

EMERGENCY FOOD IN THE ARCTIC

INTRODUCTION

In the Arctic the life of man and the life of the animals on which he lives is more precarious than elsewhere. The margin of safety is always so small that even a slight change in climate may seriously affect whole animal populations and thereby also hunting conditions. Also, the game and fish resources of arctic and sub-arctic countries, due to reasons other than climatic ones, vary greatly from place to place, from season to season and from year to year. No general statement as to the relative abundance or scarcity of game will always apply to any one region and nowhere is it less safe to generalize than in the arctic and sub-arctic regions. Thus, in one part of the Arctic, due to special conditions, a certain kind of game may be hunted by a certain method whereas in some other parts, due to other sets of conditions, the same technique may prove quite worthless.

Nevertheless, some broad statements as to the productivity of different parts of the Arctic are useful. For example, in Greenland and in the Eastern Arctic, land animals are few, and rivers and lakes, as a rule, cannot be depended upon to supply fish whereas the sea is comparatively rich in animal life. The Arctic Islands to the north of the continent also are poor in land game as is the sea in animal life.

Large areas in continental parts of the Northwest Territories likewise are poor in game whereas the lakes and rivers are generally well stocked with fish.

In the Yukon Territory and in Alaska the supply of game animals is larger and more varied than elsewhere in the North because, generally speaking, a mountainous country affords more varied conditions for game than does a low, level country. One of the least productive of all types of country is the northern muskog forest.

It is often safe to assume that any arctic country, not populated by natives, is not well supplied with game animals.

EMERGENCY HUNTING AND FISHING GEAR

The most useful "game getter" in the North is a caliber .22 repeating rifle. A bolt-action rifle is more apt to cause trouble in cold weather than is the pump or lever-action type. A large caliber and more powerful rifle is needed for such game as bear and moose, but for general purposes and because of its lightness and the lightness of its ammunition, most experienced hunters in the North, if limited to one gun, would probably choose a .22 repeating rifle. In Greenland many hunters use .22 rifles for caribou and seal.

At least 30 to 40 feet of $\frac{1}{2}$ -inch mesh gill-net should be carried by all travellers in the North because anyone, even with a minimum of experience with a fish net, can catch fish wherever they are to be found. The net should be "hung" and ready to use except that sinkers and floats may be attached or can be improvised when needed from local material.

A few fish hooks and some fishing line should also be carried. For sea fishing and for lake trout 2- to 3-inch hooks are suitable; small hooks, $\frac{1}{2}$ inch long and a few "flies" should be carried for brook trout and grayling. In all places where fly-casting might produce fish,

a usable rod can be improvised from local material. Snarcs may be used for catching rabbits, ground squirrels, and ptarmigan. Ordinary steel picture-wire is excellent for rabbits while thin, soft brass- or steel wire is used for ptarmigan. A 200 foot length of 3/8" hemp line, a stout knife and a hand axe completes the emergency equipment.

METHOD OF COOKING

The easiest and most satisfactory way to prepare fish and game under primitive conditions is by boiling in water. All sea-food is better if boiled in sea-water when no additional salting is required. When a cooking pot is not available, fish or game may be placed on a stick and roasted or fried over a slow, non-smoking fire. If no fire is available, fish or meat becomes more palatable if dried or frozen. Frozen meat or fish, before eating, should be brought to a temperature a few degrees below freezing since, when very cold, the frozen meat or fish sticks to the lips and the tongue. When carved or sliced into thin shavings, it is really very palatable and does not appear "raw."

SEA ANIMALS AND SEA-FOOD

Shallow and ice bound seas are less productive of animal life than is moderately deep water with pronounced tides and currents. For this reason Eskimo are more numerous in Greenland and Baffin Island than in the Arctic Archipelago. While the flesh of some sea mammals and fishes is more palatable than others, all can be used for food. The only exception is the liver of the polar bear, and that of the bearded seal which are highly toxic.

Whales: The only whale that might be secured without special gear is the beluga or white whale. It is often plentiful in summer, on the

sea coast, especially in Baffin Island, Hudson Bay and in the western Arctic. It may be killed with a rifle but, unless harpooned it will sink at once. It often frequents estuaries of rivers and may here be killed in shallow water where the body may be retrieved by means of a hook. Its flesh is very palatable. The skin of this and of all other whales is particularly good to eat and may be eaten raw or cooked.

Seals: Seals may be seen almost anywhere in the Arctic and can be killed by a small-bore rifle or with a shot gun. In summer the seals are often lean and will sink at once if shot through the head while during the rest of the year they are fat and will, as a rule, float. The flesh of all seals is good to eat and so is the fat. The livers (except that of the bearded seal) are choice. A small amount of fat should be taken with the meat. Seal fat or blubber can be used for fuel also. When cut into small pieces and placed in a shallow container such as a flat tin can or plate, furnished with a wick of cotton or other suitable material it provides a serviceable lamp and source of heat.

The most common seal is the small ringed or fjord seal which may be found almost anywhere in the far north. It is about three or very rarely four feet long. It is non-migratory and prefers cold, ice-filled arctic waters. It is a solitary animal that frequents deep fjords and bays. In winter it scratches and gnaws breathing holes through the sea-ice, and in spring crawls out on the ice to sleep in the sun. When asleep on the ice it can be approached to within shooting range by a hunter behind the cover of a white screen. It must be shot through the head, as otherwise it plunges through its hole and is lost.

The bearded seal is the largest of the seals and may be six feet long or more. It is less common than the fjord seal which it otherwise resembles in its habits, except that it prefers shallow water. The best raw-hide rope is made from its skin which also provides the best material for soles for native sealskin boots (kamiks).

The harbor seal is about the size of the fjord seal. It is more southern in its distribution and is rarely seen in ice-filled waters. It is a seclusive animal which frequents isolated places, where it often crawls up on solitary rocks.

The Greenland seal or saddleback is limited to the shores of Davis Strait, the northern part of Hudson Bay, and the North Atlantic where at certain times of the year it lives far from land on the drift ice. In size it is between that of the fjord seal and the bearded seal, but, unlike these, most often appears in small flocks or herds. It disappears from the northern shores before the winter ice forms.

The hooded seal or the bladdernose is almost as large as the bearded seal. It lives far out to sea in the North Atlantic and southern Davis Strait and only for a short period in the spring frequents the coast.

Walrus, like the polar bear, is usually found in the pack ice some distance off the shore. It is easily approached when on the ice. It should be shot through the head since, if not killed instantly, it plunges into the sea and sinks.

Polar Bears are rarely seen on land. They are marine animals and are most often found in the drift or pack ice some distance off shore. Their flesh, especially that of young bears, is excellent. The liver is toxic and should never be eaten. Polar bears, unlike the land bears,

may be encountered throughout the winter. The polar bear is one of the largest of the bear family; it is carnivorous and will attack man when hungry.

Birds: All sea birds can be used for food. Ducks, morres and other auk-like birds are the best, but even sea-gulls can be eaten. The eggs of all sea birds are palatable.

Fish: Fish of some kind or other is nearly always found along the shore of salt water. In the Eastern Arctic Atlantic-or Greenland cod may be caught with hand-lines or jigs in water from a few fathoms to 20 fathoms deep. The weighted hook should be barbed and about 2" long and, when lowered to within a few feet of the bottom, should be jerked up and down. Bullheads are often found in shallow water near the shore and may be taken in the same manner. The flesh of fish or some white or shiny object may be used for bait.

In winter, fishing may be done through a hole cut in the ice. At low tide emergency sea food may be obtained on the beach. Mussels or clams obtained in this way should be taken only when fresh and alive, since otherwise they may be poisonous. The shells of a live clam or mussel are firmly shut while dead ones gape open. Some red or green algae (dulse or sea-lettuce) may also be collected on the beach at low tide and may be eaten raw.

LAND ANIMALS

Big Game: When big game such as moose, caribou, or musk-oxen are plentiful even an inexperienced white man equipped with a rifle can procure food. Unfortunately, big game is not always plentiful and in many places small game is more abundant and can be more easily obtained.

Caribou are grazing animals and are widely distributed in arctic

and sub-arctic countries. The barren ground caribou is absent in East Greenland, but is found on the west coast of Greenland from lat. 62° to 72°N. It is not abundant however and is nearly always found at some distance from the coast. In Baffin Island it is scarce along the east coast but tolerably common in the interior and on the west coast. In Ungava caribou are not abundant but are found in some of the larger islands but they are not plentiful. By far the largest herds are met on the great interior plains between Hudson Bay and the Mackenzie River. In the Yukon and in Alaska caribou are generally restricted to the arctic coast or to alpine parts of the interior.

Caribou are nearly always found in herds. They are more or less migratory in habit and make seasonal migrations in quest of food. Thus, during winter the caribou wanders inland to places near the edge of the northern forest or to sheltered mountain valleys where caribou "moss" is available in abundance. In spring the herds move from the winter feeding grounds towards the coast. During the summer months the herds are generally to be found in the lowland or near the sea-shore where succulent grass and herbage provide the food. During the height of the mosquito season caribou may be found near the sea-coast or, if in the far interior, on the highest and coolest mountain peaks, often near the snow-line.

Caribou are most easily approached when in large numbers whereas singly or in small numbers they are watchful and less easily stalked. Their eyesight is poor but their sense of smell and hearing is very acute. For this reason the hunter should always stalk caribou against the wind. If no cover is available the hunter should avoid sudden or

rapid movements because caribou are easily frightened. By approaching a herd slowly, taking a zig-zag course and making frequent stops, the hunter may be able to get very close. Caribou may be hunted with any kind of gun. In Greenland a .22 caliber rifle is often used.

Woodland caribou are found sparingly across the continent from Labrador to Alaska; they are larger than the barren ground caribou, but never occur in large herds. Their favorite haunts are open or semi-barren places in the boreal forest. In habit they are less migratory than the barren ground caribou.

Muskoxen are found only in northeast Greenland, in Ellesmere and the islands to the westward, and in North Devon. On the mainland small herds are found only in the Thelon Game Sanctuary and in a few places in northeastern parts of Keewatin district.

Of all large game animals the muskox is the easiest to hunt because, when attacked, the animals do not, as a rule, try to escape but take up a defensive stand, back to back. The killing of muskoxen is prohibited throughout the year, except in cases of dire need.

Brown or grizzly bears of several kinds are found on the barren grounds of the Mackenzie district east to Bathurst Inlet and along the coast, and in the mountains of Yukon Territory and Alaska. All brown bears hibernate and, as a rule, are not seen from October to May. During the summer they are most frequently seen in hilly country or along rivers, streams, or lakes. In the autumn they are often found in places where berries are plentiful or near colonies of ground squirrels on which they feed. Brown or grizzly bears are not easily frightened and if approached against the wind the hunter may get fairly close. A wounded bear or a mother bear with young sometimes will attack man, but otherwise bears are

harmless when not molested, and may be driven off by shooting or by the rattling of equipment. The flesh of young bears is very good; that of old animals may be tough, especially in the spring when the bears are in poor condition after their winter's sleep.

Black Bears are forest animals. They are vegetarians, fish eaters, and scavengers and are most often found along rivers and streams. They are timid animals that are rarely known to have attacked man; when frightened they usually climb a tree.

Moose. The moose inhabits the boreal forest and may be found from Labrador to Alaska north to the tree-line or, occasionally, a short distance beyond the forest. Moose are browsing animals, feeding on twigs, and frequent the willow flats of river valleys and lake country or burnt-over country but are rarely, if ever, seen in coniferous forest. Because of its large size and excellent meat the moose is one of the most important big game animals of the North.

Mountain sheep are found only in the high mountains west of the Mackenzie River and in the mountains of the Yukon Territory and Alaska. Mountain sheep are wary and difficult to approach. Their eyesight, hearing and sense of smell are exceptionally keen and the hunter, to get within shot, must stalk his prey with extreme care. The best method is to get above the sheep. Sheep meat is very palatable.

Small game: Small game is nearly always more abundant than large game and, what is important to a person marooned in the Arctic, is easier to hunt.

The Arctic hare is a good deal larger than a snowshoe rabbit. It is found from Greenland to Alaska and generally in low mountain country and

in hilly rock-strewn places where the rocks and boulders provide shelter or cover. In summer it is found at high altitudes, often near the snow-line, while in winter it frequents lower country. It is a solitary animal except during the mating season when large numbers may be seen together. When approached from above the hunter is usually able to get very close.

Snowshoe rabbit inhabits the northern forest from Labrador to Alaska. Its numbers fluctuate greatly in more or less predetermined cycles of about ten years. Thus in peak years rabbits occur in incredible numbers while in other years they may be very scarce. When the snow is deep the rabbits make trails in the forest and are then easily caught in snares set in the trails. A rabbit snare is made from a two foot length of steel picture-wire, the end of which is fastened by a bit of string to a willow or to a suitable stick near a rabbit's trail in the snow. By means of a slip-knot a 1/2-inch noose is made which is placed vertically at right angle to and about 8 inches above, the bottom of the trail. A rabbit using the trail at night gets its head caught in the noose and is quickly strangled. Although the flesh is not very nourishing the rabbit is one of the important game animals of the northern Indians. Twisted strips of rabbit skin woven into a loose-mesh fabric, when covered with light cotton cloth for protection, make light and warm blankets. The skin of a rabbit makes an excellent fur sock.

The Parry ground squirrel is a small animal living in colonies in sandy and gravelly outbanks and ridges in the Arctic barren grounds from Hudson Bay to Alaska. In such places the ground may be honeycombed by its burrows. It hibernates underground from September-October to May.

During summer it is easily snared or shot. Its flesh is eaten by the Eskimo and is quite palatable, especially in late summer when the animals are fat.

The Porcupine may be found in the mountains of Yukon and Alaska and elsewhere in the northern forest but is never very common. It is very easily killed, even with a stick, and its flesh is fat and very nourishing. The porcupine often spends long periods in a tree and in winter sometimes seeks shelter in rocky caves.

The Muskrat is not a rat; it lives in lakes and streams in the forested part of the north. It is most common in the deltas of large rivers and generally avoids rocky country. In summer it may be shot when swimming. In winter it builds "houses" on top of the ice of lakes or burrows into the banks. The flesh is palatable and very nourishing.

The Beaver inhabits small streams, and lakes of the wooded country from Labrador to Alaska. The flesh, like that of the muskrat, is excellent and very nourishing.

Birds: During the summer numerous kinds of birds breed on the barren grounds and in the arctic islands. The most important food birds are ducks, geese and ptarmigan but other birds such as cranes, swans, loons, hawks and sea-gulls can be eaten as well. Birds eggs too can be eaten wherever found. During winter only a few species of birds remain in the Arctic. The most important is the ptarmigan, but in some districts snowy owls and ravens may be seen. When fat the snowy owls are very good to eat. In winter the willow ptarmigan often frequents river banks and willow thickets to feed on the leaf-buds. In such places ptarmigan can easily be snared. Near the edge of the thicket and parallel to it a

miniature fence is made by placing small willow sticks in the snow. Here and there openings or "doors" are left for the ptarmigan to go through. In the "doorways" slip-knot nooses 3 inches in diameter, made from thin steel or brass wire, are placed so that the ptarmigan will get its head caught in the noose. Once caught the bird quickly strangles. By this method large numbers of ptarmigan may be snared in one night in one willow thicket.

Generally speaking the northern coniferous forest is poor in game birds. The most common game bird here is the spruce grouse. Wherever found this bird is easily shot, or it may be snared like the ptarmigan. In summer lake country and small streams are more productive of bird life than is the forest.

FRESHWATER FISHES

Technique: To an inexperienced man left to his own resources in the arctic barren lands or in the northern forest freshwater fishes are of most importance as emergency food because fish can be caught in many places and with simple equipment. Gill nets provide the easiest and most efficient fishing gear. A $4\frac{1}{2}$ inch mesh gill net 30-40 feet long weighs but a few pounds and in most places would provide plenty of food for a small party. The technique varies for the different kind of fish and with the locality.

Gill nets should never be used in swift water. In a large river, nets should be set in quiet water above or below an eddy, while in a small stream it may sometimes be practical to set nets across the stream. In a lake, nets should be set at right angle to the shore, preferably off a point or headland where the water is deep close to the shore. Nets may

be also set near the entrance of a small creek or tributary.

A gill net used in open water should have floats along the upper edge, spaced at about 6 foot intervals and sinkers or weights along the bottom edge opposite the floats. The net, when set, should float suspended in the water from the floats. The outer end should be held in place by a larger float anchored to the bottom while the opposite end should be attached to some object on the shore. The net may be hauled in and out by a halyard fastened to the large float. If no boat is available a short net may be pushed out from the shore by the use of a long pole, or several long poles, lashed together end to end. Guy ropes to the end of the pole then hold the net in place. In wooded country a small raft may be used in place of a boat.

Fishing with a net can also be practiced in winter, in rivers and in lakes through the ice. When the ice is thick it is not very easy to set the net but when the ice is less than a foot thick it is not difficult. First a straight row of holes are cut in the ice, spaced ten to twelve feet. Then a thin rope or halyard is passed under the ice by means of a long, slender pole used in the manner of a darning needle which is passed from hole to hole, floating up against the undersurface of the ice, by means of a forked stick. Each end of the net is then fastened to the line and by it is hauled into place under the ice. The rope is left permanently fastened to the net so that when the net is hauled out on the ice for inspection or removal of fish, the line temporarily takes its place under the ice.

The net is provided with floats and sinkers to make it stand verti-

ally in the water. The sinkers should be heavy enough to insure that the floats are not resting against the undersurface of the ice because if they do they will soon freeze to the ice and thereby prevent the removal of the net. The net is fastened to and lowered under the ice by a stick or pole at each end and by a short one from the center hole. This arrangement insures that no part of the net touches the ice and that the end lines are not accidentally cut when the holes are chopped open to inspect the net or to pull it out on the ice.

As a general rule lakes that have no vegetable growth on the bottom are poor prospects for winter fishing.

In large lakes baited hooks may be set under the ice for lake trout. The hook should be placed at a depth of 5-6 feet below the ice and not too far from the shore. In muddy places along river banks or on the shore of lakes, in places where small streams enter, ling or burbot may be caught under the ice in water but a few inches deep. This fish never bites except in the dark. In similar places, but in deeper water, pike, jackfish or inconnu may be taken on hooks during the day. When fishing in this way the line is fastened to a short stick held in the hand. The hook is moved by a slight vibration of the hand.

Trotting for lake trout or pike may be profitable in summer in large clear-water lakes. Few northern fish rise to a fly. One exception is the grayling or "bluefish" which inhabits clear mountain streams from Hudson Bay to Alaska. Lacking a "fly" grayling may be taken on a small barbed hook using a cranberry or some other red object for bait.

Fish weirs and fish traps may be used in shallow rapid streams for catching salmon or char.

Fish spears, or large hooks fastened to poles are successfully used by Eskimo in clear-water streams for catching the arctic char or sea-trout. This method is often used in conjunction with a weir or dam across the river.

Most important fishes. The lakes and rivers of the Arctic are inhabited by many different kinds of fishes. While all species are edible some are more important than others. The following are the most important.

Pike or jackfish is abundant in practically all waters of forested parts of Continental Canada. It is less common north of the tree-line and is absent in the Arctic Islands.

White fish. Several members of the white fish family are very abundant in lakes and rivers of the Mackenzie river basin as well as in other water systems rising in forested country. No white fish are known to occur in the Arctic Islands. White fish also may be taken in the sea near the mouth of rivers.

Lake trout is an important food fish which is common in most large lakes in the Yukon and throughout the Mackenzie and Keewatin districts. Large specimens may weigh 40 to 50 pounds.

Inconnu when fat is an excellent food fish. Large specimens weigh 50 pounds or more. It inhabits the larger rivers of the Mackenzie drainage system and may be taken in nets in summer or on hooks through the ice in winter. Notwithstanding its size the inconnu is not a sporting fish, and when caught gives no fight at all.

Arctic char or sea-trout inhabits arctic rivers on the mainland and rivers and lakes of the Arctic Islands. The char comes to the rivers to

spawn and winters in some arctic lakes, but, otherwise, spends part of the year in salt water. It may be taken in nets in the sea near the mouth of rivers, or it may be speared or trapped in the rivers when on its way to the lakes to spawn. During winter it may be hooked through the ice.

Ling or turbot, like the jackfish, is common in all streams and lakes in forested parts of Continental Canada.

Grayling or "bluefish" is widely distributed in rapid clear-water streams from Alaska to Hudson Bay.

EDIBLE PLANTS

Introduction:

In a list of emergency foods in the Arctic, edible plants are among the least important, partly because they are few and partly because in the Arctic plants are available for such a short time of the year.

It is no doubt significant that the northern Indian and the Eskimo obtain a very unimportant part of their food from the Vegetable Kingdom. There are, nevertheless, a score or so of arctic or boreal plants that have been found edible and palatable and that in an emergency may be used for food by aircross down in the Arctic.

Generally speaking no truly arctic plants are poisonous. There are no poisonous mushrooms or toadstools and no poisonous berries. In fact, north of the tree-line it is safe to eat any vegetable produce that appears at all edible. In the northern forest, on the other hand, there are a few plants that are definitely poisonous. The ones most likely to be mistaken for edible species are the Death-Cup toadstool (*Amanita*

phalloides), and the fruit of the Red Baneberry. The following descriptions should be helpful in identifying some of the more important edible plants.

EDIBLE ROOTS

Liquorice-root. (Hedysarum boreale)

Non-climbing perennial herb of the pea family with branching stems, 1 to 2 feet high, terminated by long racemes of showy pink flowers. The seed-pods are flat, net-veined, 1 to 2 inches long, and are joined together in several roundish sections. The root, which is edible, is a well-developed tap root, in mature plants attaining the thickness of a man's finger.

Liquorice-root is widely distributed throughout northern Canada, and is found as far north as the shores of the Arctic ocean.

The root is mature in August and may be gathered in quantities with very little trouble until the ground freezes. In the spring before the new growth has started the roots are even better than in the autumn. During summer the roots become tough and woody.

The root when cooked, in taste resembles that of young carrots, but is more nourishing.

This root during the early summer forms the principal food of the barren ground brown bears. Several species of meadow mice and lemmings in the autumn "harvest" the roots and place them "en cache" for the winter. The caches are found in subterranean runways near the surface. The Eskimo, with the aid of a dog, has no difficulty locating these "mouse" caches, and frequently obtains his own supply for the winter in this manner.

Woolly Lousewort. (*Pedicularis lanata*)

Perennial herb 5 to 8 inches high, with from one to several stems terminated by dense, white, woolly spikes of rose-colored flowers. The leaf is pinnate and looks somewhat like the frond of a fern; it forms a rosette at the base of the stem. Towards maturity the stems stretch and often protrude above the snow during winter.

The well-developed tap root is sulphur yellow. It is sweet like young carrots and may be eaten raw or cooked.

It flowers in July and is found in rather dry tundra throughout arctic Canada north of the limit of trees.

Polygonum Bistorta and P. viviparum.

Low, perennial herbs from 5 to 10 inches high; glabrous; with simple, solitary, or clustered stems from corn-like, somewhat scaly rootstock. Basal leaves oblong-lanceolate up to 3 inches long. Flowers white or pink in solitary, dense spikes.

The rootstock of these closely related species is edible. It is of the size of a pecan and is very rich in starch. It is slightly astringent when raw and is best when cooked.

Common in dry tundra, chiefly north of the limit of trees.

Silverweed. (*Potentilla anserina*)

A low, trailing perennial herb characteristic of gravelly, sandy and loamy sea-shores, lake shores and river banks. The leaves are feather-like, green above and silvery beneath; the flowers are yellow of the shape and size of strawberry flowers. The plant sends out long, trailing runners and forms thickened roots or fleshy, tuber-like branches that are edible, raw, cooked or roasted. The roots are best in early spring when they taste like sweet potato.

POT-HERBS AND GREENS

Wild Rhubarb. (*Polygonum alpinum* var. *lapathifolium*)

Freely branching perennial herb, 3 to 6 feet high, with thickened, sheath-covered joints. Stems reddish, bearing numerous pointed leaves 2 to 6 inches long with crisped edges. Flowers small and insignificant in large, plume-like panicles.

Prefers moist, alluvial, or open soil such as river banks and recent landslides where it may form pure stands of several acres.

It is very common in the Yukon, on the Mackenzie and its tributaries north to the limit of trees, but does not occur farther east.

The young, bright red, juicy stems that appear shortly after the snow disappears are edible and when cooked resemble rhubarb.

Mountain sorrel. (*Oxyria digyna*)

Low, somewhat fleshy perennial herb with erect, simple stem. Leaves mostly basal, kidney-shaped in outline with 1-inch wide blades on long, slender stalks. Flowers small, red or green, in a terminal plume-like raceme.

The mountain sorrel is found throughout the barren grounds and on the higher mountains south of the limit of trees. It prefers somewhat shaded slopes and ravines where the snow accumulates during winter, providing moisture that lasts throughout the growing season.

The succulent, juicy leaves and stems are edible. When raw they are somewhat acid but very refreshing, when cooked their flavor and appearance resemble spinach. A very pleasant dish, resembling stewed rhubarb, may be prepared from the sweetened juice thickened with a small quantity of flour. Because of its habit of growth the fresh and green leaves of the mountain sorrel may be found throughout the summer.

Broad-leaved Willow Herb. (*Epilobium latifolium*)

Erect, glabrous, simple or branching, perennial herb from 6 to 12 inches high with willow-like, dark green, sessile, and fleshy leaves. Flowers purple, very large and showy in leafy racemes.

Abundant throughout the Arctic on sandy or gravelly soil such as river or creek beds where in many places large clumps are found.

The fleshy leaves are edible when cooked and in taste resemble spinach.

Dandelion. (*Taraxacum*)

The young leaves of all dandelions may be eaten raw or cooked as pot herbs.

Scurvy grass. (*Cochlearia*)

Annual or biennial, diffuse, branching, and somewhat fleshy herb. Lower leaves bright green, roundish or kidney-shaped in outline on short stalks. Flowers inconspicuous, white, in few-flowered racemes. Seed pods globular.

The scurvy grass grows abundantly along seashores, but is rarely found far inland. The plant when eaten raw as a salad or cooked is considered a valuable antiscorbutic.

ANTISCORBUTICS

An infusion made by the steeping, in boiling water, of the young twigs and leaves of spruce, hemlock, balsam, fir, or pine has long been known to be of great value as an antiscorbutic.

FRUITS

During late summer several kinds of small fruits and berries may be found in abundance in the Arctic. Without exception those found north

of the limit of trees are edible and wholesome. Several kinds are undamaged by the frost and may be eaten in spring when the snow disappears.

In the forested area the fruits and berries growing on trees or shrubs are all edible while those of non-woody plants, excepting the wild strawberry, should not be eaten.

MUSHROOMS

Many different kinds of edible mushrooms and puffballs occur throughout the North, and after a period of rain bushels of these fungi may be gathered almost anywhere. So far no poisonous species have ever been detected in the Northwest Territories. One poisonous toadstool (*Amanita phalloides*), however, has been reported from Athabaska Lake, and may also be expected in rich woods of the valleys of Slave, Liard, and upper Mackenzie rivers and in the Yukon.

In the forested area of the North it is, therefore, best to avoid mushrooms in the early or button stage and to avoid any mushroom with a membrane-like cup or bowl or scaly bulb at the base above or half-buried in the ground. Also, mushrooms in beginning decay should be avoided.

LICHENS

Of the various edible plants occurring in the North, the greatest food value perhaps is possessed by the lichens, in many cases erroneously referred to as "mosses."

Lichens are low, variously shaped, gray, brown, or black plants that in many parts of the North form an important element in the flora. Botanically they are considered akin to the fungi, and like these have no true roots or leaves nor green chlorophyll or leaf-pigment. Three principal groups are recognized, based on their life-forms, known as shrub-

like (fruticose), leaf-like (foliose) and crust-like (crustaceous) lichens.

None of the lichens occurring in the North is poisonous, but most of them contain an acid that is bitter and sometimes nauseous and may cause severe internal irritation if not first extracted by boiling or soaking in water. A very small quantity of soda or other alkali added to the water materially reduces this acid. Following the preliminary soaking the lichens are dried until brittle and then powdered, which may be done by rubbing between the palms of the hands or by pounding with a stone.

The powdered lichen if put to macerate in water overnight, when boiled jellies or becomes mucilaginous. It is best used with other foods. If mixed with a small quantity of flour a dough is formed, which may be baked into bread or biscuit, or made into soup.

Numerous species of lichen occur in great abundance in northern Canada, and several kinds are edible if treated in the way described above. Rock lichens, known by the "Voyageurs" as Tripe de Roche or Rock Tripe (*Umbilicaria Muhlenbergii*, *U. vellosa*, *U. hyperborea* a.o.) are black or brown, leathery lichens which grow on the acid, Precambrian rocks only. Their irregular, saucer-shaped fronds are attached to the rocks by the center. When dry they are hard and brittle, but in damp weather become soft and cartilaginous and, when in this condition are easily collected.

The "Iceland moss" (*Cetraria islandica*), and "Reindeer moss" (*Cladonia rangiferina*), are low, bushy, coral-like lichens that grow abundantly on the ground. The former is dark brown, its fronds are

strap-like, ciliate on the edges. It grows in colonies in rather sandy soil and is common throughout northern Canada. Reindeer moss is a grayish, much branched, coral-like lichen. It prefers hollows or slopes where snow cover is assured during winter. It is very common throughout the North, and indeed often occurs in such large colonies that distant hills appear snow covered.

Lichens of all kinds are best collected when moist after rain. In some places it is possible to gather reindeer "moss" from under the snow.

BEVERAGE PLANTS

Shrubby Cinquefoil. (*Potentilla fruticosa*)

A low, much branched shrub with shreddy bark, large yellow flowers and numerous but rather small leaves each composed of from 5 to 7 silky, pubescent leaflets. The shrubby cinquefoil is common in muskeg swamps and in moist, rocky places north to the limit of trees from Labrador to Alaska.

The dried leaves may be used as a substitute for tea.

Labrador tea. (*Ledum groenlandicum*)

A low, much branched, strongly aromatic shrub with evergreen, leathery, canoe-shaped leaves covered below by a dense, brown felt; flowers white, strongly aromatic, in umbrella-shaped terminal clusters. Common in muskeg swamps north to the limit of trees, or beyond. The leaves may be gathered throughout the year and after drying may be used as a substitute for tea.

NATIVES

Eskimo. Nearly all Eskimo tribes live on the seashore from East

Greenland to the Bering Sea; of the larger islands to the north of the continent only Baffin, King William and Victoria Islands have more or less permanent Eskimo camps while others, such as Ellesmere, North Devon, and Banks Islands are sometimes visited by hunting parties. In their primitive stage Eskimo live almost exclusively on the flesh and fats of animals and depend to a very large extent on sea animals for food, clothing, and on their fats to produce oil for heat and light. Land animals are hunted when available, but only a few tribes depend entirely on land animals. Before the advent of the white man vegetable food played a very unimportant part in the diet of the Eskimo.

Most Eskimo tribes make seasonal migrations following the game; they have a highly developed technique for catching the animals of the sea, and in winter and summer, are skillful travellers on land and on sea. In lands poor in nearly all natural resources the Eskimo, by their ingenuity and skill, have managed to survive remarkably well. Some white men in the Arctic have been able to learn Eskimo methods and ways of living; but this is by no means easy, and requires the skillful handling of boats, kayaks, dog teams, and many kinds of special hunting gear. Therefore, an inexperienced white man who is stranded or marooned in the Arctic should make every effort to find native camps or to get in touch with the natives.

The Eskimo are friendly and very intelligent people and when well treated are extremely helpful, hospitable, and trustworthy. Practically all Eskimo now have had some contacts with white men and, with very few exceptions, they have all been converted to the Christian faith. In west Greenland and in some parts of Alaska the Eskimo have largely adopted the white man's way of living and have well ordered, more or

less civilized communities.

The language of the Eskimo is very difficult and few white men can claim complete mastery. The dialects vary somewhat in the different tribes but so little that the Danish explorer Knud Rasmussen and the Greenlanders who accompanied him were able to talk to all the tribes they met on their journey from Greenland to Bering Sea. Today most Eskimo of Alaska and a number of those inhabiting arctic Canada understand some English; many Greenlanders understand Danish.

Indians. All Indian tribes of northern Canada are forest people and even today seldom venture far into the barren grounds. All are inland people and depend largely on land animals and fresh water fish. Indians are expert in "woodcraft," and by their often uncanny knowledge of the habits of animals can obtain game or food where an inexperienced white man would starve. Even so, Indian tribes are sometimes unable to procure game, and, in former times especially, famine was not uncommon. Like the Eskimo the Indians of Canada through contacts with white men have adopted many of their customs and, when available, use considerable amounts of white men's food. In their primitive state the Northern Indian, as the Eskimo, live almost exclusively on a diet of meat and fish. Indians appear less friendly and straightforward towards strangers, but when well treated they are friendly and helpful to anyone in need. The language of the Indians, like that of the Eskimo, is very difficult for a white man to learn. The dialects of the various Indian tribes differ so considerably from one another that an Indian from one tribe rarely can understand the language of the more distant tribes.

In northern Canada a number of Indians understand some English or French.

SUMMARY

In the entire Arctic perimeter every small mammal that is found in the North American Arctic has its counterpart in European and USSR Arctic areas, and in many cases they are the same.

These are the important things to remember:

1. Stalk your game until close for a sure kill.
2. Survival on fishing is easier, with less expenditure of effort, than hunting.
3. Edible plants are only a supplement to a survival diet.
4. In order to survive for long periods it will be necessary for you to get between 40 and 50 pounds of edible meat per shell.
5. Native people who inhabit Arctic areas of the world will usually help you, but you must pull your weight. Native people in the Arctic are nomadic of necessity and their margin of food storage is always slim. Help them and they will help you.