

SURVIVAL



HINTS

Present day combat operations increase the likelihood of your becoming isolated and having to find water, food, and shelter for many days--even weeks--while making it back to friendly forces.

This booklet is designed to provide immediate information on how to travel, find food and water, shelter yourself from the weather, and care for yourself if you become sick or injured.

This information is compiled and subdivided to assist Survival in each of the following geographical areas: Arctic, Desert, Tropics, and Sea.

The following is an excellent guideline for successful survival in any area:

- S
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- R
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- V
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- I
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NOTES

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ARCTIC SURVIVAL

MAJOR REQUIREMENTS FOR SURVIVAL:

When the environmental characteristics of the arctic are recognized, the major requirements for survival become evident. For example, temperatures range from cool to frigid. It is evident that warm clothing is essential to survival. The same simple reasoning results in emphasizing the need for shelter. Food also is essential for survival in the arctic. The colder the weather, the more rapidly heat is dissipated. The source of body heat is the food a person eats. Food is needed to compensate for the accelerated heat loss in cold climates.

IMMEDIATE ACTIONS:

In winter, protection from cold is your immediate and constant problem. Keep dry; avoid snow blindness; check for frostbite.

To stay dry:

1. Keep snow out of boots, gloves, and clothing.
2. Avoid open water.
3. Always remove outer clothing when working or moving.
4. Have shelter at night.

If down in a glacier area, be on your guard against falling into crevasses when moving. Rope party together, preferably three men to a rope. As you walk, probe the snow in front of you with a pole or ice ax to detect crevasses covered by thin snow.

In summer, protect yourself against insects; keep dry.

FIRST AID:

Treatment for injuries should consist of the following:

1. Keep injured man warm and dry,
2. Put patient in sleeping bag, provide shelter and build fire.
3. Treat injury as necessary using first aid equipment available.
4. Give warm foods and liquids.

Frostbite and snow blindness are two definite hazards to arctic survival.

Being able to recognize frostbite and take necessary action is the best first aid available. As a rule, the first sensation of frostbite is numbness rather than pain. You can see the effect of frostbite (a grayish- or yellow-white-spot on the skin) before you can feel it.

Use the buddy system. Watch your buddy's face to see if any frozen spots appear and have him watch yours.

Get frostbite victim into shelter if possible. Warm frozen parts rapidly. Never rub frostbite - you may tear frozen tissues and cause further tissue damage.

Symptoms of snow blindness are burning, watering, or inflamed eyes, headaches, and poor vision.

Treat snow blindness by protecting the eyes from light and relieving the pain. Protect the eyes by staying in a dark shelter or by wearing a light-proof bandage. Relieve pain by putting cold compress on the eye and taking aspirin. It can be avoided by wearing goggles or sunglasses.

SIGNALING:

Keep snow and frost off aircraft surfaces to make a sharp contrast with the surroundings. Build your fire on a platform so it will not sink into snow. Tramp out signals in the snow. Fill then with boughs, sod, or moss. A parachute teepee stands out in the forest or on the tundra in summer, especially at night with a fire inside.

SHELTERS:

You will need shelter against the cold. Don't live in the aircraft - it will be too cold! Try to improvise a better insulated shelter outdoors.

Camp in timber, if possible, to be near fuel. Don't camp at the bases of slopes or cliffs where snow may drift or come down in avalanches.

Keep the front openings of all shelters crosswind. A windbreak of snow or ice blocks set close to the shelter is helpful. In making shelters, remember that snow is a good insulator.

Don't sleep directly on the snow - provide insulation under your sleeping bag or body. Keep your sleeping bag clean, dry, and fluffed up to give maximum warmth.

CLOTHING:

It is important to wear clothing properly to keep warm and dry. Insulation combined with body heat is the secret to warmth.

Wear clothing loosely. Tight fits cut off circulation and increase danger of freezing. Keep ears covered with a scarf.

Keep your clothing dry as possible by brushing snow away before entering a shelter or going near a fire.

Keep clothing as clean as possible. Replace buttons and repair holes promptly.

If you fall in water, roll in dry snow to blot up moisture, then brush off snow. Roll again, until all water is absorbed. Do not take off shoes until you are in shelter.

WATER:

In the winter, ice and snow provide water, but fuel is needed to melt them. Never waste fuel in melting snow or ice when drinkable water from other sources is available.

Whenever possible, melt ice for water rather than snow. You get more water for the volume in less time. If you melt snow by heating, put in a little snow at a time and compress it. If water is available, put a little in the bottom of the pot and add snow gradually.

Use old sea ice for drinking water. It is bluish, has rounded corners when broken, and is free from salt. New sea ice is gray, milky, hard, and salty. Don't drink it!

FOOD:

In the arctic, native animals and plants are not a reliable source of food. Your best chances of survival are along the coast lines of Asia, Alaska, and Greenland, because sea-food is more common there and gives you a dependable supply of food.

Tundra animals include rabbits, hemming mice, ground squirrels and fox. They may be trapped or shot winter or summer anywhere on the tundra. The large game, such as caribou and moose, are migratory and are normally found on the tundra (open, treeless plains) during the winter months.

All arctic game, large and small, may transmit trichinosis; cook all meat thoroughly.

Liver of polar bear and of the bearded seal has such a high concentration of Vitamin A that it is toxic to man; never eat it.

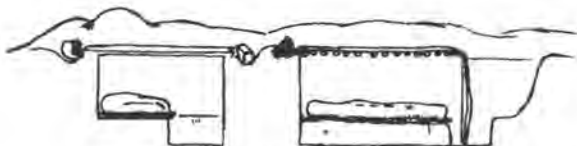
Arctic and tomcod, sculpin, eelpout, and other fish may be caught in the ocean. The inland lakes and rivers of the surrounding coastal tundra generally have plenty of fish which are easy to catch during the warmer season. Fishing in the winter is possible through a hole in the ice. To keep the hole open, cover it with skins or brush, then heap loose snow over the cover. Lakes freeze to the bottoms

around the edges, fish tend to congregate in the deep holes. Estimate the deepest part of the lake before making a hole.

TRAVEL:

Travel in the arctic is extremely difficult and hazardous. The decision to travel should be reached only after careful consideration of the following requirements for successful travel:

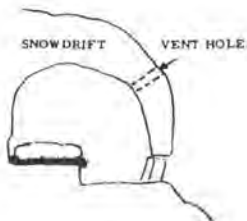
1. Exact knowledge of your present location and of the objective of the journey.
2. Knowledge of orientation methods.
3. Unusual amount of physical stamina.
4. Suitable clothing.
5. Adequate food, fuel, and shelter, or the equipment for obtaining them.



SNOW TRENCH



FIGHTER TRENCH



SNOW CAVE



DESERT SURVIVAL

IMMEDIATE ACTIONS:

Water will be your biggest problem if you are down in the desert. Get into the shade as soon as possible; keep your head and the back of your neck covered. If you have crashed or bailed out, reserve any decisions or activity until possible effects of shock have passed.

FIRST AID:

Exposure to desert sun can be dangerous. It can cause three types of heat collapse: heat cramps, heat exhaustion, and heat stroke.

The first warning of heat cramps usually is cramps in the leg or belly muscles. Keep the patient resting; give him salt dissolved in water, but only if there is plenty of water to drink.

Heat exhaustion - the patient is first flushed, then pale; sweats heavily. His skin is moist and cool; he may become delirious or unconscious. Treat him by placing him in the shade, flat on his back. Give him salt dissolved in water, two tablets to a canteen. Since he is cold, keep him wrapped up and give him warm drinks, if available.

Heat stroke may come on suddenly. The face is red, skin hot and dry. All sweating stops. The head aches severely; pulse is fast and strong. Unconsciousness may result. Treat the patient by cooling him off. Loosen his clothing, lay him down flat, but off the ground, in the shade. Cool him by wetting clothes with water and by fanning. Do not give stimulants.

WATER:

In the desert, your life depends upon your water supply; therefore, you must have an initial water supply for desert survival. In hot deserts, you need a minimum of a gallon of water a day. Since the water supply is going to be somewhat scanty, the best way to conserve water is to ration your sweat. Drink water as you need it, but keep heat out of your body by keeping your clothes on. Clothing helps ration sweat by not letting it evaporate so fast that you get only part of its cooling effect.

Although it is not wise to depend upon finding natural water in an unfamiliar area, there are a number of sources from which water may be obtained.

In all deserts, wells are the sources of most water. Hand-dug wells have furnished water to irrigate desert oases for many centuries. Hand-dug wells, like the oases themselves, are located in low places of the desert.

Desert wells are generally located along trails. In rocky deserts and on some gravel plains, however, it is not always easy to find the well.

On some flat plains, wells which are not often used are covered against sandstorms. Even though there is no sand in the immediate area, sandstorms would in time fill up such wells. Desert people have learned to cover such wells a little below the top. Sand drifts in, but the well is protected. If you travel, be constantly looking for these hidden wells.

TIPS ON LOCATING SOURCES OF WATER:

Desert natives often know of lingering surface pools in dry streambeds or other low places. They cover them in various ways to protect them from excessive evaporation. If you look under likely brush heaps or in sheltered rocks, you may locate such pools in semi-arid brush country.

Birds all need water. Some of them fly considerable distances at sunrise and sunset to reach water holes. If you hear their chirping in the early morning or late evening, you may locate their private drinking fountains. In true desert areas, flocks of birds will circle over water holes.

Places which are visibly damp, where animals have scratched or where flies hover are more reliable places to dig for water, because they indicate surface water was there recently.

FOOD:

In most deserts, animals are scarce. Their presence depends upon water and vegetation and true deserts offer little of either. However, few animals have been able to adjust their body processes to desert conditions, the best known of these being the camel and the gazelle. Apparently, the desert antelope or gazelle, can get enough moisture from its foods, as records indicate these creatures drink little, if any, water.

Camels have adapted to an irregular supply of water rather than to its absence. They make up for periods of enforced drought by drinking copiously when they are watered.

Some small rodents (rabbits, prairie dogs, rats) snakes, and lizards have learned to live in deserts.

Look for animals at water holes, in grassy canyons, low-lying areas, dry riverbeds, where there is a greater chance of moisture, or under rocks and in bushes. Animals are most commonly seen at dusk or early morning. The smaller animals are your best and most reliable sources of food.

When hunting an animal on the desert, remember that distances are deceiving - make certain the animal is actually within range before you fire. You will probably get just one shot.

On the whole, plant growth in the desert is widely scattered. On contacting plants to assure edibility, make the edibility test.

SIGNALING:

You can make a good improvised flare from a tin can filled with sand soaked with gasoline. Light it with care. Add oil and pieces of rubber to make dense smoke for day-time signal. Burn gasoline or use other bright flame at night.

Dig trenches to form signals, or line up rocks to throw shadows.

If you can find brush in the area, gather it into piles and have it ready to light when a search aircraft is heard or sighted.

Smoke fires and smoke grenades are best for use in daytime. Flares and bright flames are hard to see.

The mirror is a very good desert signal. Practice using it. Use brightly polished metal as a substitute.

SHELTER:

You will need immediate shelter, of some type, from the direct rays of the sun, as well as the extreme heat of the day.

Natural shelter is limited to the shade of cliffs or the lee side of hills. In some desert mountains, you can find good, cave-like protection under the tumbled rocks broken from cliff sides.

If you stay with the aircraft, don't use the inside of it for shelter in the daytime, it will be too hot. Get under the shade of the wing or stretch the parachute over the wing.

If the aircraft is not available, make a shelter of your parachute. The layers of cloth separated by an airspace of several inches make a cooler shelter than single thickness. The parachute can also be placed across a trench dug in the sand. The temperature one foot above and one foot below ground is normally 30° to 45° cooler than the surface temperature.

FIRE-MAKING:

In some deserts, fuel is extremely rare. Whenever you find plant growth, use all twigs, leaves, stems, and underground roots for burning.

Cooking fires are not large in the Sahara. Rarely is a fire needed to warm the adobe houses of oases.

Stems of palm leaves and similar wood serve as fuel in or near oases. Out on the open desert, dry roots or bits of dead vegetation are carefully collected to boil tea or cook a meal. Dried camel dung is the standard fuel where woody fibers are lacking.

• CLOTHING:

In hot deserts, you need your clothing for protection against sunburn, heat, sand, and insects, so don't discard any of it. Keep your head and body covered during the day; you will last longer on less water.

Wet a cloth neckpiece to cover the back of your neck from the sun. Your T-shirt makes an excellent neck drape, with the extra material used as padding under your cap. If your clothing wears out, use the parachute for protection.

TRAVEL:

The great deserts of the world have been crossed and re-crossed for hundreds and thousands of years. The crossings follow definite routes along marked trails from oases to wells, and wells to water holes or other oases.

Desert trails resemble interlacing cowpaths, all leading in the same general direction. Usually these networks of paths are only a few yards wide. These trails are usually as clear and distinct as the cowpaths in a pasture.

The best advice generally is to stay with the aircraft. You'll last much longer without water if you stay near the aircraft, in the shade, rather than exhausting yourself by trying to walk out.

Travel only if you are sure that assistance is nearby, that you have enough water, or there is reasonable doubt that rescue is possible.

NATIVES:

People who inhabit the great deserts are conservative and pretty well adjusted. When an American like you steps into the land of the desert people, that adjustment is thrown off balance. The picture is out of focus. You make confusion in his world.

The laws of the desert are quite different from ours. Among desert people, if you give your word, you must keep it. In Saudi Arabia, the courts see that you keep your oral agreements.

The people of Saudi Arabia can't understand our custom of signing a written agreement and having witnesses sign. They give their word and keep their promises.

Desert people are not fistfighters. They don't lay violent hands on each other in anger or in horseplay such as young Americans sometimes do. To inflict physical injury on an Arab, for example, is a very serious offense. You may find yourself legally obliged to support the injured and his family.

Customs among desert people are very strange and different from ours. The following are common to Saudi Arabia, and in general, apply to all deserts:

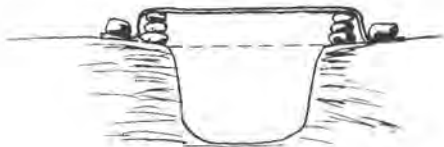
1. Don't reprimand an offender in front of other people.
2. Don't draw sand pictures or maps with your foot. Stoop down and draw with the right hand.
3. Don't swear at a native.
4. Don't expose the soles of your feet to others. Sit tailor fashion or on your heels.
5. Don't ask about a man's wife.
6. Don't throw a coin at a man's feet.
7. Gambling is forbidden.
8. Don't be impatient when dealing with desert people.
9. Never forget to act friendly.



DESERT COLD WEATHER SHELTER



SHADE SHELTER



SHADE TRENCH

TROPICAL SURVIVAL

GENERAL:

Some people think of the tropics as an enormous and forbidding jungle through which every step taken must be backed out, and where every inch of the way is crawling with danger. Actually, much of the tropics is not jungle. What jungle there is, must be traveled with some labor and difficulty, it is true, but with little danger from anything bigger or more terrifying than malaria-carrying mosquitoes. Your tropical area may be jungle, mangrove or other swamps, open, grassy plains, or semi-arid brushland. It may contain deserts or cold, mountainous districts. So you may find useful information for survival in all parts of this booklet.

IMMEDIATE ACTIONS:

Take shelter from tropical rain, sun, and insects. Malaria-carrying mosquitoes and other insect pests are the immediate dangers, so protect yourself against bites. Don't leave the crash area without carefully blazing or marking your route. Use your compass. Know what direction you are taking.

In the tropics, even the smallest scratch can quickly become dangerously infected. Promptly disinfect any wound.

WATER:

In tropical survival, an adequate supply of water normally is available. Water from tropical streams, pools, springs, and swamps is safe to drink only after it has been

purified. Water that is turbid may be partially cleared by filtering through an improvised filter, such as parachute cloth.

Vines are often good sources of water. The water should be fresh and clear. Never drink from a vine that has milky sap. Bamboo stems sometimes have water in the hollow joints. Shake the stems of old, yellowish bamboo. If you hear a gurgling, cut a notch at the base of each joint and catch the water in a container.

Animal trails often lead to water. Follow them, but take care not to get lost.

FOOD:

Food is usually abundant in tropical areas. Paths and roads are the normal passageways along which animals travel through tropical forest. Look on the ground for hedgehogs, porcupines, anteaters, mice, wild pigs, deer, and wild cattle. The dangerous beasts such as tigers, rhinoceros, and the elephant are rarely seen and best left alone.

Fruits and berries are usually plentiful throughout this area; it is just a matter of performing the test - test to see if they are edible.

SHELTER:

Try to pick a campsite on a knoll or high spot, in an open place well back from swamps. You'll be bothered less by mosquitoes, the ground will be drier, and there will be more chance of a breeze.

In the wet jungle forest, you will need shelter from dampness. If you stay with the aircraft, use it as a shelter if possible, but try to make it mosquito-proof by covering openings with netting or parachute cloth.

The easiest improvised shelter is made by draping a parachute or tarpaulin over a rope or vine stretched between two trees.

A good rain shelter can be made by covering an A-type framework with a good thickness of palm or other broad leaves, piece of bark or mats of grass. Lay the thatch shingle-fashion, with the tips of the leaves pointed downward, starting from bottom and working up to shed the rain.

Don't sleep on the ground. Contact with the ground is chilling. Make a hammock from your parachute. It will keep you off the ground and will discourage ants, spiders, leeches, scorpions, and other pests.

Don't camp too near a stream or pond, especially during the rainy season. Don't camp on game trails or near water holes.

FIRE-MAKING:

Wood is usually plentiful in the tropics. During the rainy season, the fire problem may be more complicated by the difficulty of finding dry fuel, but many of the larger trees, whether dead or alive have hollow trunks. Cut strips of the dry inner lining for kindling. You may also find dry wood hanging in the network of vines or lying on bushes.

Don't use bamboo for fuel, it burns too quickly, emits dangerous fumes, and may explode.

Keep spare wood dry by stowing it under your shelter or beneath broad green leaves. Dry out wet kindling and fuel near your fire for future use.

CLOTHING:

Keep your body covered to prevent malaria-carrying mosquitoes and other pests from biting you. Protect your skin against infections caused by scratches from thorns or sharp grasses, and prevent sunburn in the open country.

Wear long pants and shirts with the sleeves rolled down. Tuck your pants in the tops of your socks and tie them securely.

Loose-worn clothes will keep you cooler.

Wear a mosquito headnet or tie an undershirt or T-shirt around your head. Wear it especially at dawn and dusk.

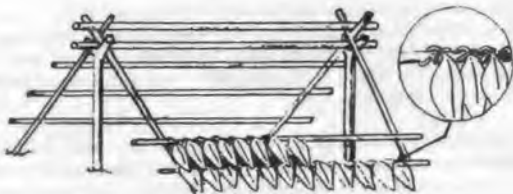
Dry your clothing before nightfall to avoid discomfort from cold. Wash clothing, especially socks, daily. Dirty clothes not only rot, but may lead to skin diseases.

TRAVEL:

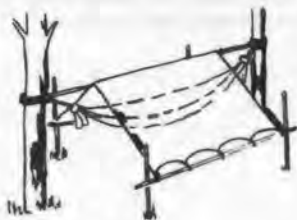
If you come down in dense jungle where your aircraft and signals can't possibly be seen from the air, you will probably do wisely to travel out.

The most useful aids to travel in the tropics are a machete, to help cut your way; a compass, for maintaining direction; a first aid kit to keep down infection and fever; stout footgear, which will save your feet and enable you to walk; and a hammock.

Travel only in daylight. Avoid obstacles, such as thickets and swamps. Find a trail and follow it. Go downhill until you find a stream, then follow the stream. In some dense jungles, however, you will find that you must travel on ridges where less vegetation makes cross-country travel possible. Your best chance of finding villages and people is along trails and streams and on coasts.

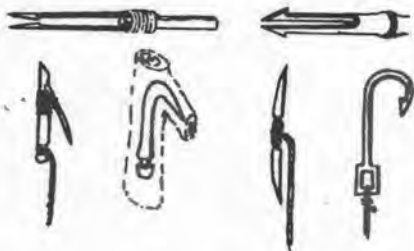


THATCH SHELTER





PARATEEPEE



SEA SURVIVAL

GENERAL:

Four-fifths of the earth's surface is covered by open water. Although accounts of survival incidents are often pessimistic, successful survival is very possible. The basic rules for ground survival also apply in this area. In general, shelter yourself from the elements, keep as dry as possible, keep trying for food, signal for help, observe strict water discipline, and do not despair.

IMMEDIATE ACTIONS:

Stay upwind and clear of the aircraft, but in the vicinity until the aircraft sinks. Search for missing men, salvage floating equipment, and stow and secure all useful items by lashing them to the raft. Check rafts for inflation, leaks, and points of possible chafing. Bail out your raft. Check the physical condition of all aboard. Give first aid if necessary. Ration food and water and start fishing immediately.

CARE OF RAFT:

Be sure your raft is properly inflated. If main buoyancy chambers are not firm, top off with pump or mouth inflation tube.

Inflate cross seats where provided unless there are injured men who must lie down. Don't overinflate. Hot air expands, so on hot days, release some air. Add air when the weather cools.

In stormy weather, rig the spray and windshield at once. In a large raft, keep the canopy erected at all times. Keep your raft as dry as possible. Leaks can be easily repaired by the repair plugs provided.

SIGNALING:

If a radio is available, transmit distress signals at frequent intervals or otherwise follow briefing instructions.

Practice signaling with the mirror in the raft kit. As a substitute, use an ordinary pocket mirror, or any bright piece of metal. Punch a hole in the center of the metal for sighting.

Use smoke signals in the daytime, and fire signals at night. Keep all flares dry and use them once the search aircraft is in the immediate vicinity.

Use the sea marker during the daytime. Except in rough sea, these spots of dye remain conspicuous for about three hours.

At night, use flashlight or any light available. Lights can be seen on the water for many miles.

WATER:

Water is your most important need. Your water supply will come from catching rainwater, or by using either the De-Salting Kit or the Solar Stills. These two pieces of equipment should be put into operation as water is needed.

FOOD:

Your food supply will be from two sources either seafood or water fowl. You should start fishing immediately and much patience is required to be successful. Shining a light on the water at night will attract fish.

Clean and cut all fish immediately and eat them before they spoil. Preserve leftover fish by cutting it in thin strips and dry it in the sun.

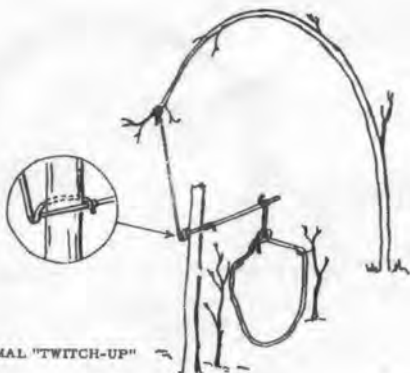
All birds are potential food. They can be caught on baited hooks, triangular pieces of shinny metal, with a noose, or a baited toggle of metal or wood. Many birds will be attracted to the raft as a possible perching place. Sit still in the raft, and they may settle on the raft or even on your head or shoulder. Grab them as soon as they have folded their wings. But don't grab until you are sure you can reach the bird.

TRAVEL:

Whether you like it or not, your raft will move. The course it will take is the result of both wind and ocean currents, modified by the use of oars or paddles, tiller, sea anchor, and sails.

When ocean currents are moving toward your destination, but the winds are unfavorable, put out a sea anchor. Huddle low in the raft to offer as little wind resistance as possible. In the open ocean, currents seldom move more than 6 to 8 miles a day.

Rafts are not equipped with keels, so they can't be sailed into the wind. However, anyone can sail a raft downwind. When the wind is blowing directly toward your destination, inflate the raft fully, sit high, take in the sea anchor, rig a sail, and use an oar as a rudder.



SMALL ANIMAL "TWITCH-UP"

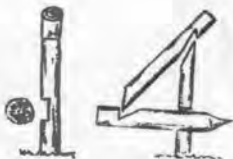
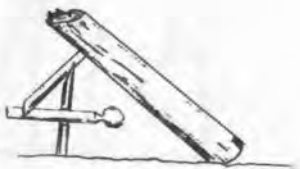
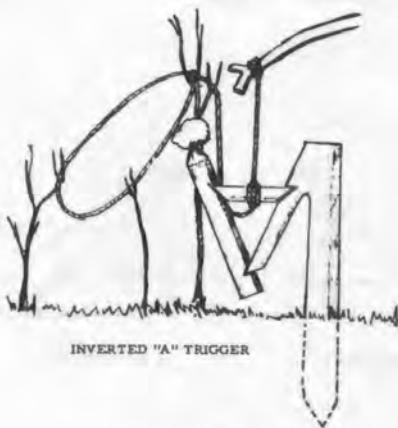
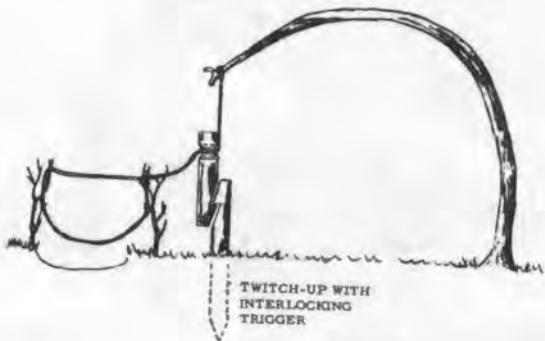


FIGURE FOUR
TRIGGER



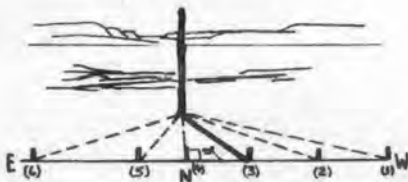
DEADFALL



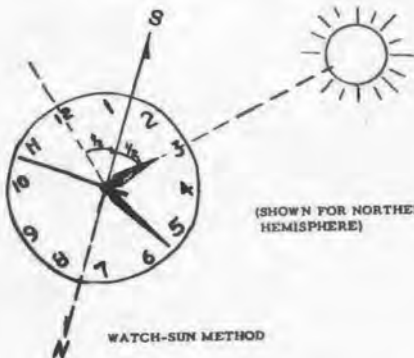
DETERMINING DIRECTION



(SHOWN FOR NORTHERN
HEMISPHERE)



STICK-AND-SHADOW METHOD



(SHOWN FOR NORTHERN
HEMISPHERE)

WATCH-SUN METHOD