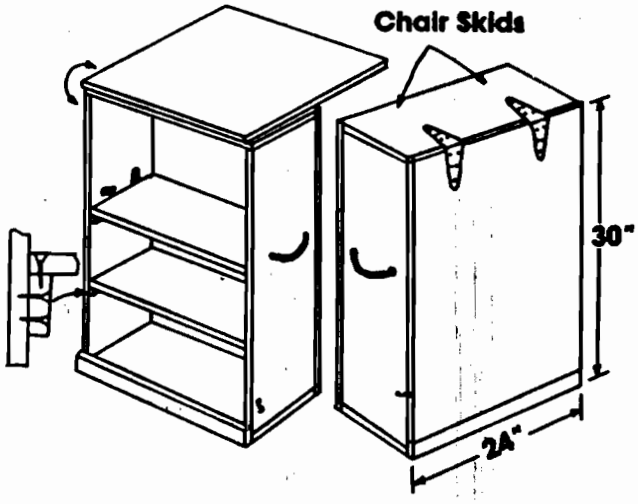


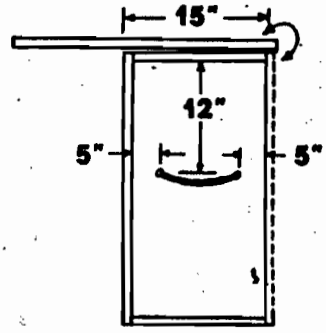
Avoid overheating. Before you start doing something you know will make you sweat, remove some outer clothing.

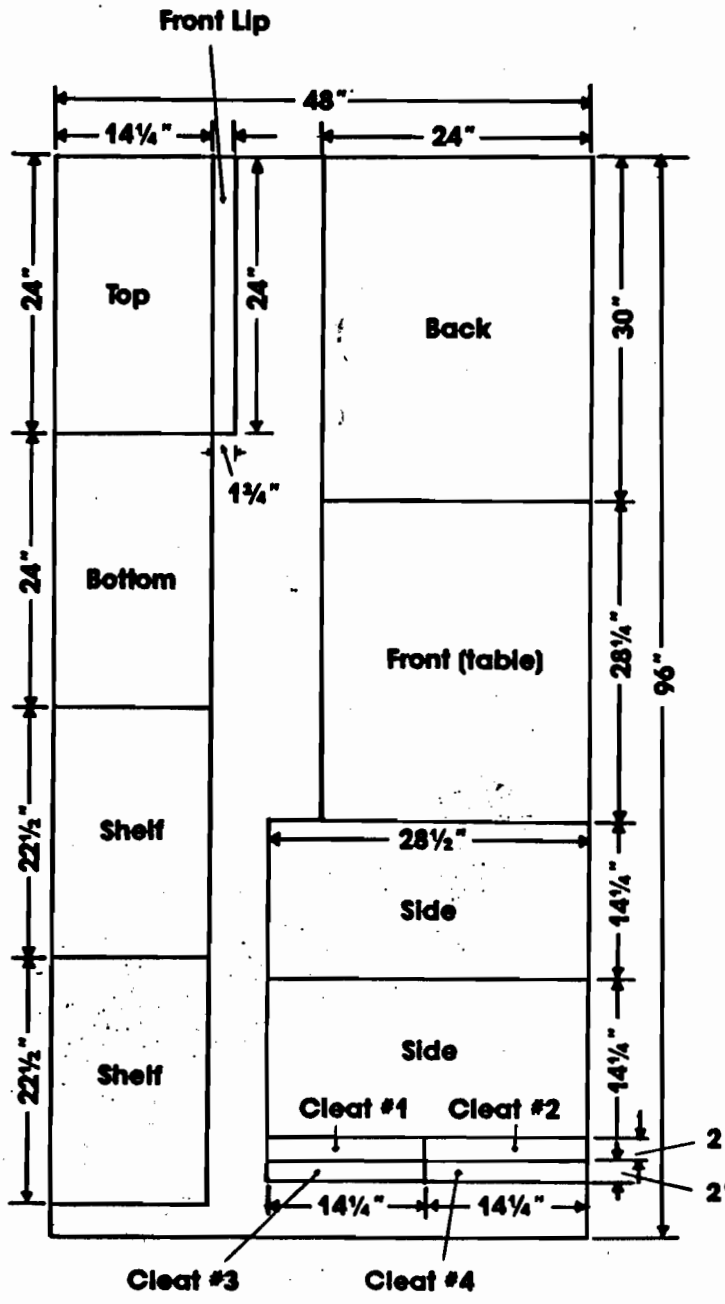
Keep your clothing dry from rain or snow by wearing water-resistant outerwear. This keeps cold wind out, too. But don't use plastic, it's airtight.

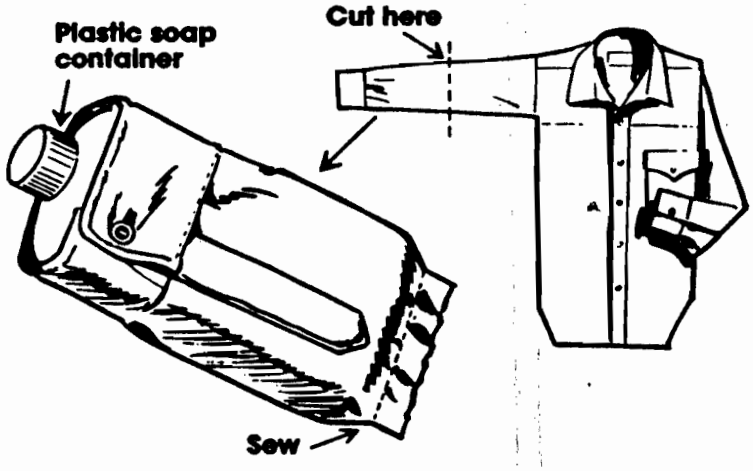
Patrol Chuck Box

The Official Patrol Leader Handbook has plans for a chuck box with legs and a hinged front that serves as a work table when it is opened. In this version, the front swings up and over the top for the work table. This project can be cut from an 4'x8' sheet of 3/4" exterior plywood. Shelves are positioned according to the size of the equipment the patrol wants to store. Assemble with glue and screws. Chair skids are used to support the table top. Use hooks and eyes to keep the legs closed while it is being carried.



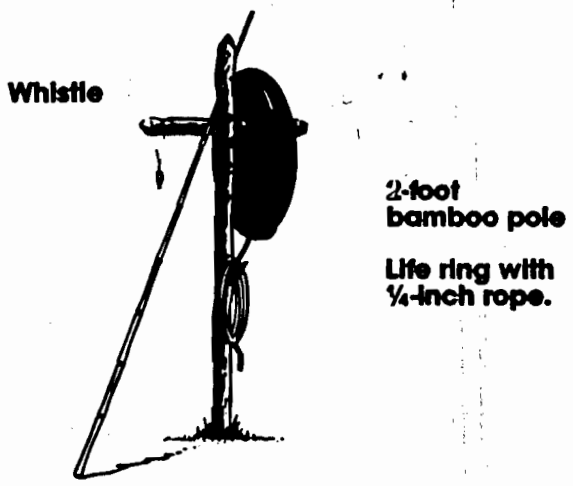






Canteen

Use a one-quart plastic dish soap container or something similar. The cover is the sleeve of an old shirt, cut and sewn as shown here.

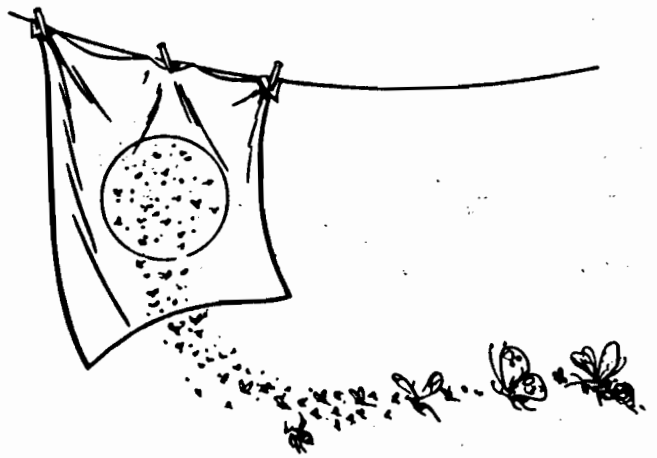


Waterfront Safety Post

A waterfront safety post is a simple device for safety gear, making it quickly accessible to lifeguards.

Bug Trap

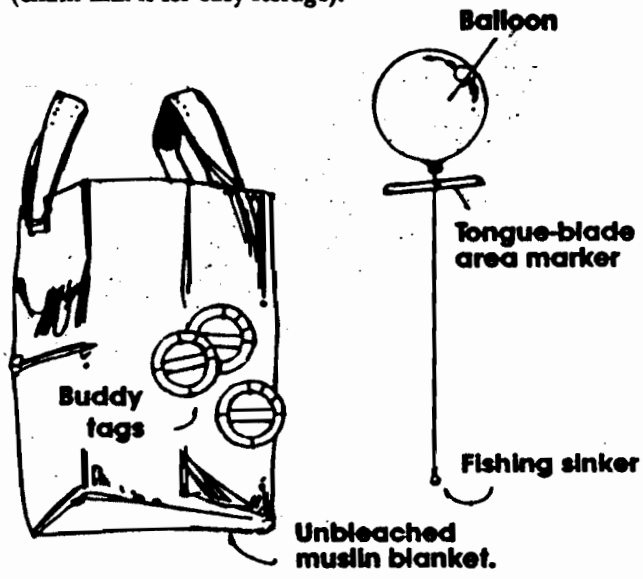
Probably there won't be a shortage of bugs in summer camp. But a Scout working on the Insect Study merit badge may want to catch a variety for study. Tell him to hang up a



sheet some night and shine a strong light behind it. In short order, he will have a big assortment of bugs which can be plucked off the sheet with ease.

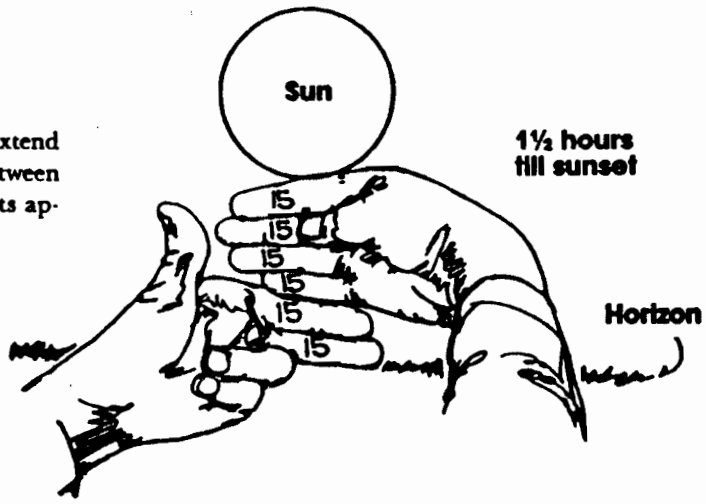
Troop Swim Kit

This troop swim kit contains all the elements for setting up a safe swimming area for the troop. Store in an unbleached muslin bucket that can also be used as a rescue float when wet and inverted. Kit includes buddy tags; 100 feet of twine for boundary lines; six tongue depressors for area markers, each tied with 7 to 12 feet of fishline and with ends weighted with lead sinkers or stones; six balloons to tie over the sticks; 100 feet of ⅜-inch nylon line for rescue line (chain-link it for easy storage).

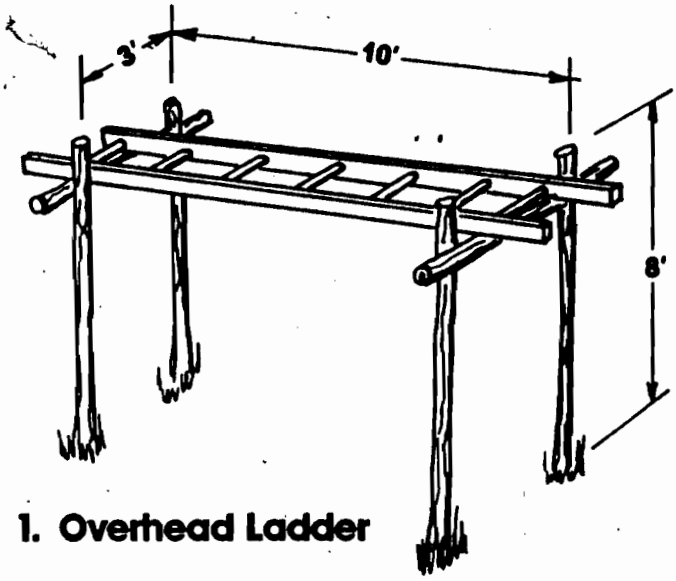


Estimating Time

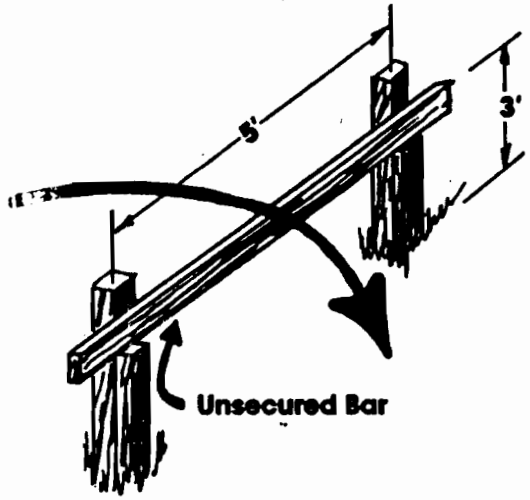
Try this method of gauging the time until sunset. Extend arms to full length and position fingers as shown between the horizon and bottom of sun. Each finger represents approximately 15 minutes until sunset.



Obstacle Course Projects



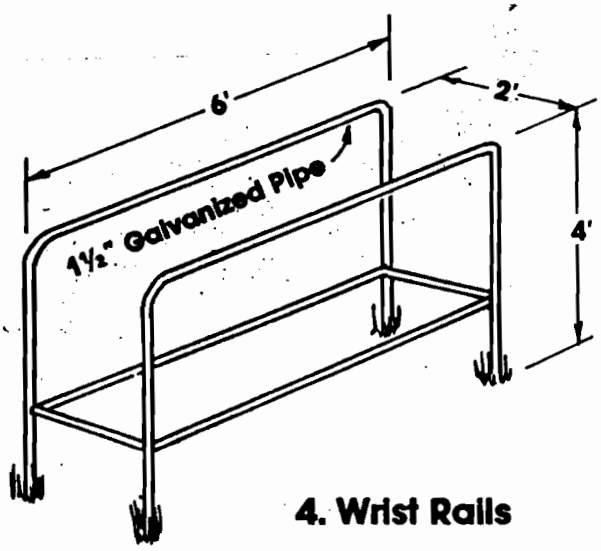
1. Overhead Ladder



2. Hurdle

3. Log Crossing

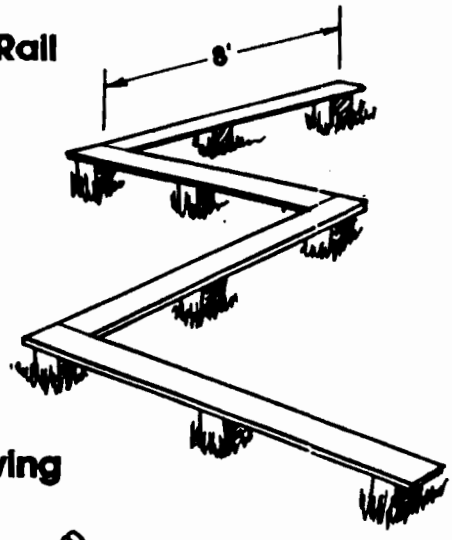
Determine length of log based on width of stream



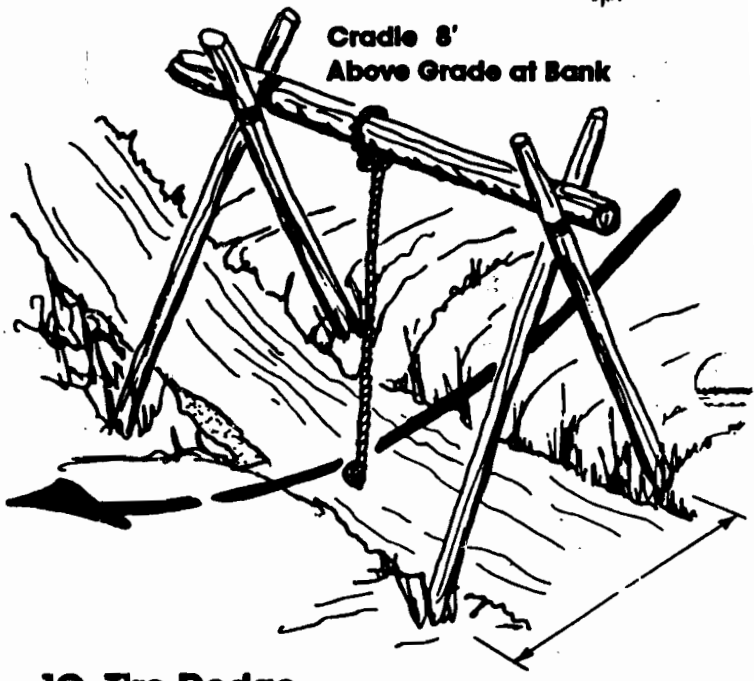
4. Wrist Rails

5. Stump Walk

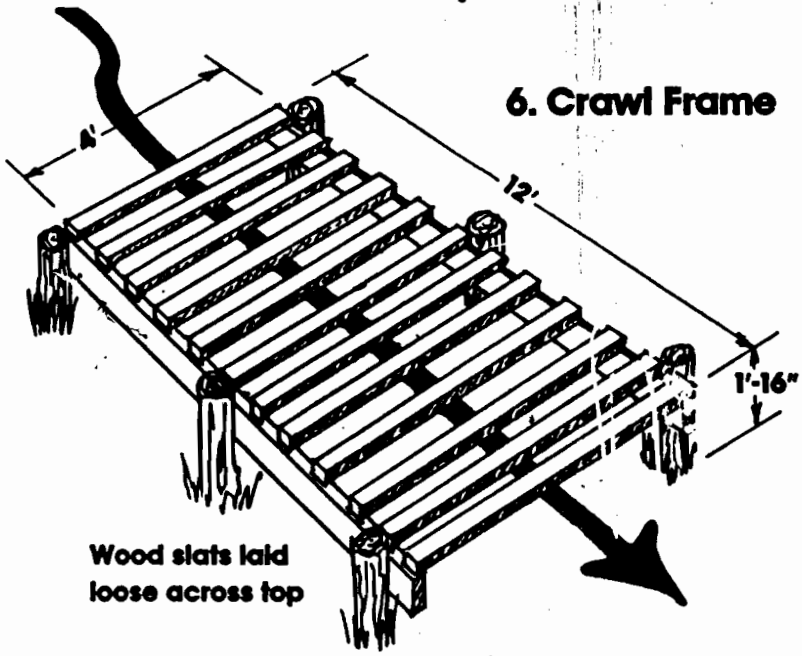
8. Balance Rail



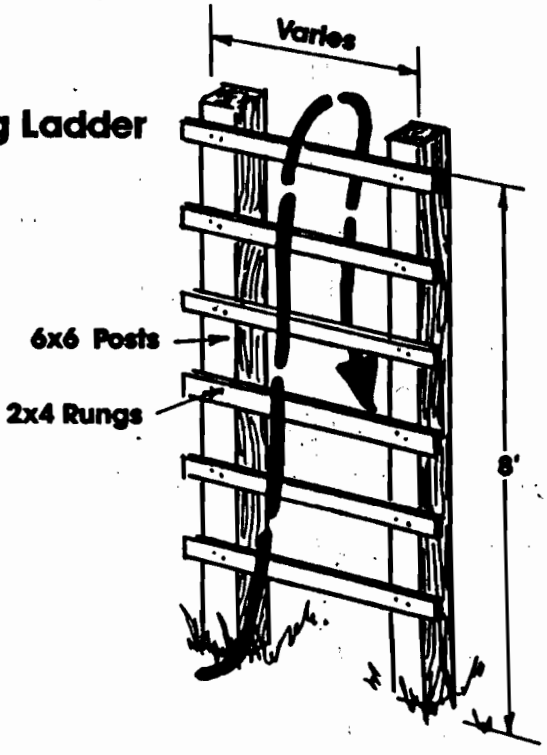
9. Rope Swing



6. Crawl Frame



7. Scaling Ladder



10. Tire Dodge