

WINTER SURVIVAL

A. Introduction

Mountainous regions and the bulk of Alaska are considered by most to be a hostile and unforgiving environment in the wintertime. Snow surveyors must travel into the mountains, and often back to very remote places, in order to do their jobs. They usually expect to return to their headquarters or at least arrive at a well stocked cabin before nightfall. Many situations can suddenly occur, however, to prevent that from happening. The snow machine may break down or get stuck, the helicopter may have to make a forced landing, a storm may come up, or a whiteout may make travel too hazardous, and the party is forced to spend the night, or a longer period camping in the snow.

Whatever, the case, the snow surveyor must be prepared and capable of taking care of himself and those in his party. Emergency survival situations have happened many times over the years and each time a properly trained snow surveyor was able to handle the difficulties without serious consequences.

B. Preparation

Before embarking on a snow survey trip, the surveyor must have collected the proper clothing and assembled and checked a required basic survival pack. This act should be an exercise that mentally prepares him for possible emergencies. It's not enough just to have a pack full of equipment, the surveyor must know how to use each item. You should try to imagine every possible problem that can befall any trip and mentally resolve the situation given the equipment available. This kind of mental exercise reduces to a minimum the likelihood of surprises and gives you a feeling of confidence.

A training session may not cover every item to the satisfaction of each individual. Also, some prior knowledge of a few subjects is taken for granted: The snow surveyor is expected to know basic first aid; how to use a compass; how to operate the camp stove; etc., just to name a few. If the surveyor, in preparing for his own trips, feels deficient in some areas of safety and survival, it is incumbent upon him to ask questions and/or seek further help. He must know his equipment. Snow surveyors must also pass an annual physical examination. A person in poor health or physical condition should never be allowed on a snow survey as he jeopardizes not only his own life but the others in his party as well.

Before leaving on any trip into back country, give your schedule to a responsible person remaining behind. He must know the route you will travel, who is in the party, and when you expect to return. If you are flying, always file a flight plan. If you do not return within a reasonable time, a search can be organized with little wasted time when a few facts are known.

C. Emergency

If you have crash-landed, stay away from the aircraft until the engines have cooled and spilled gas has evaporated. Check injuries. Give first aid. Treat for shock. Make the injured comfortable. Be careful moving people with injured backs and fractures.

Get the injured into a sleeping bag up off the snow. Get out of the wind and storm. Throw up a temporary shelter. If the radio is operational, give periodic distress signals. Keep batteries warm. Be ready to signal or transmit on a moments notice. Build a fire and make hot drinks. Build a permanent shelter. Keep a sharp eye on the injured. Remember, the injured may be yourself and you may have to direct the uninjured.

D. Recognition

Many survival situations are fairly straightforward. For instance, a helicopter may be stuck too far away in the mountains to even consider walking out. Consequently, the party is spared some of the psychological trauma of decision making. There is no question but that the night will be spent out of doors. They are left with easier decisions, such as where to prepare the bivouac site. The overland traveler, on the other hand, is much more apt to get into trouble. He must be able to recognize a survival situation. That is the first step of winter survival. There are countless stories of people who froze to death because they did not recognize their life was in danger. Therefore, you must recognize the danger and take action to stay alive. Sometimes panic follows recognition. Panic is due to lack of confidence and is the greatest contributor to death in a winter emergency situation. Preparation is the best control against panic. The more you know, the more control you have and less tendency to panic. The experience each of you will receive in preparing a camp and sleeping a night in the snow is meant to instill some of the self confidence and the psychological outlook which is so necessary if you are ever caught in a real survival situation.

Man seems to have a subconscious fear of the snow, and the cold generally associated with it. Many men have walked all night and completely exhausted themselves in an attempt to avoid camping out. They think they will freeze to death if they go to sleep in the snow. Unfortunately, often this is true when the traveler is exhausted and wet with perspiration. A traveler with some knowledge, however, will build a shelter and use the snow to stay warm.

E. Shelters

Following recognition of a survival situation, (and having dealt with any serious injuries) the snow surveyor must next take stock of the situation. Shelter from wind, wetness and cold must be obtained. The kind of shelter, its location and materials may be important decisions to make. The circumstances surrounding every survival situation is different. It is not possible to spell out a list of requirements for an emer-

situation you find yourself in. Snow, as a shelter is often overlooked or last to be considered. In any case, the campsite should be selected an hour or two before sunset, if possible. A downed aircraft may provide shelter from the wind, but that is all. It will be cold, cramped and hazardous to cook in.

Fear of the snow must be changed to respect. Snow provides the best protection when we are caught out in extreme cold. It has an insulation value similar to fiberglass and a foot of snow around a man in a sleeping bag will protect him well. In the arctic, the ptarmigan and foxes go down in the snow and can keep warm no matter how low the temperatures get. The Eskimo's dog will curl into a ball, and let drifting snow cover him completely and survive the most severe storm.

In open country when the snow is shallow and the temperature is not too cold, a snow trench makes a good shelter. The principal tool for building any snow shelter is a large, strong snow shovel. Trenches are the quickest and easiest shelters to build. Dig the trench deep enough so that there is head room when sitting up. Cover the ground or snow floor with anything available such as boughs, sticks, grass and/or tarp and ensolite pad. You must have insulation between yourself and the snow beneath you. Build a roof over the trench using cut blocks of snow, tree limbs and boughs, or a tarp supported by skis and poles, etc. Carefully cover the roof of the trench with an additional layer of snow for insulation. Close the entrance of the trench or cave with a packsack, snow blocks, or a door made of branches laced with boughs.

When snow is very shallow, it can be piled up before a trench is dug into it. If the snow is very cold and fluffy, a situation typical of interior Alaska, you may have to allow the piled up snow to set up for a few hours. In very cold temperatures, the snow trench should be just big enough to accommodate the number of people using it. This allows body heat to actually warm up the dead-air-space within the shelter.

Snow caves are the warmest of all shelters and therefore they can afford to be somewhat larger and roomier than snow trenches. Caves require much deeper snow than trenches and are usually dug on sloping ground. A disadvantage is that it takes longer and more physical effort is required to build one. The best place to dig is into the side of a deep snowdrift which faces away from the wind. Be sure the location is not under an overhanging drift (cornice) or in an avalanche path. Caves are sometimes dug by burrowing into the snowdrift with a fairly small entrance tunnel, then enlarging the cave from within. This method is very laborious and the digger winds up becoming quite damp. A much easier method is to trace the shape of a persons body with arms extended on the snow surface. Dimensions of the outline are two-feet wide by 5-6 feet tall. This is called the "t" method. The "t" shape is then burroughed into the snowdrift several feet. Then begin enlarging a cave area within the drift by throwing the snow out through the horizontal arms. Once the cave is complete, the horizontal arms are closed in as well as the top half of the vertical portion so that a small entryway remains.

Take care not to make caves too large (wide) so that the roof becomes weak. If you wish, poke an air hole up through the snow with a ski pole or stick. Usually, there is enough air in the snow and leakage to provide ample oxygen.

The inside of a cave may be shaped such that two sleeping platforms are dug out on either side of the entryway trench. The platform area is elevated such that when sitting up the feet hang over the side into the trench that leads to the crawl through opening. The main cave area as well as the sleeping area are thus higher than the cave entrance to retain warmer air within the cave. The beauty of the snow cave is that the air temperature within, once warmed up by the people inside, will nearly always be within 25 to 32 degrees, even though the temperature outside may be 40 to 50 degrees below zero. The striking difference between inside and outside temperature can make the inside temperature appear luxuriously comfortable and layers of outer clothing soon come off.

Another type of snow shelter is the classic Alaskan igloo. This shelter is rarely used as a survival shelter except in the Arctic and Antarctic regions where incessant winds pack a sparse snowpack into extremely dense drifts. The principal tool in constructing an igloo is a snow saw rather than a shovel. This shelter is not covered in this course since proper snow conditions are rarely encountered except above timberline, and at these locations a trench or cave could be built as well.

Snow shelters may not be the best when temperatures are near thawing. Body temperature will soon have the inside of the shelter above freezing, and the roof of the cave or trench will drip or sag if great care is not taken during construction.

In forested areas a lean-to shelter can provide good protection. Select a level wind-protected spot. Then tramp down the snow with your skis or snowshoes. Select two poles with a fork at the top, about 1 inch in diameter and four feet long for the front corners. Shove them into the snow about six feet apart with the fork end up. Lay a ridge pole across the two forks. Lean additional poles against the ridge pole on one side to form the lean-to. Cover the poles forming the roof and sides with boughs. Evergreen boughs readily snap when frozen. You should use small springy boughs for the bed mattress. Push the broken end into the snow at an angle, all pointing the same way. The thicker the better. You should allow several hours to build an adequate lean-to shelter. Most shelter engineers, given enough time and materials, end up closing in the both sides so the shelter may resemble a pup tent, or whatever. No two are ever alike.

In late winter, a fairly easy place to produce a shelter is adjacent to the trunk of large spruce trees. The shape of spruce trees and density of the branches are such that as the snow is shucked off, it tends to build up on the ground at the outer perimeter of the branches away from the trunk. This can create a hollow at the base and provide a nearly ready made shelter. A hatchet or small saw may facilitate

enlarging the hollow on one side of the trunk by cutting away some of the lower branches. Level out the floor of the hollow by tramping the snow with skis or snowshoes. Thatch any holes or thin spots much the same as the lean-to. Downed trees provide other versions of halfway ready shelters.

A big plus for the timbered country is the campfire which may provide as much benefit warming the spirit as well as the body. Lay a bed of green poles to build the fire on and keep it fairly small and close to the lean-to. That makes the wood pile last longer and the fire won't disappear into a crater as fast. When evergreen boughs are available for a bed, and wood for a fire, a person could spend a reasonably comfortable night with no more equipment than a match.

F. Signals

Once the shelter is secured and the party is warm, work on being rescued. When you do not return on schedule, a search party will normally be dispatched the next morning. Be ready with all possible signals to attract searchers and be ready on a moments notice. Prepare signals that will be recognized from the air. Tramp out huge letters 20 to 30 feet high in the snow in an open area and keep them maintained. If available fill letters with boughs for contrast. Have materials ready for a smoke fire by day or a bonfire by night. Be ready with flares, signal mirror, whistles, gunshots, or beat on metal to attract searchers. Review "Staying Alive in the Arctic" for more tips and detailed instructions on signaling methods.

G. Water and Food

You can live for weeks without food as long as you have water. You should drink at least two to three quarts of water a day to stay healthy. Dehydration is life threatening—an early sign is dark colored urine. Do not eat snow as it is a great drain of body heat and cools the body inner core temperature. Water obtained from snow, ice or a flowing stream should be warmed before drinking. If fuel is not available, snow or ice can be packed into a water bottle and placed inside your parka. Escaping body heat will slowly melt the contents. Snow can be melted on a dark surface when the sun is shining.

The food carried in the survival kit should be readily digestible and balanced between fat, protein, and carbohydrates. Many dehydrated foods have a high calorie value, are lightweight and keep for long periods of time. Soups and boullion cubes are very desirable since they assist liquid intake. These provisions should not be raided on routine trips but saved for their intended use. Rabbits are often abundant in the winter. They are easily caught with a copper wire snare and a little practice, so be prepared.

H. Fire .

Every emergency kit should contain moistureproof matches plus an alternate method of starting a fire. There are many methods available. One uses a "metal match," raw cotton, hemp rope and a small vial of Kerosene. These will take up no more room in a pack than a bar of soap. Fires may be easy to start in very cold weather because of low humidity and dehydrated fuel. However, they can be extremely difficult to start during adverse conditions. First spend some time getting ready. Round up a good supply of varying fuel sizes. Clumps of small, dead spruce twigs obtained near the trunk are excellent starting materials. The metal match, when scraped by a knife or other sharp metal edge, will produce a huge supply of sparks. Convert the sparks to flame by striking them into a small wad of raw cotton. It will ignite instantly, but last only briefly.

The flaming cotton is used to ignite something with more staying power like several inches or strands of hemp rope. Next, add a small amount of dry spruce twigs, then carefully build the fire by adding more and larger fuel. When conditions are damp, a few drops of kerosene to the spruce twigs will provide all the assistance needed, if care is taken in selecting the initial (dry) starting fuels. You may even have to make shavings from the center of larger sticks of wood after first cutting away the outer wet portion. Also, take great care to make the fire starter materials last as long as possible.

I. Sleeping

A down bag should be "fluffed" by shaking it vigorously to get as much air as possible into the down filling. Clothing worn inside the bag should be no more than necessary—the same as during the day. It's easy to overdress and sweat inside the bag. On the other hand, if you wake up at night feeling cold, you should "bicycle" —pumping your arms and legs—in the bag to warm up. Even when "under-bagged" you can get a decent nights sleep with periodic cycling. This works great for warming up the bag when you first get in and eases the shock when getting out in the morning. Keep felt inner boots, liners, or innersoles inside the bag with you. Also, keep some of your "layers" inside for putting on in the morning.

J. Travel

If your mechanical transportation has failed, think twice before leaving to walk out. A good general rule is to stay put! Your main objective is to stay alive. The surest way to accomplish this is by waiting for rescue. You should not travel alone and not leave someone alone. If you are still intent on leaving, consider the following:

1. Is the weakest member physically fit?
2. Do you know where to go, how to get there and that you can stay on course in bad weather?

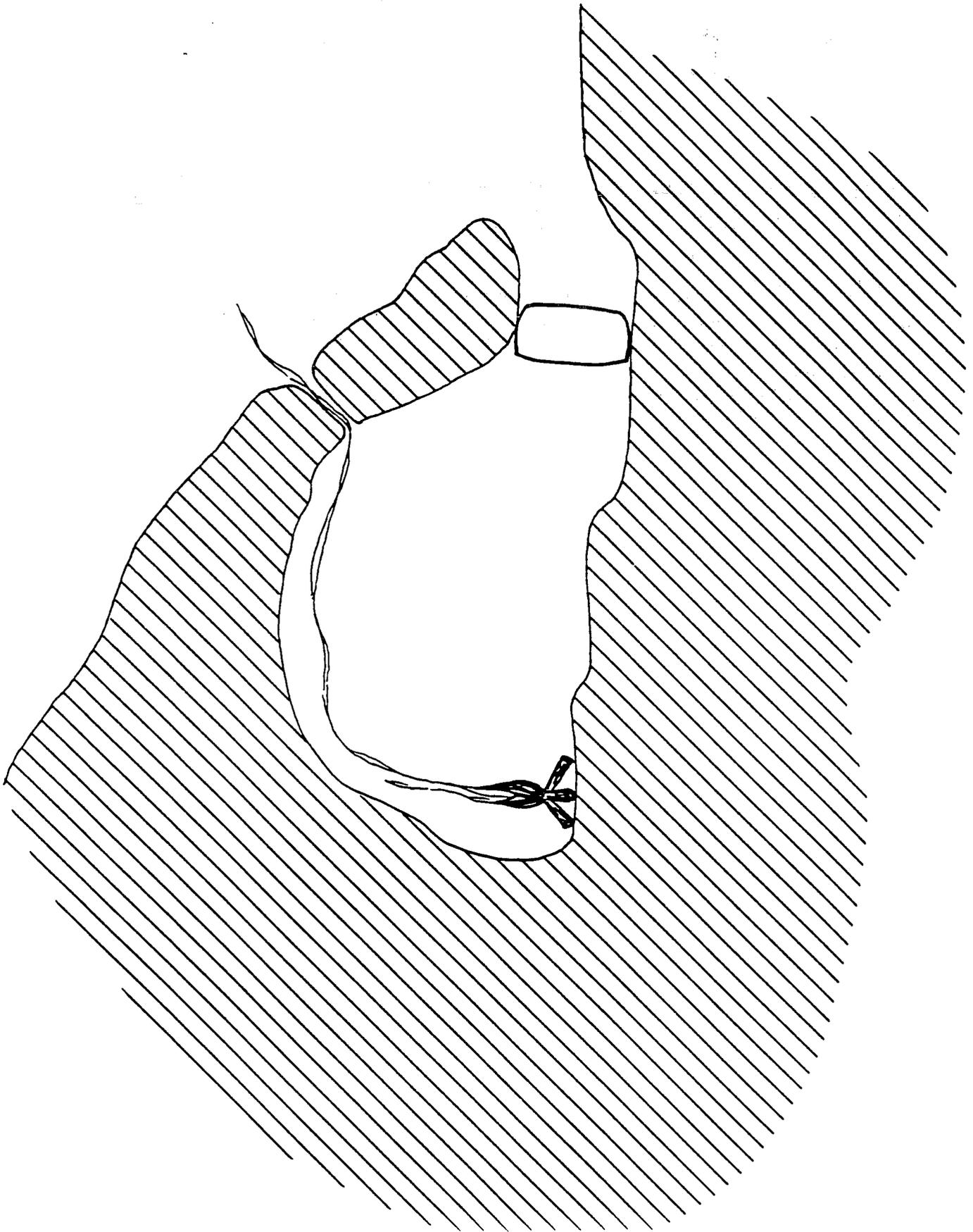
3. Can you handle adverse weather, build a shelter and fire, and procure water enroute; and will your food last the trip?

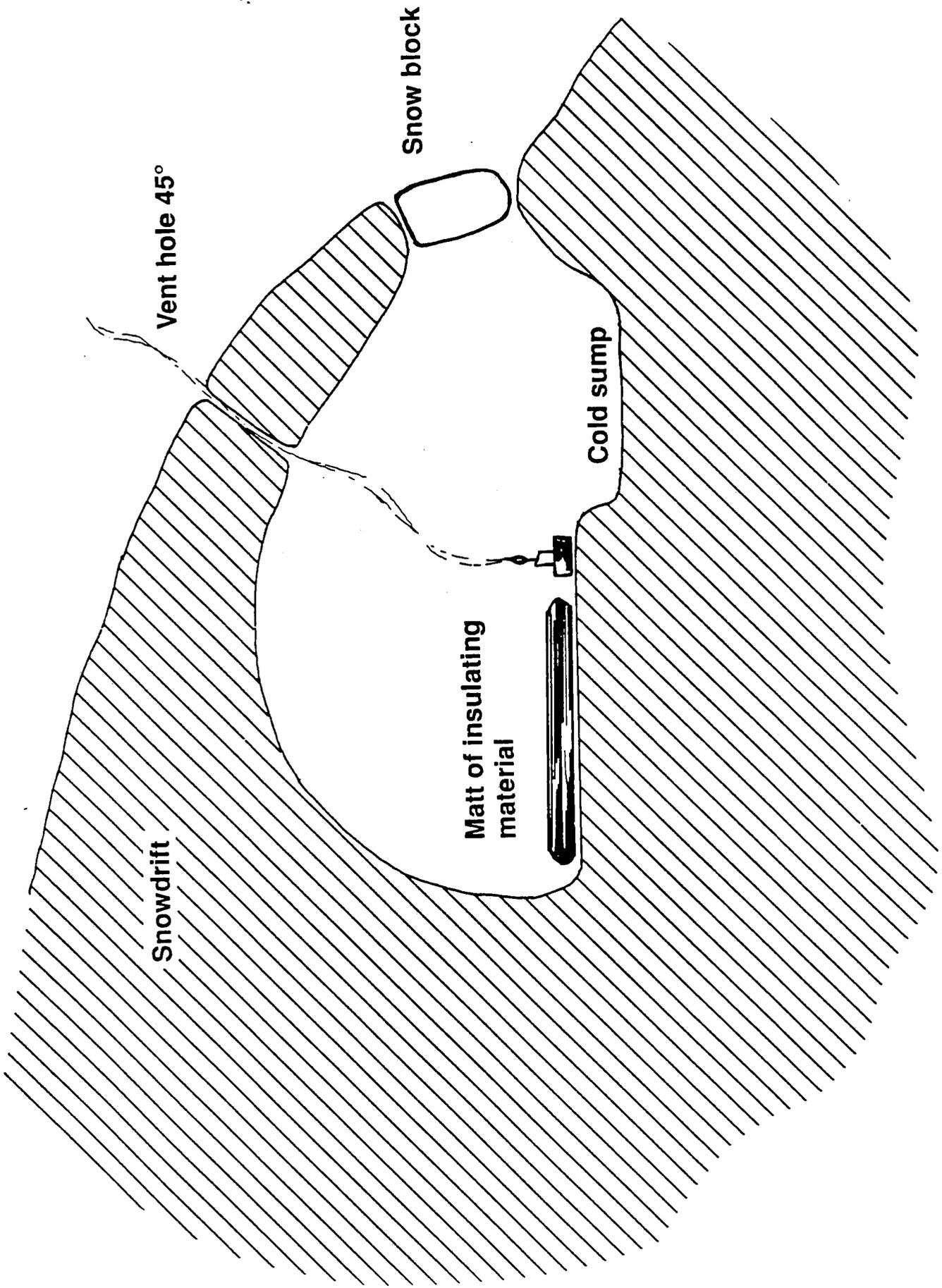
If you do leave, post a conspicuous note telling which way you are going and your intended destination. Be sure to mark your track so you can be followed by searchers, and so you can find your way back if you decide to do so.

K. Summary

In a survival situation, you must help yourself. Your own head is your best survival tool. Don't depend on someone else to think and plan for you. Make definite plans each day as to what you are going to do, and stick to it. Continuously analyze the party's resources and how to best use and conserve them.

Make a real effort to keep your own spirits high and help others in the party to do likewise. Depression can undermine the will to live. Keep busy throughout the day in improving the camp, preparing emergency signals, but do not over exert or use energy needlessly. Avoid perspiring, and if possible, keep a fire going. If you are involved in an aircraft failure, stay with the aircraft. It is much easier to find an airplane than people, and you can be certain that search procedures will already be started.





Snowdrift

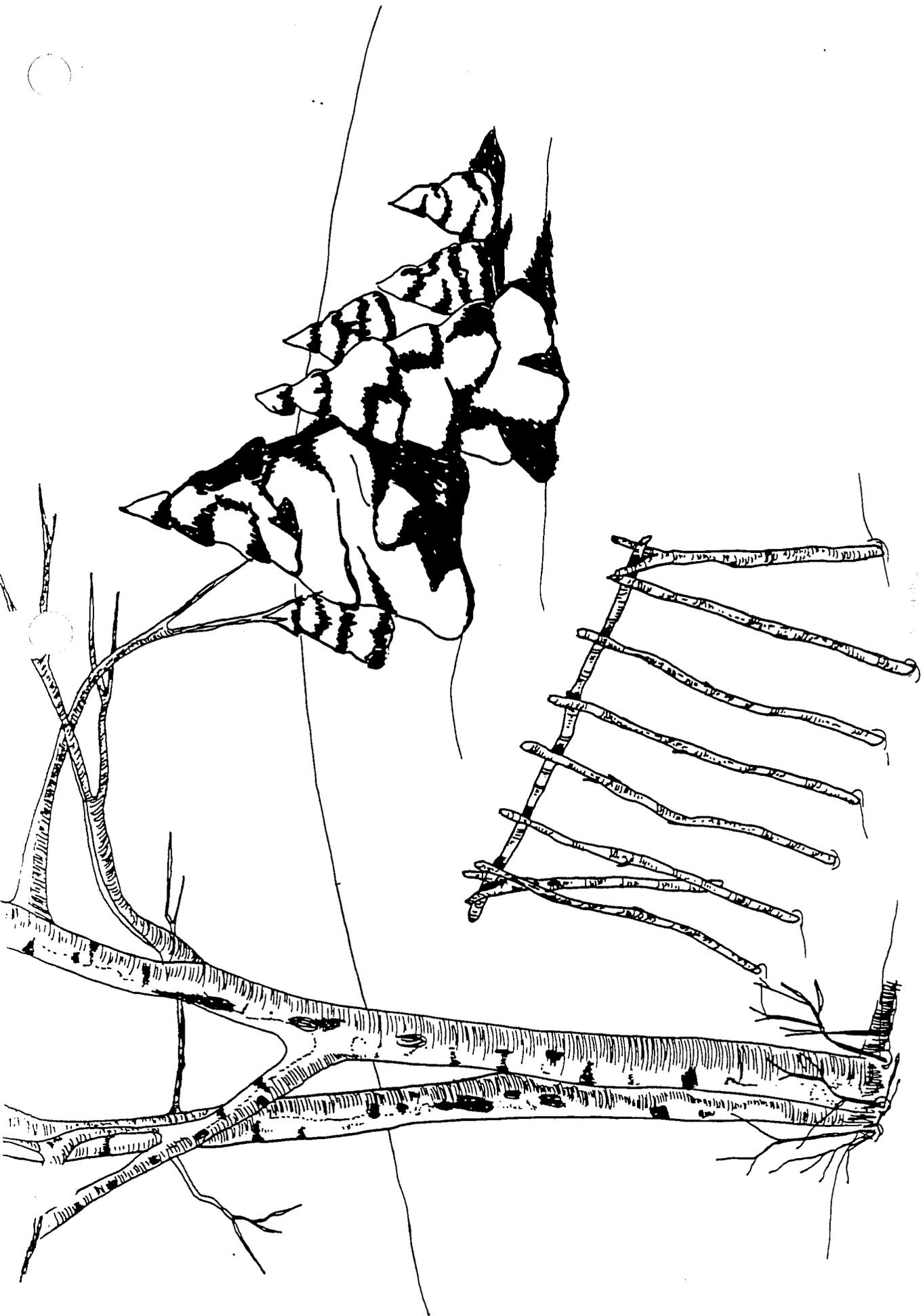
Vent hole 45°

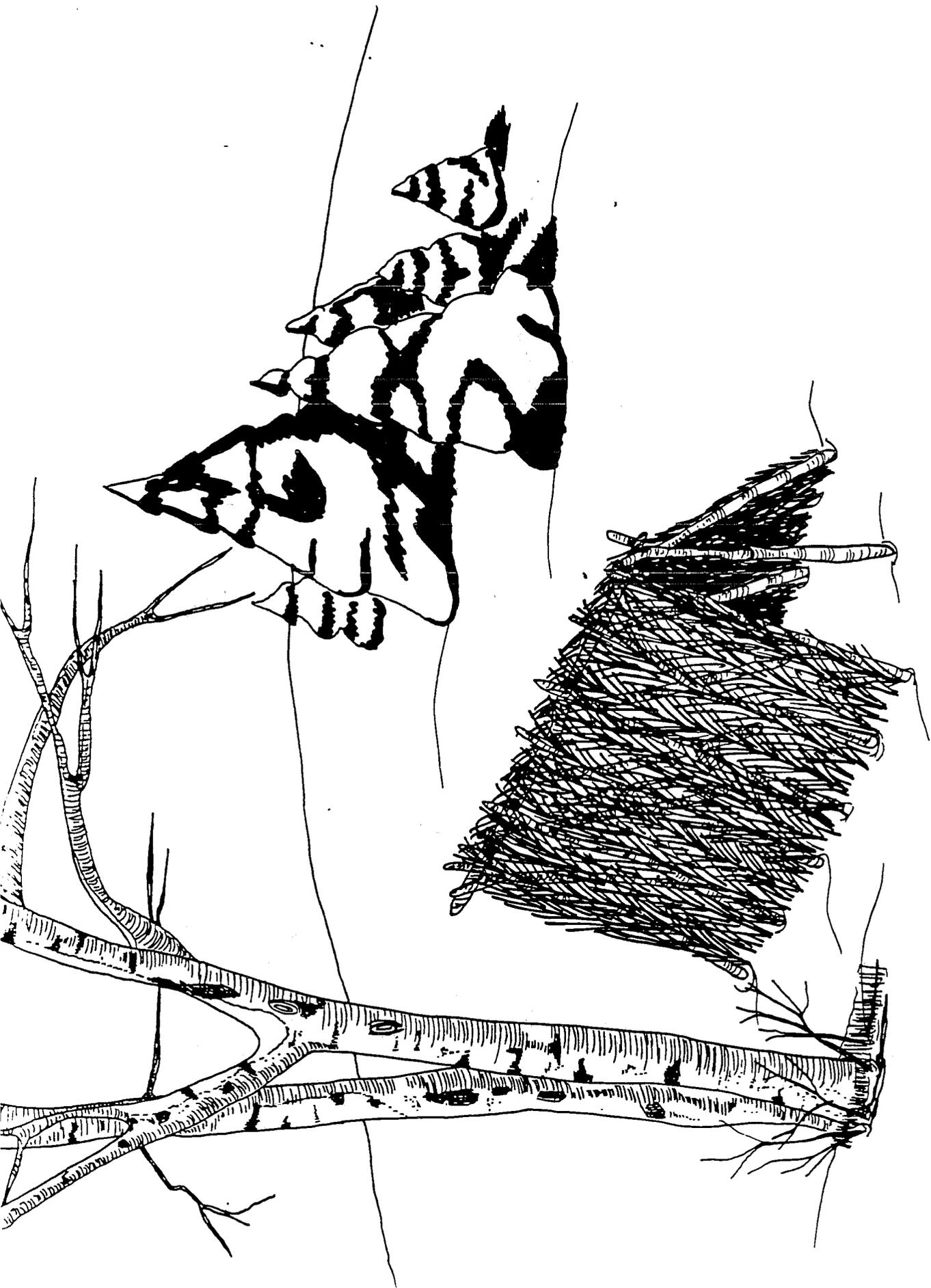
Snow block

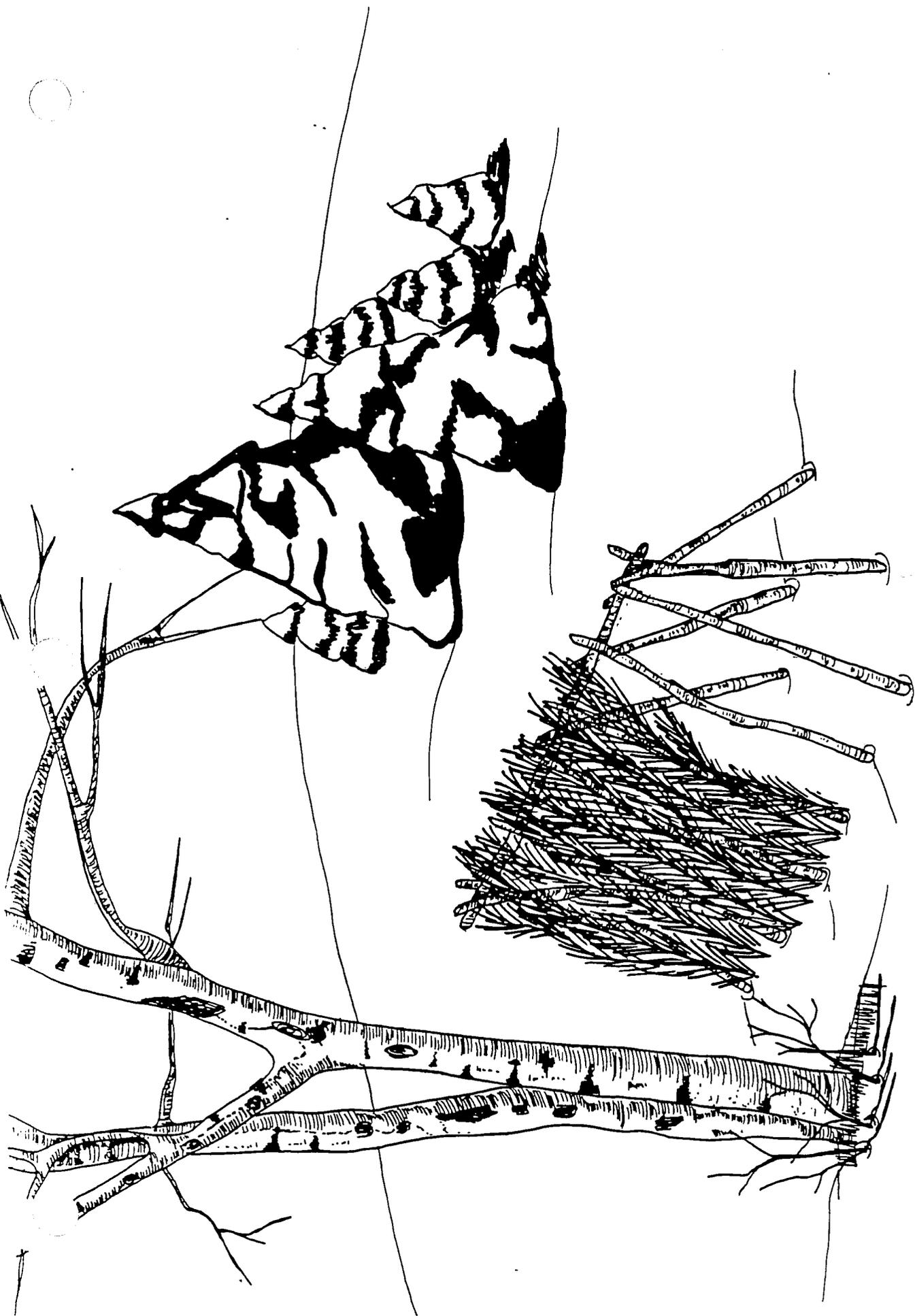
Matt of insulating material

Cold sump



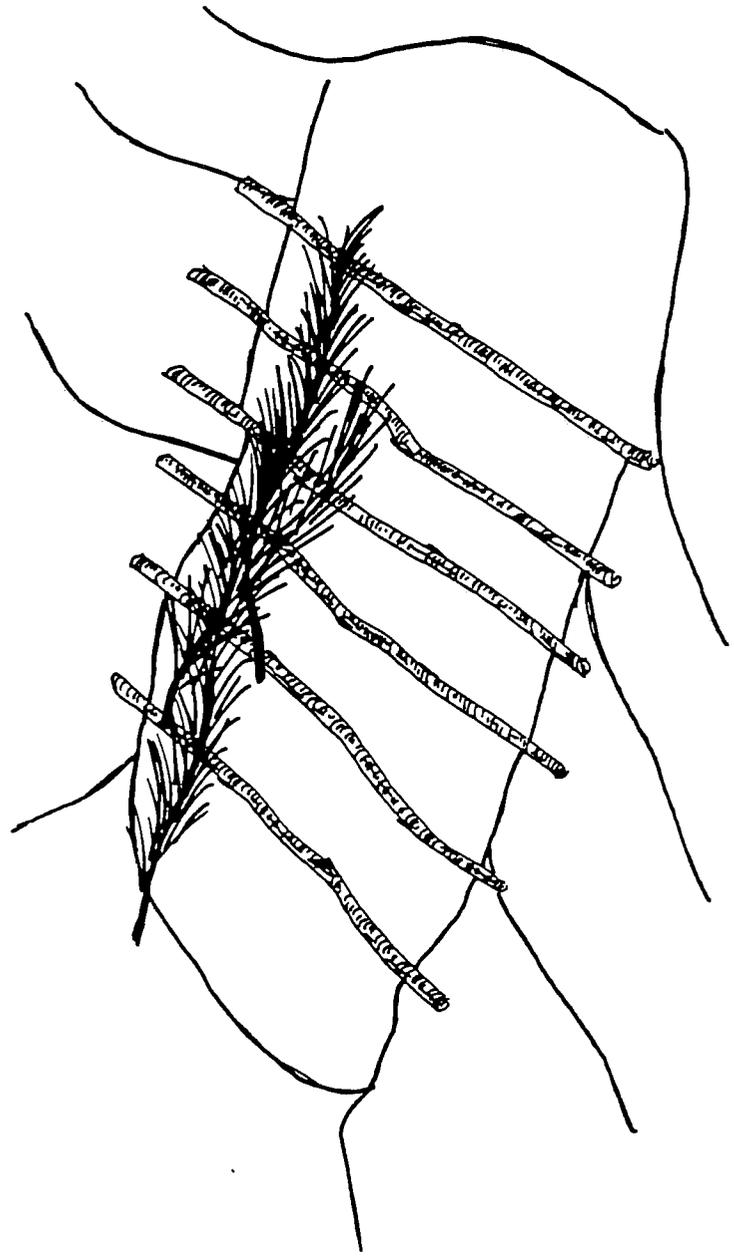


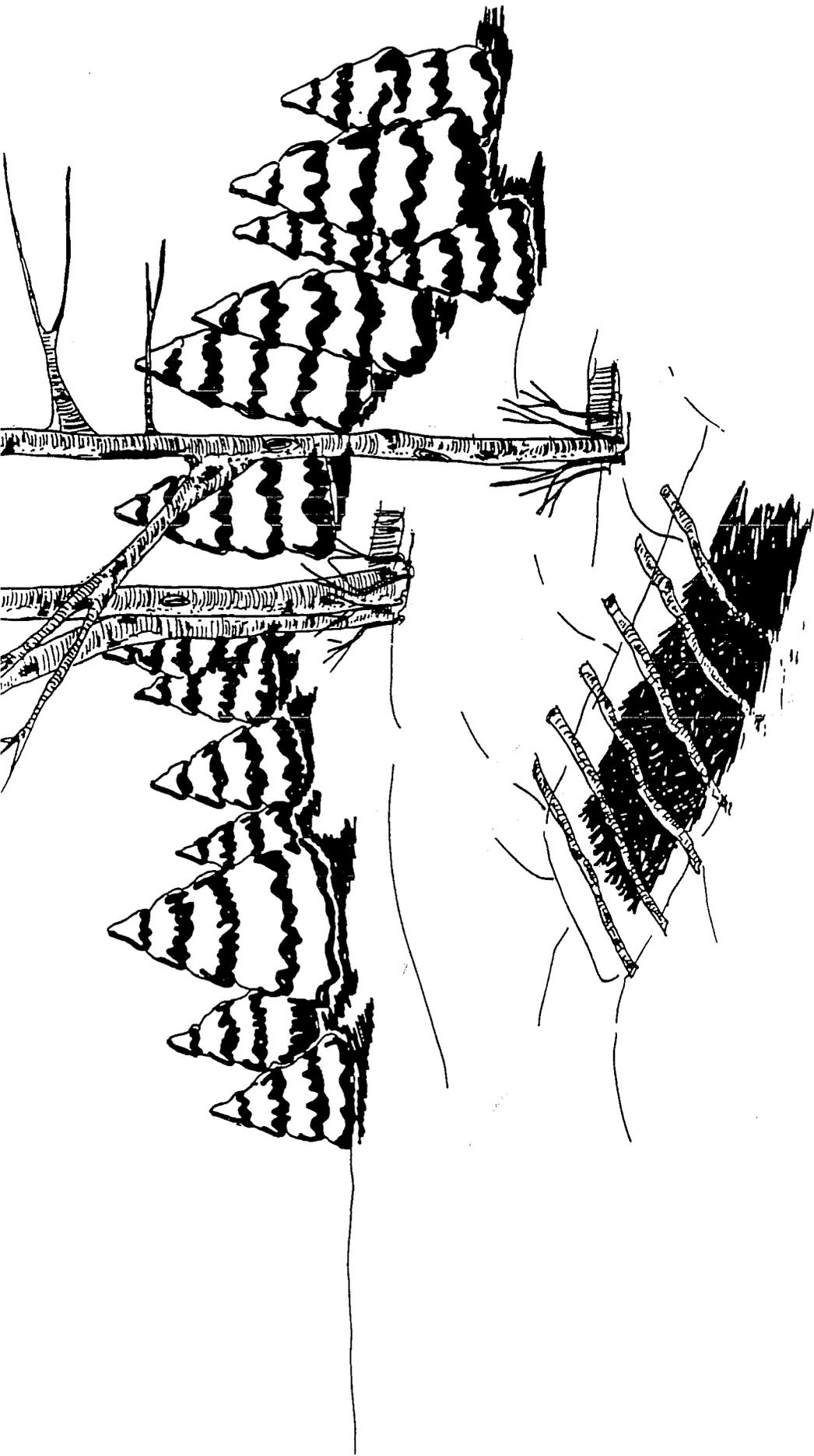


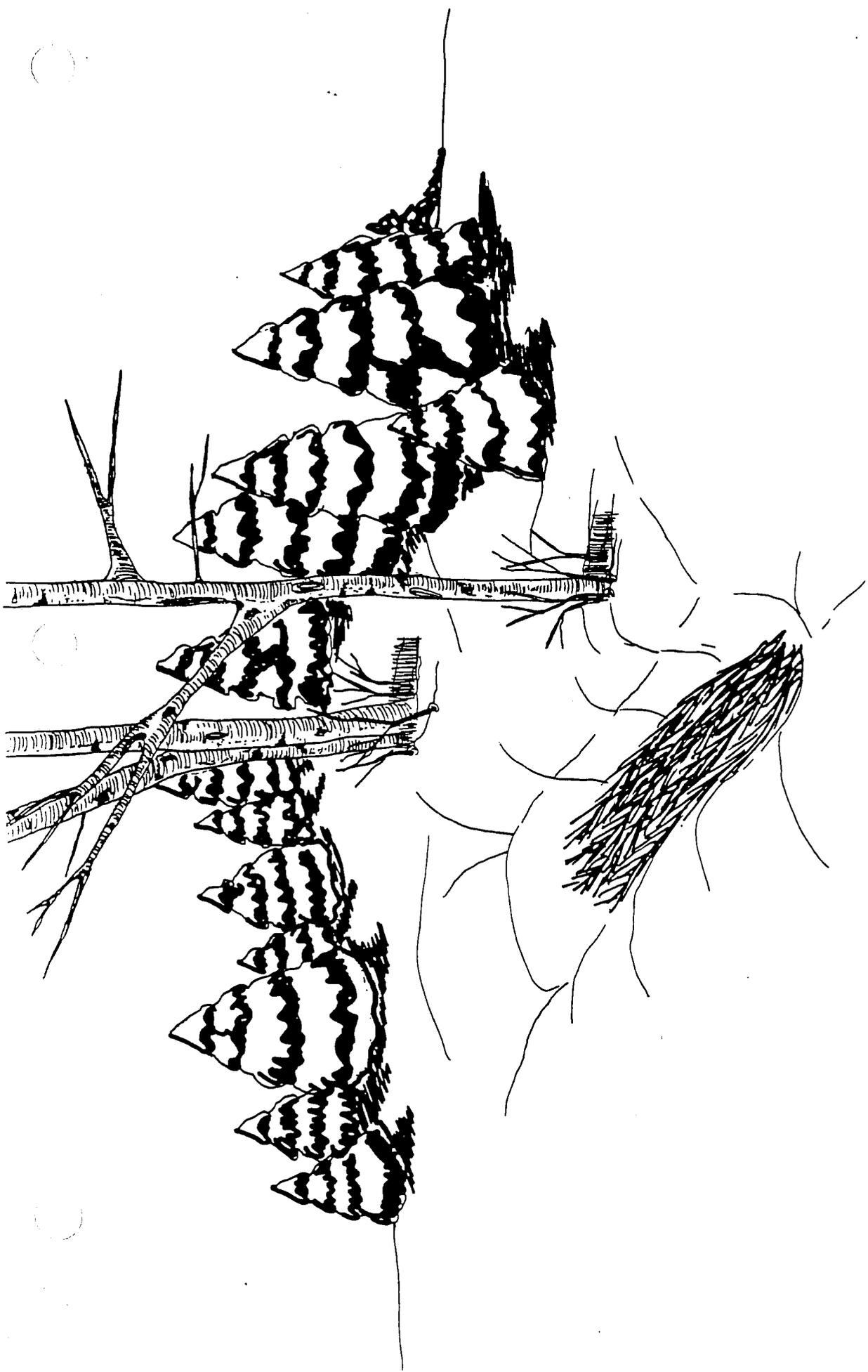


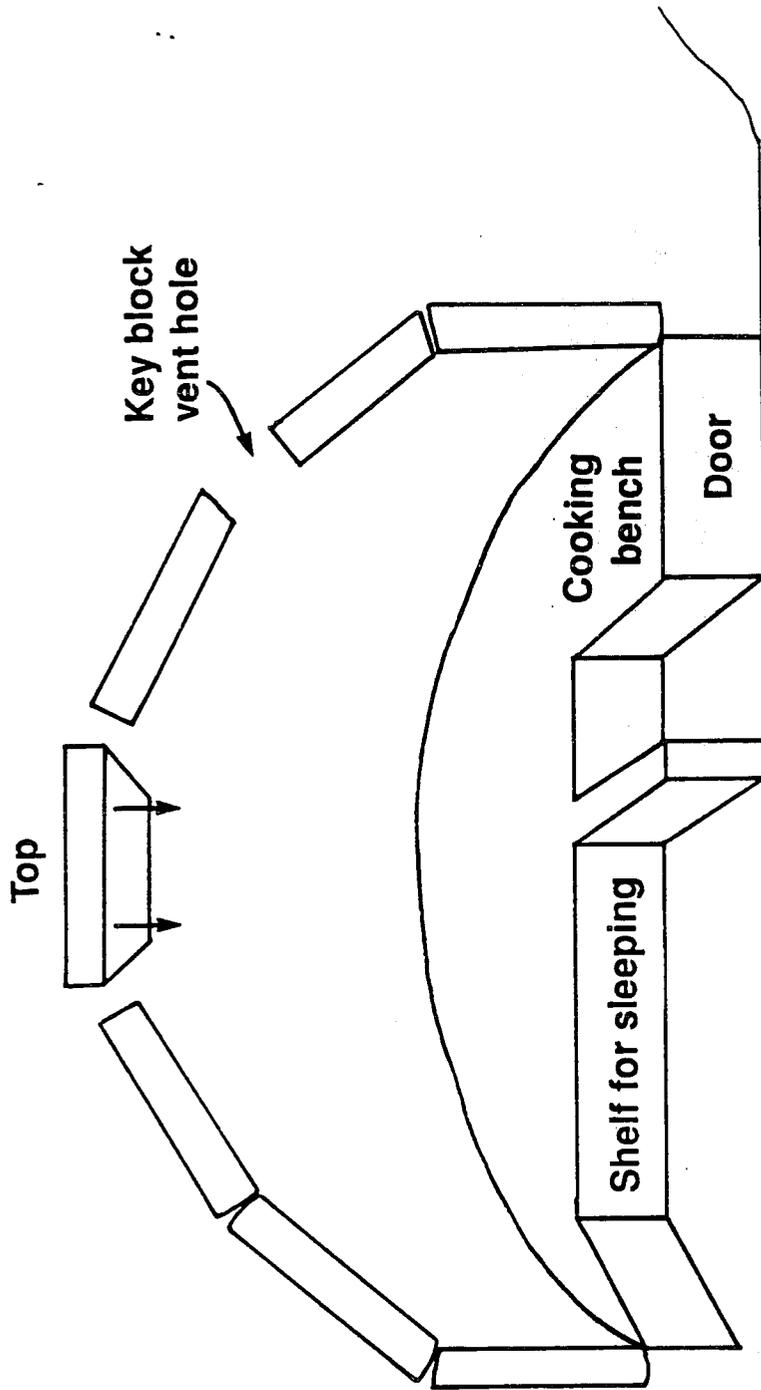


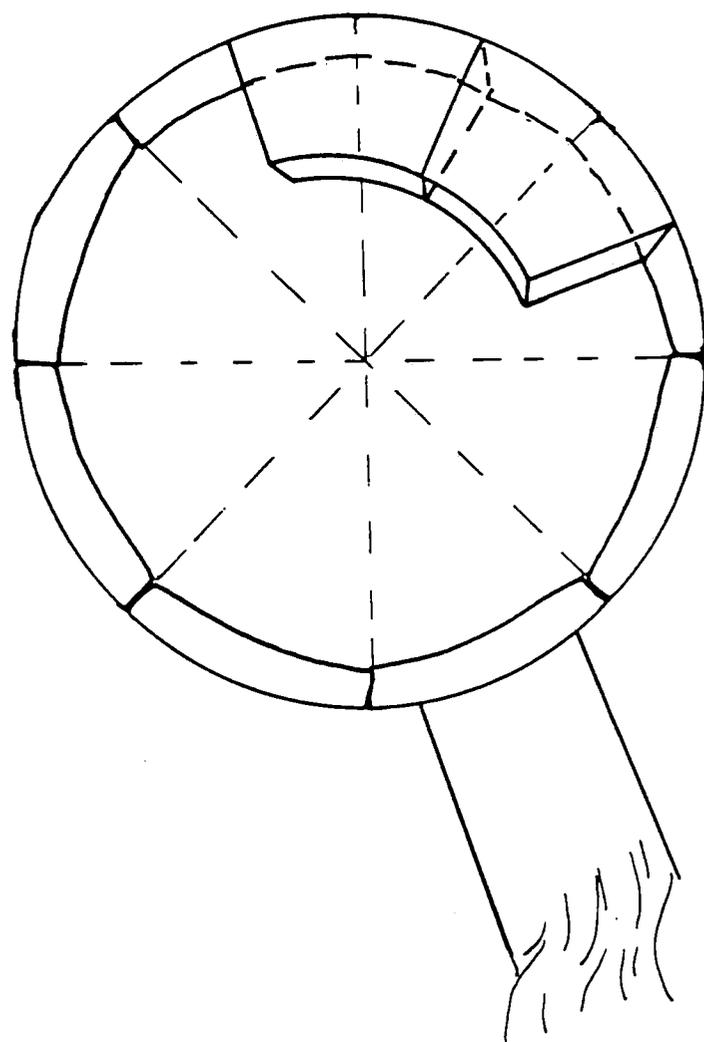
L. 7

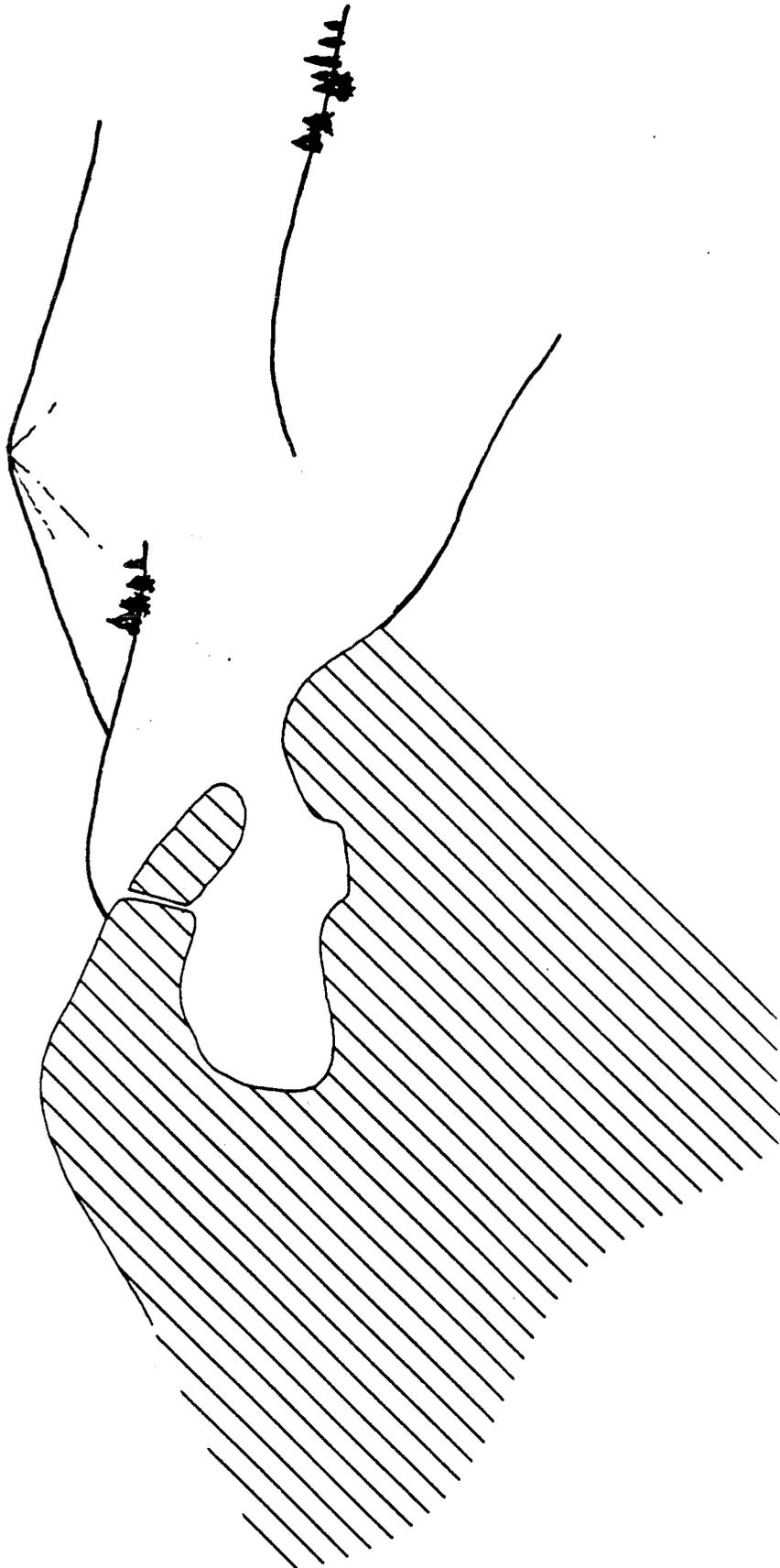


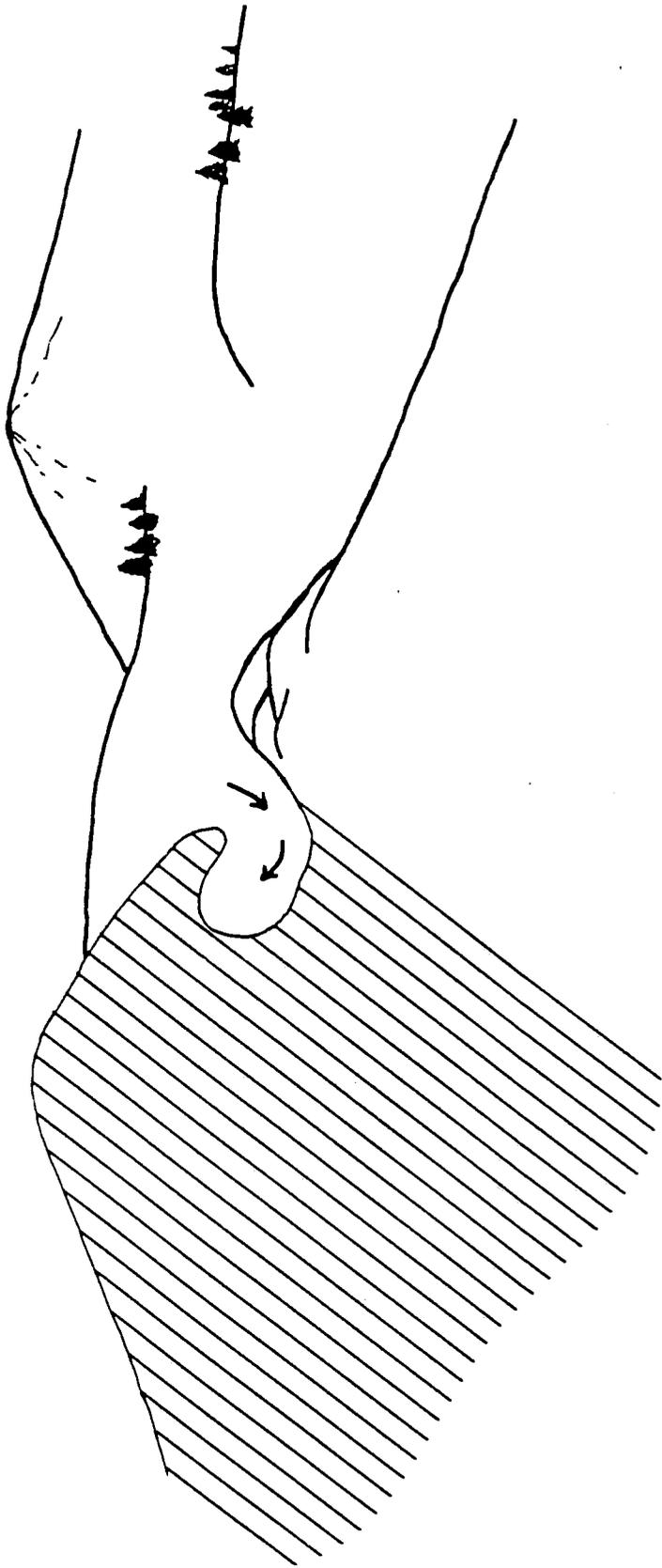


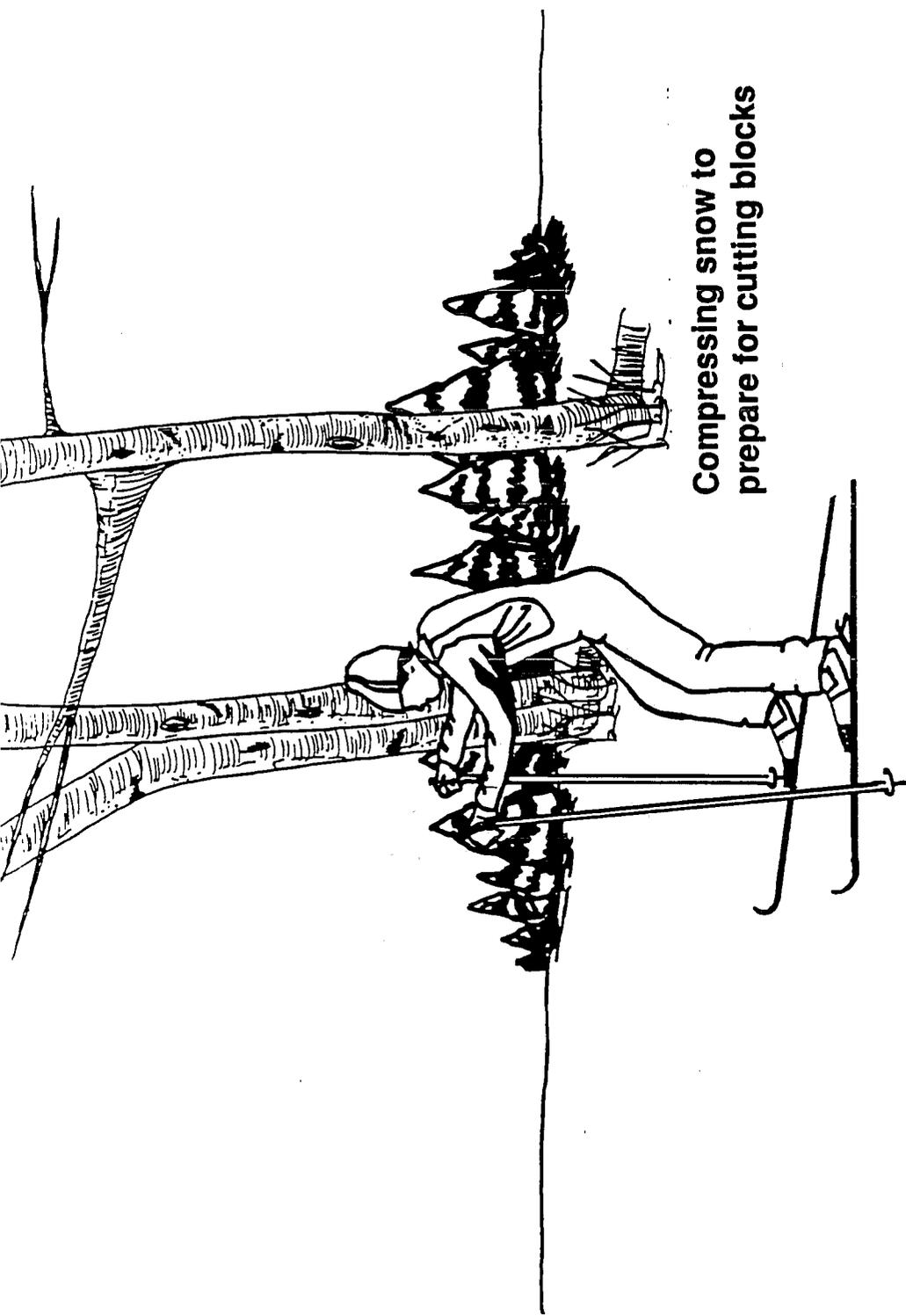












Compressing snow to
prepare for cutting blocks

