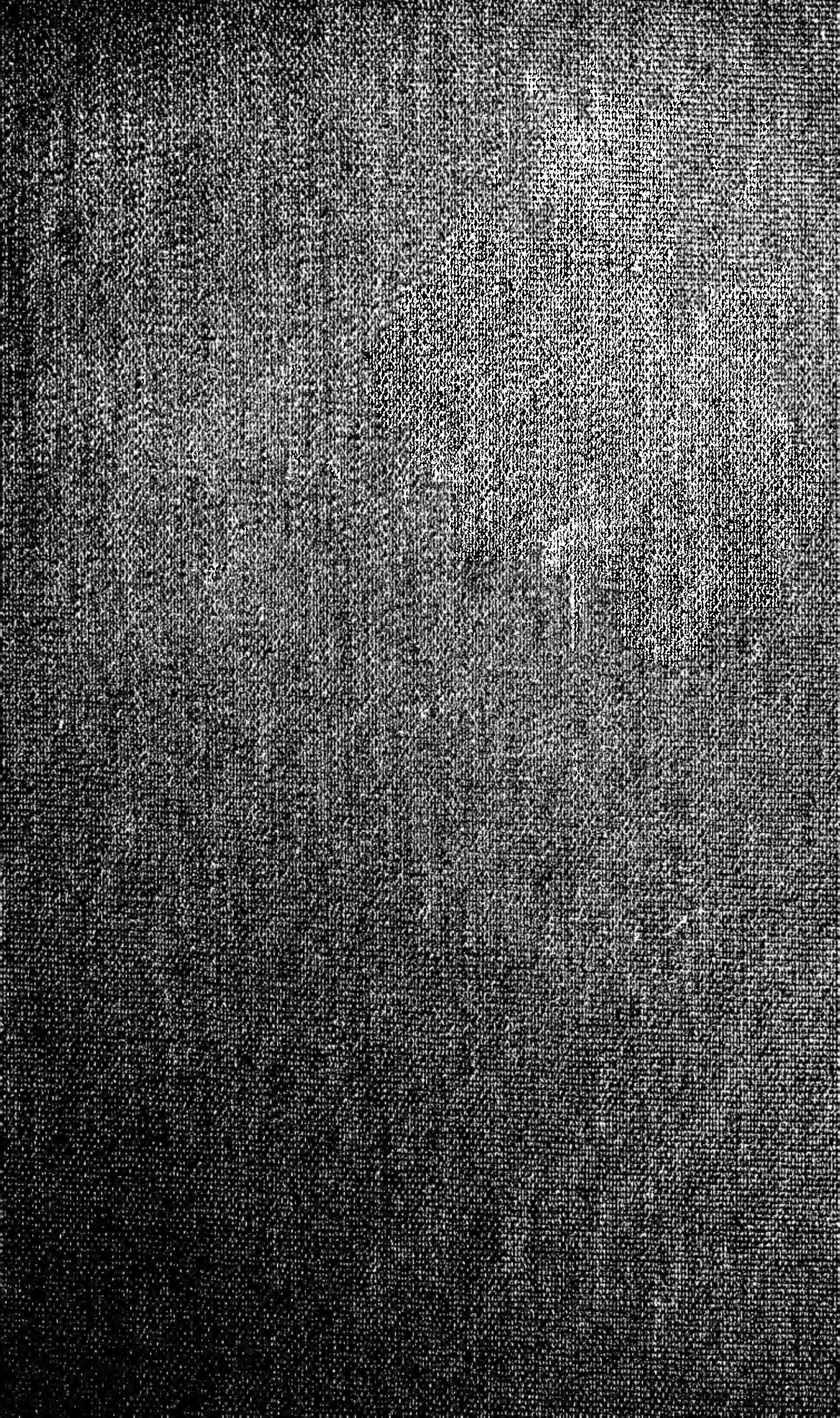

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Nunivak Island Eskimo (*Yuit*) Technology and Material Culture

James W. VanStone

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Langdon, E. J. M. 1979. Yagé among the Siona: Cultural patterns in visions, pp. 63–80. *In* Browman, D. L., and R. A. Schwarz, eds., Spirits, Shamans, and Stars. Mouton Publishers, The Hague, Netherlands.

Murra, J. 1946. The historic tribes of Ecuador, pp. 785–821. *In* Steward, J. H., ed., Handbook of South American Indians, Vol. 2, The Andean Civilizations. Bulletin 143, Bureau of American Ethnology, Smithsonian Institution, Washington, D.C.

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Nunivak Island Eskimo (*Yuit*) Technology and Material Culture

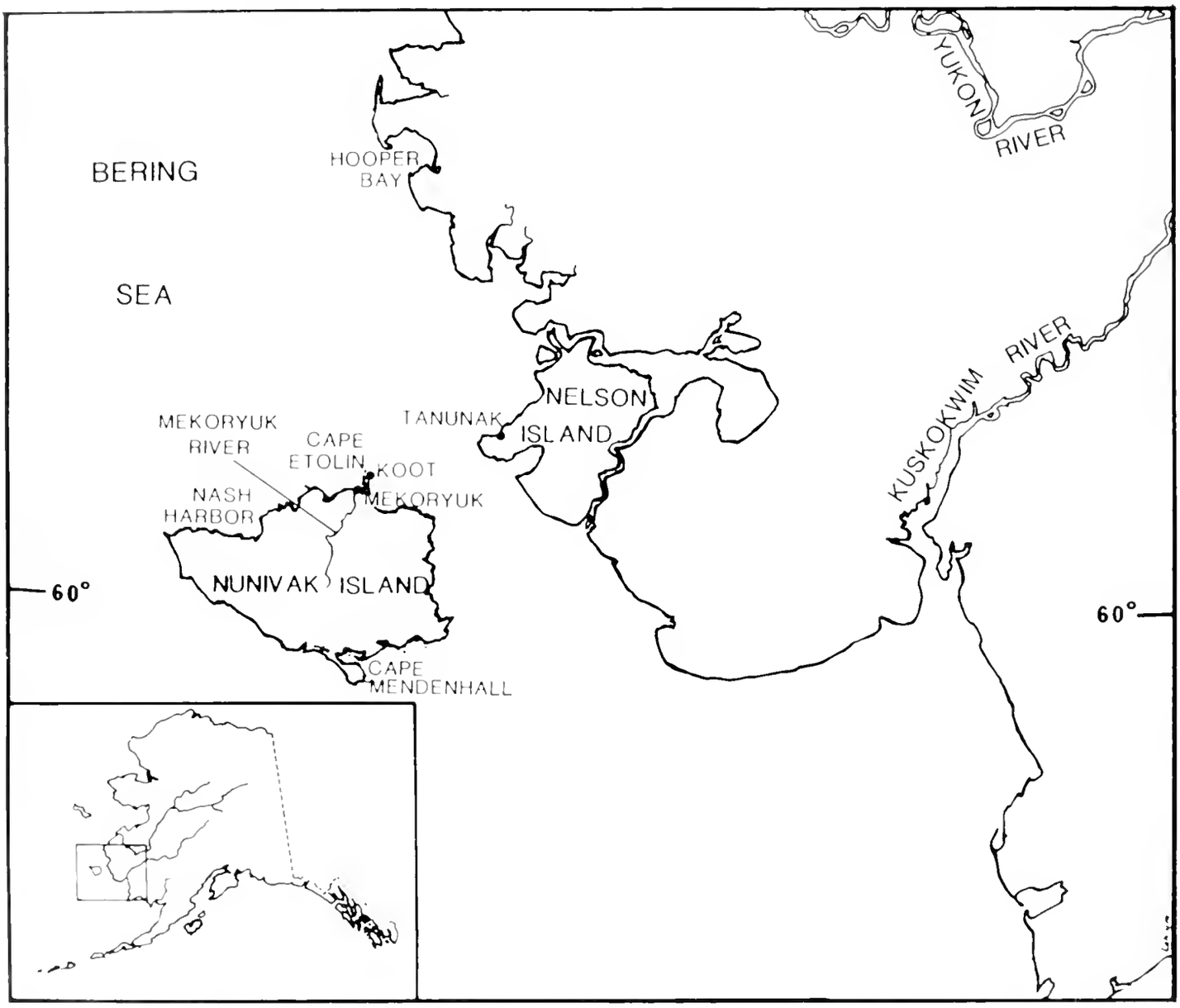

FIG. 1. Map of Nunivak Island and the adjacent mainland.

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In Memory of My Friend
Edward S. Rogers
(1923–1988)

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Nunivak Island Eskimo (*Yuit*) Technology and Material Culture

Abstract

During 1939–1940 Margaret Lantis lived for a year on Nunivak Island off the coast of west-central Alaska. Although the major purpose of her research was to record social organization, religion, and folklore, she also took extensive notes on technology and material culture. Lantis has published extensively on various aspects of Nunivaarmiut social culture but a projected study of material culture was never completed. The present account is based primarily on Lantis's field notes on Nunivaarmiut technology and material culture.

I. Introduction

In the late summer of 1819 as the Russian explorer Petr Korsakovskiy approached Kuskokwim Bay, he learned of the existence of a large island approximately 25 mi offshore from the vast, low-lying delta between the mouths of the Kuskokwim and Yukon rivers (fig. 1; Fedorova, 1973a, p. 8; 1973b, pp. 68–69). This was Nunivak Island, treeless and of volcanic origin, which averages some 650 ft above sea level. Its highest point, near the center of the island, is 1675 ft above sea level. The island extends east and west 56 mi, with a distance of 40 mi between the most northerly and southerly points. Despite having a rugged western shoreline, there are no terrain features that modify the island's subarctic, maritime climate. The surrounding Bering Sea moderates diurnal temperature variations, particularly when compared with the adjacent mainland, but the surrounding open sea results in heavy winter storms which sweep over the island and bring high windchill factors.

Nunivak Island is the home of the Nunivak Eskimo (Nunivaarmiut) and the only major offshore Bering Sea island inhabited by a Central Yupik-speaking people. Of the four main dialects spoken by the Yupik of western Alaska, that spoken on Nunivak is the most divergent (Woodbury, 1984; Jacobson, 1984; VanStone, ed., 1973, pp. 72–75; Hammerich, 1953). Nunivak Central Yupik is sometimes known as *cux*, from its cognate *yuk*, the word for person in Central Alaskan Yupik. Despite phonological differences, it is mutually intelligible with the mainland dialects (Woodbury, 1984, p. 52).

The historic Nunivaarmiut are believed to have been a displaced population of the Aglurmiut who, in the late 18th or early 19th century, were dispersed from their homeland on the mainland and settled in Bristol Bay and on Nunivak (Wrangell, 1970, p. 17; Zagoskin, 1967, p. 210; Russian-American Company Records, Communications Sent, vol. 3, no. 164, 4 May 1823; vol. 9, no. 460, 31 October 1832). These refugees, however, were not the original inhabitants of the island. Relatively restricted archaeological investigations in the 1960s indicate that what may have been the initial occupation was a Norton tradition manifestation, which Nowak (1982) has designated as the Duchikmiut phase, with early and late subphases dating respectively from 150 B.C. to A.D. 300 and A.D. 300 to 600. The Norton tradition materials, which have a strong maritime orientation but also include artifacts associated with caribou hunting, are closely related to cultural developments during a similar period on the coast of mainland western Alaska. Where differences occur, they may be the result of geographic isolation or simply reflect the limited amount of data. Recovered faunal material indicates that no major changes in the subsistence base occurred on the island from Norton times until European contact.

Whether Nunivak was occupied before the arrival of Norton peoples is not known. No evidence has been recovered, but archaeological excavations have been limited and some areas of the island have never been surveyed.

The Norton tradition was followed by a developed aspect of the Thule tradition (Mekoryuk River phase, A.D. 900–1375), with its extensive technology for sea and land mammal hunting, and a later Thule manifestation (Nash Harbor phase, A.D. 1500–1700), identified primarily on the basis of distinctive pottery forms (Nowak, 1986). It was presumably these people who inhabited Nunivak at the time of the Aglurmiut migration. Archaeological materials recovered from sites of the early historic period (VanStone, 1954, 1957) resemble ethnographic objects from the adjacent mainland described by E. W. Nelson (1899), suggesting an artifact assemblage similar to that described in this study.

Since its European discovery by Russian naval expeditions in the early 19th century, Nunivak Island has remained one of the most isolated areas in Alaska. The shallow water of Etolin Strait which separates the island from the mainland prevents the approach of larger vessels, and the constantly moving winter ice cannot be crossed on foot or by dog team in winter. Editions of the United States Coast Pilot as late as 1954 warn that the area should be approached with extreme caution (U.S. Coast and Geodetic Survey, 1955, pp. 526–529). Isolated from sustained European and American contact until relatively recent times, the Nunivaarmiut retained a larger part of their traditional culture longer than virtually any other group of Alaskan Eskimo. Nowhere else in Alaska, with the possible exception of adjacent Nelson Island, did the traditional or modified-traditional culture, both material and nonmaterial, survive into the period of modern ethnographic fieldwork.

In many ways, Nunivak Island was a place well suited for traditional Eskimo life: villages could be located on raised, well-drained land, there was an abundant supply of driftwood, and the climate was not extreme. Sea mammals, especially hair seals, and aquatic birds were plentiful, although land animals were scarce; a variety of fish species were exploited at most times of the year.

The European discovery of Nunivak took place in 1821 when two Russian naval expeditions visited the island. M. N. Vasilev, aboard the ship *Otkrytie* (Discovery), sighted the island on 11 July (OS). On going ashore, probably at some point along the north coast, he was told by the Eskimos he met that they had not previously been in direct contact with Europeans. Vasilev named the island for his ship but made no attempt to survey it. A second expedition, consisting of the brig *Golovnin* under the command of V. S. Khromchenko and the cutter *Baranov* commanded by A. K. Etolin, sighted the island just a few days later, Etolin on 28 July and Khromchenko in early August. The following summer Khromchenko and Etolin, now both aboard the *Golovnin,* visited the island for a second time, and a more thorough exploration was undertaken (VanStone, ed., 1973).

On 18 June 1822 the *Golovnin* approached the southern tip of Nunivak in the vicinity of Cape Mendenhall. Almost immediately a flotilla of 25 kayaks, some containing two people, approached the ship. Among the visitors was Ayagakak, identified as a "chief," to whom Etolin had given a silver medal the year before. Khromchenko described the Nunivaarmiut as having pierced noses and ears and wearing labrets decorated with beads acquired through trade with Kuskokwim Eskimos. The visitors were wearing fox and muskrat parkas sewn with the fur side out, over which they wore waterproof coats of sea mammal intestine. They offered the Russians white fox, red fox, caribou, and muskrat skins in exchange for hoop iron, "Aleut" hatchets, bangles, and beads.

Late in the afternoon of the same day, the *Golovnin* approached the settlement of "Chungalik" on the east coast of Cape Mendenhall, probably a summer camp at the tip of the cape (see Lantis, 1946, map 1, pp. 162–163). More Nunivaarmiut came out to the ship, including a man named Tammlokh who had received a bronze medal from Vasilev the preceding year. Khromchenko noted that the Eskimos from this village possessed some European artifacts, and traded a few fox skins of poor quality as well as bows and arrows for nails, hoop iron, and beads. The next morning (19 June) the trading, led by "Chief Ayagakak," continued, with bows, arrows, wooden vessels, and various ivory artifacts being exchanged for hoop iron and "wretched rusty nails."

In the afternoon the *Golovnin* dropped anchor near the village of "Chinik" at the tip of Cape Corwin, a summer settlement for the winter village of Paimiut, at one time the largest community on the east side of the island (Lantis, 1946, map 1, p. 162). Khromchenko and Etolin went ashore and immediately the Eskimos began trading in the same manner as when they visited the ship. While this trading was in progress, Khromchenko walked some distance from the settlement toward the in-

terior of the island and noted a fresh grave on which lay various weapons of war and a kayak frame. Later he visited several houses in Chinik which he noted were exactly like those of the "Aglegmiut" (Aglurmiut) in Bristol Bay. In one of these dwellings he found an iron adze with a "brand" on it but was unable to determine its origin from the marking; the owner said he had obtained it from the Kuskokwim Eskimos. Khromchenko also observed several cloth objects of Russian make, "hastily and poorly done," which were said to have come from the same source. The explorer surmised that the Kuskokwim Eskimos had obtained these items from Aleksandrovskiy Redoubt, the Russian-American Company's trading post, established in 1819, at the mouth of the Nushagak River.

In summing up his impressions of the Nunivaarmiut, Khromchenko noted that they were "completely like" the Aglurmiut, which is not surprising since they were, in part at least, a segment of that population group. Among the Nunivaarmiut, members of the expedition saw four men and four women who had recently come from the adjacent mainland, and Khromchenko encountered an old man who drew him a map of the mainland coast in the sand.

Near midday on 21 June the *Golovnin* once more got under sail, and that evening cast anchor off the mouth of a river just north of Chinik to fill the empty water barrels. On the morning of the 22nd the *Golovnin* left the coast of Nunivak Island, and by mid-afternoon had reached Cape Vancouver. Thus the first exploration of the island had lasted only four days and was confined to the southeast coast (VanStone, ed., 1973, pp. 58–65). Although Khromchenko's description of the Nunivaarmiut is brief, it does contain information concerning their interest in trade at this early date and their contacts with the mainland.

Apparently drawing on the journals of Vasilev, Khromchenko, and Etolin for 1821 and 1822, the Russian historian P. A. Tikhmenev wrote as follows concerning the inhabitants of Nunivak:

> On Nunivok [*sic*] live up to four hundred inhabitants of both sexes in sixteen known villages. . . . The natives on Nunivok Island do not do much hunting and trapping of fur-bearing animals although there are many foxes on this island. Their main occupation is hunting large hair seals, or makliaki [bearded seals], walrus, and caribou, and catching fish offshore. These islanders lead a sedentary life, coming to the mainland in the summer to barter sealskin blubber, and a few foxes for tobacco from the local natives. They know very little about cloth and do not use it for clothing (Tikhmenev, 1978, p. 437).

Subsequent to the explorations of Khromchenko and Etolin, Nunivak Island was infrequently visited by Europeans until the summer of 1874, when William H. Dall surveyed its northeastern extremity and made preliminary observations concerning the geology of the region. Dall's comments on the native inhabitants were limited, but he did note that they were excellent ivory carvers (Dall, 1877a, p. 18; 1896, p. 814). Ivan Petroff estimated the island's population as 400 in 1880 (Petroff, 1884, p. 16), a figure apparently obtained from Tikhmenev (1978, p. 437), since there is no record that he visited Nunivak when taking the Alaska federal census during the summer of that year.

On 11 June 1880 the U.S. Revenue-Steamer *Corwin*, under Captain C. L. Hooper, anchored in a "good harbor" on the northwest side of the island because of heavy ice conditions. The crew camped near an Eskimo settlement, presumably in the Nash Harbor region, and greatly frightened the inhabitants who apparently had seen few if any white men before. The next day they succeeded in capturing a man, three women, and three children who feared they were to be killed. A present of some tobacco seemed to reassure them and the man was persuaded to come on board the *Corwin* where he was impressed by a looking glass and expressed distaste when offered brandy. Hooper noted that the settlement consisted of 10 sod-covered houses, all connected by a subterranean passage. "They were arranged in a circle, with a common entrance to the covered way in the centre. From the main passage short ones branched off to each house. These afford the only means of entering the houses." The *Corwin* left Nunivak on the morning of 13 June (Hooper, 1881, p. 5).

It was not until 1891 that detailed observations were made on Nunivak Island and its inhabitants. In August of that year the *Corwin* landed Petroff, the enumerator for the 11th federal census, in the Cape Mendenhall area for the purpose of determining the number of villages on the island and enumerating their inhabitants. Petroff told of purchasing a dilapidated kayak at one of the small villages on Cape Mendenhall and starting out on his trip around the island. He noted "a number of

villages" between Cape Mendenhall and the northeast corner of the island, but was particularly impressed with the village of Koot, located across the bay from the present village of Mekoryuk. "Koot is the point of communication with the mainland and the commercial center of the island. Its trade, with its ramifications over the island, is in the hands of a single man, who buys up all the maklak [bearded seal] skins and lines, and oil secured by the people in excess of their immediate wants, giving in return the cargo of a single skin boat brought over once a year by the Eskimo trader from Dununuk [Tanunuk on Nelson Island]." Petroff was at Koot when the boat arrived and he mentioned that

> The cargo consisted of 10 bales of leaf tobacco of 50 pounds each, 8 sacks of flour of 50 pounds each, 3 pieces of faded calico print (of about 48 yards each), 100 half-pound cans of powder, 200 pounds of bar lead, 1 tin of matches, and 1 small box containing a few cheap knives, needles, thread, thimbles, and fine-toothed combs.

When the boat left the island it contained "280 tanned maklak hides, a dozen fox and land otter skins, 39 pairs of walrus tusks (from 5 to 7 pounds to each tusk), about 100 gallons of oil in bladders, and several thousand fathoms of seal and walrus line" (Porter, 1893, pp. 114–115).

The reference to land otter in this account is surprising as there have been none on the island in the 20th century, and no other evidence that they were present in the late 19th century. Petroff was particularly impressed by the meager prices paid to the Nunivaarmiut in exchange for local products. He mentioned one young man from the south end of the island who left a pair of very large walrus tusks with the trader in March and in August received in payment two squares of matches (100 in each square), one pound of leaf tobacco worth 30¢, and two needles (Porter, 1893, p. 115).

Petroff seems to have covered most of the island; he listed nine villages and a few small settlements with a total population of 559, of which considerably more than half were concentrated along the north coast. He noted that at the time of his visit most of the people were away at fish camps at the mouths of streams and up small lagoons (Porter, 1893, pp. 6, 112, 114). It is probable that the winter population was concentrated in fewer villages. Edward Curtis, who visited the island in 1927, noted that the people of Cape Etolin, who wintered at Mekoryuk, occupied five camps during spring seal hunting and summer fishing (Curtis, 1930, p. 6).

In 1939–1940 Margaret Lantis, with the aid of informants, obtained the names and locations of 13 winter villages and 17 seasonal camps. At the time of her fieldwork only seven winter settlements were occupied, the most important of which were Mekoryuk (figs. 2–3), on the northeast side of the island on a point of land west of Cape Etolin (Fitzhugh & Kaplan, 1982, pp. 2–3), and Nash Harbor, some 35 mi farther west along the north coast (fig. 4; Fitzhugh & Kaplan, 1982, pp. 4–5). The seasonal camps, which were often small, were returned to year after year. Like the winter villages, they had semi-subterranean houses, storehouses, and *qasgiqs* or ceremonial houses. The Nunivaarmiut did not use tents, so the term "camp" is somewhat misleading (Lantis, 1946, map 1, p. 162). A seasonal settlement at or near the village of Koot mentioned by Petroff and occupied at the time of spring seal hunting is shown in Figure 5. In 1970 Mekoryuk was the only permanent, year-round settlement.

The first reliable census figure for the island, obtained in 1940, was 218, less than half the total enumerated by Petroff in 1891. Although Nunivak was protected to some extent from the epidemics that ravaged southwest Alaska in the late 19th and early 20th centuries, this decline seems to have been due primarily to inadequate medical services (Lantis, 1946, pp. 156, 162; 1984, pp. 112–113).

The subsistence cycle of the Nunivaarmiut in 1939–1940 has been described in considerable detail by Lantis (1946, pp. 171–181), and is briefly summarized here. It should be kept in mind, however, that the cycle was never the same each year, as weather conditions varied considerably. Kayak hunting, for example, could be greatly affected by the amount and thickness of the sea ice in the spring and fall.

Seal hunting was the most important subsistence activity and was highly ritualized. Except for occasional animals taken in midwinter or during the summer, all seals were caught in spring by hunters in kayaks or in the fall with nets set under the ice before it became too thick. Walrus were also hunted from kayaks and a few beluga were taken, either with harpoons or in nets set for seals.

The principal summer fishing technique involved the construction of stone weirs in small rivers. At the opening of the weir a large rectangular trap was set (see fig. 28). Large salmon were harpooned and in winter fish were speared through

holes in the ice on a river or bay. Dried and frozen seal meat and fish were stored in large quantities, and seal oil was preserved in "pokes" (oil bags) made of whole sealskins. More plant food was utilized than might be expected. Berries and greens were collected for current use and frozen for later consumption.

Birds were a valuable resource for the Nunivaarmiut; Stettenheim (1954) obtained the native names for 47 species. Although birds were taken for food, the skins of some species were more important since warm parkas could be constructed from them. Birds were taken with nets on the cliff rookeries or with multipronged bird spears on open water. Early in the 20th century the only species of land animals were arctic foxes and ermines; the caribou mentioned in the previously quoted passage from Tikhmenev had been exterminated in the 1870s or 1880s, as were the few wolves. Petroff (Porter, 1893, p. 114) believed that the Nunivaarmiut had exterminated the caribou soon after the introduction of firearms.

Regarding outside influences on local technology, shipwrecks on the island in the latter part of the 19th and early 20th centuries brought scarce hardware and examples of ship construction (Lantis, 1960, p. 13). Beached whales may have held whaling harpoons and, by local account, made their finders prosperous through the distribution of food. Around 1900 a small store was established by a Euro-American, but after killing three people in separate incidents, he and his partner left. No other outside trader lived on the island until 1920. A local Nash Harbor man, who later became "chief" of the island, conducted trade with the Northern Commercial Company store at St. Michael even after the new trader arrived. The latter, of Russian-Eskimo ancestry from the Shaktoolik area, brought his wife and 100 reindeer. The deer and store were owned by a non-native trader and reindeer-breeding family at Nome. The increasing herds provided a good new resource, but the Nunivaarmiut had to buy the animals with labor, local products, or money.

Although considerably isolated by their island environment, the Nunivaarmiut maintained contacts with the adjacent mainland that can be documented from the earliest historic times. It will be recalled that Khromchenko believed the trade goods he observed had been acquired through trade with Kuskokwim Eskimos. He also met Eskimos who had recently come from the mainland. Petroff's comments concerning mainland contacts and trade are also explicit. In 1946 Lantis interviewed "Daniel," described as the oldest man on the island, whose memory extended back into the 1870s and possibly the 1860s. He recalled a calm day during his childhood when many kayaks came to the island from the mainland beyond Nelson Island. Daniel's father told him that some of the visitors were his relatives. The old man also remembered many people coming from the mouth of the Kuskokwim to villages on the south side of the island, and messengers being sent to Nelson Island to invite participants to a Messenger Feast (Lantis, 1960, pp. 5, 16–17).

In a recent article Fienup-Riordan (1984) has pointed out that the traditional Yupik Eskimos were divided residentially into "a number of politically and economically self-sufficient village groups" (p. 70). For the purpose of fulfilling other cultural necessities these groups were united into "regional confederations" through extensive social and ceremonial exchanges. The Nunivaarmiut were one such confederation, consisting of the various settlements on the island. Relations between regional confederations could be both negative and positive. Negative relations involved interregional hostilities, which are well documented for the Yupik Eskimo in the late prehistoric and early historic periods. At the same time, positive interregional relations in the form of trading partnerships and exchange marriages also existed, and constituted forms of alliance between members of different regional confederations.

Oral history recounts the origin of the Nunivaarmiut from the offspring of a Nelson Island woman and her dog husband (Lantis, 1946, p. 267; Fienup-Riordan, 1983, pp. 236–238). Kinship was recognized with both the Qaluyaarmiut (Nelson Island) and Askinakmiut (Hooper Bay). Hunters and traders from these two areas who came to Nunivak Island in the mid- and late 19th century, usually to hunt in times of shortage, were greeted with mixed feelings. Certain obligations were recognized as being due to kinsmen, but there was also resentment. Relations between the Nunivaarmiut and both the Kusquqvaqmiut and the Kuigpagmiut (lower Yukon) seem to have been characterized primarily by hostility (Fienup-Riordan, 1984, p. 92). Under differing circumstances through time, it is clear that the Nunivaarmiut consistently maintained relations with people from the adjacent mainland that involved ceremonial exchange and trade.

In 1934 the U.S. Biological Survey brought 34 muskoxen from Greenland to Nunivak in an effort to reestablish the species in Alaska. Because the

animals were federally protected, and since the Nunivaarmiut were afraid of them, they added nothing to the local economy until 40 years later, when Nunivak women learned to make fine items of clothing from the underwool of the muskox (Lantis, 1984, p. 212). Also in the 1930s biologists brought 10 caribou to improve the reindeer.

In 1924 a Euro-American teacher and his wife were established at Nash Harbor by the U.S. Bureau of Education, followed a few years later by Eskimo teachers from the Bering Strait area. In 1936–1937 an Eskimo missionary, like the trader also from Norton Sound, brought his family to Mekoryuk, where he established an Evangelical Covenant Church. In 1939 the reindeer and store were purchased by the federal government and a new school was built at Mekoryuk by the Bureau of Indian Affairs, thus concentrating the island's only store, church, and school in one place. Each brought new ways of making and using material things as well as new attitudes and values. (For the remarkable changes between 1940 and 1980, see Lantis, 1984, pp. 210–212.)

Because of its insular position and the resulting special nature of its flora and fauna, Nunivak Island attracted the attention of scientists in several fields of natural history. Beginning with the visit of William H. Dall in 1874, a number of fieldworkers carried out research on the island. Between 1927 and 1938, several botanists made plant collections, but their visits were short, frequently lasting no more than a single day. The first ornithologist to visit the island was Cyril Guy Harold, who collected birds for the California Academy of Sciences between 30 June and 6 November 1927 (Swarth, 1934). Considerable research relating to the reindeer and muskox herds was undertaken in the 1930s, particularly by L. J. Palmer, a biologist in charge of the Reindeer Experiment Station then located in Fairbanks.

Anthropological interest in Nunivak Island dates from the work of Dall, although his observations were brief and his ethnographic collection, now in the National Museum of Natural History, very small (Dall, 1877b). In the summer of 1905 George Byron Gordon of the University Museum in Philadelphia (then called the Free Museum of Science and Art) visited the island, apparently for about two weeks, during a journey along the Bering Sea coast, but his published account contains virtually no information on the inhabitants (Gordon, 1906, p. 72, pls. XIII–XIV).

It was not until 1927, however, that anthropologists came for an extended period. On 21 June of that year, Henry B. Collins, Jr. of the Bureau of American Ethnology and T. Dale Stewart of the U.S. National Museum landed at Nash Harbor. They took measurements and made physiological observations on the Eskimos in that settlement and then explored the western end of the island on foot, collecting bones and ethnographic material from several deserted villages and at Nash Harbor. They then moved to Cape Etolin where they continued their work, leaving the island in August (Collins, 1928). Their measurements of 180 living Eskimos and 178 skulls were published by Aleš Hrdlička (1930, pp. 238–253; 1943, pp. 201–217); their ethnographic collection is in the National Museum of Natural History. Collins made a brief film on various aspects of Nunivaarmiut life, entitled *Eskimo Children*, for the Encyclopaedia Britannica. As previously noted, Edward S. Curtis also visited the island in 1927 and wrote the first ethnographic account of the Nunivaarmiut (Curtis, 1930). Ten years later, in 1936–1937, the German ethnographer Hans Himmelheber collected myths, tales, and other ethnographic data on Nunivak and also made a psychological and ethnographic study of contemporary art and artists (Himmelheber, 1938, 1951, 1980).

Margaret Lantis lived on Nunivak Island for a year (1939–1940) after having spent a year (1933–1934) on Atka Island in the Aleutians, fieldwork for which she believed she was ill-prepared. As a graduate student at the University of California, Berkeley, she read extensively in the available literature on Eskimos, wishing to visit Alaska again, better prepared. In 1939 Henry B. Collins, Jr. recommended Nunivak Island as the most promising location for an ethnographic study. The island was relatively isolated at that time and the inhabitants still possessed what might be called a functioning East Bering Sea culture. In her publications she has expressed her appreciation to Collins and to the Nunivaarmiut for a productive and very pleasant, interesting, and satisfying year on the island.

Lantis recalled that for five months during the winter of 1939–1940 there was no mail delivered to the island, but the well-established trader Paul Ivanof and his family, who had assisted previous researchers, the missionary Jacob Kenick and family, and the new teachers Dale and Mary Stewart, as well as the Nunivaarmiut, provided good company. Donald Baker, with only local schooling, proved to be an intelligent and helpful inter-

preter. Formal interviewing was conducted in the homes of Mekoryuk residents, except for a short visit to Nash Harbor.

The initial purpose of Lantis's research was to record social organization, religion, and folklore. Although lacking training in technology, the considerable amount of meticulous craftsmanship which she observed daily led her to begin describing, measuring, and drawing objects of material culture. The initial year of fieldwork on Nunivak was financed by the Penrose Fund of the American Philosophical Society and by the University of California, Berkeley. Lantis returned to the island for special studies at Mekoryuk in 1946, 1955, and 1961, emphasizing in particular the individual development of children. Her monograph on social culture (1946) has long been regarded as a major contribution to our knowledge of the Eskimos of southwest Alaska. A long article (1953) and a monograph (1960) devoted to the psychodynamics of Nunivak society and a report on community politics (1972) have been published, but a projected study of material culture was never completed. The present account is based primarily on Lantis's field notes on Nunivaarmiut material culture.

II. Sea Hunting

Seal hunting was the most important subsistence activity of the Nunivaarmiut. Spotted seals, bearded seals, harbor seals, and, rarely, sea lions were taken throughout much of the year. Hunting at seal breathing holes in midwinter was, by the 1920s, no longer practiced. By other methods, as many as 600 seals might be caught by the hunters, even in a poor year (Lantis, 1946, p. 173). It is safe to note that nowhere else in western Alaska was sea hunting technology as highly developed as on Nunivak Island.

The most elaborate form of seal hunting was that carried out from a kayak. A man could hunt alone in his kayak, but usually two or three men hunted together. The kayak could be used at all times of the year; in winter it was carried out to the edge of the ice whenever an open lead was sighted. This did not occur frequently, however. Also few seals were harvested when the water was ice-free in summer.

Spring seal hunting was the most important and was highly ritualized (Curtis, 1930, pp. 15–16; Lantis, 1946, pp. 193–195). In preparation for the hunt all equipment was cleaned and made as nearly white as possible. Kayaks were covered with bleached sealskins; later, when canvas replaced skins, the boats were painted white. Hunting hats were painted white and the hunters wore white parka covers. This color served to disguise the hunter among ice floes and also pleased the seals, which were believed to like cleanliness (Lantis, 1946, pp. 172, 184, 194, 205).

Small seals were hunted with light sealing harpoons and harpoon darts, each thrown with the aid of a throwing board. Harpoon heads were likely to have closed or partly closed sockets with single, bifurcated, or trifurcated spurs (figs. 6–7, 75) and slate or metal blades. Flattened, conical wooden covers protected the points when not in use (Curtis, 1930, p. 24). The shaft was light and thin, but the socket piece was heavy and often carved at the distal end to represent an animal (fig. 8; Nelson, 1899, p. 137, pl. LIV, 7). Nelson (1899, pp. 323–324, fig. 111) described and illustrated an ivory socket piece from Nunivak carved to represent a land otter. The muzzle is rounded with circular perforations for the eyes. The mouth and nostrils are outlined by incised lines, and there are incised lines and circle dots on the sides.

A harpoon dart had an ivory socket piece with a wedge-shaped tang. It was somewhat lighter than a sealing harpoon and the end of the shaft was sometimes feathered. Harpoon dart heads of ivory or antler were usually symmetrically barbed, with centrally located round or oval line holes, sharp shoulders, and conical tangs (fig. 9, right; Dall, 1877b, opp. p. 77). An asymmetrically barbed dart head was recovered from a late prehistoric site on the island (VanStone, 1957, p. 110, pl. 3–4).

Both the sealing harpoon and the harpoon dart had a small bladder float with an antler or ivory mouthpiece (fig. 70, bottom; VanStone, 1957, pl. 1, 5) attached to the shaft (figs. 10–11; Nelson, 1899, p. 137, pl. LIV, 1). A strong hunter could throw a light harpoon dart more than 200 ft with the aid of a throwing board (fig. 12; Nelson, 1899, p. 155, fig. 43, 8; Kaplan & Barsness, 1986, p. 125, no. 86). For the most efficient throw, the arm was brought directly forward in a high arc and straight down, the harpoon being released when the back of the hand came uppermost.

If several kayakers were hunting in the spring ice and a seal was sighted, the oldest hunter pursued the animal, since it was easier to approach the quarry with a single boat. If there was no ice

it was more difficult to kill a seal, and a free-for-all dash after the animal by all hunters ensued. The hunters struck the water with their paddles frequently to make the seal dive so that it would soon be out of breath and exhausted. If two men harpooned the same small seal, the older man could claim ownership. A bearded seal, however, was divided equally.

When a hunter returned home, he carefully wound his harpoon line around the outside of a hollow log to dry, being certain that there were no twists that would crack as the line dried. It could then be slipped off the log onto the kayak line holder without rewinding. A harpoon line was usually in sections joined by line attachers (figs. 13, 70, top; Nelson, 1899, p. 143, pl. LVIb, 8; Fitzhugh & Kaplan, 1982, p. 76, no. 53) so that it could be taken apart.

Since Nunivak kayaks were large and roomy, small seals were placed inside the vessel after they were killed and, therefore, no buttons or toggles were necessary to fasten a line through the animal's mouth for towing. Sometimes a small hook through the upper lip was used for towing if the kayak was already loaded, a technique said to have been borrowed in recent times from the mainland Eskimos. Bearded seals were too large to be placed in the kayak and had to be towed with a sealskin line.

An important part of hunting gear was the characteristic hat worn by Nunivak hunters in their kayaks. The hat was worn only after a seal was sighted. In making a hunting hat, a large root at the base of a driftwood spruce log was used. It was split lengthwise into thin boards and one of these was carved with an adze to an approximate semilunar shape, as thin as possible. Then holes were bored along the straight edge before the board was bent. Roots were put through the holes and the board placed in hot, damp moss. It was then worked with the teeth and hands while hot, and bent until the two halves of the straight edge met. Two antler strips, often decorated with geometric designs, were placed across the back to reinforce the joint. Holes were bored alongside the antler sections, which were tied onto the hat with roots. The two edges just met and did not overlap, and were stitched up the back with root. Two sealskin straps were attached to the hat in such a manner that one was fastened under the chin and the other across the chin under the lower lip.

The decorations on wooden hats, images of animal spirits regarded as amulets, were handed down from father to son and represented family spirits; they usually were carved from ivory, were flat rather than fully rounded, and were fastened on the sides with the animal's head down and the tail pointing toward the peak of the hat. Hats were painted with white clay; several blue lines were painted over the white, like contour lines, around the front and peak.

Although seals were usually hunted from kayaks, they occasionally were hunted in open water in spring from the edge of the ice or as they basked in the sun on the ice. For this type of hunting, a large harpoon was used without a throwing board. These were weapons with heavy shafts and socket pieces (fig. 72), and with ice picks at the proximal end providing additional weight; they could only be thrown when the hunter was near the seal. Since there was very little hunting at breathing holes, the specialized equipment used for this widespread method of hunting seals in winter is absent from the Nunivak technological inventory.

Seals were caught frequently in nets in the spring and especially in the late fall, when as many as 300 animals might be taken by this method in a single season (Lantis, 1946, p. 173). Such nets, made of seal- or walrus skin thongs cut around a skin in one continuous spiral, were uniformly 6 fathoms long and 17 meshes wide. The mesh width extended from the end of the middle finger to the wrist and the length was the same. Ivory, bone, or hardwood mesh gauges were cut to these measurements. Seal nets had large curved or round wooden floats and large flat rocks as sinkers. Sometimes the floats were carved in the likeness of a seal's head.

In the fall, before the coming of ice, seal nets were set with two kayaks 25–100 yd from shore (fig. 14). The shore end was set first and then the net was stretched out into the water. Four large stone anchors were fastened to the net with walrus hide line, and sometimes another large anchor stone was attached at the center of the net. The sinkers, approximately 3 yd apart, hung 4–7 ft above the bottom of the sea, far below the lower edge of the net. The upper edge of the net was about 1 ft beneath the surface of the water. Seals swim parallel to the shore and were usually caught at night. If they failed to drown in the net, they were dispatched with a club.

In winter the nets were set through three holes chopped in the ice, approximately 16 ft apart. The entire net was pushed through the center hole; then, with the aid of long poles, sections of the net were pulled to the other holes and fastened. Seals died under the ice because they could not reach the surface to breathe. They were pulled up through

the center hole. Sometimes as many as 20 seals were caught this way in the course of a winter. As in the early fall, the animals were taken mainly at night. Sea lions and belugas were occasionally caught in seal nets; the latter usually had to be speared or harpooned before they could be removed.

On Nunivak, seal nets were set in four locations. One of these, used only in the spring, was on the south side of the island. During the winter nets were set halfway between Mekoryuk and Nash Harbor. Curtis (1930, pp. 27–29) discussed seal nets and their placement in some detail.

Amulets made of ivory or wood, usually figures of animals, were frequently fastened to the nets. A hunter had a particular amulet because his father had given it to him or had instructed him to make it when he was a boy.

While hunting in spring, snow goggles of wood were worn to protect the eyes of the wearer from the glare of the sun on the snow and ice. The best ones had a slit for each eye (fig. 15). People who could not make good ones made a single long slit that extended across both eyes. A well-made central notch which fitted over the nose was considered important since a good fit was essential if the goggles were to be effective. Eyeshades consisting of a short wooden visor, not bent but carved to shape, and a sealskin strap that fitted around the head, were worn at all times of the year (fig. 102). Eye protectors were usually painted white so that the hunter—specifically his black hair—would be less visible.

Walrus were plentiful in spring and were taken with a large, heavy harpoon by hunters traveling in kayaks. This weapon had an unfeathered shaft, a collared socket piece, finger rest (Nelson, 1899, p. 151, pl. LVIIb, 32), and long ice pick made from a split length of walrus tusk; it was used with a float and long line (Fitzhugh & Kaplan, 1982, p. 80, no. 60). The float was partly inflated before the hunter started out and then blown up fully when game was sighted. This type of harpoon was also used for bearded seals and beluga.

Walrus were most easily hunted as they slept on large ice floes far from shore. Hunters tried to kill the animals on the ice since they were difficult to retrieve if they managed to roll into the water. After a walrus was harpooned and the wounded animal was exhausted from dragging the float, the hunters paddled alongside and struck it with a lance having a detachable head (fig. 6, left; Nelson, 1899, pp. 146–147, pl. LVb, 1–2; Curtis, 1930, p. 24; Fitzhugh & Kaplan, 1982, p. 73, no. 49). This head remained in the animal while the hunter quickly fitted another one to the shaft and repeated the blow until the animal was dead. Both lance and harpoon heads were frequently marked to designate ownership by individuals or lineages (Lantis, 1946, p. 242; Fitzhugh & Kaplan, 1982, pp. 85–86). An even heavier thrusting spear was used when a large seal or walrus was dead or dying. This heavy spear was thrust into the animal to pull it toward the kayak. Wound plugs were not used. The dead walrus was suspended between four kayaks with rawhide lines and taken to shore for butchering (Curtis, 1930, p. 31).

Hunters seldom hunted alone, as a walrus is capable of surfacing under a kayak and upsetting it. Walrus were occasionally encountered on the shore in summer or on solid shore ice in the fall and were killed with a club or a thrusting spear. If a dead animal was found by a hunter on the beach, he summoned someone to help him cut it up and they divided the meat and ivory equally.

Sea lions, most common on the south side of the island, were sometimes harpooned in summer in open water. Belugas were seldom seen on the north and east sides of Nunivak because the water there is too shallow. These areas, however, have been the locations of villages in the 20th century.

The three-pronged bird spear was used from a kayak for seabirds such as murres, migrating eider ducks, and cormorants, especially when they were moulting and could not rise from the water. These unfeathered spears had a long ivory point symmetrically barbed on both sides. Set in the shaft below the point were three ivory or antler prongs lashed in position with their barbed points extending outward to form a triangle, the barbs facing inward (fig. 16; Nelson, 1899, p. 151, pl. LIX, 4). The wooden shaft kept the spear afloat. Although the center prong might impale the bird, the purpose of the spear was to catch the head or body between the prongs where it was held by the barbs (Curtis, 1930, p. 20).

Another type of bird spear had a much longer barbed point, and the three prongs were located on the shaft near the midpoint of the weapon. Such a spear from Nunivak described and illustrated by Nelson (1899, p. 152, pl. LIX, 8) has a bone point triangular in cross section and 22 inches long. The points on the shaft are barbed along their inner edges. The proximal end of the shaft is not feathered. These spears were thrown with the aid of a throwing board somewhat longer than those used with a sealing harpoon.

The bow and blunt arrows, generally associated

with hunting birds on land, were occasionally used from a kayak, in which case no float or line was attached to the arrow.

III. Land Hunting

Traditionally, caribou were the most important land animal hunted by the Nunivaarmiut. Once plentiful on the island, these animals died out about 100 years ago. In the 1930s large piles of caribou skulls and antlers could still be seen on the mountainsides in the interior of the island (Curtis, 1930, p. 32). Although, as previously noted, Petroff (Porter, 1893, p. 114) attributed extermination of the herds to slaughter by local people newly equipped with firearms, the Nunivaarmiut believed that mainland Eskimos from the Yukon-Kuskokwim Delta were responsible for depletion of the herds. They came to the island to hunt and often took only the skins, leaving the meat to rot.

Caribou were hunted following the spring seal hunt and also in winter. In summer the hunter crawled along the ground in order to get close enough to a sleeping herd for a shot with a bow and arrow. He tried to hit the animal just behind the shoulder. He had to be especially quiet because it was believed that a species of small bird often chirped and awakened the herd. A hunter never disguised himself with a caribou head or antlers. Curtis (1930, p. 32) described a summer hunt involving a number of hunters. The best marksmen stalked to windward and concealed themselves while the others, working leeward of the herd, stampeded the animals past the hidden hunters who rose up and often were able to kill a large number. The front quarters of the kill were divided by the marksmen and the stampeders shared the hind quarters.

In winter the hunter approached the herd on a kayak sled pulled by a woman. When they were close to the herd and it began to stampede, he would shoot with his bow and arrow from the sled. According to Curtis (1930, p. 32), hunters first located a herd and attempted to approach as close as possible. Then, wrapped in their parkas, they dug themselves into the snow. When the herd was close, the hunters rose up and loosed their arrows.

Although caribou were never driven into surrounds as reindeer were in more recent times, Curtis (1930, pp. 32–33) described a brush enclosure into which one or more animals were driven to be caught in snares of thick sea lion hide which secured the animals around the antlers or neck. Pits were also dug in the snow into which an animal might stumble without being driven by a hunter.

Women never hunted caribou, but in spring, after the arrival of sandpipers, they went out to pick up fawns that had died during the winter.

Bows and arrows were the only weapons used in hunting caribou. There were two types of bows: composite sinew-backed and plain sinew-backed. Both types were 5–6 ft in length, made of spruce, and used in the same manner. Bows of both types were constructed by first heating the wood in moist moss surrounded by hot stones and then placing it in a wooden frame lashed down with roots until it acquired the desired shape (Curtis, 1930, p. 27).

The plain sinew-backed bow consisted of a single curved piece of wood with two flattened cables of braided caribou sinew along the back, sometimes held in place by multiple cross lashings (Nelson, 1899, p. 156, pl. LX, 4). The composite type was double-curved, the curves being fitted with triangular blocks of ivory as reinforcement. These ivory blocks were lashed to the shaft with sinew, some strands of which also served as cross-lashing to hold the backing in place. In the center of the bow on the outer surface was an ivory strip flattened on the inner surface and grooved on the outer to receive the cable; it was intended to strengthen the weapon (Nelson, 1899, p. 156, pl. LX, 7). The single curve bow with very little sinew backing was considered suitable for war, while the heavier, composite bow was used for caribou hunting. Nunivak bows did not have as much curvature as those used on Seward Peninsula. Bow strings were of sealskin, the hair being sweated off rather than scraped. Ivory sinew twisters like those illustrated by Nelson (1899, fig. 30) were unknown, a narrow wooden stick serving the purpose instead.

The typical arrow for caribou hunting was approximately 30 inches in length with three split feathers fastened to the proximal end. The veins of the feathers lay against the shaft and were fastened at both ends with sinew. Feathers helped to rotate the arrow during flight. There were many kinds of arrowheads, but a common form used for hunting caribou was made of antler and had a blade slit, a single barb, and a sharp or sloping shoulder with a plain conical tang (fig. 17; Nelson, 1899, p. 158, pl. LXIa, 10; Fitzhugh & Kaplan, 1982, p. 106, no. 100). Bladeless arrowheads usually had multiple barbs along one side (Dall, 1877b,

opp. p. 76; Nelson, 1899, p. 158, pl. LXIa, 8; Nowak, 1970, fig. 31). The tang of an arrowhead fitted into a hole in the distal end of the shaft and was held in place with resin and sinew wrapping. Slate blades were triangular in shape, often with a concave base, and were centrally grooved to aid in hafting (VanStone, 1957, p. 102, pl. 1, 6).

A short, stubby arrowhead, used for caribou hunting and in warfare, was barbed along one side and had a tang like a harpoon head with a closed socket (fig. 18). For this type of point, the arrow shaft tapered at the distal end and fitted directly into the socket of the head which was attached to the shaft with a section of braided grass. When the animal or person was hit, the string broke and the point pulled loose, gradually working further and further into the wound.

Birds on inland lakes and marshes were also hunted with bows and arrows. Bird arrows either had blunt points (VanStone, 1957, p. 107, pl. 3, 7), three barbed side prongs, and a barbed center prong of antler or ivory, or a single multibarbed prong. A bird arrow point from Nunivak described and illustrated by Nelson (1899, p. 161, pl. LXIb, 1) has a conical point of wood with two iron crosspieces inserted at right angles through the head so that it will lodge in the bird's flesh and not pass through. This point is also illustrated by Fitzhugh and Kaplan (1982, p. 110, no. 109). Another point from Nunivak illustrated by Nelson (1899, p. 161, pl. LXIb, 16) is drilled for capping a shaft and has a crenelated tip. A different form, presumably of antler, flares toward the distal end and has a notched tang which tapers to one side (fig. 71); it was collected by Collins in 1927.

The Mediterranean arrow release was used, and whether the hunter put one, two, or three fingers on the bowstring below the arrow depended on the strength of the man and the size and strength of the bow. Crude wrist guards of seal intestine were occasionally used. Finger guards of sealskin were worn on the first two fingers.

Quivers were made of caribou or sealskin, usually with the fur scraped off. They were rectangular in shape, made of two pieces, and generally carried in the hand. If provided with a strap, a quiver was slung under the left arm with the cord over the right shoulder so that arrows, placed in the quiver with the points down, could be pulled out quickly with the right hand while hunting or fighting. Quivers were made by men, for if a woman did the sewing it was believed that the hunter would be unsuccessful.

Generally arrowheads and points were kept in the quiver rather than in special boxes or bags, although Nelson (1899, p. 162, pl. LXII, 5) described and illustrated a box for arrow or spear points from Nunivak. It is approximately 10 inches long with a narrow cover which fits onto a recessed ledge and has a projecting handle at one end. Outlines of the mouth, nostrils, and eyes of an unidentified animal are incised at the other.

Puffins nesting in spring on the cliffs along the west side of the island were taken with rectangular-shaped nets at the end of a long pole. These nets were approximately 6 ft in length, 40 meshes wide at the distal end, and attached to a wooden frame. The mesh, made of caribou sinew, was the width of two fingers. To capture the birds, a stake was driven in the ground near the edge of a cliff and a walrus hide rope was fastened around it so that the hunter could lower himself over the cliff. One man could handle the net. Birds caught were removed by hand, strangled, and fastened around the neck to a line that hung at the waist of the hunter. When many birds had been caught they were hauled to the top of the cliff by another hunter. Auklets were also taken in these nets in spring and eggs collected at the same time.

For capturing murres in the spring, a triangular net 21 ft wide at the bottom and 24 ft from top to bottom was used. The lower edge of the net was fastened to a thick pole and lowered over the edge of a cliff on two walrus skin lines to a hunter below. Using the pole, which was at right angles to him, the hunter rolled the net upward, trapping any murres nesting in the area covered. If a large number of birds was trapped, it was difficult to raise the net to the top of the cliff. These two types of nets were the only ones used for taking birds nesting on cliffs. A similar net is described by Curtis (1930, p. 29).

Snares were set on the cliffs for puffins. A sealskin cord was laid around the hole or recessed area which contained a puffin's nest. The snare-cord was fastened to a small stick set in a crack between rocks near the hole. A puffin feather with the quill end set in the mud around the hole held the snare in place. When a bird went in or out of the hole the feather would fall and the noose tighten. Similar snares but without the feather were set for nesting birds on the tundra. The end of the cord was fastened to a willow bush or other low-growing vegetation instead of to a stick. This type of simple snare was used exclusively. There were no spring snares of any kind.

With the exception of the arctic fox, furbearers were never plentiful on Nunivak Island in the past and in more recent times were almost nonexistent. For trapping foxes, a frame structure approximately 12 by 9 ft was constructed in the shape of a human habitation, with a side entrance or passageway and a skylight. Decaying meat or fish was placed in the structure as bait and the skylight was covered so that the animals could enter freely only through the side entrance. When the trapper discovered the footprints of many foxes entering and leaving the "house," he closed the side entrance and opened the skylight. The animals then had to jump down into the structure to get the bait and were unable to jump out again. The hunter jumped down into the "house" when he found foxes in it and killed them with a club. This kind of fox trap could also be made of snow in winter.

Another form of winter fox trap involved a hole approximately three ft in diameter dug into solid ice to form a bowl as large as an oil drum or larger. Bait was placed in the bottom and a sealskin cord was attached at one end to the bait and at the other to a heavy log that rested on the outer edge of the hole. When the fox took the bait and attempted to jump out, he pulled the log down upon himself and was either killed or severely injured.

Foxes could also be taken with a slip-noose snare of sealskin to which a long line was attached. The snare was placed around the opening of an animal's burrow. A hidden hunter held the end of the line and tightened the noose when a fox entered the burrow.

There were wolves on Nunivak when there were caribou, but these animals were rarely hunted even though their fur was useful for parka trim. The only method described for taking wolves involved the excavation of a deep hole in summer, along the sides of which water was poured in winter to provide a slippery, frozen surface. Bait was placed in the bottom of the hole, and when a wolf jumped in he was unable to gain a foothold on the slippery sides. Wolves were also occasionally shot with bow and arrow in winter if food was scarce.

Mink were said to have been trapped in the remote past, but informants were unable to recall the method. Curtis (1930, p. 33) described a method for taking mink in the water. A triangular brushwork fence was built across a stream and at the apex of the triangle a submerged wicker fish trap was set. The animal, in attempting to break through the fence, entered the trap and was drowned.

IV. Fishing

Fishing was an important subsistence activity for the Nunivaarmiut throughout the year. In winter tomcod were taken through holes in the ice, while spring brought the first herring and stickleback, then codfish and salmon trout. Fishing for dog and humpback salmon was the most important summer subsistence activity, but herring, sculpin, codfish, halibut, stickleback, salmon trout (Arctic charr or Dolly Varden), and flounder were also abundant during the summer months. In the fall silver salmon were running in early September; flounders were plentiful later in the month. In October there were tomcod and smelt, and by the first week in November the river at Mekoryuk was frozen hard enough for tomcod fishing through the ice (Lantis, 1946, pp. 174, 178–180).

Equipment required for tomcod fishing through the ice included a long handled ice pick, an ivory toothed saw, an ice scoop of wood or of antler with mesh made of baleen or split willow root (figs. 19–20; see Nelson, 1899, pl. LXVII, 8; VanStone, 1957, pp. 105, 107, pl. 2, 6), a wooden ladle, tomcod spear, basket, and a mat to lie on. Although men occasionally fished for tomcod through the ice, it was principally women's work. Stools were not used, the fisherwoman lying on the mat instead.

Good locations for tomcod fishing were situated within a mile of Mekoryuk and the use of a dog team was not required. A small windbreak of ice blocks was constructed, usually consisting of two large blocks not over 18 inches high set on edge and chinked with snow. The windbreak was also necessary to provide shade so that the fisherwoman could see into the dark water. The hole was made with an ivory or antler ice pick fastened to a long wooden shaft. The fisherwoman lay prone on her left side with the face right over the water (fig. 21; Lantis, 1946, p. 176, fig. 17).

The multipronged spear, usually with three or four prongs held in place by an ivory ring or ferule (fig. 22), resembles those from Nunivak described and illustrated by Nelson (1899, pp. 194–195, pl. LXVII, 1–2; VanStone, 1957, p. 109, pl. 3, 5, 8; Fitzhugh & Kaplan, 1982, p. 92, no. 80). It was twirled in the hole with the right hand, about 15 inches of the spear's total length projecting above the surface of the water. When a fish was observed, the spear was plunged downward by the fisherwoman, who often let go of the shaft. The spear

disappeared below the surface of the water but bobbed up immediately. This type of spear was described by Curtis (1930, pp. 25–26), who noted that it was also used in summer in shallow streams.

Normally only one tomcod was speared at a time, the fisherwoman pulling it out, flipping it in the general direction of her feet, and tossing it on the ice. It was not necessary for her to free the fish with her hands, so the spear was ready to use again almost immediately. Slush ice formed rapidly in the hole so she had to blow frequently into the hole to be sure of seeing the fish. Occasionally the ladle or scoop was used to remove slush ice.

Tomcod spears also were used in winter for sculpins on the south side of the island. To attract these fish a walrus bone lure was used, 3 inches long with tufts of red-dyed dog hairs fastened to its sides.

In winter flounder were speared with an implement similar to that used for tomcod, but with longer prongs. The shaft of this spear was approximately 7 ft in length and the prongs 11–12 inches.

Although spearing was the traditional means of taking tomcod on Nunivak, in recent times hook and line have been used (fig. 23). Multi-barbed tomcod hooks such as are illustrated by Nelson (1899, p. 177, pl. LXIX) and described as being used from the Yukon mouth to the Kuskokwim were not, however, the characteristic form on Nunivak. Instead, a small rectangular piece of ivory, approximately 2 inches long with a shallow groove at the distal end forming a barb, was employed for tomcod and other small fish; a bent bird rib might also serve as a barb. According to informants, fish-shaped lures, so common in other areas of Alaska, were never used on Nunivak for any kind of fishing, although Nelson (1899, pl. LXIX, 18) described and illustrated such a sinker-lure which is identified as from the island. Sealskin fishline was used for all types of hook and line fishing, and small wooden floats were occasionally attached to a line when fishing for salmon trout.

For taking codfish and halibut from a kayak, a hook with a large shank made of walrus rib or ivory—with an ivory, later iron, barb—was used with sealskin line and a flat stone sinker. The heavy shank served as a handle which the fisherman could grasp to pull the hook out. A cod hook from Nunivak described and illustrated by Fitzhugh and Kaplan (1982, p. 96, no. 85) has a shank of fossil ivory and a thick baleen leader loop lashed with sinew. Eyes and a mouth have been added to the shank to make it resemble a minnow. Hooks for codfish were also employed in pairs separated by a curved antler spreader. A round stone sinker hung in the center between the two hooks (fig. 24).

Nelson (1899, p. 178, pl. LXVIII, 13) described and illustrated a special smelt hook from Nunivak. It has a straight ivory shank which broadens at the distal end where a recurved copper hook is set and held in place with a wooden peg.

Tomcod and smelt are abundant in the Mekoryuk lagoon in autumn and were taken in gill nets. Since tomcod will not go into a net in daytime, fishing always took place at night. Nets made of sinew and sometimes as long as 15 fathoms were stretched between buoys in the lagoon on the incoming tide. A large grass basket could be filled in about two hours. Smelt were caught in dip nets with short handles similar to the one from Ikogmiut on the Yukon illustrated by Nelson (1899, pl. LXX, 16), except that on a Nunivak net the handle did not extend across its full diameter. The loop at the top was round and there was no stone sinker at the bottom.

Seines were employed to take tomcod and flounder in fall and herring in spring. The netting was made of two strands of sinew twisted rather than braided (fig. 25). Sinkers of antler or walrus rib similar to those illustrated by Nelson (1899, figs. 52–53, pp. 188–189) were used, along with wooden floats resembling those recovered from a late prehistoric site on the island (VanStone, 1957, p. 106, pl. 2, 9). However, Nunivak seines did not have spreaders as does the one in Nelson's illustration (1899, fig. 53, p. 189). The mesh measure for a herring seine was the width of the thumb; for a large salmon net it was the width of the first three fingers laid together.

In operating a seine, a woman remained on shore holding one end of the net while a man paddled from shore in his kayak and held the other end. He fastened his end to a wooden float anchored by a large stone on a line, and from his kayak was able to keep the net in position until it filled with fish. He then paddled slowly toward shore so that the fish were gradually brought into shallow water and then up onto the beach.

Informants reported that small hand nets for stickleback were sometimes made with needle and thread. In the manufacture of these nets no mesh gauge was used. The thread was pulled around the first finger to measure the mesh, thus making the mesh size equal to the circumference of the first finger.

A dip net with a triangular frame was used in

shallow water on the south side of the island for trout and other fish. Sections of bentwood, spliced and lashed with sealskin lashing, formed the frame. At the narrow end a short crosspiece was set in grooves in the frame. There was a narrow groove in the center of the crosspiece into which a handle approximately 6 ft in length was set. One frame observed was 4 ft 8 inches in length and 2 ft 10 inches wide with a net 4.5–5 ft deep. Formerly sinew netting was employed, but in more recent times the netting was made of nylon cord. Sealskin line was used to lash the netting to the frame. It was threaded through the edge of the net and tied over the frame (fig. 26).

The characteristic Eskimo forms of shuttles and mesh gauges (figs. 27, 76; Nelson, 1899, p. 191, pl. LXXII, 11; p. 192, pl. LXXIII, 19, 21) were used traditionally on Nunivak in the manufacture of netting. Reels of antler were similar to specimens illustrated by Nelson (1899, pl. LXXII, 22, 24).

Marlin spikes, used for tying and slipping meshes while making nets and for slipping meshes to enlarge or reduce their size, were usually made of ivory. One specimen seen was made from an old bird dart prong. It was approximately 4 inches in length and flattened at the proximal end. Nelson (1899, p. 193, fig. 56) described and illustrated a marlin spike from Nunivak used for slipping knots in large nets. It is round and the handle terminates in the figure of a murre's head.

Fish traps were of various sizes, but all were of the basket type and somewhat resembled specimens illustrated by Nelson (1899, pl. LXX, 13–14). The horizontal, half-round slats forming the sides were lashed to a spliced spiral frame with willow roots or tied to rectangular frames (fig. 28). The funnel-shaped section set in the frame at the open end was similarly lashed, although on some traps there was no spiral frame in this area, the slats being lashed under and over and then pulled tight together. Occasionally the funnel had a circular frame at the small end. Frequently there was a wicker door in the center of the trap on the top fastened to it with sinew. Fish could be removed through this door while the trap remained in place.

In preparing to set a trap, the fisherman put on a gut parka, belted and tied at the wrists so that water would not go up the sleeves, and also waterproof mukluks tied around the knees. A dam was constructed at low tide in a shallow area near the mouth of the Mekoryuk River. Gravel and loose stones were used in constructing the dam and an opening was left for the traps (fig. 29). Gravel was scooped from the bottom of the river so that a trap would sit low and be mostly under water even at low tide. Two traps were usually set in a single opening (fig. 30). Retainer logs were placed across the opening in the dam at the top and bottom. The fronts of the traps rested against these logs (fig. 31). Flat, heavy rocks were placed on top of the traps to prevent them from floating away (fig. 32). To lessen the opportunity for fish to escape, willow branches, with the leaves intact, were thrust into open spaces between the traps and the rock dam.

Salmon traps were inspected every two or three days. If they did not have doors, the traps had to be taken up and the funnel detached before the fish could be removed. A large salmon trap would measure approximately 6 ft in length and be as much as 2 ft square at the opening. A trap of this size could have as many as 40 slats. Traps for silver salmon were usually set in mid-August.

In addition to the fishing methods described above, the Nunivaarmiut occasionally employed a light harpoon with a multi-barbed point for taking salmon. When throwing this harpoon the fisherman was in a kneeling position holding the coiled line in his left hand. The point was inserted directly into the wooden shaft rather than into a socket piece.

Fish arrows were occasionally used, particularly by children. Two Nunivak arrows described and illustrated by Nelson (1899, p. 160, fig. 44, nos. 4–5; Fitzhugh & Kaplan, 1982, p. 93, no. 81) have a barbed center prong flanked by a lateral spur with two feathers at the proximal end of the shaft. A third arrow (Nelson, 1899, fig. 44, no. 7) has a pair of bone points barbed along their outer surfaces and is fletched with three feather vanes. With arrows it was usually necessary to shoot a fish twice before it was killed.

Smaller fish like tomcod and small flounders were twined together with two-strand bundles of grass, the fish being the warp and the bundles of dry grass the weft. Entrails of larger fish were pulled out through the gills or through a slit near the gills. Then a single strand of woven grass was pushed through the gills dorsoventrally and a second strand pulled around the outside of the fish at the neck and twisted over the first strand. This procedure was repeated for the next fish. When fish were strung in this manner, the string could be hung over a pole to dry without the individual fish sliding down against each other, thus impeding the drying process (fig. 33; Curtis, 1930, opp. p. 64).

All salmon and other fish caught through mid-

summer were split, cleaned, scored, and hung on racks to dry (fig. 34). Coarsely woven grass mats covered the drying fish to protect them from rain and blowflies (fig. 35; Curtis, 1930, opp. p. 34). Silver salmon and salmon trout, which run in the late summer and early fall, were frequently buried for the winter. No pits were dug, but a stone box was constructed for the fish. Stones were set on edge, filled in with gravel and cemented with clay to form the walls, and flat rocks laid across the top for a cover (Lantis, 1960, p. 6). Sometimes these rather crude, heaped-up caches were as much as 5 ft in height. Fish caches were not lined with leaves and grass, and greens and berries were never placed with the fish.

V. Transportation

Kayaks

The style of kayak used on Nunivak Island, with a hole or slit in the bow and projecting stern piece, was generally characteristic of southwest Alaska (figs. 36–37; Nelson, 1899, p. 219, pl. LXXIX, 1–2; Adney & Chapelle, 1964, p. 191, fig. 174, p. 193, fig. 175, p. 199, fig. 183; Fitzhugh & Kaplan, 1982, pp. 60–61, no. 27). Adney and Chapelle (1964, p. 198, fig. 180) provide a diagram showing the component construction features of a kayak collected on Nunivak in 1889, and they also illustrate a vessel with the cover partly removed obtained on the island by Petroff in 1894 (1964, p. 199, fig. 184).

A special feature of Nunivak kayaks was their size. They were the largest in southwest Alaska, usually measuring between 15 and 16 ft in length, and in recent times, when the umiak had virtually ceased to be used, kayaks were made bigger and heavier to carry more passengers and freight. Two people, when traveling in a kayak, sat back-to-back (Dumond, 1977, pp. 156–157); children were placed inside. Smaller kayaks were made for boys who usually received their first vessel when about 13 or 14 years of age. Girls and women did not own kayaks, but used them when they went to gather berries or dried grass. As late as 1946 there were still 34 kayaks in use on the island (Lantis, 1972, p. 44).

When a man was thinking about building a new kayak, he observed with care all the driftwood he gathered during the summer and set aside those pieces suitable for use in constructing the vessel. A kayak was never made all of one kind of wood, different parts requiring wood with different qualities. Having laid suitable wood aside, various frame pieces were carved during the winter and put away until early spring. To assemble the frame required nearly a month of steady work (Lantis, 1946, p. 175, fig. 14). Often the hatch, ribs, and other pieces could be salvaged from an old kayak frame, thus reducing the amount of time necessary to construct the new vessel. New kayaks were frequently made and old ones repaired in February in order to have them ready for spring sealing that, in a good year, began in early March. The Nunivaarmiut were such skilled makers of kayaks that their boats could easily be sold or traded to mainland Eskimos.

Construction of the kayak frame was much the same as described by Zimmerly (1979) for Hooper Bay, and the terminology for the various parts was virtually identical in both areas (Zimmerly, 1979, p. xvii). Distinctive features on Nunivak Island were the bow and stern pieces, which often took different shapes, either characteristic of the owner's paternal family or personal designs (fig. 37; Nelson, 1899, pl. LXXIX, 1–2).

The foundation of a kayak frame was a keel with two-piece bow and stern pieces. The curved ribs were lashed to the keel, to side stringers extending from bow to stern, and then mortised into the gunwales. The ends of the deck beams, or crosspieces, were mortised and lashed to the gunwales. Deck ridge strips ran from the bow to the hatch and from the stern to the hatch. The hatch coaming was formed by an inner and outer hoop and supported on either side by hatch stanchions (Curtis, 1930, p. 13; see diagram in Zimmerly, 1979, p. xvii). The skin cover over the keel was protected at the bow and stern with split antler guards fastened to the frame with bone or antler pegs.

A kayak frame was assembled in the *qasgiq* (fig. 65), frequently under the supervision of some old man skilled in boat making (Curtis, 1930, pp. 12–13), and when completed was removed through the skylight. Handled with care and with new parts as needed, a kayak frame could last 16–18 years (Stettenheim, 1954).

Sealskins, bearded seal skins, or walrus skins were used for a kayak cover. Three bearded seal skins were usually suitable for the bottom, with two small sealskins on top—depending, of course, on the size of the skins. A walrus skin could be stored dry until needed, then moistened with urine three times a day for about a week and soaked in

fresh water for a few hours. The skin was then split into two layers, the outside layer being used for boot soles as well as kayak covers and the inner layer for lines. One walrus skin was generally large enough to cover an entire kayak.

In preparing sealskins for use as a kayak cover, the blubber was first removed with a two-handed scraper made from a caribou leg bone split lengthwise. The skin was frequently laid over a wooden form to be scraped (fig. 87). It was then wrapped in grass and put in a warm place until the hair had rotted to the point where it could be pulled off by hand. The skin was wrung out by tying one end to a post set in the ground and the other to a piece of wood held at right angles to the post. The skin was then twisted by rotating the piece of wood; when the skin was wrung as tightly as possible, the piece of wood was also driven into the ground. The twisted skin was left for a day or more so that all the juices were squeezed out, and was then stretched and dried on a framework of notched wood crosspieces (fig. 38). With a stone tied to its neck, the skin was suspended neck down (fig. 39). Care was taken to store it in a sheltered place during wet weather.

When the skin was thoroughly dry, it was removed from the frame and stored in a cache. When ready to be used as part of a kayak cover, the skin was soaked in urine for about three days and then soaked in fresh water overnight. Again the skin was twisted to remove excess moisture. Nevertheless, it was still quite wet and pliable when sewed on the kayak.

The skins for the cover, prepared by women, were first stretched over the kayak frame before being sewed. They were then trimmed and adjusted to fit, their edges being temporarily joined at approximately 10-inch intervals. The sewing was done by women in the *qasgiq* or a house but, of course, the final seam was sewn after the cover was put on the kayak. During the sewing, the seam was pulled very tight so that the stitches did not show on the outside; the rough edges were turned inside. When a seam was finished, the cover was turned inside out and the seam overcast on the inside to cover the rough edges. On the outside the sewer usually sewed from top to bottom—that is, toward herself—whereas on the inside she sewed upward from bottom to top. One woman alone, if she was a fast sewer, could put on a cover in two days. However, even when more than one woman worked on it, a cover was never put on in a single day. When covered, the kayak was put out in cold weather to freeze, which whitened the skin. Some people prepared a new kayak cover every year, but others simply removed and cleaned the old one when fall fishing ended and stored it until the following spring.

The construction of a kayak was more than simply a technological accomplishment. The task was accompanied by fasting for men and special dress requirements for women as well as behavior patterns designed to bring success to the hunter who would use the new vessel (Curtis, 1930, pp. 13, 15–16; Lantis, 1946, p. 193).

Both the crutch-handled and the double-bladed paddle were used traditionally by the Nunivaarmiut, with the double-bladed variety being used more often. In former times, the crutch-handled paddle was smaller, and this fact, together with the greater former use of the double-bladed paddle, suggests that kayaks were narrower and lighter than in the 1930s. There were no special paddles for umiaks.

In making a paddle, after the wood was worked to a rough shape with an adze, the finishing was done with a mussel shell, open side up, the wood being shaved toward the worker. The lengths and shapes of kayak paddles varied considerably. Single-bladed paddles were keeled but the double-bladed variety was not.

Formerly designs were painted on paddles in blue and white over a base color of light blue or light orange. For base painting, fine, clean wood shavings were made and then chewed up with a small piece of red or blue pigment. When the shavings were thoroughly coated with color and saliva, they were rubbed on the paddle very fast to prevent drying and to make the color smooth. Then the paddle was rubbed vigorously with clean, dry shavings to make the color more even, remove excess paint, and hasten drying. Designs were painted on paddles in summer with different ones applied for spring seal hunting. Each man owned his own designs, which were passed from father to son and were always geometric.

Traditionally, a new kayak mat was made each spring even though with normal wear such a mat would last longer than a year. Kayak mats were long and narrow, being approximately 2 ft wide and over 5 ft long. Construction of these mats varied, but a woman always made a kayak mat in the same way, using a design belonging to her husband's family. A man, his brothers, his sons, and his son's sons thus all had mats with the same design. Variations included braided warp, crossed warps, and a variation in the distance between wefts.

An important piece of kayak equipment was the harpoon line holder, which was placed directly in front of the hatch and had two projecting pieces inserted under the line that crossed the top of the kayak at this point (fig. 40). The harpoon line was coiled in the oval frame and the harpoon rested across a notched ivory piece in the left corner.

For anchoring a kayak when fishing, a heavy stone or walrus bone attached to a sealskin line was used. The line, fastened to one side of the hatch, was run through the hole in the bow and then across to the opposite side of the hatch and down the side of the kayak. This provided stability by anchoring the vessel more or less in the center. Two kayaks were sometimes lashed together to provide stability when the paddlers were examining a seal net (fig. 14) or carrying heavy loads such as kegs of water from a spring.

Special snow scrapers were used to remove ice from a kayak after it was taken out of the water. These scrapers, never used on clothing, either had a wooden handle to which a blade of a split section of antler was lashed with roots or consisted simply of a split antler section (fig. 41).

During rough weather, when heading into the wind, sealskin floats were placed on the bow of a kayak to keep it raised. The paddler's gut parka was tied around the hatch and also at the wearer's wrists and around his face.

Kayaks were kept on high racks so that dogs could not get at them to chew the covers. These simple racks consisted of a pair of crossed supports, usually with a pole running between. The kayak rested on the supports upside down (figs. 42–43; Curtis, 1930, opp. p. 44).

Small holes in kayak covers could be temporarily repaired with moss saturated with heavy seal oil. Large holes, however, were patched with a piece of skin sewn on with sinew (fig. 44).

When outfitting a kayak for a hunting trip, a combination boat hook and ice hook was placed on the forward deck of the kayak and harpoon lines were wound within the line holder. The float rested behind the hatch with its line leading to the line holder. Harpoons and throwing board rested on the line holder alongside the hatch. Two single-bladed paddles were carried, the one not in use being placed along the decking in front of the hatch, resting against a spear and paddle guard. Nelson (1899, p. 227, pl. LXXVIII, 14) illustrated a seal-shaped guard from Nunivak intended to lie diagonally along the deck near the edge with the head pointing upward. A point was fixed to the harpoon foreshaft, the wooden point guard remaining in place until the harpoon was ready to be thrown. A kayak sled was tied behind the hatch, and this completed the equipment secured to the deck of the vessel (Curtis, 1930, opp. pp. 52, 54).

Inside the kayak the hunter placed a rectangular seat of wooden slats lashed together with sealskin line to keep him dry (fig. 45). Food in a carrying basket, seal oil in a seal stomach, fresh water in a walrus bladder, and extra grass mats for camping and to use as a windbreak were also taken. The hunter might sleep in his kayak if no other suitable shelter was available. Two wooden bowls, or kantags, were also taken along, one to eat out of and the other to urinate in in case there was no convenient place to land.

Umiaks

Since Nunivak hunters did not hunt great whales, there was little use for the umiak, a large, open skin boat. Formerly useful for trading trips and moving families to seasonal camps rather than for hunting, this type of vessel had largely disappeared by 1940 (figs. 46–47).

On mainland Alaska umiaks varied considerably in size due to locally available materials but were similar in form (Adney & Chapelle, 1964, pp. 182–183). On Nunivak the size varied according to the builder's prosperity and ownership of materials, the size of his family, the distance he usually traveled, and his willingness and ability to undertake carving the many construction parts. At the time of Curtis's visit to the island in 1927, a number of umiaks were still in use. A vessel he observed was 28 ft long, 4 ft deep from keelson to gunwale, and with a beam of 6 ft (Curtis, 1930, p. 20). In 1940 three umiaks were examined by Lantis, two of them without cover, the third recently given a new cover. The drawings of separate parts of the frame (figs. 48–49) are of umiak 1, drawings of bow and stern of boat 3 (figs. 50–51). Umiak 2 was the smallest and newest although built in the old style, except for the addition of a pair of oarlocks; in size it was comparable to umiak 3 (see measurements, table 1). These three vessels show the range in size of Mekoryuk umiaks.

Umiak Parts—The term "keelson" ordinarily designates the member above the keel. Here, however, the keelson provided as much of a keel as existed in the umiak. It was the one longitudinal centerpiece in the bottom (see fig. 48a). Adney and Chapelle (1964, p. 184), illustrating an umiak from

TABLE 1. Measurements of Mekoryuk umiaks, 1939–1940.

Dimensions	Umiak no.		
	1	2	3
Length of bottom (keelson and flat part of bow and stern posts)	23 ft 3 inches	13 ft 8 inches	14 ft 10 inches
Length of bow stem (along curve)	5 ft 11 inches	...	...
Overall length (top of prow to top of stern)	26 ft 6 inches	...	...
Length of gunwale (along curve)	28 ft 0 inch	16 ft 6 inches	17 ft 9 inches
Greatest width of bottom	3 ft 1 inch*	2 ft 2 inches†	...
Beam at center (greatest width to outside edge of gunwales)	5 ft 7 inches	4 ft 5 inches‡	ca. 5 ft
Height at center (including gunwale)	3 ft 0 inches	1 ft 9 inches	1 ft 11 inches

NOTE: Although umiak 3 was longer than umiak 2, its height was not much greater because the sides flared, its beam being greater relative to length than that in the other two vessels.

* Measured at center. † Measured 3 inches fore. ‡ Measured 18 inches fore.

the Bristol Bay or Alaska Peninsula area, also show only a keelson and no separate keel. The two long, curved chines, one on each side, outlined the bottom. Because these members established the vessel's length and bottom width, they were the principal forms setting its "lines" and were measured first; the other parts were measured relative to the chines (see fig. 48c). Between the keelson and chine on each side was a plank (fig. 48b), shorter than the keelson and chines, at bow and stern, curving inward and attached to the keelson. These three basic forms of the bottom were wider on the inside (top) and fitted snugly at bow and stern but, being narrower on the underside (outside), there were small gaps between them. The distance between them increased greatly toward the beam (point of greatest width). Figure 51 shows construction of the stern of umiak 3, including a short curved piece across the three center members and fitted into the chines. There was a similar board at the bow (fig. 48e). On the large vessel (1) there were 12 straight, flat boards, crosspieces serving as floor or deck boards, that were set into the chines.

Bow and stern structures were also basic, as both bottom and side pieces were attached to them (see figs. 50–51, showing the bow and stern of umiak 3, and fig. 48d, showing the bow stem of umiak 1; the stern of umiak 1 was not traditional and is discussed separately). The bow stem fitted into a narrow slot on the under, slightly rounded side of the headboard. The latter was the wide, curved board set atop the stem at a right angle. The keelson fitted into the lower notch of the bow stem and curve of the stern. As can be seen in the drawing of the traditional stern of umiak 3, the stern seat was a longer board than the bow headboard seat.

The stern stem of umiak 1 (fig. 49d) was modern in having a straight, vertical outer surface, although the inner surface was curved. The vertical part was made of three planks, each 2.5 inches thick. The straight, flat surface facilitated attachment of a rudder or an outboard motor. For that, three short heavy pieces, one above the other, were nailed across the stern, the lowest nearly triangular in shape. On each side of the stern there was a strut, a piece about 3 inches wide, equivalent to risers (ribs) elsewhere, from the gunwale (rail) to the lower part of the stem, set edge to the stem at its front. The inside edge of the gunwale was cut out to receive the strut. A traditional stern was more like the bow, and the gunwales were laid across the stern seat, as at the bow, projecting beyond it 4–6 inches depending on the overall size of the umiak.

The risers were set into the chines (figs. 47, 49c, 50–51) and, when the gunwales were in place, each riser was lashed to the one on its side. The number of risers varied according to the length of the vessel. Umiak 1, the largest, had 14 on each side. As Figure 49c shows, these pieces were not as strongly curved as might be expected. On all the umiaks, there were two stringers on each side, each stringer attached to the bow and stern stems (see figs. 48d, 49f–g). The lower stringer was outside the risers, the upper one inside because of the outward slant of the risers. The only exception was seen in the umiak with the modern form of stern in which the lower stringer was inside the stern's strut form of riser and the upper stringer outside. Stringers and

risers were pegged, not lashed. In umiak 1 there were five seats, lashed to the upper stringers, in addition to the bow and stern seats. In smaller vessels there might be fewer, but the 15-foot umiak 3 also had five seats and was considered large enough for 10 persons. Its beam was not much less than that of umiak 1. The larger vessel could, however, carry more freight.

Because sails were not used on these umiaks, it was not learned exactly how and where a mast was set. An elderly man stated emphatically that only one sail was used, not two as Lantis mentioned to him from Nelson's report (1899, p. 217) regarding occasional regional practice on the mainland. As with all other boat parts, there were local Yupik names for sail and mast, the sail originally having been a grass kayak mat and later made of canvas. When oarlocks were added, the lock was a sealskin arch fastened to each gunwale. There were different names for traditional and modern umiaks.

In the large Mekoryuk umiak (1), there were 65 pieces excluding cover, sail, mast, and oars. The amount of work needed to split, measure, adze, carve or bend, drill, and smooth so many parts is impressive—and pegs and lashings also had to be made. Many of the members were grooved lengthwise on the inside surface as shown, for example, in Figures 48a–b, 49a–b; no explanation for these grooves was obtained. Because longitudinal members, except the gunwales, were grooved and the floor boards were not, the grooves may have provided greater flexibility. The gunwales, nearly round in cross section, were 9 inches in circumference on the largest vessel. Bending such long pieces of driftwood, the longest in an umiak, must have required careful effort (Curtis, 1930, pp. 20–21, opp. p. 182).

Fastenings—Much was done by mortise and tenon, although the tenons apparently were not shaped differently from the main form; for example, not round in cross section on a rectangular piece. As well as could be seen without taking the frame apart, a piece was beveled and slimmed to fit the mortise. On umiak 3 each gunwale fitted loosely into a notch on the upper outside edge of both bow and stern headboards, but on another vessel they were simply laid on top before being tied. Where wood pegs were used, holes had to be drilled, with holes and pegs carefully fitted since the latter could not be driven through the boards. The upper stringers and risers were fastened together with pegs, while the seat boards were fastened to these stringers differently. There were holes near the ends of the seats for the lines that tied the board on top of or underneath the upper stringers, depending on the seat's location in the boat; most of them were on top. The higher headboards that could also serve as seats and the gunwales were lashed together. The lower stringers and risers of umiak 3 were lashed together. Two small holes were bored in both and a line run through and tied, resembling one long stitch on the inside.

Cover—For one of the smaller umiaks, four pieces of walrus hide, representing two whole skins, were used. On larger vessels six or eight halves were required. The urine in which the skins were soaked was scraped off, but the skins were not scraped or wrung out entirely dry. Women sewed the cover, and men stretched it over the frame and lashed it. A woman sat with outstretched legs on a mat with the skin on the mat in front of her to absorb moisture and keep her clean. The part of the skin being seamed was fastened to her foot by a short cord to help her pull the skin and seam tight as she stitched. She thus had to lean far forward to work. The seamstress may have used a blind stitch as illustrated by Adney and Chapelle (1964, p. 186), but this could not be confirmed. All three seams, fitting the four pieces together, ran across the frame.

Each end of the cover was folded in half and the two halves stitched, closing the end. Thus the cover could be fitted over bow and stern, one seam running up the full height of the stern and the one at the other end going one-third the distance up the higher bow. Presumably the heaviest sinews, such as those from reindeer legs or beluga flanks, were used for the stitching.

Men punched holes in the moist skin at regular intervals and pulled the cover over the gunwales so that these and the tops of the risers were covered. A walrus hide line was run through the cover, pulling the cover tight, a continuous line with no extra wrapping or knotting at each place. At bow and stern the cover was pulled over the headboard for about one inch. It was not tied or stitched to the frame itself, but a line was drawn through the closely-spaced holes in the cover, over and under its edge, and then tied to the gunwale lashing on each side, not to the gunwales themselves. When necessary, the walrus hide lines could be tightened to take up slack in the cover. Formerly, as on the kayak, the family totemic bird or mammal was painted on the cover of an umiak.

If the vessel was kept in the water or used frequently, it was necessary to oil the cover every two or three days to prevent waterlogging. A tight and well-oiled surface was necessary if an umiak was

to remain seaworthy (Curtis, 1930, p. 20). It took considerably more than a month to construct and cover an umiak.

Curtis (1930, p.20) described the use of the umiak on trips of several days' duration. The vessel, containing one or two families with dogs and household goods, was paddled or rowed during the daylight hours, frequently towing kayaks belonging to the families. At nightfall the boat was dragged up on the beach where camp was made. The vessel was unloaded, tipped on one side, and the upper gunwales supported by notched poles (fig. 47; Curtis, 1930, opp. p. 186). If the weather was bad, or the travelers were without a tent, they could sleep under the upturned umiak.

Sleds

The traditional Nunivak sled had runners which curved up only slightly in front. Bone shoes pegged to the runners provided good traction over frozen and wet snow (VanStone, 1957, pp. 102, 105, pl. 1, 1). Longitudinal strips about 3 inches above the runners extended the full length of the sled and were lashed to three crosspieces placed at regular intervals along the runners. These crosspieces rested on short wooden blocks which were lashed to the runners, creating the space between the longitudinal strips and the crosspieces, the latter forming the bed of the sled.

The railings, which were straight, extended from a height of about 3 ft at the rear to the point where they joined the upturned runners at the front. These railings were supported by four stanchions on each side, placed between the crosspieces. The railings were lashed to the stanchions with walrus hide line; the lower ends of the stanchions were mortised into the runners and also lashed to the longitudinal strips above the runners. The two rear stanchions were slightly curved and their upper ends passed through slots in the railings and handlebar. Further support and strength was provided by diagonal braces projecting through slots in the stanchions. Across the top of the rear stanchions was a handlebar, the ends of which extended 1 ft on each side (fig. 52; Curtis, 1930, p. 22, opp. p. 58).

Until the 1920s and even in the 1930s, dogs were tied at the sides of the sled rather than harnessed in pairs along a towline in front. Each dog was tied separately, not to the stanchions but to the supporting blocks between the stanchions. Since the sled was short, there usually was room for only two dogs on each side. There was no leader and no commands for right and left (fig. 53; Lantis, 1946, pp. 167, 189, fig. 25; 1980, p. 11).

Since the sled runners did not extend beyond the bed in back, the driver could not stand on the runners, but pushed and guided by means of the long handlebar. Sometimes two people pushed, or a driver might bend over and rest his forearms on the handlebar if force was not needed. If the trail was difficult, the driver pulled his sled from directly in front while the dogs pulled from the sides. It was not easy to guide the dogs and the driver had to turn the sled manually.

The simple dog harness was made of three-strand, braided grass reinforced with pieces of scraped sealskin. A loop was formed to go over the animal's head and the harness extended across the back and under the stomach. At the proximal end was another reinforced loop so that the harness could be attached to a short line leading to the sled. There were no swivels, toggles, or other harness parts.

Larger sleds with beds of horizontal planks and runners that extended out in back for riding (fig. 54) were introduced by traders along with the towline, to which dogs were hitched in pairs. In 1939 this method of hitching was so recent that even middle-aged people could make the old-style braided grass harness and hitch dogs to the side of the sled in the traditional manner.

The old-style sled dog was a large, heavy animal with a short, stubby face, long white hair, and floppy or short standing ears (fig. 55). By 1939 a more lightly built dog with a longer face and shorter hair had been introduced from the mainland (fig. 56). The Nunivaarmiut did not tie up their dogs until reindeer were brought to the island and, up to 1940 rarely cooked food for them, although trader and missionary families might do so. Formerly dogs were allowed to lie in the entrance passage of the house and were fed whatever happened to be available. Traditionally the people owned few dogs.

The kayak sled carried on the kayak behind the hatch (Curtis, 1930, opp. p. 52) was 5–6 ft long and consisted of runners with bone shoes, and traditionally three, or by 1940 usually four, crosspieces lashed to short support blocks mortised into the runners. On each side a flat, longitudinal strip was lashed to the crosspieces and pegged to the upturned front of the runner (fig. 57). These sleds were relatively wide in order to accommodate the kayak.

Snowshoes

Snowshoes, occasionally used in the past, were rather crudely made with pointed toes and widely spaced lashing that did not require the use of a netting needle; there was no netting at the toe or heel. Sealskin line was used for most webbing, but the harnesses were made of softened, bleached sealskin (fig. 58).

Breast Yoke and Pack Cord

Perhaps because dog traction was rather inefficient, a wooden breast yoke was used by men, and possibly women, to assist them when carrying loads on their backs. Nelson (1899, p. 211, pl. LXXVI, 14; Fitzhugh & Kaplan, 1982, p. 99, no. 90) described a yoke from Nunivak collected by Dall. It is a crescent-shaped, flattened board to which a cord was permanently tied at one end. This cord was passed over the load and the looped end tied to a ridge at the other end of the board. Carved in relief on the front of this yoke is the tattooed face of a woman, probably a protective being. On either side of this face is a broad groove that tapers toward each end. The edges of this groove are inset with caribou teeth. The face, grooves, and ends of this yoke are painted red and the remainder of the upper front and border is black.

When a yoke was not used, a pack rope of braided grass was particularly useful for packing driftwood. The wood rested directly on the back with the rope looped over the head, around the shoulders, over the load, under each arm, and then tied in front on both sides (Lantis, 1946, pp. 167–168).

VI. Shelter, Housekeeping, and Storage

Settlements

According to late 19th century observers, a traditional winter village of the Nunivaarmiut consisted of several houses and a *qasgiq* connected by passages, while the spring and summer camps were made up of single, unconnected houses. If there were two or three *qasgiqs* in a winter village, there would be a corresponding number of house clusters.

It will be recalled that, in a brief description of the winter village at Nash Harbor, Hooper (1881, p. 5) noted that the houses numbered 10, all of which were connected by a subterranean passage. They were arranged in a circle "with a common entrance to the covered way in the center." Petroff (Porter, 1893, pp. 111–112) confirmed this description.

> The Nuniwagmiuts occupy large subterranean communal dwellings, consisting of a number of square or circular cavities opening upon a common hall or corridor but with a single entrance from the surface of the ground. Each family compartment has its separate smoke hole, but these are rarely used, as the object of this crowding together is warmth through exclusion of all outside air, and nearly all cooking is done in the entrance or in sheds erected for the purpose.

Apparently a similar residential arrangement existed at Mekoryuk when Curtis (1930, pp. 6–9) visited that village in 1927, but by the time of the fieldwork of Himmelheber and Lantis in the late 1930s, this traditional settlement pattern had been replaced to a large extent by single houses for individual nuclear or extended families. Himmelheber (1980, p. 6) published a plan of Mekoryuk as it appeared in 1936 which shows two *qasgiqs*, one large and one small, 13 residences including three attached by tunnels to the larger *qasgiq*, seven underground storehouses, 11 aboveground storehouses, and only two houses of modern frame or log construction.

House Construction

Collins (1937, pp. 258–260) has described and illustrated a house from an unspecified location on Nunivak which he believed to be a "typical unmodified example" of the Eskimo dwelling in southwest Alaska. His careful drawing in cross section is more detailed than any other in the Alaskan Eskimo literature. Lantis, however, doubts whether this type of house was typical on Nunivak. The following pages are devoted to noting deviations from this basic form and adding certain details not specifically referred to by Collins.

Although four-post-center construction was characteristic of all Nunivak houses, the sleeping benches within the house varied. Indeed, many of the poorer houses had no platform benches at all but simply logs placed on the floor behind which dried grass was spread and then covered with mats and skins for sleeping. All other houses had sleeping platforms on the sides, varying in height from

house to house. Across the back was a platform used for storage. People slept with their heads at the front edge of the platform and their feet to the wall. Most sleeping platforms were approximately 15 inches above the floor (fig. 59).

In constructing platform benches, an earth shelf was left on two or three sides and split driftwood was placed over the earth and then covered with matting and skins. Coarse matting was also hung around the walls to cover the earth between the bench surface and the sloping roof logs. Although Collins's drawing seems to indicate that the four center posts rested on the benches, in fact they usually extended to floor level. Occasionally there was a smooth, flat board along the front edge of the bench extending somewhat higher. On it were placed cutting boards, knives, and other utensils used habitually in preparing food.

The fireplace, against the rear bench as shown in the Collins drawing or in the center under the skylight, was constructed of flat volcanic rocks set up on edge. It had an earthen base slightly higher than the house floor. A fire was started with reindeer moss soaked in seal oil. Lampstands might be set up at the two front corners of the fireplace. These were carved from a single piece of wood approximately 3 ft long and pointed at one end so they could be driven into the dirt floor. They were wide and flat at the top to hold a pottery lamp. Stands like those illustrated in Nelson (1899, fig. 19) were unknown. A framework from which to hang pots was set up at the back of the fireplace and was not movable.

Collins's drawing shows low house walls and relatively long rafters. Some houses, however, were built with higher walls allowing more headroom toward the back of the benches, which required a deeper excavation (figs. 60–61).

The walls of the underground entrance passageway, usually in a short side of the house and not a long side as shown by Collins, were sometimes higher than indicated in his drawing and faced with vertical split logs. The frame of the house roof was cribbed: on the two posts on each side, a long log was fitted, lying front to back (stringers); then smaller logs were placed across the stringers at front and rear (tie-beams or crossbeams); then stringers; and finally crossbeams, all shorter at each higher level, that is, each successive layer closer to the center. For the roof, on all four sides split logs were laid, flat side down, from the four logs forming the top of the earth wall to the lower crib logs. Then a second, higher, also sloping course of split logs was needed all around and a third flat course to complete the roof around the rectangular hole for the skylight (fig. 62).

The skylight cover, placed outside over a square wood frame, was made of strips of seal intestine sewn together with a border of salmon skin. This translucent gut window was held in place with heavy rocks (fig. 63). This is why the tougher salmon skin was used as a border. A thin, bent stick was arched between opposite sides of the frame on the inside to keep the gut window from sagging. It could be pushed back and forth to knock water and snow from the skylight.

The dimensions of the wall and roof depended largely on the size of driftwood available to the builder. More recent houses had a steep-roofed entryway of commercial lumber modeled after a ship's companionway (fig. 64). At the point where the tunnel entered the living area, a grass mat was hung, or occasionally there would be a low plank door. Formerly a whale's shoulder blade might be used at the outside entrance as a doorway.

In finishing the roof, a layer of green grass was laid over the logs, and then earth was spread on the grass and packed down. Over this were placed fresh sod blocks cut with a mattock. The roof was not entirely rounded after the sods were in place, the rectangular slanting sides and flat top being maintained to a certain degree.

These semi-subterranean houses, occupied summer and winter, were abandoned only for short periods of time when people went to fish camps. If a structure became wet in spring, a drain might be dug through the wall so that water could run off.

The *Qasgiq*

Qasgiqs, or ceremonial houses, varied greatly in size. Small ones for the use of one or two families in small settlements might be no more than 12 ft square, while the structure in a large village like Mekoryuk was nearly 20 ft square. The method of construction was essentially the same regardless of size. The roof was supported by eight posts, two for each corner, set against the walls rather than away from them, as in a house. The walls were generally formed of split logs placed vertically; diagonal beams across the corners supported a cribbed roof (fig. 65), a form of roofing reported for historic *qasgiqs* elsewhere in southwestern Alaska (VanStone, 1968, pp. 252–258; 1970, pp. 33–38).

The number of benches in a *qasgiq* varied; at

Mekoryuk the large one had platform benches on three sides while others might have only one or two. Unlike houses, *qasgiqs* had plank flooring, some of which covered the excavated central fireplace and could be lifted when the fireplace was in use. For a large *qasgiq,* the fireplace might be as much as 4 ft in depth and nearly 3 ft square. It was lined with flat volcanic rocks.

Tunnel walls were lined with split logs placed vertically. The step-up into the main part of the structure was just in front of the fireplace. The tunnel entrance opened directly to the outside (fig. 66). Formerly, as previously noted, a number of family houses might be linked to a ceremonial house by connecting passageways with a single outside entrance. A woman taking food to the men of her family could go through the tunnel to enter the *qasgiq,* and a man could go home without being out in the cold. It should be noted that sometimes two related nuclear families occupied one house, the women and children of one family on one side and the other family or perhaps an elderly relative on the opposite side, but they shared food.

In respects other than those mentioned, a *qasgiq* was constructed in much the same way as a house, except that people could sit under the higher and narrower benches. Boys customarily sat on the benches while men sat underneath on the grass or shavings-covered floor. Lampstands similar to those in houses were used in a *qasgiq,* although a suspended lamp frame, shaped like a globe and decorated with feathers and carved figures, was hung in each corner during the Messenger Feast. An example of this style of lamp frame, made in recent years by Kay Hendrickson, formerly of Mekoryuk, is in the Yugtarvik Regional Museum, Bethel, Alaska (fig. 67).

Curtis (1930, pp. 8–10, opp. p. 12) described and illustrated a *qasgiq* on Nunivak, presumably at Mekoryuk, as did Himmelheber (1980, p. 7) in 1936. The latter's drawing does not show supporting posts and indicates a shallow fireplace.

Housekeeping

In some houses the caribou or reindeer skins that people slept on were rolled up and pushed back during the day, but in most houses, particularly those with children, there was considerable litter on the benches during the day. Each older person in a family had a wooden dish (kantag), a basin with a nest of grass in it into which he or she spat and threw small refuse. There was also a rectangular wooden vessel, deeper than most food dishes, for urine. People normally did not put their feet on the benches while wearing boots but rested them on the log or plank at the outer edge of the bench.

Urine was spread on the dirt floor of the house to keep down the dust and sand; damp reindeer moss (lichen) was spread on the floor before sweeping. Some people were particular about the dirt floors in their houses and scolded young persons when they accidentally dug up the floor with their heels. Planking, of course, kept a floor moderately dry and free of sand. Some houses had wooden planks just inside the tunnel entrance and dry, coarse sand was spread on them so that people could wipe their feet.

Each person, even young children, had his or her own wooden dish for eating. There were also trays and larger food dishes from which all could eat. These and a teakettle and formerly the clay pots for cooking were kept on the low bench behind the fireplace. When later a small iron stove was set on the fireplace, it had little room for more than a teakettle and skillet (fig. 59). Even later, in the 1940s, in larger houses with plank flooring, a larger stove could be acquired and boxes and shelves used to store many household items. Homes remained crowded, however, as often there were more children; the men spent more time in the family houses when, under church and school influences, the *qasgiq* was used less or disappeared.

Caches

Formerly storehouses, or caches, were built like houses, except that they were not excavated as deeply; they had no entryway and there was usually no skylight. Entrance was by means of a rectangular doorway through one side of the roof (fig. 68). Sometimes instead of a plank door there was a mat held in place with drift logs and rocks. More recently, aboveground caches with four corner posts and end posts supporting a single ridgepole have been characteristic. Split logs for the roof interlock over the ridge pole forming a gabled roof covered with earth and sods, and there is a door in one end (figs. 39, 69). Elevated caches on piles, with flat roofs covered with sods similar to those on the mainland (Nelson, 1899, p. 244, fig. 75), are also said to have been used on Nunivak in the remote past; they were entered by means of a notched log ladder.

Food, skins, hunting implements and other large

equipment, lines, and heavy skin clothing were kept in caches. In the larger caches, there might be a raised section across the back as well as racks for harpoons, guns, and other large valuable items. Only small implements such as tools for working wood and ivory along with small containers and light clothing were kept in the house. Dried fish and meat stored in a cache were laid on dry grass or moss to prevent them from becoming moldy.

Temporary Shelters

In winter when traveling, people sometimes constructed shelters by simply digging a hole in the snow and roofing it with snow blocks cut with a wooden shovel and leaned together; there was no domed roof. Tents of walrus or other skins were not used in summer, but for camping in the rain a makeshift tent might be contrived with rain parkas or strips of gut sewn together.

VII. Tools

When a man intended to undertake a sizeable amount of woodworking, such as making kayak paddles or a number of arrow shafts, he would take a basket of mussel shells into the *qasgiq* and work all day without going out or eating. Since the number of primary tools was limited, woodworkers used a great many mussel shells, especially for scraping and polishing. A woman never carved wood or ivory, so all her tools and dishes were made for her.

Smaller tools, such as small adzes, awls, chisels, drills, and punches, as well as a variety of materials, were usually kept in a wooden box at the owner's place in the *qasgiq* (Curtis, 1930, pp. 7, 40). In 1927 Collins obtained such a toolbox at a village on the west side of Nunivak Island outside the house of its owner, who had died the preceding year. Its contents were as follows:

8 pieces of worked bone
20 pieces of worked ivory
4 walrus teeth
2 ivory points (to form hooks for seal gaffs)
2 line attachers (fig. 70, top)
1 ivory float mouthpiece (fig. 70, bottom)
1 unidentified ivory object
2 small fish-shaped ivory knife handles
3 bird arrow points (fig. 71)
31 pieces of metal—door hinges, saw blades, copper, etc.
2 slate ulu blades
1 fragment of a hard rubber comb
2 whetstones
2 heavy bone socket pieces (fig. 72)
1 adze head (fig. 73)
1 funnel (for seal poke?) (fig. 74)
2 fragmentary slate knife blades
1 slate harpoon blade
2 pieces of unidentified stone
1 piece of pumice
1 piece of cork
5 pieces of wood, mostly handles
4 drills with wood handles(?) and iron points
1 awl with wood handle and iron point
3 saws, bone and wood handles, metal blades
2 knives, bone handles, small steel blades
1 bone scraper
1 antler harpoon head (fig. 75)
2 brushes, wooden handles, human hair at each end
1 mesh gauge (fig. 76)
1 metacarpal bone of reindeer
2 small ivory tubes (snuff tubes?)
1 bundle of tobacco(?)
1 roll of seal intestine casing

The contents of this workbox may be considered typical of what was needed by a craftsman for his work. There are a variety of raw materials including wood, bone, stone, antler, ivory, and a variety of trade materials. The box also included useful small tools such as awls, drills, knives, saws, and a scraper as well as a number of completed or nearly completed artifacts.

An important tool for working antler, bone, and ivory, usually too large to be included in a workbox, was the adze which had a flat blade, frequently fashioned from a steel axe blade, a piece of saw steel, or hoop iron hafted at right angles to a wooden handle. According to Curtis (1930, p. 40), a woodworking adze might have a blade as wide as 4 inches. In 1926 Collins collected an adze with a socketed antler head flattened along a section of one side and drilled with three holes for attachment of the handle, which is missing. A metal blade is set into the socket at the distal end (fig. 73).

The rough work of blocking out was done with the adze, but for the finishing process the typical Eskimo crooked knife with a bone or antler handle and a curved metal blade was used. Nelson (1899, p. 85, pl. XXXVIII, 31) described and illustrated

a crude knife of this type from Nunivak which has a short, thick piece of iron wedged into a slot in a wooden handle, the inner end of the blade being held in place by sinew lashing.

While using a crooked knife the craftsman wore a thumb and first finger guard of scraped sealskin, an example of which was collected by Lantis. The finger guard consists of a single piece sewn in a triangular shape with sinew. The thumb guard is constructed of three pieces: an outer piece of scraped sealskin, an under piece of bleached sealskin crimped at the edge, and a thin strip of bleached sealskin serving as a tie around the wrist. The outer surface of the thumb guard is decorated with two-strand black and white thread in crossed straight lines and around the edge (fig. 77).

Lantis collected a chisel with a jade point set into a curved antler handle (fig. 7, right), the jade presumably obtained from north Alaska by trade. This implement was used to incise grooves in wood preparatory to splitting and for cutting out mortises in wood items such as sled runners and snowshoe frames. It was not usually a carving tool.

The end-bladed man's knife, a primary cutting tool, had a slate blade or, early in this century, a metal blade and a wooden handle if the knife was large, antler if it was small. Slate could be obtained in abundance at several locations on Nunivak, especially from cliffs on the east side of the bay at Nash Harbor. The slate was never split. Small, thin pieces were used for arrowpoints and larger pieces for knife and scraper blades. A piece of sandstone was used for shaping the blade and fine pumice for the final polishing. Blades made of slate could never be long, even for knives used to cut walrus and bearded seal, because they would break easily. For attaching the blade to the handle, resin from driftwood was mixed with soot. The resin did not need to be softened by heating; it was simply rubbed into the hafting slot. Women as well as men used the man's knife for cutting up seals.

The traditional woman's knife or *ulu* always had the slate blade inserted directly into the handle, which was usually made of wood or antler; small knives might have ivory handles. Sometimes the handle curved upward at one end, and the knife was always held with that end pointing forward. Lantis collected such an *ulu* that has narrow bone reinforcement pieces at both ends pegged to the handle with wooden pegs (fig. 78, top). Handles were frequently carved into figures of animals but these were purely decorative and did not have any particular significance. Modern *ulus* have blades made from old saw blades, and there may be upright pieces, usually of metal, between the blade and the handle (fig. 79).

Composite knife or engraving tool handles of antler and ivory were recovered archaeologically from late prehistoric or historic sites on Nunivak. The two identical halves of these handles were held together with pegs. At the distal ends are narrow slits, presumably for metal blades; one handle has a blade slit broad and deep enough to have contained an animal tooth (VanStone, 1957, pp. 103, 107, pl. 1, 10, pl. 3, 18, 20).

Knives of all kinds, including those with metal blades, were sharpened on whetstones made of fine-grained sandstone or schist which were sometimes carefully shaped. They have been recovered archaeologically on the island (VanStone, 1957, pp. 101, 103, 106, pl. 1, 3).

Although the bow drill apparently was known on Nunivak, the strap drill was more common; its use is described by Curtis (1930, p. 41). Lantis collected a four-piece strap fire drill consisting of a wooden shaft and cap, a drill base or hearth, and strap. The shaft is beveled at each end and the strap is a strip of walrus skin secured at each end to a small walrus tusk through a hole in the center of each tusk. Crescent-shaped grooves extend from the line holes to form an eye-fish pattern. The hearth or drill base is a block of wood with a step cut in one side and five holes with grooves extending from each. The cap is seal-shaped with a round piece of fine-grained stone set into the under surface. This stone has a round depression to receive the proximal end of the shaft (fig. 80).

Strap drills were used to make fires and to pierce holes in bone, antler, ivory, and wood. The cap was fitted over the proximal end of the shaft and held in place with the chin or teeth, leaving the hands free to manipulate the strap. Thus one person could operate the drill, although sometimes two worked together. For kindling a fire, powdered charcoal was sometimes dusted into the slots in the drill base. A tinder of oil-soaked moss was placed on the step below the slots and the burning moss was then transferred to a place where a fire could be made by adding wood (Nelson, 1899, p. 81; Curtis, 1930, p. 41). A bow might be substituted for the strap.

Nelson (1899, p. 83, pl. XXXVII, 25) described and illustrated a drill cap from Nunivak collected by W. H. Dall and made from an oval piece of white quartz with a conical depression in the lower surface. A groove extends around the side in which is fastened a rawhide cord with a loop at one end, possibly for fastening the drill strap. For drilling

rather than fire making, the drill shafts were tipped with bits made of jade or some other fine-grained stone. Fox teeth were said to have been used when drilling holes for sewing a kayak cover.

Wedges of bone, antler, or ivory were used for splitting wood, and bone and antler specimens have been recovered archaeologically on Nunivak (VanStone, 1957, pp. 103, 105–107). They were driven with heavy wooden mauls. Antler wedges were most common and usually made from the base of an antler tine. The distal end was often split or filed, exposing the core, to produce a sharper cutting edge. Nunivak wedges referred to in the literature, however, are far from typical. Nelson (1899, p. 88, pl. XXXIX, 2) described and illustrated an antler wedge obtained by Dall that includes the base of the antler and a projecting, cutoff tine in the center of which is fastened a tuft of caribou hair inserted in a hole and held in place with a peg. The specimen is decorated with incised lines and shows no signs of use.

Even more unusual is a bone wedge which, according to Fitzhugh and Kaplan (1982, p. 180, no. 219), was used for making wood splints and splitting feather quills. Nelson (1899, p. 87, fig. 24, 1) identified this object as a wood chisel. It has a convex upper surface that is covered with etchings representing a sea beast, showing anatomical details and containing within the outline of its body many other etched figures. This "wedge" is of greater interest as a work of art and for its possible relation to mythology than as a tool.

Root picks, employed for cutting sod, had ivory or bone blades attached to wooden handles. A pick collected by Dall on Nunivak and illustrated by Nelson (1899, p. 75, pl. XXXIIIb, 1) is described as having a rounded wooden handle with a knob at the distal end containing two lashing holes. This knob is flattened to receive the pick, which is lashed on with rawhide. The pick itself is half a walrus tusk with the flattened side lashed against the handle.

Rakes of antler tines were used mostly indoors to rake up grass and wood shavings. Stones, sometimes with grooved hand grips, were employed for cracking open the skulls of animals to extract the brains. Hammers for breaking bones could also be made of antler or walrus leg bones.

Meat hooks served to hold the carcass of a bearded seal or walrus close to the kayak during the butchering process, to poke pieces of meat under the bow and stern decking, and to retrieve them (Curtis, 1930, p. 17). Dall collected a meat hook on Nunivak which is described and illustrated by Nelson (1899, p. 73, pl. XXXIIIa, 8). It has a short wooden handle with a curved grip to which is lashed an ivory hook, also held in place at its base with a small ivory pin.

Snow shovels were made of wood, and earth shovels, used primarily for digging cists for "stinkfish," had wooden handles and blades made from a caribou or walrus scapula. Shovel blades of walrus scapula drilled near the articular surface for attachment to a handle have been recovered from late prehistoric or historic sites on the island (VanStone, 1957, pp. 105, 107, pl. 2, 4).

VIII. Household Equipment

Wooden buckets for carrying water were used on Nunivak Island by both men and women. These resembled buckets that have been described for other areas of Eskimo Alaska in that the sides were of one piece bent to shape and stitched with willow root. The bending was achieved by means of hot, moist moss. The bottom piece was mortised in place. Some buckets had bone or wood handles. Men's buckets were three-sided with rounded corners, while those used by women were square (fig. 81). According to Curtis (1930, pp. 36–37), wooden buckets were made by men in the *qasgiq* as part of the preparations for the Bladder Feast.

Frequently there were proprietary designs painted on the sides or bottoms of buckets, each family having its own design. A man received his bucket or dish design from his father or grandfather. Buckets like these were never used for cooking, this always being done in pottery vessels until metal pots and pans were obtained. A man carried a bucket with him when hunting or traveling. Buckets made of sealskin tightly sewn with sinew and grass to prevent leakage were used only in winter, presumably because then the skin would be hard and stiff. One piece of hide was curved around and stitched to form the side while a flat, round piece formed the bottom. These buckets were higher and narrower than those of wood.

Dippers of sealskin with a plain wooden handle attached with roots were made from a single piece of skin sewn in a circle to form a cone. They were used to dip water either from ponds when the water was low or through a hole in the ice.

Clothing bags were made from the skins of spot-

ted and ribbon seals, with the nose and eye apertures sewn shut and the hair removed. An opening extended for about 18 inches parallel to the length of the animal. Small loops were slit in the skin at each end of the opening for a carrying strap which, when the bag was carried, extended over the shoulder and across the chest. Similar bags with the hair intact and the slit extending crosswise between the front flippers are described from Kotzebue Sound (VanStone, 1980, p. 48, fig. 11) and Sledge Island (Nelson, 1899, p. 44, fig. 8). Clothing bags made of salmon and blackfish skins resembled those described and illustrated by Nelson (1899, pp. 43–44, fig. 7). They were closed with a drawstring. Lantis observed a bag for odds and ends of clothing made from a halibut stomach. The opening at the smaller end was simply tied shut, the clothes being inserted at the large end which was then wrapped with a cord to hold it shut. One elderly woman said that she made a fish skin bag to hold her reindeer skin parka.

A small workbag was made from the skin of an unborn seal. The hair was scraped off and the opening was a 6-inch slit in the ventral side parallel to the length of the animal. The two ends were sewn flat and decorated with strips of calico and wolverine fur. The flippers were pulled in so as to gather slightly and decorated in the same manner. Rectangular designs were made of sealskin utilizing different shades of coloring in geometric patterns. On another bag, made of the whole skin of a young or small adult seal with the hair on, the slit was also lengthwise and not laced. In place of the removed front and hind flippers, narrow strips of sealskin colored red on the inner side were sewn on to form fancy tufts. A band of bleached sealskin overlaid with fancy stitching was sewn around the opening.

Older men carried small snuff bags with which ivory tubes were used. Collins collected several snuff tubes on the island in 1927. The bags were of varying size, made of different skins, with much decoration. Wolf, wolverine, squirrel, beaver, and muskrat skins were acquired by direct trade with mainlanders or through native or non-native traders.

In 1905 Gordon obtained an elaborately decorated "pouch" which is probably a snuff bag. It is made of strips of fur from several different animals with a decorated cloth top edged with beads, and strands of beads ending in wool tassels. There is a fancy tassel of beads and fur at the end of the drawstring (Kaplan & Barsness, 1986, p. 147, fig. 128). In 1939–1940 Lantis saw a similar snuff bag, although not quite so elaborately decorated; it was about 12 inches deep, excluding a bottom tuft of fur, and had a band of beading around the top and bottom of the neck section made of dehaired sealskin. The lower, fuller pouch section was made of two squirrel skins and decorated with short strands of seed beads ending in tassels of wolverine fur strips. This bag was owned by a crippled, poor, and elderly shaman.

Nelson described and illustrated a number of objects from Nunivak associated with the use of tobacco, including two snuff boxes. The first, made of ivory, has separate top and bottom pieces attached with pegs. The top is inlaid with pieces of brass and there is a small, square wooden lid with a loop of skin for a handle (Nelson, 1899, pl. LXXXVI, 3). The second box is of wood inlaid with brass. The lid, similarly inlaid, is a square cap which fits into an opening with beveled edges in the center of the top (Nelson, 1899, pl. LXXXVI, 4). A tubular box of antler with a wooden top and bottom held fungus ash which was mixed with chewing tobacco. In low relief on the sides the fore and hind flippers of a seal are represented, and the box is also decorated with circle-dot patterns (Nelson, 1899, LXXXVII, 3). Nelson (1899, pl. LXXXVI, 16) also described and illustrated a small quid box of wood obtained on the island by Dall. It is shaped in the form of a murre's head, the mandible forming a thumb piece for raising the lid. The eyes are outlined by incised circles and a sinew cord for attachment to the belt or for hanging around the neck passes through drilled nostril holes.

One of the most characteristic aspects of Nunivak material culture was the use of dried grass for a variety of manufactures, many related to household activities. In addition to mats, grass was used for making baskets, certain items of clothing such as mitten and boot liners (the latter not woven but made of folded grass), and socks, and for many purposes which required the use of braided string or rope, including dog harnesses. In fact, the importance of grass as a clean insulating material as well as the raw material for the construction of many objects of daily use cannot be overemphasized (for an excellent statement on the uses of grass in the east Bering Sea-Yukon region, see Fitzhugh & Kaplan, 1982, pp. 124–129).

With specific reference to matting, grass was used to make mats for the floors of kayaks, to cover walls and sleeping benches and for a door in a

house with an underground entrance, to lie on when spearing fish through the ice or to sit or kneel on when jigging for fish, to cover meat and fish while drying (figs. 35, 82; Curtis, 1930, opp. p. 34), and in the distant past as sails for umiaks. In addition, grass matting was used for floor coverings and curtains during ceremonies. Old mats were often placed on house roofs, and coarse matlike baskets served for storing fish in winter (fig. 83).

The same species of grass (*Elymus mollis*) was used for all types of mats and baskets. It was gathered in the spring or fall, but never gathered green. Dyed grasses were not used for either baskets or matting before colored raffia was obtained, or women learned to dye grass with wet colored papers for basket decoration, and there were no designs except those made by the weaving itself. The two-strand twining technique was used for both baskets and mats, the fibers kept moist while being worked to avoid breakage.

The mats made to cover sleeping platforms were exceptionally fine, with the weft rows as close as 0.5 inch, although wefts about 1 inch apart were about the usual fineness. Mats for covering dry fish and for kayak floors were much coarser, with the weft strands being separated by 1 ft or more; the edges were not finished. Finer mats were also made to cover house walls. Coarse mats served as door coverings in front of plank doors to keep out a draft. Also, if the fire gave off smoke, the plank door could be left open to provide more draft.

Small, finely woven, coiled baskets with handles were used for gathering eggs and berries, for storing trinkets, and as sewing workbaskets. These baskets did not have lids. Clothes and larger valuables were stored in large close weave baskets (fig. 84; Lantis, 1946, p. 232, fig. 81), while large, open weave baskets served for carrying fish, firewood, clothing, and household items. These baskets ordinarily were nicely finished at the top with braided strands much like a closer-woven example from Norton Sound illustrated by Fitzhugh and Kaplan (1982, p. 125, no. 133).

Skillfully made, color-decorated coiled baskets with lids, some with geometric designs, others with natural forms (figs. 85–86; Curtis, 1930, opp. p. 78; Lantis, 1950, p. 68), were traded to the store to be sold on the mainland. There is some question as to when coiled basketry first appeared in the Yukon-Kuskokwim Delta and on Nunivak. According to Fitzhugh and Kaplan (1982, p. 129), it apparently was still new and developing on the mainland in 1880 (see also Ray, 1981, pp. 50–51), and was probably first made even later on Nunivak Island. In 1905 Gordon obtained a small coiled and lidded trinket basket on the island (Kaplan & Barsness, 1986, p. 148, no. 131). If the apparently black material seen in every third row of the coils is blackfish skin that was often sewn on garment borders and otherwise used as decoration, then the basket may be distinctively Nunivak. The trader at Mekoryuk for 20 years (1920–1940) instructed and encouraged women to make larger, finer, more colorful basketry.

Although no pottery has been manufactured on Nunivak Island for many years, some of the older women remember the process as practiced by their grandmothers. The clay, which was obtained from a deposit about 3 mi from the village of Mekoryuk, was first rubbed to make it soft; then pebbles and grass were mixed with it. The pot bottom was constructed first from a single piece of clay, and then a coil was placed around the edge of the bottom, pressed to it, and smoothed with the hands. Next, another coil was placed on top of the previous one and pressed out to the proper thickness and smoothness. These were not continuous spiral coils, but rather each row was a separate piece of clay.

After the initial building up of the pot had been accomplished, more clay was put on the inside and patted with the hands. No paddle or smoother was used during this stage of the operation. This clay slip was of the same consistency as the coils. Before vessels were fired, they were sometimes painted with a solution of burned fish eggs. For firing, a large fire was built and allowed to burn until coals were formed. Then the pots were placed on the fire and covered with green willow branches. Pots were said to have been set to burn when the tide was out and fired all the time while the tide came in and went out again. As the vessels began to cool, they were covered with seal oil, which turned them black.

Most of the Nunivak cooking vessels were either situla-shaped, that is, they had sides that flared evenly, constricted at the neck, and flared again at the mouth, or were flat bottomed with straight or slightly flaring sides. They were frequently decorated below the rim with dots or lines or a combination of the two. Flat-bottomed vessels recovered archaeologically from late sites are approximately 8 inches high with a diameter of 6.5 inches at the rim (VanStone, 1954). Earlier pottery, recovered from several sites on the island, is tempered with a variety of materials including

sand, small quartz grains, feathers, hair, grass, and gravel. The surfaces are decorated with square to rectangular checks or concentric circles, probably impressed with a paddle against the sides of the unfired pot (Nowak, 1970, p. 23, fig. 3u,y; 1982, p. 82; 1986).

Saucer-shaped clay lamps were used until a much later date than pottery cooking vessels. Nunivak saucer-shaped lamps, like those from other parts of southwest Alaska, were frequently characterized by concentric circle decoration (Oswalt, 1953). In historic times, the Nunivaarmiut could make nearly perfect circles by tying together two sharpened sticks, using one as the fulcrum point and the other as the pointed turning arm. One of Lantis's informants had seen a stone lamp, possibly traded from Kodiak Island.

Any kind of blubber could be burned in an oil lamp. The blubber was cut up and placed in a sealskin poke which was then closed and placed in a spring or some other place where the water was not flowing fast. The poke was usually put in the water in May and allowed to remain there until September. Under these conditions the blubber breaks down to oil with soft pieces of blubber in it. This was sufficient for burning in lamps. If clear oil was desired, it had to be boiled. One adult bearded seal produced a whole sealskin (harbor seal) poke of oil.

A probable marrow extractor collected by Lantis is made of bone. It is spatulate-shaped at the distal end and flares at the proximal end where there is a suspension hole. Just below this hole are paired, parallel projections (fig. 9, left).

Snow beaters, used for removing snow from boots and parkas, were always made of wood. Objects similar to the decorated ivory story knives, with which little girls on the mainland drew pictures in the sand (Oswalt, 1964), were undecorated on Nunivak, made of antler, and used for scraping or paring ice from a kayak cover and similar applications (fig. 41).

IX. Food and Its Preparation

Meals and Eating Habits

The Nunivaarmiut ate frequently in the course of a 24-hour period. They went to bed at sundown or early evening in the spring and fall, and well before sundown in summer, but arose early, often at 3:00 or 4:00 A.M. and regularly at 5:00 or 5:30. The time of rising depended on the sea tide and the time when tomcod or other fish would be running. The first meal of the day was eaten at this time and another about 11:00 A.M., with snacks once or twice in between depending on the work schedule and the availability of food. The evening meal was usually at 4:30 or 5:00 P.M. with additional snacks between the main meals. In winter the entire meal schedule was likely to be moved forward, with the first meal of the day being eaten at 10:00 or 10:30 A.M. The most common food was dried or frozen fish dipped in seal oil. The evening or late afternoon meal, the hot meal of the day, frequently consisted of boiled fish or other boiled food and tea.

From spring to early fall, fresh foods, either raw or cooked, were most likely to be consumed, while dried or otherwise processed foods were saved for winter. When away from the village for hunting, fishing, or trapping, however, dried fish and seal oil were the staple foods at all times of the year. Women and children or entire families out berry picking would carry pilot bread or a length of intestine fat to chew on. Both men and women always carried a teakettle and food with them when they left the village. Tea, sugar, and pan-fried bread were included in the larder if possible, but sometimes the supply ship was late or money was scarce. The bread consisted of flour with a little salt and baking powder kneaded into it to make a stiff dough which was then fried in seal oil in a skillet. Girls walking along a trail while gathering greens might eat dried fish.

After eating, people licked oil from their fingers and wiped out the wooden eating dishes carefully and thoroughly with the forefinger. When eating a small fish, it was first dipped in oil and then held by the tail above the eater's mouth and dropped down into the mouth to bite off a piece. This method prevented oil from running down the hand. Nothing but the bones of fish or fowl were thrown away and then not until they had been picked clean. Long strips of dried meat or pieces of dried fish were ripped off the bones with the teeth, dipped in oil, and a piece bitten off the strip. Meat was picked from the bones of a fowl with the fingernails in places where the teeth could not reach. The Nunivaarmiut did not object to chewing hard, tough, or half-cooked meat and, in fact, preferred it that way. Fish eggs were also cooked until they became hard and tough.

Land and Sea Mammal Meat

As was the case with most Eskimos, virtually all parts of a seal were either eaten or used in some other way by the Nunivaarmiut. The throat (esophagus), however, was not eaten, nor was the pancreas. During spring hunting the entire seal's head was cooked and the brains extracted after the skull was cracked with a stone. There was no special mallet for breaking the skull of any animal. The blubber from one seal filled a poke made from the skin of an animal of nearly the same size. Although most seal meat was dried, some was put fresh in pokes into storage pits. These caches were shallow pits dug into clay down to the frozen ground, usually a depth of 3 to 4 ft. The pokes, tied tightly at the opening, were placed in the caches in layers separated by moss and stones (Curtis, 1930, p. 34). These caches were never lined with clay, as were the cists used for storing fish. In permafrost areas temperature in the caches was near freezing even during the summer months so that meat would keep reasonably well for several years.

People considered walrus meat, except that of an old bull, to be a much more satisfactory food than seal meat, perhaps because it was less abundant and thus considered a treat. The skin and blubber of a walrus was cut into chunks and boiled until fairly well cooked. Then finally minced sourdock (*Rumex arcticus*) leaves were added, and when the water boiled again fish eggs were put in and the whole allowed to cook until the eggs were done (Curtis, 1930, pp. 34–35). The flippers, considered the tastiest part of the animal, were split lengthwise into two halves and boiled, flesh, fat, and skin together. The contents of a walrus stomach, consisting of mussels and fish, were eaten just as they came from the animal. The blubber from half a walrus filled a poke made from the skin of a bearded seal.

Caribou have been absent from Nunivak Island for at least 100 years, but many of the procedures for preparing the flesh of this animal also apply to the domestic reindeer. In earlier times, however, caribou livers were placed in the animal's stomach to ferment; this is no longer done. The lining of a reindeer stomach was cut up and eaten with dried fish or by itself. Lungs and kidneys were given to the dogs, but the heart was eaten. Neither caribou meat nor fish were ever pounded as a method of preservation.

The Nunivaarmiut practiced few restrictions with reference to food, but the flesh of the red fox was avoided since it was believed to cause a person to sleep during the day and be restless at night. This restriction did not apply to the flesh of the white fox.

Fowl

The flesh of virtually all waterfowl in the environment was eaten, either fresh or dried, usually with oil or a sourdock leaf soup (Curtis, 1930, p. 36). Even cormorants were considered edible and the meat of these fishy-tasting birds was dried or boiled when freshly killed. The eggs of waterfowl were sometimes sucked raw, but were usually boiled. Unlike Eskimos of the adjacent mainland, the Nunivaarmiut did not boil eggs hard and pack them in pokes for use during the winter. Instead, if there were more eggs than could be consumed at the time of collecting, they were hard-boiled and, still in their shells, placed in wooden dishes of seal oil to be kept for a short while.

Fish and Shellfish

Prior to being dried, salmon were split down the back rather than along the belly, the usual Norton Sound way. The skin of a halibut was completely removed along with a thin slice of meat, the remainder being cut into strips and dried. Split heads and eggs were buried in pits lined with grass and covered with sod (Curtis, 1930, p. 35). Cod were cut along the back in the same manner as salmon. Fresh boiled salmon and trout, cooked in half salt and half fresh water, were eaten throughout the summer and early fall.

Often fresh fish were boiled in large pots over open fires outdoors. A pit 2 or 2.5 ft across was dug into the side of a bank so that one side was higher than the other. Flat rocks were occasionally used to build up the low side to hold fuel, a pothook, and the pot, but they did not really constitute a stone hearth. Iron pots were used and earthen pots in the prehistoric and early contact periods. Pot fragments recovered from archaeological sites on the island have suspension holes suggesting that earthen vessels were suspended by a wood pothook as were the iron vessels (VanStone, 1954, p. 182, pl. 1, 1; 2, 1). The cooked fish was ladled into wooden dishes and eaten without seal oil, outside or in the house. Pieces of fish were picked out with the fingers and the soup was then drunk. Nunivak informants had never heard of stone-

boiling. Pots were always suspended above or set around a fire until the contents boiled. As noted previously, fish were also placed in storage cists to make a slightly rotten product known as "stinkfish." When taken from these cists, the fish were allowed to thaw before being eaten raw; but they would be given frozen to the dogs.

When preparing tomcod or flounder caught in the fall, a sharpened stick was sometimes used to cut the belly to remove the entrails. With larger fish, the head was removed by running an *ulu* under the left gill slit and then around the body so that the entrails were left intact with the head. Usable parts of the entrails were then cooked with the heads, although livers were often cooked separately to extract the oil. If the fish were particularly small, the usable parts of the entrails were simply left inside.

After cleaning, tomcod were allowed to stand for a while and then packed into straight-sided, rough baskets which were stored on the roof of a storehouse or otherwise out of the dogs' reach (fig. 83). There they quickly froze and remained all winter or until they were consumed.

In preparing cod the heads, with the eyes removed, were split open and the bodies cleaned. Both were spread on the rocks to dry and then strung on lines and stored (Curtis, 1930, p. 35). Dried cod were sometimes soaked in a fresh tundra pool to soften them before they were eaten raw with oil. Stickleback and small flounder were also eaten raw after having been frozen. While still frozen they were cut into strips half an inch wide with an *ulu* and then dipped in seal oil; bones, fins, and entrails were eaten.

Fish eggs were hung from the rafters of the house above the fireplace to dry and then were usually eaten plain. As previously noted, people liked to chew on hard, tough fish eggs, so when cooked they were boiled hard. Salmon eggs could also be mixed with sourdock leaves and seal oil. In late August when salmonberries were ripe they were mixed with beaten seal oil and partly rotted fish eggs, a very popular dish ("Eskimo ice cream") at this time of the year and throughout the fall. Mussels, shellfish obtained near Mekoryuk, were eaten raw with enjoyment.

Vegetable Food

It would be a mistake to conclude that the diet of the Nunivaarmiut consisted almost entirely of protein and fat. People who were at all provident could obtain plant food, from which they derived important vitamins and minerals, for as much as nine months of the year. Lantis (1959, pp. 59–62) collected 25 edible plants on the island, three of them boiled for tea, the remainder used for food. The regular utilization of only a fraction of this number would have provided a good variety in the diet.

Sourdock leaves were perhaps the most popular vegetable food for the Nunivaarmiut, being frequently mixed, as previously noted, with seal oil and dried fish, as were other greens. The leaves were gathered in August and parboiled, being removed from the boiling water as soon as they changed color. A pit about 3 ft deep was dug in sandy, dry soil, lined with dry grass, and covered with sod. The leaves alone and not the juice were placed in the pits to be removed in winter after they had been pressed dry by the sod cover and frozen. The leaves could also be stored in cists similar to those used for "stinkfish." After the leaves were removed from the pits or cists, but before being cooked, they were ground up with an ivory pestle, usually the butt end of a walrus tusk, in a deep, square "woman's dish."

Leafy seaweed was eaten by individuals fishing or hunting along the shore. Usually they just picked it up and ate it on the spot. "Sea squirts" (stalked solitary tunicates) were abundant in the fall and were eaten raw, first having been dipped in seal oil, or cooked in a mixture of fresh and salt water.

A variety of berries, including low bush cranberries, crowberries, and salmonberries, were gathered when semiripe by women and girls who collected them in wooden buckets. Some were eaten immediately and others stored in dry pits lined with leaves and grass, to absorb moisture, and covered with sod. Curtis (1930, p. 36) described another form of berry cache which consisted of a square or rectangular structure of flat stones lined with grass and made air- and watertight by a covering of sod.

X. Skin Preparation and Sewing

Skin Preparation

Fresh seal and bearded seal skins were scraped lightly to remove excess blubber, but enough was left on so that the skin remained soft until ready for use. If the hair was to be removed, slightly

moist sand was put on the hair side and the skin was scraped with a two-handed scraper made from a caribou leg bone. Before scraping, the skin, at least of small seals, was pulled over a wooden form (fig. 87). With the head end of the skin facing toward the worker, the scraping motion was away from the worker and thus in the same direction as the lie of the hair.

Prior to bleaching a scraped sealskin in former times, the front flippers were cut off, the holes sewn up, and the skin inflated. The neck was stretched and plugged with a flat, spool-like piece of wood covered with a strip of seal stomach to provide a tight fit. The skin was then set out in cold weather to freeze (fig. 88). More recently, the skin was split and cut off evenly around the edges. Then, as previously noted, it was stretched on a frame consisting of a single vertical piece of wood and seven or eight flat crosspieces cut to conform to the shape of the prepared skin before being set out to freeze (figs. 38–39).

A whole sealskin to be used for lines was placed in a very warm place, usually in the *qasgiq*. It was rolled up tight, covered with damp grass, and left for two or three days if the *qasgiq* was being heated for a sweat bath. The hair loosens from the heat; when it is loose it can be pulled out with the hands or scraped off with a mussel shell. After this the skin was cut into strips with an end-bladed knife. The line was cut in a continuous spiral around the whole skin. According to Petroff (Porter, 1893, p. 113), a single sealskin, carefully cut, provided from 300 to 400 ft of quarter-inch line.

The newly prepared lines were then stretched between posts outdoors and left until thoroughly dry (fig. 89; Curtis, 1930, opp. p. 62). If the lines were to be used for harpoons or otherwise be in contact with salt water, they were soaked in cold fresh water for about three days and then for about a day in salt water before being stretched and dried. Lines to be used for net floats were cut the proper length before being dried and then hung in a bundle. Although most skin preparation was women's work, men did all the work in preparing sealskin and walrus skin lines, which were an important item of trade with the mainland (Porter, 1893, p. 113).

Seal esophagi were first soaked in urine until all the blood was removed, then wrung out as dry as possible and soaked in salt water for about a week, and finally soaked in fresh water. One end was sewn shut and the esophagus inflated. The other end was closed with two-strand grass string. Each esophagus was tied separately by this string to a grass braid and hung out to dry in very cold weather to freeze (fig. 90).

When a walrus was skinned, the hide could be allowed to dry without being prepared in any way. When ready for use the dry skin was moistened with urine three times a day for about a week, then soaked in fresh water for a few hours. Soaking was usually accomplished by anchoring the skin in a small stream with rocks. The skin was then ready for use.

As noted previously, a walrus hide was split into two layers, the outside layer being used for boot soles and kayak covers. Skins to be used for boat covers were prepared in the same way as a small seal or bearded seal skin. A single walrus skin would cover a kayak, but bearded seal skins were also used, preferably not both on the same boat. From the inside layer of a walrus skin, heavy lines were made; the skin was not scraped or washed but simply cut and hung outside between posts to stretch and dry. A walrus stomach, used as a container for water or oil, was washed, inflated, and hung outside to dry and bleach (fig. 91).

Like walrus skins, fresh caribou skins were simply dried and stored. When ready for use in making a parka, a skin was moistened with urine, scraped on the inside with an end scraper which had a slate blade lashed with root to a flat wooden handle (fig. 92). The skin was then moistened again; while drying it was rubbed with a special bone or wooden tool and kneaded with the hands until dry. This was done to soften the skin, which was then ready to be made into a parka.

The only small mammals on Nunivak Island that could be utilized for clothing were mink and arctic fox. In former times fox skins were scraped on the inside when fresh, a process that did not remove all the oil. Nelson (1899, p. 115, pl. L, 5) described and illustrated an antler scraper from Nunivak used for cleaning the skins of birds and small mammals. It is slightly spoon-shaped at one end for scraping, and flattened at the other end for a handle which has incised parallel lines across the upper side. Frames were not used and a skin was rubbed and kneaded between the hands to soften it until dry. In more recent times a fox skin was turned inside out and put over a wooden pole. The small end of the pole was inserted into the nose and the skin stretched taut. Then it was scraped forward toward the head with an end-bladed knife, removing every particle of flesh. The processed skins were hung on a line to dry (fig. 93). White foxes had to be prepared carefully as the skin is very thin.

Wolverine skins purchased on the mainland were already scraped, tanned, and ready for use. However, the Nunivaarmiut preferred to dye them on the underside. A skin was moistened with water and then red pigment rubbed over it. Squirrel skins, also obtained from the mainland, were not tanned. Women chewed these skins to clean and soften them. Then a little seal oil was put on them and they were allowed to dry. Mink skins were dried without being scraped and then treated the same as sealskins.

Parkas made with bird skins are closely associated with Nunivak Island, where many varieties of seabirds nest in spring. When a bird was skinned, the skin came off whole with the feathers on the inside and was dried this way. In removing the skin whole in this manner, it was first cut loose around the bill and legs and the wings were broken. Then a wooden rod was thrust in at one wing socket, through a hole in the breast bone without breaking the skin of the breast, and out of the other wing socket. The worker, a woman, then put her feet at the ends of the rod and pulled the skin off whole. The skin was pulled toward the worker over the rear end of the bird so that the body was removed through the mouth opening. This procedure was possible for all birds whose skins were used for parkas—usually murres and puffins—except eider ducks, whose bodies are too large to go out through the mouth opening. The skins were sucked to remove fat and then allowed to dry before sewing. Most bird skin parkas were reversible, the feathers being worn outside in extremely cold weather and inside at other times, under a cloth cover.

Sewing and Sewing Equipment

Sewing bags, or "housewives," similar to those described by Nelson (1899, p. 105), were usually made of sealskin or, in later times, of printed cotton cloth. The basic form was a strip of cloth or other material about 8 inches wide and 18 inches long, to which pieces of material were stitched on one side crosswise at intervals to form pockets. Since such holders were common in the United States in the 19th and early 20th centuries, the form and name were presumably introduced.

On Nunivak Island strips of bleached seal esophagus were sewn across pockets and around edges, often alternating with fish skin to make the bag more attractive. Then puffin beaks and beads or other decorations were sewn along two sides. An ivory fastener, usually in the form of a fish or seal, on the cord fastened at one end completed the bag. When not in use, it was rolled up and wrapped with the cord, with the fastener inserted under the cord to hold everything in place.

A "housewife" from Nunivak collected by Dall in 1874 and illustrated by Nelson (1899, pl. XLV, 31) is made of caribou ear skin "bordered by a fringe of small strips of the same material." The border is white caribou skin, the upper part edged with a narrow strip of bleached sealskin and mink fur. Evidently instead of pockets the inside is "divided into quadrate spaces by parallel seams of black and white and rows of small beads." There is also a beaded tie-string. The "tags of red worsted" around the edge and the beads indicate that before the 1880s new materials were being integrated with old ones (Nelson, 1899, p. 105). Nelson (1899, p. 105, pl. XLV, 29; Fitzhugh & Kaplan, 1982, p. 86, no. 70) also illustrated an ivory "housewife" fastener from Nunivak in the shape of a salmon. Such pieces were often made by men as gifts for their wives or girl friends.

Women also kept sewing equipment in small wooden boxes. Nelson (1899, p. 102, pl. XLIII, 4) illustrated an antler handle from Nunivak for such a box. It is decorated on its upper surface with incised lines and a series of concentric circles with holes through the center. Two small bags or pouches collected by Gordon may have served as containers for sewing equipment. One is made from unidentified bird skin with a fur fringe across the bottom and a strip of fur around the opening. The other is made of duck feet (Kaplan & Barsness, 1986, p. 133, no. 106; p. 164, no. 164).

Formerly a woman might use the membrane covering of a walrus kidney in its natural kidney shape to hold her small sewing tools and supplies. There was no type of fastening.

In a sewing bag or box a woman would keep needles in a needle case, sinew thread, skin thimbles, bodkins, and sinew shredders (fig. 94). Needles were always made of bone, usually a swan's wing bone. Typical Nunivak needle cases were not of the kind that is open at both ends so that a cord can be pulled through, but were closed at the bottom with a stopper fitted into the top, although the other type was known. Curtis (1930, p. 42) described a hollow wing bone needle case plugged at each end with an ivory stopper carved to represent the head and tail of a bird, fish, or animal. Ivory needle cases in animal form were common. Lantis collected two seal-shaped cases, on each of which the head detaches. On one the etched details

of the face and flippers are filled with black and red color (fig. 78, bottom). The second case, now in the Washington State Museum, has ears which are separate pieces of ivory and eyes and nostrils inset with baleen. A geometric design of dashes and spurred lines is incised on the back and filled with brown color (fig. 95; Ray, 1981, p. 158, no. 121).

Bodkins resembled those illustrated by Nelson (1899, pl. XLVI, 2–3) and were used for making holes in kayak and umiak covers before sewing. Thimbles were flat pieces of walrus hide, commonly cut from old kayak covers or stiff, bleached sealskin, cut straight across the bottom and curved at the top in the shape of the end of the finger but a little wider and longer than the finger joint. There was a transverse slit through which the sewer put her finger so that the thimble covered the front, not the end of the finger. Thimbles were carried on hook-shaped holders, frequently attached to a cord fastened to the "housewife" or workbox. Nelson (1899, p. 110, pl. XLIV, 7) illustrated an ivory holder from Nunivak in the form of a salmon.

Boot sole creasers, used for crimping the heels and toes of boot soles, are described by Curtis (1930, p. 42). Nelson (1899, p. 108, pl. XLIV, 43, 47) described and illustrated two creasers of unidentified material from Nunivak. One, collected by Dall, is pointed, sharp-edged, and plain while the other is in the form of a walrus with the head and tusks carved and the flippers and other anatomical details etched on the back of the implement.

Sinew for sewing was shredded from fibers obtained from the legs and back of caribou or reindeer. Curtis (1930, p. 42) described sinew shredders with ivory handles and metal points used to separate the sinew fibers. Implements that Nelson (1899, p. 111, fig. 30) referred to as "sinew twisters," used for twisting sinew strands, on Nunivak served to keep strands of sinew untangled when making sinew braid. Most threads and cords were made of two strands, except those used in sewing kayak covers which were three-strand and the four-strand braid used for fastening a socketpiece to the shaft of a harpoon. Women made all types of sinew braids and thread including those used on bows, harpoons, and other hunting equipment.

Nelson (1899, p. 111, pl. XLVIIIb, 4–6) described and illustrated reels of unidentified material, probably antler, on which thread was wound. Two of them are carved to represent mythological beings, half woman and half seal, with the hands held against the sides of the faces. These reels were sometimes used as shuttles in making small meshed nets.

XI. Clothing and Personal Adornment

Skin Parkas

Traditionally, virtually all parkas worn by the Nunivaarmiut were made from the skins of seals, caribou, or birds; the skins of reindeer have been used in more recent times. Mink and fox skins were also utilized in the past, the latter occasionally for the ruff since it was too thin to be durable enough for men's parkas. Mainland furs that have been used in recent times but not in the past include ground squirrels received from the people of Nelson Island who, in turn, obtained them from the Kuskokwim River, and wolverine used primarily for trim.

Curtis (1930, pp. 9–10, 71) was particularly impressed with the number and variety of parkas possessed by each individual. Every family tried to have good, new clothing for the annual Bladder Feast, and a complete new outfit of clothing was given to the principal guest from another village at the Messenger Feast. Also a young man gave good furs for a parka to his bride's mother for the bride or a fine parka made by his mother to show that he was a good provider. This repetitious construction of fine clothing fostered quality as well as variety.

Sealskin parkas were the most common type in former times, being worn by people of all ages and both sexes. A sealskin parka for a woman or man required five skins: a whole skin in the upper middle front and another one for the back, a third cut to form the yoke and sleeves, a half for each side, the fourth split lengthwise, a half being used under each arm, the fifth cut crosswise with one half used for the lower front and the other for the lower back. The rough edges of all seams were on the fur side of the garment. Women's parkas were curved up the sides and rounded at the bottom, somewhat longer in back, while men's garments were not slit and had straight bottoms. There was not always a border around the lower edge of parkas for either sex; instead it was cut into narrow strips to form a fringe (fig. 96). If there was a border, it was either a plain strip of white fur or two strips, one brown and the other white, rather than the small pieces of fur of different colors assembled in geometric

designs characteristic of the mainland farther north. Also strips of sealskin were often sewn into the seams at the yoke's edge, front and back.

Parkas made from ground squirrel skins were especially light and warm. Normally the skins of 45 squirrels were necessary to make a man's parka and 35 for a woman's. The hind part of each skin, including the back legs, was cut off and not used. Squirrel skin parkas often had elaborate trimming of white and brown reindeer skin with wolverine fur dyed on the inner side. Squirrel tails formed an additional border around the bottom (fig. 97). There might be a fringe of long strips of fur around the upper part of the garment, appearing like a yoke, or only at both sides of the front and back and at the top of the sleeves (Curtis, 1930, opp. p. 20). On Nunivak such elaborate trimming is modern.

Mink skin parkas, and also mink pants for small boys, formerly were made. In recent times such parkas were elaborately decorated with various colors of reindeer skin, dyed wolverine skins, tails, and beadwork. There were commonly two panels, either rectangular or triangular, of white reindeer fur or solid beading on the upper front of the parka. This is still seen on both island and mainland parkas.

Sealskins and caribou skins were always kept separate and not combined in the same garment except for occasional decorative strips. In the more recent past, when reindeer skins have been used for parkas, the front was usually taken from the ventral side of the deer, the back from the dorsal area, and leg strips were used for the sleeves (fig. 98).

A characteristic feature of Eskimo parkas from southwest Alaska, including Nunivak Island, was elaboration of the ruff on the hood framing the face, on the cuffs, and, in recent times, the border around the bottom of the garment (Curtis, 1930, opp. p. 28). The most common materials used for this decoration were the following: (1) strips of bleached sealskin laid on pieces of dark sealskin and stitched over to form an appliqué—a narrow strip of blackfish skin may be sewn down the center of each strip of bleached sealskin (fig. 99); (2) white caribou hair with soot-blackened sinew thread stitched over it; (3) dark beluga sinew occasionally used for decorative stitching; (4) sinew thread colored with red and blue pigments for fancy stitching. Both red-colored and blue-colored threads were used on men's clothing, but only red-colored on women's.

The ruff on a fancy parka was constructed of not merely one or two layers of fur but of three or four of different tints and thicknesses. Trimming on the sleeves and cuffs was made separately and then sewed on the parka. The ruff was also made as a separate unit and attached last.

Traditionally skin clothing was washed in urine, but by 1939 only one family was doing this regularly. The dirty parts of a parka were immersed in a wooden urine dish and the fur kneaded down into the urine with a movement like kneading bread dough. Then the garment was shaken out and hung up to dry. Sometimes it was rinsed in clear water.

Feather Parkas

The bird skins most commonly used for clothing were those of the cormorant, eider (Steller's, Pacific, and king), the California murre, tufted puffin, and common puffin (fig. 100; Curtis, 1930, opp. pp. 30, 33, 60). Cormorant and eider were considered more valuable and gave more prestige to the owner. Bird skin parkas are light and comfortable to wear but tear easily. Such parkas were usually reversible, worn with the feathers next to the body in winter with a cloth garment over the parka to cover the rough, yet fragile, skin side. At night the parka was turned and slept in or used as a blanket with the feathers on the outside.

Tufted puffin skins were counted and sold in "knots" or bundles of six. Thirty-four skins were necessary for a man's parka and 28 for a woman's. The common puffin is smaller, so six knots and four extra skins were required for a man's parka, five knots and four extra for a woman's. Bird skin parkas were shaped like those made of animal skin, but because of the great thickness of the feathers and the general bulk, they did not have fur strips, beading, and other decoration. Cuffs and bottom borders tended to be plain except on murre parkas. Seams, with rough edges on the feather side, were sewn with a single running stitch, one stitch at a time because of the thickness of the skins. Puffins are found only along the cliffs near Nash Harbor, and residents of Mekoryuk had to trade for them with those living in the settlement there. Sufficient puffins for a parka could be obtained in exchange for one bearded seal skin.

Parkas made of cormorant skins were worn only by women. The skins of these birds are larger than those of murres and puffins. A skin consists of the head, neck, breast, and sides, the skin being split down the back. On one such parka there was a single skin on each side of the hood extending

down over the shoulder almost to the elbow. Another skin, consisting of the breast and sides, formed the middle of the front, and the neck and breast of a single bird formed the center back of the hood and extended down between the wearer's shoulders. One breast and back was cut in two, and a half sewn on each side. This pattern, a whole skin and two half skins, formed the two lower rows, front and back, of the garment. Two skins formed each underarm area and each sleeve was formed of a single skin. Around its legs, the adult cormorant has white feathers; these white patches show at the lower corners of each skin. All seams had the smooth edge on the skin side of the garment and rough edges on the feather side.

When murre skins were prepared for parka use, they were roughly square in shape and included the breast and the sides. Two narrow black backs were sewn together to form the crown of the hood, the remainder of this area being formed of head and neck skins which are black with white markings. The thick white breasts edged in black constitute the body and sleeves of the garment. Backs, placed vertically, made a wide black band around the bottom. There was usually a simple ruff, perhaps wolf or dog fur.

Gut and Fish Skin Parkas

Walrus or bearded seal intestines were considered better materials for rain parkas than the intestines of small seals. First the intestine contents were pressed out and the outside of the casing scraped clean. The gut, still whole and not slit, was then soaked in fresh water for several days before being soaked in salt water two or three days. After being emptied of water, it was inflated and stretched on the ground to dry (fig. 101). The amount of a woman's effort required to inflate the large intestine of a walrus approximately 75 ft long (the small intestine even longer) using only her own lung power was remarkable.

The back of the hood of a rain parka was constructed first, and then the front. Tufts of dog hair dyed red might be sewn into the seams at the back of the head and along the three horizontal seams just below it. The tufts of hair were cut from live dogs and, in former times, the hair was boiled in berry juice to produce the coloring. A piece of bleached sealskin might be stitched at the face edge with the edges sewn to form a slip for the drawstring.

The main body of the rain parka consisted of horizontally sewn rectangular strips of intestine; there were no side seams. A continuous strip started at the front. The seams were sewn with sinew thread overcasting dried grass. There were no drawstrings at the wrists or around the bottom, which was not hemmed. Sometimes narrow pieces of bleached sealskin were fastened to the wrists with a running stitch (fig. 102; Curtis, 1930, opp. p. 24).

Fish skin parkas in the past were worn by both men and women when hunting and traveling. In winter they were worn over a fur parka just as cloth covers have been in more recent times. In summer they were used as rain parkas and were as waterproof as garments made of intestine. Men wore parkas made of silver salmon skin, while those of women were made of salmon trout (charr) skin and often had a white fox ruff on the hood. The Nunivaarmiut did not prepare their own fish skins for parkas, but bought them, already prepared, from people on the Yukon and Kuskokwim rivers. These imported skins had been stretched, smoke-dried, and scaled.

Individual fish skins were sewn together vertically and then these sections were stitched horizontally in rows. Many of these parkas, particularly those worn by women, had elaborately decorated borders of bleached sealskin and colored cloth. The outer side of the skins always faced outside.

In former times, rather crudely made shirts without hoods were made of local salmon or trout skins. The skins for these shirts were not carefully prepared, but simply had the flesh scraped off and then were dried. These shirts were worn under the fur parkas by both men and women.

Pants

Women wore trouser-boots, each one made from a single small harbor seal skin with the seam running down the front of the leg. Each boot, longer on the outer (hip) side, was tied to the belt. Very short trousers made from a single small sealskin were also worn. A man's sealskin pants required two skins, and was not hemmed at the bottom (fig. 103). At the top the skin was turned under and stitched. Braided sinew was run through the hem to serve as a belt. Narrow strips of sealskin were sewn on a man's pants at the waist in front and in the seam of a woman's trouser-boots as fringe or tassel decoration.

Belts were held in place with a fastener. Nelson

(1899, pp. 60–61, pl. XXVII, 8, 15, 17) described and illustrated three fasteners from Nunivak. The first is made of ivory, carved to represent a walrus, and pierced vertically for the cord. The second is smaller, carved to represent two animal heads, neck to neck, with a loop underneath for the belt. The third is constructed from a rounded piece of ivory hollowed out at the back and with human features represented on the front. The mouth and eyes are pierced and there are lines representing snow goggles across the eyes; a knob on the back is for attaching the belt cord. Although apparently different, all three operate on the principle of a toggle or line fastener. One end of a cord is tied to the fastener, while the other end is tied on itself in a loop. The loop is simply placed over the toggle, which is at right angles to the cord. This is not a true buckle as there is no clasp to hold the free end (loop) in place. To adjust belt length, one end or the other must be retied.

Caps

Men wore caps with many strips of fur hanging from the bottom edge over the neck and shoulders, like the one illustrated by Nelson (1899, p. 32, fig. 2). The main body of these caps, worn at dances, was usually made of squirrel skins with a crown and borders of white reindeer fawn skin. Sometimes a wolverine tail was fastened on the back, and the long bottom fringe might be of reindeer skin strips. Men also wore caps with an entire red or white fox skin hanging down the back similar to the one described and illustrated by Nelson (1899, p. 33, fig. 3). Wolf's head caps, which consisted of an entire head skin including ears and nose, were also worn at ceremonies. Curtis (1930, p. 70) mentions animal-head caps worn during the Messenger Feast.

In recent times men and boys, especially the latter, wore caps of squirrel skin similar to the one illustrated by Nelson (1899, p. 33, fig. 4). They were made by sewing coils of the fur round and round until the right size was attained. These caps had a narrow fur ruff and at each side of the crown a squirrel tail or other fur "ear" (fig. 104).

While taking a sweat bath, men protected their heads with a crude cap of puffin, eider duck, or murre skins. The top of the cap was made from one whole skin split down the middle of the breast. The wings, with bones removed, were left on and stuck out at the sides. Half skins were sewn around each side.

Women had dance cornets instead of caps. The one illustrated had a band of bleached seal esophagus with a narrow strip of blackfish skin over it and a border of red cloth. At the top was a trim of unplucked beaver fur from under which extended strands of long, coarse white hair from under the neck of a reindeer (fig. 105). A string of small beads hung from each side.

Armbands

Men wore fancy armbands around the upper arm when dancing without a parka. These were made of seal or caribou skin with the fur on the inside and tufts of dog fur or other fancy fur sewn on for decoration. The bands were approximately three inches wide and were not continuous, but rather a strip with skin ties at each end.

Mittens

Formerly wrist-length mittens were commonly made of seal or caribou skin with the fur and the rough edge of the seam on the outside. Sealskin mittens were frequently made from leftover pieces of skin after boots were cut from them. The back and palm were separate pieces and the thumb one piece; gloves were unknown. Women wore fur mittens reaching nearly to the elbow with wolverine trim along the upper edge (Curtis, 1930, p. 11). Mittens of silver salmon skins which reached to the elbow were worn by men when hunting in a kayak in spring. The fish were cut down the back and the belly skins used for mittens. These sometimes were lined with grass or had grass mittens, woven all in one piece, inside; often they had a border of bleached sealskin. The combination of fish skin mittens with grass padding was less bulky for paddling than fur mittens. According to Curtis (1930, p. 11), mittens of dehaired sealskin that reached barely to the wrist were also worn by men in the spring.

Boots

In former times the skin from caribou legs was used for winter boot tops, dark hair for the front and back pieces while the two sides were of white hair. The small piece over the instep was frequently taken from the lower part of the leg just above the hoof. In preparing a piece of caribou leg skin

for boots, it was first scraped on the inside with a bone scraper, then placed in the *qasgiq* during a sweat bath and scraped again with pumice.

Boot soles were occasionally cut from old kayak covers that had been made from bearded seal skins. Crimping of toe and heel with an ivory crimper was done before any sewing; Nunivak women never used their teeth. The sole was sewed to the upper with a simple overcast stitch, the needle being inserted into the ridge of every crimp. For tying boots there were two skin loops on each side of the sole. A strip of sealskin was run through them, across the instep and heel, and then tied around the ankle. Painted skin sometimes formed a fancy border around the boot tops.

Both men's and women's water boots were made of sealskin with the hair on the inside. Although fresh sealskins were sometimes used, a skin that had been used for an oil poke for a year or two was more likely to be completely waterproof. In summer and indoors, men sometimes wore a short ankle boot (Curtis, 1930, p. 11). For tending their seal nets, hip-length water boots were worn.

In former times, men wore grass socks and folded grass insoles inside their water boots; in cold weather sealskin socks were worn. Lantis collected a pair of open weave sedge and grass socks constructed of a two-strand warp and, at intervals, two-strand weft. The tops are edged with lavender cotton flannel. There are several rows of close weave all around the socks above the open weave soles (fig. 106). In making the socks, a smooth stone was used as a boot last when the sole was nearly complete; the stone was placed inside and work continued over it. This last was used not so much for shaping the sock as to provide a basis for the weaving so that the openwork twined grass could be pulled even and firm. The sedge was used principally because its pink color was more attractive than grass.

Comparison with a pair of grass socks obtained by Gordon on the Kuskokwim River (Kaplan & Barsness, 1986, p. 147, no. 129) is interesting. Two colors were also employed in this pair, but apparently only in the close weave portion which extends up over the instep. The two colors form stripes of weft, whereas the Nunivak socks have warp and weft of different colors. The earlier Kuskokwim pair are not bound at the top.

Coarse grass, gathered in October, was used for insoles. Grass for one boot was divided into two bundles, folded and laid together so that each was turned over the rough ends of the other at toe and heel. The two together were grasped in the middle in as compact a bunch as possible and thrust into the toe of the boot first; then grass for the heel was pushed into place. After the insole was in place in both areas, it was patted out to the correct width. The insoles, which had to be replaced every two or three days, provided a cushion and absorbed moisture.

Children's Clothing

Reindeer fawn and puppy skin parkas, with the fur inside, were made for babies and small children. Puppies one and two months old were killed for the purpose. Fawn and puppy skins were turned inside out, scraped, hung out to dry, and then put away (fig. 107). When needed the skins were taken from storage, rubbed between the hands with a rotary motion, and chewed as necessary to soften and loosen tissue that had not previously been removed.

For a sealskin parka, one skin was required for a three year old, two for a five or six year old, and three for a child of 10 or 12 years. A small child's sealskin parka was often decorated with tassels of the same material stitched to the upper center of the back. A baby's boots were always made with the fur inside but otherwise were similar in construction to adult boots. In former times, babies wore long boots and no pants. When a child was toilet trained, pants separate from boots were put on a boy, while girls were given trouser-boots like those worn by women.

Although usually no diaper was put on a baby, since the mother or infant caretaker was trained to recognize the infant's needs and to hold him or her over a receptacle or the ground, there was another provision. A naturally curved section of a seal stomach was cut out in a bowl shape with one side extended higher like a rectangular flap; dry moss was put in the bottom. With the top edge of the flap hemmed and a drawstring run through the hem, the infant was placed in the bowl in a sitting position with the flap up between the legs and the string tied around the waist. The moss served as a disposable diaper and the strong, hairless membrane, kept pliant by body heat and moisture, was functionally like rubber pants.

Personal Adornment

The only form of facial adornment used by men were labrets worn by only a few individuals at the

time of Curtis's fieldwork in 1927. Nevertheless, he noted that they were worn on Nunivak to a far greater extent than on the mainland (Curtis, 1930, pp. 11–12). The holes for labrets worn by men were made just below the ends of the lower lip at about the age of puberty. Small ivory plugs were inserted to keep the holes open. After the skin healed, larger plugs could be inserted to enlarge the holes. Curtis (1930, opp. p. 56) illustrated a man wearing simple ivory plugs.

Nelson (1899, pp. 46–47, pl. XXII, 10–12) described and illustrated three men's labrets from Nunivak collected by Dall. Unlike most mainland labrets, the hat-shaped sections that pierce the lip are separate pieces of ivory. On one a wooden pin extends through the base and has a large white bead at its outer end. Beyond this bead is a piece of serpentine cut to represent a whale's tail. On the second six short strings of beads held in position by ivory spacers form the outer part. The third labret, much simpler, has a lead tip in the form of a truncated cone extending from the base. The whale tail form was not worn in 1939–1940 but a few men still owned them. In the past, wide lateral labrets were also worn.

According to Curtis (1930, p. 12), women wore labrets only as part of the ceremonial and dance costume, but Lantis observed them worn at other times. The ordinary form of the woman's labret was a simple sickle-shaped piece of ivory. An elaborate example from Nunivak described and illustrated by Nelson (1899, p. 46, pl. XXII, 1) has two such pieces joined by an external bar. On the inner side of the sickle-shaped pieces are small perforated discs of ivory. Attached to the outer borders are three short, double strings of beads which hang down over the chin. Curtis (1930, opp. pp. 20, 42, 66, 68, 72) illustrated women wearing similar labrets.

For ceremonial and dance wear, women wore earrings which varied from simple ornaments of decorated ivory to elaborate beaded pendants (Curtis, 1930, p. 12). Nelson (1899, p. 54, pl. XXIV, 2) described and illustrated a circular ivory earring engraved with concentric circles and having a central hole filled with a small ivory plug. There are small ivory spurs on each corner and below, extending downward, two oblong ivory projections the ends of which are pierced by small, round holes. These projections are decorated with engraved lines and concentric circles. A pair of earrings from Nunivak collected by Nelson are illustrated by Fitzhugh and Kaplan (1982, p. 144, no. 165). They are engraved with seal faces which are believed to represent the *inua*, or spirit, of that animal. Curtis (1930, p. 12, opp. pp. 66, 68) described and illustrated extremely elaborate earrings in which the strings of beads formed a long loop extending from one earring to the other and passing under the chin or around the back of the neck. In 1905 Gordon collected a pair which have ivory ear pieces carved to represent human faces, from which hang long strands of beads terminating in what appear to be circular pieces of metal with central holes (Kaplan & Barsness, 1986, p. 149, no. 133).

A girl's nasal septum was pierced to add decoration, usually a short string of beads hanging over the upper lip (Curtis, 1930, opp. pp. 66, 68). Perhaps before beads were obtained there was an ivory or bone pin through the nose, although informants did not mention this.

Nelson (1899, p. 50) observed that tattooing was universally practiced among women of the Bering Sea region, but that the Eskimos of the Yukon-Kuskokwim Delta had adopted the practice in relatively recent times from the Nunivaarmiut. According to Curtis (1930, p. 12), tattooing on Nunivak consisted of a single line extending from each corner of the mouth down the chin. Lantis (1946, p. 225) reported that there might be two lines at each corner and a row of dots from the outer corner of each eye across the temple. Parallel lines were also tattooed around the wrist. The process of tattooing involved dipping a sinew thread into a mixture of charcoal dust and seal's blood. With a sharp ivory needle fine stitches were made in the skin and the thread drawn through leaving the coloring under the skin (see Lantis, 1946, pp. 224–225, regarding occasions for piercing and tattooing).

Combs for the hair were made by cutting slits in curved pieces of antler, bone, or ivory. Nelson (1899, p. 58, fig. 16, 2) described and illustrated an ivory comb from Nunivak provided with large teeth at one end and small ones at the other.

XII. Conclusions

As noted in the Introduction, the Nunivaarmiut had direct contact only with those Yupik speakers on nearby Nelson Island and the adjacent mainland. Subsistence similarities between the two islands were particularly noteworthy. Relatively late contact and geographic isolation, combined with

a lack of commercially exploitable resources but an abundance of subsistence resources, was characteristic of both areas. By the early 1930s use of firearms, the most significant innovation, was well established on both islands, but the subsistence cycle was not seriously affected. Similarly, the expansion of commercial fox trapping and the growth of introduced reindeer herding in the 1920s were not major disruptions since they did not conflict with either spring seal hunting or summer fishing. Peoples of southwest Alaska adjacent to Nelson and Nunivak islands, from Norton Bay to Nushagak Bay, were, like the islanders, never sea mammal hunters to the extent that the people of the Bering Strait region were, for example. Their emphasis on fishing, however, was combined with an inland orientation lacking among their island neighbors.

The initial period of direct contact on Nelson and Nunivak islands was characterized by extensive depopulation following the introduction of European diseases. In their pursuit of game the Eskimos were accustomed to movement, resources being harvested as they became available. Mobility was traditionally important for obtaining the highest yield per unit of labor.

With population decline, the traditionally dispersed and seasonally mobile populations became more stable. Since fish and game resources were never seriously depleted even after firearms came to be widely used, the population that remained, though concentrated in fewer villages, was better equipped to pursue available resources (Oswalt, 1967, pp. 128–129; VanStone, 1967, pp. 129–130; Fienup-Riordan, 1983, pp. 8, 29–30, 36–37).

The similarities just discussed make it clear why the Nunivaarmiut shared many material culture traits with the inhabitants of the lower Kuskokwim-Yukon area of mainland southwest Alaska despite certain differences in details of technology and in subsistence emphasis. This shared material culture inventory is apparent in the following trait list. It consists of Nunivak material culture elements derived from Lantis's field notes together with those described by Nelson (1899) and Curtis (1930). Also included are a few items collected by Gordon in 1905 (Kaplan & Barsness, 1986) and Collins in 1927, and excavated from historic sites on the island by VanStone (1957).

Sea Hunting

sealing harpoon with toggle head
harpoon dart
throwing board
harpoon head cover
harpoon for bearded seal, walrus, beluga
lance with detachable head
harpoon float
cord attachers
hunting hat
ice hunting harpoon
seal gaff
seal net
net amulets
snow goggles
eyeshade
thrusting spear
three-pronged bird spear
bird spears with barbs at midpoint on shaft

Land Hunting

caribou enclosure
caribou snare
caribou pit trap
composite sinew-backed bow
plain sinew-backed bow
arrow with three split feathers
blunt arrow for birds
Mediterranean arrow release
wrist guard
finger guard
quiver
box for arrow or spear points
bird nets for puffins
bird net for murres
bird snare
excavated fox trap (two types)
fox snare
excavated wolf trap
mink trap

Fishing

ice pick
ice scoop
ice saw
multipronged tomcod spear
tomcod hook
lure
lure hook
sinker-lure
smelt hook
gill net
dip net
seine
net shuttle
mesh gauge
marlin spike
fish trap
fishing harpoon
fish arrow
aboveground fish storage cache

Transportation

kayak
kayak line holder

crutch-handled kayak paddle
double-bladed kayak paddle
stone or walrus bone anchor
snow scraper
kayak rack
boathook
spear and paddle guard
umiak
umiak mat sail
umiak oars
dogsled (two types)
braided grass harness
kayak sled
snowshoes
breast yoke
pack cord

Shelter and Storage

semi-subterranean house with four-post center construction
qasgiq with cribbed roof
excavated cache
elevated cache(?)
temporary snow block shelter
lined food storage pits

Tools

toolbox
adze
saw
crooked knife
thumb and finger guard of sealskin
end-bladed knife
ulu
awl
composite knife
whetstone
bow drill
strap drill
wedge
maul
root pick
rake
hammer
meat hook
snow shovel

Household Equipment

wood bucket
wood dish
wood platter
ladle
dipper
sealskin bucket
skin clothing bag
skin workbag
snuff bag and tube
snuffbox
quid box
grass mat
coiled grass basket
situla-shaped clay cooking pot
saucer-shaped clay lamp
sealskin poke
marrow extractor
snow beater
pothook

Skin Preparation and Sewing

wood form to hold sealskin
two-handed scraper
end scraper
sewing bag ("housewife")
sewing box
bird skin bag
bird foot bag
walrus kidney bag
needle case
thimble
thimble holder
bodkin
sinew shredder
needle
boot sole creaser
sinew twister
thread reel

Clothing and Personal Adornment

fur parka
feather parka
gut parka
fish skin parka
fish skin shirt
sealskin trouser-boots
belt
fur cap
feather sweat bath cap
dance cap
dance cornet
armband
sealskin mittens
fish skin mittens
grass mittens
caribou skin winter boots
sealskin water boots
grass socks
grass insoles
labret
earrings
tattooing
comb

Those elements listed which appear to be unique for Nunivaarmiut, since they are not described by Nelson, include the caribou pit trap, light fishing harpoon, ice saw, aboveground stone fish storage cache, traditional sled with dogs hitched at the sides, braided grass dog harness without buckles or other harness parts, pack cord, and excavated animal traps. Particularly distinctive on Nunivak were kayaks much larger and heavier than those used by mainland peoples and the extensive use

of grass for a variety of purposes associated with many indoor and outdoor activities. Nunivak art styles were also distinctive, and the variety of artistic expression inherent in Nunivak material culture will be treated in detail by Lantis in a separate publication.

A significant aspect of Nunivak Eskimo life revealed by a study of material culture, and noted previously by Lantis (1946, p. 260), was the decided individualism that characterized economic activities including art and craftsmanship. Cooperative activities were limited, confined almost exclusively to some aspects of kayak hunting, to seal netting and bird netting, the taking of fish in traps or nets, and house or *qasgiq* construction. Even when cooperative, these tasks were usually performed by two partners or relatives.

Another significant feature of Nunivak culture stressed in the preceding pages was the importance of gathering, an activity which on neighboring Nelson Island provided nearly half the diet (Fienup-Riordan, 1983, p. 36). Gathering, which was principally women's and children's work, serves to point up two aspects of Nunivak material life that deserve emphasis: first, the remarkable industriousness and clearly defined sexual division of labor previously noted by Lantis (1946, p. 256); and second, the handling and working of a great variety of raw materials, including grass, driftwood, plant food, a variety of marine products, clay and other minerals, ivory, antler, and bird skins. It seems safe to say that nowhere else in Eskimo Alaska, with the possible exception of Kodiak Island, was the natural environment as fully utilized by the native peoples.

There appeared to be more differences from mainland practice in women's work than in men's work. Women cut fish differently, used a different kind of needle case, made boots somewhat differently (less well), and used grass in a greater variety of ways than, for example, the women of the lower Yukon-St. Michael area. This may be explained by greater isolation which encouraged a separate development, or by conservatism of the women, who maintained old techniques, designs, and habits when their men could travel for trade and absorb new ideas. In the 19th century even the isolated coastal villages of the Yukon-Kuskokwim Delta were affected either by Inupiat from the north or Russians and later Americans from the south. Once the latter were established in the region, they could visit mainland communities summer and winter, whereas Nunivak was accessible only in summer. Hence Nunivak in some ways could diverge and in other ways conserve what had once been a widespread culture. This is shown more clearly in religious practice than in technology. Although the Bering Strait islands were similarly isolated, they were visited by commercial whalers at frequent intervals and also had access to Asiatic diffusion of new ideas.

Until World War II, Nunivak was about 50 years behind the Seward Peninsula-Norton Sound area in acculturation. After 1945, with the operation of its modern meat (reindeer) processing plant, the only one in Alaska, cultural change was astonishingly rapid. (Regarding these changes, see Lantis, 1972, particularly pp. 43–45.) As of 1985, the island had one very small, modern community, Mekoryuk, while most other Nunivaarmiut lived in Bethel or Anchorage, doing administrative work, driving taxis, or performing a range of other jobs like their native and non-native neighbors.

Acknowledgments

Figure 1 was drawn by Mrs. Linnea Lahlum and some photographs reproduced from copy negatives made by Field Museum's Division of Photography. Unless otherwise indicated in the captions, all photographs were taken by Margaret Lantis on Nunivak Island in 1939–1940. The author would like to thank Dr. Hans Himmelheber for permission to publish the photographs in Figures 2, 14, 23, 100, and 103 and Peter Stettenheim for the use of his unpublished field notes. Figure 37 is reproduced through the courtesy of the University of Washington Press. George R. Milner, former director and curator of the Museum of Anthropology, University of Kentucky, kindly assisted the author in his study of ethnographic materials from Nunivak Island collected by Lantis and now in that institution. An early draft of the manuscript was read by Wendell H. Oswalt and the author is grateful for his perceptive and useful comments. Several drafts of the manuscript were typed with accuracy and dispatch by Mrs. Loran H. Recchia.

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FIG. 2. The village of Mekoryuk in 1937. Photograph by Hans Himmelheber.

FIG. 3. The village of Mekoryuk in winter.

FIG. 4. A part of the village at Nash Harbor showing semi-subterranean houses and log caches.

FIG. 5. A seasonal settlement on Cape Etolin occupied principally for spring seal hunting.

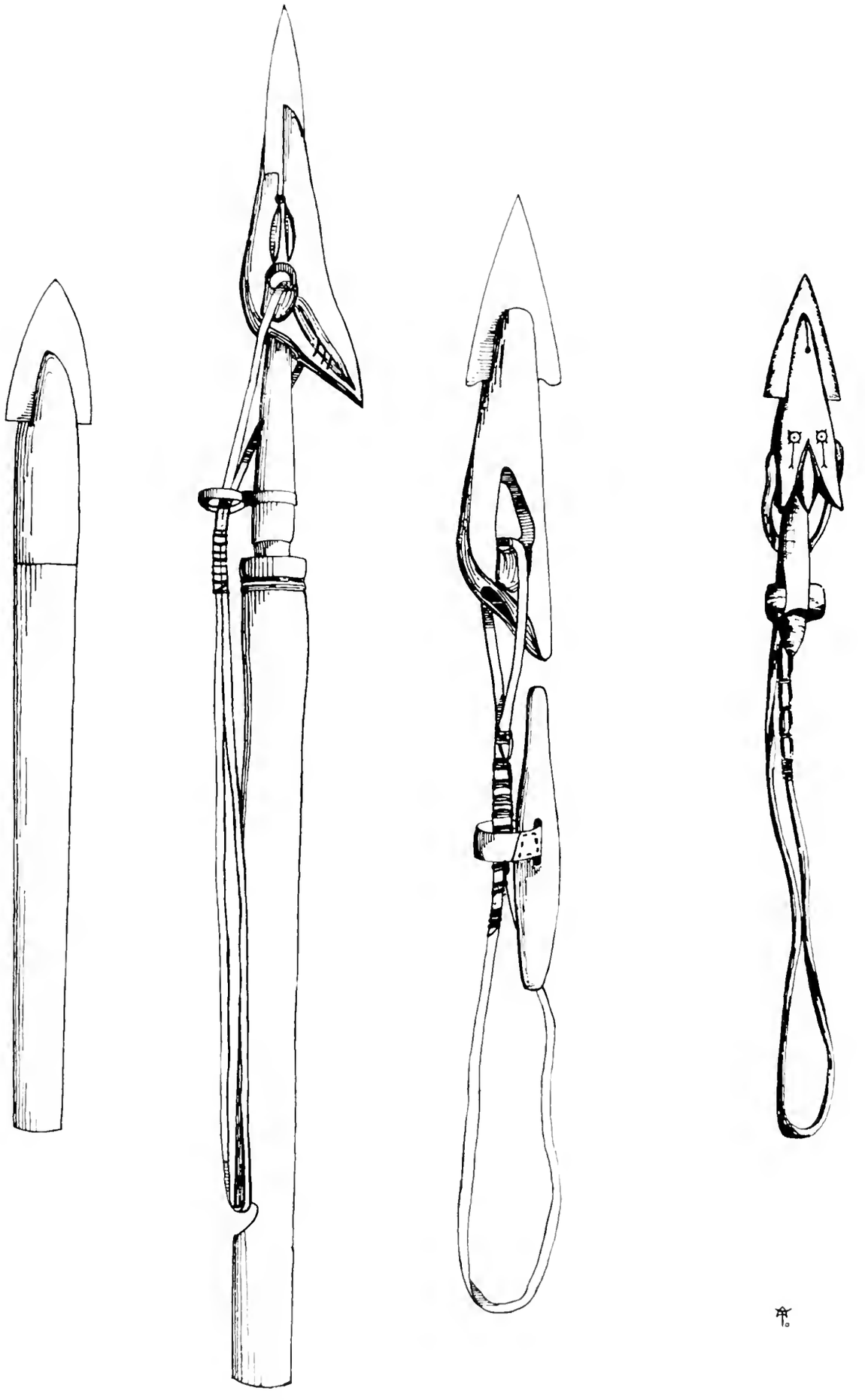


FIG. 6. Sealing harpoon heads. Note that the specimen on the right has a trifurcate spur and the blades on the left and right are parallel with the line hole, while that in the middle is at right angles to the line hole. Drawing courtesy of the Lowie Museum of Anthropology, University of California, Berkeley.

Fig. Left, sealing harpoon head (76-10-29); **right,** chisel (76-10-43). Museum of Anthropology, University of Kentucky. Photograph by George R. Milner.

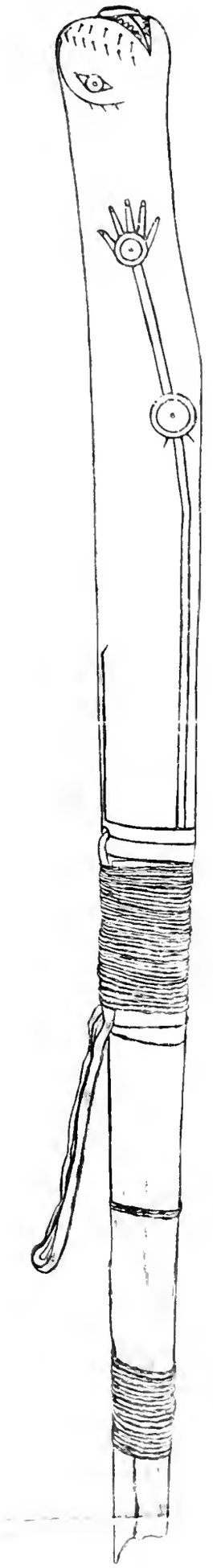


FIG. 8. Sealing harpoon socket piece of ivory with incised and blackened design. Line would be fastened to the rawhide loop with a toggle.

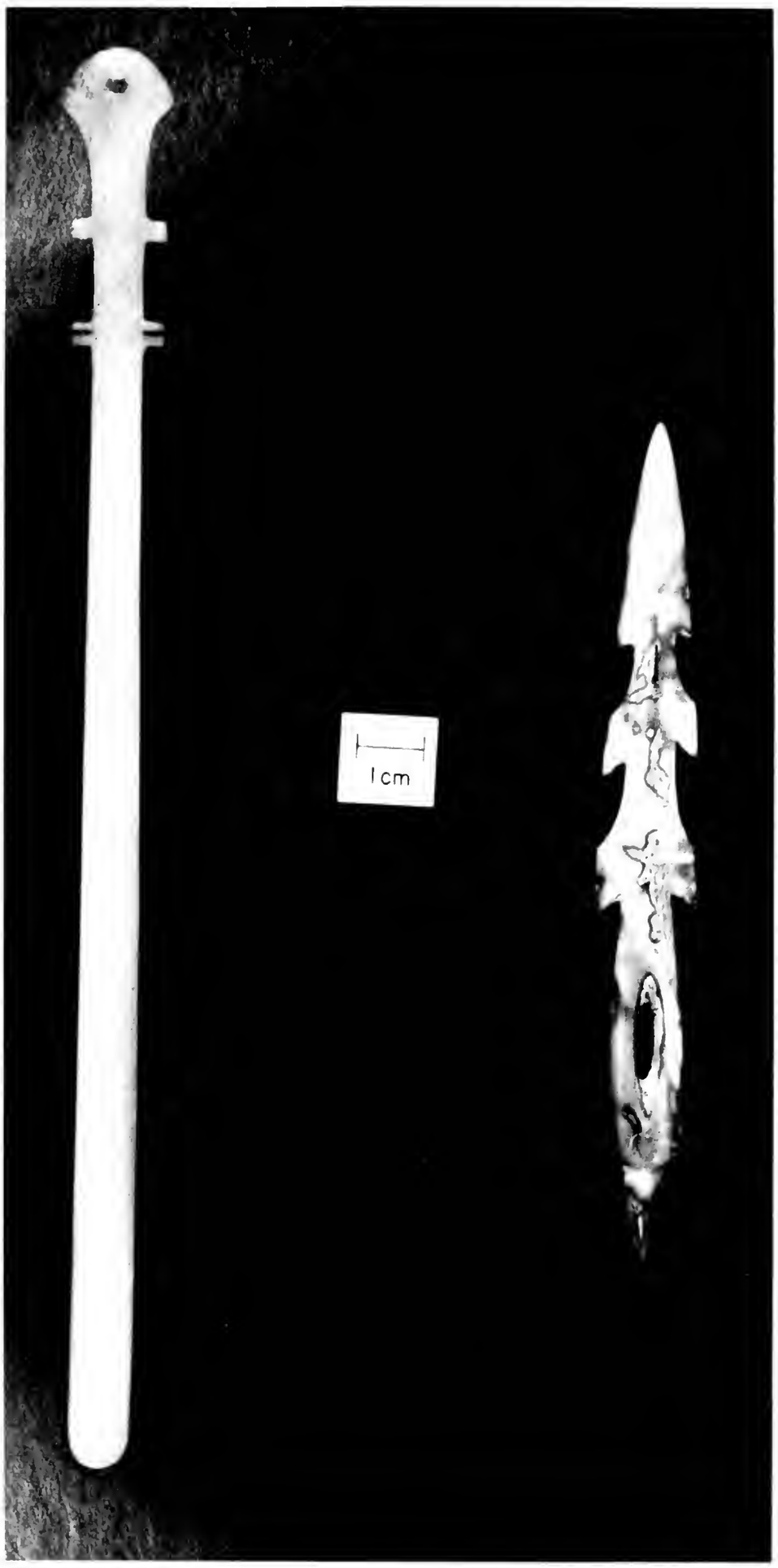


FIG. 9. **Left,** bone marrow extractor (76-10-47); **right,** harpoon dart head made of old ivory (76-10-48). Museum of Anthropology, University of Kentucky. Photograph by George R. Milner.

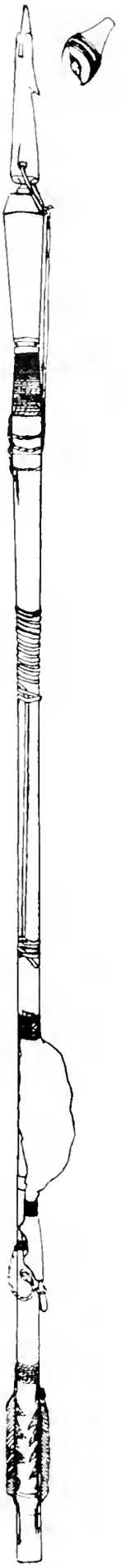
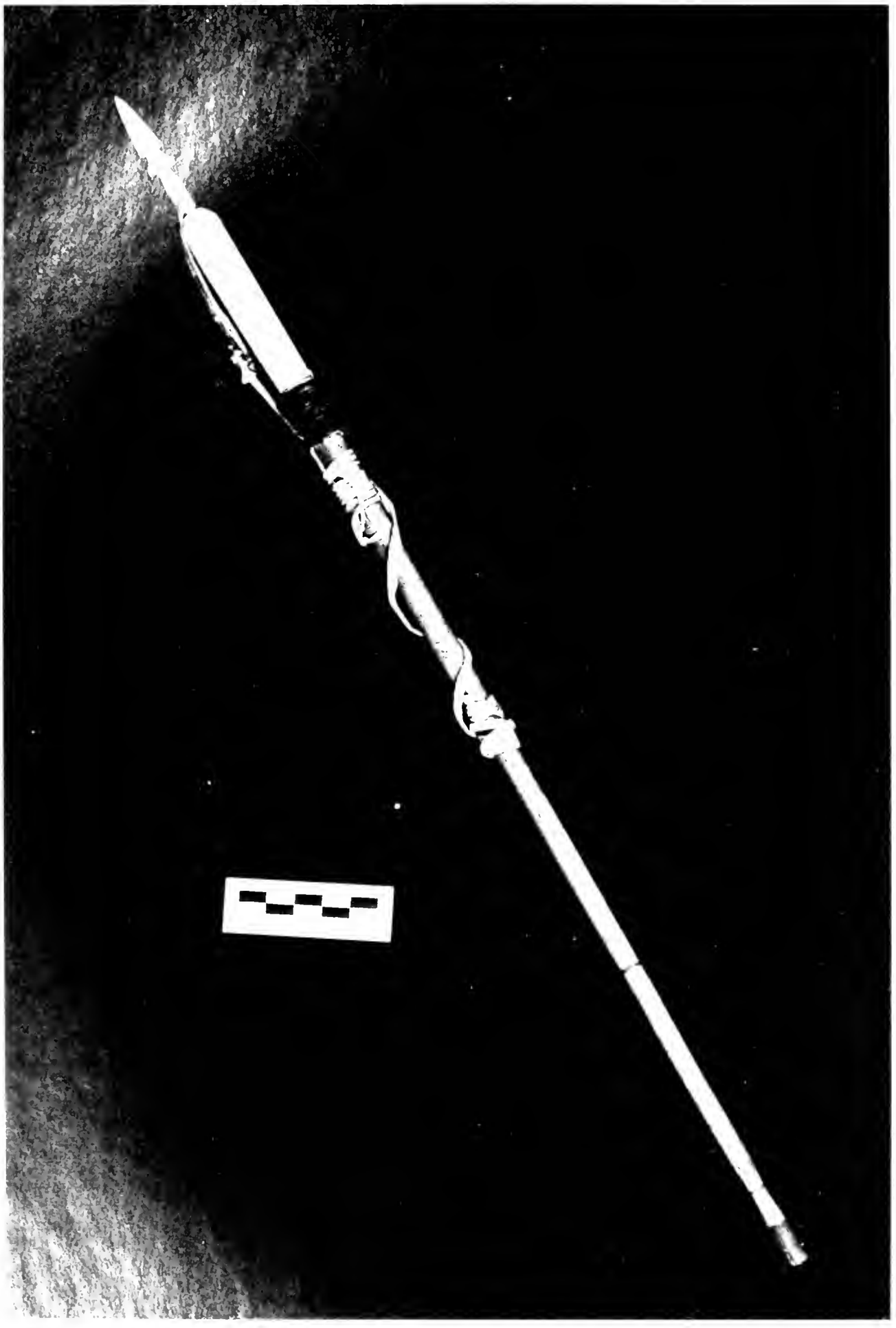


FIG. 10. Harpoon dart.



Museum of Anthropology, University of Kentucky. Photograph by

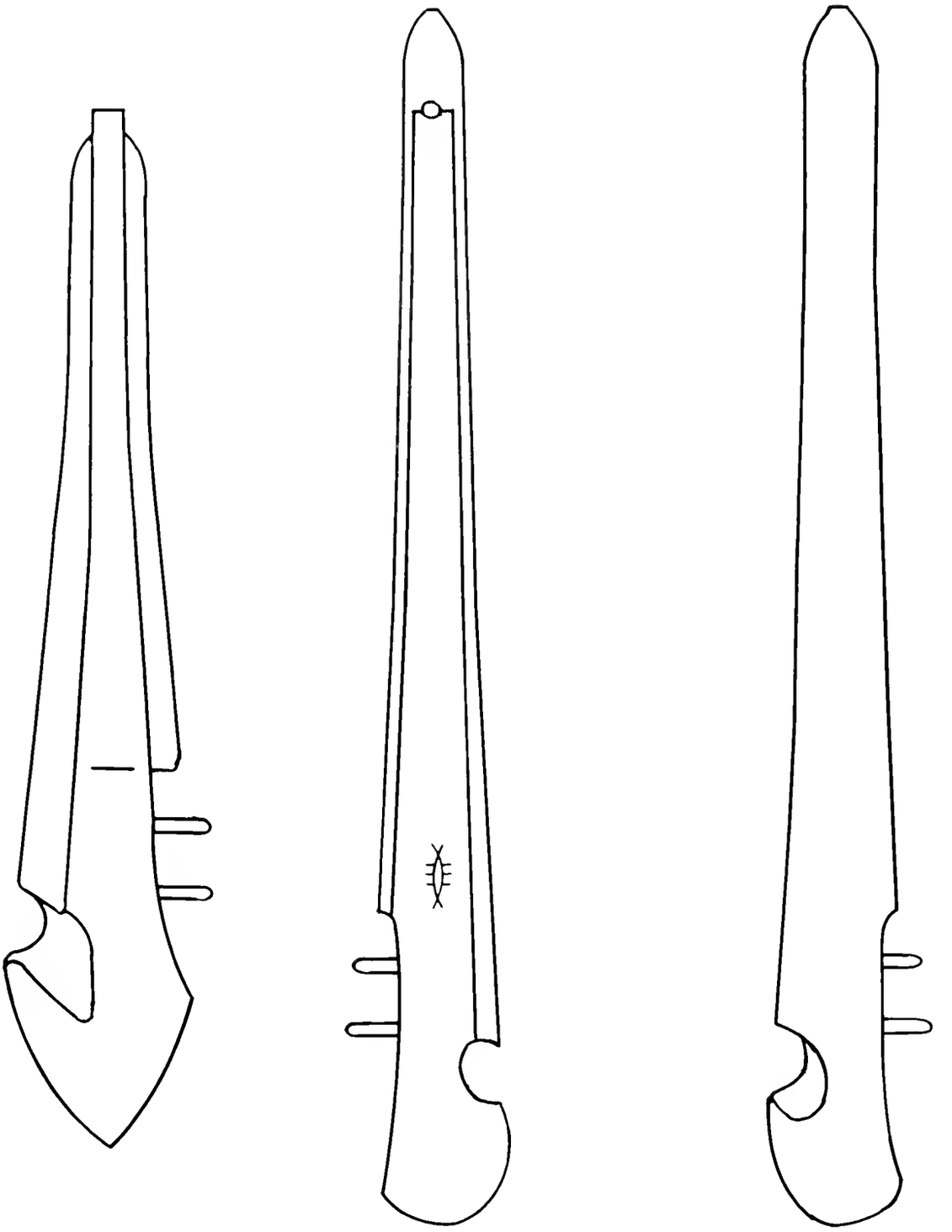


FIG. 12. Throwing boards. Drawing courtesy of the Lowie Museum of Anthropology, University of California, Berkeley.

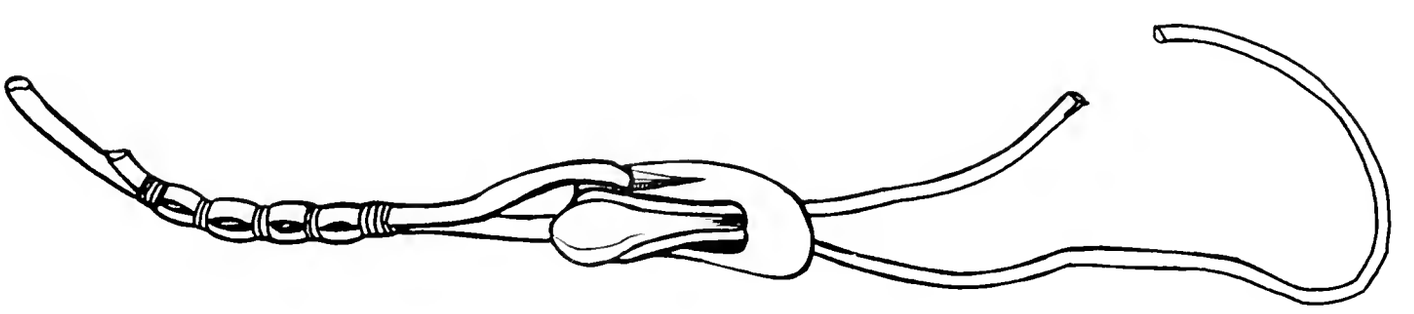


FIG. 13. Line attacher.

FIG. 14. Two kayaks lashed together to provide stability while fishermen are examining a seal net (1937). Photograph by Hans Himmelheber.

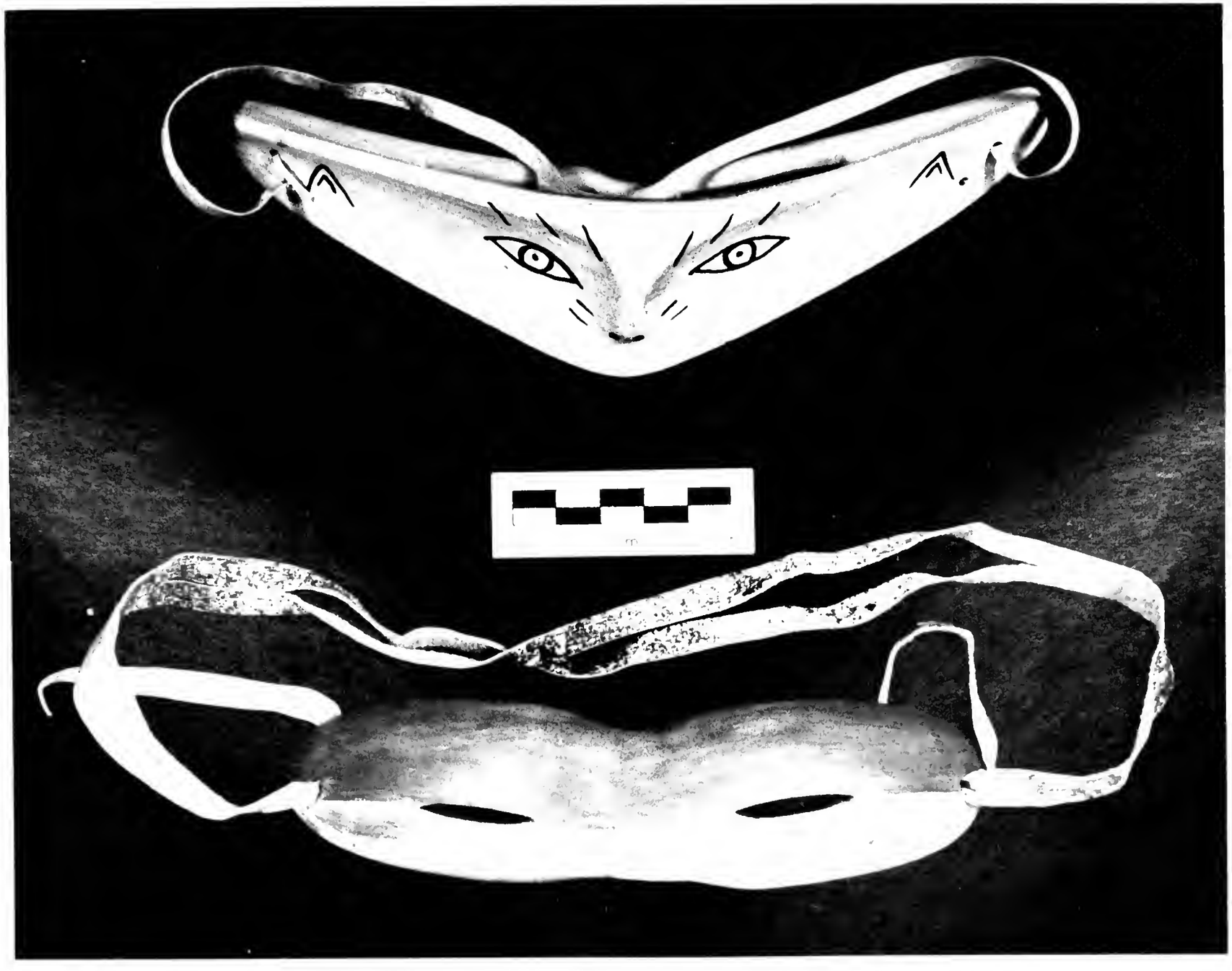


FIG. 15. Snow goggles (76-10-18-19). Museum of Anthropology, University of Kentucky. Photograph by George R. Milner.

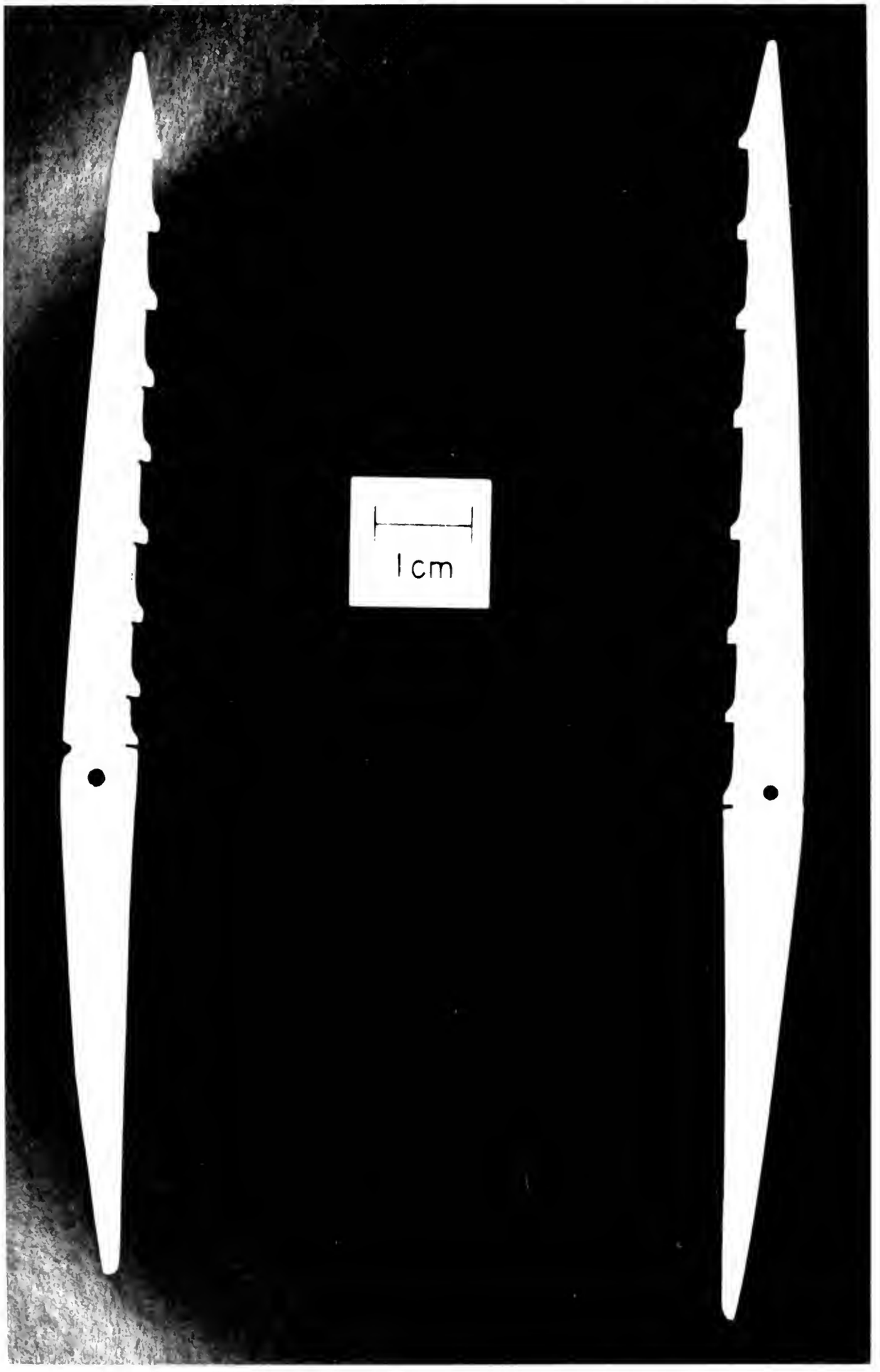


FIG. 15.—Bird spear prongs (76-10-32-33). Museum of Anthropology, University of Kentucky. Photograph by George R. Milner.

FIG. 17. Antler arrowhead.

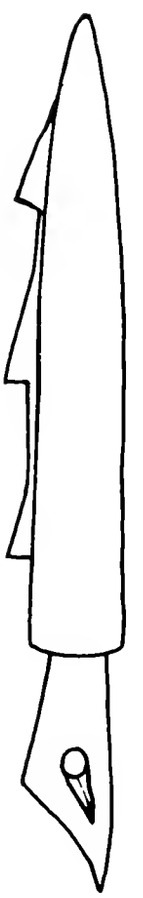


FIG. 18. Socketed arrowhead.

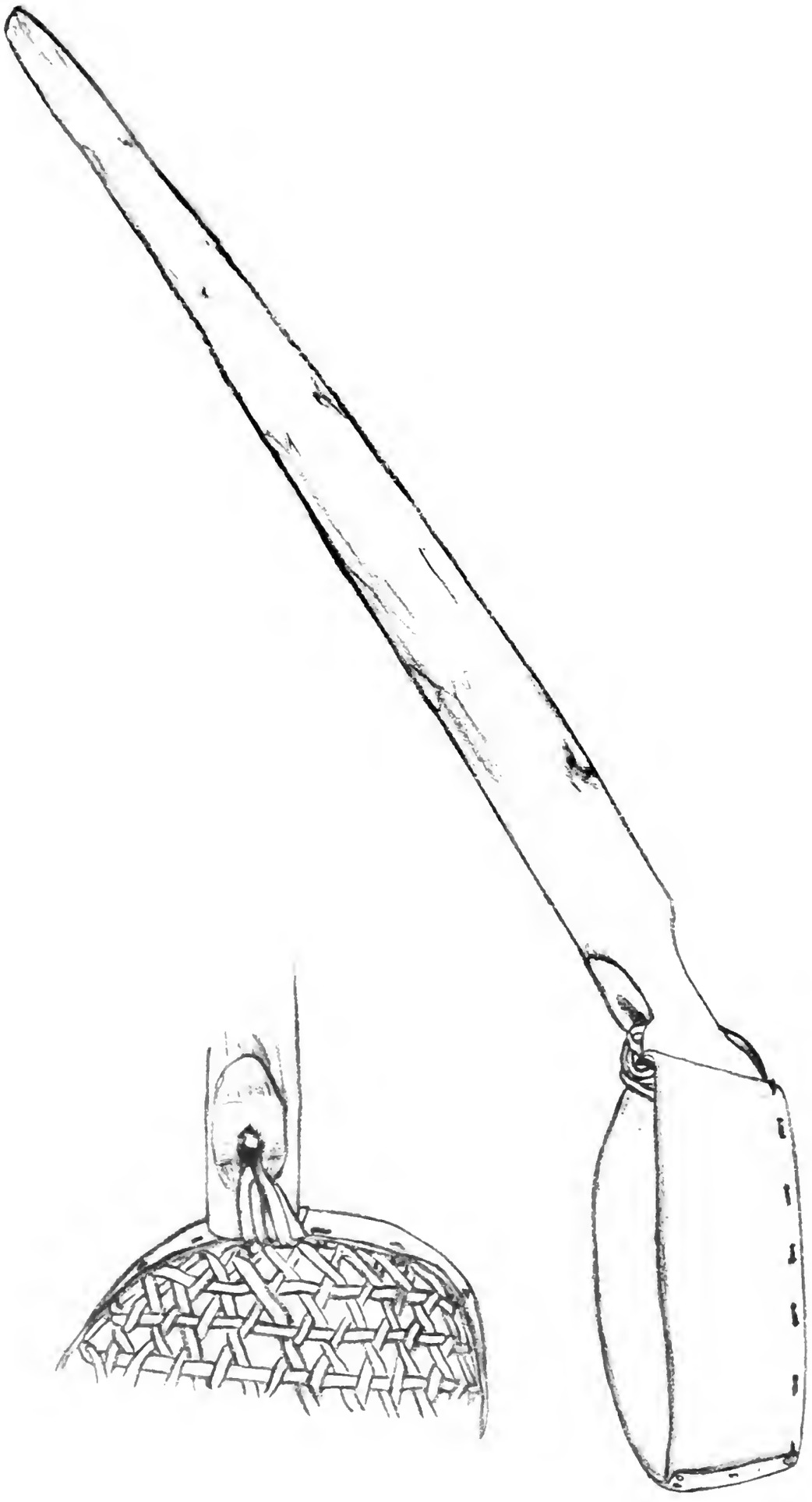


FIG. 19. Ice scoop with mesh of split willow root.

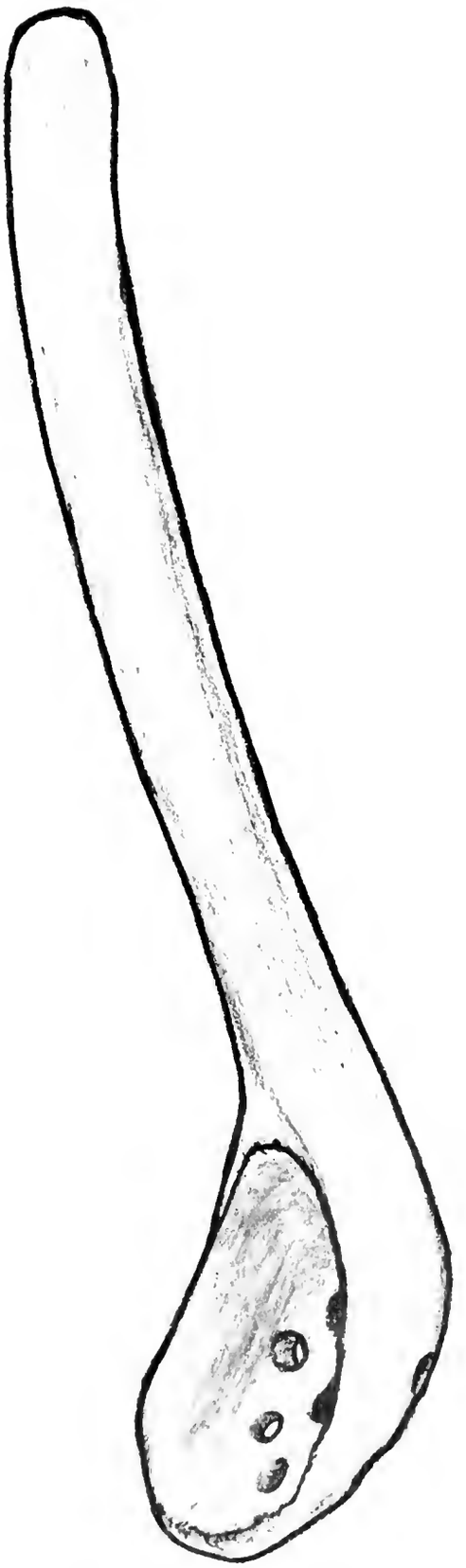


FIG. 20. Wooden ice scoop.

FIG. 21. Woman fishing for tomcod with a multipronged spear. Note ice scoop, mitten, and carrying basket.

FIG. 22. Tomcod spear.

FIG. 23. Boy fishing (jigging) for tomcod with hook and line (1937). Photograph by Hans Himmelheber.

FIG. 24. Three-piece cod hook (76-10-71a-c). Museum of Anthropology, University of Kentucky. Photograph by George R. Milner.

FIG. 25. Spools of sinew cord for a fish net.

FIG. 26. Dip net for trout and other fish.

FIG. 27. Wood and bone net shuttles (76-10-24-25). Museum of Anthropology, University of Kentucky. Photograph by George R. Milner.

FIG. 28. A pair of slat fish traps.

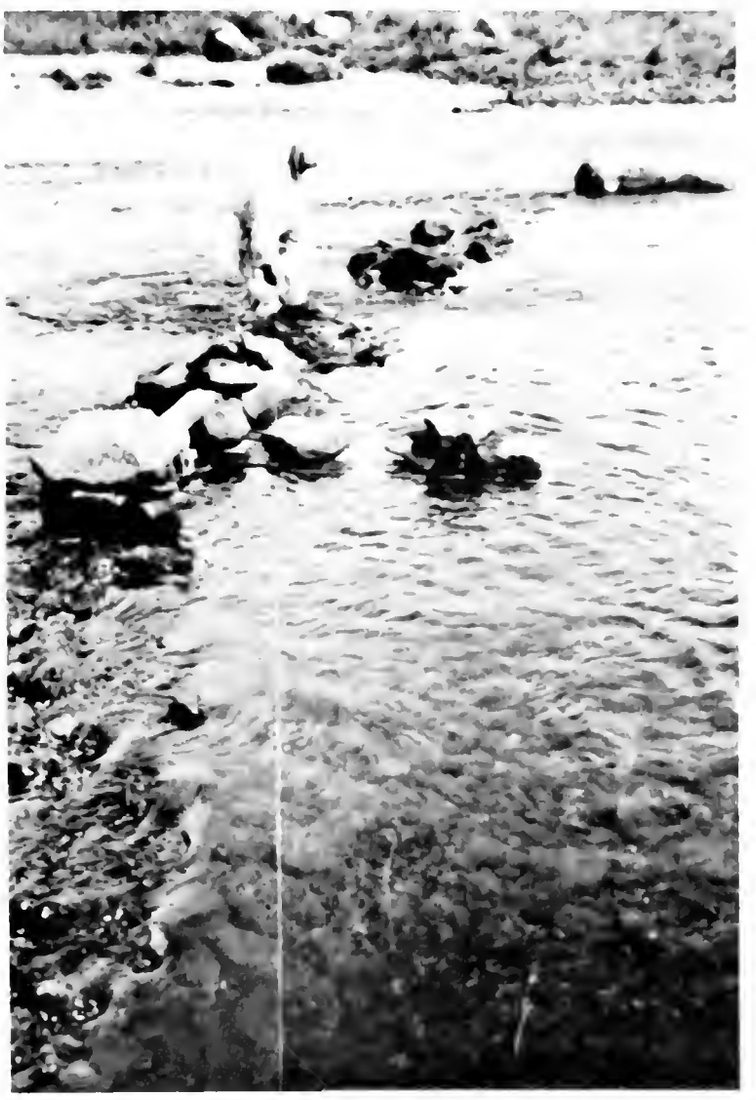


FIG. 29. Constructing a dam with an opening left for fish traps.

FIG. 30. Setting fish traps in the dam opening.

FIG. 31. A fish trap in place in the dam opening.

FIG. 32. Rocks are placed on fish traps to prevent them from floating away.

FIG. 33. Flounder and tomcod strung and hanging on a drying rack.

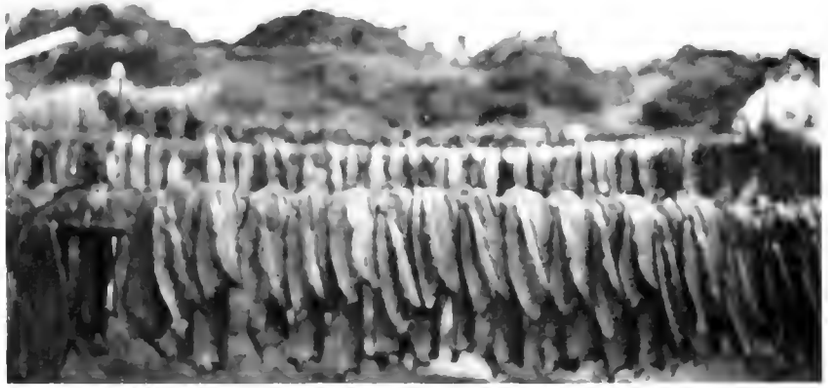


FIG. 34. Salmon sun-drying on racks.

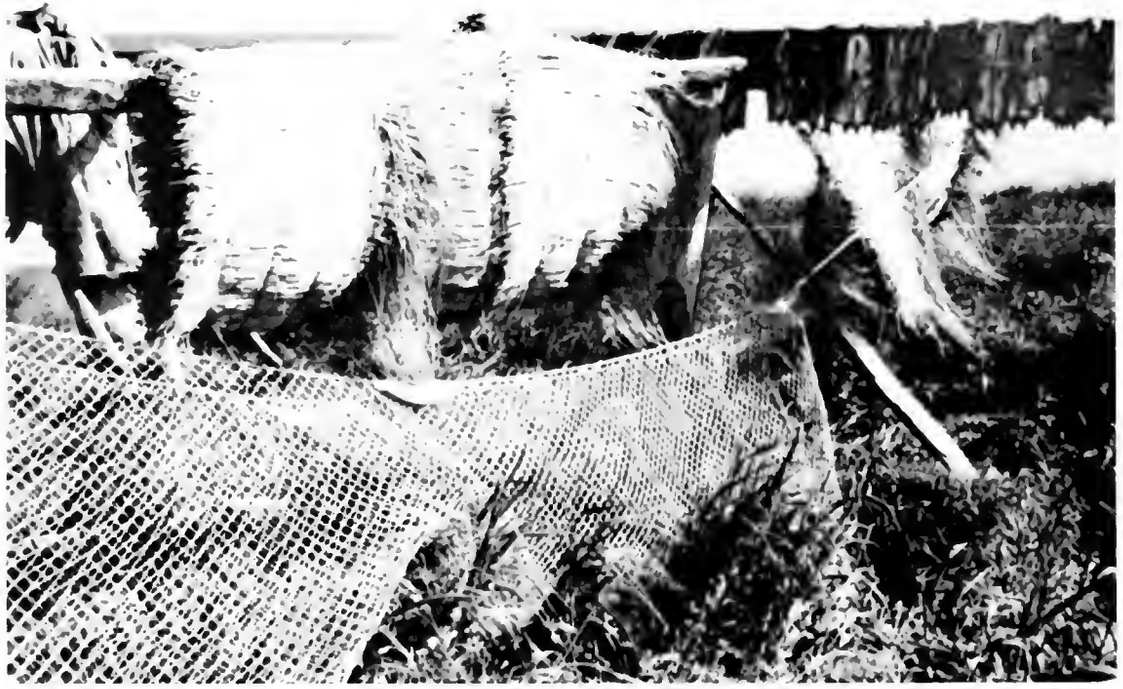


FIG. 35. Coarsely woven grass mats covering drying fish to protect them from flies and rain.

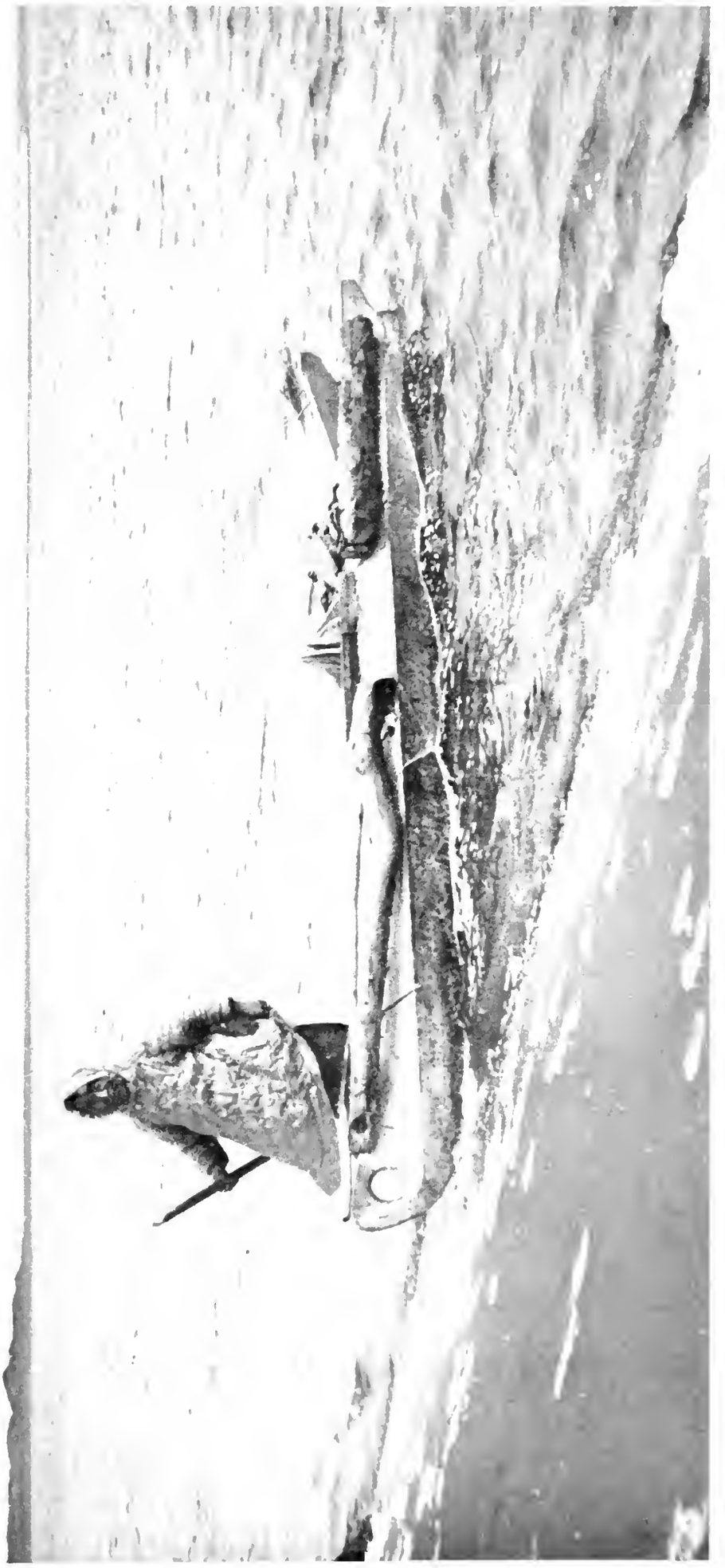


FIG. 36. Typical Nunivak Island kayak with a load of driftwood. The man wears a rain parka made of intestine casing.

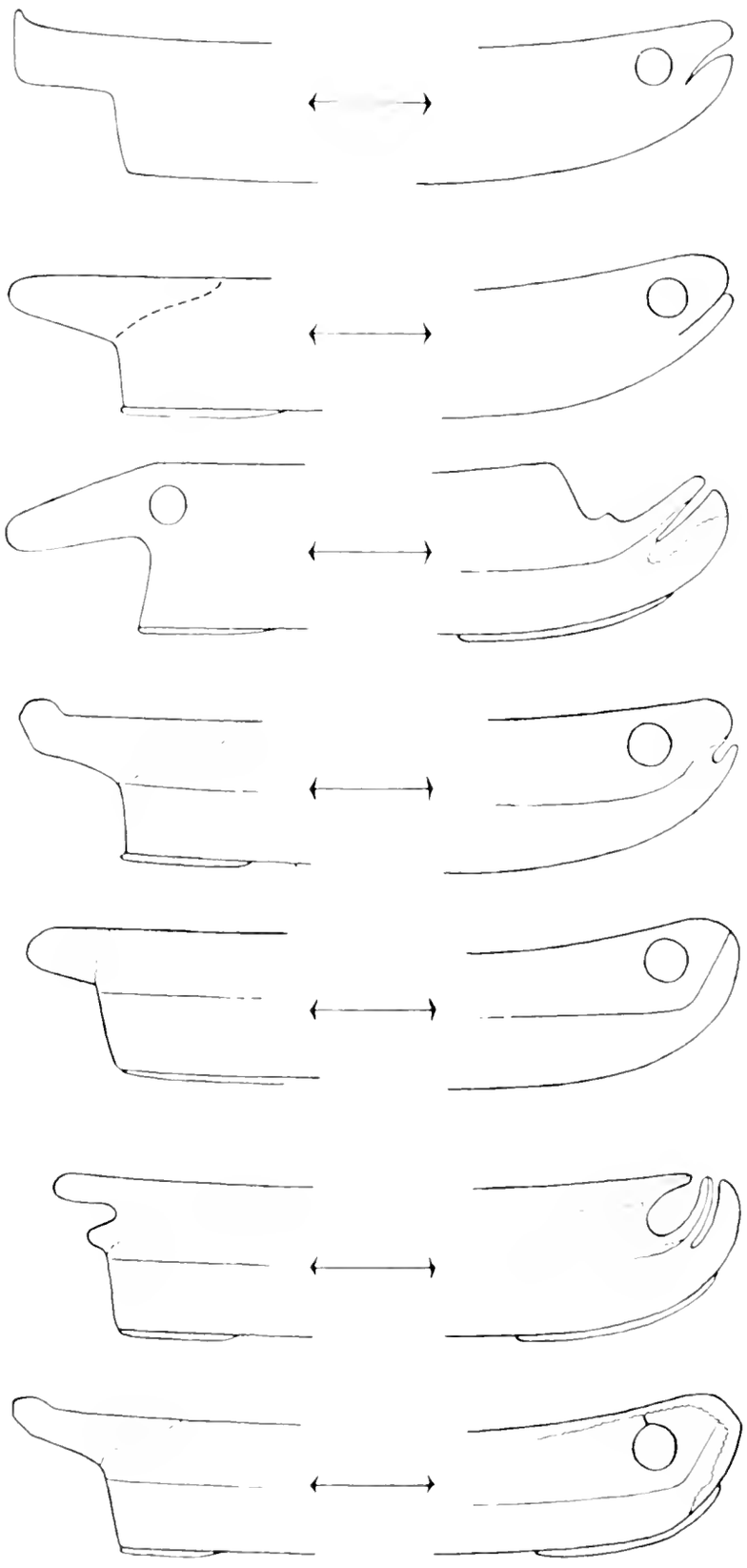


FIG. 37. Examples of personal variations of bow and stern design, drawn from kayaks in use at Mekoryuk and Nash Harbor, 1939–1940 (from Lantis, 1960, p. 85) (Courtesy University of Washington Press).

FIG. 38. A sealskin stretched and dried on a framework of wood crosspieces.

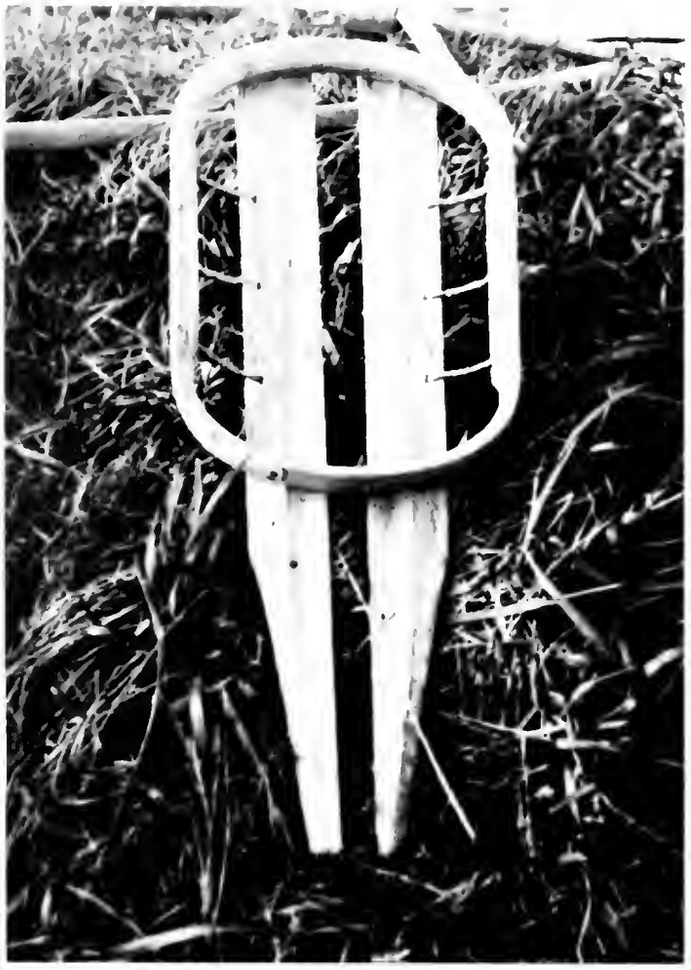


FIG. 40. A kayak harpoon line holder. The projecting pieces are inserted under a line across the deck of the kayak.

FIG. 39. Sealskins being stretched and sun bleached. Boots, seal pokes, a storage basket, and other items are also drying on the cache roof and pole.

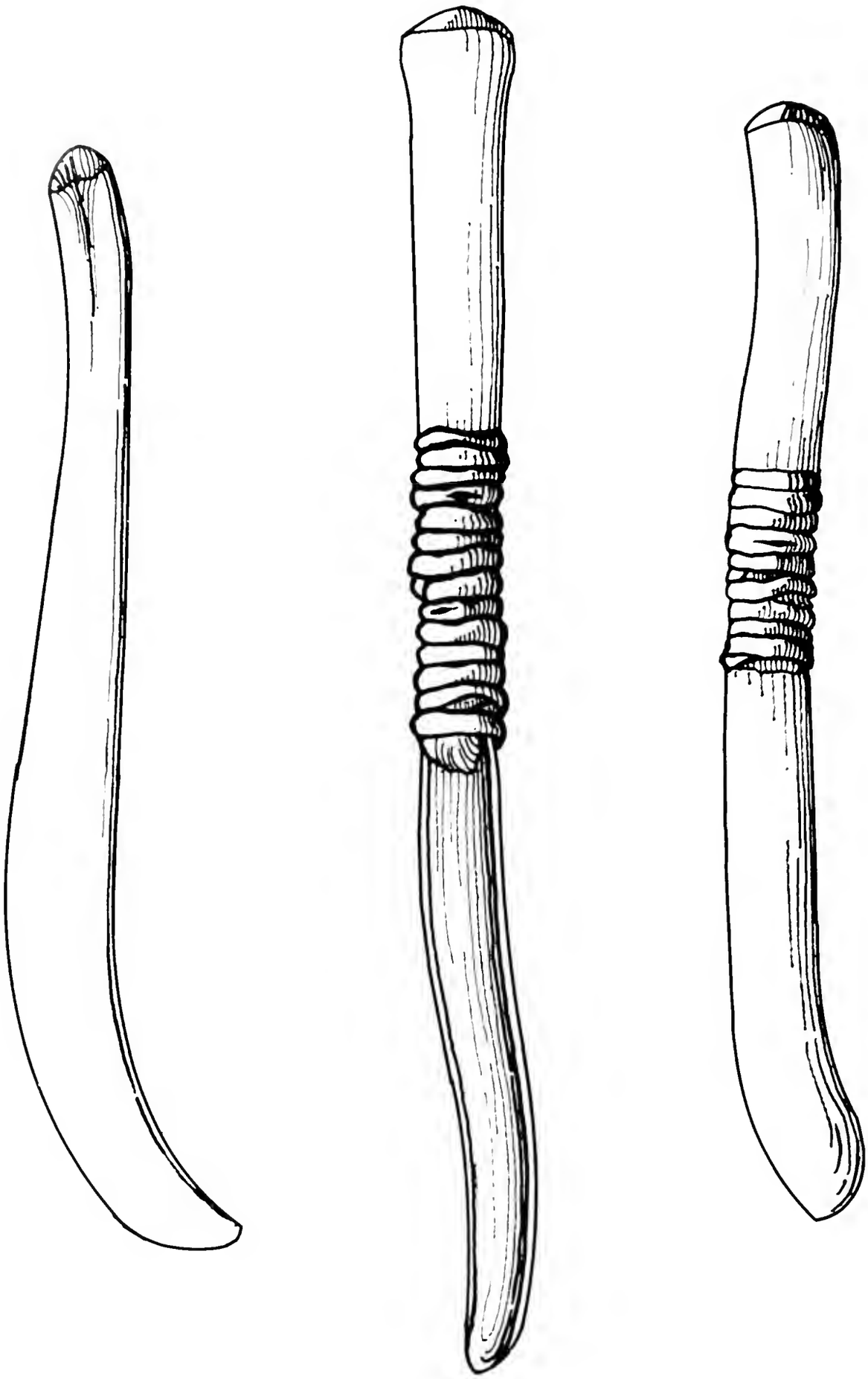


FIG. 41. Snow beater-scrapers to remove ice from a kayak.

FIG. 42. Kayak frames on racks in winter.

FIG. 43. Newly covered kayaks in spring.

FIG. 44. Man applying patch to an old kayak cover.

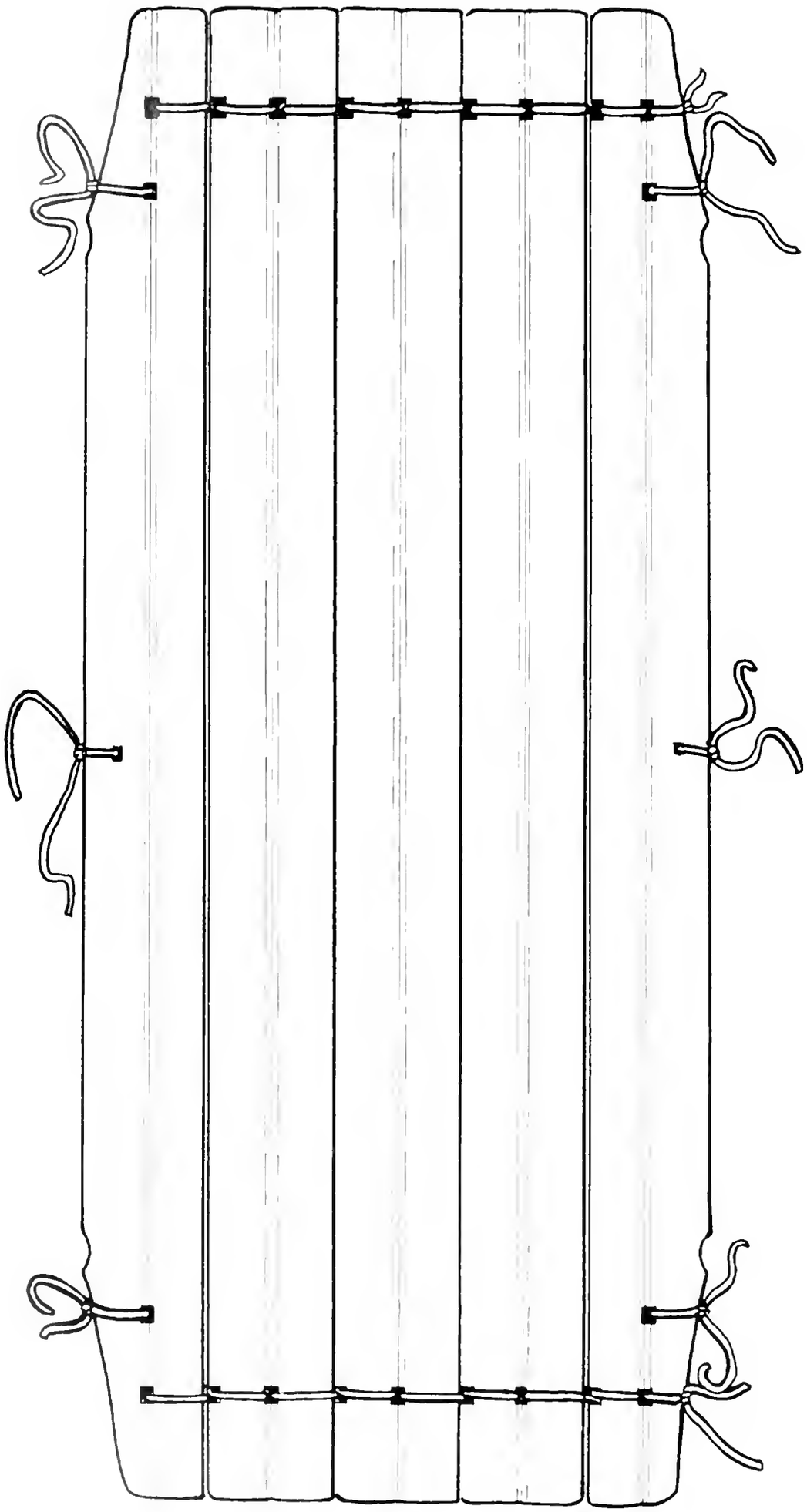


FIG. 45. Kayak seat of grooved wooden slats lashed with sealskin line.

FIG. 46. Small umiak with a new translucent cover and modern oarlocks.

FIG. 47. Same umiak as in Figure 46, showing part of framing.

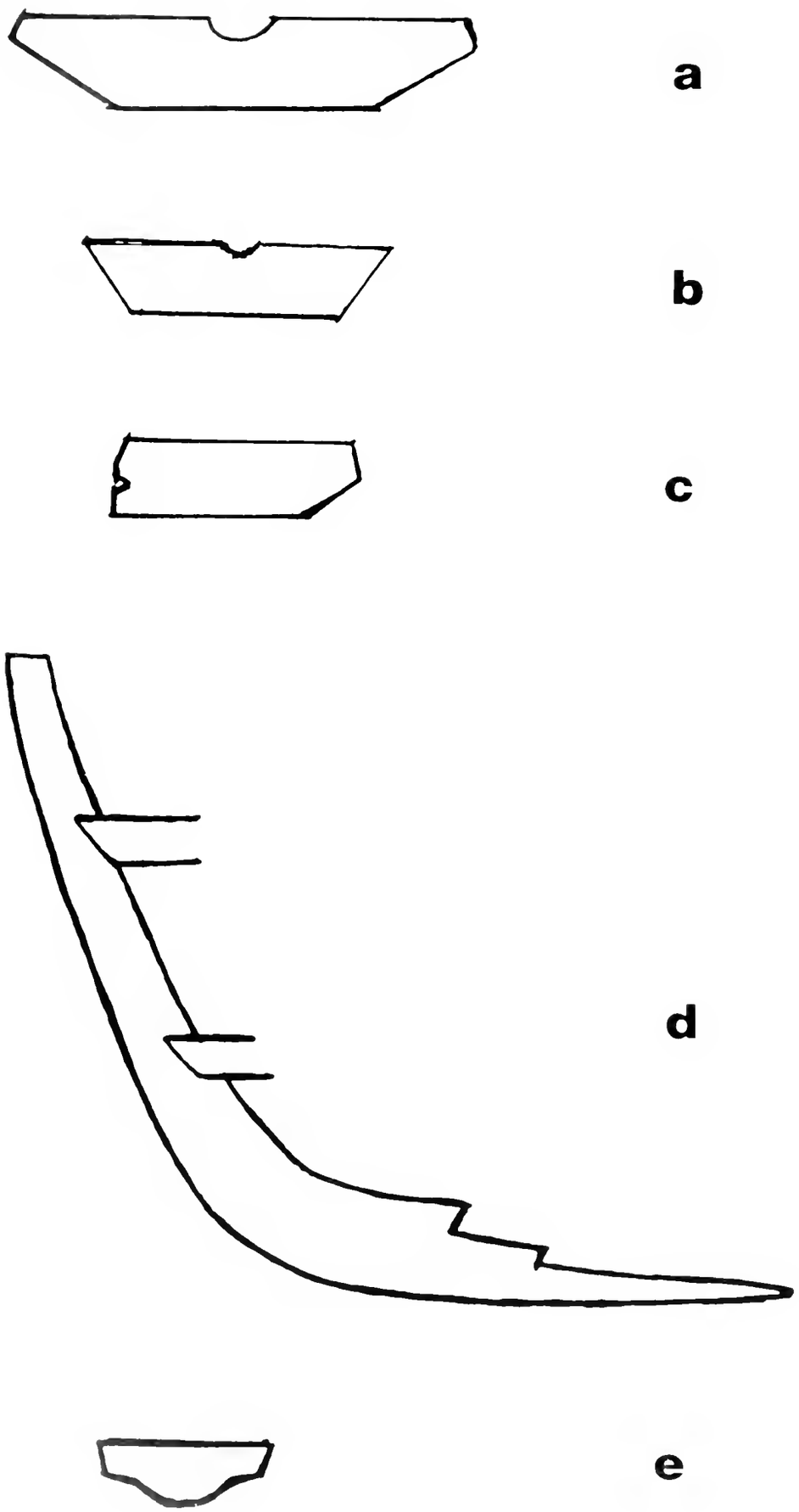


FIG. 48. Umiak frame parts (boat 1): **a**, cross section of keelson; approx. ⅓ actual size; **b**, cross section of side plank, curved to meet keelson; approx. ⅓ actual size; **c**, cross section of starboard chine; approx. ⅓ actual size; **d**, bow stem seen from side; outside length 5 ft. 11 inches; lower notch where keelson fits, higher notch for two chines, stringers fastened to side of stem; **e**, bow and stern thwarts in cross section; approx. ⅓ actual size.

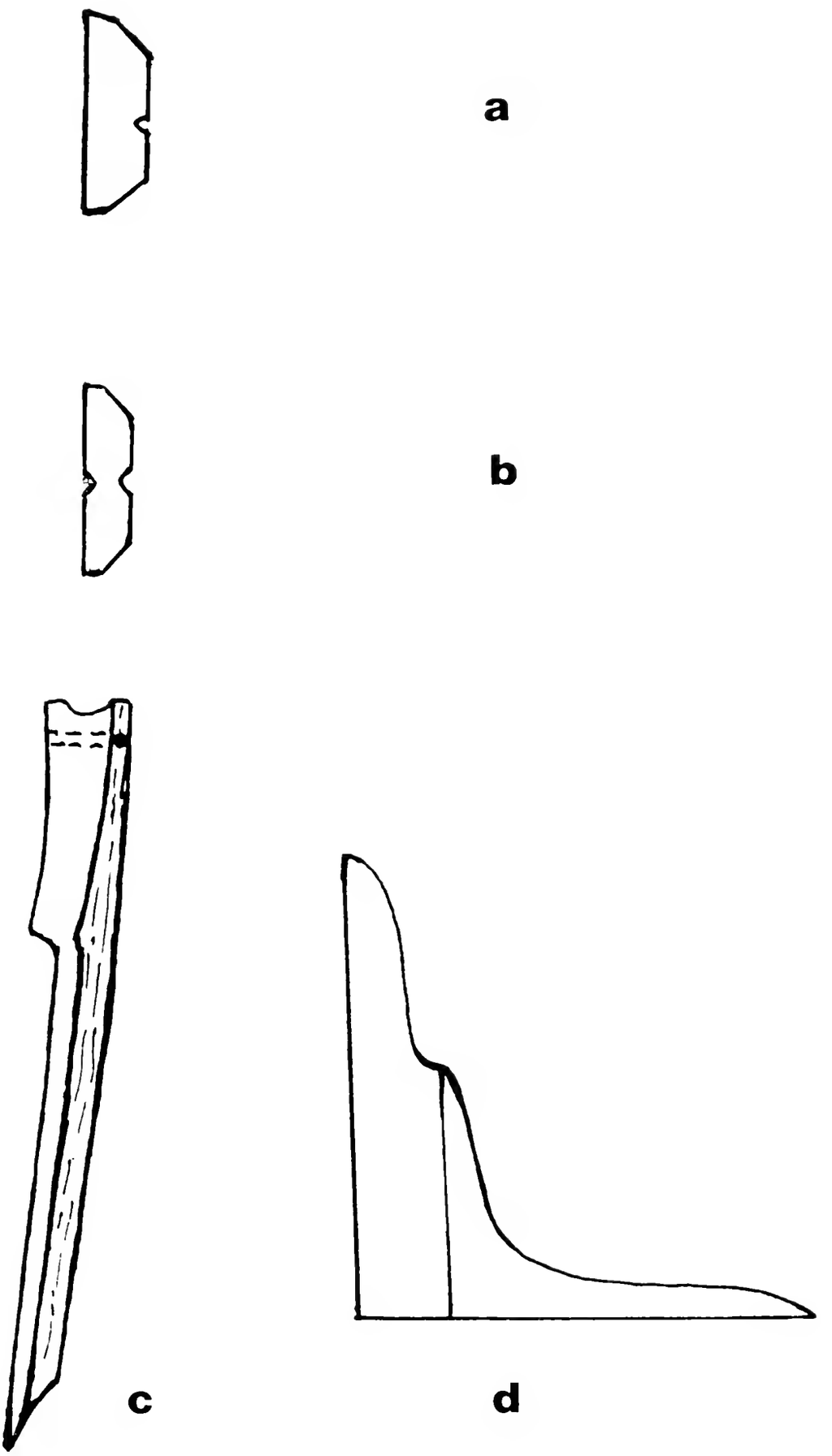


FIG. 49. Umiak frame parts (boat 1): **a,** lower stringer in cross section, outside surface on left; this stringer is outside the risers; approx. ⅓ actual size; **b,** upper stringer in cross section, outside surface on left; this stringer is inside the risers; approx. ⅓ actual size; **c,** riser (rib); upper stringer fits in notch, hole at top for lashing gunwale to riser; **d,** stern stem seen from starboard side; made in two sections.

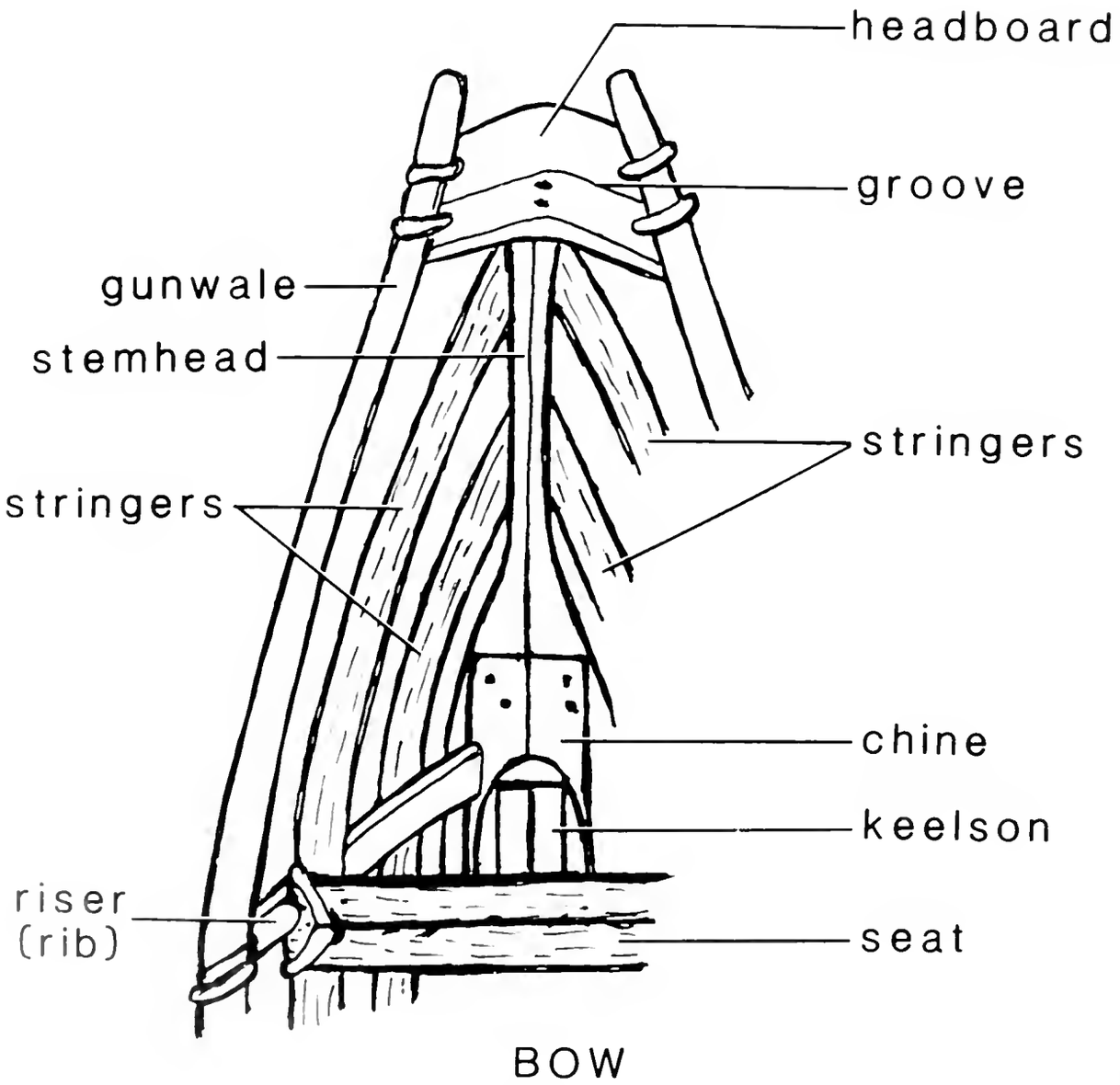


FIG. 50. Frame of umiak bow (boat 3).

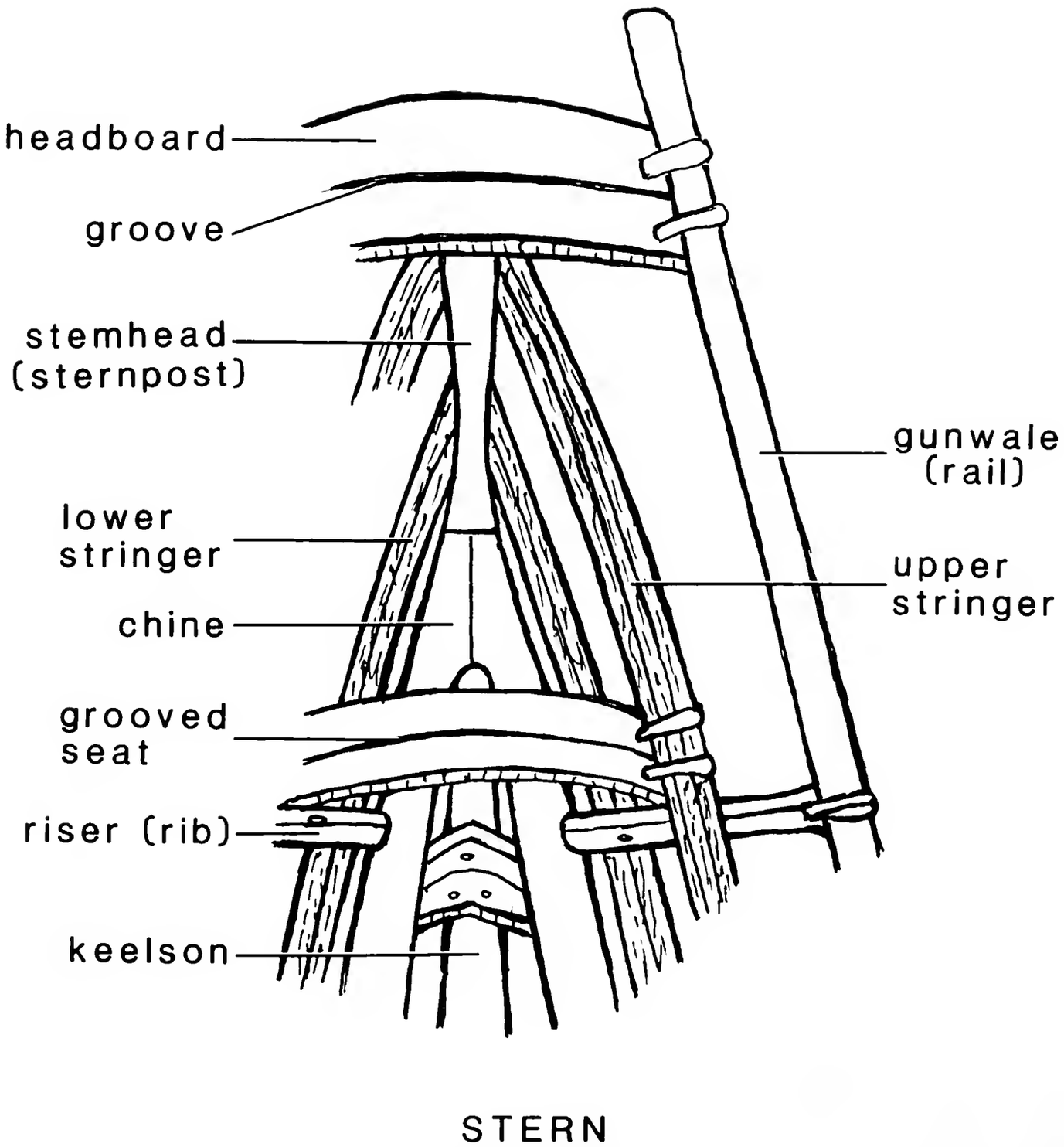


FIG. 51. Frame of umiak stern (boat 3).

FIG. 52. Traditional Nunivak sled.

FIG. 53. Traditional Nunivak sled showing dogs harnessed individually to sled with no leader.

FIG. 54. Modern Nunivak sled, 1940. In contrast to traditional sled, runners extend so that driver can stand on them. Note pedal brake and short handlebar at rear.

FIG. 55. Old-style sled dog, large and woolly.

FIG. 56. Sled dog introduced from the mainland. Some dogs combined traits of both old and new breeds.

FIG. 57. Kayak sled on rack with kayak.

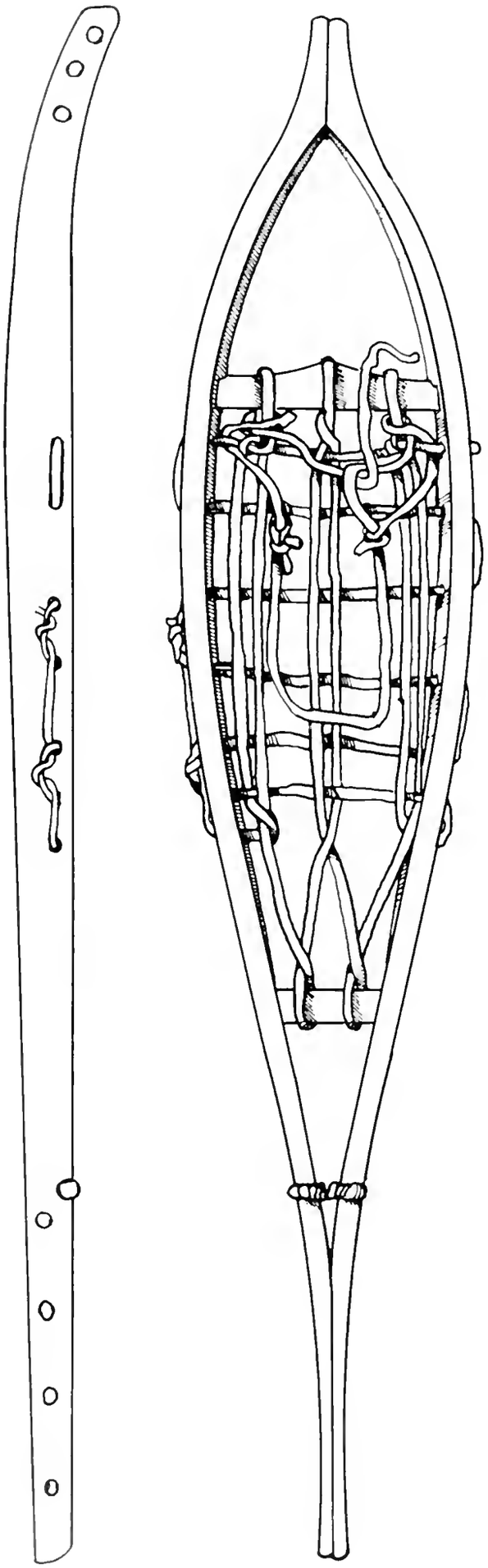


FIG. 58. Snowshoes.

FIG. 59. Interior of an unoccupied semi-subterranean house. At the left is a sleeping platform and across the rear a narrow bench for cooking utensils, water buckets, and other storage. One of the four supporting posts can be seen at the left rear and, at the right, one of the front posts. A stove has been placed on the old stone fireplace. The interior of this old house has been darkened by smoke, oil, and dirt.

FIG. 60. House excavation.

FIG. 61. House excavation, showing low height of doorway at left. House owner stops to take snuff while child watches.

FIG. 62. Partially constructed house roof. There are four support posts, one of which is visible, on which rests a four-layer cribbing of horizontal logs. Walls are of vertical split logs and roof two courses of slanting split logs (one unfinished course shown).

FIG. 63. Gut window of house resting on wooden framework and held in place by large, flat stones.

FIG. 64. House with roofed underground entrance passage through which one moved in a stooping posture and with the outer door modeled after a ship's companionway. House entrance at right is of older type.

FIG. 65. Corner of a *qasgiq* showing cribbed roof on two of the eight supporting posts. Men sat on floor and children on high benches above them. There is a wooden urine tub on the bench.

FIG. 66. *Qasgiq* entrance with steep steps to deep tunnel.

FIG. 67. Suspended frame for a pottery lamp, made by Kay Hendrickson. Yugtarvik Regional Museum, Bethel, Alaska. Photograph by James H. Barker.

FIG. 68. Entrance to old style cache.

FIG. 69. Aboveground log cache with flowering sod-covered roof.

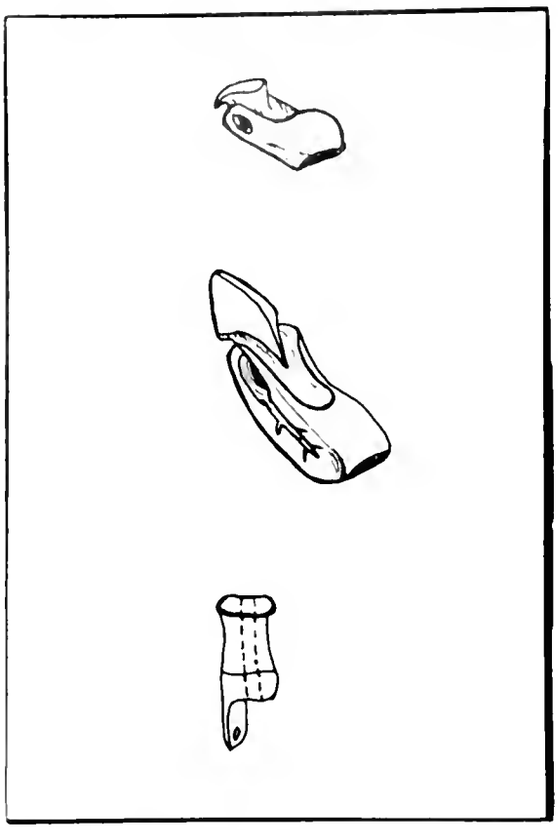


FIG. 70. **Top, center,** line attachers (center, length 2⅛ inches); **bottom,** float mouthpiece (1⅜ inches) (340305, 339482). U.S. National Museum.

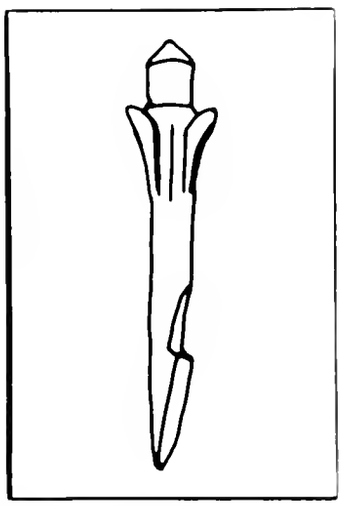


FIG. 71. Bird arrow point (length 3½ inches) (no number). U.S. National Museum.

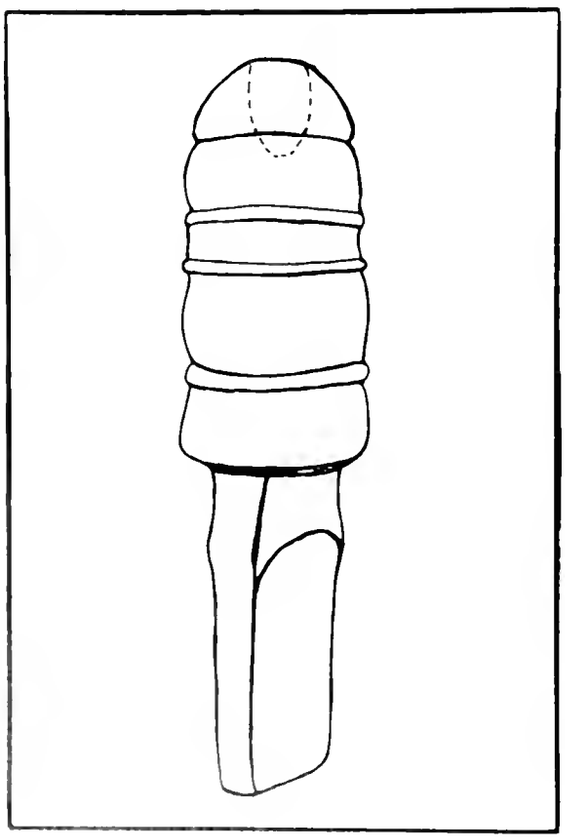


FIG. 72. Heavy bone socket piece (6½ inches) (339475). U.S. National Museum.

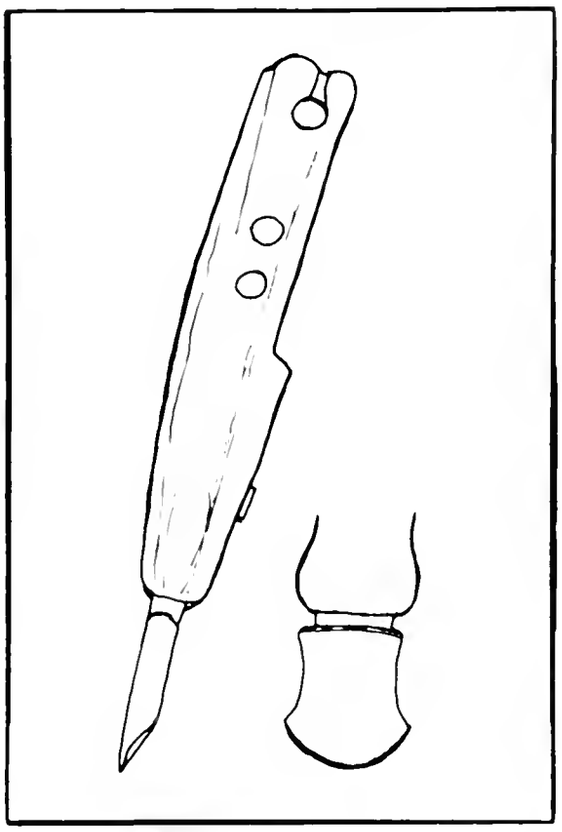


FIG. 73. Adze head with blade (7⅛ inches) (339638). U.S. National Museum.

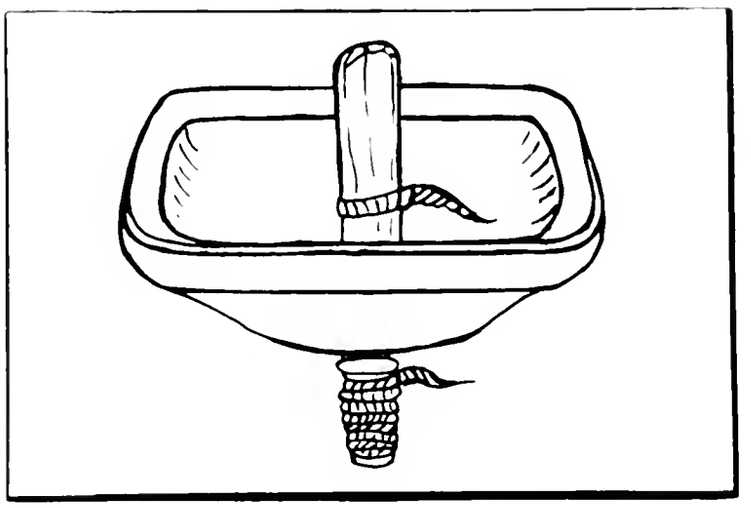


FIG. 74. Funnel (for seal poke?) (2 inches) (339536). U.S. National Museum.

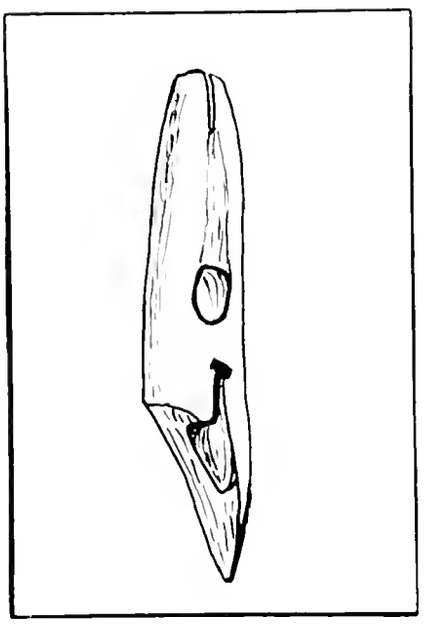


FIG. 75. Harpoon head (4 inches) (340294). U.S. National Museum.

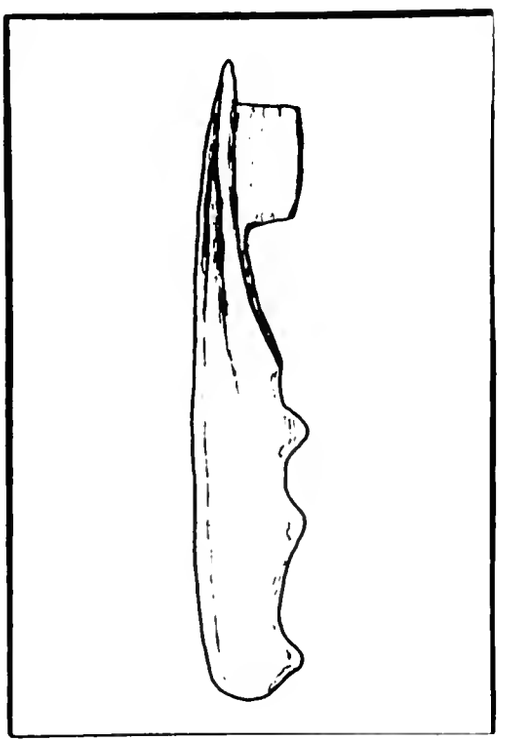


FIG. 76. Mesh gauge (339380). U.S. National Museum.

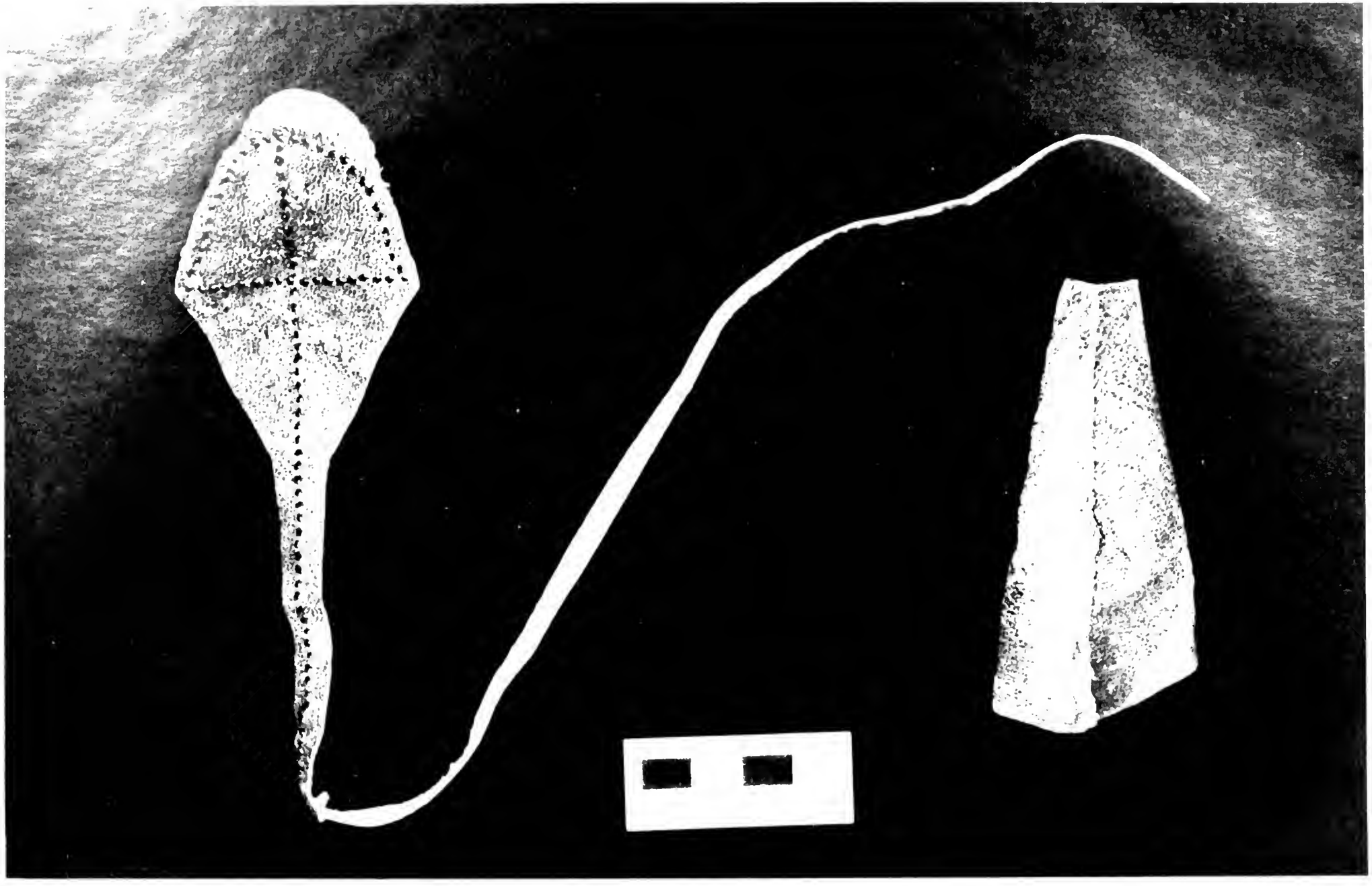


FIG. 77. Sealskin thumb and finger guard (76-10-17a-b). Note that thumb guard is crimped along the front as on a boot. Stitching is with bleached and blackened sinew thread. Museum of Anthropology, University of Kentucky. Photograph by George R. Milner.

FIG. 78. **Top,** Ulu (76-10-23); **bottom,** needle case (76-10-45a-b). Museum of Anthropology, University of Kentucky. Photograph by George R. Milner.

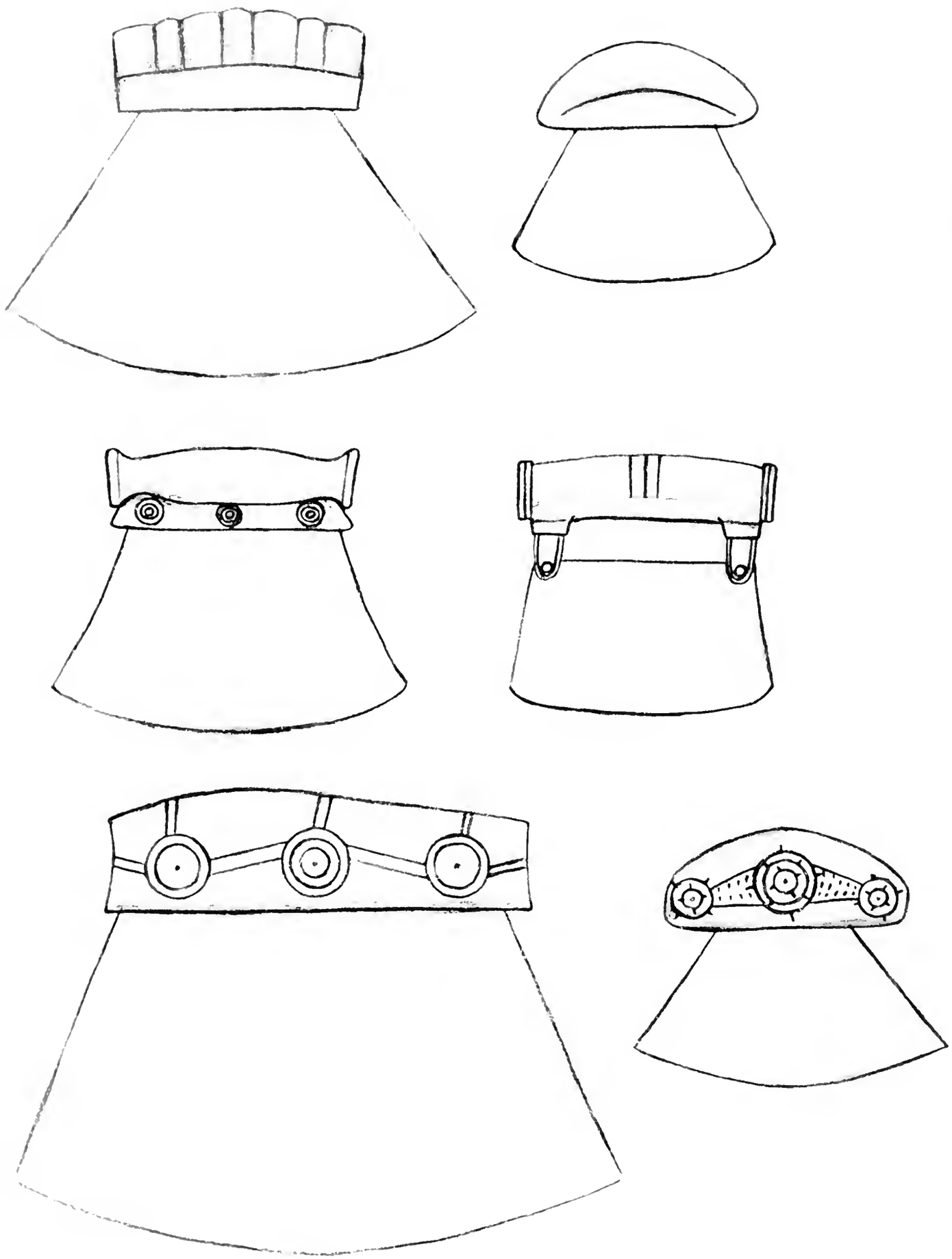


FIG. 79. Ulus, each with blade cut from a steel saw.

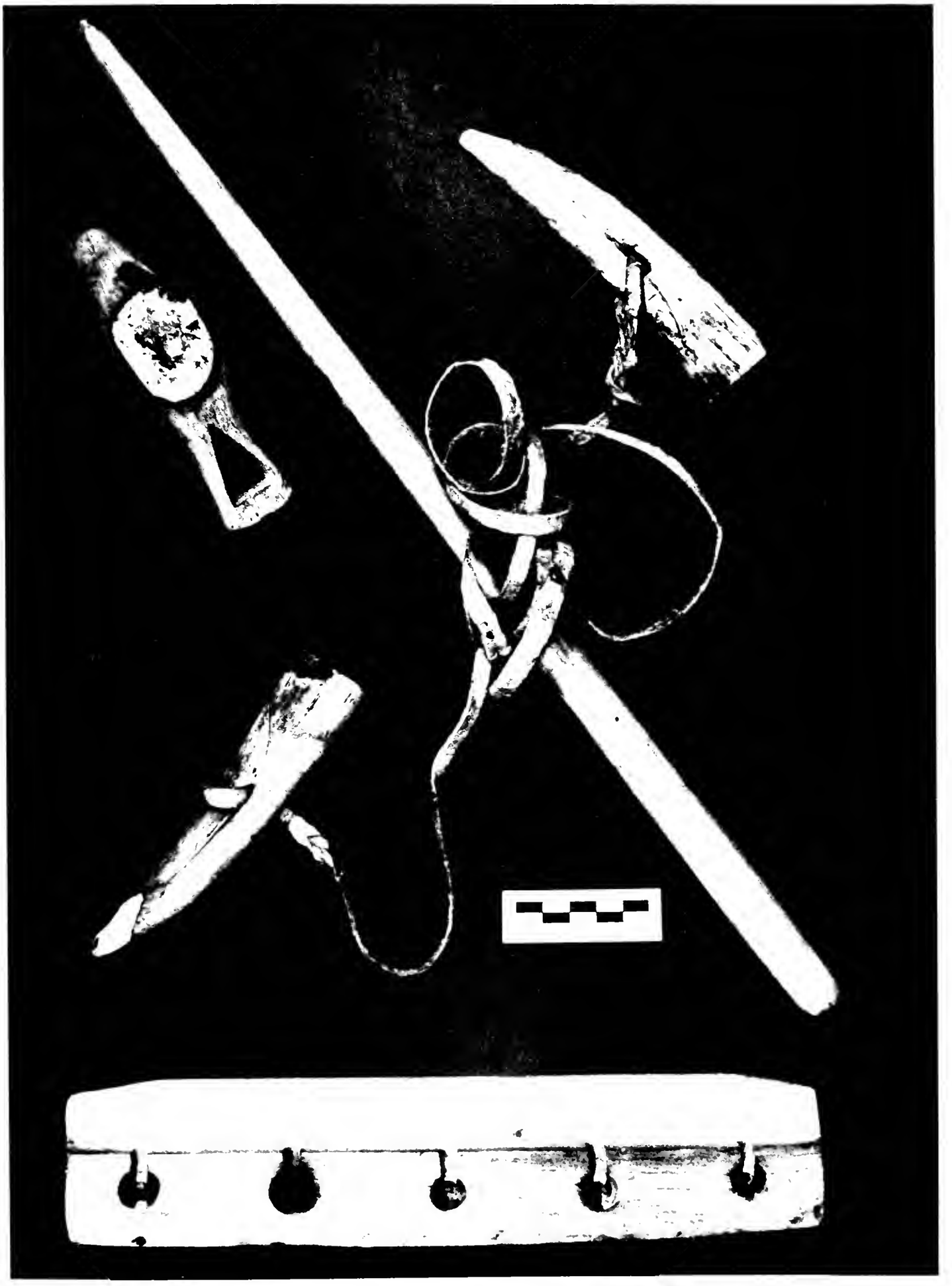


FIG. 80. Strap fire drill (76-10-44a-d). Museum of Anthropology, University of Kentucky. Photograph by George R. Milner.

FIG. 81. A square woman's bucket of bentwood painted red with bent antler handle.

FIG. 82. Bundles of dry rye grass (*Elymus mollis*) for many uses.

FIG. 83. Carrying basket and coarse matting baskets containing frozen tomcod on cache roof.

FIG. 84. Large close weave storage basket with scraped skin handles.

FIG. 85. Coiled baskets with lids traded to the Mekoryuk village store to be sold on the mainland. Both geometric and naturalistic designs were used, sometimes separately, sometimes together.

FIG. 86. Coiled basket with lid showing naturalistic designs.

FIG. 87. Wooden form over which a sealskin is scraped with a two-handed bone scraper. A woman, kneeling at the left, would scrape forward and downward over the curve of the form.

FIG. 88. Inflated sealskins drying on a cache roof prior to being bleached; without bleaching, they might be used as "pokes" (oil bags).

FIG. 89. Rawhide sealskin lines and an inflated whole sealskin frozen and drying. In the background a competition between the old and young men in throwing a feathered spear with a spear-thrower is in progress.

FIG. 90. Inflated seal throats drying and bleaching in clear, windy, cold weather under an old umiak.

FIG. 91. An inflated walrus stomach drying. In the background codfish are drying on a rack.

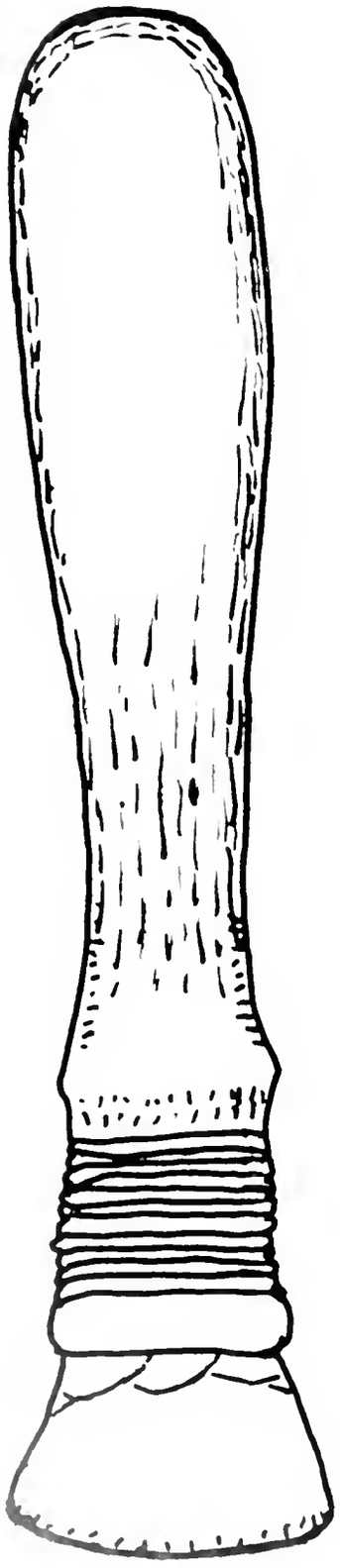


FIG. 92. Stone end scraper with wood handle.

FIG. 93. Processed arctic fox skins hanging on a line to dry.

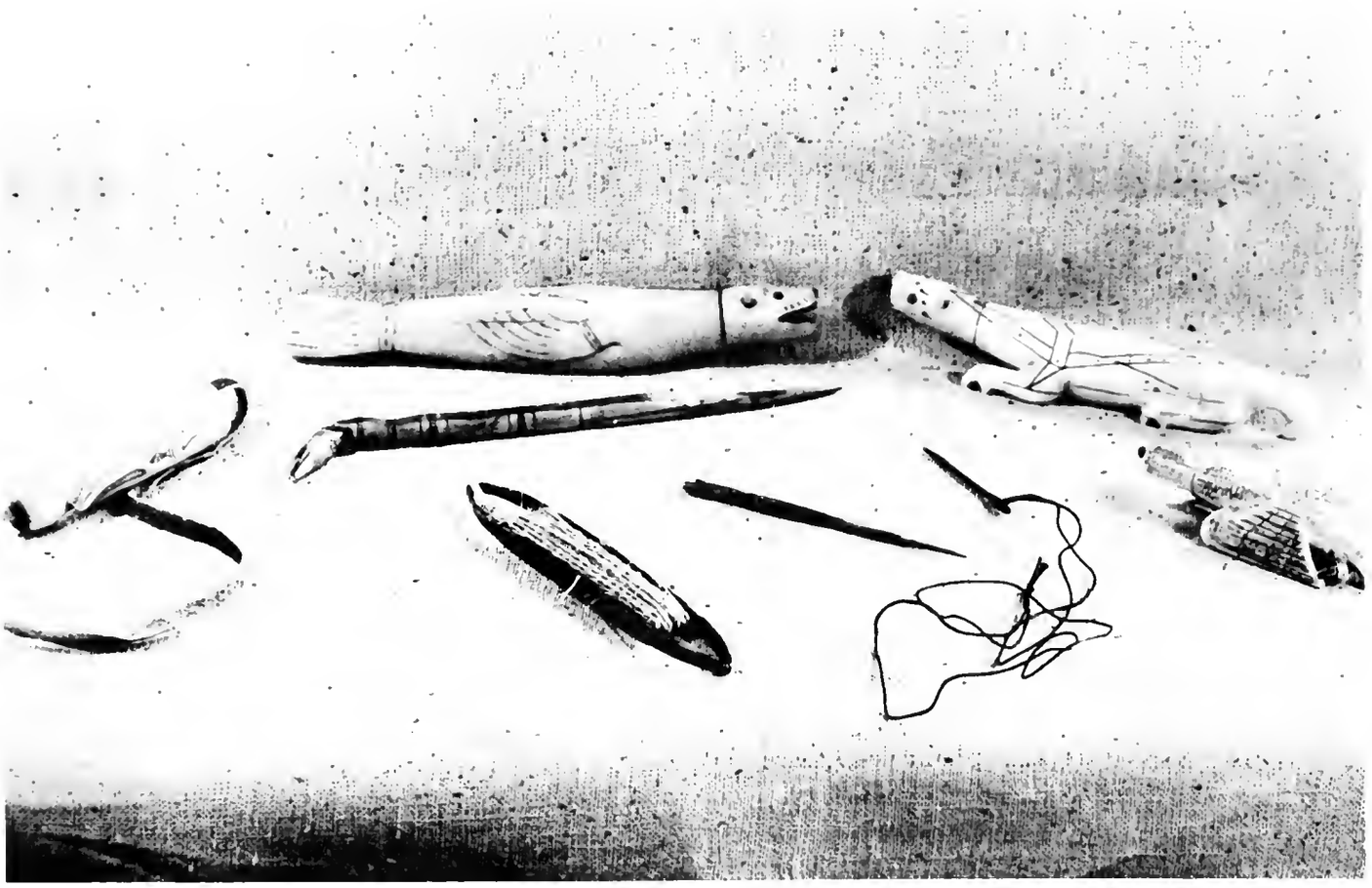


FIG. 94. A woman's sewing equipment, including four needle cases of both closed and open types, bone needles, ivory bodkin with animal head link at proximal end, and sinew thread on a shuttle. Photograph courtesy of the Lowie Museum of Anthropology, University of California, Berkeley.

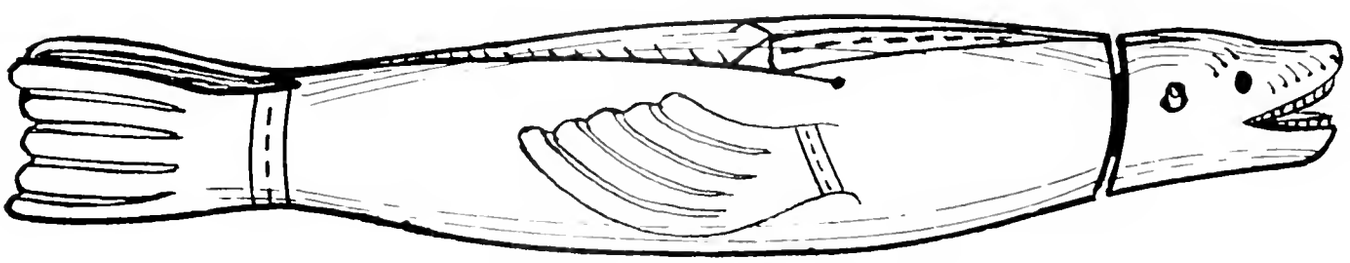


FIG. 95. Ivory needle case (5½ inches). Drawing courtesy of the Lowie Museum of Anthropology, University of California, Berkeley.

FIG. 96. Boy's sealskin parka, old and frayed. Instead of a border around the lower edge, there is a fringe of slit sealskin.

FIG. 97. Young woman's squirrel skin parka cut up the sides in the old style, with wide layered ruff, many furstrip tassels encircling the parka, and both border and fringe around the bottom.

FIG. 98. Women's parkas cut in the old style but made of spotted domestic reindeer skin. The woman on the right apparently wears the full length sealskin boots, while the woman on the left is wearing short fancy boots.

FIG. 99. Woman's parka showing narrow strips of blackfish skin sewn down the center of strips of bleached sealskin sewn onto a denim parka.

FIG. 100. Boys in head-pulling contest wearing murre skin parkas (1937). Note the wide bottom border of black murre backs. Photograph by Hans Himmelheber.

FIG. 101. Walrus intestine cleaned, inflated, and stretched on the ground to dry.

FIG. 102. Elderly man wearing wooden eyeshade, a gut parka with insets of bleached seal throat at the shoulders, and waterproof sealskin boots.

FIG. 103. Elderly man wearing squirrel skin parka and sealskin pants (1937). Pieces of brown and white fur and squirrel tails decorate the upper sleeve. Nunivak boots were generally soft and loose, not holding their shape well. Photograph by Hans Himmelheber.

FIG. 104. Boy in center wears an old style cap of the type formerly worn by all Nunivak men and boys. The cap has a narrow border of short and long fur, not a stand-up ruff. The man was the carpenter building the first school at Mekoryuk in 1939.

FIG. 105. Girl wearing dance headdress. The long white hairs across the top are from under the neck of a reindeer. Hanging at each side are long strands of beads.

FIG. 106. Grass socks formerly worn inside sealskin boots. A strip of flannel forms the border.

FIG. 107. Puppy skins turned inside out to dry, to be used in making infant's parka.

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