

## FOOD USE AND PREPARATION

### INTRODUCTION

The first concern of a people dependent on their immediate environment for subsistence is to obtain enough food to satisfy hunger. Whether or not a man and his family succeed in this undertaking depends on what is available seasonally throughout the year; on family skills in hunting, fishing and food gathering; on the ability to anticipate needs and to devise successful ways of preserving and storing sufficient foods for off-season use.

Food also fulfills other satisfactions and needs, among which are the promotion of health through proper nutrition, the means for sociability and simple gustatory delight. Considering the very limited number of foods that were and are available to any one geographic group of Eskimos in a given year, they have succeeded admirably in using them in many imaginative and satisfying nutritional ways.

Food preparation in Indian and Eskimo homes is traditionally done by the women. "In times past," Petroff<sup>(15)</sup> states, "the men, while in the villages, normally spent a great deal of their time in the Kashims (men's community building), and while living there would occasionally cook their own breakfasts, but usually the wives would bring them their food already prepared." Today men cook when living alone, when their wives are away or when on hunting expeditions.

### TYPES OF COOKING STOVES AND FUEL

Even in the most primitive of present day Eskimo homes the seal oil lamps have long since been replaced by wood or oil-burning stoves. In areas like Point Hope, where seal blubber is often plentiful and wood scarce, the blubber may still be used to obtain a quick, hot fire.

Most stoves found in Eskimo and Indian homes are locally made, usually from discarded oil barrels. Occasionally one finds a typical modern oil range, bought when the head of the family was

temporarily employed on a well-paying job. Most of these stoves have been abandoned or stored, and the family has returned to the use of the small, home-made variety that uses a minimum of fuel. In the larger, more sophisticated villages, such as Kotzebue and Bethel, where many of the families have a year-round steady income, modern oil stoves are more commonly used.

The gasoline camp stove is the most popular stove on extended hunting, fishing and camping trips and while traveling. In many homes it is occasionally used for emergency cooking and further use is limited only by the high cost of the gasoline.

At many of the north central Alaskan villages where the summers are usually fairly dry and warm (rainfall averages 8 inches a year and temperatures may be in the 80's and 90's) families that remain in the village often dismantle their household stove and reassemble it just outside their cabins. Here they do their cooking and heating of water for laundry purposes. This type of stove is easily transported to hunting camps out on the ice, as at Point Hope during the whaling season, and to other family hunting and fishing camps. It serves a double purpose—for cooking and to keep the living quarters (tents) dry and comfortable.

Many villages are not favorably located for the acquisition of fuel. Driftwood is commonly used for fuel in coastal villages, but its availability varies considerably from village to village and often from year to year. At one time Hooper Bay residents thought seriously of moving their village site because driftwood was so scarce, but then a single storm tossed several years' supply upon the beach.

The tundra villages, especially those scattered throughout the Yukon-Kuskokwim delta region, have the most difficulty in obtaining fuel. The sparse copses of willow in the immediate village area have been depleted, and the people now have to go farther and farther away in search of similar willow copses and river driftwood. Hence, it is not unusual in these villages to find that even in the dead of winter, stoves are used only during meal preparation. Villages located in tree-bearing areas, of course, have no such problem.

## **MEALS, GENERAL COOKING AND STORAGE PROCEDURES**

Early observers of arctic Eskimo life report that boiling was the most common method of cooking<sup>(34,35,36)</sup>. Cooking in water, which may not be actually boiling, is still the favorite method of cooking meats and fishes. The thoroughness of the cooking depends on individual tastes, the amount of fuel available, or the amount

of time the women can spare from other duties. When the women are engaged in fishing and hunting small game in the local area, berry picking, gathering greens or bird eggs, preparing the fish and meat catch for drying and storage, or tanning hides, cooking as well as other household duties, of necessity, receive only minimum time and attention. Meat or fish, put in a pot of cold water and placed over the fire, may be cooked such a short time as to be barely heated through.

Gilder<sup>(37)</sup>, 1878, in writing of his arctic experiences among the Canadian Eskimos, states that "warm food was especially welcomed as a treat in extreme weather, or as a celebration after a successful hunt."

Stefansson<sup>(34)</sup> reports that a meal served him consisted of two courses—boiled seal meat, on the underdone side, and a soup "made by pouring seal blood into the broth immediately after the cooked meat has been taken out of the pot and stirring briskly until the whole comes nearly, but never quite to the boil—."

Cooked fish or meat is often cut up and served individually, or it may be placed on a wooden tray or other serving dish, and each person cuts off the amount desired, either as a single large piece, or in some instances, as bite-size pieces. This latter method is practiced on St. Lawrence Island. The soup or broth is then served separately.

Thickening the cooking broth with seal or caribou blood, as outlined by Stefansson, is not generally practiced today among the Alaskan Eskimos, although its use in soups still persists in some areas. Today the most general practice is to add rice and macaroni to the meat or fish cooking broth, with onion and salt as seasonings. In a few villages in the Kotzebue area, curry is used as a seasoning, a practice probably introduced by an early missionary or teacher. If there are family garden plots, as at Akiak and a few other interior river villages, potatoes, carrots or turnips may also be added. In very recent years, canned condensed soups, especially vegetable soup, are added whenever money is available for their purchase. Other canned foods occasionally added are meat balls and corned beef.

Alaskan Eskimos only occasionally fry meat or fish. The Athapascan Indians of Interior Alaska, perhaps from more consistent contact with Caucasians, often use this method of preparation, but even they seem to prefer oven roasting to frying. The Indians also use more of the various commercial condiments such as steak sauce on their cooked meats and fishes. For more detailed methods on cooking meat and fish products or otherwise preparing them, see Appendix.

## USE OF COOKED, RAW-DRIED AND RAW-FROZEN MEAT AND FISH

In the overall Alaskan Eskimo and Indian diet four-fifths of the total protein came from meat and fish products, most of it of local origin. The relative importance of these two food groups depended upon the location of the village. In general, meat accounted for about one-half to three-fifths of the total protein in the diets of northern Eskimos and Indians. In contrast, among southwest Eskimos fish accounted for from about four-fifths of the total protein at the tundra villages of Kasigluk and Napaskiak to about one-half of it at Akiak (Table 75).

It was of interest to know the relative proportion of meat and fish eaten in the cooked, raw, raw-dried and raw-frozen state. This was determined for adults on the basis of total protein obtained from these food sources. It was found that about four-fifths or more of the meat protein on adult diets was from the cooked product. The raw-dried product was used in significant amounts only at Noatak, Akiak, Shishmaref, Newtok and Hooper Bay and the raw frozen product only at Shishmaref and Shungnak.

**TABLE 75.—PERCENT TOTAL PROTEIN FROM MEAT AND FISH**  
Eskimo and Indian Diets: All Ages, Both Sexes  
By Area and Village

Area and Village	No. Records	Percent of Total Protein		
		Meat	Fish	Combined
<i>N. Central Athapascan</i>				
Allakaket .....	257	45.9	31.7	77.6
Huslia .....	369	55.5	16.3	71.8
<i>Northern Eskimo</i>				
Noatak .....	462	46.4	36.0	82.4
Pt. Hope .....	362	64.0	8.5	72.5
Shishmaref .....	372	67.4	14.0	81.4
Shungnak .....	285	56.4	32.7	89.1
<i>Southwest Eskimo</i>				
Akiak .....	228	36.2	45.5	81.7
Hooper Bay .....	1212	19.9	62.3	82.2
Napaskiak .....	422	6.1	79.2	85.3
Newtok .....	247	12.3	74.9	87.2
Kasigluk .....	351	3.4	82.8	86.2
All Areas & Villages .....	4567	34.1	47.8	81.9

Most of the dried meat used at Noatak was from the summer ugruk and beluga catch; at Shishmaref from the spring ugruk catch; at Akiak from ground squirrel, bear and beaver; at Hooper Bay and Newtok from wildfowl, muskrat and mink.

In general, most fresh meats are available for short periods only, except for Noatak and Shungnak where in most years caribou are available from late fall throughout the winter; and at Point Hope and Shishmaref, where seal hunting is generally good throughout the winter season.

It was only at Point Hope, however, that large quantities of meat were frozen. Abandoned sod igloos were used as freezers and in most years these retained sufficient ice to keep the meat frozen or at least in cold storage throughout the summer. This meat, however, was cooked before eating it.

The underground ice cellars at Noatak are also quite effective in maintaining freezing and cold storage temperatures, but they are located at the village site while the ugruk and beluga supplies are obtained at the spring and summer camps on Kotzebue Sound 50 miles or more from the village, and the winter meat supply (caribou) several miles upriver from the village. Raw frozen meat was not a common item on Eskimo diets (Table 76).

## **FISH**

Of the total fish protein intake on adult diets two-fifths was cooked, two-fifths was eaten raw-dried and the remainder was eaten raw-frozen. There was considerable variation, however, in the use of the dried, raw-frozen and cooked products at the several villages.

The bulk of the fresh fish supplies at all the study villages was available from about mid-spring (late May and early June) throughout the summer and into the early fall. Air-drying was the most common method of preservation. A large share of the dried fish was used for dog feed at all the study villages. Under ordinary conditions of food supply, the northern villages and Akiak in the Southwest obtained sufficient fresh meat during the winter season to meet most of their protein needs. At the rest of the southwest study villages the fresh meat supply was extremely limited in winter, even at coastal villages located on Norton Sound. Ice conditions make sealing extremely dangerous in this area, therefore, most of the southwest people of necessity depend on their dried fish products as the major source of their protein from November to April. In the overall diet of the southwest Eskimo fish provided from slightly less than one-half of the total

TABLE 76.—PERCENT MEAT AND FISH PROTEIN FROM THE RAW-FROZEN, RAW-DRIED AND COOKED PRODUCT, ADULT MALE AND FEMALE DIETS  
By Geographic Area and Village

Food	Athapascan		Northern Eskimo				Southwestern Eskimo				All Areas and Villages	
	Allakaket	Huslin	Noatak	Point Hope	Shishmaref	Shungnak	Akiak	Hooper Bay	Napaskiak	Newtok		Kasigluk
Fish: Cooked.....	43.8	16.6	83.4	77.6	34.8	39.8	66.6	61.3	41.2	33.3	47.2	41.7
Dried, Raw.....	32.2	73.3	13.6	21.1	5.4	4.5	1.5	12.1	49.0	62.1	50.1	41.2
Frozen, Raw.....	24.0	10.1	3.0	1.3	59.8	55.7	31.9	26.6	9.8	4.6	2.7	17.1
Meat: Cooked.....	97.9	96.0	70.4	98.7	74.3	85.1	61.8	82.6	99.9	85.7	100.0	80.1
Dried, Raw.....	2.1	4.0	29.6	1.3	11.7	0.5	36.4	13.7	0.1	14.3	.0	14.8
Frozen, Raw.....	.0	.0	.0	.0	14.0	14.4	1.8	3.7	0.0	.0	.0	5.1
Mean Daily Protein Intake (gm).												
Male, Adult.....	204.7	136.7	237.0	154.3	196.1	262.1	192.0	196.2	167.1	181.1	270.8	199.1
Female, Adult.....	139.5	122.3	217.7	137.1	172.2	186.4	192.7	173.3	144.6	155.6	230.2	169.6
No. Records, Both Sexes	88	99	199	178	177	130	103	490	199	110	152	1925

protein at Akiak to four-fifths of it at Kasigluk. The bulk of the fish was salmon obtained during the spring and summer fish runs. Raw-frozen fish was used in significant amounts by villages such as Shishmaref and Shungnak in the North, and Akiak and Hooper Bay in the Southwest where a modest but fairly consistent supply of the fresh product is available during the winter months.

## USE OF VEGETABLES AND FRUITS

Kjellman<sup>(38)</sup>, the Swedish botanist with the *Vega Expedition* (1878-79) was the first to draw attention to the fact that vegetable foods were used and relished by an arctic people. The members of this expedition, forced to spend the winter in the vicinity of the Chukchi coast of Siberia, had ample opportunity to observe these people. It was noted that when they partook of food on the VEGA that the Chukchi always showed preference for the vegetables used and even sought out diligently the tiny bits used in soups.

Kjellman also found that the Chukchi's winter supplies of locally obtained greens were sometimes as large as their stored winter meat supplies. He thought that the Chukchi differed from other polar peoples in this respect, and that their preference for vegetables probably stemmed from food experiences enjoyed prior to their northward migration. Although he had made botanical field trips to the American side of the Bering Straits, he never lived as intimately with the American Eskimos as he did with the Chukchi. Therefore, he could only draw his conclusions on their use of vegetable products from the reports of earlier arctic traveler-authors who had apparently never observed their use.

That local fruit and vegetables played little, if any, part in the diet was and is certainly true of those Eskimos inhabiting the "high arctic" where vegetation is sometimes extremely sparse. But, a significant segment of the Alaskan Eskimo population does live in areas where considerable quantities of wild edible berries, greens, roots and other underground plant parts are not only available, but are widely used.

The gathering of these foods in season is woman's work and many Eskimo women still spend considerable time and effort in obtaining as large a supply as possible. The kinds and amounts used and stored vary with the location and environs of the village as well as seasonal growing conditions. At Hooper Bay, for instance, where cloudberry are commonly found a woman may store from 150 to 300 pounds for winter use. She may also store an almost equal supply of lowbush cranberries, one or two gunny

sacks (100# size) of "mousenuts" and lesser amounts of sourdock.

At Shungnak most families store 100-200 pounds of blueberries and lesser supplies of other local berries. Greens, mainly from *Polygonum alaskanum* and "mashu", the roots of *Hedysarum alpinum*, are sometimes stored in smaller amounts.

At Shishmaref the majority of families store up to a 100 pounds or more each of cooked sourdock and raw or cooked willow leaves, the latter marinated lightly with seal oil. They may also store from 50 to 200 pounds each of cloudberry, lowbush cranberry and crowberry, although the crowberries are most often mixed in with the sourdock. Noatak families may store 50 or more pounds each of cooked "mashu", lowbush cranberry and blueberries.

Most families at Napaskiak, Akiak and Kasigluk in the Southwest collect and store berries, mostly cloudberry and lowbush cranberry, but the older women in the village say not in as large quantities as was the custom in the past, probably because many no longer go to fall camps. Those with school age children remain at the village so the children can start school on time.

Lesser amounts of these products are used at Point Hope in the North, at Newtok in the Southwest and at the Indian villages. Supplies of these foods are not available at Point Hope village but the people formerly collected moderate supplies at their summer inland camps in the Cape Thompson and Cape Lisbourne areas. However, very few families now establish such camps regularly.

Berries are available at Newtok but because of the quaking bogs they are not as easy to procure. At the Indian villages a few families collect wild edible greens and berries but rarely in significant amounts. For the majority they are a rare seasonal treat only.

The people of St. Lawrence Island use many of the same greens in the same manner as that described for the Chukchi by Kjellman. On both St. Lawrence and Diomed Islands, stored greens eaten in combination with fresh walrus, seal or mukluk (bearded seal) meat and fresh oil are still favorite winter repasts.

Plant produce collected in considerable quantities by Alaskan Eskimos and Indians includes among the berries cloudberry, lowbush cranberry, crowberry and blueberry; among the greens "mare's tails", willow leaves, stonecrop, sourdock, wild rhubarb, marsh marigold, coltsfoot and sea purslane; among roots and other underground parts "mashu" or Eskimo potato, the roots and

tubers of spring beauties, Indian rice and "mousenuts"; and seaweed and kelp. Many other berries and greens, usually available in lesser amounts or of more limited distribution are also used. They are described elsewhere<sup>(39)</sup>.

On the mainland of Alaska, sourdock is the green collected and stored in the largest amounts. It is usually cooked in water to cover and mashed thoroughly. The Eskimos from Seward Peninsula usually add an equal amount of crowberries, but on St. Lawrence Island the cooked sourdock is put in seal pokes and stored without this addition. During the winter sourdock is either eaten as such with sugar and oil, used in making agutuk, or to make ahslookcahlak (St. Lawrence Island). The latter is a mixture of sourdock, seal oil and a little sugar with seal blood added when ready to eat.

The leaves of stonecrop, usually called *eveeahluk* on the mainland and *noneevuk* on St. Lawrence Island, are another very popular green collected and stored in fairly large amounts, especially by the Eskimos of Seward Peninsula and Diomedes and St. Lawrence Islands. At the latter two places they are stored in barrels with water added to cover, the lid is weighted with rocks and then set in a cool place to sour. Or, it may be stored in seal pokes. On St. Lawrence and Diomedes Islands the Eskimos relish these greens as a winter food, preferably eaten with fresh blubber, meat or duck liver.

*Noneevuk* is also used on St. Lawrence Island in making one of their popular agutuks. A piece of frozen *noneevuk* is either scraped with a sharp chisel to a powder or finely minced. Then walrus, whale, seal or reindeer fat, mixed sometimes with lard, hydrogenated fat, sea gull fat or cormorant fat, is gradually added, and the whole mixed slowly and thoroughly with the hands. Sugar is added to taste. The mixture is molded on a plate, left to cool and when ready is cut into small cubes and eaten.

Young, tender, smooth willow leaves are also very popular greens collected and stored in quantity for winter use by the Eskimos of St. Lawrence Island and Seward Peninsula north to Kotzebue. On the mainland the leaves, either cooked or raw, are first lightly marinated in seal oil and then stored in the cold, but on St. Lawrence Island the raw leaves are soured in the same way as is *noneevuk*. They are often eaten with bearded seal blubber or raw seal meat. Another old St. Lawrence recipe, rarely used now, is a mixture of about equal quantities of chopped willow leaves, seal blood and seal oil. This is called *ahkukuk*.

Mouse nuts, bits of the root and/or underground stem of various tundra plants, are still collected and used in good amounts

at Hooper Bay and on St. Lawrence Island, but on Seward Peninsula they are rarely collected now. In the immediate past the people had been informed that food from mice caches was contaminated, but if these plant pieces are thoroughly cooked before eating, as is usual, the chance that they are a disease source should be negligible.

Adolph Murie<sup>(40)</sup> has described mice caches in his recently published "A Naturalist in Alaska." It is interesting to note that all of the root and other underground plant bits found in these caches by Murie are also well known to the Eskimo, and many of the Eskimo women who do the collecting, can describe the source plants adequately enough so that they can be easily identified by a botanist.

At Hooper Bay mouse nuts are stored, unwashed, in gunny sacks, but before use they are thoroughly washed and then used in special soups called *oknuk* (see Appendix), or they are cooked, finely chopped, and used as an agutuk ingredient. On St. Lawrence Island they are mashed after thorough cooking and eaten with blubber and raw seal meat.

"Mashu" is often collected in considerable quantity by Eskimos living in the Kotzebue Sound, Noatak, and Kobuk River areas and by many Indians living in the upper Yukon River drainage area. The women either dig the roots themselves or rob rodent caches. Before storage they are usually thoroughly washed and cooked. The Eskimos eat them with seal oil. In Eskimo country these roots are called "Eskimo Potato", while Athapascan Indians call them "Indian Potato". On St. Lawrence and Diomed Islands and at Wales, the fleshy roots and potato-like corms of certain of the spring beauties are sometimes collected in considerable quantity, cleaned, beaten or mashed and eaten with seal oil.

On St. Lawrence and Diomed Islands, along the Aleutian Chain and the mainland coast, seaweeds and kelp are gathered and used as food. Beginning in June St. Lawrence Islanders collect several different kinds of seaweed blown up onto the beach following a north wind. Often a sufficient quantity is harvested so that a portion can be dried for winter use. Seaweed is used both as a vegetable and as flavoring in meat and fish soups.

*Eskimo Ice Cream or Agutuk:* Most Eskimos and some Athapascan Indians make special desserts made from a mixture of fats and to which one of the following may be added:

- 1) *Berries*—cloudberries alone or a mixture of 2 or 3 kinds of berries.

- 2) *Cooked Sourdock*—or a combination of sourdock and berries.
- 3) *Cooked and chopped Eskimo Potato* (Mashu).
- 4) *Cooked and Chopped "Mouse nuts"*.
- 5) *A combination of berries with salmon, whitefish or pike roe.*
- 6) *Berry combinations with the cooked flesh of pike, whitefish, or ling cod, or with the livers of these fish.*

Eskimos almost always use seal oil as one of the fat ingredients except possibly on the tundra where seal oil may be scarce or too costly. Here they may use whitefish oil or occasionally, when they can afford to buy it, cottonseed or corn oil. The actual ingredients used and the amounts depend not only on the village location and adherence to traditional methods of preparation, but more particularly on the immediate family food supplies. In the past few years, when money has been available for their purchase, cooked dry fruits have sometimes been substituted for local berries or used in combination with them.

Eskimo women do not have cook books, nor do they follow exact recipes, but a few approximate "recipes" for agutuk or Eskimo Ice Cream collected during the course of the food study are included in the Appendix.

## **IMPORTED FOODS: FACTORS DETERMINING THEIR USE AND PREPARATION**

The introduction of new foods into the aboriginal diet pattern of the Alaskan Eskimo and Indian began as soon as these people came into contact with explorers, sailors, colonizers, traders and others. Although the Eskimos of the Bering and Chukchi Sea coasts had had trading relationships with the Chukchi, the Russians must be credited as being the first to initiate permanent changes in the diet. The foods they introduced, such as brown \* and white sugar, tea, flour, crackers, rice, salt, butter, canned fruits (limited amounts) were used in addition to but not in place of local foods.<sup>(15,41)</sup> Where the Russian contact was of long duration as in southeastern Alaska, Kodiak, the Alaska Peninsula and the Aleutians, they successfully introduced gardening and the use of such vegetables as potatoes, rutabagas and onions. A favorite Russian dish on Kodiak Island, still in use today, is a tasty cas-

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\* The brown sugar was solid. The custom was to hold a piece between the teeth and sip tea through it.

serole of rice, onion, rutabagas and fresh fish. The Hudson's Bay Company introduced several of these same kinds of foods to the Eskimos and Indians of northern and north central Alaska<sup>(42)</sup>.

After the purchase of Alaska by the United States an ever increasing number of outsiders—whalers, sailors, miners, traders, missionaries, teachers, servicemen and others came to Alaska. Gradually through their associations with the local Eskimo and Indian peoples other new foods and new food preparation techniques were introduced.

By and large, Americans are responsible for introducing canned milk (first condensed; later evaporated), oatmeal, cornmeal, baking powder, candy, lard, butter, margarine, edible beef tallow, hydrogenated fats, cookies, crackers (especially Pilot Bread, a hard ship's cracker and Jersey Creams), coffee, macaroni, dried fruits and, in more recent years, an ever increasing variety of canned and processed foods, the most popular being fruit (dried, fresh \* and canned), fruit juices, instant cereals, cereals specially designed for infant feeding, syrup, pop (Kool Aid), gum, jams and jellies. Comparison of past inventories of food items for sale in local village stores with current lists shows the variety and amounts of imported food items available in some villages has markedly increased since World War II. Some of the newer items are prepared infant foods, dry cereals, cake mixes, peanut butter, canned seafood and meat products, various condiments such as prepared mustard, steak sauces, catsup, pickles, prepared pudding mixes, gelatins, dessert mixes, processed cheese and both whole and non-fat dry milk solids. On rare occasions fresh vegetables, fresh meat products and bakery bread may be shipped into a village, but usually only to those relatively close to major trading centers like Fairbanks and Anchorage. Cost is the primary deterrent to more widespread use. Airfreight charges added to the price of these items at the nearest retail market often increase the cost twofold or more. Recently, for example, an Eskimo from one of the southwest study villages who was in Anchorage attending National Guard Encampment, purchased fresh fruits and vegetables costing approximately \$10.00. The airfreight charges were \$10.75.

Because of ice conditions along the coast, food and other supplies are freighted by boat to accessible Eskimo and Athapaskan Indian villages once or twice a year and only during the summer months. Generally, most of these supplies are exhausted by late winter or early spring. In the past, during the interim before the arrival of the next supply boat, Eskimos and Indians would

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\* Fresh fruits are usually available only when the annual supply boat arrives.

revert almost completely to their aboriginal diet. Too often, however, this was the time of the year when local food supplies were also most likely to be limited. Except in those areas favorably located for late winter and spring hunting and fishing, the Eskimos frequently referred to this period of the year as the "hunger time." This general pattern of food shortage would probably be found in some areas of Alaska today except that emergency air shipment of food supplies is now possible.

The increase in monies obtained from welfare, unemployment insurance, social security, the National Guard, sale of handicrafts and furs, and seasonal wage work, has made possible shipment of larger and more varied supplies of foods than was formerly the case. Yet the kind and amounts of imported foods dispensed at village stores and trading posts is still very limited for several reasons. Shipping food to remote Eskimo and Indian villages by boat or airfreight increases the cost of each individual item. For example, a #2½ can of peaches costs about 38-45 cents in Anchorage, less during sales; the identical item costs 75-80 cents in remote villages.

A low and highly variable income and its preferential use for other types of goods further limits the use of imported foods. Lack of suitable warehouse facilities, especially those with adequate temperature control also limits the variety of foods which village stores can handle.

In spite of these factors new food items continue to find a place in the Eskimo and Indian diet. Children learn to like the taste and texture of foods served at the school lunch and ask for them at home. Increasing numbers of the people are leaving their villages for extended periods of time for schooling, occupational training, hospitalization, wage work and National Guard training where they are exposed to new food experiences. On their return to the villages foods especially well-liked are eventually stocked at the local store on demand and, depending on cost, may become commonplace in some family diets.

Many former villagers now living permanently either in urban areas of Alaska or outside Alaska return occasionally to visit their village relatives. While the desire for "native" foods is often given as a reason for the visits, the visitors generally bring a supply of "outside" foods with them. While visiting, they may teach their relatives new food preparation techniques to which they have become accustomed. This is particularly noticeable among young Eskimo and Indian women who marry Caucasians or who have worked as housekeepers and baby sitters for them in urban areas. If infants are brought along on these village

TABLE 77.—PER CAPITA SOURCE OF ELEVEN NUTRIENTS FROM SELECTED FOOD GROUPS  
Alaskan Eskimo and Indian Diets: All Areas and Villages, All Seasons  
All Ages, Both Sexes \*

Food Group	Nutrient										
	Cal- ories	Pro- tein (gm)	Fat (gm)	Carbo- hydrate (gm)	Cal- cium (mg)	Iron (mg)	Vita- min A (I.U.)	Thia- mine (mg)	Ribo- flavin (mg)	Nia- cin (mg)	Ascorbic Acid (mg)
Dairy.....	150	7.7	8.2	11.3	275	0.3	427	.055	.397	0.3	.....
Egg.....	12	0.8	1.0	.....	4	0.2	86	.006	.018	.....	.....
Meat.....	278	47.9	8.5	2.3	21	15.8	1338	.255	.827	10.0	.....
Fish.....	400	67.1	12.6	0.7	80	2.3	1395	.260	.610	12.1	.....
Fats as such.....	154	0.4	16.8	0.2	2	.....	628	.005	.003	0.1	.....
Fruits.....	88	0.7	3.7	14.3	9	0.4	392	.033	.026	0.4	23
Vegetables.....	36	1.5	0.8	5.6	9	0.5	727	.028	.039	0.4	5
Breads/Cereals.....	728	13.6	31.2	101.0	210	4.8	35	.582	.341	5.0	.....
Sugar Products.....	142	0.1	0.2	36.7	4	0.3	.....	.002	.003	.....	.....
Miscellaneous**.....	11	0.6	0.2	1.9	3	0.1	738	.350	.342	2.3	7
Mean Per Capita Intake.....	1999	140.4	83.2	174.0	617	24.7	5766	1.576	2.606	30.6	35

\* 4567 Diet Records of 8 to 7 days each.

\*\* Includes pharmaceutical vitamin preparations.

visits, a supply of commercially prepared infant foods is often brought along too. Public health nurses sometimes advise their use too. As a consequence prepared infant food products are gradually being stocked in village stores, particularly in the North where income from summer wages tends to be higher and more dependable from year to year.

The first village stores were all operated by traders, but through a Bureau of Indian Affairs loan program many villages have succeeded in purchasing the local store which they run on a cooperative basis through their local village council with advisory help from the loaning agency. In the past few years an increasing number of native Alaskans, especially Eskimos, have established privately owned and operated stores. Most of these stores have a small inventory and carry essentially the same types of food items and other goods as do the trader and village operated stores. At Newtok, for example, there were three stores, one owned and operated by the village and the other two by local families. All three carried essentially the same items and had about the same inventory value. Two villages, Napaskiak (population 175) and Kasigluk (population 182), had no stores of any kind. Napaskiak

TABLE 78.—PER CAPITA SOURCE OF ELEVEN NUTRIENTS ON ALASKAN ESKIMO AND INDIAN DIETS \*

All Areas and Villages, All Seasons  
All Ages, Both Sexes

Nutrient	Mean Per Capita Intake				
	Mean Daily Intake	From Local Foods	From Imported Foods	From Vitamin Preparations	From Mixed Preparations**
Calories . . . . .	1999	735	1180	1	83
Protein (gm) . . . . .	140.4	109.4	25.2	.....	5.8**
Fats (gm) . . . . .	83.2	29.0	49.5	.....	4.7
Carbohydrate (gm) . . . . .	174.0	2.9	167.0	.....	4.1
Calcium (mg) . . . . .	617	99	512	1	5**
Iron (mg) . . . . .	24.7	17.0	6.5	0.3	0.9***
Vitamin A (I. U.) . . . . .	5766	3380	1937	248	201***
Thiamine (mg) . . . . .	1.576	0.462	0.980	0.092	0.042***
Riboflavin (mg) . . . . .	2.606	1.332	1.091	0.088	0.095
Niacin (mg) . . . . .	30.6	20.8	8.3	0.6	0.9***
Ascorbic Acid (mg) . . . . .	35	13	14	2	6***

\* 4567 Diet Records of 3 to 7 days each.

\*\* Food mixtures from a combination of local and imported foods.

\*\*\* Mostly from local foods.

people made many of their purchases at a trader-operated store across the river and Kasigluk at the nearby village of Nunapit-chuk. In summer and fall people from both of these villages purchased significant amounts at Bethel where their summer fish camps were located.

The yearly cash income of most Eskimo and Athapascan Indian families is low by present day U. S. standards. Because of this, they are not yet in a position to afford a suitable combination of purchased foods, either in kind or amount, which would assure them an adequate diet by modern dietary standards. Therefore, they will probably be dependent for some time to come on locally available game, wildfowl, fish, berry and vegetable products to assure them adequate intakes of most food nutrients.

Most of the imported foods now shipped into the villages fall into four major categories: dairy products, fats, grain products and sugar. These food groups contribute significantly (one-half or more of the per capita intake) to the calorie, fat, carbohydrate, calcium and thiamine intake (Tables 77 and 78).

A comparison of the estimated weekly per capita consumption of selected food groups by Alaskan Eskimos and Athapascan Indians with that of another group of U. S. citizens is presented in Table 79. Our figures are derived from the mean per capita caloric intake from ten selected food groups as found on 4567 diet records, both sexes and all age groups inclusive. From these data it was found that Alaskan Eskimos and Indians average about the same amount of meat in their diet as in the U. S. reference diet but in addition to the meat they consumed a nearly equal amount of fish. They also consumed more than twice as much bread and cereal foods. Their egg, milk, fruit, vegetable and sugar consumption, however, was considerably lower. Nutritionally, the Eskimo and Indian diet differed in that their protein intake was significantly higher but their calories, calcium, vitamin A and ascorbic acid contents were lower than in the reference diet (Table 79).

#### **PREPARATION AND USE OF "IMPORTED" FOODS IN THE DAILY DIETARY**

Just as the number of imported food items commonly used by Alaskan Eskimos and Indians is limited, so are the methods used in preparing them.

##### **Cereals:**

Usually quick-cooking types of cereal are preferred since they require a minimum of time and fuel for their preparation.

Breakfast cereals, however, are not commonly used. They are used more frequently in villages such as Allakaket and Shishmaref—where past teachers or missionaries taught and encouraged their use. Sugar and milk (usually canned evaporated milk) are generally added to cereals at serving time.

Rice is the most popular of the cereal foods. It is used most frequently as a soup ingredient but occasionally as a dessert with raisins, sugar and milk added.

Macaroni is another common soup ingredient, usually in combination with rice. It is rarely served as a separate food item.

The most common bread products used are crackers, chiefly Pilot Crackers (occasionally Jersey Creams or other crackers), homemade yeast and sourdough breads and hotcakes. White enriched flour is used in their preparation. At one village the women had been taught to use whole wheat flour usually half and half with white flour. Yeast breads are made according to the usual recipes, occasionally with milk but most often not. Milk is seldom used in the preparation of sourdough bread and hotcakes. Non-fat milk solids have only recently been made available at a few of the villages and are rarely used in bread-making.

The typical sourdough bread and biscuits are made from a thin batter of flour and water to which salt and soda may be added.

TABLE 79.—COMPARISON: CONSUMPTION OF SELECTED FOOD GROUPS  
USDA<sup>(43)</sup> and Alaskan Eskimos and Indians  
In Pounds

Food Groups	Estimated Weekly Consumption	
	USDA Per Person Annual Income \$1250	Alaskan Eskimos and Indians*
Meat . . . . .	3.8	6.5-(Meat 3.4) (Fish 3.1)
Egg . . . . .	1.0	0.1
Milk and Milk Equivalent . . . . .	8.4	3.4
Butter/Margarine . . . . .	0.4	0.3
Fruit . . . . .	5.9	2.2
Vegetables . . . . .	5.6	} 1.6
Potatoes . . . . .	2.0	
Sugar . . . . .	1.3	0.6
Bread/Cereals . . . . .	1.7	4.3

\* 4567 Diet Records of 3 to 7 days each.

After thorough mixing, the batter is set in a warm area and allowed to sour. When ready to use, fat (lard or hydrogenated fat) and flour are added to make a stiff dough. The mixture is kneaded thoroughly and either baked in a hot oven or cooked in a greased skillet. At Kasigluk during the fall whitefish run, freshly rendered oil and fresh roe may be added to the dough which is fried in fresh whitefish oil. This makes a particularly delicious bread.

In many villages, especially in the Kuskokwim River Basin, baking powder is used in place of soda as the leavening agent. Most of the baking powder contains a calcium salt.

Sourdough batter is also used to make hotcakes, usually once a day in the morning. Those left over from breakfast are set aside and are available for eating whenever wanted. Margarine, butter or hydrogenated fat is sometimes used as a spread but most often they are eaten plain. Occasionally syrup or sugar may be used but this is not a common practice.

Either bread, hotcakes or crackers are served at every meal, frequently with a fat spread for the bread. Occasionally commercial jams are used but not often as they are quite expensive. Other breadstuffs such as soda crackers, saltines, graham crackers and cookies are seldom included except in the diet of the school child, usually in the school lunch program.

Commercial cake mixes are used to some extent in all villages, more so in the North than the Southwest, but cake is an occasional treat only, usually for birthday celebrations.

#### **Fats:**

The most common kinds of imported fats used are butter, margarine, hydrogenated fat, lard and edible beef tallow. Cottonseed and corn oil were rarely used at the Eskimo study villages and occasionally at the Indian villages. Peanut butter was occasionally included in the home dietary, but more frequently as a spread for bread and crackers at the school lunch. Bacon was a minor item on these diets and was used more frequently by Indians than by Eskimos. Hydrogenated fat and lard are used as a bread ingredient and some times as a spread, but butter and margarine are more commonly used for this purpose. Because margarine is cheaper it is rapidly replacing butter on Eskimo and Indian diets, and hydrogenated fat is replacing lard.

Hydrogenated fat and edible beef tallow are used in the preparation of the Eskimo "agutuk" mixtures, the tallow replacing the caribou and reindeer back fat formerly used. About 60 percent of the fat in the overall Eskimo and Indian diet comes from imported sources (Table 78).

### **Soup Additives:**

Soups are a favorite dish particularly among the Eskimos. In addition to the rice and macaroni already mentioned, salt and onions (either fresh or dehydrated) are used as flavorings and occasionally other foods may be added. At Akiak, for example, where most families have a small garden plot, potatoes are added. Rutabagas or turnips are sometimes added but by only a few families.

For the most part gardens are limited to a few of the river villages where soil and other growing conditions are suitable and summer fishing activities can be carried on nearby. Gardens are possible in many other selected areas but they are not common, chiefly, because the people do not have sufficient time for caring for them. Summer fishing activities which demand much time and effort are, of necessity, given preference. Only limited supplies of fresh onions and potatoes are imported.

Occasionally a variety of imported food items may be added to soups either when a family has a little extra money to spend, or more often as an extender during periods of temporary local food shortage. The following are combinations added to the basic fish or meat cooking broth which appeared on some family diets:

- 1) Potatoes, canned tomatoes, rice and macaroni
- 2) Rice, macaroni, mixed dry vegetables and canned turnip greens
- 3) Canned beef stew, rice, macaroni and noodles
- 4) Canned spaghetti in tomato sauce and oatmeal
- 5) Canned corned beef, rice and macaroni
- 6) Canned corned beef hash, edible beef tallow and rice
- 7) Canned soup (pea, tomato, vegetable and vegetable-beef were the most popular), rice and macaroni
- 8) Macaroni, evaporated milk and catsup
- 9) Canned tomato soup, canned spaghetti in tomato sauce and bacon
- 10) Canned roast beef, canned beef and gravy or canned meat balls in combination with spaghetti in tomato sauce or canned soup
- 11) Canned hamburger, vegetable shortening and canned kidney beans

Cost limits the use of most of these canned products.

### **Vegetables:**

Canned and fresh vegetables were not commonly found on Eskimo diets. Although used more frequently by Indians they

were still limited. A favorite of the Indians appeared to be cream style corn.

#### **Fruits:**

Fruits of all kinds are well liked but cost also limits their use. Among the canned varieties peaches appeared to be the favorite and among the fresh varieties, oranges and apples. In areas where the summer supply boat can dock, such as at Bethel, the Eskimo will pay a very fancy price for almost any kind of fresh fruit available. Recently watermelons have been shipped in. When Eskimos and Indians have had a good wage work year, they may have some fresh fruit airfreighted in, particularly at Christmas-time. Since this procedure is very expensive it is not done often nor are large amounts ordered. Imported fresh fruits are a very minor item in the overall yearly dietary since they are available for such a limited time.

#### **Milk:**

Canned evaporated milk is the most common milk product used in the villages. It is used in various dilutions for the preparation of infant formulas, as a beverage for other children and as a cereal and coffee additive for most family members. Occasionally it is used in the preparation of American style ice cream (in winter time) and puddings, the latter mostly at the Indian villages.

An occasional village may still have a limited supply of condensed milk shipped in but its use is confined to trappers who find it more convenient than transporting evaporated milk in extremely cold weather.

Dry milk products were not used to any extent at any of the villages except at Allakaket where they used dried whole milk.

#### **Sugar:**

Sugar is a popular additive to reconstituted evaporated milk in children's diets. It is also used on cereal and fresh berries, in coffee (occasionally in tea) and as an ingredient in the preparation of the berry and other agutuk mixtures used by the Eskimo. The estimated per capita intake of sugar products in the overall Alaskan Eskimo and Indian diet appears to be about half that found in the general U. S. diet (Table 78). The Alaskan figure, however, includes only that from candy and pop and sugar used as a separate and measurable food item. That used in the preparation of the agutuks, cakes, puddings, breads and other homemade mixtures as well as that from canned fruit was not measured separately.

The total carbohydrate calories from fruit products, including the berry agutuk mixtures, however, accounted for less than 9 percent of the total intake of this nutrient on these diets (Table 80).

In general, imported foods provided most of the carbohydrate and calcium, well over half the calories, fat and thiamine, half the riboflavin, one-third of the ascorbic acid and niacin, two-fifths of the Vitamin A, one-fourth the iron, and one-sixth of the protein found in the overall Alaskan Eskimo and Indian diet (Table 78).

### EATING HABITS OF ALASKAN ESKIMOS AND INDIANS

The usual Eskimo and Indian pattern of eating consisted of three meals a day with an occasional evening snack. A few individuals may also have a mid-morning or mid-afternoon snack or both. Evening snacks are very common in a few villages, for example, at Shishmaref, but in most cases they are confined to "movie night" or evenings when other village-wide affairs are scheduled.

The time for serving meals is by no means exact. Breakfast may be eaten from about 9:30 AM to noon; lunches from noon to late afternoon, and dinners from about 6 PM to late in the evening.

Some regularity in eating—i.e. 3 meals a day—is now customary since the clock has become important in regulating many

TABLE 80.—COMPARISON: ESTIMATED DAILY CONSUMPTION OF SELECTED NUTRIENTS USDA<sup>(43)</sup> and Alaskan Eskimos and Indians Per Person Per Day

Nutrients	Estimated Daily Consumption	
	USDA Per Person Annual Income \$1250	Alaskan Eskimos and Indians*
Calories.....	3200	1999
Protein (gms).....	103	140
Calcium (gms).....	1.15	0.6
Thiamine (mgs).....	1.56	1.57
Vitamin A (I.U.).....	8540	5766
Ascorbic Acid (mgs).....	106	35

\* 4567 Diet Records of 3 to 7 days each.

villages activities. The store, the post office, the church and plane service to the village all have regular days and hours. From a review of the literature, it appears that in times past generally fewer than three daily meals were eaten, but this number increased during periods of plenty. Then, as now, meals were seldom served at specified times. Rather, the Eskimo and Indian ate when hungry or when hunting, fishing or traveling permitted.

Ray<sup>(44)</sup> reports from his observations made at Point Barrow in 1881 that "when food is at all scarce or while travelling they (the Eskimo) never eat but once a day, and it was a surprise to us to see them when on a journey, get out before daybreak and without a mouthful of food, make a journey of 30 to 40 miles before breaking fast; and they treated their dogs in the same manner, saying they travelled better when fed only at the end of the day's journey." This practice still persists under certain conditions, especially among the men who hunt seal and polar bear out on the sea ice in winter. The reason given is that one must be ever alert and watchful at such times and that a heavy meal or eating too much would dull the senses and encourage careless hunting behavior.

Weather permitting, hunters usually stay out on the ice during the total daylight hours. It is only after they return to their homes and have taken care of the dogs that they finally have a hearty meal. Hot food is always ready for them.

When women are actively engaged in hunting and fishing activities—and they have many such duties—they have little time for the usual housekeeping activities, including cooking and meal preparation. During the summer fish runs, for example, the women are entirely responsible for cutting the fish and preparing it for storage. In some areas, along the upper Kobuk River, for instance, they also have full responsibility for catching the fish as well. And during the winter months along certain coastal (Shishmaref) and river areas (Noatak) they have the major responsibility for gigging for fish through the ice holes. During these periods it is not unusual for the women to remain at their outside work for the entire day. Many take along a light lunch and possibly a thermos of hot tea or coffee.

Women have many other tasks to perform outside of the home—such as the butchering of seal, berry picking, gathering bird eggs and edible greens and roots, snaring ptarmigan, hunting muskrats and tanning hides. When they must engage in these tasks for long hours, they do as they did in the past—prepare a large pot of food just once a day. Other family members then help themselves whenever it is convenient. Women do, however,

prepare and serve meals at regular hours if their husbands are locally engaged in wage labor such as on a major construction job. This is an unusual occurrence in most villages.

The three-meal-a-day pattern is most commonly followed during the school year. However, the Eskimo and Indian of today still feel that there is no particular need for the family to eat together and they seldom do so. The principal meal of the day is usually served in the evening as was the custom in the past.

Although the clock and the calendar are regularly taken along to hunting and fishing camps, they are not used to regulate daily living activities, but rather to help keep them abreast of village activities, such as the arrival of the mail plane. If camp and village are located in close proximity, there may be considerable traffic back and forth to make store purchases and to meet incoming planes.

While at camp both men and women work long hours. The young children play around camp or out on the nearby tundra or beach, coming back to camp to eat when hungry and to sleep when tired. The older girls have most of the responsibility for the care of infants and toddlers and may also do much of the food preparation.

At the village level, the three-meal-a-day trend and living more or less by the clock has been hastened by a number of factors. The most important appear to be:

- 1) The increased number of men—Eskimo, Indian and Aleut—who obtain seasonal (mostly summer) wage employment in mines, on construction jobs and at canneries more or less regularly. During such employment the men work, sleep and eat at fairly regular and designated hours, often eating at company mess halls. The same pattern is also followed by members of the Alaska National Guard at the time they attend the annual encampment.

- 2) More and more Alaskan Eskimos and Indians have had hospital experience, especially for tuberculosis, some of them for extended periods of time. The "three-meal-a-day and snack program" is common at the hospital.

- 3) An ever increasing number of youngsters are leaving the village to attend boarding school where meals are also served at regular and specified times.

The "Kasgha" or "Kashim" is still in existence as the men's community house in some of the southwestern Eskimo villages, but it is no longer used as their working, sleeping and eating

quarters to the extent it was formerly<sup>(15,45)</sup>. Only occasional feasts are held there now and at these times, as before, the men and boys eat by themselves and have special dishes prepared for them by the women.

### **CHILDREN'S EATING HABITS**

During the school year children often prepare their own breakfasts before going to school, while the rest of the family still sleeps. This is not child neglect as we might interpret it in our culture, for it is still the custom to allow children to help themselves to whatever food is available and it is usually within their reach. But, like children the world over, they frequently sleep until the last possible moment and so do not have time for breakfast before going to school. When schools were first established in the villages, this was such a common occurrence and, since a hungry child is not usually attentive in the classroom, many of the early village teachers found it more desirable to serve a breakfast at school rather than a noontime lunch. This is still the custom in some villages.

Because school and home are so near in the villages, children often run home at mid-morning recess for a snack even though they may have eaten a hearty breakfast at school. They sometimes go home, so they say on inquiry "to eat 'native' food," but often as not they will eat a cold hotcake or a piece of sourdough or pilot bread. Then at noontime they may play during the entire lunch period and go home again at the afternoon recess for another snack.

At some villages, children may eat one or more of their meals at someone else's house, either that of a relative or possibly at a namesake's house.\*

For the most part, children still eat separately from the adults. For this and other reasons, it is often difficult for parents to observe them carefully, thus making children's diet records the most difficult to collect.

### **FOOD QUANTITIES EATEN**

Many early explorers, whalers and others gained the impression that Eskimos, in particular, habitually ate large amounts

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\* Many Eskimo children have two names. An American one which is their legal name and appears on birth and baptismal certificates, legal documents and the school roster, and an Eskimo name. If the child is named after a living person this establishes a very special and valued relationship and, in essence, the child has two homes.

of food, especially fat. This notion still persists, even though it has been refuted by careful observers since the early 1880's. Murdoch<sup>(46)</sup> stated, in regard to the Point Barrow Eskimo's consumption of fat that "the amount consumed, in most cases, is little, if any, greater than that eaten by civilized nations when we consider—they had no butter, cream, bacon, olive oil or lard."

Petroff<sup>(15)</sup> writing about the southwest or Kuskokwim Eskimo states that "as a rule the Eskimo are moderate eaters. In the morning, the wife or some other female relative brings to the husband, father or brother who has slept in the Kashga (men's community building) a kantag or wooden bowl with cold water, together with a piece of dried frozen or boiled fish weighing perhaps a pound. After breakfast the men follow their various pursuits of hunting and fishing and sometime in the afternoon, after indulging in a sweat bath, they partake of another piece of fish or meat of about the same weight, with the addition of a tid-bit of rotten fish (tipnuk) or spawn ----- An evening meal is frequently but not always partaken at home in the dwelling. The women and children always eat at home."

Jenness<sup>(47)</sup> states that in Arctic Alaska the principal meal, sometimes the only meal, was served in the evening. In his travels across Arctic America he found "that Eskimos often lived on fish and blubber, or on caribou and fish alone for weeks at a time." In one tent he visited the breakfast served consisted of "biscuits, 1/2 frozen fish apiece and strong tea. At the end of the day this same meal was repeated." He also found that children dined apart from their mothers but, he says, "that under normal conditions of food supply children were never hungry because as children they had the privilege of helping themselves to any food that lay within their reach and they exercised their privilege all day long." Petroff<sup>(15)</sup> also refers to the Eskimo indulgence of their children in regard to food. Gilder<sup>(37)</sup> forced by circumstances to spend the winter of 1878 in an Arctic Eskimo village, states that following a successful seal hunt, "that he who has the largest kettle or the biggest heart, when his own meal is ready, goes to the door of his igloo - - -, and calls out 'oyook, oyook', which means warm food, and all the men and boys gather in, each with a knife in his hand, and without further ceremony they fall to and devour what is placed before them." These oyooks according to Gilder "are merely festal occasions, though they might occur several times a day, and may happen any hour of the day or night when the Eskimos are assembled in villages and have plenty of food on hand." It is then, he says, that "they recompense themselves for starving in the past or in prospect."

C. L. Hooper<sup>(48)</sup>, captain of the Revenue ship the CORWIN, noted on his visit to the Arctic in 1881 (he had hired Eskimos working aboard ship) that, "the Eskimo bolt their food but do not appear to be heavy eaters—we offered them all they could eat many times and generally found they were satisfied with what would make an ordinary meal for a white man and often with less—they drink enormous quantities of water and while travelling (by dog sled) take up handfuls of snow to eat." He also observed Eskimos ashore and found them moderate eaters. Dr. Irving Rosse, M. D.<sup>(49)</sup>, physician aboard the CORWIN, in 1881, concurred in these observations.

It is understandable how the notion that Eskimos have large appetites gained credence. Most of the early trips made to the Arctic by whalers and others were during the summer months, a time of the year when most Eskimo people were either camped along specific coastal areas to hunt sea mammals or along the rivers to fish. Many of these observers were unaware that some of these people may well have been on short rations in the preceding late winter-early spring period. If such was the case, the Eskimo understandably might well have overindulged when suddenly confronted with plenty. He may also do so when an especially well-liked food, absent from his diet for a period, becomes available again. This occasionally happens today, as it did at Point Barrow in 1959. That year 15 baleen whale were caught after a three year period when none was obtained. The people did overindulge, especially in eating one of their favorite foods "baleen muktuk". As a consequence there was a run of patients with digestive upsets at the outpatient clinic of the Barrow USPHS Alaska Native Hospital<sup>(50)</sup>.

Similarly, a teacher<sup>(51)</sup> at another northern Eskimo village, reported that at the first fall caribou kill, the hunters ate fantastic amounts of meat. Caribou had not been on their diets for several months.

It should also be mentioned that in the past the diet was particularly low in carbohydrates because sources of this nutrient were chiefly limited to that provided by berries, greens and animal organs. Scott and Heller<sup>(52)</sup> estimated that the calories from carbohydrates in their past diet probably averaged about 5 to 6 percent and never higher than 11 percent of the total intake. The Indian diet was also low in carbohydrate. Therefore, meat and fish products had to supply most of their calories.

The present study has shown that while there is an extremely wide range in nutrient intakes from very low to very high for all age groups, except possibly infants under 2 years of

age, the mean daily intakes indicate that on the whole Eskimos and Indians are still moderate eaters. The mean caloric intake in 858 adult male diets was 2598, and in 1067 adult female diets 2167. These values are in fairly close agreement with those given by Rodahl<sup>(1)</sup>.

## **SERVING MEALS**

In most Indian and in many Eskimo homes meals are now served at a table. There are still some Eskimos, however, who prefer to sit on the floor around a square board, a piece of oilcloth or a low wooden platform upon which are assembled wooden trays or pots of prepared foods from which each person helps himself as long as the food lasts or until the appetite is satisfied.

## **EATING DISHES**

Many Eskimos still follow the old custom of using individual eating dishes and drinking cups which are used by the same person at every meal. Since a wide assortment of crockery, china, glass and plastic dishes of varying sizes and shapes are now in use, this practice was helpful in determining more accurately the size of servings.

In former times, eating dishes were made of wood, cups of bone, wood or whalebone, and spoons and ladles of wood, bone or sheep's horn<sup>(42)</sup>. Lantis<sup>(53)</sup> reports that on Nunivak Island eating dishes had special designs painted on them, some commemorating hunting achievements or possibly devised especially for a child by a relative. Only in museums can one see these early dishes, except for an occasional wooden bowl or Kantag. They, too, are becoming rare and only a few old men know how to make them. Wooden meat trays, however, are still made and used in many Eskimo homes; and wooden serving spoons of traditional village or family design are still made and used. (See illustration 23)

## **COOKING EQUIPMENT**

The most common cooking vessels of the past depended on location and trade affiliations, and include the above mentioned wooden bowls (in the mid and lower Yukon and adjacent tundra areas), birch bark baskets (in the northern birch-forest areas), stone containers, or crude pottery bowls made of local clay reinforced with ptarmigan feathers and animal blood. Since some of these containers could not be placed directly over the fire, water

was heated in them by repeatedly plunging red hot stones into the container until the desired temperature for cooking was reached and then adding the meat or fish and more hot rocks until the food was cooked to the right degree<sup>(54)</sup>.

Through continued contact with traders new types of cooking utensils were introduced. They became popular because they were often nonbreakable and could be placed directly over the fire. They could also be easily transported as the people made their seasonal rounds from camp site to camp site. The first such utensils, obtained from the Russians and the whalers, were of copper and light sheet iron, although discarded tin cans were also used.\* Eventually cast iron pots and pans were introduced and, in more recent times, aluminum cookware<sup>(41,42)</sup>.

Large cooking kettles are preferred by most Eskimo families as it is still customary to prepare most foods in quantities sufficient for several family meals. Every family also has a frying pan, usually one made of cast iron. While it is primarily used to cook sourdough hotcakes, it may also be used on occasion for frying meats, fishes, and potatoes, and for making fry bread. It is occasionally used as an oven-baking dish for sourdough bread. Most families also have an assortment of loaf baking pans and muffin tins for bread baking.

### **THE WOMAN'S KNIFE**

One of the most important utensils of the past which is still used by the Eskimo woman is the "woman's knife" or "ulu"<sup>(55)</sup>. The Eskimo woman uses it for butchering sea mammals; cutting meats and fish preparatory to drying them; and often as a table knife. The ulu has many uses outside the kitchen too. It is used in place of shears to cut hides into patterns for parkas and other types of clothing. In some of the southwest tundra villages, young girls use small ulus for cutting the grass to be used as insulating material in their boots or mukluks.

In the past, the ulu blade was made of stone or slate, and occasionally of jade (in the Kobuk-Kotzebue area). They are now made with tempered steel preferably that from old saw blades (See illustration 22).

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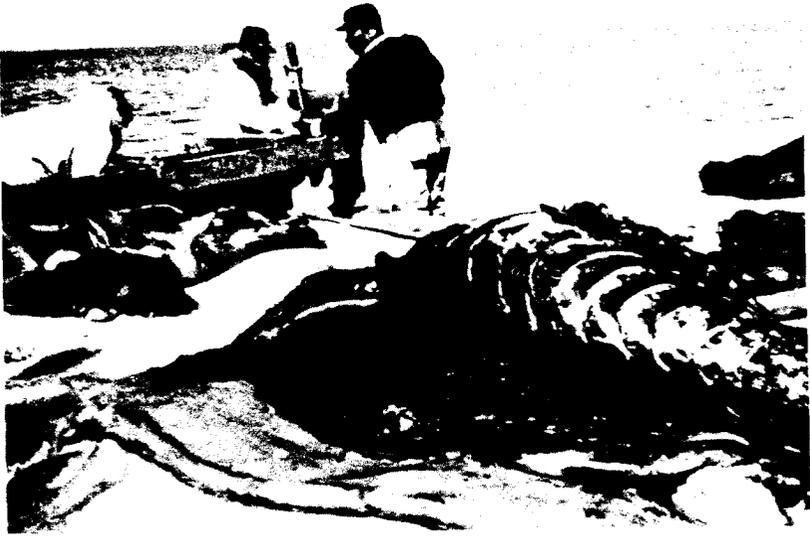
\* Whaling ships carried canned meat products.



Family gardens at Unalakleet, Eskimo village located on Norton Sound, Bering Sea.



Athapaskan Indian man and wife in front of log cabin home at Tetlin. Note "Yukon stove" used outdoors in summer.



**Ugruk catch, split and lying on shore ice ready for final butchering by women, Sealing camp, Shishmaref.**



**Eskimo woman (past 70 years of age) using the woman's knife or ulu, Sealing camp, Shishmaref.**



**Blowing up a seal poke to be used as a storage container for seal oil and other foods, Tununak, Nelson Island.**



**Eskimo woman scraping excess blubber from poke being prepared for storing food, Sealing camp, Shishmaref.**



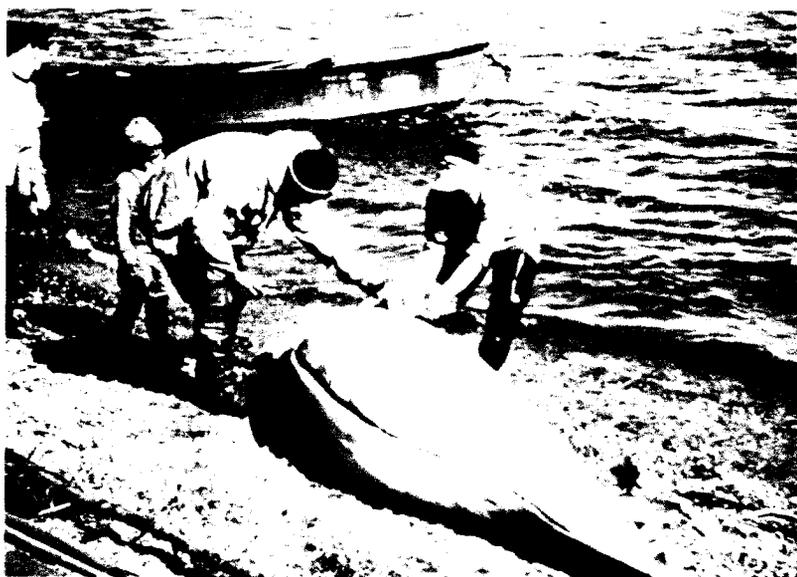
**Smearing seal blood on poke to make it impervious, Shishmaref.**



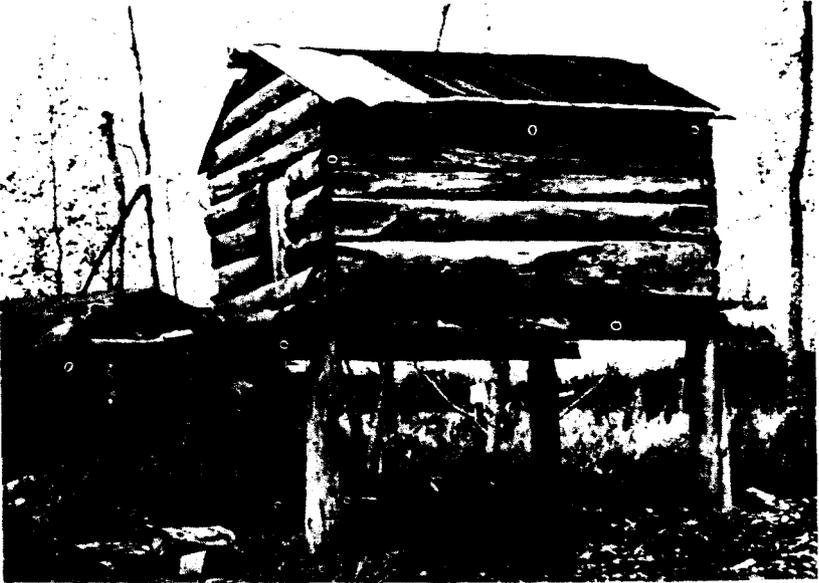
**Stuffing blubber into seal poke, Tununak, Nelson Island.**



**Walrus meat drying on racks, Gambell, St. Lawrence Island.**



**Butchering beluga whale on beach at Kotzebue.**



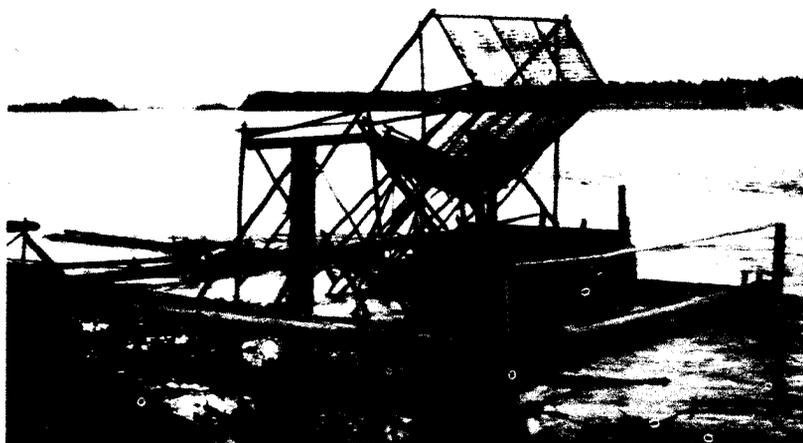
**Typical storage cache on stilts and sod house still in use, Akiak.**



**Preparing salmon for drying racks at summer fish camp on the Kobuk River.**



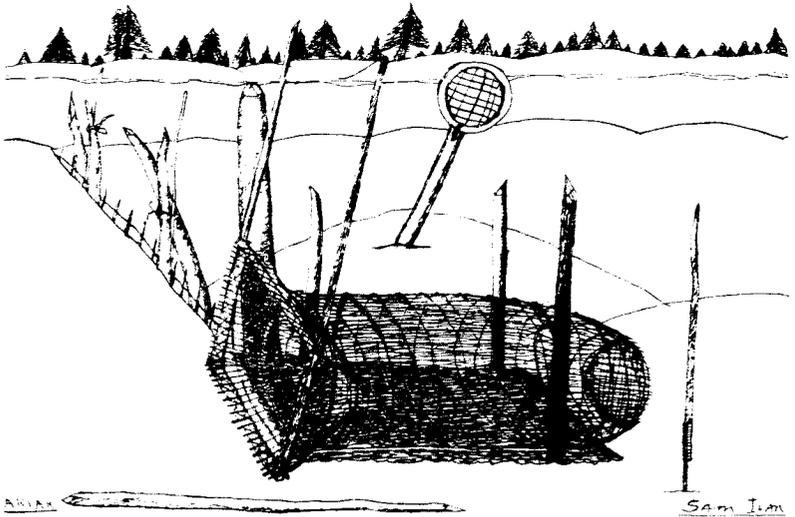
**Eskimo woman using ulu to prepare salmon for drying, Noatak.**



**Fish wheel used by Indians to catch salmon, Nenana River.**



Young Eskimo woman braiding strings of herring for drying, Tununak, Nelson Island.



Fish trap made of spruce root used under river ice for catching ling cod and other fish. (Drawing by Sam Ivan, Akiak Eskimo)



Dipping for needlefish through hole in the ice. Note pile of fish at right. Newtok.



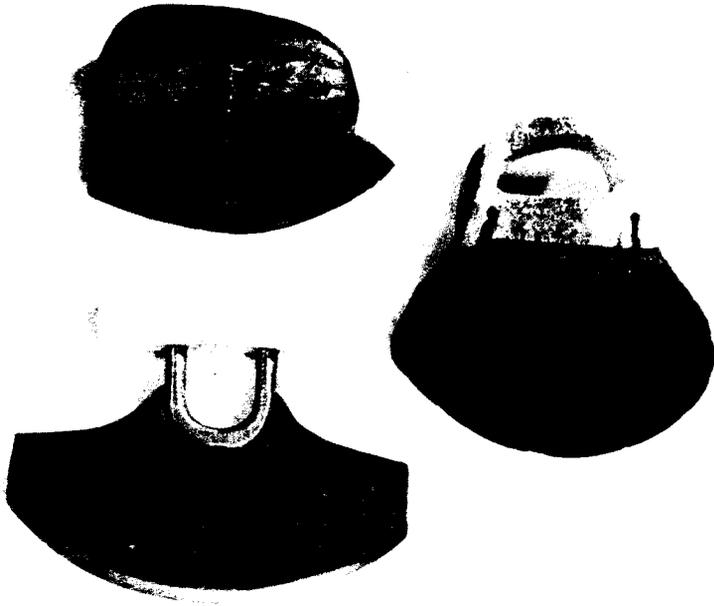
Removing ling cod from fish trap. Funnel is made of willow root, trap of chicken wire. Newtok.



**Woman fishing through river ice for whitefish and arctic trout, Noatak.**



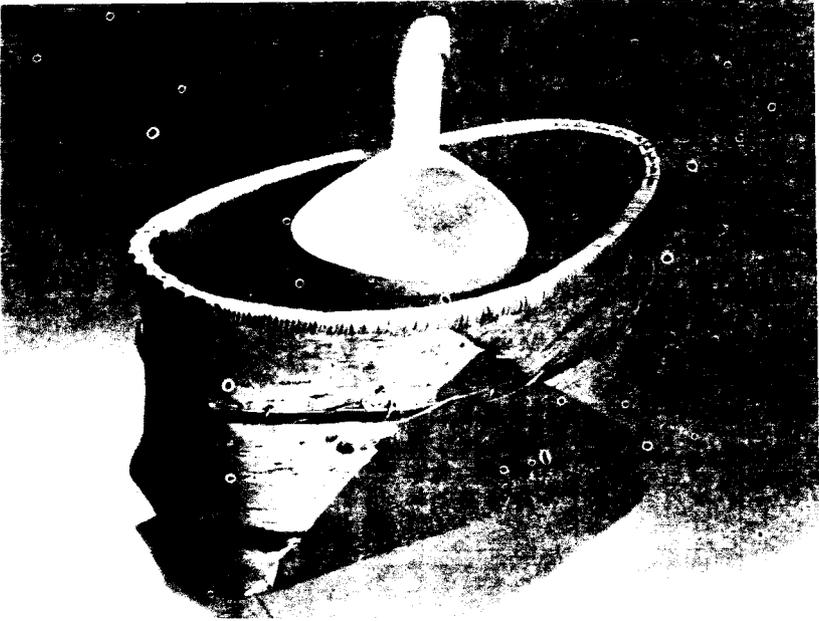
**Eskimo woman jigging for tom cod through ice, Norton Sound, Bering Sea.**



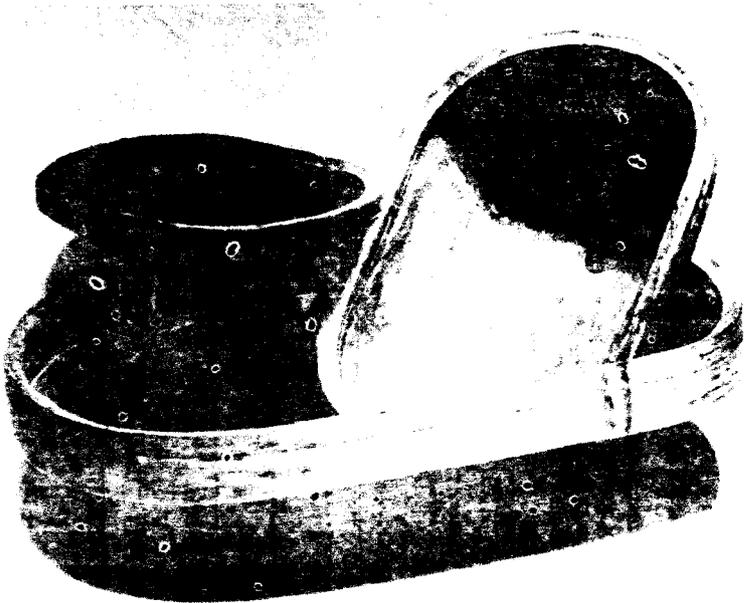
**Ulu, Eskimo woman's knife. At top and right, old type ulus with bone handles and slate blades; bottom, modern type with tempered steel blade, usually made from used saw blade.**



**Spoons, masher (for berries and greens) from Shishmaref, and meat tray from Savoonga, St. Lawrence Island. All carved from driftwood.**



Birchbark berry basket and wooden scoop carved from willow or spruce root. Shungnak.



Wooden serving or storage bowls made by both Eskimo and Athapaskan Indian men. Very few in existence now. Lower Yukon and Kuskakwim River area.