WINTER SCOUTING

THE BOY SCOUTS
ASSOCIATION
CANADA

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CANADA

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HONORARY EDITOR

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FOREWORD...

One of the things in Scouting we must avoid at all costs is the trend which seeks to make things too easy for our boys. I believe that there is still plenty of pioneer spirit in young Canadians. This spirit helped build Canada, and it will be needed in the future. It must be encouraged and developed.

Winter Scouting, with its hiking, camping, skiing and adventuring, is one of the best ways of doing it.

This book seeks to give you the "know how." It is authentic and up-to-date, and its suggestions and ideas have the weight of the foremost authorities in both Canada and the United States behind them. II commend this book to every Scout and Scouter in Canada. I trust it will lay the trail to more adventurous Scouting, which will result in a hardier and more virile Canadian manhood.

Chief *Executive Commissioner*

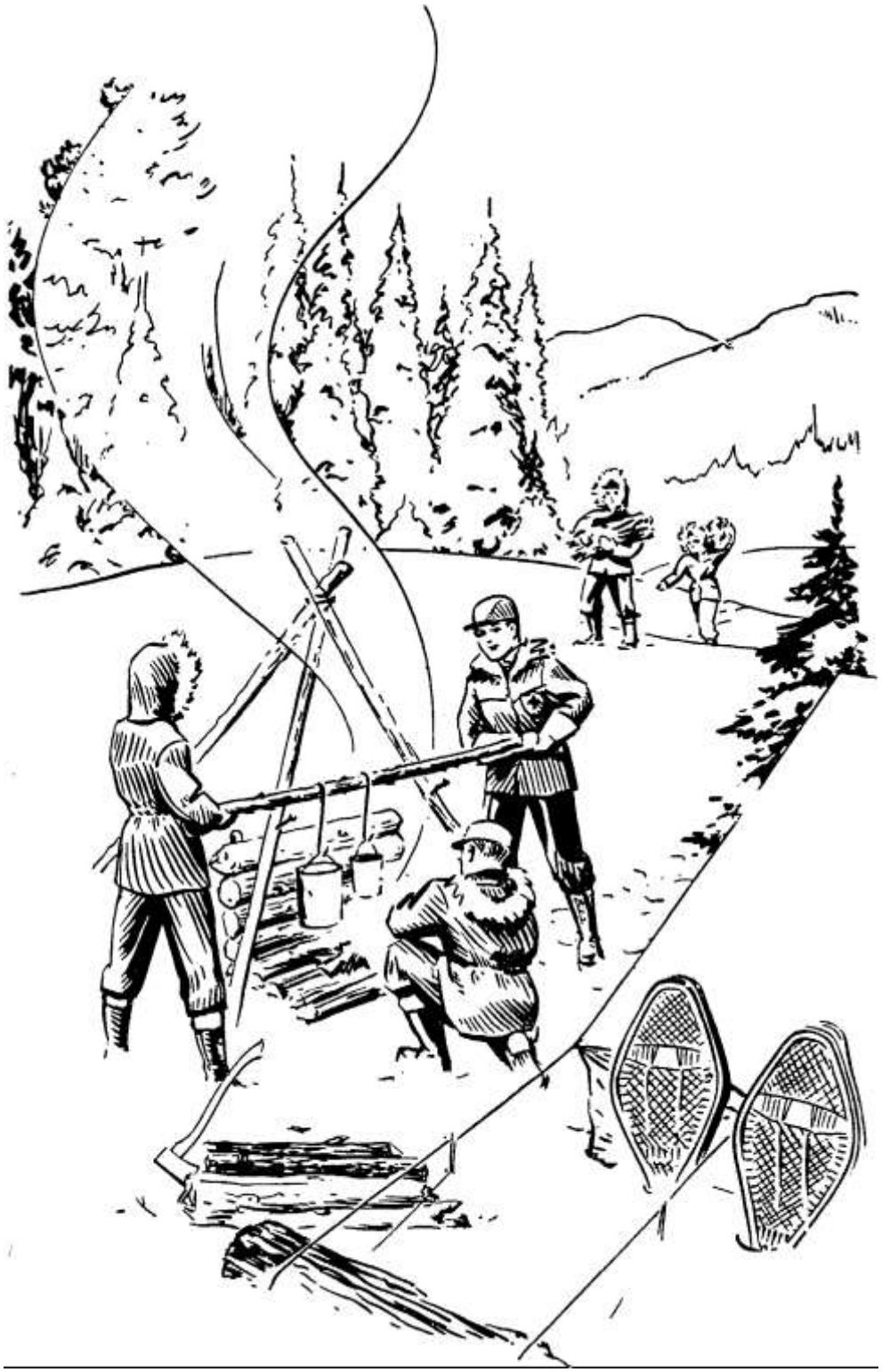
PREFACE...

IT WILL be obvious that a book on Winter Scouting in Canada could not possibly cover all the varying winter conditions of the Dominion from the only occasionally severe temperature and heavy snowfalls of the more temperate zones to the zero, snow-bound winters of northern Quebec and Ontario, the northern Prairie Provinces, North-West Territories and the Yukon.

Since severely cold weather and heavy snowfalls do occur in all areas from time to time, however, offering sturdy, adventure-minded older Scouts the opportunity for testing their knowledge and hardihood under genuinely rugged conditions, WINTER SCOUTING has been written primarily for such occasions and such Scouts, while also carrying suggestions for progressive hiking and camping by younger Scouts under milder winter conditions.

For the use of much valuable reference material and the contribution of most helpful comments and suggestions out of personal Arctic experience, the Boy Scouts Association would express its warm thanks to Ex-Assistant Commissioner H. Darling, Deputy Commissioner C. K. Gray and Constable E. A. C. Heruog of the Royal Canadian Mounted Police; to Lt.-Col. P. D. Baird of the Arctic Institute of North America; Major Don Rochester, Royal Canadian Engineers; Graham W. Rowley, Arctic Research, Defence Research Board, and W.O. II Frank Spain, R.C.O.C., Fort Churchill. Our appreciation also is expressed to the Canadian Red Cross Association and the St. John Ambulance Association for material on winter first aid, and to Chief Scout Executive Arthur Schuck and National Director of Scoutcraft William Hillcourt of the Boy Scouts of America for placing at our disposal their books and pamphlets, and photographs of Winter Scouting equipment and activities.

NOTE: It is assumed that all winter hiking and camping groups will be headed at least by a First Class Scout, having all the practical Scouting experience and knowledge expected of that rank. It is also assumed that each Scout possesses the basic Canadian Scouting manual, TENDERFOOT to QUEEN'S SCOUT, hence certain references are made to material in that book, to save repetitim and space.



WINTER SCOUTING

ZERO weather hiking and camping calls for considerable physical stamina and general Scouting experience. Definite qualifications for Scout participation therefore should be laid down by the Troop Court of Honour and Group Committee, the stipulations including age, health and Scout training. The requirements for instance may call for:

Age, not less than 15 years. Minimum time in Scouting, two continuous years. Rank, First Class. Proficiency Badges to include Ambulance and Camp Cook.

A review of requirements, for modification or additions in the light of experience, should be made at each Autumn-resumption Court of Honour.

To emphasize the importance of age and Scouting experience it is sufficient to remind that during a physically taxing snow hike-which any hike may become through a sudden change of weather-the too-young and inexperienced Scout can prove a serious problem for himself and a serious handicap for his companions.

In planning a winter outing, the first question to be discussed will be: Where shall we go? Next, who, and how many? And so on in orderly fashion.

WHERE SHALL WE GO?

THE Scouts of Troops with winter camping traditions will find no difficulty in deciding on a hike objective. Probably they will have several favourite winter sites. Other Troops may own a winter cabin on their summer camping place, where in winter the surroundings have an added familiar interest in the leafless trees, the snow mounds over the camp oven, the fireplace; the far views that were hidden in summer.

If it is to be the first winter hike adventure, however, selection of a destination will be given serious debate, inquiry, and further discussion. Points to consider will be: easy accessibility in the time available and with the means of travel to be used; and as to the camp site, protection from the wind, and trees for shelter and fire wood. An ideal site would be the lea of a tree-covered hill or ridge, and by the side of a stream or lake.

"Right here!"

And secluded, -out of the reach of casual visitors.

A bare ridge would be avoided, as liable to prove a snow trap in case of a heavy snowfall or blizzard.

WHO AND HOW MANY?

PAST experience in zero weather hiking and camping has demonstrated the wisdom of organizing an expedition in small, self-contained groups of six to eight Scouts, and not less than 4. (In case of casualty, two can carry one, leaving one Scout to go ahead for help if necessary.) Six to eight is about the right number for a 10' x 12' x 14' tent, their gear (beyond that in their back-packs) will fit nicely into a five- or six-foot toboggan, the size usually available; and six or eight in one tent can better maintain a night watch (page 21)

A Patrol of six to eight Scouts also is more suitable for pulling a toboggan, in relays of three, -one Scout on the mush rope and two on the pull ropes. With only four Scouts, all must pull most of the way.

The larger group is also better for breaking trail by the "peeling off" method, on foot or snowshoes (page 15).

WHAT TO WEAR?

IF IT is to be the Troop's first real cold weather "Zero Expedition Scout" some of the boys concerned may have some rather strange ideas concerning what to take, -perhaps a big blanket "horse-collar" roll, three or four extra sweaters; maybe even a hot-water bottle. In other words, they would load themselves down like a prospector's donkey.

The first job therefore will be to get the fellows down to earth -or down to the frost line, so to speak-in the matter of kit. And the starting point wilI be "What are we going to wear?".

The "whys" of comfortable cold weather garb should be thoroughly understood to ensure that the improvisations of clothing which may be necessary for some of the boys may be intelligently made.

To begin with, then, -just what is the process of "keeping warm"? For it is not, as so many believe, a matter merely of piling on more and heavier clothing as the temperature drops. It is a combination of insulation and moisture control (both outside dampness and body perspiration), and the relation of these factors to the particular hiking and camping activities planned, - such as travel distances involved, quantity and weight of gear, whether back-packing or using toboggans or sleds; the work to be expected in making camp, etc.

So keeping dry is the vital thing,-avoidance of overheating, per-

spiration and subsequent chilling; when on the move, clothes kept to the minimum, and replaced during halts. This may be a "nuisance," but it pays off.

According to the famous Arctic explorer Stefansson, the various factors of keeping warm in sub-zero temperatures include: Clothing of loose air-space texture. Air-space between garments. An outer garment of wind-resistant and water-repellent material. Avoiding

dampness of clothing by adjusted circulation of air between garments (as by "breathing" a parka by drawing it out and in).

UNDERWEAR Latest research shows that the best type of underwear for use on winter camping expeditions is a suit of flannelette pyjamas. This type of underwear is issued to Canadian forces serving in Arctic regions and is found superior to regular types of underwear because it is loose fitting and provides plenty of air space which is essential in cold climates.

Tight fitting clothing which does not allow sufficient air space is not considered fit wear for cold weather.

FOOTWEAR For hiking afoot, which we are considering here (snowshoeing and skiing are dealt with elsewhere), the temperature, weather and nature of the country to be covered will suggest the type of footwear, -whether moccasins, shoepacks or larrigans, mukluks, laced leather ankle boots or high-cut boots.

For frosty snow, not too deep, the Indian moccasin is ideal. When bare rough ground may be encountered, or when there is a possibility of wet snow, -as in the middle of a sunny day of early Spring, -the shoepack or larrigan, well greased, is preferable. Storm-rubbers worn over moccasins also are an excellent combination.

Shoepack

Ski boots are not recommended for tramping because of their extra weight. Overshoes should not be considered. They are extra warm and are likely to cause sweating during continuous hiking, and their weight added to that of the boots may prove seriously tiring.

Mukluk

In all cases, footwear should be sufficiently roomy to permit the comfortable wearing of two pairs of wool socks. Or in place of one pair of socks, a felt insole. This absorbs a great deal more moisture, and keeps the feet dry. Two pair may be carried, and the extra pair dried on the chest next the skin while on the hike.

Larrigan

Tight boots restrict circulation, and are a direct cause of frozen toes or feet.

Spare footwear, moccasin type, is most essential for changing into as soon as major activities have ceased for the day, -for comfort and as assurance against frosted feet.

SOCKS Soft wool, smooth fitting -and not tight. Needless to say, no holes or hard darned spots. One heavy pair, or better, two pairs in zero cold weather, -the outer pair a half size larger. No ankle socks -they should be high enough to roll, for dry snow, or to pull up well on the calf when travelling through damp or melting snow.

TOE-COVERS For ski-hiking only. During the winter campaigns of World War II, the Canadian Army developed a toe-cover that proved a valuable added protection in steadily frosty weather. This is a cloth "foot," and is drawn on over the boot, covering foot and instep, and tied at the back of the heel by a lace.

SHIRTS Woollen with long sleeves. Worn over woollen underwear, or a wool shirt, plus either a sweater or a second wool shirt. In both cases a water-repellent and wind-resistant jacket or parka insures sufficient warmth in sub-zero weather.

PARKA The parka has advantages over most other types of jackets. Its roominess permits both freedom of movement and inside circulation of air, and helps to eliminate perspiration dampness. The Scout Parka, with its large and weatherproof pockets, is recommended.

MITTENS Knitted mittens or mitt-liners inside water-repellent overmittens are best. Finger gloves are not sufficiently warm in sub-zero cold even with an outer mitten. An extra pair of gloves (fingers loose fitting) may be useful around a bivouac in milder weather.

HEADWEAR The ski cap worn as part of the Scout winter uniform is best. Otherwise, a snug wool cap that will pull down over the ears. The skier's knitted ear-band, leaving most of the head uncovered, should not be worn in zero-weather.

SLEEPING BAG For overnight bivouacs and camps a standard Scout sleeping bag, plus two heavy-weight fleecy blankets, will be suflicient. If blankets only are used, to make a 'fleabag' three good soft fleecy blankets probably will suffice (see TENDERFOOT to QUEEN'S SCOUT, page 31.) For zero camping, however, a sleeping bag is almost a "must."

NIGHT WEAR Suitable sleeping clothes will vary with circumstances and conditions, -the period of hiking and the temperature, and whether bunking down in an open-front bivouac or a tent. In all cases a complete change of clothing to warm pyjamas and dry socks will best ensure a sound sleep. A knitted toque will make a good nightcap.

American Scout winter hikers have developed an excellent sleeping suit made of a sweatshirt with a built-in parka hood and a pair of track trousers, plus a pair of inexpensive sheepskin slippers.

HOW SHALL WE TRAVEL?

TRAVEL plans will depend upon duration of the hike, the country to be traversed, weather, snow conditions, and number of Scouts going. For a one-day expedition (Saturday or other holiday), the food, an extra sweater for rest periods and personal Scout first-aid kits can readily be carried in a Scout rucksack.

The overnight or week-end outing will call for real discussion, the details including number of Scouts and groups going, and incidental activities along the trail and in camp.

SKIIS OR SNOWSHOES? Most boys today own skiis, or in some sections snowshoes. In the absence of either, snowshoes can be made by any handy Scout (page 38). The making of a satisfactory pair of skiis is practically out of the question, because of the difficulty of fashioning dependable boot fittings.

TRAIL BREAKING Failing either skiis or snowshoes, the adoption of a good system of cross-country trail-breaking by Scouts in turn may provide the solution. A good system is to hike in single file, taking turns as "lead." At a given time interval, or distance, the trail-breaker "peels off" by stepping aside until the Patrol passes, then brings up the rear -now going easily in a well broken trail.

ROUTE TO BE FOLLOWED If possible this should be across-country. Following travelled roads means losing half the fun, with the added disadvantage of exposing the party to any frosty wind, instead of having the occasional protection of trees and ridges afforded by a cross-country trail. A safely frozen stream may offer an ideal route part of the way.

TOBOGGAN OR SLED? For the transportation of the bulkier duffel, experience strongly favours use of a toboggan or wide-runner sled. While the ordinary narrow-runner sleigh or bobsled may be satisfactory on a snow-covered road or a well packed trail, when it comes to the usual cross-country going the runners probably will cut through any crust, and bring a pulling problem that may upset the hike time table, -may possibly result in arrival at the camp site after dark.

An important matter will be the loading and lashing of the duffel on the sled or toboggan (page 32).

WHAT SHALL WE TAKE?

PERSONAL KIT Experienced Scout campers will have no difficulty in selecting their personal kit. The following list is offered as an over all check. Experience and the means of travel used may suggest the addition or deletion of certain items.

Sleeping bag.
Ground sheet.
Blankets.
Blanket pins.
Scout knife.
Hand axe.
Lightweight billycan nest (plate, mug and cutlery).
*Matches in waterproof container.
Flashlight.
First Aid Kit.
Notebook and pencil.
Compass.
Scout Diary.
Small camera.
Snow goggles.

*While it would be interesting and scouty to rustle the material for an Indian fire-bow set and start your fires in this woodsy way, the time possibly involved would make this impractical on a winter hike.

Cutlery note: One of our Arctic-travelled collaborators observes, "I can get by with a pocketknife, spoon and large mug. Leave the plates and forks behind!"

PATROL EQUIPMENT As in the case of individual kit, Patrol groups with winter hiking qualifications will have little difficulty in making up the required equipment list (doubtless neatly stored in a special

Patrol Camp Box). The following list is given for checking:

*Shelter.
Light axe.
Kitchen knife, fork, ladle.
Can-opener.
1 Dish cloth.
2 Dish towels.
Two 100-foot life lines.
Hank of soft stovepipe wire.
200 feet of cord (woven sash line).
Candles.
Matches in metal container.
One wash basin.
Two canvas buckets.
Two 2 gal. cooking pots.
One large frying pan.
One shovel.
One reflector oven.
Primus stove (non-wooded areas).

QUICK FIRE LIGHTERS Make by brushing hot parafhn on a sheet of newspaper, then roll tightly while still warm, and cut into small rolls about two inches long. These will prove useful when kindling wood is scarce, or when a fire is needed in a hurry to meet an emergency. Have in your pack a "snowball" of absorbent cotton soaked with paraffin, with a "wick" projecting.

*The term *Shelter* is used here and elsewhere as meaning any form of tent, canvas lean-to, etc., which a Troop may possess; also snow shelters or houses.

FOOD

IN PLANNING "eats" the difference between winter menus and those of summer outings will be kept in mind. Particularly the matter of freezing (see FROZEN FOODS, page 29). Next, minimum number of items, and minimum weight.

Select from this list:

Oatmeal.
Bacon.
Prepared biscuit and pancake flour.
Sugar.
Molasses, corn syrup or honey.
Milk powder.
Cornmeal.
Dried meat.
Salt.
Butter.
Tea, cocoa.
Prunes, apricots, raisins.
Dehydrated vegetables and soups.

No canned goods or fresh fruits such as oranges and apples. Apples in particular are unpalatable after freezing and thawing. The dried fruits mentioned are less bulky, and are better sources of energy; also they may be eaten dry while on the tramp. Incidentally they help to assure healthy elimination.

A useful practice is the preparation at home beforehand of foods such as baked beans and stews, freezing outside in pans, then cutting into individual size blocks. These require only heating, so are especially convenient for quick preparation on the trail. (They would be used in southern zones only during a definitely indicated freezing spell.)

HINTS FOR THE TRAIL

ONE of our most winter-experienced Scouters offers these suggestions:

KEEPING WARM On the hike the parka or jacket and the woollen shirt should be allowed to hang loose. If Scouts become over-warm, the moist air inside the garments may be expelled by pumping in a quantity of fresh air. This is done by grasping the jacket or parka at the bottom, pulling it outward and bringing it back several times. When resting, the parka cord or sash should be lightly tightened.

To avoid chilling during the regular stops for rest, halt your party in a sheltered spot, pair off, and sit back-to-back on packs, with a ground-sheet round each pair. This back-to-back furnishes a good deal of warmth.

If feet are wet, from perspiration or melting snow, socks and insoles should be changed immediately. This can be done even in

severe weather if exposure to wind is avoided. If frostbite is suspected, however, footwear should not be removed on the trail, since the feet will swell to such an extent that it will be impossible to put the boots on again.

FROSTBITE On the principle that an ounce of frostbite prevention is worth a pound of cure for frozen noses or cheeks, we use this procedure on zero hikes:

At intervals the Patrol Leader calls out, "Check for frostbite," whereupon each Scout turns and examines the face of his opposite number, and points out any whiteness or discolouration. Thus caught in time, a "bitten" nose or cheek can be corrected by applying the bare hand while hiking on. (The outside of a mitten will be frost-cold.)

The routine must be carried out frequently when the hikers are exposed to a wind.

USING THE COMPASS Ordinarily a compass will be used only as a guide to general direction,- not for the laying and following of a crow-line course. Used in this way it could considerably slow down a hike, since it of course does not indicate the best route.

BEWARE COLD METAL Guard against the touching of frost-cold metal with the bare hands, or a metal cup with the lips. You may lose some skin or lip.

DRINKING WATER OR EATING SNOW The summer caution against drinking water of unknown purity applies equally to winter hiking and camping. Typhoid has been traced to a supposedly "perfectly clear" spring and "pure ice." Even sucking icicles may be risky.

For convenient purifying of water for camp use, "HALAZONE" tablets, for sale by druggists, are recommended.

A caution also is offered against much eating of snow to slake the thirst, particularly during a hike of any distance. The practice, combined with the loss of body salt through perspiration, may cause stomach cramps. (Liberally salted food is an antidote.)

If necessary, a little clean snow may be sucked from time to time; or if the snow is frosty dry, it may be caught up on a glove and licked.

A good plan for the all-day winter hike is to carry hot thermos bottle drinks for the noon halt, or as needed at other times.

SCOUTING FUN ALONG THE TRAIL

THE weather being suitable and the hiking time permitting, the day's programme should include one or more Scouting contests, such as:

Wild animal and bird observation, with competition points for each first seen.

Bird and animal snow track identification, and the best "stories" taken from them.

"Observation Alert" -the low whistle by anyone of a Morse A, meaning "Freeze," a hand indication of a general direction and the low announcement, "I see a partridge" (or other object), when all halt and endeavour to discover the object; each on doing so announcing "I've got it."

Discovery of old birds' nests in leafless trees and bushes, and securing them if of a kind desired for the Patrol or Troop Museum,- and if procurable without too much difficulty or delay.

Identification of leafless trees: (a) by trunk characteristics; (b) by general contour.

Identification of bushes by shape, bark and colour of stems.

Collecting of small twig cuttings of deciduous and evergreen trees and bushes, for later mounting.

Finding suitable material for fire-bow sets, including tinder.

Finding good types of the more difficult Twig Alphabet letters, to improve existing Patrol or Troop mounted alphabets;-letters such as A-B-D-G-H-O-P-Q-R-X.

Occasional compass direction quiz, without warning.

THE BIVOUAC

THE arrival of a Zero Expedition Scout at its campsite objective offers one of the top opportunities of demonstrating planned *Patrol teamwork.*

Having arrived at least two hours before dark, as part of the planning, and assuming the bivouac site to be well wooded, the Patrol proceeds thus, as an illustration:

The Patrol Leader selects the spots for tent and fireplace, and No. 2 begins unpacking the toboggan.

No. 8 clears away or packs down the snow for the tent and fire.

P.L. and remaining Scouts all go for boughs for the tent floor and the night's supply of firewood.

Nos. 6 and 7 return with the reflector logs and starting firewood. No. 2 builds the fireplace and fire, and 6 and 7 (cook and cookee) begin preparation of the meal.

Remainder of the Patrol brings in firewood until the P.L. is satisfied there is sufficient for the night.

Upon completing their first tasks, all except cook and cookee help in arranging the tent floor boughs; and this done, one Scout remains inside and the others pass in the duffle, to avoid tracking in snow.

On a site where trees are not plentiful, as soon as the tent is erected the entire Patrol goes after the floor boughs and firewood. For this may prove to be a full hour's task, and is one sometimes skimped, only to be regretted before morning.

After the evening meal, it's wash the dishes, tidy up, fix fire for the night, P.L. name the "watch,'' -a singsong, prayers and Good Night.

NIGHT CARE OF CLOTHING During the night socks and inner soles of footwear should be dried by hanging within reach of heat from the fire. In an open-front shelter they may be hung on a line or boughs in the shelter top. Boots may be placed at the foot of the sleeping bags.

NIGHT WATCH One of our winter-experienced Scouters contributes this on standing watch during the night: Our practice is to appoint each Scout in the shelter to about one hour's watch (time depending on number of Scouts). For this period the boy going on duty must get completely out of bed, tend the fire, and make sure none of the sleepers get out of their blankets, stick a foot in the fire, etc. During his watch he washes up. If in a closed tent, and the camp is of several day's duration, he takes a sponge bath-"with emphasis on the feet." He makes a cup of cocoa and has a bite to eat.

All this makes the watch pass quickly, and helps keep the watcher warm until he awakens his successor, and returns to bed.

During the watch, shaving may be done, if necessary.

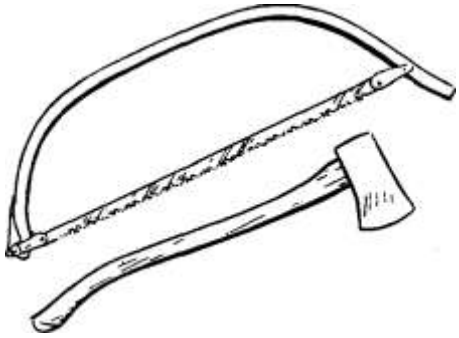
In other words, emphasis is placed on all round personal care and cleanliness.

And *No Heads Under Blankets,* a tendency to be cautioned against and watched for by the Scout on duty. It means excessive moisture condensation inside blankets and sleeping bag.

CARE OF THE SLEEPING BAG In the morning sleeping bags should be turned inside-out, any hoarfrost brushed off and the bag aired.

WINTER AXEMANSHIP

FOR the winter's first outing Scouts should be reminded of the extra care necessary when handling an axe in frosty weather. The sharpest blade may bounce off a solid piece of frozen wood or glance off a knot, and the blade edge may chip or nick.



Claiming it will do twice the work with half the effort, some Troops have adopted the Swedish bow-saw as a substitute for most winter chopping. It cuts readily regardless of the frost in the wood.

For axemanship in general, sharpening, etc., re-read pages 52-54 of TENDERFOOT to QUEEN'S SCOUT.

IF SOMEONE GETS LOST

EACH winter brings its occasional stories of persons lost in the northern woods and mining country, even experienced trappers and prospectors; or on the prairies during blizzards; even in the bush country or wooded areas of the older sections of the provinces. As part of the explanation of these mishaps it is to be remembered that familiar country may look quite unfamiliar when mantled with snow, and strange country may have an identical appearance in every direction.

A compass is not a complete answer in all circumstances, but should be carried by every Scout hiker. Care should be taken that its needle is not deflected by any nearby metal such as a handaxe or Scout knife. And if ever lost, remember always to follow the needle's guidance rather than any mental conviction that "the compass must be wrong".

When starting out, the obvious first precautions against losing direction will include noting prominent landscape features and the position of the sun, -this in relation to the time of day. If the day is cloudy, check the sun's position from time to time by the shadow of a knife blade point, or a small sharp stick, on the thumb-nail or other convenient surface.

Another simple precaution when setting out is to note the direction of the wind as felt on the face: whether on the right cheek, or on both cheeks equally, -that is, from straight ahead; or on the left cheek, etc.; later reorienting in the same way if the trail changes direction.

Against the possibility of a member of a camping party wandering off and becoming lost, such precautions as the following should be laid down:

Upon discovering that he has lost his sense of direction the Scout first of all makes sure that he keeps his head,-does not become panicky and start running. Instead he:

1. Sits down to think things over, and in the snow sketches what he can remember of his route.

2. If no wind is blowing and covering his trail, he simply starts back-tracking.

3. If his back trail is disappearing under drifting snow, he gives the agreed upon "Lost" signal, -such as three long "Coo-ee" calls, then

4. Looks for a sheltered spot, if possible among trees. He heads thither, and proceeds to make a fire, then a shelter, meanwhile giving the "Lost" call at the agreed intervals.

5. He remains until help comes.

6. In case of a blizzard, he "stays put" until it abates, and makes himself as comfortable as possible; for fighting a driving snow storm merely wastes energy, often with disastrous consequences.

WEATHER HINTS The evening and morning radio weather reports of the Dominion Weather Bureau and those of local stations provide very dependable forecasts throughout Canada. In certain districts special attention is given conditions for week-end skiing, this equally applying to Scout hiking.

In most areas east of the Rockies, Patrol Leaders may check up on the routine radio weather predictions by the terms given below. In the eastern foothills of the Rockies, and the valleys and plains west of the mountains, P.L.s will read-in the significance of the winds and other signs peculiar to their localities:

PROMISING FAIR: A bright, clear sky and moderate Southwest or West wind.

UNCERTAIN: A Northwest wind, and cloudy - possibly stormy, with snow.

THREATENING: Night before, a ring around the moon. An East wind.

DEFINITELY COLD: A North wind. With clouds, probably snow.

And by birds: If they are seen flying high, the barometer is HIGH, for FAIR. If flying low, the barometer is LOW, for STORMY.

WINTER FIRST AID

FROSTBITE On the hike, frostbite of the cheeks and the nose are most common. The best remedy is to hold the bare hand to the face until the whiteness and stiffness have disappeared. Never rub with snow. This one-time treatment has been discarded as harmful, particularly if the snow is hard or granular.

For fingers which have lost feeling, thrust the hand inside the clothing, close to the body -under the armpit if this is possible.

Frosted heels or toes present the most difficult problem on the hike. If the stinging has given place to numbness, a sheltered spot should be found as quickly as possible, a fire made, the sufferer's shoes removed, socks replaced by warm ones, and the patient wrapped in warm blankets. A hot drink also should be given as soon as available.

If the shoes are wet they should not be removed until the fire is going well.

According to one of our experienced Northerners, the best way to thaw a frozen foot is against a chum's stomach, under his clothing.

When travelling on snowshoes, the toes, because of the restriction of the foot harness, are a frostbite hazard. The precaution is to halt occasionally, step out of the harness and massage the feet.

CHILLING Signs of a chill, while resting at the shelter when tired after a considerable hike, should never be treated lightly. It means that the body temperature has fallen below normal, a condition that favours development of a possibly heavy cold, or something more serious.

TREATMENT A warm fire, blankets and hot tea or soup. In case of an actual chill, with shaking arms, blue lips and chattering teeth, the patient should be tucked into a sleeping bag as soon as possible, with heated stones or blocks of heated wood.

FREEZING The signs of freezing are not always the same. There may be sudden sharp biting pains, followed by numbness; again, the freezing may be slow, and become extensive before you are aware of it. This is particularly true of the feet. Sometimes there is very little change in colour, the only visible sign being a slightly waxen appearance.

TREATMENT If a hand or foot is frozen, warm it very gradually, and in the meantime massage the adjacent parts, to increase the circulation. Warm drinks and blankets will accelerate the thawing. But ***do not apply any heat directly to the frozen parts.***

When thawing has taken place, apply antiseptic emulsion freely and bandage gently,-being careful not to constrict circulation. There may be increasingly severe pain for a time, this then subsiding. In

severe cases the damage to the circulation may cause gangrene-that is, death of the part involved. Since it is not possible to tell the extent of damage until some time after thawing and first aid, arrangements should be made to take the patient home by sled or toboggan as soon as possible.

BLISTERS Blistering between the toes or on the ball of the foot sometimes results from snowshoeing. Watch the points of pressure of the snowshoe harness and the toe-hole bar of the snowshoe.

To make blisters less likely, keep socks and insoles dry and change them regularly.

As in preventing frostbite, massage is important.

Puncture all blisters with a needle as soon as discovered, after smearing the blister with an antiseptic emulsion. If you have to continue walking, cover the blister with a gauze dressing.

SNOW BLINDNESS This term is a misnomer, since actual blindness does not often occur. There is first a feeling as of grit in the eyes, they become hot and sticky, then begin to water, and the vision becomes blurred. Next comes sharp pain, and an impulse to shrink from the light.

The sun need not be shining to cause snow blindness. In fact the trouble develops more often in diffused light,-on days of a slightly overcast sky and without shadows.

As to prevention, polarized or amber coloured glasses are dependable protection. Other colours are less effective, according to the Arctic explorer Stefansson, and smoked glasses are the poorest of all.

Glasses of any type must have some side ventilation in very low temperatures to prevent frosting.

If without glasses, the eyes should as far as possible be kept on a dark object ahead, such as dark canvas covering a loaded toboggan or sled, or the back of a companion mushing ahead of you. A trail-breaker developing eye trouble would relinquish his place temporarily, and fall back to the end of the line.

Failing the above sources of relief, the eyes can be given some help by alternate closing, or by nearly closing the lids of both eyes and looking through the eyelashes.

When starting out from camp, blackening of the nose and cheek-bones with a mixture of charcoal and grease may be helpful,-this depending in part on the contour of the individual face, particularly the height of the nose.

Eskimo snow goggles also may be resorted to. These consist of a thin strip of wood or cardboard the width of the face with eye-slits about as long and wide as a silver half-dollar, and kept in place by a

cord or lace through end holes and around the head. Naturally such goggles limit the field of vision; you cannot see what lies at your feet without stooping.

In moderate weather an adaptation of the principle of the Eskimo goggles to ordinary eyeglasses may be the covering of the lenses with adhesive tape, leaving an eye-slit.

Camp treatment for snow blindness consists of bathing with a boric acid solution and shielding the eyes as effectively as possible. In serious cases the patient should be kept in a darkened place for as long as necessary.

CARBON MONOXIDE It is assumed that winter-camping Scouts will understand the danger of carbon monoxide poisoning in snow houses as well as tents, when these are lighted or heated by lamps or stoves, and insufficiently ventilated. There is no smell nor other advance warning; a sudden severe headache, dizziness and sickness may be followed quickly by unconsciousness. The patient must be speedily removed to the fresh air, and if necessary given artificial respiration. He should then be returned to the meantime ventilated shelter, kept warm and quiet, and given a hot stimulant.

DRYING CLOTHES Regardless of care to prevent perspiration during cold weather hiking, moisture will always condense inside clothing, as hoar-frost; most of it on the inside of outer garments. Before entering the shelter, therefore, such outer garments should be removed, turned inside out, as much of the frost as possible brushed off, then the clothing hung up to dry. Wind and sun will effect this, unless snow is falling.

If not planning to remain inside for long, the outer garments are best left outside until replaced. If hikers are to remain in the shelter, do not bring in the outer clothes until they have had time to dry

thoroughly. Otherwise the remaining frost will melt, dampen the clothes, and when later exposed to the cold, will form ice.

For drying clothes inside a shelter, hang each piece separately where dry circulating air will strike them. Do not place near a fire. In a cabin with a stove, hang the clothes high. And take care that there is nothing steaming on the stove.

Since footwear also may be lined with hoar-frost this should, like the other clothing, be quickly removed, the frost scraped off and insoles taken out for drying. Footwear must never be thrust close to an open fire or stove to dry and to warm feet at the same time. Boots, socks and insoles are more likely to become soggy wet from the melting snow and hoarfrost, and the leather perhaps ruined.

Small items such as socks, mitts and mitt-liners and insoles may be dried conveniently during the day by placing them on the chest near the skin, or may be placed inside the sleeping bag at night.

ICE CAUTIONS AND ACCIDENTS Even though the ice may be thick on lakes, rivers and creeks, it should be closely inspected before crossing. Sometimes water wells up through cracks and is prevented from freezing by the overlying blanket of snow. And wherever there is possibility of "quick water" at the bends of rivers, and inlets and outlets of lakes, the ice may be thin and treacherous.

Remember that ice which gives way under one person's weight is not likely to support another person.

For full details on the making of an ice rescue, including use of the Scout life line or guard-rope, re-read pages 98-100 of TENDERFOOT to QUEEN'S SCOUT.

After a winter rescue, hurry the victim to a shelter and fire, remove wet clothing, dry off, and promote warmth and blood circulation by rubbing the limbs upward. When the patient is better, wrap him in woollen blankets, place inside a sleeping bag and administer small quantities of hot tea, milk or broth. Encourage him to sleep.

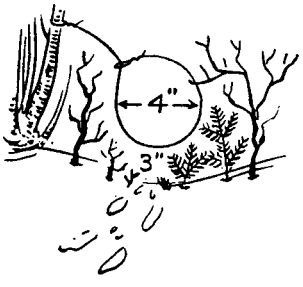
"LIVING OFF THE COUNTRY"

WHILE obviously it would not be common sense for any group of Scouts to carry out an actual "Find Your Food or Starve" winter hike, it will add fun to any week-end expedition to plan in part to "live off the country, Indian style."

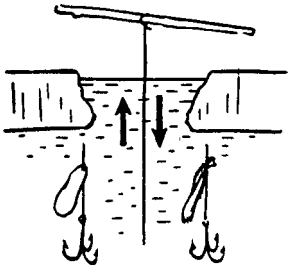
That is, snare rabbits, catch partridge, quail or ptarmigan (provincial game laws permitting), and fish through the ice. Larger game would not be thought of, since firearms would rarely if ever be approved by Scouters and parents of all the boys concerned.

FRUITS AND NUTS In certain southern sections, to game could be added a hunt for wild fruits and nuts: Wild apples, Indian plums and large-size haws frozen on the trees, wild grapes, cranberries, saskatoons; and in the woods beneath the snow, wintergreen and squaw berries. Also, under the snow directly beneath the trees,-chestnuts, beechnuts, hickory nuts, black walnuts and butternuts; and along old fences on the side roads, perhaps hazelnuts.

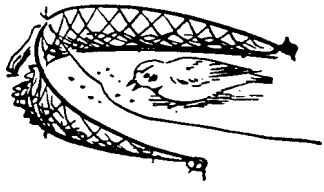
FISH AND FISHING Numbers of Scouts will have fished through the ice along the shores and in the bays and harbours of the Great Lakes, or the inland lakes and rivers; less often in strange streams while on a hike. In fishing, special care would be given to safety (see ICE ACCIDENTS). In river fishing, places favoured by Indians are the ice-free exits of good-sized lakes, where the ice usually is fairly thick right up to the open water. An advantage is that nets as well as lines can be used effectively.



A Rabbit Snare



Winter Fishing



Bird Snare

Lacking ordinary bait, a strip of red flannel or a small piece of bright metal foil may be used. Weight with a sinker, and tie the line to a stout stick laid across the hole. It will increase chances if the bait is kept in motion by raising and lowering two or three feet. A light at the hole also will attract fish.

WINTER COOKING

WATER FOR COOKING Snow water, although to be avoided for drinking, is good for tea and other hot drinks, or soup. The soft top snow makes very little water for its bulk, so dig deeper for the granular snow. Ice is better, if procurable. It must be chipped fine on the bottom of a cooking pot or it will "burn."

For chopping a water hole through ice use an axe. And take your time. Cutting a hole through say two feet of ice is hard work, and calls for a wide opening to allow for axe-swing when the hole gets deeper. After drawing water, cover the hole with loose snow; this will retard freezing over. Also, as a safety measure, thrust in a branch to warn of the hole's location.

A water hole may serve the double purpose of a fishing hole.

TEA, COFFEE OR CHOCOLATE? Most Arctic travelers recommend tea in preference to coffee or chocolate. It can be made more quickly on the trail, weighs less as a transportation item, and gives a real lift when you are tired. Usually it is taken with plenty of sugar, which adds to its pick-up value.

Coffee is much bulkier to carry, and is not as easily and quickly prepared. Chocolate makes a nourishing night-cap, but its richness and the time required in preparation are against its frequent use during a hike or in camp. And if not thoroughly dissolved and smooth it will add to instead of slake the thirst.

FROZEN FOOD D uring freezing weather there is an advantage in carrying frozen rather than unfrozen food. Potatoes, eggs and the like, if frozen once (and not thawed out until prepared for use) are almost as good as if never frozen.

Meat is so little affected that it is difficult to tell, after cooking, whether it has been frozen or not. As a convenience for handling it can in advance be cut into separate steaks or roasts, and handled like chunks of wood. Or you can carry large pieces, and cut up with axe or saw as desired-preferably with a saw.

Even greases freeze "clean" when temperatures are low enough. Butter is clean to handle at zero. Milk also can be frozen into bricks and handled like bricks.

A popular food in the North is baked beans frozen into bricks, or baked dry and frozen as separate kernels-so you can eat them like peanuts. In either form they are heated in a little water in a pot or a little grease in a pan.

COOKING FROZEN MEAT Cut meat into pieces the size of your fist, or two fists. Fill the pot three-quarters full of snow or cracked ice, and place the meat on top. As the snow or ice melts, the meat sinks, and thaws gradually as the water warms. When the pot boils,

or perhaps five minutes later, remove it and place it on a slab of wood to simmer, fireless-cooker style. Or better still, place it in a cooking-utensil box with a hinged top.

BANNOCK The menu will of course include the genuine sourdough bannock of the prospector. Here is the how-to-do of an expert:

For every cup of flour add a teaspoonful of baking powder and a pinch of salt. Mix up together and add water sufficient to form a thick paste.

Cook slowly in a very slightly greased frying pan, turning it over (by tossing like a pancake, if you have sufficient confidence) when the top is fairly dry, indicating that the bottom has been done to a nice brown.

Variations can be tried by making a thinner paste and using more grease in the frying pan.

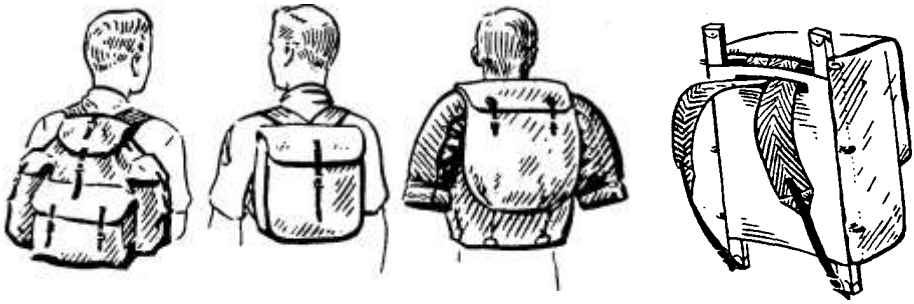
For other camp and hike recipes and cooking hints see pages 62 and 118-123 of TENDERFOOT to QUEEN'S SCOUT.

RUCKSACKS AND BACKPACKING

STOWING duffle for a winter hike is another of those details governed by the outing's duration, and whether everything is to be back-packed, or the heavier stuff transported by toboggan or sleigh.

If everything is to be carried, each Scout's load will be stowed with particular attention to tight snugness, especially the blankets and sleeping bags; and to smoothness of the side against the back.

When packed, put it on, and test it for balance of pull on the shoulder straps, greatest weight on the hip bones, a hand's-thickness of "breathing space" in the hollow of the back, and general non-swing, snug riding comfort.



Recommended type of rucksacks and packboard. For complete details see Stores Dept. Catalogue.

The above points apply both to weighted rucksacks and pack-boards.

Smaller packs of less duffle, carried higher on the back, will present little difficulty of stowing, and of carrying.

HINTS ON CARRYING FULL PACKS Walk with a slight stoop, leaning forward from the hips. Use a stride as long as comfortably possible, the hips twisting a trifle with each leg swing, adding a final push with the toe of the back foot. Keep arms swinging easily; chin up, breathing deeply.

Every half hour or so stop for a rest. Make it about five minutes. If you rest longer, your leg muscles will stiffen and you will have trouble limbering up again. Make sure the rest is a real one. Lie down, with the feet up against a stump or rock, to allow the blood to run from them. When the five-minutes is up, snap out of it, get up and get into your stride again.

USING A TUMPLINE For extra heavy packs, older Scouts with good neck development will find the load substantially lightened by the use of the tumpline,- a leather head-band secured by rope-ends to the base of the pack. The strap should be placed on the head so that the load bears directly down the spine, distributing the weight over the entire body.

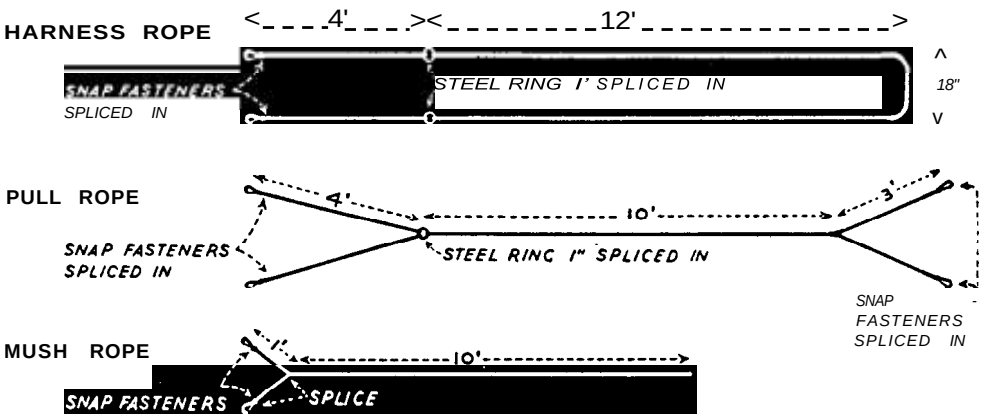
Use of the tumpline should be taken gradually; at first neck and shoulder muscles may feel the strain, but this will pass in a day or so.

The Tumpline in use with the Nelson Packboard.

LOADING AND LASHING THE TOBOGGAN

IF PERSONAL clothing, equipment and rations for the day are carried in the pack, a five- to seven-foot toboggan will be sufficient to carry a canvas shelter, rations for subsequent days, cooking equipment, axes, shovel, spare pair of skiis, first aid kit and most if not all of the bedding for a Patrol of from six to eight boys.

The following ropes are required:



LASH ROPE *(NOT SHOWN) IS 3/4 INCH CIRCUMFERENCE AND 50 FEET LONG*

TOWING THE TOBOGGAN The toboggan is towed by a crew of three, two Scouts towing and one Scout holding the mush rope. The Scout on the mush rope is in charge, and controls the Scouts who are pulling. To make the team go slower he calls "HI" and to make it move off or go faster he calls "MUSH." He is responsible for holding the toboggan back on down-hill descents, keeping it straight on side-hill, and steering it around holes, trees and other obstacles.

The mush rope is hooked to the stem of the toboggan and the free end held in the musher's hand. He must not tie it around his waist, as this will make it hard for the team should he fall or hold back.

The harness rope is passed under the upturned bow of the toboggan or passed through the towing holes in the bow. The two forward ends are passed over the shoulders of the first Scout, across his chest, and hooked back into the steel rings by the snap-fasteners.

The pull rope is fastened into the steel rings of the harness rope by the snap-fasteners, and the forward end is fastened over the shoulders of the second Scout in the same way the harness rope is fastened to the first.

If the load is heavy or the going bad, additional pull ropes and more Scouts may be added.

The musher must get all the work possible out of his team. To do this he must be constantly on the job, calling to his team, making sure that the ropes between the Scouts of the team are tight and that each man is doing his share of the work. The Scouts must work with a will while in harness, and thirty minutes is a good shift for each team, although this will vary with the type of going.

A TOBOGGAN TEAM ON SKIIS On the ascent, the herringbone will usually be used. If the hill is steep another team may be harnessed to the team on the toboggan.

When descending hills, the team must snowplow so they will not pull the toboggan down-hill. The musher must see that harness ropes are kept tight.

When nearing the bottom of the slope the musher must call "MUSH," and the team will stop snowplowing and start to pole to keep ahead of the toboggan.

LOADING THE TOBOGGAN A large canvas sheet shouId first be laid on the toboggan. This may be a tent or shelter, but in any case must be sufficiently large to turn up on the sides and ends, and cover in the load completely.

The load weight must be equally distributed over the toboggan, the sides packed square, and nothing projecting beyond the toboggan edges.

The load thus compactly stowed, cover it snugly with the canvas, and proceed with the lashing.

Start the lashing rope at the front of the toboggan (either side), cross over the top, down and through the side-ropes, back up and over,-and so to the rear. You need not be told what knots to use.

The lashing completed, axes, shovels, spare skiis, etc., may be secured on top,-and centered for weight. The top load should not be overdone, however.

A SNOW HOUSE

EVERY winter-scouting Patrol or Troop will plan sooner or later to master the art of building an Eskimo igloo, or snow house, for the fun as well as for the usefulness of it. It is not difficult, with snow of the right depth and texture-"live snow" as the Eskimos call it-and the construction carried out with due care.

A few details of a completed igloo may help the novice to an understanding of its method of building. For a party of 4 to 6 Scouts the circular interior will be approximately 10 feet in diameter. Two thirds of the floor space will be taken up by a sleeping and day-time snow platform (covered with fur skins). The platform will be higher than the top of the door, exit being made by sliding off the platform, stooping and passing out the tunnel-like entrance.

From the above it will be clear that a desirable igloo site would be a well-packed snowbank not less than 4 feet in depth.

BUILDING TOOLS The implements required include two or more knives suitable for cutting and trimming snow blocks, a 4 or 5 foot rod for testing snow ,depth and quality, a snow-shovel or improvised substitute and a 15-foot length of cord. While a kitchen bread-knife or butcher-knife with an extra long blade may serve reasonably well, a better knife-with an 18-inch blade and an 8 or 10-inch handle-probably could be fashioned by the Troop Blacksmith, Metal Worker or Handy Man.

PLANNING Since early-winter snow usually is too soft for satisfactory snow blocks, igloo building will best be planned for mid-winter.

In discussing the project the first consideration will be the prevailing temperature, which should be at least a steady 10 to 20 below zero. Otherwise, the house once built, the body heat of its Scout occupants may melt holes in the roof, and the interior become unpleasantly damp. The next consideration will be the depth and texture of the snowdrifts likely to be available in the locality to be visited.

The location promising such snow is country sufficiently level to permit a strong sweep of wind, and having rock or tree snags or other inequalities that will accumulate drifts 4 feet or more in depth.

The test for block-cutting suitability of a snowdrift is to walk over it in moccasins or other soft footwear, when the surface should take a faint imprint, without breaking through; then probing with the snow rod. If the rod goes down under an even pressure to a depth of at least 4 feet, the snow probably is suitable. If the resistance to the rod varies, the snow is in layers, and not good.

THE IGLOO SITE A suitable snowbank having thus been found, a level space is selected. For a house to accommodate 4 to 6 Scouts,

the cord and a improvised marking stick are used to run a 10-foot circle. This will provide the outline of the inner wall of the house.

For a larger number of Scouts two separate houses would be built, or two igloos immediately adjoining,-these being connected when finished by a door cut between. (Three- or four-room houses are sometimes constructed in the same way.)

CUTTING THE SNOW BLOCKS Snow blocks can be cut either vertically or horizontally, but come out more easily if cut vertically. In either case the first step is to dig a working pit.

For vertical blocks the pit will have a straight backwall, and be of a size to give blocks approximately 4 inches thick, 15 to 20 inches wide and 20 to 30 inches long.

In starting the first block, begin by cutting downward, for the block ends. Next, undercut; and finally, holding the knife-point down, cut along the back. This cut finished, pull the knife-handle gently toward you, when the block will rock forward and come free. After lifting it out, slice off any projections. Should a corner break, square the end, to assure a rectangular shape.

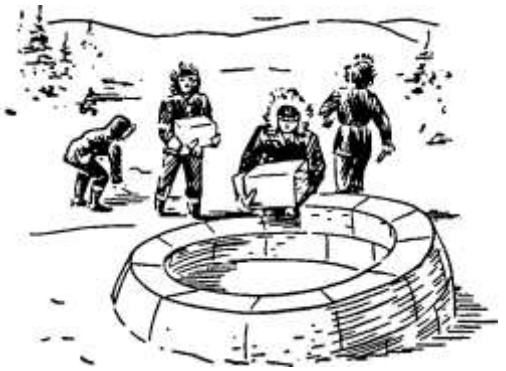
For cutting blocks horizontally the digging pit will be 6 or 8 inches deep. First cut the ends and back, then the bottom or undercut. For this cut, run the knife backwards and forwards several times. Then gently kick with your foot at several points along the cut-line-as though kicking at a block of ice to make it crack where desired. One final kick should break the block out.

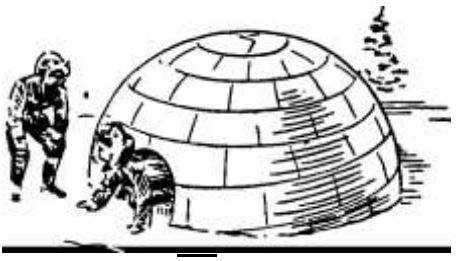
Now lay your knife aside and slip your mittened hand under the edge of the block about 8 or 10 inches from either end. Should the block prove somewhat fragile, add a lift with one of your feet in the middle of the block, so as to have three points of lifting pressure.

BUILDING The block having been lifted out by the cutter, it is carried by one of the builders (organized Scout team-work of course) and placed in position on the outside of the drawn circle,-leaning slightly inward. The succeeding blocks follow, slightly trimmed as necessary to fit snugly end-to-end.

The first tier completed, the "boss builder," starting at any block of the circle, with his knife makes a downward sloping horizontal cut to the bottom of the far end of the third block (see illustration). Into this cut, working on the inside, he places the first block of the second tier,-its end against the fourth block, and leaning inward a little; the next second-tier block against this, and so on. And similarly with the succeeding tiers.

Here it may be explained why the blocks hold their leaning position. Each as it is placed is supported both on the bottom and by the end adhering to the block previously laid-much as loose snow





compacts and adheres to make a snowball packed by hand.

When the igloo wall is three tiers high it begins to become difIicult for the Scouts outside to hand the blocks over to the builder. The latter then cuts a hole somewhere at the base of the wall and the blocks are shoved in to him.

The work on the dome is not as difficult as might appear, for on nearing the top the blocks lean against one another more sharply, and so secure greater mutual support. Care, however, must be taken in the placing of the last block in the top of the dome.

The hole, which usually is irregular in shape, is first made square. Then a block somewhat larger than the opening is chosen, and trimmed an inch or more thinner than the regular blocks.

To place the key block, it is held on end and pushed up through the hole until it is clear of the sides, turned over flat and gently lowered, like a lid. With his knife the builder carefully shapes the edges with bevel cuts until the block finally falls into place.

The wall construction is finished off by filling the cracks and crevices, inside and out, with wedges, or loose snow lightly rubbed in (not patted); and throwing shovels of soft snow over the outside of the dome, to smooth irregularities.

The hole through which the blocks have been passed is filled with a close-fitting block, then the door is cut.

THE DOOR The igloo entrance preferably is cut at a place other than the snow-block opening; for a one-night camp, to leeward, and for a semi-permanent camp at right angles to the prevailing wind.

To begin the door, the inside builder thrusts his knife out through the wall above the centre of the door's chosen position,-to indicate its exact location to the Scouts outside. Then he begins digging a trench down and outward, under the wall, while outside a second digger works downward and inward.

When the opening has been made, the snow in the front third of

the house is dug to a depth of 3 feet, and passed out, leaving the sleeping platform.

If the weather is bad, or a storm threatening, a block-roofed alleyway may be made of the entrance trench, with an elbow-turn opening to leeward; or a T-joint double opening, either end of which may be closed as the wind changes.

The igloo and entrance thus completed, all that is required to prepare it for use is a double layer of skins spread over its platform -the first layer with the hair side down, the second with the fur side up. (This not so much to keep you warm as to keep the snow cold.)

If you wonder as to the stability of an igloo for semi-permanent use,-by the time its building is finished its blocks will have coalesced so that it has become practically a one-piece structure.

SNOW CAVES A cave dug out of a deep snowbank may make a comfortable shelter. The snow should be well-settled,-the better if composed of a frozen-sleet strata. As a small opening is necessary, it should be dug by one Scout. If large enough, the interior may include a raised igloo platform. The roof should be cut dome shape.

A cave has certain disadvantages. The interior is dark, and unless the roof is definitely solid it may have soft spots, and collapse. The interior will become quite comfortable from the body heat of a number of boys, so a caution! -avoid contact with the walls!

A PAIR OF ALGONQUIN SNOWSHOES

A PAIR of snowshoes, the historic Canadian means of winter travel on foot, should be included in the Canadian Scout's personal equipment for winter hiking. Otherwise there always is the possibility of having to trudge through deep, new-fallen snow, which if long sustained, as in the case of a continuous heavy snowfall during an all-day hike, may prove seriously taxing.

For the benefit of skiing enthusiasts it can be said that snowshoes, while not as fast as skiis, are preferable for use in hummock or brush country, for climbing hills, and for pulling a loaded toboggan or sled. Unlike skiis, a quite satisfactory pair can be home-made by any handy Scout, and even on the trail in case of necessity material for improvising a pair of bear paw snowshoes probably could be found. Finally, snowshoes call for much less skill in using, and never "run away" with their users.

There are several types of Canadian snowshoes,-a long, narrow shoe for plains and prairie travel or for racing; a medium shoe like that pictured, and the bear-paw type used by most trappers and woodsmen. Probably the best general purpose snowshoe is that developed by the Algonquin Indians. Any resourceful and reasonably handy Scout can make a pair.

improvising a pair of Bear Paw Snowshoes

AN ALGONQUIN SNOWSHOE Material required: A strip of ash 7/8” square and approximately 84" long; straight grained and free of knots; edges slightly rounded; middle 12" thinned, to facilitate bending. Two ash crossbars 12” x 2”, 5/8” thick.

Quarter-inch rawhide thong cut from cow or ox skin, for main lattice, and from calf skin for the toe and tail filling; quantity to be worked out after the frame is made.

Two 18" lengths of inch-wide calf skin, for the bridles.

Two yards of 3/4” lamp wick, or similar material, for the foot harness.

THE MAKING On a flat board make a “form” of small wooden blocks, or of nails. Bend the ash strip to this, and secure in place. If green, it will bend readily. If dry, steam the middle 12 inches over a kettle.

As shown in the illustration of the completed snowshoe, mortise the ends of the spreaders (shortened if necessary), and lash the tail-pieces with thong,

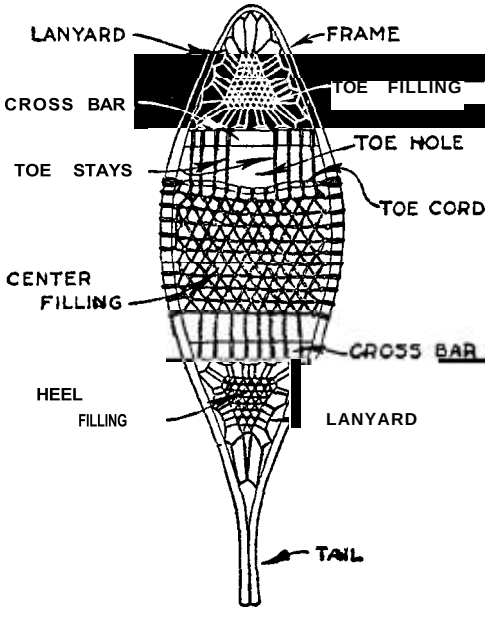
There is no fixed design for the lattice, or filling. Study the Algonquin meshing. The thong may be wound around the frame, or run through holes bored or burned in the rim, or alternately around and through. Too many holes will weaken the frame.

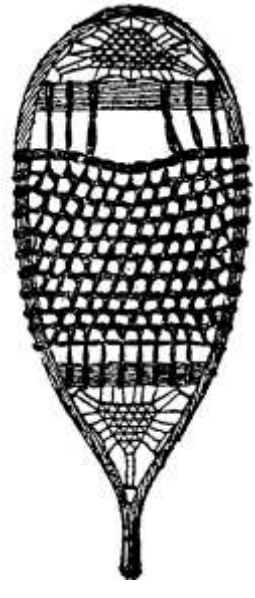
The foot harness is secured to the toe cord. First, for the bridle, take one of the 18” calf skin thongs and lace the ends into the webbing on either side of the foot position, as illustrated. Leave it just slack enough to take three fingers on edge between it and the webbing.

Take a yard of lamp wicking, an end in each hand. Push them down through the lattice just back of the toe hole, the width of your foot apart. Bring the ends up. Pass the left end under the bridle and over to the right side. Pass the right end under the left in front of the bridle; draw it up on top of the bridle, and pass it to the left side.

Now place your foot on the snowshoe, toe under the bridle just far enough to permit the bridle to lie across the base of the large toe. Draw up the ends of the harness until the loop rests comfortably on the heel. Now hold in your right hand the end that was passed down through the lattice on the left of the foot position, and in your left hand the other end. Make a half-hitch from the outside around the loop resting on the heel, at each side of the ball of the foot. Draw up and tie over the heel. Do not draw tight enough to force the toe far under the bridle.

Moccasins are the only proper snowshoe footwear, preferably high-cut and large enough to take heavy woollen stockings. Leather shoes wear the meshing and are stiff and cold.





Above, left-parts of the Algonquin Snowshoe. Above, right-an Iroquois type Snowshoe. Right -the Bear Paw.

It's here!

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FOR BOY SCOUTS AND WOLF CUBS

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