



Chapter  
**12**  
**Survival  
Preparedness**

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**E**very day of our lives, we are engaged in surviving. Continually, we need air to breathe, food and water to nourish ourselves, and protection from the elements. As a society, we've created intricate networks of food production, distribution, and storage that can put fresh fruits on our tables in the dead of winter and make eating ice cream an everyday occurrence, even where there are no cows and no ice. Our water comes from public systems that are so convenient we seldom think about the wonder of having fresh, pure water piped into our homes. Our homes are sturdy and secure, insulated against heat and cold and kept comfortable by furnaces and air conditioners that may rely on energy sources hundreds of miles away.

Most of the time we survive without much effort, but when we travel in the backcountry, down wild rivers and across rugged terrain, we remove ourselves from the familiar networks of society. For a while we are on our own, fully responsible for our comfort and safety. That responsibility means we must do all we can to be prepared to survive.

Survival preparedness is being able to cope in situations where your safety is not automatically assured by the resources to which you are accustomed. Suppose a ski breaks, stranding you miles from the nearest road or a vehicle in which you're traveling breaks down far from help. You become injured or ill. On a hiking or boating trip, you are separated from your companions and become confused about your location. Bad weather disrupts your travel plans. To deal with unexpected circumstances, you'll need to understand the nature of the danger and know how to stay alive until you can get to safety.

(For more on preparing for outings see "Planning.")

In other chapters of the *Fieldbook*, you've discovered the importance of learning about the territory into which you intend to travel, and about the conditions of weather and terrain you're likely to encounter. You know you should equip yourself properly and carry plenty of provisions,

"The worst thing you can do is to get frightened. The truly dangerous enemy is not the cold or the hunger, so much as the fear. It robs the wanderer of his judgment and of his limb power; it is fear that turns the passing experience into a final tragedy . . . Keep cool and all will be well . . . Use what you have, where you are, right now."

*Ernest Thompson Seton, 1906*

but good judgment, resourcefulness, and mental toughness can see you through even without gear. You won't embark on an adventure without several companions who can share the pleasures and responsibilities of the trek, and you're wise enough to leave a detailed trip plan with a responsible adult.

In addition to carrying a first aid kit, you can further prepare yourself by taking a lightweight survival kit on all of your outings. Put the following items in a small plastic container, tape it shut, write the date on it, and open it only to replace perishable items or for a real emergency.

(For a listing of the contents of a first aid kit, see "Outdoor First Aid.")

## Survival Kit

Rescue blanket	Small glass signal mirror
50 feet of nylon cord	Pen light with spare batteries
Hard candy, chocolate, meat bar	Small, sharp pocketknife
Matches/metal match and 0000 steel wool	Metal cup or plastic water bottle
Candle/fire starters	Water purification tablets
Plastic whistle	Clear plastic sheet or an emergency shelter

A survival kit provides a few familiar resources to use in case of an emergency. The most important survival tool, however, isn't one that fits inside a kit, or something you can ever forget to carry. It is your mind. Here's how to use it.

Suppose you become lost in a wilderness. You have no idea where you or your companions are, and you have only the gear and provisions in your pockets and packs. As you realize the gravity of your situation, you'll probably feel a wave of panic sweeping over you. You'll be understandably frightened and perhaps a little disoriented, and questions will come fast: What will I do? Where should I go? How can I get help? The way to find these answers is to Stay, Think, Observe, and Plan—STOP!

**Stay**  
**Think**  
**Observe**   
**Stop!**

**Stay!**

At the first sign of trouble, STOP! The urge to walk faster or run blindly to escape your predicament will be difficult to resist, but rushing about will only confuse you more. Stopping helps you fight panic, and it greatly improves your chances for survival. If you're in a boat, get ashore. If you're on foot, slip off your pack, sit down, and relax. If anyone is injured, administer first aid, and then rest. Fifteen or 20 minutes may pass before the panic subsides, so be patient. Remember, you probably got into this situation by yourself; you can get out the same way.

**Think!**

As you relax, think. If you're lost, study a map and look for recognizable landmarks. How long ago did you know where you were? Are there footprints in snow or soft ground that will guide you home? Can you hear traffic on a distant highway? Does the motion of a river current or the wind on a lake suggest the direction in which you should steer your boat in order to reach your destination?

Take time to think, and you'll almost always figure out where you are and how to get back on course. Don't make hasty judgments. If you have any doubt about where you are, stay put and observe.



## Observe!

When you are late returning home, searchers will come looking for you, so your task is simple—keep safe and visible until rescuers arrive. Look around carefully and size up your situation. Determine the extent of any injuries. Look for hazards that may pose threats to your security. Note how many hours of light you'll have before the sun sets, and check the resources in your pack and your pockets. Is there firewood nearby? A clearing visible from the air? A lookout from which you can observe the surrounding countryside? Sources of water and shelter? Mentally list everything, then plan.

## Plan!

After considering all sides of your predicament, decide how best to utilize your resources and your energies. Be deliberate and practical in your planning. Jumping from one course of action to another can lead to inefficiency and exhaustion. What should you plan? Your plan should be a blueprint of how you intend to stay sufficiently supplied with each of the following survival essentials, listed in order of importance.

1. **The will to live.** You cannot survive long without it.
2. **Oxygen.** If you are deprived of air, you can live just a few minutes.
3. **Shelter/clothing.** In extreme conditions, you'll last only about 3 hours without them.
4. **Fire.** The more adequate your shelter and clothing, the less your need for a fire, but it can give heat, light and a lift to your morale.
5. **Rest.** Conserving energy will extend your survival time and keep you mentally alert.
6. **Signals.** These attract the attention of rescuers.
7. **Water.** Without water, you can live about 3 days.
8. **Food.** Because you can live 3 weeks or more without food, it is the lowest survival priority.



## The Will To Live

History is filled with accounts of ordinary people who, when threatened by extraordinary circumstances, were able to walk hundreds of miles, endure intense heat and cold, and overcome great hunger, thirst, pain, and loneliness. With the right frame of mind, a person can survive for a long time without shelter, clothing, nourishment, and rest. No one can survive without hope.

How can you develop a positive mental attitude? Some people seem to have a natural ability to remain optimistic in the face of adversity, and everyone can practice the mental toughness survival situations demand. If you enjoy athletics or you're trying to master an academic subject or artistic skill, you know it's not easy to work hard at it every day, and yet by doing so you not only come closer to achieving your goal, you also discipline your mind. For example, you may go on an outing and, after an exhausting hike, want nothing more than to sit against a tree and let someone else make camp. If you fight off that yearning and pitch the tent, get supper cooking, and secure your gear for the night, you'll probably discover you had a reserve of energy just waiting to be tapped. Push yourself now and then when conditions are right so that you realize you have those energy reserves and mental toughness, and in a real emergency they may tip the balance in your favor.

## Oxygen

On land, breathing usually is not a problem, but if you've capsized a boat or if smoke or chemical fumes are billowing around you, breathing becomes more difficult. You may have only a few moments to get to open air. Even as your body fights for oxygen, try to keep panic under control. To escape an overturned boat or turbulent surface waters, you may have to descend before you can surface. In heavy smoke, you might need to crawl to safety, or to work your way upwind. In an avalanche, you'll have to create an air pocket by pushing settling snow from your face. Stop, think, observe, and plan, even if you must do all four in a split second.



## Clothing/Shelter

Once immediate life-threatening situations have passed, you can turn your attention to life-extending matters. Chief among these is protection from the elements. In cold weather, you'll need to keep warm to ward off hypothermia; in hot conditions, you'll need to stay cool. Do it by using your clothing and preparing a good shelter.

It is difficult to improvise clothing in the wilderness, so probably all you can count on is what you brought with you. Keep your clothes as dry as you can, especially in cold weather. Wear just enough layers to keep yourself comfortable. In the hot sun, prevent sunburn and dehydration by wearing a loose, long-sleeve shirt, long pants, a brimmed hat, and sunglasses.

(For more on clothing, see "Hiking" and "Gearing Up." For more on the adverse health effects of hot and cold weather, see "Outdoor First Aid.")

A shelter will act as an extension of your clothing, blocking the wind, creating shade, and keeping your body's temperature at a reasonable level. Tents, caves, overhangs, canoes, tarps, and the undersides of large fallen trees are excellent ready-made shelters. A vehicle such as an automobile or a downed aircraft is often easily sighted by search teams, and in extreme temperature conditions it can be a haven. However, if the interior is extremely hot or cold, you'll probably be safer if you camp under or near the vehicle rather than inside.

When you must build a shelter, the type you construct will depend on the materials you can find and the adverse conditions you expect—heat, cold, rain, and wind. A hot-weather shelter should shield you from fierce ultraviolet light and keep you cool. Make your shelter in the shade and keep it loose so air can circulate freely. Stifling heat stays close to the ground, so a knoll or hilltop may be cooler than lowlands. Blazing daytime temperatures in desert regions may drop dramatically at night. Dig a shallow trench during the day and the sun will warm it. When you become chilled, you can lie in it and cover yourself with warm sand.

In cold weather you'll find that the smaller the shelter, the easier it is to build and the warmer it will be. A shelter 7 feet long, 3 feet wide, and 3 feet high usually is big enough for one person. Simplest of all is improvising natural shelters. For instance, using a boulder, a fallen tree, or tangled roots as a base, you can prop branches 1-3 inches in diameter against the



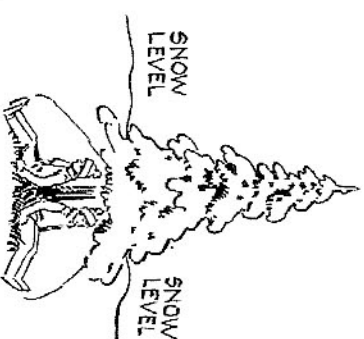
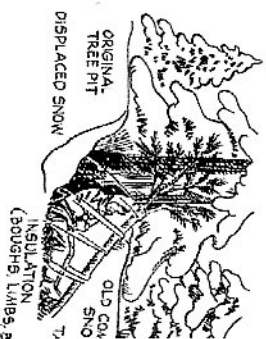
side away from the wind, angling them sharply so they will shed rain. Weave smaller branches among the large ones, then hatch the framework with sticks and foliage and cover it all with boughs stripped from evergreen trees. The shelter will be snug, warm, and dry.

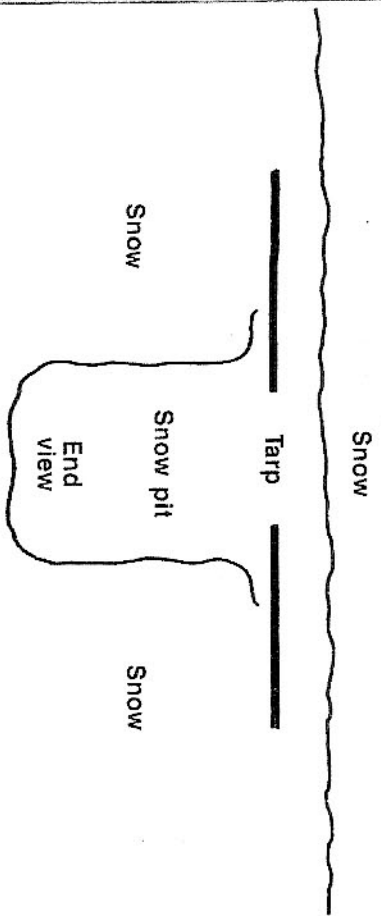
(Note: On first reading, you may question the propriety of stripping green boughs from living trees. In a real survival emergency you must use every resource at your disposal to ensure your safety, even if that means cutting live trees and destroying ground cover. Your life far outweighs any damage you may cause. However, if you are practicing survival techniques when no emergency exists, follow low-impact camping ethics and leave the area unmarred by your presence.)

Another way to make a shelter is by tying together the tops of bushes and small trees, and then weaving brush and boughs among their branches. You might even start a shelter by bending down the top of a sapling and tying it to a rock or log, or lashing two upright, 4-foot-long poles to a ridge pole about 8 feet long. Prop branches on either side of the resulting frame, weave in plenty of branches, cover them with conifer boughs, and you'll have a shelter that can weather quite a blow.

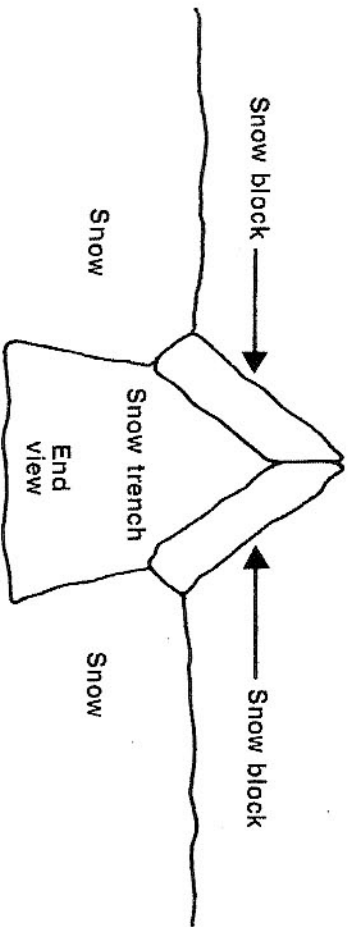
Shelters like those described above are easy to make, but if the ground is covered with snow, the materials you need may not be available. Still, keep in mind the basic shelter principles—construct the simplest structure that will meet your needs, and keep it small. In snowy conditions, that probably means building a tree pit, snow pit, snow trench, snow cave, snow dome, or igloo.

**Tree pit.** The area beneath the branches of an evergreen tree often is nearly free of snow. Crawl underneath, snap off branches that are in the way, and form a place to sit or recline. Bare earth radiates some heat, so remove the snow underneath you if you can. Insulate the bottom with a foam pad or 10 inches or more of evergreen boughs, and you'll be ready to move in. A tree pit gets you quickly out of the wind and cold. Construction time for one person is 15 minutes.





**Snow pit.** If you can't find a tree pit, you can dig a long, narrow pit in the snow. Insulate the bottom, then stretch a tarp or ground cloth over the top of the trench, weigh down the edges with branches or snow, and cover the material with a thin layer of snow. Tunnel into one end of the pit and, once you are inside, fill the entry with snow to keep out the cold. Poke a few ventilation holes and check them occasionally to keep them clear. Construction time for one person is 30 minutes.



**Snow trench.** When snow is firm, cut it into blocks to form a trench in which you can recline. Place the blocks on edge along the sides of the excavation, then lean them against one another to form a roof. Construction time for one person: 2 to 4 hours.

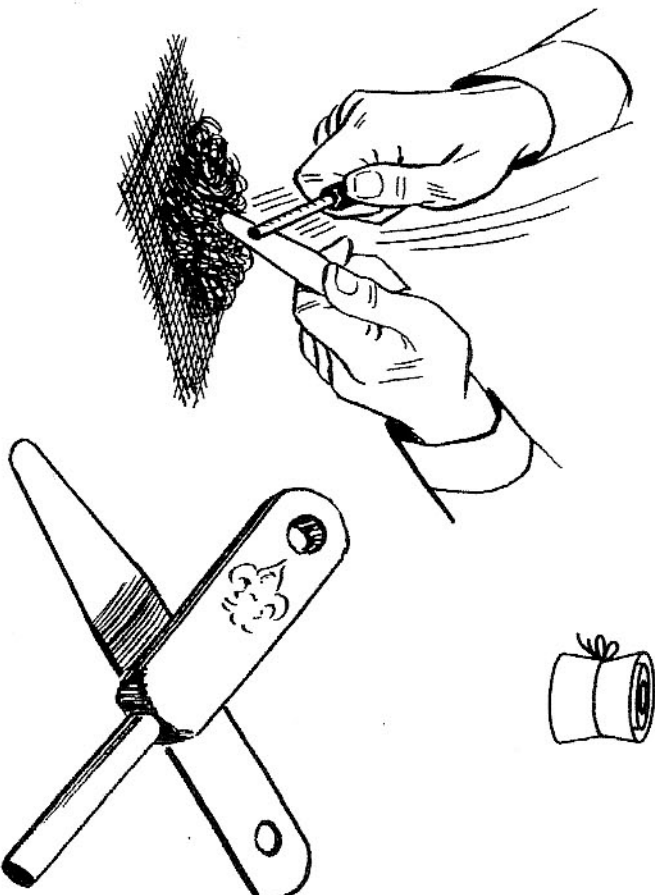
Any of these shelters will protect you from winter storms and arctic cold, and you won't waste much energy getting them ready. If you must stay a long time in a snowy environment, you may want to construct a snow cave, a snow dome, or an igloo, especially if there are several people in your party and you've already assured your immediate safety with quick and simple shelters. Igloos, domes, and caves take time, effort, and expertise to build, so be sure you have the physical resources to expend before you begin.

(For instructions on building snow caves, domes, and igloos, see "Winter Camping.")

## Fire

The tighter and smaller your shelter the less need you'll have for a fire, though a flame can do much besides warm you. It can provide light, boost your morale, attract the attention of rescuers, purify your water, and heat your food. Still, you must weigh the advantages you can gain from a fire against the energy you must expend to build and maintain it. You may enhance your immediate chances of survival by spending time improving your shelter rather than gathering firewood.

(For information on kindling a fire, see "Stoves and Fires.")



If you don't have a match to light your fire, you may be able to use a convex lens from your eyeglasses, camera, or binoculars to focus a hot pinpoint of sunlight on the tinder. With luck, you can strike sparks from a piece of flint with the steel edge of a closed pocketknife and catch them in charred cloth, the fine fluff of weeds, the dry inner bark of some trees, or 0000 steel wool. A metal match works in much the same way. Increase your chances of kindling a blaze by using a fire starter from your survival kit. Commercial fire starters include heat tabs and flammable pastes. Prepare your own fire starters at home by rolling 1-inch-wide strips of newspaper until they are about an inch thick, then tie them with string and dip each into melted paraffin. In place of a fire starter, put a candle stub under your tinder and light the wick. It should burn long enough to ignite a blaze.

## Rest

Survival emergencies often occur after backcountry travelers have been pushing hard for hours or even days, and their energy levels are low. Exhaustion makes them less able to keep warm, build a shelter, and clearly think through their situation.

When you first realize you are in trouble, stop and rest. While resting, you'll have an opportunity to think, look, listen, and plan future activities. Elderly, injured, or very young members of a party will need extra rest. In extremely hot climates, you can conserve body water by resting in the shade during the day, and becoming active only after the sun has set. Rescuers normally search during the daytime, so your chances of missing a rescue by sleeping at night are minimal.

## Signals

To attract the attention of rescuers, use signals that make you louder, larger, or more colorful than usual. Motion and colors that contrast sharply with their background are especially effective in attracting attention.

**Audible signals.** When you first become separated from your group, you might be able to attract their attention by blowing a whistle. Later, searchers may be close to you but unable to see you. Blow on a whistle occasionally in groups of three blasts to signal your location.

**Passive visible signals.** Many searches are conducted from aircraft, so large, angular ground signals that contrast in color with natural hues may catch the eye of an airborne rescuer. You can make the most common ground-to-air signal—a large X—by laying out brightly colored tents, tarps, or rescue blankets; by stamping down sand or snow with

# V

REQUIRE  
ASSISTANCE

your boots; by pulling out clumps of turf, or by lining up branches and stones. A great advantage of ground signals is that they need no further effort once you've completed them, though as with other visual signals they are effective only when the sky is clear and light. Be sure to dismantle your ground signals after you've been rescued.

# Y

YES OR  
AFFIRMATIVE



# ↑

PROCEEDING IN  
THIS DIRECTION

# X

REQUIRE  
MEDICAL ASSISTANCE

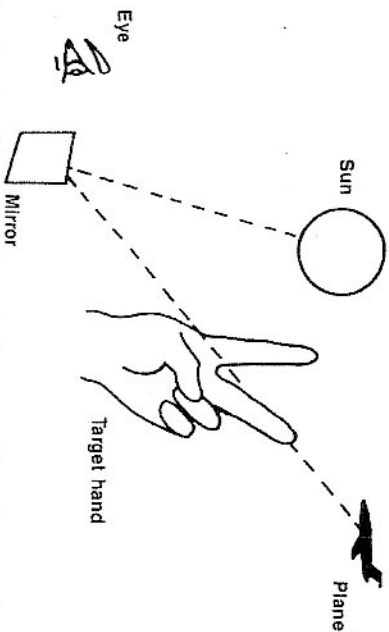
# N

NO OR  
NEGATIVE

**Active visible signals.** Active visible signals don't work by themselves. They include mirrors, fires, and flares.

On a sunny day, the flash of a mirror can be seen by aircraft many miles away. If the mirror in your survival kit has an aiming device, use it. If not, hold the mirror in one hand near your face, extend the other hand in front of you, and tilt the mirror until you can fill your empty palm with reflected light. Make a V with your illuminated fingers, then sight across the top of the mirror and through the V toward an aircraft and drop your





empty hand out of the way. Repeat the procedure frequently to adjust your aim, and be especially certain to signal as a plane is flying toward you. A glass mirror reflects light better than one made of metal, but if you have no mirror, try using the lid of a tin can, a piece of foil, or any other shiny object.

Smoke and flame are also good signals. Lay green leaves and evergreen boughs on a fire to create dense smoke that may attract the attention of pilots and fire wardens. Better yet, prepare second and third fires about 50 yards from the one that is burning, locating them so the three are the points of a large triangle. Keep a torch of easily flammable material near the blazing fire, and as soon as you hear an approaching aircraft, quickly ignite the additional fires. (A combination of any three signals is a universal sign of distress.)



Flares and smoke devices are useful for signaling; but since each can be used just once, activate them only when you've sighted a rescue craft. Follow the directions carefully.

## Water

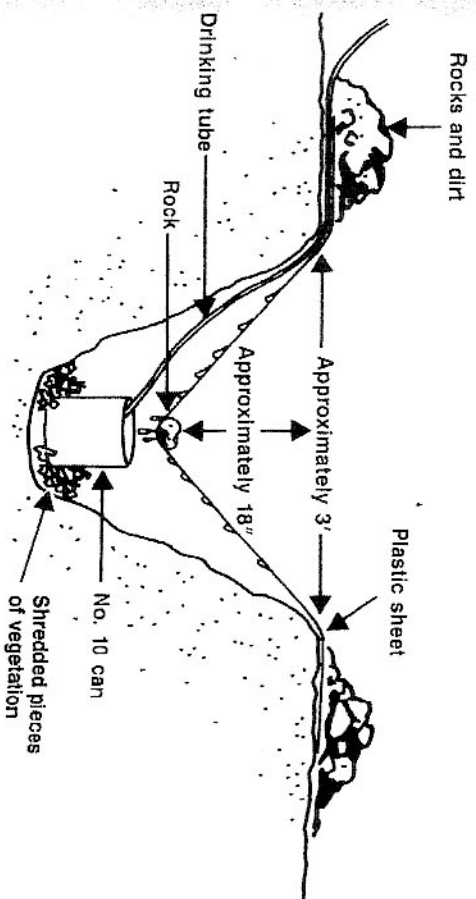
Two-thirds of the human body is water. Because we lose water constantly through perspiration, respiration, digestion, and waste disposal, our body fluids must be replenished regularly. Without sufficient water, sweating ceases, blood circulation slows, and tasks become arduous. Even in temperate weather, people can survive only a relatively short time without water. In hot deserts, they'll need a gallon or more a day each.

Even though your water supply may be limited, drink enough to keep your body healthy, then do all you can to prevent the loss of moisture through perspiration. In hot weather, limit your activities to the cool hours of the evening and early morning. Keep your clothing loose and stay in the shade. If you can get a few feet above the ground, even by sitting on a brush pile, you'll find the temperature is a good deal cooler than it is on the desert floor. In cold weather, force yourself to drink now and then, even if you don't feel particularly thirsty. The low humidity of winter can steadily drain the moisture from your body.

Your sources of emergency water are groundwater, rain, snow, ice, dew, succulent plants, and the clear sap of trees, vines, and fruit. Where water is scarce, look for green vegetation in the bottoms of ravines and gullies, and dig where the soil is damp. When clouds form, get ready to catch rain in plastic ponchos and ground cloths, and cook pots. Pockets in boulders may contain water, and early in the morning you can use a handkerchief to mop dew from leaves and rocks. Melt snow and ice in a pot over a fire. In hot weather, a solar still can provide some of your water needs. Standing water and water from streams and lakes should be purified with tablets or by boiling.

## HOW TO MAKE A SOLAR STILL

When the sun is beating down, you can get a pint or two of pure water a day from a solar still. Here's how.



Line a cone-shaped hole with slices of succulent plants. Place a cup in the bottom of the hole, and run a 6-foot length of rubber tubing from the bottom of the cup over the edge of the hole. Cover the hole with a sheet of transparent plastic, seal its edges with stones and dirt, and place a small stone in the center of the plastic so the depression it makes is just above the cup. As the sun warms the still, plant moisture will rise, condense on the plastic, and drop into the cup. You can sip the water through the tubing without dismantling the still.



## Food

Surprisingly, food is a relatively unimportant survival consideration. A healthy person can live 3 weeks or more without eating, and since most lost persons are found within 2 or 3 days there is little danger of starvation. However, in extremely cold conditions, when the body is burning lots of calories to keep itself warm, food becomes much more vital. If you are familiar with edible plants or if you are knowledgeable in the ways of wilderness fishing and trapping, you can forage for food if you desire, but don't waste energy you can't replenish. It may be better to wait quietly to be rescued than to exhaust yourself trying to eat off the land.

## Going For Help

In most instances, a lost person's best course of action is to stay put until rescuers come. However, there are a few circumstances where you may need to move to a safer location, or even attempt to get out of the backcountry on your own. Perhaps you failed to leave a trip plan with someone who would realize you've not returned on time. One of your companions may be seriously ill or injured. The decision to travel must be made carefully, and only if you are sure the only chance you have for survival is to find help rather than wait for it.

Should you decide to leave, mark the direction of your travel well, with a large ground-to-air arrow. In a plastic bag leave a note describing your condition, the time and date of your departure, and your intended route and destination. Use brush, rocks, or deep footprints to make a large arrow pointing in the direction you will travel. Also, at regular intervals, leave bits of cloth or paper, break branches, make blaze marks on trees, and do whatever else you can to give searchers a trail that's easy to follow should they reach the area after you've left. Whenever it's possible, make your trail signs at eye level, each mark in sight of the one before it.

## PRACTICING SURVIVAL SKILLS

You can practice using emergency survival skills by playing a mental game whenever you are in the field. Ask yourself questions that force you to think in terms of survival. What would I do if my partner fell right now and broke a leg? If I needed shelter right away, where could I find it? What course of action would I follow if I became lost here? If my canoe overturned and I lost my pack, how could I build a fire to dry my clothes?

If you don't know how to respond to a question, ask experienced backcountry travelers for advice and read all the books you can about survival. In time, the answers will come quickly, and should a real emergency arise you'll be able to respond at once. The mind is, after all, your most powerful survival tool. Remain calm, have faith in your ability to deal with any situation you may face, and you're certain to find ways to ensure the safety of yourself and your companions.

