

ANTHROPOLOGICAL RECORDS

17:1

**ARCHAEOLOGY OF THE UYAK SITE
KODIAK ISLAND, ALASKA**

**BY
ROBERT F. HEIZER**

**UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1956**

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Vol. 17, No. 1

UNIVERSITY OF CALIFORNIA
ANTHROPOLOGICAL RECORDS

Editors (Berkeley): R. L. Olson, R. F. Heizer, T. D. McCown, J. H. Rowe
Volume 17, No. 1, pp. 1-200, plates 1-85, 63 figures in text

Submitted by editors December 30, 1954
Issued February 17, 1956
Price, \$3.00

University of California Press
Berkeley and Los Angeles
California

Cambridge University Press
London, England

Manufactured in the United States of America

PREFACE

One of the most outstanding achievements in the long and productive scientific career of the late Dr. Aleš Hrdlička (1869-1943) was his anthropological contributions to the problem of the peopling of America. In order to accomplish one phase of this research, he conducted, under the auspices of the Smithsonian Institution, numerous archaeological excavations in Alaska.

His initial anthropological exploration in Alaska was in 1926. During the ensuing years, ending in 1938, he made nine additional trips. In the years 1931, 1932, 1934, 1935, and 1936, assisted by students from various universities, he concentrated on the excavation of a prehistoric site which he called "Our Point," Uyak Bay on Kodiak Island.

As a result of his ten seasons of investigations in Alaska, Dr. Hrdlička by 1943 arrived at several conclusions: that there could not have occurred any one large migration from Asia to America, but only repeated dribblings over several thousands of years which brought to the new world a variety of languages and physical types; that these small contingents did not necessarily need a land or even an ice bridge but could easily have reached Alaska over water, even in their smallest skin boats; that as long as the road to the south was free of glaciers they were under no necessity of establishing any permanent settlements in the north; and that the direction of least resistance and better prospects was not through the difficult and largely inhospitable Alaskan mainland but along the much easier coasts southward. In this direction moderate-sized contingents coming across the Bering Strait could reach as far as the Alaskan Peninsula within a single short season. Further migrations could then take them more and more eastward and southward.

Dr. Hrdlička's primary interest was the recovery of skeletal materials. The archaeological matters he felt should be left to the archaeologists. It is therefore very fitting that Dr. Robert F. Heizer, who, as a student, assisted Dr. Hrdlička on two field trips in the archaeological excavations on Kodiak Island, should be the author of this contribution to the field of Alaskan archaeology. I feel confident that Dr. Hrdlička would have been pleased with the meticulous analysis of the artifacts recovered and herein described. This report could well serve as a memorial to Dr. Hrdlička's long and devoted interest in the aborigines of America.

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ARCHAEOLOGY OF THE UYAK SITE KODIAK ISLAND, ALASKA

BY

ROBERT F. HEIZER

INTRODUCTION

This report concerns the large and important archaeological collection made at Uyak Bay, Kodiak Island, in the summer field seasons of 1931, 1932, 1934, 1935, and 1936 by the late Dr. Aleš Hrdlička, former Curator of Physical Anthropology in the United States National Museum, where the collection is now housed. Dr. Hrdlička discovered and tested the Uyak Bay site in 1931, and for four summers (because of curtailment of Federal funds 1933 saw no expedition) returned and excavated, with the assistance of volunteer crews who paid all of their own expenses. In 1932 his assistants were Richard Erstein and Francis Cary. In 1934 a party of five volunteers accompanied him: C. T. R. Bohannon, the present writer, T. W. MacRae, I. H. Zarbell, and H. E. Zickefoose. In 1935, the party included J. Barton, E. H. Bell, the present writer, C. B. McKee, G. A. Seib, T. Weber, R. H. Merrill, and H. Enslow. The following volunteers spent the final season (1936) at Uyak: S. Connor, G. Corner, A. G. May, and M. F. M. Osborne. Since the Kodiak digging season is short and Dr. Hrdlička showed indefatigable energy, work was carried out a full seven days a week. My rough computation, but probably fairly accurate, yields a figure of 1,416 man-days' excavation for the five summers, the equivalent of four men working continuously for just under a year.

I have not presumed too much nor relied too heavily upon my memory of Kodiak Island in the summers of 1934 and 1935, but in writing this report I have, at least, the advantage of having participated in the excavation of the site for over five months. This experience enables me to discuss the features of the Uyak Site, which are somewhat familiar and not known to me simply from another person's notes and photographs.

In 1940 Dr. Hrdlička invited me to study and publish the Kodiak collection. Through his efforts and those of Mr. F. M. Setzler and Dr. A. L. Kroeber I secured a grant from the American Philosophical Society to carry out the project. As I was about to leave for Washington, hostilities between Japan and the United States broke out, and my trip was postponed. In the summer of 1946 the museum analysis was finally made, the expenses being defrayed by the American Philosophical Society, which most kindly reactivated the grant made originally in 1940.

I am particularly indebted to Mr. Frank M. Setzler, Head Curator of Anthropology, U. S. National Museum, and to Mr. Neil M. Judd, former Curator of the Division of Archaeology, U. S. National Museum. Both helped me immeasurably by arranging facilities for study and in guiding me along the unfamiliar path which confronts the visitor in a strange museum. The American Philosophical Society has been good enough to accommodate itself to my oft-changed plans, and to the

Society, through its executive officers, Dr. E. G. Conklin and Dr. L. P. Eisenhart, I offer my sincere thanks.

The photographic plates were made by the late G. I. Hightower, staff photographer for the Smithsonian Institution. The pen and ink drawings are the product of many hands, among them those of the late E. G. Cassedy, illustrator for the Bureau of American Ethnology, A. Treganza, San Francisco State College, and John Goins, of the Department of Anthropology, University of California. Mrs. J. Bennyhoff has been of great assistance in checking catalogue numbers of illustrated artifacts, and I express my thanks for her efforts.

ENVIRONMENTAL BACKGROUND

The environmental background of our area has been well described by Capps, and the following account is reprinted from his work on the geology and mineral resources of the Kodiak group (1937, pp. 00-00).

Location and area.—The group of islands here described, of which Kodiak Island is the largest, lies at the western border of the Gulf of Alaska, in the north Pacific Ocean between 56° 30' and 58° 40' north latitude and 150° 40' and 154° 50' west longitude. The group as a whole has an area of about 4,900 square miles, extends for a distance of 177 miles in a northeast-southwest direction, and at its greatest width is 67 miles wide.¹

Shuyak Island, the northernmost large island of the group, lies a little more than 40 miles southwest of the nearest point of Kenai Peninsula, on the mainland, with the Barren Islands about halfway between. West of these islands, and separating them from the mainland of the Alaska Peninsula, is Shelikof Strait, which at its narrowest point is only 20 miles wide. In the character of its rocks and in its geologic history it may well be considered to be the southwestern continuation of the Kenai Mountains of Kenai Peninsula, whereas in these features it differs markedly from the Alaska Peninsula, which lies even closer to it. At no remote time geologically the islands of the Kodiak group were apparently all a part of a single large island that had a fairly smooth coast line.

The present intricate shore line, with its numerous deep bays, and the separation of the land mass into a great number of islands are the result of severe glacial erosion during the ice age, and the long, narrow bays and most of the narrow channels that separate the islands from one another are glacial fiords.

¹ Kodiak Island itself has an area of 3,588 sq. mi.

Relief.—The dominant geologic structural features of the islands have a northeast trend, in line with Kenai Peninsula, to which their geology has a striking similarity, whereas in both lithology and structure the islands differ markedly from the Alaska Peninsula, to the west. It may, therefore, be stated that topographically, structurally, and geologically these islands are the southwestward continuation of the Kenai Peninsula, though separated from it by the accidents of erosion that have reduced much of the intervening gap below sea level. The islands are therefore to be considered as an integral portion of the great chain of mountains that borders the Gulf of Alaska on the north and west, though separated from them by some 40 miles of salt water. As a whole they are mountainous, the relief being least on the islands at the extreme north and south ends of the group and greatest in the central part of Kodiak Island. Most of the interior portions of the islands are still unsurveyed, but the coast charts show a 420-foot hill on Shuyak Island and many mountains from 1,900 to 2,546 feet high on Afognak Island. Kodiak Island is the largest and has the greatest relief, with numerous peaks among its granitic axis that rise above 3,000 feet, and near the head of Ugak and Uyak Bays mountains of more than 4,400 feet above sea level are shown. Possibly still higher mountains lie in the unsurveyed interior of the island, and there are large areas within which the mountain tops rise above 2,000 feet. Sitkinak Island, at the south end of the group, has a greatest elevation of 1,640 feet, but Tugidak Island is of low relief, much of it lying only a few feet above sea level.

The surface features of this group of islands are due largely to sculpturing by glacial ice during the recurrent stages of Pleistocene glaciation and by the local glaciers that must have persisted in these mountains until comparatively recent geologic time. Glacial deposition has also played a part in building the surface of certain areas to its present form, but within these islands glaciation was so intense and so widespread that the products of ice erosion and transportation were for the most part carried out to sea and deposited there. No understanding of the present topographic forms found here is possible without an appreciation of the profound sculpturing accomplished by glaciers in past time. At the time of greatest ice accumulation only the highest peaks and ridges stood above the ice surface and so escaped smoothing, and the slopes of these elevations were sapped by ice scour and reduced to sharp ridges and pinnacles.

Coast line.—The coast line of these islands is long and intricate, characterized by a large number of deep bays with branching arms and a multitude of scattered islets. Apparently in preglacial time this island group was a single large island with a fairly regular coast line. In Pleistocene time a great glacier covered this island, and from it the ice flowed seaward along all of the preceding valleys, deepening and widening them and scouring many of them below sea level. With the wane of the glaciers these over-deepened valleys were flooded by the sea, many masses of land being entirely surrounded by water and left as islands separated by narrow channels from the main land mass. Other valleys became long, deep fiords that penetrated well in toward the heart of the islands. The distribution and location of these fiords was no doubt determined mainly by the position of preglacial valleys, though in places the ice plowed across

interstream divides and altered the ancestral drainage pattern. At present the processes of erosion and deposition by streams and the powerful attack of waves on the shores are tending to reduce the irregularities of the coast line. The fiords are slowly but surely being filled; prominent headlands and exposed islands are being cut away by the waves; and bars and spits are in process of formation across many bays and inlets. The result is still far from completed, but the processes are continuous and inexorable.

Drainage.—The rivers of Kodiak and its neighboring islands are all comparatively small, for the deeply embayed coast line leaves no spot that lies more than 15 miles from the ocean. The two largest rivers are probably the Ayakulik, locally known as the Red River, and the Karluk, both of which drain the unsurveyed area at the southwest end of Kodiak Island. Both are important salmon streams and head in lakes, but it is said that neither is navigable for even shallow-draft power boats. All the other sizable streams are on Kodiak and Afognak Islands, and in ordinary stages of water, even the largest of these may be forded at favorable places with hip boots except in their lower tidal portions, though after heavy rains even the smaller ones become torrents. Nearly every one of the fiorded bays has at least one river or large creek flowing into it, and several receive the drainage from a number of such streams. The average rainfall of this region is over 60 inches and is rather evenly distributed throughout the year, so that the streams are large compared with the area of their basins, and their discharge is fairly constant. All flow in short, direct courses to the sea, and the drainage systems are therefore simple and of small area. In the whole region there is scarcely a human habitation that is more than a mile or two from the coast, and few valleys have even the semblance of a man-made trail leading up to them, though bear trails are everywhere present. These, however, take little account of brush and other impediments to human travel, and progress up the stream valleys is slow and laborious and is possible without much trail cutting only by taking advantage of stream bars and by wading the streams where no open bars occur.

Numerous small lakes and ponds are found scattered throughout the islands, but not many are more than a mile or so long. Litnik Lake, on Afognak Island, is said to be about 6 miles long; Karluk Lake, in southwestern Kodiak Island, is of about like size; and there are several unsurveyed lakes tributary to the Ayakulik River and Olga Bay that are from 1 to 4 miles or more long. The lakes have an important bearing on the industry of the islands, for the much sought red salmon spawns in lakes and in streams draining to and from lakes, whereas the less desirable varieties of salmon spawn in nearly every stream in the region. Of recent years beaver have been introduced to the islands, and they have readily adapted themselves to the local conditions and have multiplied with remarkable rapidity. By building dams on many streams they have not only flooded large areas in the lowlands and so made travel difficult but have made it impossible for the salmon to reach many spawning grounds that had long been so used.

The Kodiak group of islands lies in the path of the Japan current, which sweeps northeastward along the coast of the Alaska Peninsula into the Gulf of Alaska, and its climate is much more equable than that of island areas of similar latitude. The following table, compiled from data collected by the United States

Weather Bureau, gives in condensed form the salient features of the climate at the town of Kodiak, where records have been kept more or less continuously for over 40 years. Kodiak is the only locality in the island group where such records have been collected for a continuous period long enough to yield reliable averages, and the weather there is believed to be fairly representative of the island group as a whole.

The highest recorded temperature is 85° F. and the lowest -12° F. Many summers pass in which the temperature in the shade fails to rise to 75°, and in only eight winters out of the 46 years during which records have been kept has the temperature fallen below zero. The average yearly precipitation of about 60 inches is rather evenly distributed throughout the year, though nearly half of the total falls in the last 5 months. The average of 163 days a year on which 0.01 inch or more of rain falls indicates an even larger number of overcast days. Most of the harbors and bays remain ice-free through the winter, though during exceptionally cold spells winter ice may form in enclosed bays, particularly in those that receive considerable fresh water from tributary streams.

As is to be expected, there may be a wide variation in the summer weather in successive years. In 1934, from mid-June to mid-September, there was much fine, clear weather, with light winds and calm seas. In 1935 during the same months the weather was pre-vaillingly cloudy, with high winds and rough seas.

Vegetation.—The distribution of timber in the Kodiak group of Islands is peculiar in that the northern part of Kodiak Island and all the islands north of it are well clothed with Sitka spruce trees up to about 1,000 feet or less above sea level, whereas south of Viekoda, Kizhuyak, and Chiniak Bays spruce is almost completely absent. Within a mile or so of the edge of the spruce forest fine trees 3 to 4 feet in diameter are common, and these have been used extensively for

local purposes. That this unusual distribution of timber is not due to the present climate or soil is shown by the fact that within historic times the edge of the spruce forest has invaded the untimbered areas to a perceptible degree and in places is advancing at the rate of about 1 mile a century. Griggs (1934) suggests that the absence of timber in many areas where conditions appear to be favorable to its growth is an inheritance from the time when Pleistocene glaciers completely erased plant life from this region, and that the reestablishment of the forest is now underway but far, from completion.

Balsam poplar trees occur on well-drained slopes and in river valleys within the areas in which spruce is the predominant timber, and poplar trees are also found farther south than the spruce, being present along the valley floors and on alluvial slopes as far southward as Uyak and Alitak Bays. Poplar trees reach a diameter of 3 feet or more, but most of the large ones are decayed at the core, and this wood is little used for lumber.

For all the area south of northern Kodiak Island the symbol indicates only the presence of small groves or scattered trees of balsam poplar, and many of these groves consist of medium-sized to small crooked trees.

To those unfamiliar with the rapid summer growth of plants in northern latitudes during the days of long hours of sunshine, the luxuriance of vegetation in parts of Kodiak seems astonishing. Scarcely has the snow disappeared in the spring when a lush grass, locally known as redtop, springs up and grows rapidly, often to a height of 5 or 6 feet. This grass clothes most of the lower slopes to a height of several hundred feet above sea level and in many places is interspersed with salmon berry, blueberry, and rose bushes and with brakes and other plants that together form a growth that is difficult to penetrate. There are many areas, too, where alder brush forms dense thickets

Weather Records for Kodiak, Alaska

[Capps, 1937]

	Length of record (years)	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Temperature (°F.)														
Monthly mean	38	29.5	31.3	33.4	36.4	43.0	50.0	54.3	54.3	49.8	42.0	35.0	30.7	40.8
Monthly mean maximum	15	34.3	36.5	38.5	42.0	47.8	56.1	60.0	59.4	55.6	47.6	39.7	35.7	46.1
Monthly mean minimum	15	24.8	26.5	28.7	31.2	37.1	43.5	47.4	48.1	43.6	36.9	30.3	26.4	35.4
Lowest recorded	46	-9	-3	2	5	20	30	32	34	26	7	-3	-12	-12
Highest recorded	36	53	60	65	61	74	82	82	85	77	66	60	61	85
Precipitation														
Monthly mean (in.)	44	4.69	4.64	3.93	3.82	5.76	4.85	3.46	5.27	5.16	7.32	5.63	6.08	60.61
Monthly mean snowfall (in.)	29	9.7	11.2	9.2	5.6	.4	T	0	0	.1	.8	3.3	8.0	48.3
Average number of days with 0.01 in. or more		14	12	13	13	16	12	12	15	12	16	14	14	163
Winds														
Prevailing direction		nw	nw	nw	se, w	ne	ne	ne, se	se	se	nw	nw	w, nw	nw
Average velocity (mi. per hr.)		13.4	10.6	8.3	9.9	7.9	7.4	5.9	6.0	7.7	8.8	8.3	9.9	8.7

[pl. 1], and these with thickets of willows make travel up many valleys slow and difficult, so that few people venture far from the coast. In such a tangle of vegetation one is likely to have constantly in mind the possible presence of the great Kodiak bears, which range throughout this region and whose great trails through grass and brush are reminders that one may at any time unexpectedly meet a bear at close quarters. There is no doubt that this possibility prevents many persons from visiting the little-explored interior of the islands.

Wildlife.—During the glacial period this island group was the center of accumulation of local ice masses that completely covered the islands except for the highest peaks and ridges and that denuded them of vegetation and rendered them inhospitable for all sorts of land animals. It is also probable that glacial conditions lingered there much later than in lower latitudes and that postglacial time has been relatively short. Furthermore, since the shrinking and disappearance of the glaciers these islands have been cut off from the mainland by more than 20 miles of salt water. As a result, many of the wild animals common to nearby portions of mainland Alaska were not naturally present on these islands, which had a very sparse fauna of land animals. Those indigenous animals include the Kodiak bear, fox, ermine, mice, and ground squirrel. Such animals as the rabbit, mink, marten, lynx, land otter, beaver, black bear, muskrat, caribou, mountain sheep, and goats, native to Kenai Peninsula, to the north, or to the Alaska Peninsula, to the west, were missing from the island fauna, though present conditions seem to be entirely hospitable for them. In recent years the Biological Survey has introduced deer, rabbits, beaver, elk, and reindeer to the islands, and all seem to have multiplied and to have adapted themselves to conditions there. The beaver especially have found favorable conditions and have multiplied and spread with astonishing rapidity. Already many of the streams on northeastern Kodiak Island have been so blocked by a succession of beaver dams that the lowlands now consist of an almost continuous chain of ponds. Much fine grassland has been flooded and travel made difficult. Beaver pelts should furnish a welcome addition to the trapper's income when trapping these animals is permitted. Muskrats have also been introduced and are numerous in places. Many of the smaller islands are held as fur farms and are stocked with blue foxes.

The marine mammals include hair seals, sea lions, and several species of whales. These animals formerly supplied an important element in the diet of the natives and, with the bear, furnished the only source of red meat. Seal are still eaten to some extent. The sea otter, whose valuable fur was the main object of the Russian penetration of this territory, is now practically extinct on these islands, though it is said that an occasional pelt is illegally taken.

The waters surrounding the islands and the larger streams teem with fish, and commercial fishing is the major industry of the region. Fish also still constitute one of the main items in the diet of the inhabitants. By far the most important varieties of fish economically are the several species of salmon, locally known as king, red, humpback, dog, and silver, for these fish support the many canneries of the region, and the canneries in turn furnish the principal employment of the people.

Glaciation.—Accurate age determinations for the glacial deposits of the region must await much more detailed field studies than have so far been made. After the climax of the Wisconsin glacial stage was reached the climate again slowly became milder, the average yearly snowfall was less than the average melting, and the glaciers began to shrink, both in area and thickness, more and more of the higher mountains began to appear above the ice surface, interstream ridges and divides were bared, and the central ice mass was broken up into a large number of individual valley glaciers, each of which found its way to the sea, but between which rocky headlands were exposed on the coast. With continued melting the separate glaciers shrank back into their basins, large areas in the regions of mild relief were freed of ice, and those glacial troughs that had been eroded below sea level became straits or fiords, extending deeply into the land mass or cutting it up into a great number of islands.

It is believed, however, that in these islands valley glaciers lingered in favorable places for a long time after the ice had disappeared entirely in lower latitudes, and that the time since the final disappearance of some of the glaciers is very short compared with post-Wisconsin time in the Great Lakes region. Indeed, a single small glacier about a half a mile long still survives in the headward basin of Ugak Bay, on the sheltered north slope of a 4,000-foot mountain, and other small glaciers may persist in the little-explored and unmapped interior of Kodiak Island. The present topographic forms of the region are therefore due in considerable part to erosion by valley glaciers that persisted long after the decline of the greater Wisconsin glaciers was well under way.

CAUCASIAN DISCOVERY AND NATIVE POPULATION

It is believed that some island of the Kodiak group was sighted by Vitus Bering in 1741 (Golder, 1922, 1:334). There are statements that Kodiak was visited by Russians in 1761 and 1762 (Hrdlička, 1944, pp. 9-10), but most historians credit Stepan Glotoff with the first landing and occupation of the island by Europeans in 1763. In 1765 a Russian trader, Bragin, wintered on Kodiak. The first permanent settlement by Russians on Kodiak was in 1784 by Gregory Schelekov who founded the village in Three Saints Bay. This original settlement was removed in 1792 to the southwestern end of the island to the site now occupied by Kodiak City.

Kodiak was visited often by round-the-world travelers in the late eighteenth century, each of whom recorded important information on the native peoples. When the United States acquired Alaska in 1867, the native population was already partly mixed, both with Russians and with other natives such as Aleutian Islanders who had been brought to Kodiak.

The original population of Kodiak (plus perhaps the nearest off-lying islands) was probably something under 10,000. Hrdlička (1944, p. 19) cites a census of 1792 by Delareff of over 6,000 persons, and Baranov in 1796 listed about the same number. Davydov in 1803 gave a total figure of not much less than 7,000. A manuscript in the Bancroft Library, University of California (cat. no. Cal. Ms. P-K, 3) cites the following population figures

for Kodiak natives: 1792, 6,510 male and female; 1806, 3,944; 1817, 4,198; 1821, 3,649; 1825, 1,351 male and 1,468 female. Bancroft (1886, p. 356) gives the 1795 population as 2,985 female and 3,221 male. Hrdlička (1944, p. 20) has traced the population decline, as far as possible, of the Koniag people to 1880, when the total number of Koniag was given as 1,943 persons.

HISTORIC ETHNOLOGY OF THE KONIAG

No full-dress ethnographic treatment of the Koniag (Kaniagmiut) has ever been done. Although there are still some surviving Koniag, they are of mixed ancestry and now removed by one and a half centuries from their precontact culture; hence it is unlikely that anything but gleanings of the old culture could now be recovered.

The early literature has been surveyed and abstracted by Hrdlička (1944, Pt. I) and presented in the form of an ethnographic report, which is rather uncritical and far from complete. Similar attempts along these lines were made long ago by Bancroft (1886) and Petroff (1884). The most complete older account of the Koniag is by Holmberg (1856) who was on Kodiak in 1851. His important collection has been well described by Birket-Smith

(1941). C. H. Merck recorded useful information on the Koniags in 1789-91 (Jacobi, 1937, pp. 127-132).

A small collection of Koniag material culture now at the University of California has been described by Heizer (1952). Lantis (1938a, 1947) has collected a large amount of information on Koniag ceremonialism and presented it in the larger context of Eskimo religion. Lantis (1938b) has also collected everything available on Koniag mythology. Each of the publications cited above contains extensive bibliographies referring to Kodiak Island.

A worth-while project in Alaskan ethnology would be for some student to visit Kodiak and record what remnants of traditional ethnology are still recoverable, and to fill these data out with those derived from an intensive review of unpublished museum materials and printed and manuscript historical documents. The resulting monograph would be an important contribution to our knowledge of the Pacific Eskimo. Recently K. Birket-Smith (1953) has done just such a work on the Chugach Eskimo of the mainland to the east.

THE UYAK SITE

The site is referred to by Hrdlička in his *Anthropology of Kodiak Island* (1944) as "Our Point." In this report I

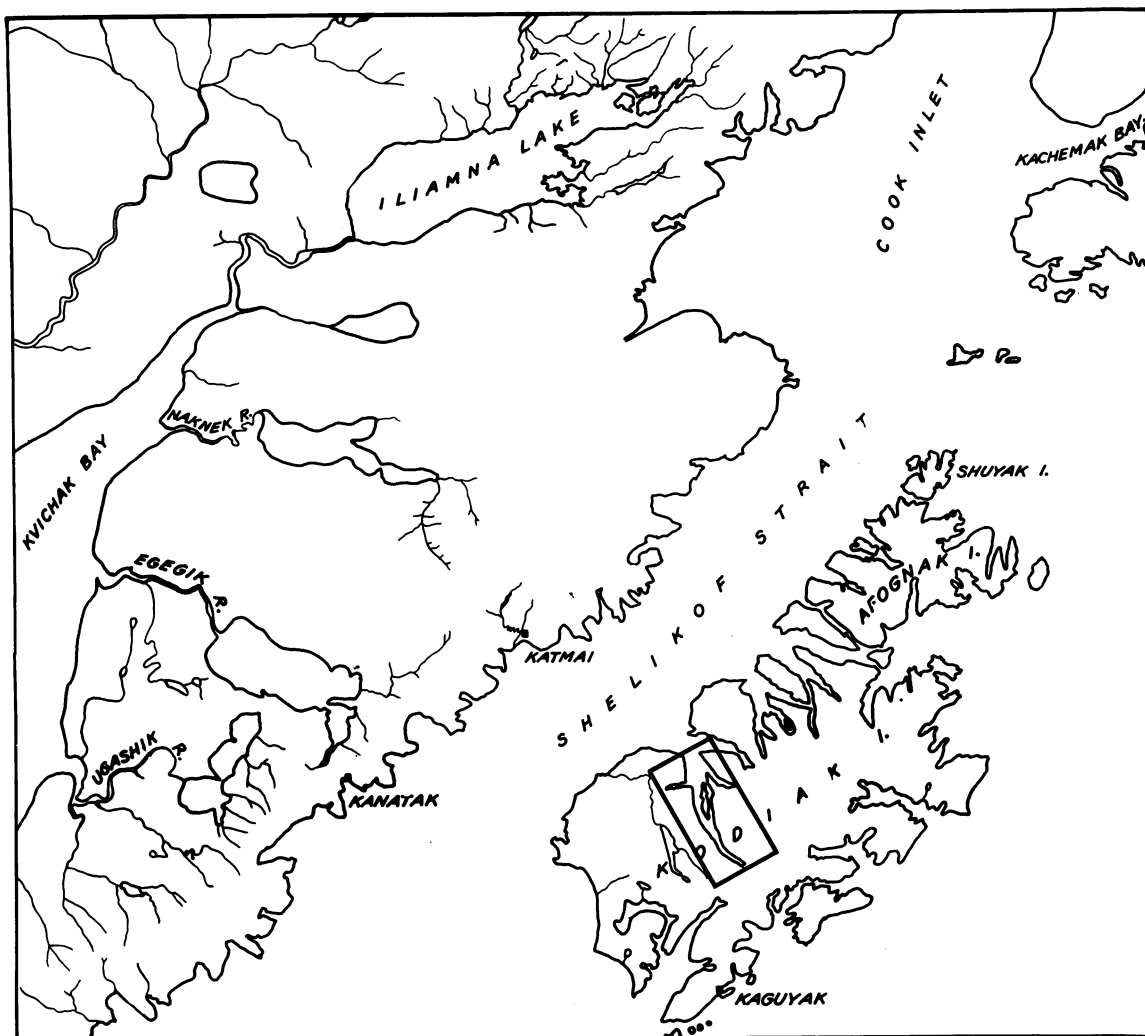


Fig. 1. Map of Kodiak Island and the mainland showing the area in figure 2.

prefer to use the more noncommittal term, "Uyak site." In addition to its treatment in Hrdlička's book (1944), which details the record of excavation, findings, and physical anthropology of the prehistoric and living inhabitants of Kodiak Island, the archaeology of the Uyak site has been more briefly touched on by Hrdlička in a series of articles cited in the bibliography under the following publication dates: 1932, 1933, 1935a, 1935b, 1936, 1937, 1939, 1940, 1941a, 1941b.

Description.—The site lies on a small rocky point (pl. 1) at the mouth of Larsen Bay on the north shore of Kodiak Island facing the width of Uyak Bay (fig. 1). Its location is approximately $57^{\circ} 32' 18''$ N. latitude and $153^{\circ} 58' 48''$ W. longitude. From the site one can look west into the entrance of Larsen Bay and is afforded a

view of the width, length, and entrance of Uyak Bay, as well as the open beaches on each side and the long gentle slope toward the south up the mountainside (fig. 2; pl. 1). The small stream which runs at the east edge of the site furnishes adequate water supply for a village, but is not large enough to constitute a salmon stream. One is therefore led to conclude that the village was located primarily for purposes of protection. Bitter warfare and surprise attacks are characteristic of recent Koniag culture (Davydov and Khostov, 1810-12, 2:32, 39, 67, 106, 113; Holmberg, 1856, p. 410; Petroff, 1884, p. 149; Osgood, 1937, pp. 73, 109, 112), and the Uyak site, both by its location and internal evidence, attests to the antiquity of these practices.

On either side of the site lie gently curving sandy

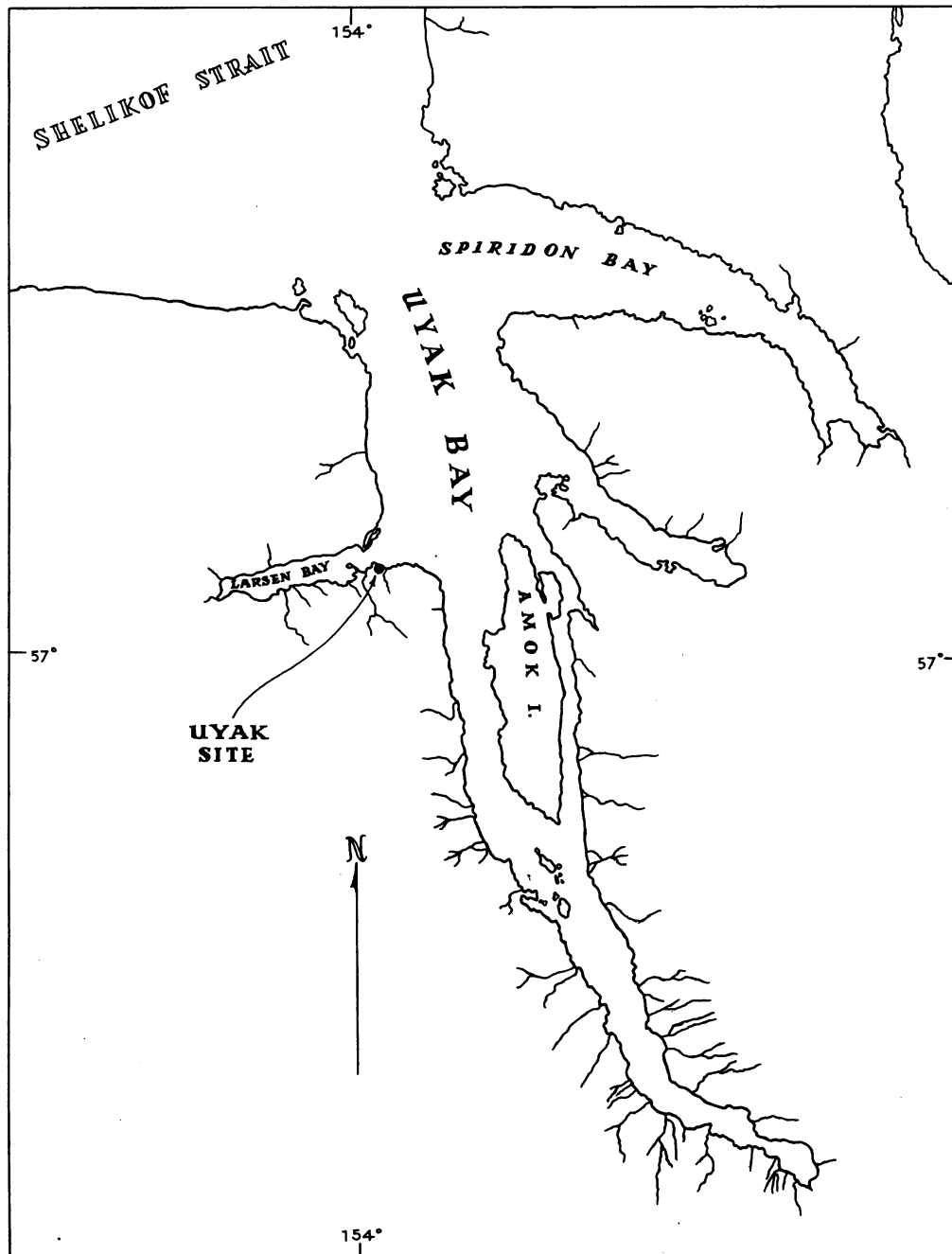


Fig. 2. Map of Uyak Bay showing the site location.

beaches about a quarter of a mile long (pl. 2). These beaches yield clams, and the rocky point abounds in mussels and sea urchins. In former times small tide-water lagoons stretched away from each lateral side of the site, but these have now dried up and are grown over with a thick cover of bear grass. A heavy storm-beach ridge has been built up along the upper edge of the beach close off these lagoons.

There is no adequate and detailed map of the site area and only rough sketch maps are in my notes or on file in the National Museum. Figure 3 shows the site area. The main deposit of village refuse covered an area extending about 270 ft. east-west along one shore. The main site was approximately 180 ft. wide. These figures do not include the midden deposits resting on the narrow rocky point extending north into the bay. East of the small creek was a second refuse deposit where once stood a large semisubterranean kashim (ceremonial house) covering an area about 50 ft. in diameter.

The surface of the site bore a vegetation cover of thick sod, nettles, wild parsley, and elder bushes. This floristic assemblage is invariably associated with Kodiak sites, and is a definite advantage to one engaged in a site survey.

Method of excavation.—Hrdlička (1944, pp. 141, 145) has accurately and succinctly stated the archaeological method employed by him at the Uyak site as follows.

The chief object of these excavations was to secure the skeletal materials which the site evidently contained; at the same time, however, throughout the work

all reasonable care was given to the cultural side of the project, every specimen that showed any human work was carefully examined, and where worth while, preserved for the National Collections.

The progress of the work will be presented in the daily notes. These notes may be crude, but they are faithful notes made right on the spot or at the end of the same day, of what seemed worth recording. To go into greater details, with measurements of depths, etc., was soon found on this site to be quite impracticable, and would have confused rather than simplified matters.

Also find it impracticable to dig from the surface. This is extremely irregular, covered with a heavy sod-root layer, and the roots extend everywhere thickly and deep into the deposits. It seems that the best procedure under the circumstances will be to excavate by clear vertical cuts reaching to the very base of the deposits, which will reveal the nature of the latter and give a constant check on the provenience of specimens.

Stratification.—Throughout this report reference to provenience of specimens is by "Upper Level" or "Lower Levels." Hrdlička, early in the Uyak work, came to the conclusion that the spot had been occupied by two different populations, the older of which he called "Pre-Koniag" and the later one "Koniag."

What was quite obvious in a vertical midden exposure was that the uppermost layer of the Uyak midden consisted of loosely laid shell, brown humus, and, in particular, quantities of burned slate (pls. 3-5). This topmost

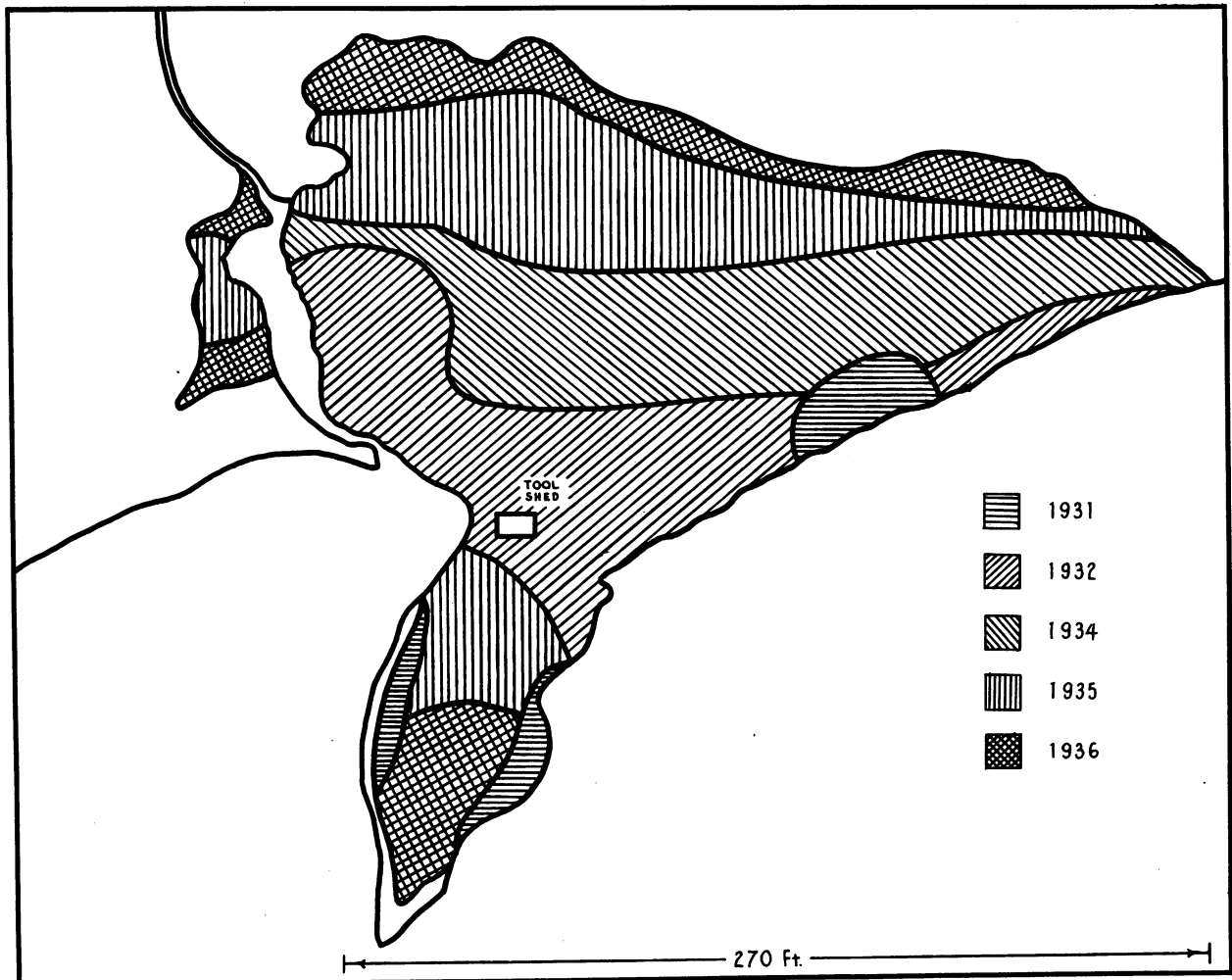


Fig. 3. Map of Uyak Site showing areas of digging in the years 1931-1936.

layer became equated to the Koniag culture and physical type (Hrdlička, 1944, pp. 201-203, 353 and passim), and the deeper deposits, which were somewhat different in appearance, were assumed to have been laid down by the distinctive Pre-Koniag population. I believe that this view is an unwarranted oversimplification of the history of the Uyak site, but since all of the available data are expressed in terms of this assumption, we must try to use the data to advantage.

As we have seen, the methods of excavation were of the very crudest sort, and neither the horizontal location of any find nor its association with other artifacts, burials, house remains, or refuse strata was regularly noted. Hrdlička (1944, p. 202) describes the system used for indicating vertical provenience of finds. The "Koniag" or "Upper" layer, ranging from surface to about 3 ft. in depth, produced remains which were marked with a graphite lead pencil. Any find made within 2 or 3 ft. of the bottom of the midden deposit was said to be from the "Oldest Pre-Koniag" or "Deep" layer, and was marked with a streak from a pencil with blue lead. Any find in the intervening deposit, which might in some areas of the site constitute up to 12 ft. of midden, was marked with a pencil with red lead thus indicating its location within the "Later Pre-Koniag" or "Intermediate" layer. Due care was taken, as Hrdlička points out, "for all specimens, unless uncertain, were marked accordingly immediately after discovery. Any further subdivision [i.e., exact depth recording at precise locations] was found wholly impracticable."

In writing this report, I have used the "layer" provenience as entered in the U. S. National Museum catalogue. Hrdlička's "Koniag" layer I have called Upper Level, and his "Later Pre-Koniag (Intermediate)" and "Oldest Pre-Koniag (Deep)" layers I have lumped together (with the exception of the provenience of stone lamps where the original distinction is preserved in the hope that it may be ultimately revealing of some historical trends) into a single term, "Lower Levels." Thus, the concordance of stratigraphic levels used in the field and reported in publications by Hrdlička and by myself in this report are:

<u>Hrdlička</u>	<u>Heizer</u>
Koniag or Upper layer (marked with black pencil)	Upper Level
Later Pre-Koniag or Intermediate layer (marked with red pencil)	} Lower Levels
Oldest Pre-Koniag or Deep layer (marked with blue pencil)	

I do not believe that we can be certain that all artifacts assigned to a level are correctly designated, for there were several in the U. S. National Museum which bore both a black (graphite) and red pencil mark, or red and blue pencil marks. For all practical purposes, however, all specimens assigned to the Upper Level came from the top stratum, and those designated as Lower Levels came from beneath the Upper Level. Since no particular attention was paid to detecting intrusive objects into the Lower Levels from the Upper Level, some specimens of Upper Level provenience are doubtless listed here as having come from the Lower Levels. Also, objects found at the contact line of the Upper Level and Lower Levels may have been incorrectly assigned layer provenience in the field. We can only hope that such errors are not common enough to invalidate our counts of types by levels. I do not believe that they are, though when a form is listed as very common in one level and very rare in the other, the possibility of error should not be forgotten.

It is precisely because whatever history of the site can be extracted from the available data is inevitably generalized that I have decided not to devote the necessary time to making a trait distribution analysis of the Uyak site material. Collins, De Laguna, Rainey, and others, have all done such studies and have reached important conclusions, but their primary data came from better controlled excavations. The Uyak collection is sufficiently large and the archaeology of the island sufficiently unknown to warrant publication of a descriptive report. In the near future we are not likely to have available again the total artifacts from a complete large midden, and this report will at least tell us a great deal about the gross sequence of artifact forms on the north shore of Kodiak Island.

Regarding the internal stratigraphy of the Uyak site, there are no exact field records available. The loose burned slate rubble of the Upper Level, and the more compacted, wetter, and less stony Lower Levels are the main facts in this connection. The lowest refuse lay upon the yellow loess ("butterclay") and the loess lay upon greenish glacial moraine till, whose components ranged from fine sand grains to boulders as large as a wheelbarrow. The till in turn lay upon the slate bedrock.

In the center of the site the deposit reached depths of 17 to 19 ft., and from this maximum it shallowed out to the thin edges where the midden was only a few inches thick. Some indication of the nature of the deposit can be gained from inspection of plates 3-5 of this report, and from the numerous photographs in Hrdlička (1944).

ANTIQUITY AND CULTURAL POSITION OF THE UYAK SITE

The foremost fact concerning external relationships of the culture disclosed at the Uyak site is that the prehistoric culture of the Cook Inlet area immediately to the east is so closely comparable as to be practically identical. This is not to say that the imperfectly defined Uyak site culture sequence is matched, trait for trait, by the elements in De Laguna's Kachemak Bay I-III culture periods, for it is not. De Laguna's sampling, though derived from a number of sites, will perhaps be admitted as too limited to enable her to state definitely that certain types are demonstrably exclusive to one or another horizon, and unless this can be proved, the trait roster of the three Kachemak Bay periods stands as potentially open to addition. In the Uyak site we have available a very large collection (over 4,600 specimens) from a single midden, so the problem of correlating culture levels in different sites in order to obtain evidence of sequential development does not concern us. On the other hand, the crude collecting methods at Uyak have undoubtedly caused some errors in level attribution of some specimens. For this reason we can be certain of level provenience only when a number of specimens of one type are listed as from one level. When a particular artifact type occurs in some numbers in the Upper Level at Uyak and is designated as early in Kachemak Bay, it is probable that that type is to be interpreted as late in the Pacific Eskimo area, even though it has only an early vogue in the presently known Kachemak Bay sequence. The Uyak data support Collins' statement (1951, p. 434) that the oldest materials (i.e., from the Lower Levels) are more Eskimolike than the later remains. This situation is paralleled in Cook Inlet, and apparently also in the Aleutian Islands.

Several students of Eskimo prehistory have assigned guess-dates to the Pre-Koniag/Koniag sequence as presented by Hrdlička (1944). De Laguna (1947, pp. 10-11) considers Kachemak Bay I "the earliest culture stage in this area . . . known from only one site." The Kachemak I culture, which is of "generalized, old-fashioned Eskimo character" (De Laguna, 1947, p. 11), she thinks was established before the beginning of the Christian era and lasted until about 500 A. D. Hrdlička's Pre-Koniag culture (= Lower Levels horizon) she appears to equate with Kachemak Bay II which has estimated duration dates of 500-1000 A. D. (*ibid.*, table, p. 6). This dating and equivalence (Kachemak Bay II-Pre-Koniag) is similar to that proposed by Martin, Quimby, and Collier (1947, chart XVII) and Larsen and Rainey (1948, table 2). Kachemak Bay III is equated with Hrdlička's Koniag culture (= Upper Level horizon of Uyak site) and is suggested to date from 1000 A. D. to the opening of the historic period ca. 1750 A. D. (Martin, Quimby, and Collier, 1947, chart XVII).

A single lot of wooden stakes was submitted to W. F. Libby (Inst. Nuclear Studies, Univ. Chicago) for radiocarbon dating. These were determined to be 333 ± 280 years old, but they occurred within the Lower Levels deposit and the date does not seem to fit very well. These wooden stakes (described below under "Wood") occurred at a depth of about 6 ft. at a point where the midden was about 12 ft. thick, and appeared to be in situ in the Lower Levels deposit, their preservation being due to enclosure in a small permafrost area. The date is difficult to inter-

pret, partly because its plus-or-minus error is very large. Taken literally, the age of the stakes may be as little as 53 years or as great as 613 years. Since the Uyak site bears no evidence of post-Russian occupation, it was probably abandoned by 1800 A. D. Therefore, the possible 53-year date is certainly an error. If we take the maximum age, 613 years, they would have been laid down 361 years before the abandonment date. This seems a pretty short span of time for six feet of midden to accumulate, and I suspect that we do not know the necessary details about these stakes—they may, for all that was noted at the time of discovery, have been in the fill of a pit dug from the Upper Level. This date had best be tabled until an organic sample with better stratigraphic control can be secured from one of the large middens elsewhere in Uyak Bay.

Whether or not the Kachemak I culture is a specific entity sufficiently distinctive to permit its identification in another site (De Laguna, 1934, pp. 121-122, lists only six types characteristic of this phase) is, I think, doubtful. I would lump Kachemak I and II as equivalent to the Early Uyak (Lower Levels) culture and agree with Collins (1951, p. 434) that this generalized Eskimo culture was in operation by the beginning of the Christian era.

This would make Kachemak I and II and Early Uyak older than Ipiutak, a conclusion which Collins endorses but which differs from the new theory of the origin of Eskimo culture advanced by Larsen and Rainey (1948). They propose that Ipiutak is the basic Eskimo culture type from which all other Eskimo developments derive. Collins (1951, 1953) has recently discussed the position of the Ipiutak culture in the framework of Eskimo prehistory and has concluded that it is largely later in time than the Old Bering Sea culture. Even more recently radiocarbon dates for the Ipiutak site indicate it as later (Collins, 1953).

The Early Aleut culture level on Umnak Island has been dated by the radiocarbon method at 1000 B. C., the horizon being characterized by a number of types which do not occur in the Uyak site. These distinctive Early Aleut types are: core and blade tools; lamellar flakes; barbed harpoon heads and perhaps more, since details have not been published (Laughlin and Marsh, 1951; Laughlin, 1952; Bank, 1953; Spaulding, 1953).

Whether the Early Uyak—Kachemak I and II culture type is equivalent in time to the Early Aleut culture cannot be determined with the evidence at hand, but it is clear that the culture content of the two series is quite different in many details.

If the final glacial retreat on Kodiak, and farther west on the Aleutian Islands, occurred at about the same time (a question for which we do not now have the answer), and if the culture horizons in the Aleutians (now in the process of being worked out independently by at least four persons) can be correlated with those of the Kodiak-Kachemak Bay area, we may learn more of the chronology of the Uyak site (cf. Anderson and Bank, 1952; Laughlin and Marsh, 1951; Collins, 1953, pp. 198-199; Bank, 1953; Spaulding, 1953). The beginning date for the Uyak site cannot be much later than the termination of deposition of the yellow loess which caps the greenish

glacial till. Perhaps the Kodiak profiles collected (and to be dated) by the Michigan Project group will give us some hint of this date (Anderson and Bank, 1952).

Some of the early Asiatic migrants to the New World, whose traces are perhaps to be seen in the Cape Denbigh and Trail Creek sites and who could have pressed south through the ice-free glaciation corridor separating the Cordilleran and Keewatin ice sheets (cf. Hansen, 1950, pp. 420-421), may have reached the shores of the Gulf of Alaska, but of such early people there is as yet no real evidence. On the whole it seems unlikely that the Gulf shore would have received any important population until the post-Wisconsin xerothermic interval (sometimes referred to as the "postglacial climatic optimum" or the "Altithermal Age") to which is usually ascribed the period from 7000/9000 years ago to 4000 years ago (Sharp, 1951, p. 104; Heusser, 1952; Cooper, 1942; Antevs, 1953). That environmental conditions of the present are much improved over those of a few thousand years ago is known, for example, by the evidence for the westward advance of the forest front (Griggs, 1934; Bowman, 1934).

The interesting attempts by Marsh and Swadesh (1951; see also summary in Laughlin, 1952, pp. 67-70) to date the time required for linguistic differentiation of the three major branches of Eskimoan (Aleut, Yupik, and Inupik) indicate that the Pacific Eskimo are at least 1,500 years old, and that the Aleut, for 4,000 or more years, have been recognizable as such. These figures, though not inconsistent with the few radiocarbon dates for Aleutian sites, nevertheless strike me as rather difficult to employ directly in archaeological chronology unless (even granting the chronological method in linguistics is sound) we are certain that we are dealing with the earliest Aleut or Pacific Eskimo culture deposits, and these figures cannot be definitely ascertained without considerably more survey and excavation.

The upshot of this brief review is that in the Aleut-Pacific Eskimo area there are locally distinctive cultures which are intermediate in time between the Cape Denbigh flint and associated Trail Creek Cave complexes (Larsen, 1951) with an antiquity variously estimated at between 6,000 years and 10,000 years (Collins, 1953, p. 199; Giddings, 1952a, p. 91; Hopkins, 1952) and the later protohistoric Aleut and Koniag Pacific Eskimo cultures whose time depth has been estimated as not reaching back beyond 1000 A. D.

I would interpret the Uyak site data and the few generalizations derived from them as broadly confirmatory of Collins' view (1951, p. 434) that the basis of the culture was Eskimoan and that its bearers had passed beyond Bering Straits before the development of the distinctive Old Bering Sea—Ipiutak cultures. In the Pacific Eskimo-Aleut area we may be dealing with subarctic coastal sea-hunting cultures whose nature is about what we would expect as the original or basic Eskimo culture. This may indicate that early populations at Bering Strait moved south some 2,000 to 4,000 years ago to the Pacific front and later pushed back north to Bering Strait where the specialized developments (Old Bering Sea, Ipiutak, Birnirk, Thule, etc.) occurred to form the Arctic Eskimo culture series. This view partly parallels that of Hatt (1914, 1916).

Some readers of this report will be disappointed that it does not follow the general comparative analytical approach which so notably characterizes the near-dozen basic studies of Eskimo culture development—e.g., Birket-Smith's Caribou Eskimo monograph (1929); H. B. Collins' outstanding study of the archaeology of St. Lawrence Island (1937); F. De Laguna's reports on Yukon River

(1947) and Cook Inlet prehistory (1934); Larsen and Rainey's imposing Ipiutak culture analysis (1948); Mathiasen's all-important Archaeology of the Central Eskimos (1927); and the most recent contributions to this subject by Giddings (1952a and b) and Birket-Smith (1953). The methodology of historical analysis through trait distributions has been most explicitly set forth by De Laguna (1946, pp. 110-111).

Although I have here on numerous occasions called attention to an Uyak trait occurring in one or more prehistoric Eskimo sites, such comparative notes are not intended to serve any other purpose than to show that the Kodiak culture is, pretty basically throughout its whole continuum, specifically Eskimoan.² The presumption that the Uyak site has a long history, extending perhaps over two or three millenia, obviously implies that developmental changes are due in part to influences diffusing from the mainland. To attempt to reconstruct the history of individual Uyak traits when we do not know, within the Lower Levels of the site, which traits are earlier and which are later, would mean that our hypothetical history would remain, as it began, suspended in a nonsequential vacuum. If we really want to know such answers, we must find a deep site on Kodiak and excavate it properly. In my opinion, the extensive midden at the mouth of Karluk River, a few miles west of Uyak Bay (Hrdlička, 1944, pp. 102-103) offers the most promise for a really old site, for the Karluk is an important salmon stream which would have attracted early settlement. That the history of Eskimo culture on Kodiak has not been the same over the whole island is illustrated by the presence of pottery in numerous sites in the Alitak Bay region (Heizer, 1949) and its absence in the Uyak site as well as elsewhere on the north and east shores of the island, so far as Hrdlička's survey (1944, Pt. II) indicated.

We know so little about the archaeology of Kodiak Island that it is premature to speculate on the significance of certain manifestations occurring on the southwestern coast of the island. Here are found pottery, incised petroglyphs, and numbers of small incised flat slate pebbles (Heizer, 1947, 1949, 1951, 1952). Whether this represents a sufficiently different culture type from Uyak to deserve a separate name, or whether it is contemporary, earlier, or later than the Upper Level Uyak complex cannot now be answered. A problem exists, and can be answered only by excavation data.

Several students of northern archaeology have proposed that the basic or original culture on the Northwest Coast was Eskimo or Eskimoid. This view is advanced by De Laguna (1934, p. 218; 1947, p. 12), Collins (1929, p. 13; 1937, pp. 291-292; 1940, pp. 576-577), and by Borden (1951). Drucker (1943, p. 125) noted strong connections of his Northern Aspect of the Northwest Coast with Pacific Eskimo culture, but did not discover any ancient horizon which was of Eskimo derivation. Borden, (1951) sees "a culture of pronounced Eskimoid pattern" in his Locarno Beach site, the oldest found by him in the Fraser Delta region. Although I do not accept Borden's argument (also advanced by Birket-Smith, 1953) that the Nootka whaling complex is copied after the Bering Sea Eskimo whale-hunt technique, his theory of an original

² Indian influencing is also apparent. I should take the late appearance of the steam sweat bath as indicating the coastward spread of Indian influence perhaps contemporaneous with or in some part associated with the same forces which brought the Tanaina out to the Cook Inlet shore. Another possible trait of interior non-Eskimo origin is the cradleboard, as evidenced in the late Uyak appearance of occipital head-flattening (cf. Hrdlička, 1944, pp. 366-367). The cradleboard was used by the early historic Koniag (*ibid.*, p. 37).

occupying group of Eskimo or Eskimo-derived people and culture on the Northwest Coast is consistent with the interpretation of the early Pacific Eskimo culture type (Lower Levels Uyak-Kachemak I, II horizon) to which I subscribe. His Locarno Beach finds do appear reminiscent or suggestive of Eskimoan rather than Northwest Coast Indian artifact types, and further excavation of equally old sites may yield enough materials to enable us to say definitely that the early or proto-Eskimo coastal sea-hunting complex spread southward

along the northwest Pacific shore as far as the Fraser River or even farther south.

Speculation at this point of incomplete knowledge is almost useless—only more excavation will produce the answers to weigh the already too abundant hypotheses on the origin and development of Northwest Coast culture. The Uyak site materials, crude though their chronological ordering may admittedly be, will nevertheless be of some assistance in the future by providing a reservoir of factual data upon which to base comparative studies.

NONARTIFACT REMAINS

DISPOSAL OF THE DEAD

A very large number of human burials were collected from the Uyak site. Even with adequate excavation records, the problem regarding burial practices and total number of individuals represented would be complex, since isolated human bones and partial skeletons were of common occurrence.

In the practical absence of exact data on number of burials, burial posture, depth and location in the site area, and cultural associations (grave offerings), we can make, for the most part, only general observations.

There was no localized cemetery area in any part of the Uyak site. Burials occurred at random, horizontally and vertically. Whether, as Dr. Hrdlička thought, there is an undiscovered cemetery in the site's vicinity remains unproved, but to the present author it seems that the graves in the Uyak site were sufficient to account for the population. Here again one must regret the lack of exact information on number of burials, their sex, age, and position within the deposit, since with these data at hand the complete excavation of the site would have permitted calculation of significant vital statistics.

It was a noticeable feature of the Uyak skeletal material that the condition and color of bones varied with the level from which they came. Hrdlička's observation (1944, p. 176) is accurate when he states: "All Upper bones whitish to grey, clean and substantial; all intermediary nice light yellowish and clean but tender; all deep ones brown or brown-gray in color, tender to soft and mostly crushed by weight of deposits."

Methods of disposal.—

A. Interment

1. Complete skeleton, generally flexed, and placed in dug grave.
2. Incomplete skeleton. Due either to burial of an incomplete corpse or postinterment disturbance and removal of some of the bones.
3. Secondary burial. Of the "bundle reburial" type, with disarticulated bones placed in a dug grave.
4. "Mass burials." Large numbers (6-20) of individuals, both male and female, with skeletons in varying degrees of articulation and completeness buried on house floors or in the mound mass (pls. 7, 8; fig. 4).

B. Dissociated bones. Generally single bones, such as skull without mandible, or individual long bones; less commonly a few bones (lower leg, foot, arm) in articulation.

C. Cremation. Rare; only two certain instances noted.

Type A.1 burials (complete skeleton).—From my own observations made during the seasons of 1934 and 1935 at the Uyak site, and from the notes printed by Hrdlička (1944, *passim*, pp. 202-203) it is clear that the normal or characteristic method of corpse disposal throughout the whole span of time and peoples of the site was that of placing the flexed body, lying on the side or back, in

a dug grave (pl. 6). Grave pits were large enough to accommodate only the contracted body, and clear examples of these pits were noted in the lowest levels of the deposit where the grave had been dug into the mound base of glacial till (Hrdlička, 1944, pp. 202, 239, figs. 88, 103). Pit outlines often could be easily detected in the mound mass owing to disturbance and cutting through of localized shell layers (cf. Hrdlička, 1944, figs. 146, 159), but sometimes traceable pit outlines were not apparent.

Articulation of the skeleton was so variable that, taken as a whole, no single direction of orientation of the corpse seems to have been selected. Of the articulated, flexed single burials excavated and noted by me in 1934, 6 came from the "Low" deposit (within 2 or 3 ft. of the glacial till) and were oriented as follows: east, 1; north, 1; south, 2; west, 2. Of 6 "Intermediate" burials, 1 pointed west, 2 south, and 3 east. Of 5 "Upper" burials, 1 was oriented east, 1 south, and 3 west. This is admittedly a small sampling, but since it constitutes our only exact body of data of Uyak burials, any general conclusions must rest upon it.

Position of the skeleton varied from loosely to tightly flexed, with the latter most common. The body was usually laid on the side or back. Of the "control series" of 1934 mentioned in the last paragraph, 4 "Low" flexed burials are on the right side and 2 on the back; 3 "Intermediate" flexed burials are on the right side, 2 on the left, and 1 on the back; 3 "Upper" flexed burials are on the back, and 2 on the right side. Here again are differences, but with our small sampling these appear insignificant as far as time and culture are concerned. At least one dorsally extended burial was recovered (pl. 6, e), and in 1934 this was the only known instance of this position at the Uyak site.

Type A.2 burials (incomplete skeleton).—Partial skeletons were, it seems in retrospect, at least as common as complete skeletons and Hrdlička's notes support this assumption (Hrdlička, 1944, pp. 157, 163-165, 170, 176-177, 179-180, 190, 195, 245, 246, 272, 275, 283, 351). Any archaeologist may find a skeleton with the skull missing or the lower legs absent, but these are usually special examples, whose condition can be accounted for as due to head-taking or postinterment disturbance or other equally probable explanations of such rare occurrences. In the Uyak site, however, partial skeletons occurred with such frequency that they may be looked upon as a characteristic feature. Incomplete skeletons were most common in the "Intermediate" levels, definitely rare in the "Low" and "Upper" strata (Hrdlička, 1944, pp. 202-203, 351).

The most probable explanation of these incomplete skeletons is the custom of cannibalism. Isolated human bones or a few bones in articulation were apt to turn up at almost any time during the excavation, and it is worth noting that they occurred most frequently in the "Intermediate" levels, where the majority of incomplete skeletons were also found. Hrdlička's published studies do not tell us whether there were visible signs of cutting marks, which must have resulted when a skeleton was dismembered, but it seems probable that a careful inspection of the skeletal material would reveal such

TABLE 1

Data on Burials*

(L, Lower Levels; U, Upper Level)

Age and sex	Description	Orientation	Level and depth (ft.)	Remarks
Ad. (F)	Isolated skull	...	L, 14	No associated artifacts
Ch. (M)	Flexed on rt. side	E	L, 9	
Ad. (M)	Loosely flexed on rt. side	S	L, 12	Fox skeleton at head; fox skull at knees; slate knife, harpoon point at head
Ad. (M)	Tightly flexed on back	W	L, 10	Slate spear. Lying in oval grave 18 in. deep and dug into glacial till
Ad. (F)	Tightly flexed on back	S	L, 12	
Ad. (M, F)	2 dissociated skulls lying together	...	L, 16	Teeth missing, bone bruised
Ad. (F)	Loosely flexed on rt. side	W	L, 9	Left limb bones missing
Ad. (M)	Tightly flexed on rt. side	N	L, 8	
Ch. (M)	Flexed on rt. side	E	L, 6	In entrance to house no. 5 (fig. 11)
Ad. (F)	Flexed on back	S	L, 9	Grave pit 30 in. wide, 8 in. deep
Ch. (M)	Flexed on left side	W	L, 7	Lying on slate slabs. Lower legs fallen accidentally into Chekalina pit. Slate spearpoints associated. (Fig. 5, <u>b</u>)
Inf. ....	...	...	L, 6	3 newborn infants lying under large slate slab. Crude lamp in association.
Adol. (F)	Loosely flexed on rt. side	E	L, 8	Slate slab over skull. Rt. pelvis and leg lacking. Slate knife, 11-in. bone dagger and 30-in. whalebone fish club in association. (Fig. 5, <u>c</u>)
Ad. (M)	Flexed on left side	E	L, 8	Lying on slate slab. Human mandible with drilled holes through rami found at pelvis
Ch. (M)	Flexed on rt. side	S	L, 5	Lying on slabs which were probably part of a house feature. Cache of 11 drilled ivory pendants near skull
Ad. (F)	Flexed on back	S	U, 6	Lying in surface house pit. Barbed dart head at chest
Ad. (M)	Flexed on back	W	U, 6	Associated with last mentioned skeleton. Lamp and slate knife in association
Ch. (M)	Secondary reburial	...	U, 5	Fox skeleton near skull. Polished bear legbone associated
Ad. (M)	Tightly flexed on back	W	U, 2	Numerous flat slate slabs around skeleton
Ad. (F)	Flexed on rt. side	W	U, 2	Stone knife associated
Ad. (M)	Flexed on rt. side	E	U, 1	Skeleton incomplete

* Observed by author in 1934, 1935.

indications. That dismemberment of corpses was not ordinarily due to disturbance of a buried body by an animal (e.g., a fox) is shown by the absence of marks of teeth or gnawing on the bones which there would have been if an animal had removed part of a skeleton still clothed in its integument. (Cf. Hrdlička, 1944, p. 180.)

Type A, 3 burials (secondary burials).—Burials of the separated bones of a skeleton lying, not in apposition, but at random occurred only in the uppermost levels of the site, which Hrdlička (1944, p. 146) limits to the top 3 ft. of midden. These are reburials, the bones having been removed from an earlier burial spot and re-interred in the Uyak site deposit. This custom is late, and perhaps was practiced after the Uyak site had been abandoned. Many of the craterlike house depressions evident on the site's surface had such shallow secondary burials lying in their bottoms. These burials must have been placed after the abandonment of the Uyak village, which seems to have been not long before the Russian settlement in the mideighteenth century.

Type A, 4 burials ("mass burials").—"Mass" or "nest" burials was the term adopted for the large series of groups of simultaneously interred skeletons found in the Uyak site (pls. 7, 8; fig. 4; table 2). Hrdlička's daily notes record, for example, "nests" of 9 skeletons (1944, pp. 178-179), 6 (p. 241), two nests with a total of 12 skeletons (p. 250), one with more than 6 individuals and two with 12 (pp. 267-278, 308). Most of these were heaps of human bones, with a few articulated skeletons and numerous dissociated bones. In 1934 I noted five mass burials which Hrdlička does not report, his 1934 notes having been lost. These five nests comprised heaps of bodies numbering 6, 6, 7, 12, and 18-20. This series of 1934 was found at different depths over a wide area from one edge of one site to the other along the vertical east-west face against which we were working and cannot all date from the same time. Therefore, an explanation of a single great village massacre (Hrdlička, 1944, pp. 230, 270, 395) to account for these does not fit with the stratigraphic facts, however meager these last may be. These mass burials are often large aggregates of complete and partial skeletons and dissociated bones. Many

were broken, as if they had served as food; the marrow or brains had been extracted. The evidence indicated that they fall into the "Intermediate" levels. They may represent remains of cannibalistic feasts, perhaps the aftermath of a battle. The bodies may therefore be those of local villagers, strangers, or both. Two of the mass burials I noted lay on house floors. The others were in dug pits.

Type B human remains (dissociated bones).—These are single bones or a small lot of articulated bones too few in number to be a separate burial.

Generally speaking, these human bones occur at random in the refuse deposits and are to be equated with other discarded bones of animals used as food. Long bones in particular are often split or broken in such a manner as to indicate their intentional fracture for the purpose of extracting marrow.

Many of these isolated bones show evidence of modification in the form of drilled holes or cutting marks. Skulls in particular were commonly found alone (cf. Hrdlička, 1944, figs. 40, 48, 77, 79, 98, 102). Occasionally these isolated skulls had the mandible and a few cervical vertebrae associated, as though the head had been detached at the neck.

These single bones probably also occur among the mass burials described above, as suggested by the presence of numerous extra bones in these ossuaries. For example, note the drilled skull and mandible in a mass burial (Hrdlička, 1944, fig. 151, p. 267).

Cannibalism, commented on several times above, is repeatedly mentioned by Hrdlička (1944, pp. 146, 196, 240, 248, 351), who is also of the opinion that the practice was least developed in the earliest and latest phases of the site's occupation (*ibid.*, pp. 150, 203) and most common in the "Intermediate" levels and times. The presumption of the connection between cannibalism and partial skeletons and mass burials is thus strengthened, since the incidence of all three of these tends to be greatest in the "Intermediate" levels.

Type C human remains (cremation).—Although the records are incomplete, it appears that cremation was definitely practiced by the "Intermediate" and "Upper" people of the Uyak site.

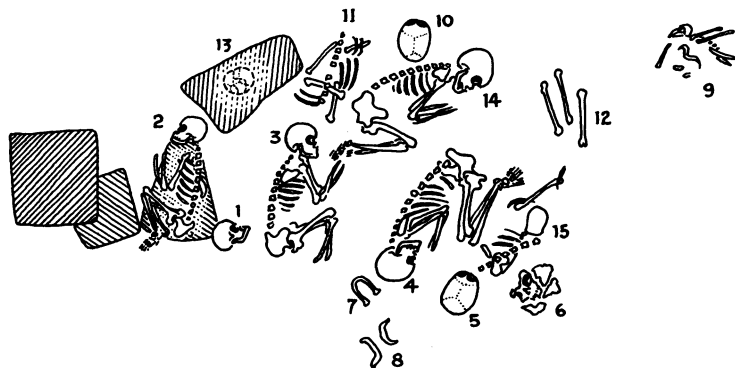


Fig. 4. Mass burial.

- | | |
|----------------------------------|--------------------------------------------------------|
| 1. Dissociated skull (male?) | 9. Eagle and smaller bird skeleton |
| 2. Female burial | 10. Skull (associated with no. 11?) |
| 3. Male burial | 11. Disturbed male skeleton |
| 4. Male(?) burial | 12. Dissociated arm bones |
| 5. Skull lacking mandible | 13. Skull crushed under slate slab |
| 6. Crushed skull | 14. Adult male burial with hole in skull |
| 7. Mandible | 15. Incomplete skeleton (associated with nos. 5 or 6?) |
| 8. Mandible, broken at symphysis | |

TABLE 2

Mass Burials

(L, Lower Levels; U, Upper Level)

Age and Sex	No. in grave	Level and depth (ft.)	Description	Remarks
Ad. 2(M) Ad. 1(F) Ch. 2 Inf. 1	6	L, 9	Only a few bones in articulation; others scattered at random	Stone lamp associated
Ad. 4(M) Ad. 2(F) Ch. 1	7	L, 4	Apparently in position in which they died	On floor of house no. 6 (fig. 13) Stone lamps (4), barbed dart heads, slate knives. No evidence of violent death or cannibalism. Death from epidemic ?
Ad. 2(M) Ch. 2 Inf. 2	6	L, 6	Flexed position, but skeletons not complete	Fox skeletons near skull of child. Bone "dagger," 12 in. long, lamp, and slate knife
(M, F)	18-20	L, 6	Skeletons piled indiscriminately; skeletons incomplete	Probably secondary reburial. Long bones split (for marrow ?). Evidence of cannibalism. Lamps, barbed dart heads in association
(M, F)	12	U, 6	Majority male, skeletons mostly incomplete	Eagle skeleton, barbed dart point, associated. (Fig. 4)

Hrdlička (1944, pp. 228, 280) mentions cremation of a female and male, but without detail except the statement that the skeletons came from "Intermediate" levels. The fact that he could determine sex may indicate that they were only incompletely cremated, though he distinguished these two from an accidental partial cremation of a woman and child which took place when a house burned (*ibid.*, pp. 176, 228). A burned skull under a slate slab (*ibid.*, p. 257) is described as "not accidental," but the degree of intention is not suggested.

In 1935 I witnessed the discovery of a complete cremation (fig. 5, d) lying on the floor of a surface house pit depression. There was no question but that this was an intentional cremation, and it must date from the latest occupation period or perhaps even from the post-occupation period when the abandoned site was used as a graveyard.³

Grave goods (cultural items).—There is some, but not much, information on artifacts found in graves. Hrdlička (1944, *passim*) notes the following items associated with skeletons: animal bones (seal, fox); bird bones, lamp, and knife; bear bones and slate knife; "long pointed bone" and slate point; large slate "cutters"; toggle harpoon; stone knife; lamp, ivory "spindle," ivory whale figurine; bone poinard; bone club, bone arrowpoints; spearpoints and ivory pegs; stone maul; ivory earplug. This list is sufficient to indicate that a respectable cross section of the material culture was represented in burial furniture, and it is to be regretted that accurate segregation of these cultural pieces with notes on the burial which they accompanied were not kept, since these might have been sufficient to furnish the key to sequence of cultural types.

³ We found in 1934 one intrusive coffin burial which probably dated from ca. 1800.

Burials observed in 1934 and 1935.—Table 1, giving data on burials noted by me in 1934 and 1935, constitutes the most exact record of interments from the Uyak site. Of special interest is the association of fox skeletons with human remains from both the Upper Level and Lower Levels, and the occurrence of an eagle burial in an Upper Level mass grave (fig. 4, item 9). Lisianski (1812, 2:58) mentions a tamed eagle in a Koniag settlement and says these birds were kept for their feathers, which were used for arrow vanes.

Fox skeletons in graves.—A number of human skeletons were accompanied by those of foxes. Hrdlička (1944, pp. 172, 175, 182, 188, 220, 245, 479) cites a number of occurrences, in all levels of the site. The custom is therefore one practiced through the whole period of the site's occupancy. Foxes may have been tamed as pets. One occurrence of a fox head resting inside a broken human skull (occipital) is recorded by Hrdlička (1944, p. 245).

Association of slate slabs with burials.—Large, flat, slate slabs sometimes measuring 3 by 4 ft. were frequently encountered during excavation. Often their presence indicated a burial (fig. 5). Slate slabs were apparently used to form the floor of the grave (Hrdlička, 1944, pp. 178-179; fig. 88 and pp. 248, 250; and figs. 144, 145 and p. 261) or as a cover over the grave, perhaps to prevent burrowing animals from disturbing the corpse (Hrdlička, 1944, pp. 160, 179, 250, 275, 280). Since these thin slabs were used for other purposes (in houses, fireplaces, etc.), their use in graves is probably to be looked upon as one of many functions rather than a specific and unusual feature.

Vital statistics of the Uyak population.—The total number of individuals represented by skeletal remains from the Uyak site is unknown. If we judge from crania alone,

TABLE 3

Burials in the Uyak Site: Sex Distribution

Level	Male	Female	Juvenile
Upper	44	10	23
Intermediate	48	99	4
Lower	22	27	1
Unspecified .....	...	2	25
Total	114	138	53

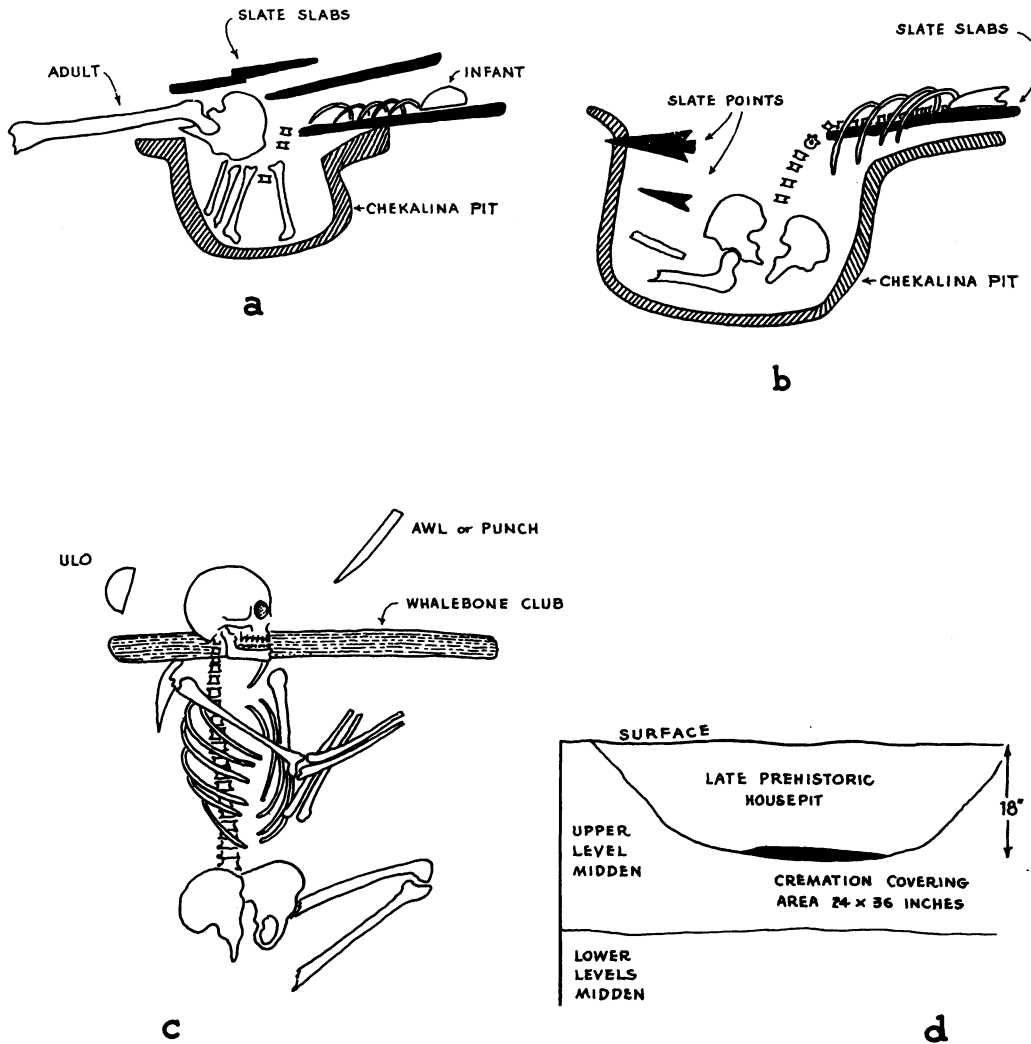


Fig. 5. Burials. a. Partial burial (infant and adult) in an ovoid clay pit 12 x 16 in. deep. b. Burial, accidentally lying partly in a pit lined with blue clay. c. Burial of an adolescent male. It lay at 72 in. below the surface in a midden deposit of the upper Lower Levels, d. Upper Level cremation lying on floor of late house pit.

TABLE 4

Age and Sex of the Uyak Site Population

Population groups	Per cent			
	Under 30 yrs.	30-60 yrs.	Over 60 yrs.	Average age
Koniag males (50)	28.0	64.5	7.5	37.0
Koniag females (35)	41.0	50.0	9.0	37.5
Pre-Koniag males (65)	20.5	69.9	9.6	...
Pre-Koniag females (125)	40.1	51.8	8.0	...

a minimum total of 305 adult and juvenile individuals were buried in the Uyak site. This figure comes from Hrdlička's latest Catalogue of Crania, Non-Eskimo People of the Northwest Coast, Alaska, and Siberia (1944, pp. 34-60). These may be separated according to culture level and sex (table 3).

The 1944 Catalogue of Crania and Part IV of The Anthropology of Kodiak Island include archaeological crania not from Uyak, so the tabular and statistical summaries do not quite accurately represent the population of the Uyak site. These vital statistics are summarized in table 4 (cf. Hrdlička, 1944, pp. 366, 395).

Hrdlička attributed the high female mortality to child-birth. The other figures on mortality seem not particularly divergent from those of other aboriginal American populations. The imbalance in sex ratios of the Koniag and Pre-Koniag remains is not easy to explain, since females generally are more common than males in archaeological sites. The Koniag male-female ratio remains a puzzle.

Cause of death could sometimes be determined as a wound (cf. Hrdlička, 1944, pp. 191, 192, 250, 288, passim), but for the most part the cause was impossible to ascertain.

Hrdlička's book (1944) presents the following illustrations of burials.

Type A. 1, Upper Level. Figs. 134, 146, 149, 160

Type A. 1, Lower Levels. Figs. 101, 103, 128, 131,
133, 142, 144, 145,
149, 150, 152, 156,
178

Type A. 2. Fig. 131

Type A. 4. Figs. 130, 135, 148, 151

Type B. Fig. 48

STRUCTURAL REMAINS

There were abundant evidences of dwellings and ceremonial structures in the Uyak site, ranging from surface depressions which indicated the position of the last houses to stand on the site to numerous house floors and the like in all levels and portions of the midden and to the floor outlines of the dwellings built by the first occupants of the site, which had been dug into the yellow butterclay. Unfortunately, Hrdlička did not consider it feasible or important to observe and record information on house remains (1944, p. 213). The following data are those recorded by me in the summers of 1934 and 1935. Dr. Hrdlička permitted us, provided it did not slow down

the rate of midden removal, to clear off house floors, expose floor features, and to make notebook and photographic records of these. In the two summers mentioned, certain data were thus recorded, and, although accurate as far as they go, no single house floor was completely studied. I would guess that the house remains described below amount to between 5 and 10 per cent of the total number in the site. The sample is, therefore, too small to be a reliable guide to the history of the dwelling-structure complex of the Uyak site, but since even a little information is better than none at all, the data are important.

Surface remains of structures.—As nearly as can be made out from the scanty records, there were about 45 saucer-shaped depressions visible on the surface of the site when it was first seen in 1931. Hrdlička (1944, pp. 145, 154, fig. 54) mentions and maps the surface depressions which he believes were remains of semisubterranean dwellings.

The location and relative size of the surface depressions are shown in figure 6 of this paper. There are two very large circular depressions, which are probably to be taken as kashims (see below). Their diameter I would estimate to be about 25 ft. There are 27 medium-sized circular depressions, which probably mark the location of living houses. The rectangular depressions may be evidence of houses of this shape, though round surface depressions may often turn out to have been formed from rectangular house pits. There are at least 13 small circular depressions (indicated in solid black), which are either sweathouses, small storage houses, or even sunken burial tombs. None were recorded when excavated, so their identification cannot be even guessed.

Shallow flexed burials were found in many of the house depressions, and I agree with Hrdlička (1944, p. 146) that many of these burials must have been deposited after the village had been abandoned. It is to be regretted that the artifacts accompanying these near-surface burials were not kept separate, for they might tell us something of the terminal or postoccupation culture of the Uyak site. Two near-surface burials of this sort are shown by Hrdlička (1944, figs. 159, 160), and the contour of two of the surface depressions may be seen in the same publication (figs. 99, 128).

We may assume that the depressions visible on the surface of the Uyak site were of houses like those described in the early historic period by Sauer, Davydov and Khvostov, Lisianski, and Holmberg, whose accounts have been reprinted by Hrdlička (1944, pp. 26-29).

Kashim remains.—The great communal house or kashim is described by Davydov (after Hrdlička, 1944, p. 29): "In every village there is a large house called

kashim in which are held the plays of the people. Its roof is dome-shaped . . . and inside along the walls are benches." The two large circular depressions so labeled in figure 6 are judged to be kashim pits. The southern one was dug out without any record being made of its depth, size, or associated features. The northern one (house no. 9), excavated in 1935 was found to be a circular pit with a packed midden and sand floor 30 ft. in diameter lying 6 ft. from the surface (pl. 9, b and fig. 7).⁶ Closely adjoining it on the north at a depth of 2.5 ft. from the surface was a large circular slate slab cyst whose cavity was 2 ft. deep and interior rim diameter 6 ft. It was filled with ash, sand, and burned slate rubble. No features such as benches, fire pit, postholes, or the like were visible in the floor of the large pit, and the association of the slab cyst with the deeper house floor is only surmised. No evidence of walls was noted. Possibly the large slate firebox was used to heat stones for sweat-bathing in the kashim, though I do not know of any ethnographic evidence for such use of these large ceremonial structures. Both the large pit and the slate slab cyst may be ascribed to the Upper Level horizon and may therefore be presumed to have been built by the prehistoric Koniag and abandoned long enough ago for a couple of feet of midden refuse to be deposited over the location.

Dwelling remains.—Not one of the surface depressions was properly excavated, so we know nothing of the details of Upper Level houses. From the Lower Levels the record

is better, and it is possible to establish three chronological groups.

Earlier Lower Levels houses: Two house outlines were exposed and noted in 1935. Several others were encountered, but because of the fragmentary condition of the remains or their position beneath a thick overburden of midden deposit they were not studied. These lowest house remains were concentrated in one area at about the center of the site where the glacial till rose to form an elevation.

House no. 1 (pl. 9, a and fig. 8) lay at a depth of 120 in. from the surface. The floor lay on the glacial till and had been cut through the overlying yellow butterclay (loess). The house pit, about 7 in. deep, was filled with mixed earth, shell, stone, and bone. The floor was rectangular, measuring 8 by 7 ft. Three corner posts were located, but the fourth was not visible. There were two center posts. An entranceway 44 in. wide, 36 in. long, and 12 in. deep intersected the west wall. No evidences of supporting posts were noted for the entrance. To its left was a slate slab fireplace composed of four upright slabs, whose interior measured 6 in. wide and 24 in. long. It was filled with ash and charcoal; at the rear was a small platform of three flat slate slabs.

House no. 2 (fig. 9) was found near by at a depth of 108 in. from the surface. Like house no. 1, the floor rested on glacial till and had been dug through the yellow butterclay layer, which was here 12 in. thick. The pit

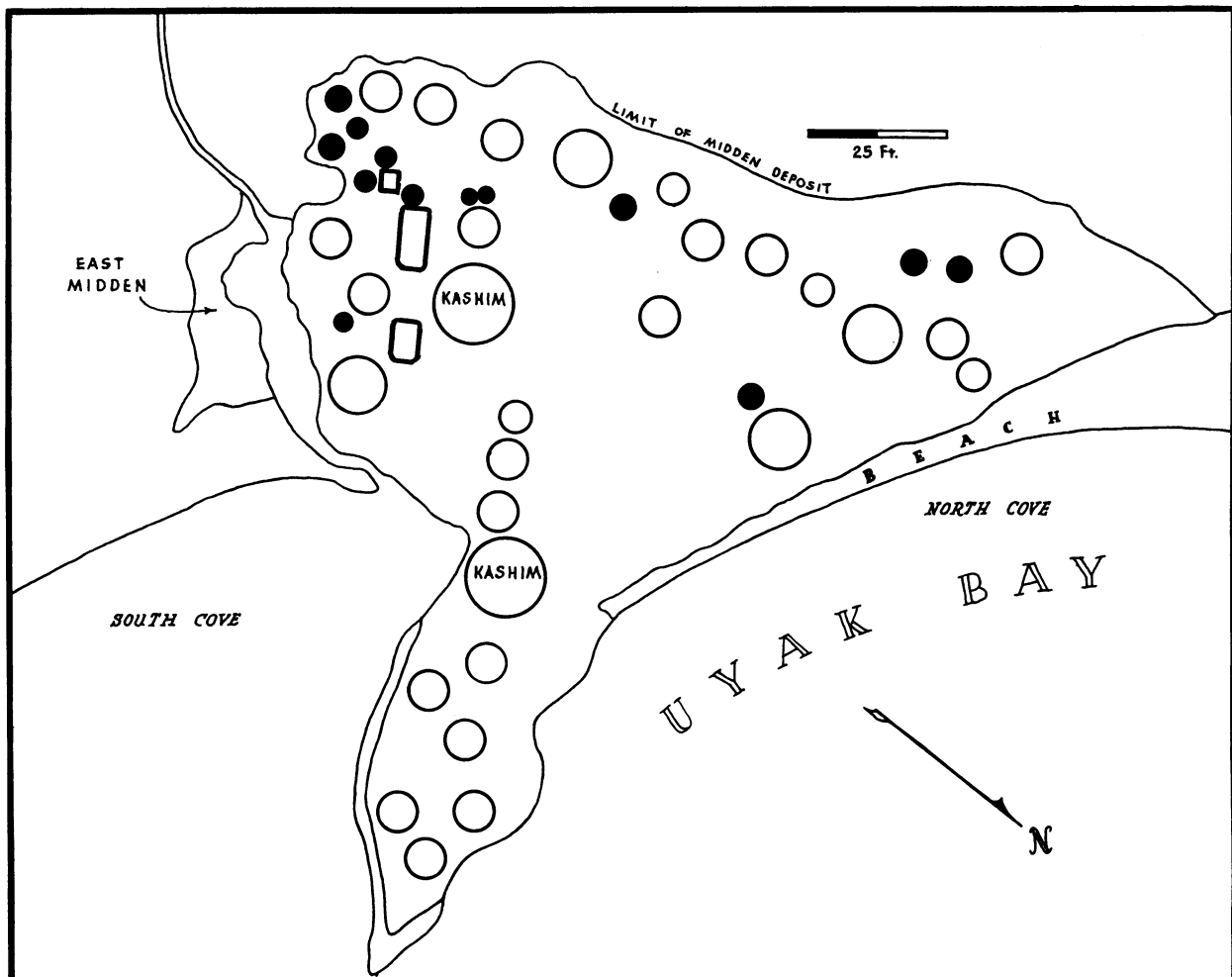


Fig. 6. Approximate distribution and relative size of surface house depressions, Uyak site. Scale approximately 1 in. to 25. ft.

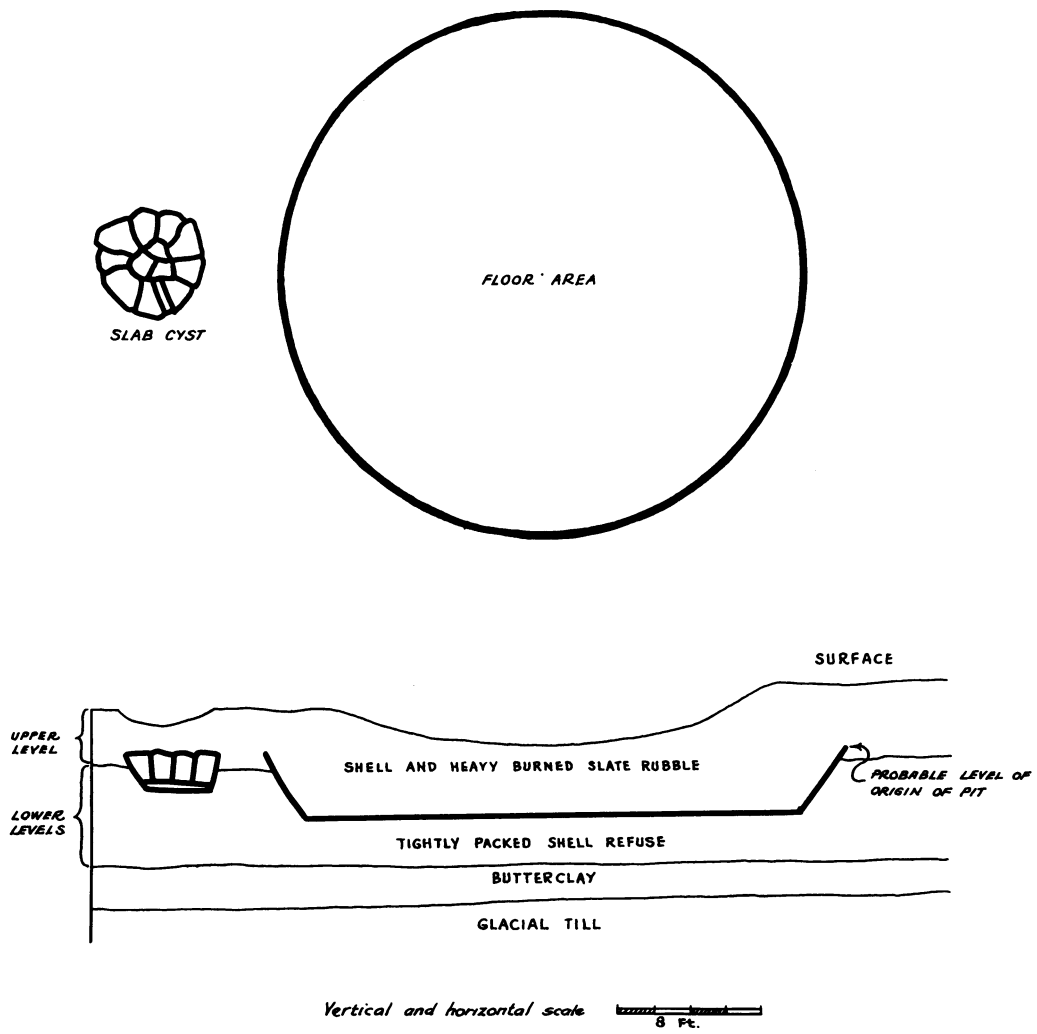


Fig. 7. Upper Level Kashim (house no. 9).

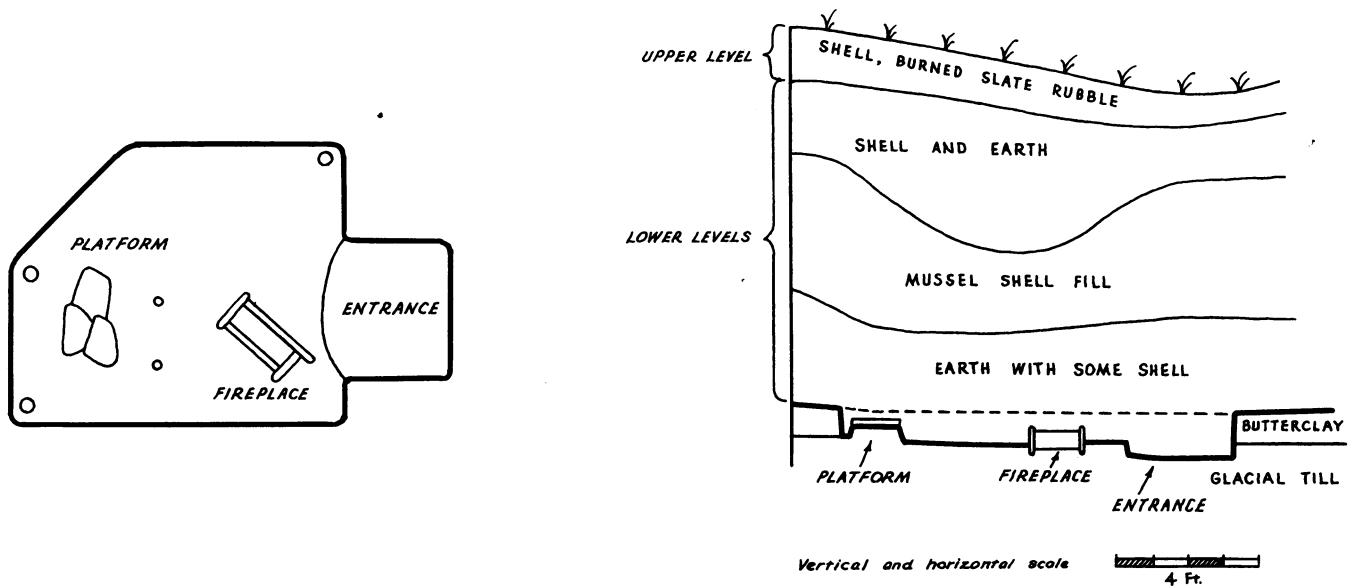


Fig. 8. Early Lower Levels house no. 1.

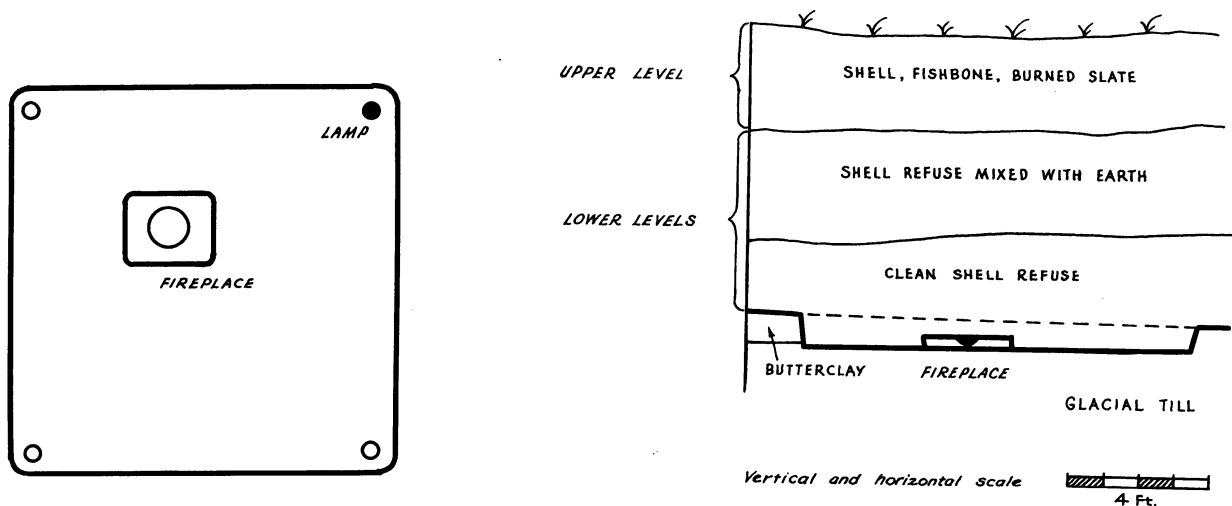


Fig. 9. Early Lower Levels house no. 2.

was filled with an earthy layer of finely crushed, decomposed shell and bone. Above this was a layer of clean mussel- and clamshell. The pit was square, measuring 11 ft. on a side. The corners were rounded, and in three of them a posthole was found. Near the center of the floor was a raised fireplace consisting of a block of hard packed ashes 4 in. thick and 36 by 24 in. on the sides. The fire pit, sunk into the center of the raised ash bed, was circular, 12 in. in diameter, and lined with fine blue clay of the sort used to form the Chekalina pits for preparing fish. In one corner a small inverted oval stone lamp was found.⁴

The earliest houses at the Uyak site, judging from the scanty record of two house floors, were small and rectangular. Internal features, such as arrangement of supporting posts, type of fireplace, and entranceway, varied. A shallow pit was dug, but in the two houses known this is hardly deep enough to warrant calling the house semisubterranean. There is no information on the type of walls or roof. One fragment of a house (no. 3) was noted in which a slab fireplace was located 18 in. from a round food (?) pit, as shown in figure 10. The pit was perfectly round, 24 in. in diameter and 18 in. deep. It was not clay-lined, nor was it covered.

House no. 4 (pl. 9, *d* and fig. 11) lay at a depth of 108 in. from the surface. The floor, like the floors described above, had been dug through the yellow loess layer and lay on the glacial till. The center fireplace was made of 2 slabs, each 36 in. long, and at the end was a slab cyst with sloping sides 24 in. in diameter. The floor was 15 ft. square. No postholes or other features were noted. The sides of the pit, which was 24 in. deep, were inclined as shown in figure 11.

The earliest fireplaces, commonly made of slate slabs set vertically in the floor, consisted of 2 parallel slabs with the ends open; of 3 slabs with one open end; or of 4 slabs with both ends closed or, in one instance, with a slab cover. These fireplaces range from 12 to 36 in. long, stand 4 to 12 in. high, and are 6 to 12 in. wide inside.

Intermediate Lower Levels houses: House no. 5 (pl. 9, *c* and fig. 12) was judged to be of slightly later date than the four houses just described. The floor lay

at a depth of 96 in. from the surface, and had been made some time early in the history of the site after at least one foot of refuse had accumulated over the butterclay (loess). The floor plan is rectangular and measures 12 by 16 ft. A ridge of tightly packed clay, 8 in. high, bisects the floor, and on either side of this low ridge is the slab fireplace for a family. The house is a "duplex." Each half had a separate entrance marked by a gap in the pit wall, so we may guess that a partition of some sort separated the two halves of the house when it was occupied. No postholes were noted. A burial lay just inside each entrance. In each half there were a lamp and round food pit, besides miscellaneous features and artifacts (fig. 12). The left-hand fireplace was 30 in. long and was covered by three thin slate slabs.

Later Lower Levels houses: Two houses which date from about the end of the period of the accumulation of the Lower Levels were exposed.

House no. 6 (fig. 13), whose floor was 36 in. below the surface, was found near the eastern edge of the site where the Upper Level refuse was thin. The surface outline of the pit was clearly visible. We believed the house was probably of Upper Level date, but it seems to have just preceded this period, and therefore dates from latest Lower Levels times. The floor was square, measuring 13 ft. on a side. There were four corner posts, but no other features. The entrance (my notes do not tell in which direction this faced) was steeply sloping, and

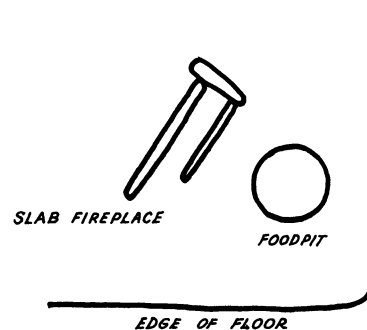


Fig. 10. Fragment of earliest Lower Levels house no. 3, with fireplace and food pit.

⁴Hrdlička (1944, pp. 284-285) believed that some large whale vertebrae with projections trimmed off were used as stools. They may have been, but there is no evidence for this supposition.

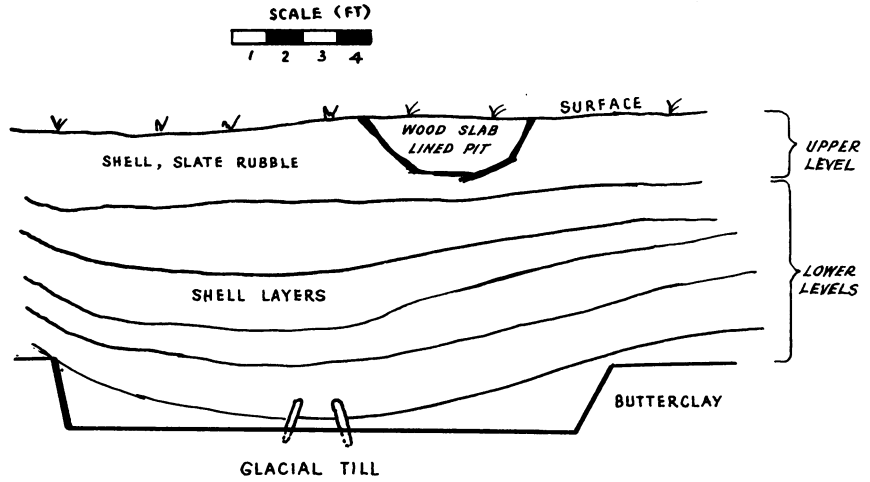
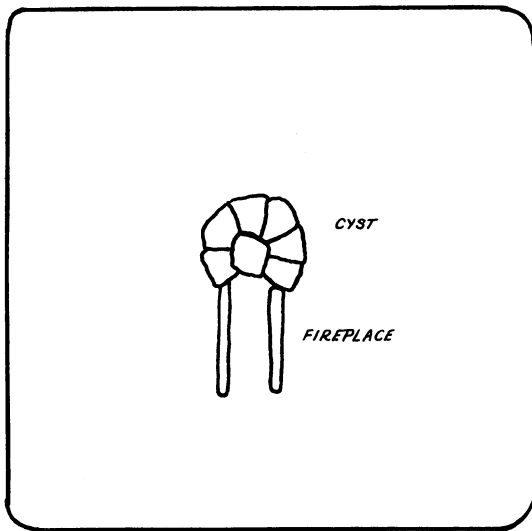


Fig. 11. Earliest Lower Levels house no. 4.

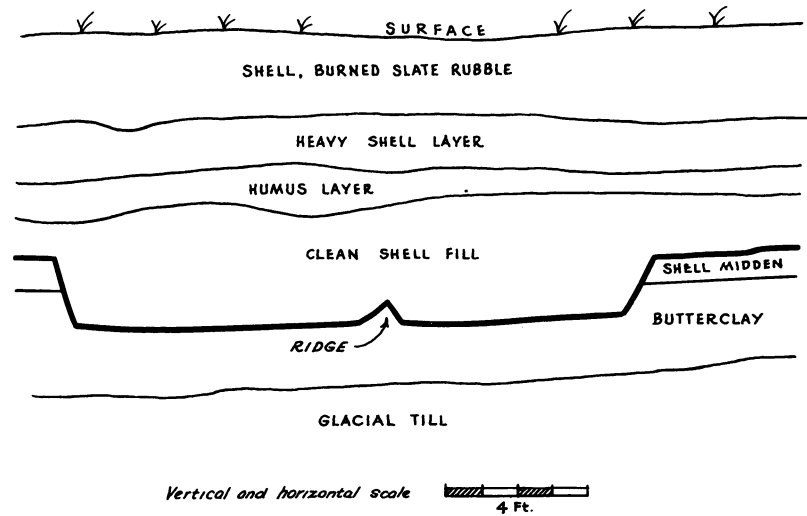
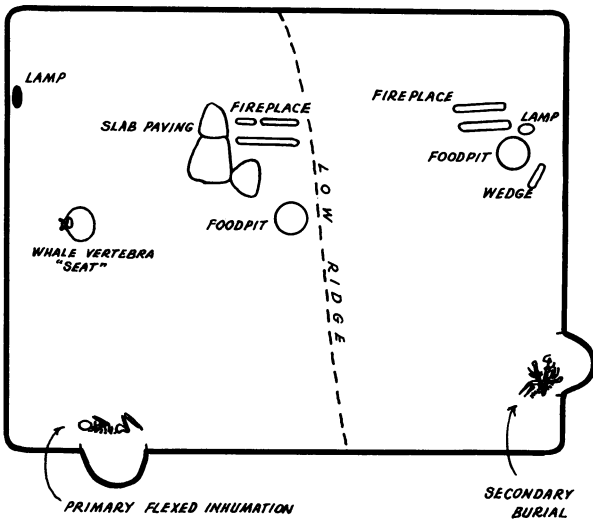


Fig. 12. Intermediate Lower Levels house no. 5.

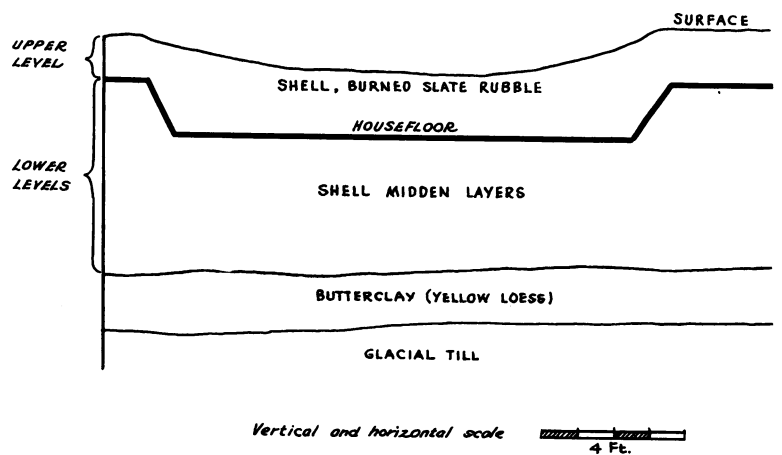
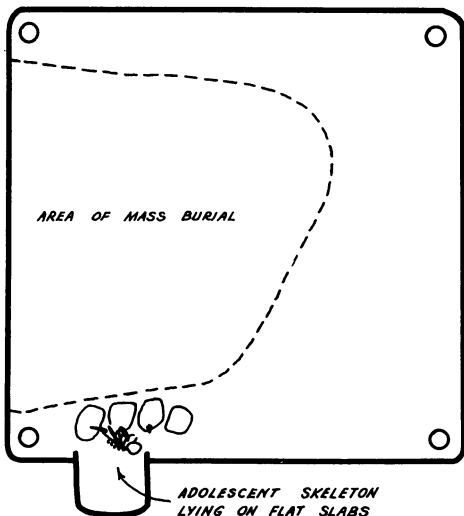


Fig. 13. Lower Levels house no. 6.

just inside it lay a flexed burial on four large slate slabs (pl. 6, d). Beneath this burial on the floor was a mass grave of seven adults. It is barely possible that the flexed burial on the slabs is intrusive from the Upper Level, for two reasons: first, according to Dr. Hrdlička, this is a Koniag (i.e., Upper Level) skeleton, and second, this burial lay over the mass grave which in turn rested upon the house floor. The skeletal type of the mass grave individuals was pronounced to be of pre-Koniag (i.e., Lower Levels) type.

House no. 7 (pl. 9, e and fig. 14) whose level of origin lay near the upper limit of the Lower Levels deposit, was undoubtedly a semisubterranean structure, since the pit is 48 in. deep. The floor is circular and measures 18 ft. in diameter. The sides slope markedly, and at the top the pit is 25 ft. in diameter. No entrance was visible, and the roof entrance was probably used. No side or center posts were noted, but, as in the other houses, this does not mean that there were no posts, since our techniques were rude and a shell midden is a

hard place to find postholes. Just off-center there was a fireplace made by setting two parallel slate slabs on their long edges. On the floor of the pit lay a mass grave of 18 individual bodies or parts of them. It seems probable that this was a kashim or ceremonial chamber.

Our notes on house no. 8 (fig. 15) are not adequate, but it appeared to be 12 ft. square with the east and west sides open and the north and south sides delimited by inclined flat slate slabs. It was found at a depth of about 4 ft. from the surface, just under the burned slate deposit forming the Upper Level. No postholes, fireplace, or entrance were noted, and information regarding this structure is so incomplete that its identification as a dwelling is hazardous.

The Ipiutak house is basically the same as that found among the recent Pacific Eskimo (Larsen and Rainey, 1948, p. 50; De Laguna, 1934, p. 159). Ipiutak houses are square or rectangular with rounded corners and a central fireplace, resembling in these features the early Uyak houses. The Ipiutak houses, however, have

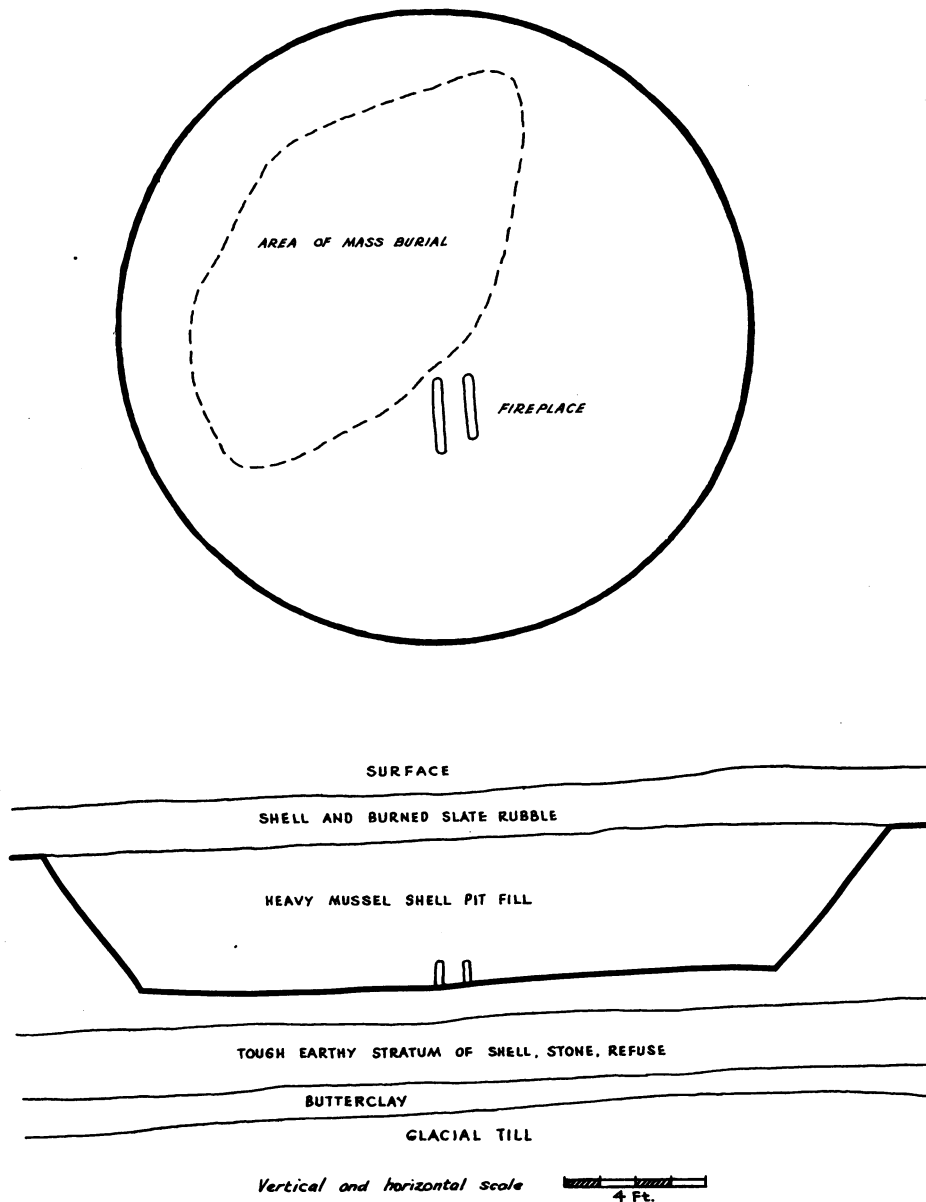


Fig. 14. Later Lower Levels house no. 7.

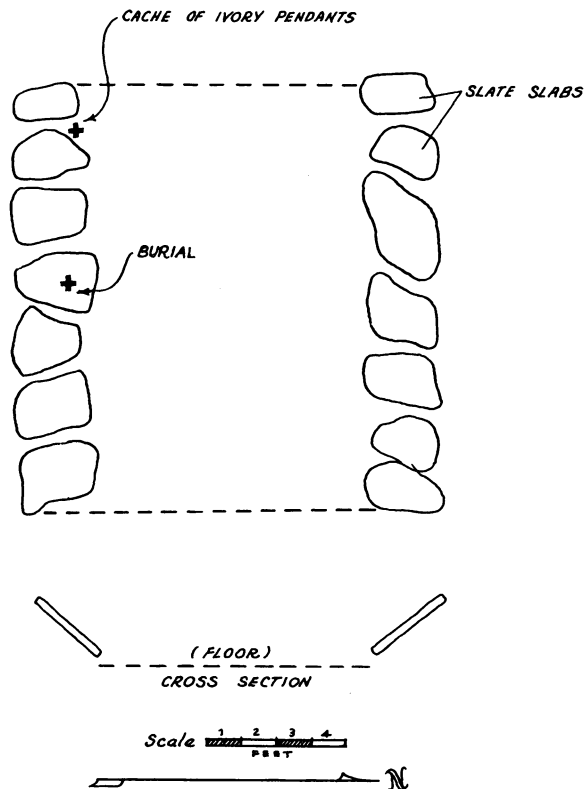


Fig. 15. Later Lower Levels house no. 8.

raised benches on the sides, but this feature does not occur in the prehistoric Uyak houses. No evidence of the use of whale jaws or ribs in house construction was noted in the Uyak site.

That the rectangular house is ancient in the Eskimo area is admitted by most scholars (Giddings, 1952a, p. 33; Holtved, 1944, Pt. 2, p. 88).

Sweathouses.—The Upper Level midden layer consisted mainly of burned slate rubble, and there is little doubt that this fired stone was the by-product of steam-sweating. Occasionally an unlined fire pit filled with burned slate was seen (pl. 10, a and b). Recent natives in Larsen Bay still use slate for this purpose and outside their sweating room, which is a small rectangular annex to the dwelling, are large heaps of burned slate rubble identical to that in the Uyak site.

None of the numerous surface house pits was properly excavated, so we do not know the form of the structures, much less what their purpose was. Figure 6 indicates some small separate rooms closely adjoining larger structures. If these last were dwellings, the small adjoining rooms were probably sweating baths, for this is the pattern even today in this section of Kodiak. Numerous slab fireplaces in the Upper Level were either for house fires or fireboxes to heat slate for sweating. Plate 5, c shows an Upper Level fire pit, filled with slate rubble and intrusive into Lower Levels strata.

We may with some reason assume that the sweat-bath rooms used in the Upper Level period of the occupation of the Uyak site were rectangular. Not only does this form persist today, but also early historical accounts attest to their use. Sarychef (1806, 2:72-73) says each Kodiak hut has a small "apartment" attached to it which serves for a vapor bath and that stones were heated

outside the house and carried into the small room to make steam by pouring water on them. Schelikov (quoted from Petroff, 1884, p. 137) noted that stones, heated outside the house, were brought into the bathhouses where the natives "rub themselves with grass and twigs," but says that no steam was used. Since Schelikov's statements of 1783-1785 are the earliest detailed record for Kodiak Island, it may possibly be that hot-air sweating was the aboriginal form and that steam-sweating was introduced by the Russians, as it was among the Aleut (Jochelson, 1925, p. 73). This, I think, is to be doubted, since the evidence from the Uyak site strongly supports the idea that steam-sweating is prehistoric on Kodiak. Davydov and Khvostov in 1805 said of the Koniag villages: "There are also bath houses which they knew of before the advent of the Russians." Lisiansky (1814, p. 212) notes that the Koniag sweat-bath room is added to the house and measures about 14 by 15 ft.

Between the cannery and the Uyak site was an old "barabara" (fig. 16), covered with sawed lumber, but with log framing timbers. The main outer room (14 by 14 ft.) has in the center a square slab-lined fire pit and a center roof smoke hole. A low tunnel passage on the west side gave access to a rectangular sweating chamber about 6 ft. square. This structure was used as late as 1882, but was made somewhat earlier. A practically identical construction at Douglas Village is shown by Martin (1913, p. 145).

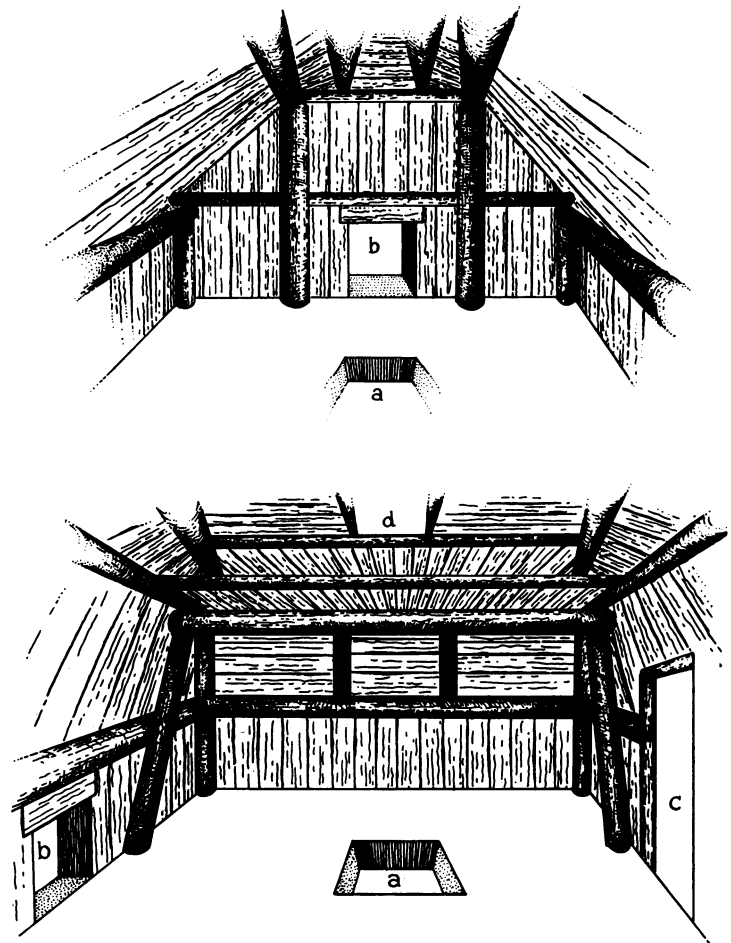


Fig. 16. Historic Koniag house. Construction is of hewn logs fitted together. Note also rounded (domed) construction of roof. a. Fire pit. b. Entrance to smaller rear chamber. c. Door. d. Smoke hole.

Near by we noted the surface remains of an older house with a pit about 18 in. deep and a small ante-chamber for sweating. The house was about 18 by 10 ft. and was surrounded by burned slate piles. The pit walls were lined with flat slabs (fig. 17). This may be of early historic date.

Two Koniag-built sweathouses still in use in 1935 are shown in figures 18 and 19. The first (fig. 18) is used as follows: rocks are heated in the fire pit in the main room, the fire being stirred with a wooden poker about 3 ft. long. The stones heated in the fire are black slate beach pebbles about fist size. When the rocks are hot, they are picked up on the wooden shovel and carried into the rear chamber through the door, which is then closed. The hot stones are stacked in the corner and water is poured on them to generate steam. The bather lies on the low platform and switches himself with the bundle of supple alder shoots to stimulate circulation. The rear chamber is earth-covered, although the whole structure is built on the surface. The second sweathouse (fig. 19) is a frame structure built over a shallow pit only 12 in. deep. It is like the last, except that the platform on which the bather lies is absent.

The most significant feature of these historic Koniag sweathouses seems to be that the main room no longer

serves as a dwelling, but is considered part of the sweating structure.

De Laguna (1934, p. 162) notes that the older (Eskimo) sites in Prince William Sound and in Kachemak Bay show no evidence of the steam sweat bath, but that at Indian sites in Cook Inlet there are quantities of fire-cracked stones once used in steam sweating. She suggests that "the steam bath in southwestern Alaska may be, therefore, a recent innovation taken over from the Indians." The Kodiak evidence appears to support this conclusion. The problem of the steam sweat bath is discussed further by Birket-Smith and De Laguna (1938, pp. 369-370).

Slate-slab fireplaces and fireboxes.—In both the Upper Level and Lower Levels were found flat slate-slab fireboxes. The usual form consists of a flat slab bottom, along the borders of which were laid on edge four inclined flat slabs to form the sides (pl. 10, *d*; pl. 11, *d-f*; Hrdlička, 1944, figs. 56, 65-68, 107, 181). We may assume that, since the inclined slabs could not be supported above the ground surface, they were used to line a pit. The interiors are filled with midden, the slabs show signs of burning, and the bottom contains ash and charcoal. In size these fireplaces measure from 1 to 3 ft. on a side. The largest slab-lined pit had seven side slabs (pl. 11, *c*; Hrdlička, 1944, fig. 175). It was near

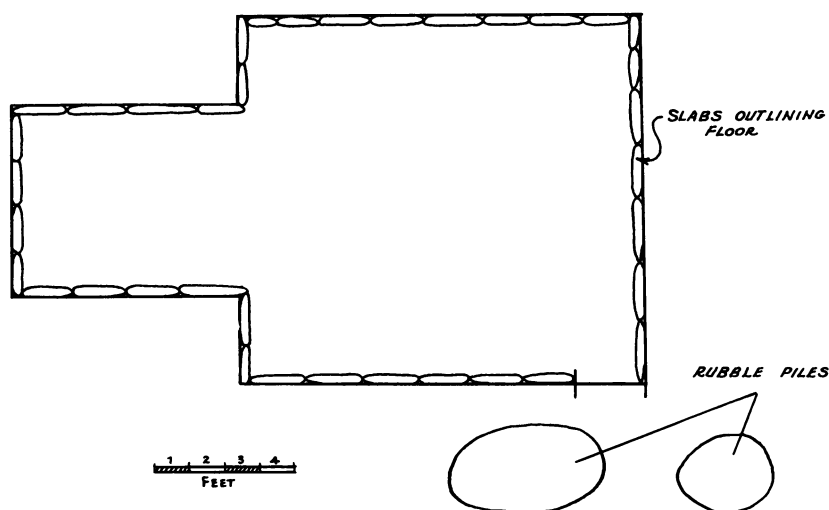


Fig. 17. Modern Koniag sweathouse, showing floor plan.

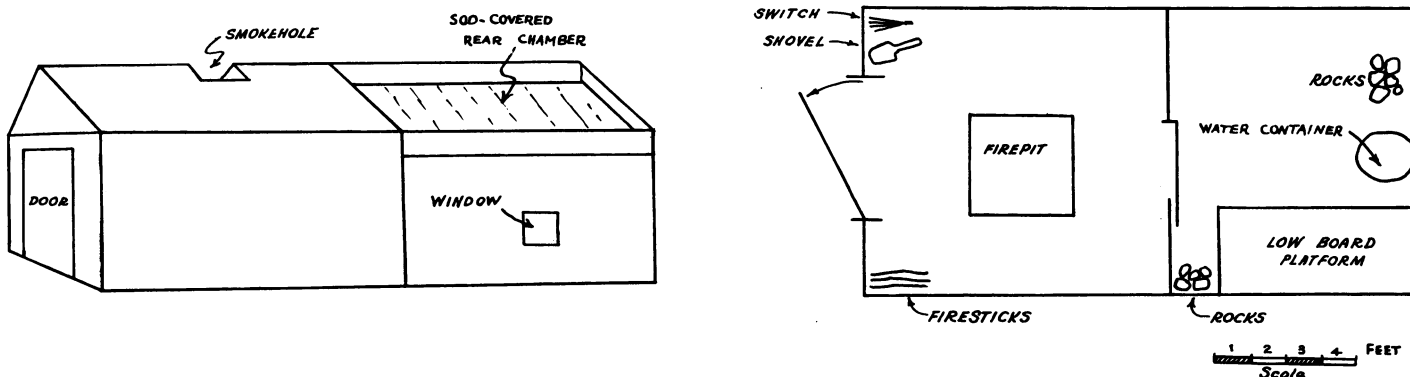


Fig. 18. Modern Koniag sweathouse, no. 3.

the surface, was filled with fired slate, and was associated with the ceremonial house discussed elsewhere in this report.

Some of the dwellings had fireplaces consisting of two vertical slabs set parallel about 15 cm. apart (Hrdlička, 1944, fig. 139). These are discussed elsewhere in relation to house remains. Similar hearths are noted by Rainey (1941, p. 471) from Okvik site, Penuk Islands. The Yurok of northwestern California also employ this form of fireplace (Kroeber, 1925, pp. 79-80).

The use of slate slabs was extensive in the Uyak site, partly, one may suppose, because the point on which the site rests is composed of a nearly vertical slate outcrop from which slabs could very easily be prized off.

Slate-slab alignments.—Thin slabs of slate, sometimes measuring up to 4 ft. on a side, were used extensively by the Uyak site inhabitants, as may be seen from the examples in Hrdlička (1944, figs. 49, 77, 79, 87, 88, 99, 103, 106-109, 129, 144, 145, 149, 180). Often a single slab was found with no apparent association, but often whole flat or inclined alignments were found. These were called "walks," but at the same time the term should not be taken too literally. Examples are shown here in plates 10, c, 12, and 13.

About all that can be said definitely about the uses to which these slabs were put is that they often formed the floor of graves and that they occasionally entered into house construction. They may also have been the paving for the raised benches inside dwellings—Davydov (in

Hrdlička, 1944, p. 27) speaks of floors made of slabs of wood—or possibly retaining wall facings (cf. Lisiansky, quoted in Hrdlička, 1944, p. 28, where slab walls are mentioned).

In the Uyak site, at least, the use of flat slate slabs, often trimmed on the edges for regularity, is noteworthy. Because such slate is fairly common all over the island (Capps, 1937, pp. 138 ff.), the use of this material will probably be found to characterize the cultures of the whole island. Hrdlička (1944, p. 95, fig. 8) describes and illustrates a slab-sided grave on near-by Amok Island and specifically states that such lined graves were absent in the Uyak site.

Artifact caches.—Although excavation records give very little information on artifact caches, a few hints of these may be recovered from Hrdlička (1944, *passim*), the USNM catalogue, and notes made by individual excavators. Caches of this sort were often found under house floors or were buried beneath large flat slate slabs which presumably once formed part of floor or wall features of dwellings.

In the Lower Levels were found 5 bone harpoon "blanks" in 1932. Many lots of from 3 to 20 flaked slate blades and polished or flaked slate ulos came to light, but details on these are unfortunately missing. Grooved stone sinkers up to 40 in number were found together.

Without precise notes we can go no further than to say that many, perhaps most, types of common artifacts occurred at times in quantity, as though they had been hidden or stored away for a day which never dawned.

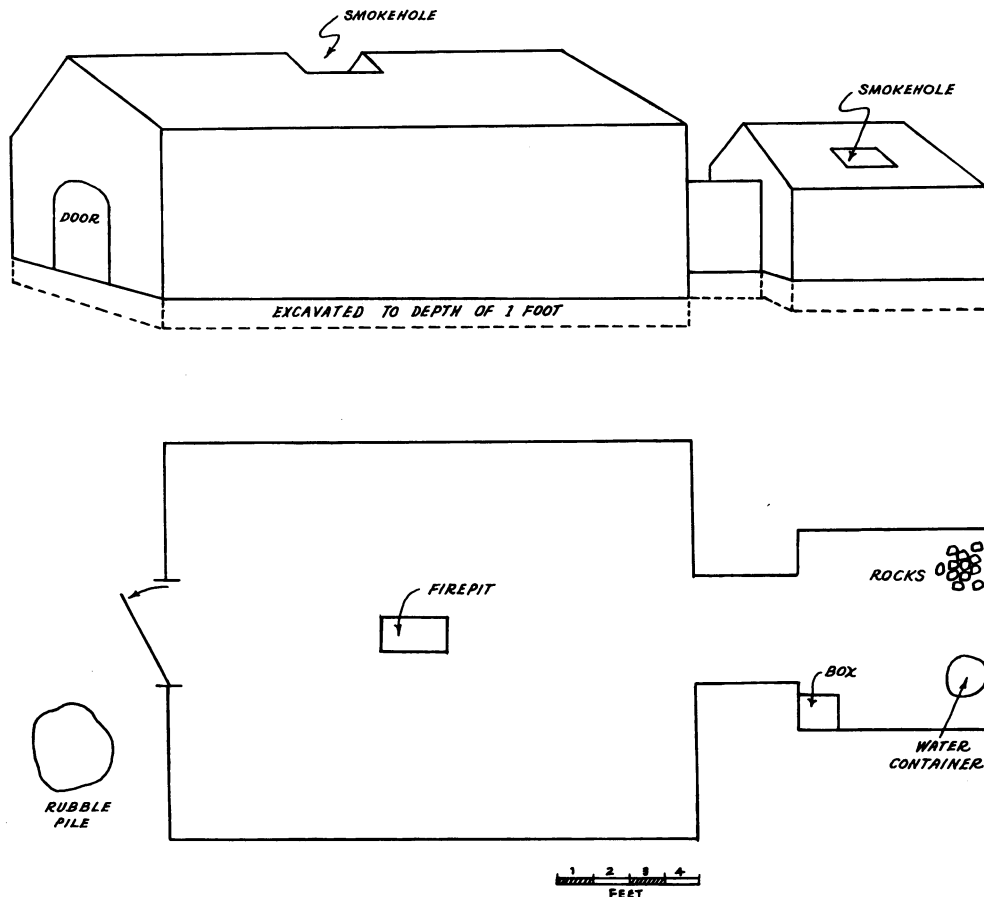


Fig. 19. Modern Koniag sweathouse, no. 4.

ANIMAL REMAINS

Fox skeletons, mentioned elsewhere in this report, were of common occurrence, and a total of 71 skulls and skeletons (some incomplete) were collected and are now in the U. S. National Museum. All specimens are of the local red fox, Vulpes vulpes harrimani

Merriam, but there is no record of the Alaskan Arctic fox (Alopex lagopus innuitus Merriam) from the Uyak site.

Large amounts of bird bone were collected from the site, and these have been reported on by Herbert Friedmann (1934, 1935). The species present and their level of origin, as far as recorded, are listed below:

<u>Species</u>	<u>Common Name</u>	<u>Site Level(s)</u>
Diomedea nigripes	Black-footed albatross	Lower, Upper
Cygnus buccinator	Trumpeter swan	Lower, Upper
Chen rossii	Ross's goose	Upper
Nyroca affinis	Lesser scaup	Upper, Lower
Olaucionetta clangula	Golden-eye	Upper, Lower
Haliaeetus albicilla	Gray sea eagle	Upper
Gavia immer	Common loon	Upper
Phalacrocorax carbo sinensis	Chinese cormorant	...
Clangula hyemalis	Old squaw	Lower, Upper
Arctonetta fischeri	Spectacled eider	...
Melanitta deglandi	White-winged scoter	Lower, Upper
Melanitta perspicillata	Surf scoter	Lower, Upper
Bubo virginianus algistus	St. Michael horned owl	...
Surnia ulula caparoch	American hawk owl	...
Gavia adamsi	Yellow-billed loon	Lower, Upper
Gavia arctica pacifica	Pacific loon	Lower
Gavia stellata	Red-throated loon	Lower, Upper
Colymbus auritus	Horned grebe	Lower, Upper
Phalacrocorax pelagicus	Pelagic cormorant	Lower, Upper
Cygnus columbianus	Whistling swan	Upper
Philacte canagica	Emperor goose	Lower
Anser albifrons	White-fronted goose	Lower
Anas platyrhynchos	Mallard	Lower, Upper
Dafila acuta	Pintail	Lower, Upper
Histrionicus histrionicus	Harlequin duck	Upper
Polysticta stelleri	Steller's eider	Lower, Upper
Somateria v-nigra	Pacific eider	Lower, Upper
Somateria spectabilis	King eider	Lower, Upper
Oidemia americana	American scoter	Lower, Upper

<u>Species</u>	<u>Common Name</u>	<u>Site Level(s)</u>
<i>Haliaeetus leucocephalus</i>	Bald eagle	Lower, Upper
<i>Thalassoaetus pelagicus</i>	Steller's sea eagle	Lower, Upper
<i>Grus canadensis</i>	Little brown crane	Lower, Upper
<i>Stercorarius longicaudus</i>	Long-tailed jaeger	Lower, Upper
<i>Larus glaucescens</i>	Glaucous-winged gull	Lower, Upper
<i>Larus argentatus</i>	Herring gull	Lower, Upper
<i>Larus canus brachyrhynchus</i>	Short-billed gull	Upper
<i>Uria aalge californica</i>	California murre	Lower, Upper
<i>Uria lomvia arra</i>	Pallas's murre	Lower, Upper
<i>Cephus columba</i>	Pigeon guillemot	Lower, Upper
<i>Cyclorhynchus psittacula</i>	Paroquet anklet	Lower, Upper
<i>Lunda currhata</i>	Tufted puffin	Lower, Upper
<i>Pica pica hudsonai</i>	American magpie	Lower, Upper
<i>Corvus corax principalis</i>	Northern raven	Lower, Upper
<i>Corvus brachyrhynchus caurinus</i>	Northwestern crow	Lower, Upper
<i>Colymbus grisegena</i>	Holboell's grebe	...
<i>Diomedea albatrus</i>	Short-tailed albatross	...
<i>Fulmarus glacialis</i>	Pacific fulmar	...
<i>Lagopus rupestris</i>	Kellogg's ptarmigan	...
<i>Larus hyperboreus</i>	Glaucous gull	...

Mammalian bones were sampled in order to determine what animals were hunted by the people who occupied the Uyak site. The zoological determination, made

by Jeanette Orange of the U.S. National Museum at the request of Dr. Hrdlička in 1937 (see also Kellogg, 1936), are given in the tabulation below.

<u>Species</u>	<u>Common Name</u>	<u>Species</u>	<u>Common Name</u>
<i>Ursus mittendorfi</i>	Brown bear	<i>Lagenorhynchus</i> sp.	Striped porpoise
<i>Rangifer Granti</i> ?	Caribou	<i>Odocoileus columbianus</i>	Black-tailed deer
<i>Lutra canadensis</i> <i>Kadiacensis</i>	River otter	<i>Phocaena phocoena</i>	Harbor porpoise
<i>Enhydra lutris lutra</i>	Sea otter	<i>Phocaenoides dalli</i>	Dall's porpoise
<i>Alopex hallensis</i>	Blue fox	<i>Delphinapterus leucas</i>	White whale
<i>Eumetopias jubata</i>	Sea lion	<i>Mesoplodon stejnegeri</i>	Stejneger's beaked whale
<i>Callorhinus alascanus</i>	Fur seal	<i>Microtus kadiacensis</i>	Meadow mouse
<i>Phoca richardii</i>	Hair seal	<i>Castor canadensis</i>	Beaver
<i>Odobenus divergens</i>	Walrus	<i>Mustela kadiacensis</i>	Kodiak weasel

Remains of domestic dogs (*Canis familiaris*) from the Uyak site have been studied and reported on by Allen (1939) and Haag (1948, pp. 179, 187-189, figs. 11, 14). The Kodiak dogs are of two types: a small-sized form, which Hrdlička (1944, p. 470) believes is pretty well restricted to the Lower Levels, and a large-sized type, which is either restricted to or dominant in the Upper Level. Allen in his sample of thirty skulls notes four which he believes are hybrids of the large- and small-type dogs. Haag (1948, p. 223) finds that prehistoric Eskimo dogs from St. Lawrence Island differ from the prehistoric Kodiak types.

Fish bones were not saved for identification. One lot of 53 salmon vertebrae 5 mm. in diameter was found, with a central perforation to permit stringing. The disks of halibut vertebrae were occasionally used as beads or ornaments.

MOLLUSCAN REMAINS

Only a very incomplete list of mollusks can be made since there seems to have been no systematic sampling or identification of types.

Shells modified to make artifacts are: Neptunea lyrata Gmelin; Protodesmus macroschisma Deshayes; Saxidomus giganteus Deshayes.

Unmodified mollusk shells, a large percentage of the refuse midden, are to be interpreted as food remains: Saxidomus giganteus; Saxidomus nuttalli Conr.; Modiola modiolus L.; Mytilus edulis; Littorina sitkana Philippi; Echinarachinus excentricus; Polinices sp.; Protodesmus macroschisma Desh.; Pecten sp.; Ostrea borealis Lam.; Nucella emarginata Desh.; Vola sp.

ARTIFACTS: SHELL, WOOD, BASKETRY, CLAY

SHELL

Shell objects were rare in the Uyak site, a reflection, perhaps, of the greater use of bone, stone, and wood for implements and objects of adornment.

Columellae of sea snails (*Neptunea lyrata* Gmelin) were found singly or in lots. Five separate lots numbering 44 pieces came from the Lower Levels. There were none from the Upper Level. The columella was broken out by chipping to produce a rough-edge spiral from 3 to 5 cm. long and about 1 cm. in diameter. Only one specimen shows smoothing and small drilled perforations (pl. 14, h-j). These pieces could have been tied on a string and used as ornamental pendants. From Ekseavik on Kobuk River, in the culture stage dated 1400 A. D., Giddings (1952a, pl. 43, fig. 10) recovered three identical "conch" columellae. These are the only specimens found, and Giddings considers them unique. I would guess that the Uyak specimens, all from the Lower Levels, are rather earlier in time than the Ekseavik examples.

Oyster shells (*Protodesmus macroschisma* Deshayes) with the edge smoothed down by grinding may have served as ornaments, attachment to a string being made through the natural foramen (pl. 14, m). Eight of these were found in the Lower Levels. Numerous unmodified examples of *Protodesmus* valves occurred at random in both the Upper and Lower Levels.

From the Lower Levels came a clam shell (*Saxidomus giganteus* Deshayes) containing a mass of red iron oxide pigment; an elliptical disk of *Saxidomus* shell (pl. 14, l) with a bored hole in its center; and a second complete shell, somewhat smaller, with a drilled hole (pl. 14, k).

WOOD

A small number of wooden artifacts were fortuitously preserved in the Uyak site.

Two ovoid labrets (pl. 79, b, c) are similar to other pieces made of ivory and stone.

From about the midpoint of the deposits where they were running 12 ft. or so deep we encountered, in 1935, a section of frozen midden. My recollection is that it may have measured 6 or 8 ft. in diameter, and about 2 or 3 ft. in thickness. Enclosed within this mass were a number of perfectly preserved wooden objects which, unfortunately, tell us little, since they consist merely of sharpened stakes and short cylindrical rods. There are 12 of the sharpened stakes (pl. 14, a-c, e), and 12 of the short, cylindrical polished wooden pegs with ends cut off square (pl. 14, d). No specific use can be proposed for either of these types.

A piece of a ladle or shallow wooden bowl (pl. 14, g) lacks depth location, but is probably from the Upper Level.

There is an oval bark disk, 5 mm. thick and measuring 2 by 2.5 cm., from the Lower Levels and an ovoid blubber or fat scraper of wood with sharp edges, measuring 10.5 cm. long, 6.8 cm. wide, and 2.1 cm. thick (fig. 20). It is quite similar to an Okvik piece shown by Rainey (1941, fig. 21, item 4).

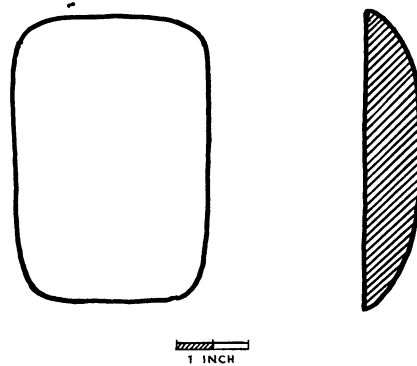


Fig. 20. Wooden fat-scraper. Left, Scrapper for fat or blubber; right, cross section.

BASKETRY

Two separate lots of carbonized twined basketry were recovered during the excavation of the Uyak site (Hrdlička, 1944, pp. 219, 306).

Both lots came from the Lower Levels, and therefore belong to the full prehistoric period. Such remains are rare in Eskimo sites, being noted elsewhere only at Platinum Village (Larsen, 1950, p. 184, fig. 57). The basketry was sent to Dr. L. S. Cressman, University of Oregon, who has kindly supplied the following analysis.

Report on Basketry from Kodiak Island

By

L. S. Cressman

Lot No. USNM 365470, Lower Levels, Uyak Site

Small box contains two types of carbonized basketry called here types A and B. Specimens (7) are charred and heavily coated with preservative and too friable to manipulate without breaking.

Type A. Plain twining [pl. 65, a]

Pitch of weft stitch is down to left. Weft rows wide apart, average inter-weft distance is 0.5 cm. Each warp consists of two elements which are separated and paired in alternating weft rows with half of the adjacent warp elements. There are 3 warps per 1 cm.

Attu baskets in the University of Oregon Museum use this technique, but stitch is down to right [Also see Cressman, 1942, figs. 11, 84, c, e, f.]

Type B. Plain twining with false embroidery.

Pitch of stitch is down to right. Weft elements are either flat or flattened materials which cross rather than twist over each other between warps and are pushed down tightly to compress the double weft material between the warps to the surface width of the weft element crossing the warp.

Warp—two elements made from two parts oval in cross section with flattened surfaces in apposition and lying parallel to the weft elements, giving a warp that is about four times as wide as thick from outside to inside.

False embroidery on two fragments.

Lot No. USNM 398814, Lower Levels, Uyak site

Simple twining down to left. Rim finish—a weft row of down to the right twining binds the warps just over the last warp row. Warps then seem to be bent over and carried back down inside of basket to be caught under the binding weft row and the protruding ends cut off (cf. Cressman, 1942, fig. 14). The modern Klamath use this method. [A diagrammatic sketch of this rim finish technique is shown here in figure 21.]



Fig. 21. Basketry, showing probable rim finish of Kodiak twined basketry. USNM 398814. Lower Levels.

Two fragments have a piece of three-strand braid attached. On one fragment the braid passes between the warps and the last two weft rows from one side of the basket to the other and appears to form a binding knot. However, the ends are broken off and from the fragmentary condition no conclusions as to function can be drawn. The braid may be a part of a hemp line. Attu baskets are frequently finished by a three-strand braid but in the Kodiak specimen this is not rim finish. The other braid fragment is pressed into a mass of burned basket and cannot be analyzed.

There are 5 weft rows per 2 cm. and each weft element is approximately 2 mm. wide when it crosses the warp. There are 7 warp elements per 2 cm.

Warp and weft may be bundles of fine grass but this cannot be determined from the present condition with any degree of certainty because of the carbonized condition and the preservative which makes the material very friable.

Hrdlička (1944, p. 342) refers to burned "mats . . . doubtless made of wild rye (*Elymus*) . . . [which] were all evidently thick floor mats of parallel fibers originally held together, in all probability, by wide-apart rows of stitching."

One sample of this carbonized matting from the Lower Levels was saved. The warp consists of bundles of grass 2 cm. in diameter. About every 10 cm. a twined grass

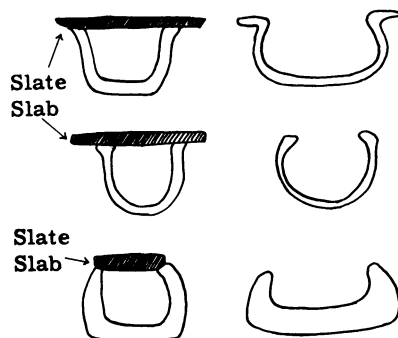


Fig. 22. Clay-lined pits, "Chekalina pits."

bundle weft is spaced, each weft course row catching alternating warps. Sauer (1802, pp. 175-176) speaks of Kodiak "grass mats, much coarser than those of Oonashka."

Throughout the history of the Uyak site the floors of houses were covered, in part at least, with grass. Often house floors with carbonized layers of grass up to an inch in thickness were used, the inference being that the grass was a floor covering.

No remains of coiled basketry were recovered from the Uyak site.

CLAY

Clay-lined pits.—No fired pottery was found in the Uyak site, though pottery does occur in the Olga Bay-Cape Alitak region on the west coast of the island (Heizer, 1949). The Kodiak at the opening of the historic period in the mideighteenth century made pottery. Since the cultural materials associated with the Olga Bay and Alitak pottery are practically identical to the Upper Level Uyak site material, it would appear that Kodiak pottery-making was fairly restricted and had been so recently introduced that either the idea had not spread north and east the relatively short distance to the Uyak site or that the Uyak site was already abandoned by the time the pottery art was first practiced on the island. Only excavation in the Alitak region will throw light on this matter.

In the Uyak site were discovered a very large number of circular pits lined with a very fine blue clay (fig. 22) which Dr. Howel Williams, Department of Geology, University of California, has kindly examined and pronounced to be composed largely of quartz, and from either an aeolian or a fluvial deposit. It is not fine volcanic pumice, as we assumed while excavating the site. According to Gordon Jones, superintendent in 1934 of the Alaska Packers' cannery at Larsen Bay, similar clay-lined pits were used by the Athabascan Indians of Cook Inlet for storing fish. This observation is verified by Osgood's Tanaina informants and the North Pacific-East Asiatic distribution of the custom is described by Birket-Smith and De Laguna (1938, pp. 445-446) and Rostlund (1952, Map 43). The name of the pits in Cook Inlet was "chekalina." Salmon were put into them, allowed to decay, and permitted to freeze once. The freezing killed the maggots and the mass was then considered edible.

Chekalina pits were much more common in the lower Levels than in the Upper Level (pl. 11, a-b). In diameter they ranged from 15 to 62 cm.; interior depths varied from 10 to 30 cm. (Hrdlička, 1944, figs. 176, 210-212, pp. 246, 312, 439, 442). The clay is very fine-grained and was so smoothly plastered that the pits must have been watertight. The walls varied in thickness, from 2 to 8 cm.

The fish-storage hypothesis seems probable because numbers of the pits contained a layer of fish bones in the bottom. One instance of an infant burial in a clay-lined pit was noted (Lower Levels), and not uncommonly artifacts, such as slate ulos, or barbed dart heads, were found in them. In many of the pits a large flat slate slab was used to cover the opening (Hrdlička, 1944, fig. 210).

I would specifically reject Quimby's (1945, p. 12) idea that on Kodiak Island the clay-lined pits were an intermediate step in the evolution from stone vessels (i. e., lamps) to fired pottery. These three features seem most likely to have been originally separate entities and to have so remained functionally.

The only other archaeological occurrence of these pits known to me is from Port Möller on the Alaska Peninsula (Weyer, 1930, p. 274).

STONE ARTIFACTS

LAMPS

Occurrence and classification.—Only stone lamps with a grass wick which burned the oil of seals, sea lions, whales, and bears (Schelekov, 1793, 1:76; Davydov and Khvostov, 1810-12, 2:104; Holmberg, 1856, p. 382) were found in the Uyak site. No clay or pottery lamps occurred here.

Our only stratigraphic information on the lamps, as on the rest of the material from the Uyak site, is in terms of a subdivision, conceived and executed in the field by Dr. Hrdlička, into "Low," "Intermediate," and "Upper" material. The "Low" material was that recovered from the first two or three feet of cultural refuse lying on top of the yellow loess or greenish glacial till; the "Upper" level was marked by a superficial stratum which was distinctive in being dry and packed with burned and exfoliated slate used in steam

sweating; the "Intermediate" level included those deposits below the Upper and above the Low strata. Since the assignment of an object to Low or Intermediate was generally pretty arbitrary, it would be dangerous to consider all artifacts listed in the catalogue as from the Low Level earlier than all artifacts marked Intermediate, for the reason that the largest proportion of the Uyak deposits (Low and Intermediate levels) was excavated without proper attention being paid to the stratigraphic placement of artifacts or burials. It has been necessary, therefore, for purposes of discussion, to combine the Low and Intermediate deposits into a single stratigraphic horizon which I have called "Lower Levels," and to treat the Upper Level as stratigraphically distinct. It is evident that our analysis of stone lamps is thus deprived of one essential element of interpretative data, the relative temporal placement of the numerous specimens recovered.

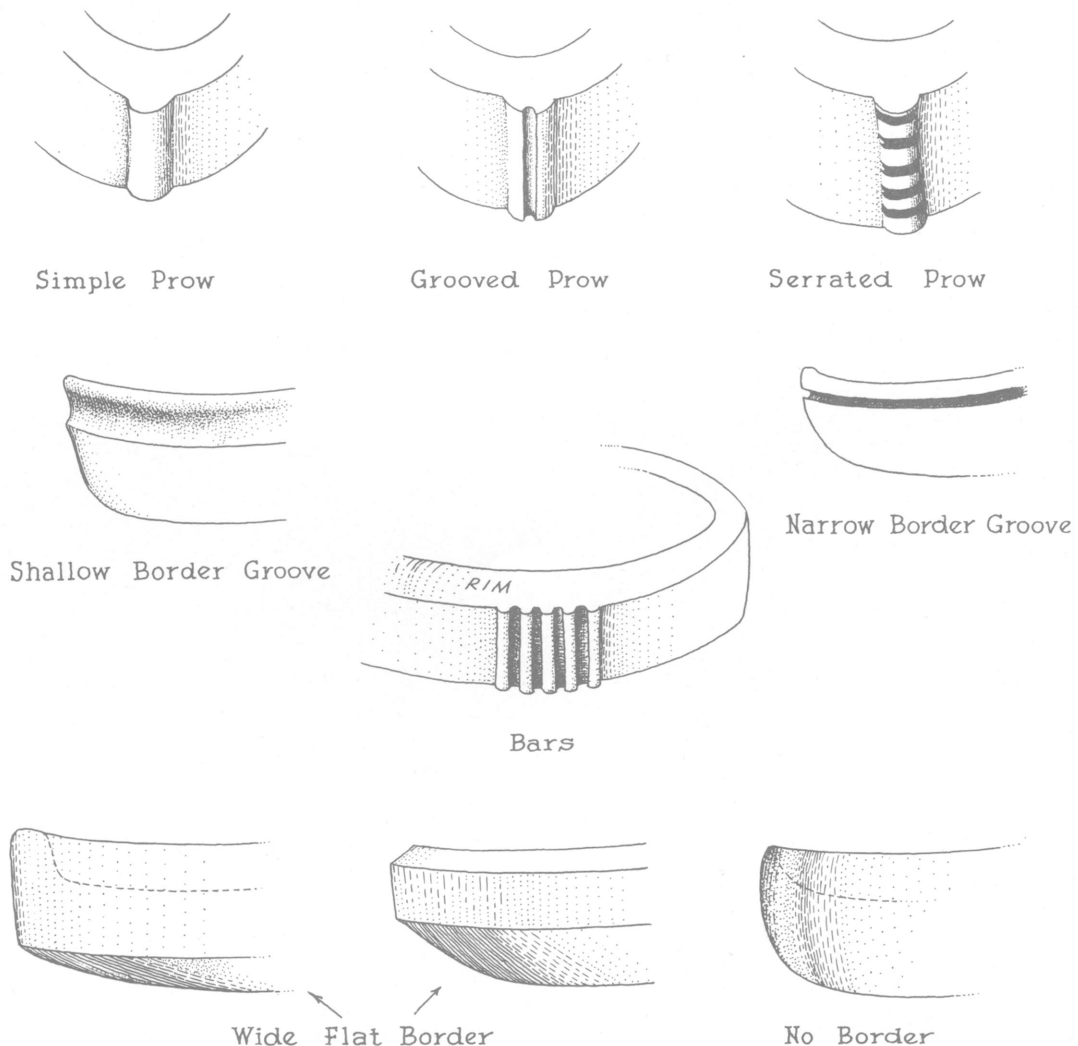


Fig. 23. Lamp features illustrating terminology.

In the description of stone lamps alone I have preserved the original stratigraphic level designations (Upper, Intermediate, Lower) in the hope that these differences may possibly prove in future to have some significance. If the reader will keep in mind that references to Intermediate and Lower are to presumed stratigraphic distinctions within what has elsewhere in this report been called "Lower Levels," no confusion will arise.

The classification employed here is a simple one based primarily on form or shape features (fig. 23) and secondarily on decoration (fig. 24). It is summarized as follows.

Type I. Ovoid

- I. A. 1. Wide, flat rim with troughed wick channel at small end, undecorated
- I. B. 1. Like I. A. 1, but decorated
- I. A. 2. Pointed ovoid, undecorated
- I. B. 2. Like I. A. 2, but decorated (subtypes a-h)

Type II. Elliptical

- II. A. Undecorated
- II. B. Decorated

Type III. Circular

- III. A. Plain and undecorated
- III. B. Decorated

Type IV. Rectangular

- IV. A. Simple, undecorated

Type V. Crescentic

- V. B. Decorated

Type VI. Hunters' Lamps

Type VII. Natural Forms used as Lamps

Aberrant and special forms (not given typological designations)

In the tables all measurements are in centimeters, weights in pounds and ounces, and catalogue numbers are those of the USNM. L and B signify respectively length and breadth; Ht. is the height of the lamp resting in normal position and is measured from the plane on which the lamp sits; depth is the depth of the oil reservoir (bowl).

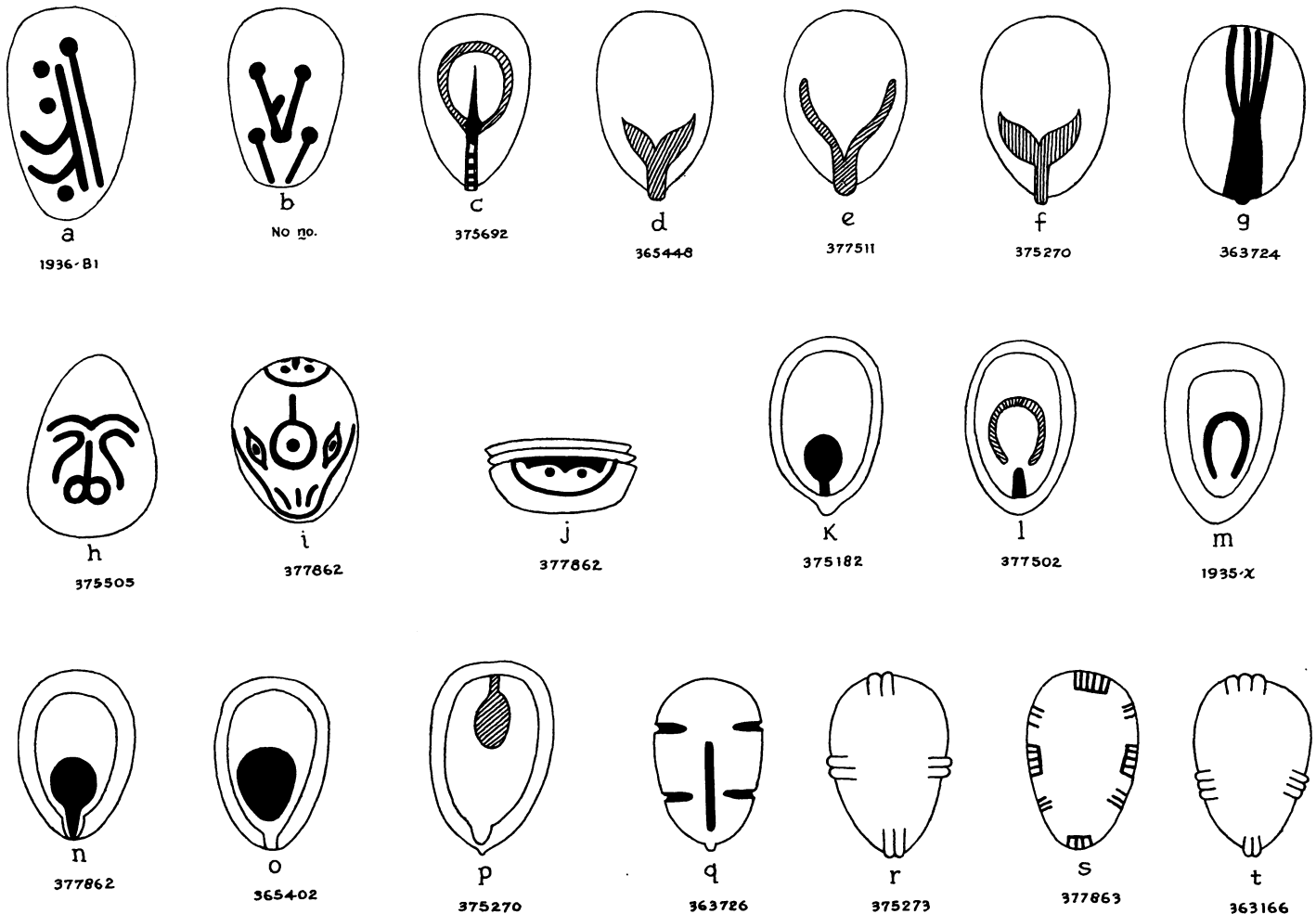


Fig. 24. Decorations on bottoms and basins of stone lamps. Solid black represents incising; hatched areas are relief. a, USNM 1936-B1. b, Uncat. c, USNM 375692. d, USNM 365448, Lower Levels. e, USNM 377511, Lower Levels. f, USNM 375270, Lower Levels. g, USNM 363724. h, USNM 375505, Upper Level. i, USNM 377862. j, USNM 377862. k, USNM 375182, Lower Levels. l, USNM 377502, Lower Levels. m, USNM 1935-x. n, USNM 377862. o, USNM 365402, Lower Levels. p, USNM 375270, Lower Levels. q, USNM 363726. r, USNM 375273, Lower Levels. s, USNM 377863. t, USNM 363166, Lower Levels.

Types I. A. 1 (plain) and I. B. 1 (decorated).—Table 5 presents the essential data on measurements and materials of the 8 lamps of types I. A. 1 and I. B. 1 recovered from the Uyak site. All come from the Upper Level, and are made of diorite or granite. The distinguishing features of this type are the wide and flat upper rim, shallow bowl, evenly rounded exterior, convex bottom, and wide wick channel cut out of the flat border. This type of lamp, as pointed out by Birket-Smith (1941, p. 148, fig. 25) and Hough (1898, p. 102, pl. 20) is typical of Kodiak Island. Hrdlička collected 2 of these lamps from living Koniag, and there is every reason to believe that

this was the type in use on Kodiak at the opening of the historic period. The late temporal position of type I. A. 1 lamps is further attested by the fact that all of the Uyak site examples came from the Upper Level. This type of lamp was in recent use in Norton Sound (Gordon, 1906, pl. 26, fig. 6).

The convex bottom of the single decorated lamp (type I. B. 1) has a pecked design which probably represents an attempt to portray a human face. Other lamps with human faces pecked or incised on the bottom surface are described by Orchard (1930, fig. 32) and Larsen (1950, fig. 57, item 7). Both are from southwestern Alaska.

TABLE 5

Stone Lamps, Types I. A. 1 and I. B. 1

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
Type I. A. 1								
365541	Upper	Diorite	19.1/14.7	15.5/10.5	4.4	1.3	4-3	Pl. 16, <u>a</u>
375496	Upper	Diorite	21.4/19.4	14.9/13.3	6.6	2.1	7-12	...
375498	Upper	Granite	17.3/11.5	13.7/ 7.5	4.8	1.7	3-3	Pl. 26, <u>f</u>
375504	Upper	Diorite	21.3/18.8	15.5/13.3	6.4	2.3	8-7	Pl. 26, <u>c</u>
377634	Upper	Granite	10.5/ 8.4	7.2/ 4.9	3.5	1.0	1-0	...
1936-B4	Upper	Diorite	12.1/ 8.7	9.6/ 5.7	4.6	1.3	1-11	...
1936-B5	Upper	Diorite	13.8/ 6.6	11.6/ 4.2	3.7	1.4	1-1	Pl. 19, <u>e</u>
Type I. B. 1								
375505	Upper	Diorite	13.4/11.5	10.5/ 7.7	5.7	2.1	...	Pls. 15, <u>a</u> , 26, <u>b</u> , <u>e</u>

Type I. A. 2 (undecorated).—The simple, pointed, ovoid stone lamp was certainly popular during the earlier periods of occupation of the Uyak site. Table 6 indicates that of the 40 lamps of this type, 6 come from the Upper Level and 34 from the Lower Levels.

In materials and measurements the two groups are not distinctive, and the probable explanation of the paucity of Upper Level examples is simply that the vogue of this form was diminishing.

TABLE 6

Stone Lamps, Type I. A. 2

USNM cat. no.	Level	Material	Measurements (cm.)				
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)
363729	Upper	Granite	17.0/12.3	14.5/ 6.2	5.8	1.6	3-10
365406c	Deep	Diorite	13.0/10.5	11.0/ 8.0	5.0	1.5	2-7
365406e	Deep	Diorite	14.6/13.6	11.4/ 9.8	5.1	1.5	3-1
365406g	Deep	Granite	17.2/ 9.3	14.0/ 6.5	5.1	1.7	2-10
365447b	Inter	Sandstone	13.9/10.0	10.1/ 6.5	4.9	1.3	2-1
375183	Deep	Granite	16.8/12.3	14.8/10.3	6.9	2.1	4-5
375184	Deep	Granite	15.2/12.8	12.0/ 9.2	6.7	2.1	4-4
375192	Deep	Diorite	13.6/12.1	11.3/ 9.0	5.1	2.0	2-5
375199a	Deep	Sandstone	15.5/11.7	12.5/ 7.6	5.6	2.2	3-2
375275	Inter	Granite	21.7/15.4	17.6/10.2	6.9	2.0	7-7

TABLE 6 (Cont'd.)

Stone Lamps, Type I. A. 2

USNM cat. no.	Level	Material	Measurements (cm.)				
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)
375276	Inter	Sandstone	18.8/15.0	15.0/10.8	6.7	2.5	5-12
375279	Inter	Granite	15.3/11.9	13.0/ 9.5	6.6	2.5	3-12
375283	Inter	Granite	19.2/15.9	15.0/11.6	6.5	2.1	5-13
375287	Inter	Granite	14.5/11.7	12.3/ 9.5	5.8	1.6	2-14
375289a	Inter	Sandstone	16.3/14.4	13.2/11.4	6.7	2.3	4-2
375292	Inter	Granite	11.3/ 9.8	7.6/ 6.8	5.2	1.3	1-13
375293	Inter	Granite	12.3/10.6	9.0/ 7.4	6.2	1.5	2-11
375299	Inter	Sandstone	21.7/16.3	14.4/ 8.8	4.8	1.8	4-11
375495	Upper	Basalt	19.7/16.7	16.8/13.5	7.6	2.6	6-8
375497	Upper	Granite	15.6/11.3	12.3/ 8.6	5.6	1.6	3-5
375499	Upper	Granite	13.0/11.4	10.0/ 8.2	4.4	1.8	2-2
375506	Upper	Sandstone	16.3/12.4	12.5/ 8.8	6.5	1.7	4-7
375510	Upper	Granite	13.9/ 8.9	9.0/ 5.2	5.6	1.6	2-1
377508	Deep	Diorite	20.7/16.7	17.4/12.1	7.5	2.5	7-6
377509	Deep	Granite	17.8/15.9	15.0/12.8	6.0	1.5	5-0
377512	Deep	Basalt	13.7/11.3	10.7/ 9.0	5.1	1.3	2-2
377513	Deep	Diorite	13.8/12.4	10.4/ 9.0	5.8	2.1	3-3
377514	Deep	Granite	14.3/13.8	10.2/ 8.5	5.0	1.6	3-2
377515	Deep	Granite	15.8/11.0	13.0/ 8.5	5.7	1.4	3-4
377627*	Inter	Diorite	25.1/18.7	21.0/14.2	9.2	2.3	13-4
377630	Inter	Granite	16.6/13.4	13.7/10.1	5.9	1.6	4-0
377631*	Inter	Sandstone	12.9/11.2	11.0/ 9.4	4.5	2.1	1-9
377632	Inter	Granite	13.9/10.6	10.5/ 6.5	5.6	1.7	2-11
377633*	Inter	Granite	13.1/ 8.7	11.8/ 7.9	4.0	1.0	1-6
1936-A*	Deep	Andesite	23.7/15.5	21.2/12.7	8.4	2.6	9-4
Uncat.	Deep	Diorite	18.2/11.7	15.0/ 8.5	6.2	2.0	2-15
Uncat.	Deep	Diorite	14.0/11.2	11.0/ 8.5	6.0	1.5	2-14
Uncat.	Inter	Sandstone	15.3/12.8	13.0/10.5	5.5	2.2	2-12
Uncat.	Inter	Diorite	12.5/10.0	10.7/ 8.0	3.3	1.7	0-11
Uncat.	Inter	Soapstone	15.5/12.5	13.0/ 9.0	4.0	2.0	2-0

*Illustrated as follows: 377627, pl. 16, e; 377631, pl. 16, c; 377633, pl. 16, d; 1936-A, pl. 16, b.

Type I. B. 2 (ovoid, decorated).—This class comprises the largest number of specimens, 44 lamps in all being included. Figure 24 shows the decorative features of I.B.2 lamps. It is possible to distinguish at least 8 subtypes of type I.B.2 and a majority of each subtype is characterized by possession of the following distinctive features.

- Subtype a. With prow, exterior groove or border and bowl plain or with longitudinal groove, flat rim (table 7)
- Subtype b. With ovoid depression or raised "horse-shoe" in bowl cavity (table 8)
- Subtype c. With grooved prow and raised "bars" on exterior side walls (table 9)
- Subtype d. With exterior groove or flat rim, plain bowl (table 10)
- Subtype e. With two conical knobs in bowl cavity (table 11)
- Subtype f. With prow, plain bowl, no border (table 12)
- Subtype g. With center groove in bowl only (table 13)
- Subtype h. With outer groove or flat border and bowl groove (table 14)

It is admitted that the subtypes so distinguished are arbitrary, but their distinction serves to isolate certain fea-

tures of lamp embellishment, the presence of which will probably prove significant as far as historical connections and chronological differences are concerned. It is regrettable that, because of inadequate depth records accompanying individual specimens, these chronological data cannot be extracted from the Uyak lamp collection.

Subtype a: There are 21 examples of this subtype. The majority (15) have a wide flat rim, which is horizontal or beveled out. The sharp-rimmed specimens (4) have rounded exterior side walls. Usually the side has a wide shallow groove border (6 specs.) or a narrow groove border (8). The bowl is either plain (11 specs.) or bears a fore-and-aft groove (6) and two bowls have, respectively, an ovoid depression and crossed grooves. The standard feature of the "prow" is represented either as plain (12 lamps), double or vertically grooved (4) and in one lamp the prow is serrated. The materials vary: diorite (9 lamps), granite (9), sandstone (2), and basalt (1). All examples except one (1936-A3) are from the Lower Levels. The exception may possibly be an earlier lamp dug out and used by later occupants of the site. This single specimen does not, therefore, necessarily invalidate the observation that subtype a of type I. B. 2. is an early Uyak form.

TABLE 7

Stone Lamps, Type I. B. 2, Subtype a

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
363725	Lower	Granite	21.9/16.5	18.5/12.7	5.6	1.4	6-11	...
363726	Lower	Granite	18.2/13.9	15.0/10.9	4.3	2.1	3-5	...
363727	Lower	Granite	15.7/13.7	13.4/11.7	5.6	1.7	3-8	Pl. 18, <u>a</u> , <u>b</u>
365403	Lower	Diorite	17.9/12.7	16.0/ 9.8	6.5	2.1	4-12	Pl. 18, <u>h</u>
365448	Lower	Granite	14.2/11.1	11.4/ 8.1	6.2	1.7	2-14	...
375179	Lower	Sandstone	17.0/14.0	13.6/10.5	7.6	1.4	5-15	Pl. 18, <u>e</u>
375181	Lower	Diorite	13.4/11.6	11.2/ 9.2	5.4	1.4	2-11	Pl. 19, <u>d</u>
375186	Lower	Granite	14.9/ 9.9	12.8/ 7.3	5.3	1.4	2-7	Pl. 18, <u>c</u> , <u>d</u>
375187	Lower	Granite	10.0/ 8.3	8.0/ 6.4	4.5	1.4	1-3	...
375200	Lower	Diorite	...	...	...	...	(frag.)	Hrdlička, 1944, fig. 226
375270	Lower	Diorite	26.0/19.5	22.0/15.8	9.0	2.5	?	Hrdlička, 1944, figs. 153, 219, 219a; pl. 19, <u>f</u>
375272	Lower	Diorite	20.0/16.4	17.3/13.5	6.5	3.0	6-0	Pl. 19, <u>a</u>
375288	Lower	Granite	13.2/ 9.6	11.1/ 6.9	4.8	1.4	1-15	Pl. 19, <u>g</u>
375289	Lower	Sandstone	11.6/ 8.5	10.0/ 6.6	3.3	1.2	0-12	...
377504	Lower	Diorite	17.0/12.9	14.4/ 9.9	5.1	1.8	3-2	Pl. 18, <u>f</u> , <u>g</u>
377511	Lower	Basalt	16.7/13.1	14.3/10.6	5.2	1.8	3-8	Hrdlička, 1944, fig. 215
377626	Lower	Diorite	19.1/15.2	16.6/12.2	7.1	2.0	6-2	Pl. 19, <u>b</u>
377864	Lower	Diorite	18.3/14.3	15.6/11.7	7.6	2.2	5-13	Pl. 18, <u>i</u> , <u>j</u>
1936-A3	Upper	Granite	21.9/16.5	18.5/12.7	5.6	1.4	6-11	...
1936-A4	Lower	Granite	15.6/13.0	13.2/10.1	6.1	1.8	3-14	...
1936-A6	Lower	Diorite	12.0/10.4	10.3/ 8.2	4.5	1.4	1-8	...

Subtype b: Of the 7 examples of this subtype, all come from the Lower Levels. They are variable in size, weight, and material used. Four have a simple prow, a feature occurring in subtypes a, e, and f. The most characteristic feature is an ovoid depression in the bowl, though one lamp has a raised "horseshoe." The exterior

has either a shallow or narrow groove border, or is unelaborated and simply rounded off. Rims are flat, sharp-edged, and beveled out. No. 377862 is noteworthy by reason of the incised decoration on the bottom which represents the head of an animal, probably a seal.

TABLE 8

Stone Lamps, Type I. B. 2, Subtype b

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
365402	Lower	Diorite	20.5/16.1	17.2/12.7	7.1	1.2	6-12	Pl. 20, <u>e</u> Pl. 21, <u>e</u>
365539	Lower	Granite	21.8/12.9	19.8/10.0	6.9	1.4	3-1	...
375182	Lower	Granite	17.5/11.5	14.7/ 9.3	7.2	1.4	4-14	Pl. 20, <u>d</u>
375693	Lower	Granite	40.4/29.5	36.0/23.7	10.5	3.6	38-1	Hrdlička, 1944, fig. 137
377502	Lower	Diorite	21.2/15.3	18.0/12.5	8.3	1.9	8-7	Pl. 20, <u>a</u> Hrdlička, 1944, fig. 213

TABLE 8 (Cont'd.)

Stone Lamps, Type I. B. 2, Subtype b

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
377862	Lower	Diorite	20.1/17.8	18.0/14.8	8.5	1.9	9-3	Pl. 20, <u>b</u> Hrdlička, 1944, fig. 216
1936-A5	Lower	Sandstone	16.4/12.3	14.4/10.0	4.9	2.4	2-6	Pl. 20, <u>c</u>

Subtype c: Only 3 lamps of this subtype were noted. All have a double (i.e., grooved) prow, and bars on the exterior side. No. 363166 has a double prow which forms two vertical bars, and on each side and at the back are sets of three vertical bars. No. 375273 has at each end and midway at each side, sets of two raised bars. No.

377863 is the most elaborate example: in addition to three raised bars at the front and three sets of five elevated bars at each side and the rear, there are four sets of three grooves separating the elevated bar, that is, eight alternating arrangements of grooves and ridges occupy the exterior walls below the rim.

TABLE 9

Stone Lamps, Type I. B. 2, Subtype c

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
363166	Lower	Sandstone	14.7/12.5	11.7/ 8.6	6.3	1.7	3-5	Pl. 21, <u>b, c</u>
375273*	Lower	...	...	...	...	...	...	Pl. 21, <u>a</u>
377863	Upper	Diorite	19.0/14.9	18.0/13.6	6.8	1.9	5-0	Pls. 15, <u>b,</u> 21, <u>d</u>

* My records on this lamp lost.—RFH.

Subtype d: There are 10 lamps, of which 2 come from the Upper Level and the balance from the Lower Levels. The bowl is plain, and the exterior bears either a shallow groove (2 specs.) or is beveled out (7).

No. 375290 has a long groove running fore-and-aft along the bottom. Subtype d lamps may be characterized as well made, simple and unelaborated utilitarian items.

TABLE 10

Stone Lamps, Type I. B. 2, Subtype d

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
365404	Lower	Diorite	15.2/11.3	12.7/ 8.6	5.8	1.8	3-0	...
365541a	Upper	Granite	19.8/15.4	17.0/12.3	7.0	2.1	6-10	...
365543c	Lower	Granite	11.9/ 8.5	9.3/ 6.1	5.4	1.6	1-11	...
365543f	Lower	Granite	10.9/ 9.2	8.6/ 6.7	5.4	1.7	1-11	...
365565	Upper	Granite	19.2/14.0	16.0/10.6	6.8	1.4	6-1	...
375178	Lower	Andesite	20.4/16.1	17.8/12.7	8.4	1.9	7-10	Pl. 22, <u>b</u>
375180	Lower	Granite	16.1/13.7	13.5/10.6	6.5	2.3	4-0	...
375274	Lower	Sandstone	16.9/14.4	13.1/10.6	8.0	1.7	6-4	Pl. 22, <u>a</u>
375278	Lower	Granite	14.7/11.2	12.6/ 9.1	5.7	1.5	3-0	Pl. 22, <u>c</u>
375290	Lower	Granite	10.1/ 7.8	8.2/ 5.2	3.9	1.4	1-0	...

Subtype e: There are 8 lamps of this class, their chief characteristic being two conical knobs in the bowl. Six have a prow, and 3 have a longitudinal groove in the bowl. The rim and exterior are variably treated, as inspection of table 11 will show. An

unfinished example (365532) is shown in plate 22, e. What is clear is that this form of lamp is restricted to the Lower Levels, and that it had passed from vogue by the time the Upper Level was laid down.

TABLE 11
Stone Lamps, Type I. B. 2, Subtype e

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
365405	Lower	Diabase	16.1/13.6	13.5/11.0	6.0	1.4	4-5	Hrdlička, 1944, fig. 155
365532	Lower	Granite	24.5/17.4	20.0/14.1	9.6	3.4	12-14	Pl. 22, <u>e</u>
375280	Lower	Granite	15.1/12.9	13.1/10.3	5.9	2.2	3-6	Pl. 22, <u>d</u> , Hrdlička, 1944, fig. 135
375281	Lower	Sandstone	12.1/ 8.4	10.1/ 6.2	4.6	1.1	1-8	...
375692	Lower	?	26.2/20.0	21.0/15.0	8.0	2.2	16-0	Pl. 23, <u>b</u> ; Hrdlicka, 1944, fig. 223
377628	Lower	Sandstone	17.9/14.3	14.2/10.2	5.9	2.2	5-2	...
377861	Lower	Diorite	22.9/17.9	19.4/14.7	8.8	1.0	12-8	Pl. 23, <u>a</u> ; Hrdlicka, 1944, figs. 155, 218
1936-A2	Lower	Andesite	27.3/20.6	23.2/16.7	8.5	3.1	12-11	...

Subtype f: Like the preceding class, this form is also limited to the Lower Levels of the Uyak site. Seven examples were noted, all having a

prow and plain bowl. With one exception (an uncatalogued piece), all have sharp-edged or rounded rims and simple, rounded exterior sides.

TABLE 12
Stone Lamps, Type I. B. 2, Subtype f

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
363554d	Lower	Granite	10.2/ 7.7	8.0/ 5.2	4.4	1.3	1-3	...
365447a	Lower	Granite	16.2/11.5	13.7/ 8.4	5.3	1.8	2-13	...
377503	Lower	Diorite	18.1/14.3	14.5/ 9.7	7.5	2.8	4-12	Pl. 17, <u>b</u> ; Hrdlička, 1944, fig. 220
377635	Lower	Granite	19.2/14.5	16.1/10.6	6.4	1.8	5-2	...
1936-A1	Lower	Diabase	20.5/14.1	18.5/11.3	6.3	2.2	4-12	Pl. 23, <u>c</u>
Uncat.	Lower	Diorite	16.0/12.0	12.5/ 9.0	5.3	0.7	...	...
Uncat.	Lower	Diorite	16.2/11.5	13.5/ 9.0	5.8	2.0	...	...

Subtype g: Three of the four examples of this class, characterized by a longitudinal groove in

the bowl, come from the Lower Levels; one lacks level attribution.

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TABLE 13

Stone Lamps, Type I. B. 2, Subtype g

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
365406c	Lower	Granite	13.5/10.8	11.2/ 8.2	5.8	1.6	6-2	...
375284	Lower	Granite	17.7/14.6	14.0/11.2	7.4	2.0	6-2	...
377506	?	...	18.2/13.7	15.3/11.4	5.0	2.0	4-3	...
1936-B2	Lower	Granite	21.5/12.0	19.5/ 9.3	3.6	1.0	3-5	Pl. 16, <u>f</u>

Subtype h: Five subtype h lamps with find data come from the Lower Levels. The provenience of two is questionable, but they are also thought

to have come from the Lower Levels. General characteristics of this type are a central bowl groove and either an outer groove or flat border.

TABLE 14

Stone Lamps, Type I. B. 2, Subtype h

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
363728	Lower	Diorite	17.5/14.4	14.7/11.5	7.4	1.6	5-4	...
363734a	Lower	Sandstone	24.9/18.0	22.3/15.0	6.5	1.6	10-0	...
365401	Lower	Diorite	18.4/15.6	16.2/12.9	6.8	2.5	6-8	...
365717	Lower?	Diorite	17.1/13.7	15.2/11.5	5.8	2.0	4-0	...
375189	Lower	Sandstone	9.6/ 7.7	8.1/ 6.0	3.9	1.2	0-14	Pl. 23, <u>d</u>
375271	Lower	Diorite	25.2/18.8	25.2/15.8	7.3	2.2	9-12	...
377505	Lower	Diorite	19.8/15.8	17.2/13.1	6.0	1.8	5-11	Pl. 23, <u>e</u>

Type II. A (plain) and II. B (decorated).—Elliptical stone lamps number 12. All but one are plain and undecorated. Table 15 presents the detailed measurements, level of origin, and materials of type II stone lamps. All but three come from the Lower Levels of the Uyak site and these three Upper Level lamps are in no way different from the 9 lamps of this type from the Lower Levels. The one decorated lamp (type II.B)

bears a simple pecked encircling groove just below the rim. It comes from the Lower Levels.

In addition to these 12 lamps there are 6 others whose location within the site levels is doubtful. Five are presumably Upper Level and one Lower Levels. If these are admitted as type II pieces the total of type II lamps from the site would be 18, of which 8 are from the Upper Level and 10 from the Lower Levels.

TABLE 15

Stone Lamps, Types II. A, II. B

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
Type II. A								
365447	Lower	Granite	14.0/ 8.0	12.0/ 6.4	4.2	1.2	3-2	...
365447	Lower	Granite	17.4/12.0	13.5/ 8.6	5.3	1.2	3-11	...
365531	Lower	Granite	28.6/15.3	24.7/10.8	7.0	2.3	10-3	...
365547	Upper	Granite	19.6/11.5	15.5/ 9.0	5.8	1.7	3-5	...

TABLE 15 (Cont'd.)
Stone Lamps, Type II. A, II. B

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
375185	Lower	Basalt	16.5/10.8	14.3/ 8.6	6.1	2.0	3-6	Pl. 24, <u>a</u>
375194	Lower	Sandstone	16.6/ 9.8	13.0/ 6.1	6.2	1.5	3-4	...
375300	Lower	Diorite	13.5/ 9.7	10.8/ 6.4	4.6	1.3	2-0	...
377517	Lower	Granite	13.6/ 7.3	11.0/ 4.5	4.9	0.8	1-13	...
377742	Upper	Granite	23.8/11.6	13.7/ 5.8	5.9	1.8	5-12	...
377743	Upper	Sandstone	16.0/ 9.5	12.6/ 6.2	5.3	1.7	2-5	...
1936-B3	Lower	Diorite	22.0/11.3	18.5/ 7.9	5.5	2.5	4-8	Pl. 24, <u>b</u>
Type II. B								
375282	Inter	Granite	14.5/11.5	11.1/ 7.9	7.0	1.7	3-13	...

Type III. A (circular, plain) and III. B (circular, decorated).—Five stone lamps have a circular outline. Two (type III. A) are plain and unornamented. Three (type III. B) bear exterior elaborations. Two (377295, 375500) have a narrow, encircling border

groove, and one has an outslowing flat rim with a wide, shallow concave border. Of the 5 lamps, 2 are from the Lower Levels and 2 from the Upper Level; one is without depth location.

TABLE 16

Stone Lamps, Types III. A, III. B

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
Type III. A								
375500	Inter	Sandstone	12.3/10.8	8.9/ 8.2	5.0	2.0	1-15	...
377295	Inter	Granite	8.3/ 7.6	6.8/ 6.2	2.4	1.2	0-8	...
377745	Upper	Diabase	12.7/11.7	9.4/ 8.9	5.5	1.4	2-7	Pl. 24, <u>f</u>
Type III. B								
365536	Upper?	Quartzite?	15.9/13.6	11.8/10.2	6.7	1.3	4-8	...
377513	?	Diorite	12.0/13.5	9.0/10.0	5.5	2.0	2-10	...

Type IV. A (rectangular, simple).—Two stone lamps have a rectangular outline. One (375501) is from the Upper Level, the other (375277) from the Lower Levels. It is to be doubted whether these two lamps, with their different forms and belonging

to different periods, can constitute a significant tradition of rectangular lamp shape on Kodiak Island. They are more probably chance variations ascribable to their maker, who worked in angles rather than curves.

TABLE 17

Stone Lamps, Type IV. A

USNM cat. no.	Level	Material	Measurements (cm.)					Illus.
			Outside L/B	Bowl L/B	Ht.	Depth	Wt. (lbs.-oz.)	
375277	Lower	Diorite	25.0/14.8	18.3/10.4	9.2	2.6	11-10	Pl. 25, <u>a</u>
375501	Upper	Diorite	14.3/12.4	11.5/ 9.5	5.4	1.7	2-13	Pl. 25, <u>b</u>

Type V. B (crescentic, decorated).—A single lamp from the Lower Levels is crescentic or semilunar in outline. Its shape may possibly be due to the original shape of the stone, which was hollowed out by pecking for the oil basin. There is no wick groove or lip. Signs of fire at each end show that the lamp was lighted in the usual manner of the standard ovoid lamps. Another unusual feature of this lamp is the low relief representation of a whale on the low convex underside. The data on this lamp are as follows: USNM catalogue no. 377507; Lower Levels; granite; length-breadth ratio, outside 24.6/11.8 cm., bowl 21.0/11.8 cm.; height 7.9 cm.; depth 2.7 cm.; weight 8 lbs. 12 oz; illustrated, plate 25, *c* and Hrdlicka, 1944, figure 105.

Type VI (hunters' lamps).—Small oil lamps, taken by men on a hunting trip, are known to have been used by the Aleut (Jochelson, 1925, p. 74). There were many of these miniature lamps in the Uyak site, and they are probably to be considered hunters' lamps. No lamps with rings, like those recovered in Kamchatka and the Aleutian Islands, were found in the Uyak site.

Detailed data on numbers and find depths of small hunters' lamps were not compiled, and those listed in table 18 may be taken as typical of the whole group.

TABLE 18
Stone Lamps, Type VI

USNM cat. no.	Level	Length (cm.)	Ht. (cm.)	Wt. (lbs.)
363731*.....	?	7.5	2.6	5.0
365546a.....	?	7.9	2.5	8.5
365407.....	Lower	8.3	2.4	6.0
375193.....	Lower	8.7	2.9	8.0
375304b.....	Inter	9.0	4.0	12.5
375304x.....	Inter	12.3	4.2	8.5
375365.....	Inter	4.2	2.1	3.0
375514.....	Upper	9.6	3.1	9.0
377526.....	Inter	8.4	2.5	8.0
1936-A7.....	?	5.1	2.2	3.5

*Illus., pl. 25, j.

Additional hunters' lamps are shown in plate 25, *d-i*, *k-n*. These lamps are all relatively well made and obviously completed pieces, as shown by their surface finish and evidence of burning at the narrow end. There is another class of artifacts which grades imperceptibly into hunters' lamps, and these might be called "pitted stones." Essentially they are flattened pebbles with a pecked pit in one surface. The borders and ends often show battering marks which give one the impression that they were also hammerstones. These pitted stones as a group may include several diverse and specific artifact types which include: (1) hammerstones; (2) anvils; and (3) hunters' lamps in process of manufacture.

Type VII, natural forms used as lamps.—Beach stones with a natural hollow were sometimes used for lamps. These are like the ones shown by Hough (1898, pl. 22) from the Aleutian Islands. A large number were found and discarded; only 8 were brought to the National Museum. Of these, 2 are without depth location, 3 are from the Upper Level, and 2 are from the Lower Levels. If this small series is representative, natural stone lamps were used throughout the history of the Uyak site.

The USNM pieces are catalogued under numbers

365546; 365546b, c, d, f; 365700; 375297; 377739.

Atypical lamps.—Four oil lamps in the Uyak site collection may be called unique, and are treated separately. Some or all of them may be items introduced by trade from the mainland or islands westward.

No. 375296, from the Lower Levels, is a squat, blunt, flat-bottomed lamp made of black basaltic rock and measuring 10 cm. long, 8 cm. wide, and 4.6 cm. high. It is shown in figure 25, *a*. The oil reservoir is deep at one end and shallow toward the fire (wick) end. Around the base is a narrow panel of incised lines, and at the fore end are three vertical incised lines which run from the lip down to the upper encircling groove of the base decoration.

No. 365547, from the Uyak site but of unrecorded depth provenience, is made of soapstone which resembles darkened beeswax (fig. 25, *d*). It is fragmentary, with an incurved edge and beveled rim which bears incised line decoration consisting of a single line bordering the oil cavity edge and a "ladder" design bordering a narrow raised ridge near the outer edge of the rim. The lamp was broken in antiquity and was made useful again by scraping out a new oil reservoir in the remnant of the floor of the original oil basin.

No. 365647, from the Uyak site, but of unknown stratigraphic location, is made of gray granite and bears a single rounded knob 3 cm. in diameter and 4 mm. high in the bowl toward the rear of the oil reservoir (fig. 25, *b*). It is not unlike many lamps of type I. B. 2, subtype c, except that the knob is single.

The fourth piece, No. 365533, also of unrecorded depth in the Uyak site, is of simple ovoid shape (type I. B. 1) and made of local gray diorite (fig. 25, *c*).

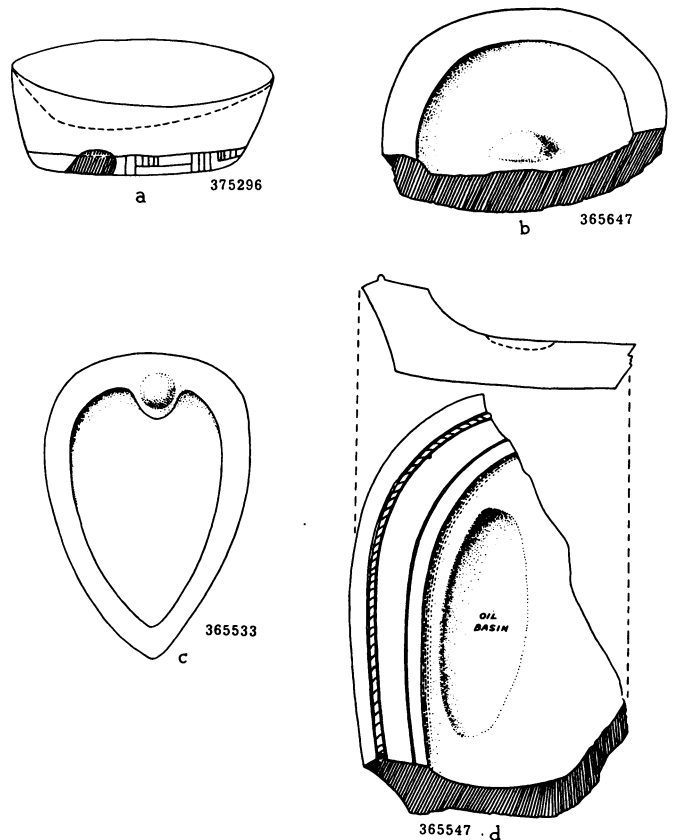


Fig. 25. Atypical stone lamps. *a*. USNM 375296. Lower Levels. *b*. USNM 365647. *c*. USNM 365533. *d*. USNM 365547.

It is 21.8 cm. long, 16.2 cm. wide, and stands 8.6 cm. high.

The distinctive feature of this lamp is a slightly elevated knob 2.9 cm. in diameter at the rear of the bowl but still attached to the flat rim. It may be a true knob or may have been intended as a purely decorative feature. The knob may originally have been left with the idea of delineating the facial features of a human being or animal, though here it must be noted that the lamp shows signs of much use in the form of carbonized deposit at the narrow end of the reservoir and adjacent rim.

Lamps with decorated bowls, sides, or bases.—Several pieces of lamp sculpture deserve particular mention because of the incised or relief representations of parts of animals or geometric line arrangements on the side, base, or in the bowl.

No. 1936-B1 (an uncatalogued lamp in the 1936 collections) is a rather crudely made type I (ovoid) specimen of gray granite measuring 33.2 cm. long, 24.2 cm. wide, and 11.2 cm. high. It weighs 29 pounds, and has a simple ovoid bowl measuring 27.5 cm. long, 19.8 cm. wide, and 2.1 cm. deep. On the rounded underside of the base are four shallow conical pits and four wide, shallow pecked grooves, two of which are straight and parallel and two curved and concentric. The specimen is illustrated by Hrdlička (1944, fig. 174); a sketch of the decoration is given here in figure 24, a. The find-data are incomplete, and it may be either of upper Lower Levels or Upper Level provenience.

A similar specimen (uncatalogued) is much smaller, but bears on the bottom similar shallow round pits and engraved lines. It weighs only 14 oz. and measures 14 cm. long, 9.5 cm. wide, and 3.5 cm. high. The bowl is 12 cm. long, 7.5 cm. wide, and 1.7 cm. deep. The rim is rounded and the border is flat. The design on the base is illustrated in figure 24, b. This piece comes from the Lower Levels.

No. 375692 (described elsewhere as an example of type I. B. 2, subtype e) has two knobs in the bowl and a decorated base consisting of a wide raised serrate bar which is a continuation of the notched prow and terminates at the point of a raised ovoid ring with a central groove. The base of this lamp is illustrated by Hrdlička (1944, fig. 223), and in the present paper in figure 24, c. The decoration looks not unlike that of several other lamps which have similar ovoid depressions or raised rings inside the bowl.

Nos. 365448, 377511, and 375270 (classified as type I. B. 2, subtype a) each bears on the underside, as a continuation of the "prow," the flukes of a whale. Sketches of these are shown in figure 24, d, e, f, and some are illustrated by Hrdlička (1944, figs. 215, 219a). No. 363724, the lamp with the reclining human figure in the rear of the bowl, has a relief design of some swimming animal (seal, sea otter?) engraved on the bottom. This design is shown by Hrdlička (1944, fig. 221) and in figure 24, g.

The unusual portrayal of what is probably a human face on the base of an Upper Level lamp (375505) classified as type I. B. 1 has already been discussed. This unusual piece is shown in plates 15, a and 26, b, e, and figure 24, h. Attention may be called to the general similarity of the face on the lamp and the faces portrayed in petroglyphs from the southwestern coast of Kodiak Island (Heizer, 1947, fig. 4). Some connection between the two areas is almost certain in view of the parallels in technique and style. The lamp in question, like the petroglyphs, belongs to the later prehistoric period and is therefore probably contemporaneous with the latter.

No. 377862 bears a masterfully executed engraved face of an animal, which can be identified as probably representing a seal. The rear side of the lamp bears another engraved design, contained within a curved line border. This may be a separate face or was perhaps meant to represent another part of the animal. The underside of this lamp is shown by Hrdlička (1944, fig. 216) and here in figure 24, i, j.

Several lamps (375182, 377502, 377862, 365402, 375270) have either raised ovoid lines or sunken ovoid depressions in the bowl. These have been classified and described elsewhere as examples of type I. B. 2, subtype b, and are illustrated here in plate 20, and in Hrdlička (1944, figs. 58, 212, 213, 219). Sketches of the ovoid bowl features can be seen in figure 24, k, p.

Simple grooves and raised "bars" (discussed elsewhere under type I. B. 2, subtype c lamps) are shown schematically in figure 24, q-t. They are catalogued respectively as Nos. 363726, 375273, 377863, and 363166.

Reference is made here to the lamp, shown by Hrdlička (1944, fig. 138), with an animal's facial features incised on the edge and to the well executed bear's head (pl. 26, a) and reclining human figure modeled in the bowl of two other lamps (Hrdlička, 1944, figs. 52, 157, 217, 221).

Lamps with figures of humans or animals.—This is a special class of lamp whose function is unknown but almost certainly something other than that of lighting the house of some ordinary Kodiak native of ancient times. Either because of their size or elaborate decoration, they stand out from the everyday lamps of the Uyak site, and therefore merit special treatment.

No. 375349 (pl. 26, a), of gray diorite, well finished over all surfaces, is remarkable for the representation of an animal's head which rises from the bottom at the after end of the oil cavity. It is not difficult to visualize this ancient lamp full of oil, its wick lit, and the animal's head rising above the illuminated surface of the oil fuel. The lamp weighs 23 lbs. and measures 30.3 cm. long, 18.9 cm. wide, and 3.4 cm. deep. The bowl shallows toward the wick end to furnish an inclined base for the wick, which lay in the front where the rim has been thinned. Hrdlička (1944, figs. 157, 217) gives two views of this lamp, both showing the simple "prow" and the secondary hollow inside the bowl just in front of the animal's head. This head was thought by Hrdlička to represent a bear, but it may quite as well represent some sea mammal. It is 5.6 cm. long, 4.6 cm. wide, and rises 4.1 cm. from the bowl. Shallow pits and incised grooves indicate the eyes, ears, nose, and mouth of the creature. This lamp came from the Lower Levels and presumably was in use about the midpoint of the span of the site's history.

No. 363724 is remarkable chiefly because it is the only lamp which shows an attempt to portray the human figure (fig. 24, g). It is probably from the Lower Levels, though this is not certain. The lamp was found by Mrs. Laura Jones, wife of the superintendent of the near-by cannery, and was given to Dr. Hrdlička. It does not look to me like an example of the work of the later people, and the Lower Levels provenience suggested by Hrdlička strikes me as probably correct. The lamp is made of fine-grained, light gray diorite and weighs 12 lbs., 9 oz. It is 26.4 cm. long, 19.4 cm. wide, and 3.2 cm. deep. At the back end of the bowl is a human figure with extended legs and spread arms, reclining on the back and looking toward the forward (wick) end of the bowl. There are details of the face or body of the figure, which

measures 4.5 cm. long and has an arm span of 5.2 cm. A suggestion of the "prow" feature so common in type I, B, 2 lamps occurs on this specimen, where it apparently represents the head of some highly conventionalized animal. Two views of this lamp are shown by Hrdlička (1944, figs. 51, 212). Collins (1937, p. 169, pl. 58, fig. 14) illustrates a potsherd of the Old Bering Sea culture with a human figure in relief that is nearly identical to that of the Kodiak lamp.

The third lamp (377501) is itself modeled into the form of an animal (pl. 27, a, b). It is of some soft brown stone (diorite?), weighs 4 lbs., 7 oz. and comes from the base of the Lower Levels deposit. Top and bottom views are shown by Hrdlička (1944, figs. 91, 92). The lamp is ovoid, with a knoblike projection which clearly was intended to represent the head of some animal. This "head" is 3 cm. long and 5 cm. broad, with two ivory pegs representing eyes, and a short deep cleft on the underside which may have been meant as a mouth. Over-all length of the lamp is 19.8 cm., breadth 14.6 cm., and height 5.7 cm. The bowl, which has three parallel front-to-back grooves, is 15.0 cm. long, 11.8 cm. wide, and 1.9 cm. deep. A noteworthy feature of this specimen is the several drilled holes in which are inserted short ivory pegs about 6 mm. in diameter. There are 11 of these pegs: 2 set laterally to form the eyes of the projecting head; 2 set vertically inside the bowl at the midpoint of the two outside grooves; 2 set laterally on the exterior just below the rim and just ahead of the midpoint of the bowl; 1 set vertically in the rim at the rear midpoint; 2 set laterally just behind the head where it joins the body of the lamp; and 2 on the bottom, forming the termini of an engraved arc (see Hrdlička, 1944, figs. 91, 92).

Lamps in process of manufacture.—A large number of flattened round or ovoid stones, ranging from fist-size beach pebbles to boulders weighing more than 20 lbs., had ovoid depressions pecked out on the upper surface. Occasionally these cavities are well finished, but for the most part they are rather irregular and are clearly hasty or unfinished jobs. All are to be considered lamps. Some were used in their present unfinished state, probably as emergency light. Others are partly completed lamps which, for unknown reasons, were never finished. A too refractory stone might discourage the lamp-maker, as might a flaw which developed after the pecking process had begun.

None of these pieces is illustrated. The U. S. National Museum catalogue numbers are: 363733, 365406b, 365407, 365526, 365527, 365534, 365545, 365547, 365652, 375176, 375177, 375195, 375199, 375301, 375302, 375303, 375304, 375510, 375511, 375512, 375515, 377524, 377636, 377741, 377744, 377746, 377747.

STONES WITH PECKED NOTCHES OR GROOVES

A total of 213 grooved or notched pebbles with depth location is in the Uyak collection. About half as many more pieces, whose vertical location was not noted, were collected, but since these include no forms in addition to those of types I-VII, they have been omitted from consideration here.

The stones selected were commonly hard volcanic beach pebbles, which vary from flattened ovoid to cylindrical in cross section and angular to ovoid and round in shape. The majority are elliptical. Flattened pebbles needed only a pecked notch to receive a fastening, whereas cylindrical stones apparently required a continuous groove to permit the line to be attached securely. Natural shape, there-

fore, seems to have determined the choice of a notch or groove. Most, if not all, of these stones were probably used as fishline sinkers in the manner described by Holmberg (1856, p. 385) and illustrated by Heizer (1952, pl. 2, i).

TABLE 19
Types and Occurrence of Stones with
Pecked Notches or Grooves

Type	Description	Lower Levels	Upper Level
Ia	Pecked continuous groove around short diameter	14	8
Ib	Pecked notch at middle or each long side	1	0
IIa	Pecked continuous groove around long diameter	44	8
IIb	Short pecked notch over each end	15	5
IIIa	Continuous groove around short diameter and over one end	54	17
IIIb	Pecked notch on each side and one end	3	5
IIIc	Pecked notch on one end and continuous groove around short diameter	1	1
IV	Pecked notch on one end	6	4
V	Pecked continuous groove near one end	9	0
VIa	Continuous groove around short and long diameters	1	1
VIb	Pecked notch on each side and each end	3	1
VII	Special types, both grooved and notched	2	0
	Total	153	50

Type Ia examples (pl. 30, a, b) range from 4 to 8 cm. in diameter. They were more abundant in the Lower Levels (14 specs.) than the Upper Level (8).

Type Ib sinkers are represented by a single specimen from the Lower Levels.

Type IIa grooved stones (pl. 29, l) are abundant in the Lower Levels (44) and rare in the Upper Level (8). One piece is outstanding in size, measuring 13.5 cm. long, 11. cm. wide, and 7 cm. thick. It is made of granite and came from the Lower Levels.

Type IIb (pl. 29, g, h) is represented by 20 examples, 15 from the Lower Levels and 5 from the Upper Level.

Type IIIa (pl. 29, e, f) is the most numerous form, with 54 specimens from the Lower Levels and 17 from the Upper Level.

Type IIIb (pl. 29, i) is represented by few ex-

amples (8), which are about evenly divided between the Lower Levels (3) and Upper Level (5).

Type IIIc (pl. 29, m) is a modification of IIIa and IIIb. A single example from each level was found.

Type IV (not illustrated) with a single pecked notch on one end has about the same incidence in the Lower Levels (6 examples) and Upper Level (4).

Type V specimens (pl. 30, c-e) vary somewhat in form, the groove in some being placed so as to leave the natural end of the stone (pl. 30, c) and in others so close to the end that only a tapering pile remained (pl. 30, d, e). All of the 9 examples came from the Lower Levels.

Type VIa (pls. 29, d; 30, f) is represented by two examples, one each from the Lower Levels and Upper Level. One of these (pl. 29, d) is better made than the other, the plain surfaces being pecked away in order to leave a ridge bordering each side of the grooves.

Type VIb (pl. 29, j, k) was more abundant in the Lower Levels (3 examples) than in the Upper Level (1), though the total number is too small to make this difference of much significance.

Type VII (pl. 29, b, c). The specimen shown in plate 29, c is basically a type IIIa form with the addition of a deeply pecked, short, side groove which is angled toward the intersection of the two continuous grooves. It is a unique piece and comes from the Lower Levels. Plate 29, b shows an elaborated type Ib form with two side notches. This piece is also unique and from the Lower Levels.

Because we do not have adequate records of the stratigraphic profile, it is difficult to say definitely whether a form occurring throughout the deposit from bottom to top and somewhat more abundant in the Lower Levels than the Upper Level was actually more abundant or whether the difference is due to the greater thickness of the Lower Levels, which automatically yielded more specimens. Thus, if the Upper and Lower Levels were treated as equivalent, types Ia, IIa, IIb, and IIIa would apparently have had greater vogue in earlier time. But we cannot state this categorically, and controlled sampling of other Uyak area sites will be necessary before we can indicate the probable significance of frequencies of this sort. Types Ib, V, and VII are limited to the Lower Levels, and these types are doubtless conclusive evidence of stratigraphic differences. Any decision regarding time differences among the remaining types (IIIb, IIIc, IV, VIa, VIb) would be unjustified since the incidence of each type is small.

Weyer (1930, fig. 22, p. 273) noted grooved sinkers of types IIa, IIIa, and V from the Lower Levels of the Port Möller site, believing them earlier than the side-notched pebble sinkers. Sinkers with a drilled perforation, of which 4 were found at Port Möller, did not occur in the Uyak site.

STONES WITH CHIPPED NOTCHES

Flat side-notched pebbles.—Small, flat, round-to-ovoid pebbles, with a chipped notch on opposite sides, occurred rarely in the Uyak site. De Laguna (1934, pp. 51-54, pl. 16) noted these objects as the most numerous single type of artifact from Kachemak Bay sites. The contrast between her total of 955 specimens and the 31 from Uyak Bay is remarkable in view of the proximity of the two sites. De Laguna notes two size classes of

notched stones, namely, "small," under 5 cm. in length, and "large," over 5 cm. long. In the Uyak collection there are 6 small specimens, examples with recorded location, three from the Upper Level and 3 from the Lower Levels. Of the 25 large notched pebbles, 22 are from the Lower Levels and 3 from the Upper Level.

Weyer (1930, p. 273) believed side-notched pebble sinkers were more recent than grooved sinkers at Port Möller.

Long, flat side-notched stones.—Long flat beach pebbles with 2 opposite percussion notches in the sides at about the middle may be distinguished as a regular type. They are made of slate or fine-grained metamorphic rocks. Four examples were noted, of which 3 are from the Upper Level (pls. 42, g, 43, g, h). They average 24 cm. long, 8 cm. wide, and 2 cm. thick. One from the Lower Levels is 28 cm. long, 8 cm. wide, and 2 cm. thick.

Large, flat single-notched stones.—Four examples of flat, ovoid, volcanic or metamorphic beach pebbles with a single concave notch chipped out of one long edge came from the Lower Levels (pl. 29, a). They are uniform in size, varying between 10 and 12.5 cm. in length. The notch shows no special amount of smoothing, and the function of these pieces is a puzzle.

TESHOA FLAKES⁵

These are sharp-edged discoidal flakes struck from a large pebble or boulder. They may be unmodified or elaborated with a small surface flake or slight retouching of the underside. An example from the Lower Levels with a surface flake is shown in plate 42, i. Since there appears to be no reason to subdivide these on the basis of small differences of retouching and presence or absence of the small side flake, we may merely note that 19 specimens came from the Lower Levels and 4 from the Upper Level.

Cook Inlet sites also produced similar boulder chips (De Laguna, 1934, pp. 60-61). A teshoa flake from Olga Bay, Kodiak Island, is shown in plate 42 h.

SPLITTING AND PLANING ADZE BLADES

Following De Laguna (1934, pp. 56-57) and Drucker (1943, pp. 43-44), adze blades are here divided into two major types, "splitting" and "planing" adzes. Drucker classes these latter as celts. Each form was ordinarily hafted, the splitting adze to a T-shaped or inverted L-shaped handle (cf. Giddings, 1952a, pl. 3), and the smaller planing adze or celt in a socketed or bedded haft of bone or antler, the whole being lashed to a scarfed or shouldered wooden handle. A few specimens may have served as chisels, judging from the battered polls which look as though they were struck directly with the maul. Others are battered on the ends and/or edges, and may be adze blades which served for heavy stone pecking work such as lamp-making. It is not clear whether pieces so used were hafted or held in the hand. No adze handles of bone were recovered from the site. Davydov and Khvostov say (1810-12, 2:103):

Their axes they made wedge-shaped, from hard black or greenish stone, and fastened them to a

⁵ I have used this term after Holmes (1919) who derived it from Leidy (1873). It has been used in California by Rogers (1939). De Laguna (1934, pp. 60-61) and Oswalt (1952, p. 61) use the term "boulder chip scraper." Rainey (1939, p. 360) calls them "tci-tho," as does Giddings (1952a, p. 82). The Kobuk River examples have fully retouched margins.

short bent handle. They looked like our adzes. The natives were so accustomed to them that now iron axes are made by them in the same manner.

Splitting adzes.—Two types of splitting adzes occurred in the Uyak site.

Type I (pl. 31, d, e). Small, single ridge across top, shaped by pecking with only the cutting edge ground and polished. Two examples, both of black diorite: pl. 31, d from Upper Level, length, 12 cm.; pl. 31, e from Lower (?) Levels, length, 16 cm.

Type II (fig. 26, a-d). Large and heavy, single- or double-pecked groove over top with ridge bordering groove(s). Two shapes called here "D-shape" and "shoe-form." Four examples, all of dark, tough, igneous stone. Of the two from the Upper Level, one (fig. 26, a) is D-shape, 8 cm. high, 27.5 cm. long, and 4.3 cm. thick; the other (fig. 26, b) is shoe-form, 7 cm. high, 29 cm. long, and 5 cm. thick. The latter is unusual, since the groove continues on each side down to the base. The other two examples (fig. 26, c-d) were collected by Mrs. Laura Jones and listed in the USNM catalogue simply as "Kodiak Island; prehistoric." Since Mrs. Jones collected for the National Museum a number of objects from the Uyak site, these are probably either from that site or one near by. Both are shoe-form and have a double groove across the top. One has a squared poll (fig. 26, c) and is 6.5 cm. high, 36.2 cm. long, and 5.3 cm. thick.

Planing adzes (celts).—Larger blades were fashioned by primary flaking and, if a surface finish was desired, the flake scars were smoothed down by pecking and then polished by rubbing. At times only the cutting edge was polished. Smaller adze blades were sawed from a block of stone (cf. pl. 31, m) and then polished over all. Larger blades may have been hafted directly to a shouldered handle while smaller pieces could have been either held in the hand or attached to a socketed or

bedded bone haft. Such a haft might have been held in either of these ways.

Type Ia (pl. 31, k, l, n, o). Small, flat, with tapering edges generally well polished, under 6 cm. long, 1/2 to 1 cm. thick. Seventeen examples: 6 from Lower Levels, 11 from Upper Level. Made of greenstone or dense slate. Those shown in pl. 31, k, n, o, illustrate range in size and degree of finish. An occasional flaked adze blade of this class occurs, but they are rare (pl. 31, l).

Type Ib (pl. 31, b, g-j, m).—Like Ia, but longer (from 6 to 16 cm. long), thicker, and wider in proportion. Many are only partially polished (pl. 31, b). There are 111 examples: 57 from the Lower Levels, 54 from the Upper Level (fig. 27, a, c). Made of diorite, slate greenstone, variable in width and thickness. The stubby piece in pl. 31, h has probably been shortened through long use and repeated sharpening. One greenstone blade from the Lower Levels, found lying in original bedded haft (pl. 32, c), is 7.7 cm. long, 3.7 cm. wide, and 7 mm. thick. One blade (pl. 31, m) from the Upper Level has an angled cutting edge and sawing grooves on one edge.

Type IIa (pl. 31, c). Large flaked adze blades over 16 cm. long with little or no polishing of surface or edges. Seven examples: 4 from Upper Level, 3 from Lower Levels. The Upper Level pieces range from 17.5 to 19.5 cm. in length and 6 to 8 cm. in width; the Lower Levels examples range from 16 to 22 cm. in length and 5 to 6 cm. in width.

Type IIb (pl. 32, a-b). Large flaked adze blades over 16 cm. long, polished cutting edge. Surfaces have varying degrees of polishing. Eleven examples: 6 from Lower Levels, 5 from Upper Level (fig. 27, d). Lower Levels pieces range from 16.5 to 29 cm. in length, and 5.5 to 6.5 cm. in width; those from Upper Level, 16.5 to 19.5 cm. in length. Hrdlička (1944, fig. 69) illustrates one of these pieces which is remarkable chiefly on account of the arc of the cutting edge.

Miscellaneous forms (pl. 31, a, f; fig. 29).—Two stone blades are noteworthy in that they have axe cutting edges at one end. The blade shown in plate 31, a is roughly shaped, but the cutting edge is narrow and at right angles to the flat surfaces. Plate 31, f shows this same feature clearly, and has on the other end a regular adze edge. These may be accidental forms since the axe-type of cutting instrument is otherwise not reported for our area. The first specimen is without depth assignment; the second is from the Upper Level.

Adze blades which had completed their primary service as cutting instruments may have had a secondary use as stone-pecking implements. Eleven pieces, blunted on each end and the edges, were originally adze blades. Nine are from the Lower Levels (pl. 34, e, g; fig. 29), one is from the Upper Level, and one is without depth location.

The history of the splitting adze has been discussed by Giddings (1952a, p. 77). The Uyak examples help to fill the distribution between the Yukon River, Cook Inlet, and the northern Northwest Coast (Drucker, 1943, pp. 43-45). Generally speaking, the Uyak splitting adzes seem late, but their chronologic placement here is uncertain because of inadequate data on depth convenience and these pieces cannot help us to elucidate the problem of the direction or time of diffusion of this implement.

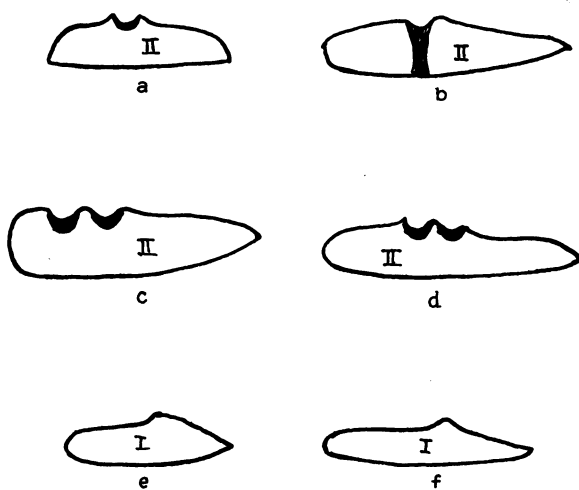


Fig. 26. Splitting adze typology. a. Type II adze blade, D-shape. b. Type II adze blade, shoe-form. c. Type II adze blade, double-grooved. d. Type II adze blade, double-grooved. e. Type I adze blade. f. Type I adze blade.

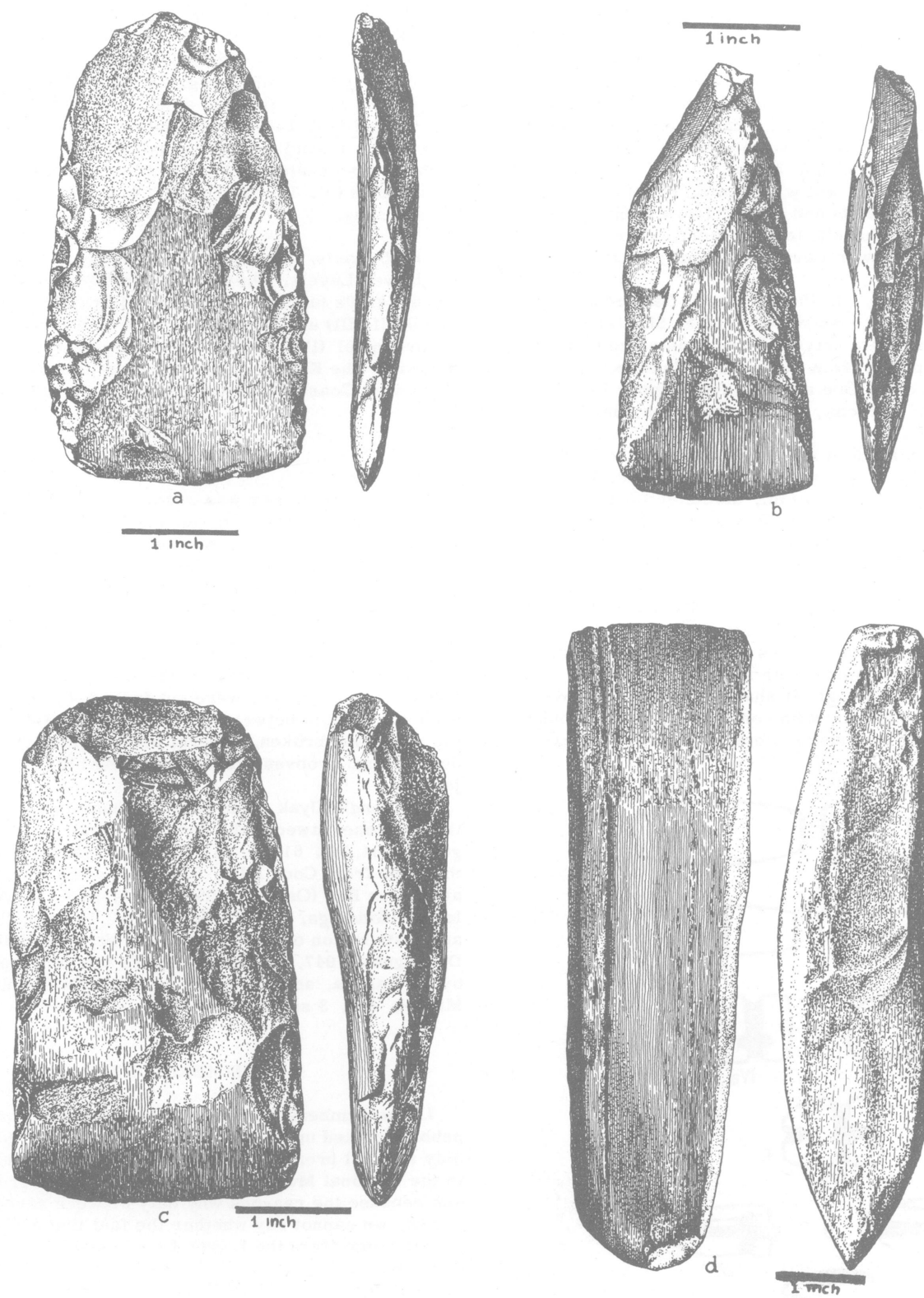


Fig. 27. Adze blades. a. USNM 375532, Upper Level, Type Ib. b. USNM 365706, Karluk site, Type Ib. c. USNM 375532, Upper Level, Type Ib. d. USNM 375530, Upper Level, Type IIb.

MAULS

Heavy stone hammers for driving stakes or wedges are of four types: I and II, held directly in the hand; III and IV, hafted for use. For typology see figure 28.

Type Ia (pl. 33, a, b). Cylindrical, with tapering ends showing marks of battering and with 4 pecked pits around center for grasping. Six examples: 5 from Lower Levels; 3 diorite (pls. 33, a, 51, c, d), 2 granite; average length 14.7 cm., average diameter 8 cm. One from Upper Level of granite, length 17.5 cm., diameter 9 cm. (pl. 33, b).

Type Ib. Like Ia, but with 2 pits. Flatter in cross section; wear on ends and sides. Two examples: 1 without location; basalt; length 12 cm., diameter 7.7 cm. One from Lower Levels; of basalt; length 15 cm., diameter 8 cm.

Type II (pl. 33, c). Paddle-form, flattened, round striking head with constricted handle. Similar mauls, referred to as "pile drivers," are illustrated by Goddard (1934, p. 71) from the Quinault Indians of the Washington coast. One example from Upper Level; basalt; length 30.5 cm., head 5 cm. thick, handle 4.5 cm. diameter.

Type III. Like Ia in shape with medial encircling pecked groove. Wear on ends. One example, from Upper Level; length 26.5 cm., diameter 9 cm.

Type IVa (pl. 33, d, e). D-shaped, with full or three-quarters groove over rounded back. Two examples from Lower Levels. One of granite (pl. 33, e), 9 cm. wide, 10 cm. high, 12 cm. long, with three-quarters groove; the other (pl. 33, d) of andesite, 9 cm. wide, 11.5 cm. high, 12 cm. long, with full groove and two short grooves near bottom at right angles to and connecting with main groove.

Type IVb (pl. 33, g). D-shaped, with full groove over rounded back and with connecting groove around one end. Other end has incomplete groove. One ex-

ample, of diorite, Lower Levels; 10 cm. wide, 12 cm. high, 12.5 cm. long.

Type IVc (pl. 33, h). D-shaped, but more flattened on top, with one groove running around side and with raised "bar" across face between grooves. Two examples from Lower Levels: one, of andesite (?), 8.5 cm. wide, 8.5 cm. high, 13 cm. long; the other, of andesite, 12 cm. wide, 8.5 cm. high, 14.5 cm. long. This maul (fig. 28, g) has an additional vertical groove on each side.

Type IVd. Like IVc in shape, but with two grooves running around side and converging at groove across face. One example (fig. 28, h) from Lower Levels, of andesite (pl. 33, f), 7.8 cm. wide, 8 cm. high, 11.5 cm. long.

Of 15 mauls, 3 are from the Upper Level and 12 from the Lower Levels. The pitted form (I) was used throughout the site's history. The grooved cylindrical and handled forms (II, III) are exclusively late, and the D-shaped groove maul (IVa-IVc) is exclusively early. Generally speaking, the Kodiak mauls are most like those of the Northwest Coast (cf. Drucker, 1943, pp. 48-50).

SAWS

Only one stone saw was recovered from the Uyak site. This is probably not to be taken as evidence of the rarity of the technique of stone-sawing, since numerous pieces of slate and several of greenstone showed sawing grooves or marks. The saw is shaped like an ulo, is 15 cm. long, 8.5 cm. wide, and 2 cm. thick. The curved edge is dulled and rounded.

The method of stone-sawing is clearly evident in a number of pieces of slate, serpentine, and greenstone. Deep, scored grooves were cut from both surfaces, and when the septum between the grooves was thin enough, the piece was broken. Several pieces which did not have deep enough grooves broke across the blade and were rejected.

The single Uyak stone saw was from the Lower Levels, though stone-sawed slabs occurred in all levels. De Laguna (1934, pp. 61-62, pl. 22), noted larger numbers of this type from Cook Inlet. Stone saws are recorded also at Hooper Bay (Oswalt, 1952, pl. 4, fig. 13), Ambler Island (Giddings, 1952a, pl. 6, figs. 10, 13). The history and distribution of the stone saw is discussed at length by De Laguna (1947, pp. 167-168). To the occurrences cited by De Laguna, add Santa Rosa Island, California (Jones, MS, pl. 466, 3 sandstone saws).

HAMMERSTONES

Large numbers of hammerstones, made from tough pebbles picked up on the beach, were recovered, but only a small proportion of these were saved and returned to the National Museum. Because so many were discarded and because the reasons why only 67 were saved are unknown, we cannot say whether the fact that 24 hammerstones come from the Lower Levels and 43 from the Upper Level is actually an indication of the lesser frequency of these tools in the Lower Levels or whether this stratigraphic difference is due to collecting technique.

The hammerstones show battering on one end, both ends, around part of or the entire perimeter, or on the flat surfaces. Plate 34, a-d illustrates various forms of hammerstones. The 3 specimens shown in plate 34, e-g

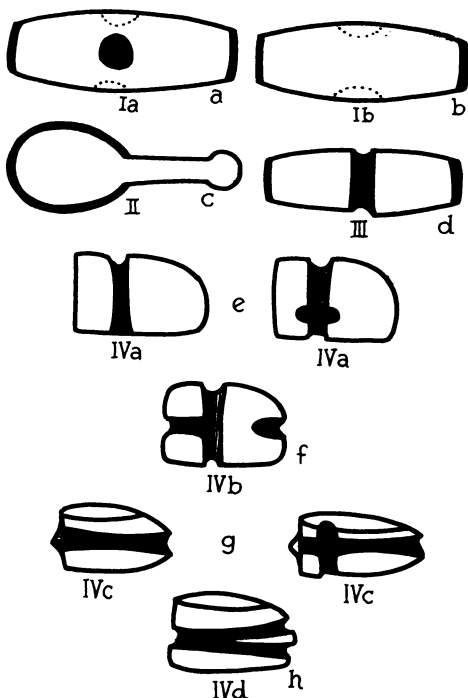


Fig. 28. Stone maul typology.

are flaked adze blades which have been relegated to some such activity as lamp-making (see also fig. 29). Indeed, most of the hammerstones were probably used in the stone-pecking process or for heavy percussion stone-chipping.

WHETSTONES

A total of 64 artifacts classed here as whetstones came from the Uyak site. In view of the large number of sharp-edged tools of stone (e.g., ulos, slate points, knives) and bone, 64 specimens seem almost too few if the sharpening of cutting edges was done exclusively with whetstones. Our pieces may be portable whetstones or sharpening stones. They are made of varied materials, among which are fine-grained sandstone, pumice, and vesicular basalt or scoria.

Two main types are established on the basis of form: Type I whetstones are irregular and unshaped pieces of abrasive stone; Type II whetstones are more finished and fashioned into regularly shaped pieces.

Type I specimens number 26, and are made almost wholly of sandstone. Besides the 15 irregular chunks of scoria or sandstone which show some flattened grinding faces, there are 11 flat, oval sandstone pebbles with concave grinding surfaces (pl. 35, *m, n*). There are 13 specimens each from the Lower Levels and Upper Level.

Type II whetstones number 38. The first subtype (IIa), numbering 30 specimens, is angular (3 have 5 sides, the balance have 4), though the grinding faces are not always flat and are often concave and twisted (pl. 35, *l, o-q*). From the Lower Levels come 19 specimens; from the Upper Level, 11. The second subtype (IIb), numbering 8 pieces, takes the form of pumice lumps with a rounded top and a flat basal grinding surface (pl. 35, *i-k*). The last-mentioned specimen bears an equilateral rubbed groove. All 8 are from the Lower Levels.

For illustrations of additional whetstones, see Hrdlička (1944, fig. 141).

Angular whetstones are, as one might expect to find among people using polished slate, very widespread in

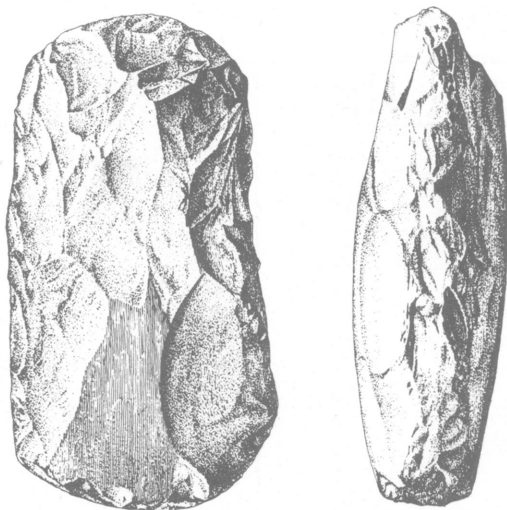


Fig. 29. Hammerstone. USNM 365456.
Lower Levels.

the Eskimo area. A partial listing of occurrence includes the following sites: Kukulik (Geist and Rainey, 1936, pl. 34, figs. 9-13); Okvik (Rainey, 1941, fig. 33, items 6-8); Ambler Island and Ekseavik (Giddings, 1952a, pl. 6, figs. 1-7; pl. 34, figs. 2-4); Hillside site, Old Bering Sea culture (Collins, 1937, pl. 43, figs. 1-4); Ipiutak (Larsen and Rainey, 1948, pl. 10, figs. 7-10); Amaknak Island (Jochelson, 1925, pl. 16, fig. 23); Cook Inlet (De Laguna, 1934, pl. 22); and Kobuk River (Giddings, 1952a, pl. 6, figs. 1-7).

POLISHING STONES

Eight beach pebbles of dense stone ranging from 4.5 to 10 cm. in length, 3.5 to 7.5 cm. in width, and from 1 to 2 cm. in thickness exhibit highly polished and flattened edges or ends resulting from abrasion. They were probably used for rubbing a final polish on stone artifacts, perhaps lamps. Four come from the Lower Levels, none are listed as from the Upper Level, and 3 are unaccompanied by depth information. Four specimens are shown in plate 35, *r-u*.

Nothing like the slender, highly polished jade sharpening stones found in Eskimo sites farther north was found in the Uyak site.

FLAKED IMPLEMENTS

It is probable that a scarcity of favorable raw material from which chipped implements could be easily manufactured is partly responsible for the small numbers of such artifacts in the Uyak site. That the technique of flaking stone was known is certain, since adze blades were customarily roughed out by percussion flaking before they received a final finish by grinding. In part also, concentration and reliance upon polished stone and bone may account for the minimal use of flaked projectile points and polished bone knives. The Uyak site collection of chipped implements for cutting or piercing (exclusive of ulos, which are treated separately) can be subdivided into four classes or types.

Type I. Large percussion-flaked stone disks.—The usual form of this type is a round or subcircular disk which bears heavy percussion flakes on each surface which have been struck off the perimeter of the disk. Eight specimens come from the Upper Level. They range from 9.5 to 16.8 cm. in diameter (average 10.0 cm.) and average 2.3 cm. in thickness. The Lower Levels yielded only 3 examples, which range from 11 to 19 cm. in diameter with an average of 13 cm. The materials are slate and metamorphic rocks. These may have served as heavy chopping tools whose continuous edge was utilizable.

Type II. Chipped flint or glassy basalt knives.—Only 3 ovoid flint or basalt knives, all from the Lower Levels, came from the Uyak site deposit. A well fashioned piece of glassy basalt (pl. 36, *a*) is 10.2 cm. long and 6.2 cm. wide. In shape it is like an ulo. A longer and narrower knife made of light tan flint is 11.7 cm. long and 4.1 cm. wide (pl. 36, *b*). The third piece (pl. 36, *c*) has one evenly curved edge (for cutting?) and one wavy margin. It is made of greenish-gray opaque flint and is 6.7 cm. long.

Type III. Triangular basalt and slate spear or lance heads.—Only four examples of this type were found, all from the Lower Levels of the Uyak site. Two pieces

are of glassy basalt. One (pl. 36, e) has a suggestion of shoulder and slightly contracting basal portion with a shallow concavity of the terminus and is 7.0 cm. long, 3.6 cm. wide. These two pieces can be exactly duplicated, as regards material and technique of manufacture, by specimens found in large quantities to the west in the Aleutian Islands (cf. Jochelson, 1925; Hrdlička, 1944). It is not improbable that these two flaked points are examples of projectile weapon tips recovered from the bodies of whales or other large sea animals killed on Kodiak but formerly struck farther west in the Aleutian chain (cf. Heizer, 1944).

Type IV. Small, flaked projectile points.—Only 5 examples of this class occur in the large Uyak site collection. It is improbable that their scarcity is a result of failure of recovery, since many smaller items were seen and recovered from the excavations. Of the five, no two are made of the same material and, so far as it has been possible to ascertain, none of these materials occurs in the Uyak Bay district, though they may well be found elsewhere on Kodiak Island. All specimens are from the Lower Levels, with the possible exception of the small point of red jasper, which is unaccompanied by depth provenience.

The point shown in plate 36, h is made of a dull violet basalt whose surface is much corroded, as though acid-eaten. The chipping scars are not apparent, and the surface corrosion is difficult to account for. Plate 36, i is made of some indeterminable siliceous stone and its waterworn surface is unusual. It appears to have rolled about for some time on a sand beach before being picked up and brought to the site. The next example (pl. 36, k) is of fine-grained greenstone. The flaking is well executed. The small, bright red jasper chipped piece shown in plate 36, l is 2.5 cm. long and plano-convex in cross section. It would have served excellently for a drill point, but it shows no signs of wear. Its size and shape render it unsuitable for employment as a weapon tip. The only explanation which seems to account for these rare occurrences is that the pieces have been introduced into the site by accident through recovery from the bodies of dead sea mammals in whose flesh they were imbedded. The corroded, beach-worn and fragmentary condition of three

of the pieces offers support for this explanation. The small crudely chipped jasper piece may have been received in trade from the mainland peninsular region.

CHIPPED SLATE SPEAR OR KNIFE BLADES

Heavy, rather crudely flaked blades, either leaf-shaped or with a suggestion of a stem, were abundant in all levels of the Uyak site.

Leaf-shaped blades predominated, there being 142 in the collection from the Lower Levels. A few are well made: for example, the long slender pieces shown in plate 35, a, b, but the majority were rather roughly formed (e.g., pl. 35, c). Lower Levels pieces range from 8 to 27 cm. in length and 3 to 7 cm. in width. Upper Level pieces are represented by 38 examples and average about 17 cm. in length. A random selection of such blades from both Upper and Lower Levels is presented in plate 37.

"Stemmed" examples are limited to 2 pieces, one from the Lower Levels (pl. 35, d). These two are probably to be taken as unimportant variations of the basic leaf-shaped form.

SLATE ULOS

I am in agreement with De Laguna (1934, p. 74) who proposes that the distinction between women's knives with a curved cutting edge and men's knives with a straight edge does not hold for the Southwest Alaskan region occupied by the Pacific Eskimos.

Ulos vary considerably in shape, size, degree of finish, and method of attachment. Using these features as a basis of classification of the 878 ulos recovered with adequate notation of depth occurrence, we may distinguish 5 main types, with a total of 13 subtypes. By "small" is meant a size easily suited to hand use and ranging from 8 to 14 cm. in length; "large" indicates pieces over 14 cm. long.

The predominant ulo shape is semilunar (cf. pl. 38, a, d-e, g-h). The back is blunted and the cutting edge curved. Most could have been used without handles,

TABLE 20

Slate Ulos: Types and Occurrence

Type	Description	Size	Lower Levels	Upper Level	Illus.
I	Polished, plain	Small	290	120	Pl. 38, <u>g</u> ; pl. 41, <u>b</u> .
II	Polished, notched	Small	7	8	Pl. 38, <u>a-b</u> , <u>d-e</u>
IIIa	Chipped, plain	Small	267	56	Pl. 42, <u>a-c</u> , <u>e-f</u>
IIIb	Chipped, notched	Small	1	0	...
IVa	Chipped, 2 drilled holes	Small	15	9	...
IVb	Polished, 2 drilled holes	Small	3	1	Pl. 41, <u>g</u> ; pl. 43, <u>a-e</u>
IVc	Polished, 1 drilled hole	Small	10	4	Pl. 38, <u>h</u> ; pl. 43, <u>f</u>
IVd	Polished, 1 pecked hole	Small	6	2	Pl. 38, <u>c</u>
IVe	Polished, 1 cut hole	Small	0	1	Pl. 38, <u>i</u>
Va	Chipped, plain	Large	28	18	Pl. 42, <u>d</u>
Vb	Polished, plain	Large	17	8	Pl. 41, <u>a</u> ; pl. 39
Vc	Polished, 1 drilled hole	Large	3	0	...
Vd	Polished, 1 pecked hole	Large	3	1	...
Total			650	228	

though a cleft-edged handle of wood was known ethnographically (Birket-Smith, 1941, fig. 31, *g*). A minority, chiefly significant in type I ulos on account of the large number found, are subrectangular in shape. In place of the lunate cutting edge, there are straight or only slightly curved cutting edges (cf. pl. 38, *c*). Holes in ulo blades are of three distinctly different forms. Most common is a biconically drilled hole (pl. 38, *h*); next a biconical pecked hole (pl. 38, *c*); and least common, a cut hole done in the Dorset fashion (pl. 38, *i*). These holes served for lashing a wooden handle to the blade as illustrated by Mason (1891, pl. LXX, fig. *f*) and Birket-Smith (1941, fig. 31, *j*, *k*). No bone or wood handles for ulos were recovered from the Uyak site. Another modification of the blade intended to assist in hafting the handle is to be seen in the bilateral notches of type II and type III specimens. Unfortunately I failed to note carefully the number and stratigraphic location of what appear to be two distinct notched ulo forms, one with narrow cut notches (pl. 38, *e*) and the other with wide basal notches angled so as to produce a tang (almost a handle) in the middle (pl. 38, *a*, *d*, *h*). As in all other individual features, however, we note here intermediate forms, for example, those shown on plate 38, *b* and *g*. The most abundant ulo form, it may be observed, is a plain or simple semilunate form without holes or notches. Some, included under the large class (type V), reach lengths of 35 cm. and widths of 20 cm. (pl. 39). These are hardly ulos, but their shape is that of the woman's knife, and they probably served as two-handed choppers for cutting whale blubber or meat.

Degree of finish seems to be an important classificatory feature since chipped and unpolished ulos are more abundant in the Lower Levels than in the Upper Level. Types IIIa, IIIb, IVa, and Va are chipped; the rest are polished.

A number of special forms, probably to be interpreted as unique productions, were noted. Plate 40, *a* is a type I ulo with two opposite notches at one end. It may have served as an emergency hafted flensing knife or scraper. From the Upper Level came a ulo 15.5 cm. long and 7 cm. wide, with one side notch and on the opposite end a drilled hole. No special function can be attributed to the eccentric form shown in plate 41, *j*, though it may have been particularly made for a specific purpose. The ulos shown in plates 40, *b-h* and 41, *a-i* will illustrate variations in size, shape, degree of finish, and forms of cutting edge of the numerous specimens in the collection from the Uyak site.

Since not all of the fragmentary ulos were collected and brought to the National Museum, the quantitative data as shown in table 20 may be incorrect. According to this table, there is a total of 878 chipped and polished ulos. There is a total of 394 chipped ulos (83, Upper Level; 311, Lower Levels). Polished ulos total 484 (145, Upper Level; 339, Lower Levels). Thus, chipped ulos are approximately four times as common in the Lower Levels as in the Upper Level, and polished ulos are about twice as abundant in the Lower Levels as in the Upper Level.

Elsewhere in Eskimo sites ulos with straight or concave blades are reported from the Aleutian Islands (Jochelson, 1925, pl. 16, figs. 1, 5, 8, 9, 10, 13). Oswalt (1952, p. 60) observes (and this is borne out by the Uyak data) that straight-edged ulos occur most frequently in the Southern Alaskan Eskimo region. The tanged ulo is also present in the Aleutian Islands (Jochelson, 1925, pl. 16, fig. 6), at Ipiutak (Larsen and Rainey, 1948, pl. 90, fig. 27), and Kachemak Bay (De Laguna, 1934, pl. 33).

The cut hole in ulo blades is reported by Mathiassen (1930, pl. 3, fig. 23) from Point Atkinson, but was not found in De Laguna's Cook Inlet excavations.

GROUND SLATE BLADES AND POINTS

The Uyak site produced a total of 147 polished slate blades or points which are sufficiently complete for shape classification and whose depth provenience is accurately recorded.

Without making unduly fine typological distinctions, there seem to be 14 distinctive shape-size categories which are briefly described and tabulated according to stratigraphic level in table 21.

Suggested functions of the various types are as follows: dart points (types I, IV-VI); arrowpoints (types IX-X, XIII, XIVf); harpoon head tips (type XII); lance or whaling spear heads (types II, III, VII, XI, XIVa-d); and flensing blades or lance heads (type VIII). These are only suggestions. The single piece classified as type XIVf bears a certain resemblance to the composite wood-slate whaling head illustrated by Birket-Smith (1941, fig. 16g). No polished slate lance heads were found of the form in use when Holmberg visited the Koniag in the middle of the last century (cf. Birket-Smith, 1941, figs. 15, *a-b*, and 16), and it seems probable that a shorter and broader blade was more anciently in use, as has been implied by Birket-Smith (1941, p. 139).

There is a total of 107 ground slate blades and points from the Lower Levels as against 40 from the Upper Level. This preponderance of Lower Levels specimens is partly due to the greater mass of midden comprising the Lower Levels, but even granting a Lower Levels-Upper Level ratio of midden of 3:1, types IIa, III, IV, V, VI, and XIVb-d, *g*, had a greater vogue in the earlier period, while types VIII, XI, XIII, and XIVa, *e*, are predominantly late (Upper Level). It is not possible, with the lack of accurate stratigraphic data, to make more than this sort of general observation of the development of culture in the Uyak site.

Type XI points occur in Arctic Eskimo sites—e.g., at Point Atkinson (Mathiassen, 1930, pl. 3, figs. 1-2).

Miscellaneous pointed ground slate implements.—It is not surprising that a people who relied so strongly on slate as a material for implements, and who had, further, devised methods for cutting, drilling, chipping, and polishing this stone, should have indulged themselves on occasion in making various imitative or incidental forms when the need or impulse arose. This category of polished slate tools would appear to include such forms which, though made at the Uyak site, are not typical of the culture(s) in the same sense that slate ulos or stone lamps are characteristic.

Long pointed pencil-like slate pieces may have served as projectile tips. They vary in degree of finish and completeness. There are 11 pieces from the Lower Levels, the longest (pl. 47, *a*) being broken and cylindrical in cross section. A similar piece from the Lower Levels is lozenge-shaped in cross section (pl. 47, *b*). A third Lower Levels example (pl. 47, *c*) is ovoid in cross section and has a point which is beveled on both sides. Upper Level examples of this type, which number only 3, are found in cross section (diameter 1.2 cm.) and range from 8 to 14.5 cm. in length.

Slender, rough slate splinters with sharp ground tips may be punches or awls, or even emergency tips for weapons. There are 39 examples, of which 34 are Lower Levels and 5 Upper Level. The average length for all is

TABLE 21

Ground Slate Blades and Points: Types and Occurrence

Type	Description	Av. L/B (cm.)	Lower Levels	Upper Level	Illus.
I	Tanged (shouldered butt, tang base either concave, convex, squared or rounded)	7.0/2.5	12	6	Pl. 45, <u>h-n</u> , <u>p-t</u>
IIa	Deep corner notch, long barb, parallel-sided stem with squared end, blade edges straight	15.6/4.5	12	3	Pl. 44, <u>l</u>
IIb	Like IIa, but with concave stem base	16.0/4.0	2	2	Pl. 44, <u>f</u>
III	With squared base and basal edges notched or serrated for hafting	12.0/3.6	9	1	Pl. 44, <u>g-k</u>
IV	Small corner notched, with sharp barbs and parallel sided stem	5.7/1.6	7	0	Pl. 46, <u>p-s</u>
V	Similar to IV, medium size, parallel or contracting stem, shallow diagonal corner notches with short barbs	8.5/2.4	15	3	Pl. 46, <u>a-g</u>
VI	Contracting stem, short diagonal notches and barbs, faceted blade thickest at center	12.4/2.4	8	2	Pl. 46, <u>h-l</u>
VII.....	Basic leaf shape ranging from squared to rounded base; unbarbed often faceted blade	11.5/3.2	15	5	Pl. 47, <u>q, r, t-x</u>
VIII	Large, wide, with rounded to squared base, lozenge or lenticular cross section	16.6/5.1	2	3	Pl. 45, <u>a-c</u>
IX	Long, thin, cylindrical to lozenge cross section, conical base	9.3/	6	2	Pl. 47, <u>n-p</u>
X	Like IX, but with flat beveled base	9.6/	7	4	Pl. 47, <u>d-g, m</u>
XI	Large, wide faceted blades with shallow basal notch and flat ground upper face for shaft attachment	11.7/5.6	1	3	Pl. 44, <u>m-o</u>
XII.....	Small, with concave base and concave channeled upper blade	5.6/1.0	3	1	Pl. 46, <u>n, o</u>
XIII	Slender, flattened circular cross section, with unilateral cut barbs	+6.3/	2	1	Pl. 46, <u>v, w</u>
XIV	Miscellaneous shapes:				
XIVa	Like type I, but larger and with two lateral drilled holes at end of base tang	9.8/4.5	0	1	Pl. 45, <u>o</u>
XIVb	Wide faceted blade with two drilled holes near edges above center	9.7/5.9	1	0	Pl. 45, <u>e</u>
XIVc	Wide blade with two shallow base notches and wide stem	8.0/4.3	1	0	Pl. 45, <u>f</u>
XIVd	Wide, poorly finished blades with square base	9.9/5.4	2	0	Pl. 45, <u>d, g</u>
XIVe	Long, slender, with angled barbs and long stem with notches	14.0/1.5	0	1	Fig. 30
XIVf	Side notched near end	5.8/2.0	1	2	Pl. 46, <u>m</u>
XIVg	Unfinished (?) points with expanded and unmodified base, parallel-sided blade and short taper point	8.4/	1	0	Pl. 46, <u>t, u</u>
Total			107	40	

10 cm., the range being 6.5 to 14.2 cm. Two Lower Levels specimens are illustrated in plate 47, h, i.

Round slate shafts with squared ends are represented by 2 Lower Levels pieces (pl. 47, j) which are 4 mm. in diameter and 5.2 and 6.2 cm. long.

What appears to be a small chisel (for wood engraving ?) is shown in plate 47, l. Both ends are beveled abruptly to a sharp cutting edge.

Either an unfinished implement or a rough "dagger" with sharp edges is shown in plate 47, s. The piece comes from the Lower Levels and is 35 cm. long, 2.5 cm. wide, and 1.4 cm. thick.

A narrow sharp-edged knife (pl. 47, a') comes from the Upper Level. It may be a reworked ulo, but appears to be an intentional fabrication. Two Lower Levels flat, parallel-sided "knives" have unfinished handle ends (pl. 47, y, z).

SLATE FLENSING BLADES

Slate blades, which probably served as flensing knives for cutting off whale blubber, skinning sea mammals, or for almost any sort of flesh cutting, are of two main types.

Type I blades, with a tang for attaching a handle or hand-grip wrapping, are often single-edged, like our knives, or double-edged. Subtype Ia has a straight blunt back and a wide, curved cutting edge. The tang is of the simplest form. Subtype Ib has a tang formed by two steps that separate it from the blade, which has two lateral cutting edges, either both edges curved (pl. 48, e) or one straight and one curved (pl. 48, b, d). Subtype Ic is represented by a single specimen, which may be a simple knife blade (pl. 48, a); the back is blunt and the single cutting edge continuous and slightly curved. Subtype Id comprises a number of large, heavy, and crude chipped slate blades with a tanged handle (pl. 49, d-g). They may have served for chopping or hacking. For rough cutting up of a whale these would answer the need. All are large enough to be held directly in the hand, provided the grip is wrapped.

Type II flensing knives are subovoid in outline, and comprise three subtypes. Subtype IIa has two drilled holes in line of the blade. Four IIa specimens (not illustrated), all from the Lower Levels, are from 10.5 to 14 cm. long and 4.5 to 10 cm. wide. The entire margin is ground to a cutting edge. There is no evidence of a haft. Subtype IIb is based upon a single drilled hole in the center of the blade near the smaller end. Subtype IIc differs from the last by having two drilled holes arranged vertically (pl. 49, h).

Identification of type III polished and drilled slate blades as flensing knives is made with some hesitation. They may possibly have served either as whaling spears or killing lance heads and, though blunt, were probably sharp-edged enough to penetrate the skin of a whale if the thrust was sufficiently forceful. Of the 17 examples, 11 are base fragments which contain the drilled holes for hafting. Two subtypes, divided on the basis of number of drilled holes, have been established. Subtype IIIa blades have a straight base, slightly curved edges, and a blunted point. The base is thickened and flat, while the lateral margins are thin, owing to grind-

ing of a cutting edge, and the point is thin. Near the base are two holes, drilled side-by-side, which served for lashing on a handle. Plate 48, g, h shows variation in size; the first piece is a re-drilled one which broke across the blade near the holes; the one complete hole at the lower left is functionless. Subtype IIIb (pl. 48, c, f; pl. 49, i) has the same shape as the preceding, but has an extra drilled hole in the center and near the base. The three holes, which form a triangle, imply a different, or at least more elaborate, method of hafting.

The total occurrences by culture level show that there are 32 specimens of types I-III from the Lower Levels as against 5 from the Upper Level. The ratio is roughly 1:6, which is sufficient to indicate a more extensive employment of these forms in the earlier phases of the site's occupation than in the later. This observation is supported by the fact that 5 subtypes (Ib, Id, IIa, IIb, IIIb) aggregating 19 examples are restricted to the Lower Levels, while only 2 subtypes (Ic, IIc) with a single occurrence each are unique to the Upper Level. Two subtypes (Ia, IIIa) totaling 16 occurrences are common to both levels.

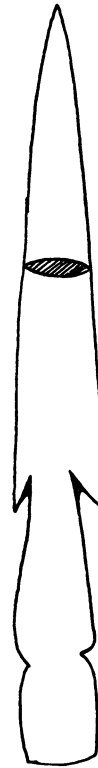


Fig. 30. Ground slate blade. USNM 377766. Upper Level. Type XIVe.

SLATE MIRROR

A single thin, well polished subrectangular slate piece (pl. 50, w) from the Lower Levels is probably to be identified as a mirror. The specimen is not decorated, as some of the Yukon Island examples are (De Laguna, 1934, pl. 37), nor does it resemble the flat, wedge-shaped slate mirrors of the Tsimshian (Emmons, 1921).

TABLE 22

Flensing Blades: Types and Occurrence

Type	Length (cm.)	Width (cm.)	Lower Levels	Upper Level	Illus.
Ia.....	11-16	3.3-9.0	3	1	Pl. 49, <u>a-c</u>
Ib.....	10.5-19	4.3-9.5	5	0	Pl. 48, <u>b</u> , <u>d</u> , <u>e</u>
Ic.....	15.5	3.4	0	1	Pl. 48, <u>a</u>
Id.....	26-33	11.2-15	4	0	Pl. 49, <u>d-g</u>
IIa.....	10.5-12.5	4.5-10	4	0	
IIb.....	7.5	4.5	1	0	
IIc.....	7.5	5.0	0	1	Pl. 49, <u>h</u>
IIIa.....	13-18.8	5.7-9.0	10	2	Pl. 48, <u>g</u> , <u>h</u>
IIIb.....	12-14	6.3-9.0	5	0	Pl. 48, <u>c</u> , <u>f</u> ; pl. 49, <u>i</u>
Total.....			32	5	

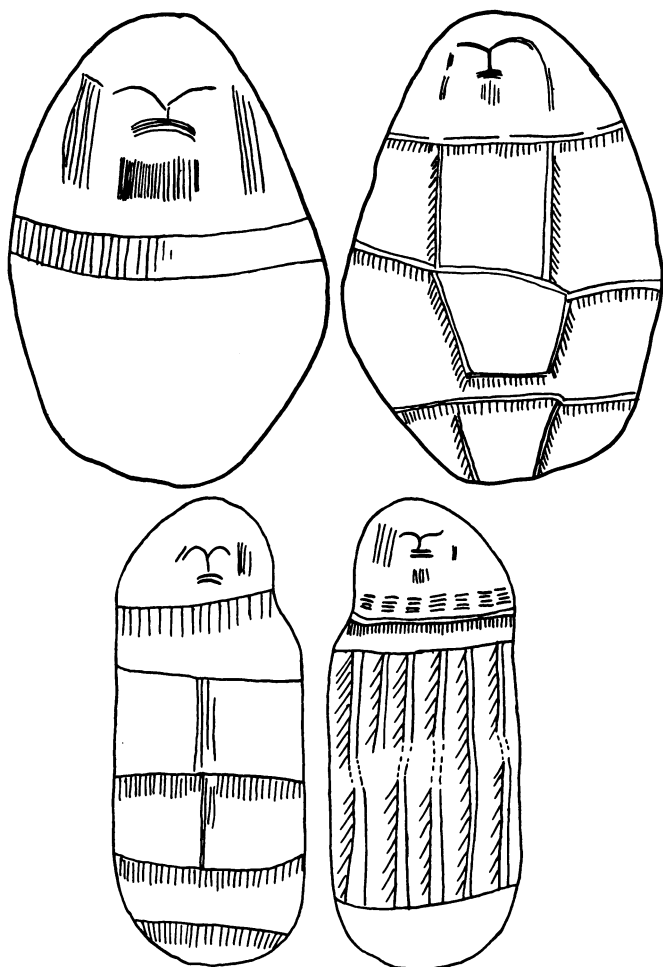


Fig. 31. Incised slate figurines from Kodiak.

CARVED SLATE OBJECT

A single specimen (USNM 377736), a natural elongated bar of slate, came from the Upper Level. It is shown in figure 63.

The design is done by pecking, and may be taken as an effort to represent a human face. There is nothing else similar to this specimen from the Uyak site, nor, so far as I can determine, from elsewhere in the Pacific Eskimo region. It is probably the result of a single effort on the part of some individual who had the natural slate cylinder and a few idle moments.

INCISED SLATE TABLETS

Two flat slate pebbles have been carefully incised with a sharp tool to produce a human figure. These figures are stylistic, and I have illustrated them in a report on the Cape Alitak petroglyphs, calling attention to the practical identity of the treatment of the face in both forms of stone art (Heizer, 1947). The illustrations are reproduced here in figure 31. Both come from the Upper Level.

More recently, Mr. Donald W. Clark of Kodiak City has permitted me to inspect, copy, and publish a number of similar incised flat slate pebbles from sites near Kodiak City (Heizer, 1952).

There appears to be no similar art style of incising

on tabular slate pebbles among other Eskimo cultures, and we may count this feature, for the present at least, as a distinctive Koniag trait, for it seems likely that the ancestors of the living Koniag made these specimens (cf. Keithahn, 1953). Possibly connected, but having a different style of incising, are the two flat engraved pebbles from Ipiutak (Larsen and Rainey, 1948, pl. 10, figs. 12-13). Oswalt (1952, fig. 1, E, pp. 52-53) compares a schematic human face incised on a slate blade from Hooper Bay with the incised faces from Kodiak Island.

Although I earlier concluded (Heizer, 1947) that the stylized human faces without outlining in the Cape Alitak petroglyphs and on the small flat incised slate pieces were probably derived in recent times from the Northwest Coast area, I would now consider the possibility that the face motif itself may be of Asiatic derivation. Mrs. Hazel B. King, Curator of the Allen Memorial Museum at Oberlin College, has called my attention to the striking similarity of the petroglyphic Kodiak faces with an inscription on a Shang dynasty bell (King, 1947, fig. 1). From Shumshir in the Kurile Islands, Baba (1934, pl. 1, fig. 13) recovered a whalebone object with an engraved representation of a face which is also remarkably like the Kodiak petroglyphs. Laufer (1899) illustrates petroglyphs from the Amur River region which are reminiscent of those from Cape Alitak.

Durville (1950) calls the faces without outlining of the Kodiak petroglyphs (which are stylistically very similar to the small inscribed slates) "end Neolithic or beginning Metal Age" and proposes that they are representations of "la déesse néolithique des morts." I can think of nothing to substantiate this conclusion and, before entertaining it as a serious possibility, would want to see evidence for the assumed connection in the intervening areas between Kodiak and Eurafria.

PAINTED PEBBLE

A small, flat, pear-shaped stone beach pebble from the Upper Level bears on one surface a red painted design (fig. 32), now somewhat faint, but still quite definite. It is 9 cm. long, 5 cm. wide, and 2.5 cm. thick. The specimen is unique in the site.

Painted pebbles are apparently rare in prehistoric sites in western North America, the only other instance

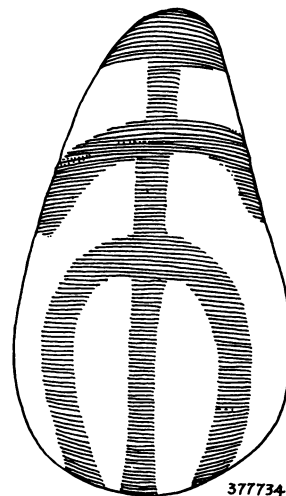


Fig. 32. Painted pebble. USNM 377734, Upper Level.

known to me being a small boulder with a red-painted circle from Lytton, B. C. (Smith, 1899, p. 155).

Holmberg (1856, p. 407), quoting Davydov, says that on certain festive occasions "there was also a stone with red spots on it which represents a deceased hero of their clan in whose honor the feast is offered." It seems doubtful that our pebble could have served this purpose.

STONE LABRETS

A total of 18 stone labrets from the Uyak site may be divided into four types. The material used for labrets is jet or black coal, which is light in weight but dense and will assume a very high polish.

Type I labrets are called "hat-shaped" after De Laguna (1934). There are 5, of which 1 is from the Upper Level (pl. 50, h), 2 are from the Lower Levels (pl. 50, f, i), and 2 are not accompanied by information on depth provenience (pl. 50, j). All are made of black cannel coal, and each of the specimens shown in plate 50, h, i has a gouged cup in the flat face of the smaller (outer) end, probably to receive an inlay.

Type II labrets are all of cannel coal; they number 3 pieces. One (pl. 50, g) is from the Upper Level, the others from the Lower Levels. The oval top of the illustrated specimen is 3.7 cm. long and 2.2 cm. wide.

Type III labrets are round or ovoid, and have a groove around the side. They might be called "spool-shaped." There are 10, of which 7 are from the Upper Level and 3 from the Lower Levels. One (fig. 33, a)

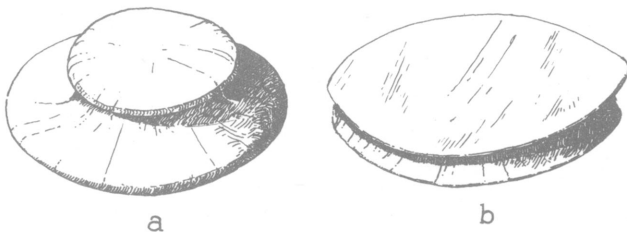


Fig. 33. Stone labrets. a. USNM 375322. Lower Levels. Type III. Inter. Marble.
b. USNM 365594. Type III. Cannel coal.

is round and of white marble, 1.6 cm. thick, and with a top diameter of 5 cm. and bottom diameter of 3 cm. The larger surface is cupped. A second labret (fig. 33, b), of cannel coal, is oval, 5.5 cm. long, 3.5 cm. wide, and 1.2 cm. thick. A similar unfinished specimen (pl. 50, b) still shows filing marks. The round labret shown in plate 50, a is unusual in having a depressed top surface, presumably for an inlay, and two side grooves. One type III labret from the deepest level of the midden is shown in plate 50, d. It is unusual in that the oval top surface is keeled, and not flat or concave like the rest of this group. Pl. 50, e illustrates an oval, green jadeite labret of distinctive form and material; it may be a trade piece received from farther north. Type IV labrets are of the "thin" type. Two specimens are made of white marble or gypsum, come from the Upper Level, and apparently represent a late acquisition by the occupants of the Uyak site. The larger (pl. 50, l) is 4.5 cm. long, 2.8 cm. wide across the top, and 8 mm. thick. The smaller (pl. 50, m) is 1.5 cm. long, 3.3 cm. wide, and 7 mm. thick.

STONE BEADS AND PENDANTS

There are 5 objects which may be called beads, and 3 which probably served as pendants, in the Uyak site collection. Materials vary and include lignite or cannel coal (2 pieces), white limestone or marble (3), slate (1), and fine-grained sandstone (1). All but one specimen came from the Lower Levels of the site deposit. All pieces except one have biconically drilled holes. Table 23 presents data on these pieces.

Referring by number to the pieces, we may offer further descriptive data. No. 3, flat on one surface and rounded on the other, has a sharp-edged perimeter. No. 5, by reason of its size, which is roughly that of a silver dollar, may not be a bead (cf. Jochelson, 1925, fig. 36, a-c). It is too small for a spindle whorl and, in any event, this type of artifact would not be expected to occur on Kodiak. The perforations of no. 6 were never completed, and a thin septum still remains between the deepest point reached by each drilled hole. This is also true of no. 8, though the two small conical holes are properly aligned for a juncture. These pieces are probably unfinished ornaments. No. 7 is similar to no. 8 in general outline, and may represent the finished form which no. 8 would have had if it had been completed. No. 7 is the only drilled specimen of this group which seems to have a tubular drill hole. This perforation is small enough to suggest that it was made with a metal drill, though a sharp stone splinter could possibly have served, since the marble is not excessively hard.

The small number and variety of beads and pendants indicate only occasional use of such forms by the occupants of the Uyak site. Bone and ivory seem to have been the favorite material for beads and pendants here as in most other sites occupied by people with Eskimo culture. De Laguna (1934, pl. 50, figs. 5-11) records from Cook Inlet sites to the east stone beads of red shale similar to nos. 2 and 4 in table 23.

PAINT MORTARS

Three stone objects which would, under ordinary circumstances, be classed as unexceptional lamps of type I. A. 2 (see pl. 16, b-f), are here classed as pigment grinders because of the heavy stain of hematite in the cavity of each. That these were actually used as both mortars and lamps is shown by no. 363732 which also shows signs of burning from a wick at one end of the pecked cavity.

All specimens (nos. 265543, 363732, 377637) are nearly the same size and weight. The average length of the 3 is 14.0 cm.; width, 11.7 cm.; bowl length, 10 cm.; bowl width, 7 cm.; bowl depth, 1.2 cm.; and wall thickness, 5.6 cm. Two pieces are without depth provenience and the third comes from the Lower Levels.

PITTED ANVILS

Flattened beach pebbles which served either as a platform for resting an object being worked by stone pecking or as special-purpose hammerstones, are represented by 7 examples, of which 2 are unaccompanied by depth location, 4 are from the Lower Levels, and one from the Upper Level. Two pieces with 2 pits on each surface and pecking marks on the sides (one illustrated, pl. 34, d) are 13 and 16 cm. long, respectively, and 7 cm. wide. Three others have only a single pecked depression on

TABLE 23
Occurrence of Stone Beads and Pendants

Description	Material	Diam. (cm.)	Thickness or ht.	Site level	Illus.
1. Globular bead	Lignite	3.0	2.3 cm.	Lower	Pl. 50, <u>s</u>
2. Flattened disk bead	Sandstone	1.8	1.1 cm.	Upper	Pl. 50, <u>t</u>
3. Hemispherical disk bead.....	Marble	1.2	4.0 mm.	Lower	Pl. 50, <u>v</u>
4. Short tubular bead	Lignite	1.4	1.0 cm.	Lower	Pl. 50, <u>u</u>
5. Large disk bead (?)	Slate	4.0	1.1 cm.	Lower	Pl. 50, <u>o</u>
6. Bar-shaped pendant	Slate	5.0	1.0 cm.	Lower	Pl. 47, <u>k</u>
7. Ring pendant	Marble	3.0	8.0 mm.	Lower	Pl. 50, <u>r</u>
8. Spade-shaped pendant	Marble	2.0	1.2 cm.	Lower	Pl. 50, <u>q</u>

each flat surface; these pieces average 15 cm. in length, 9 cm. in width, and 5 cm. in thickness.

STONE BALLS

These may be classed as of two types: type I, naturally formed, round beach pebbles with an average diameter of 3.5 cm.; type II, of similar size and shape but artificially made by the pecking technique. There are 34 type I examples—21 from the Lower Levels and 13 from the Upper Level. There are only 6 artificially formed type II stone balls, of which 2 are from the Lower Levels (pl. 35, h) and 4 from the Upper Level (pl. 35, f, g).

MISCELLANEOUS STONE OBJECTS

A very fine-grained sedimentary stone has been carefully shaped into a slightly curved cylinder 7 cm. long and 1 cm. in diameter (pl. 50, p). It bears 11 cut equatorial grooves. It is an old piece in the Uyak site, and came from the lowermost midden strata. From Cook Inlet comes a similar specimen made of walrus tooth (De Laguna, 1934, pp. 116-117, pl. 58, fig. 5).

A curved tapered hexagonal piece of cannel coal (pl. 50, k), broken off at one end, is 3.7 cm. long. On one face are 3 drilled pits, perhaps to receive inlays. It was probably originally a labret, but this is not certain.

A unique slate specimen is shown in plate 50, n. It is wedge-shaped in cross section, has center and end grooves, a flat back, and sharp ground edge on the curved margin. I can suggest no function for this specimen, which comes from the Lower Levels, or for the numerous similar examples made of whalebone (cf. pl. 74, k-n).

A basalt beach boulder has 2 ovoid mortar holes which measure 9.3 cm. by 8 cm. by 4.2 cm. deep and 9.0 by 6.2 by 2.5 cm. deep. It is the only specimen of this sort noted, and is not illustrated (cat. no. 363326b).

A sandstone smoothing slab (uncatalogued and not illustrated) from the Lower Levels measures 28 cm. by 21 cm. by 5 cm. thick. Across both surfaces are shallow, concave grooves 4 to 5 cm. wide which were probably caused by grinding some objects in a finishing or polishing process.

A single large stone, nearly round, with diameters measuring 14 by 16 cm. and with two pecked equatorial grooves which cross at right angles, came from the Uyak site (pl. 51, a). Unfortunately, there is no information on its depth location, but the piece is sufficiently unusual to deserve this brief mention.

A unique specimen from the Upper Level shown in plate 42, g, a long, flat, side-notched stone, is 22 cm. long, 14.5 cm. wide, and 8 mm. thick. It bears no signs of hard usage, and is sharp enough along the inner arc to have served as a crude sickle or grass-cutting implement. This function is merely suggested as a possibility.

Naturally perforated stones may have been either curiosities brought home by their finders and discarded or pieces saved for use as emergency fishline or net sinkers. Six specimens were noted, 2 each from the Upper Level and Lower Levels, and 2 without depth provenience. They are mentioned because De Laguna (1934, p. 56) relates them in function to the grooved stones of Kachemak Bay.

A single worked specimen of gray, light-weight pumice, shaped into an ovoid ball 4 cm. long and 3.5 cm. in diameter with a cut longitudinal groove running continuously around the outside, came from the Lower Levels (pl. 35, v). Since this material will float in water, the piece could hardly have served as a fishing weight, the function usually assigned to similar grooved pieces of denser and heavier materials.

ARTIFACTS: BONE, IVORY, ANTLER, TOOTH

HARPOON SOCKET-PIECES

Socket-pieces attached to the end of the wooden harpoon shaft and with a socket in the upper end to receive either the foreshaft or the harpoon point base directly were common in the Uyak site, as, indeed, they are in most other Alaskan sites. They are alternatively referred to as "foreshaft receivers."

Several types of socket-pieces are recognized, and an illustrated typology key is given in figure 34. "Long" socket-pieces are more than 12 cm. long; "short" pieces are less than 12 cm. long.

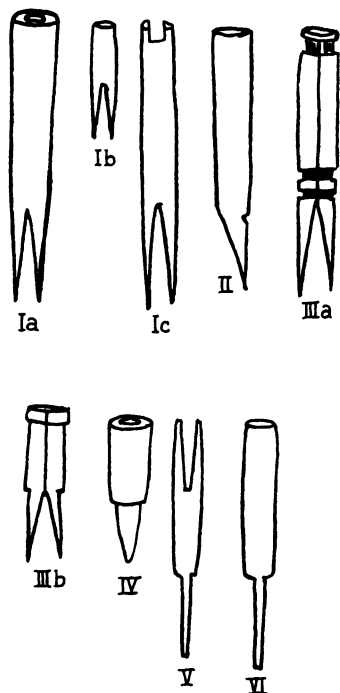


Fig. 34. Harpoon socket-piece typology.

Type Ia. Long and heavy, one-piece, with round or ovoid closed socket and bifurcated base.

There are 15 examples, 13 from the Upper Level and 2 from the Lower Levels. The type of 6 fragmentary pieces from the Upper Level cannot be identified with certainty; they are either type Ia (long) or type Ib (short).

Upper Level pieces of type Ia average 20 cm. long; Lower Levels pieces, 17 cm. Those from the Upper Level range from 13.5 to 37.0 cm. long; those from the Lower Levels, 13.5 to 22.0 cm. Upper Level specimens are illustrated in pl. 52, i, m; a Lower Levels piece, in pl. 52, h.

Type Ib. Short, one-piece, with round or ovoid closed socket and bifurcated base, sometimes slightly recessed as in pl. 53, b, c, or with tangs notched as in pl. 53, g.

There are 26 examples from the Uyak site, 15 from the Upper Level and 11 from the Lower Levels.

Average length of Upper Level socket-pieces (pl. 53, a, c, g) is 8.7 cm.; for Lower Levels socket-pieces (pl. 53, b, d-f), 7.8 cm.

Lower Levels socket-pieces range from 3.5 to 12.0 cm. in length; Upper Level pieces, from 4.5 to 12.0 cm.

Type Ic. This class is represented by 2 examples (pl. 52, j), both from the Upper Level. They are 23 and 25 cm. long and are distinguished by having a rectangular open socket for securing the foreshaft.

Type II. Short and heavy, one-piece, with round socket and oblique (wedge) base with a notch. The single example (pl. 53, i) is from the Upper Level and measures 9 cm. in length and 1.7 cm. in diameter.

Type IIIa. Long and heavy; in two pieces; round socket; wide, shallow lashing grooves; bifurcated base.

There is a total of 37 fragmentary socket-pieces which are either type IIIa or IIIb. (While studying the collection, I did not note probable original size of broken socket-pieces but simply recorded them as fragmentary.) Complete specimens number 14, of which 9 are Upper Level and 5 are Lower Levels. Upper Level examples (pl. 52, a, d) range in length from 14 to 36.5 cm. (average 20.4 cm.); Lower Levels socket-pieces (pl. 52, b, c, e, g) range from 16 to 26 cm. in length (average 19.1 cm.). The socket-piece moiety shown in pl. 52, e bears steep "spiral" parallel engraved lines and has 4 drilled pits which might have originally served as seats for inlays.

Type IIIb. Like type IIIa socket-pieces, but less than 12 cm. long. Some of the fragmentary pieces referred to above are probably broken examples of this class.

There are 4 complete halves, of which 3 from the Upper Level average 10 cm. in length, and a single Lower Levels piece (pl. 52, f) is 12 cm. long.

Type IV. A single short socket-piece (pl. 53, h), 9.5 cm. long and 2 cm. in diameter, with a round socket and round conical butt, comes from the Lower Levels.

Type V. Long and heavy; flat tenon base; cleft point to receive foreshaft. There are 2 from the Lower Levels and one from the Upper Level. The Lower Levels pieces (pl. 52, k) are 19 and 22.5 cm. long and 1.5 and 2.2 cm. in diameter. The tenons are not the same; in one piece the socket cleft is in the same plane as the flat butt, and in the other at right angles to the plane of the tenon butt. The Upper Level piece, which is 20 cm. long and 2 cm. in diameter, has the socket cleft in the same plane as the tenon.

Type VI. Long and heavy; closed socket for foreshaft; thin flat tenon butt for shaft attachment. Three examples of this form (pl. 52, l) are all from the Lower Levels, and are 12, 13, and 16 cm. long and 2.5 cm. in diameter.

Type Ia socket-pieces are characteristic of the Aleutian Islands to the west (Jochelson, 1925, pl. 23, figs. 19-24), Cook Inlet to the east (De Laguna, 1934, pl. 41, fig. 13), and Point Barrow to the north (Wissler, 1916, fig. 43 b). Type Ib socket-pieces are known ethnographically from Kodiak (Birket-Smith, 1941, figs. 13, 14), and archaeologically from the Aleutians (Jochelson, 1925, pl. 24, fig. 27; pl. 25, figs. 19-20; pl. 26, fig. 34), Hooper Bay (Oswalt, 1952, pl. 1, fig. 6), Ipiutak site at Point Hope (Larsen and Rainey, 1948, pl. 38, p. 74), and Point Barrow (Wissler, 1916, fig.

Occurrence of Socket-pieces

Type	Lower Levels	Upper Level
Ia*	2	13
Ib	11	15
Ic	0	2
II	0	1
IIIa'	5	9
IIIb	1	3
IV	0	1
V	2	1
VI	3	0
Total	24	45

*Not including 6 fragmentary specimens which may be either type Ia or Ib.

'Not including 37 fragmentary specimens which may be either type IIIa or IIIb.

43, d). Oswalt (1952, p. 52) discusses the wide distribution of socket-pieces with bifurcated tang and indicates this feature may be older in the Pacific Eskimo area than farther north. The Uyak type Ic socket-piece seems to be limited to Kodiak. The wedge-butt socket-piece (type II) is recorded for St. Lawrence Island (Geist and Rainey, 1936, pl. 63, fig. 3; pl. 20, figs. 8, 9) but with rivet holes for attachment. Collins (1937, pl. 66, fig. 3) notes this type for the Punuk culture (see also Rainey, 1941, fig. 10, item 3). The large two-piece foreshaft receiver (Uyak type IIIa) occurs in the Aleutians (Jochelson, 1925, pl. 26, fig. 11), though it is here misidentified as a handle for a knife or dagger (cf. also our pl. 52, e, g with Quimby, 1948, fig. 16), and in Cook Inlet in the Yukon Island III period which is late (De Laguna, 1934, pl. 41, fig. 10). The short two-piece socket-piece (Uyak type IIIb) is Aleutian (Jochelson, 1925, pl. 26, figs. 31, 33) and is early in Cook Inlet since it is characteristic of the Yukon Island I and II periods (De Laguna, 1934, pl. 41, figs. 7, 11). The socket-piece with a conical butt (Uyak type IV) is common farther north in the Bering Strait region (Geist and Rainey, 1936, pl. 53, fig. 1; Larsen and Rainey, 1948, pl. 38; Collins, 1937, pl. 31, fig. 11) and occurs to the west of Kodiak in the Aleutians (Jochelson, 1925, pl. 22, fig. 6) and to the east in Cook Inlet (De Laguna, 1934, pl. 41, fig. 12). The type V socket-piece form at Uyak seems unique. The type VI Uyak form with a flat tang base is easily confused with the wedge-base form (type II), but the former seems to be present in short form in the Aleutians (Jochelson, 1925, pl. 22, fig. 4) and in the long Uyak form in Cook Inlet (De Laguna, 1934, pl. 41, fig. 9) and perhaps the Franklin Bay District (Wissler, 1916, fig. 38 f). Further distribution data may be found in De Laguna (1934, pp. 194-195).

De Laguna's view that the evolution of socket-pieces has been toward longer and more slender forms, and from one- to two-piece types, is not borne out by the data from the Uyak site. Laughlin (1952, p. 32) notes that two-piece socket-pieces precede the one-piece form and, further, that the earlier socket-pieces are longer than later ones. On Kodiak, although it appears that the latest (Upper Level) socket-pieces are longest, they are also the largest and heaviest. The apparent sequence of

socket-piece types in the Uyak site is: oldest, type VI, next oldest, type Ib which was contemporary with IIIa, IIIb, and V, and with types II and IV appearing latest in the development. I do not press this point, and merely suggest that one intensive excavation of the magnitude of the Uyak site carried out with proper control of recording depth and association would go far to clear up many problems raised by generalizing on the small Cook Inlet sample, and the poorly documented Uyak collection.

HARPOON FORESHAFTS

Foreshafts with a special base to fit the socket-piece and a tapering (blunted or pointed) tip to insert in the socket of a one-piece or compound toggle harpoon head were surprisingly common in the Uyak site, 228 specimens being recovered. Most are small, measuring less than 12 cm. in length, and the few longer and more rugged examples stand out sharply. Unfortunately I did not try to fit foreshafts with toggle harpoon heads, and can therefore not identify the purposes of the different size groups if, indeed, they were different.

Two main types of foreshafts are recognized. The first (type I) is simple and the retrieving cord was tied around the shaft just above the expanded base. The second (type II) has a drilled hole in the base, either at its edge (type II. A) or in the center (type II. B).

Type I foreshafts number 180 examples, of which 38 come from the Upper Level and 142 from the Lower Levels. This difference is consistent with other indications of the greater relative use of toggle harpoons by the people responsible for the Lower Levels midden. Upper Level type I foreshafts (pl. 53, q, t-v, y) average 8.9 cm. in length (range 5.5 to 19 cm.). Lower Levels foreshafts (pl. 53, o, p, r, s, w, x, a'; pl. 54, g-j) average 9.4 cm. in length (range 4 to 17 cm.). Of the heavy foreshafts (these are included in the counts and measurements above), 4 are Upper Level and 9 are Lower Levels.

Type II. A foreshafts number 41, of which 12 are from the Upper Level (pl. 53, m, c') and 29 from the Lower Levels (pl. 53, j-l, n). Upper Level pieces average 7.1 cm., and Lower Levels pieces average 11.0 cm., in length.

Type II. B foreshafts number 7, all of which come from the Lower Levels (pl. 53, b', d', e').

HARPOON FINGER RESTS

Finger rests lashed to the hand-cast harpoon were present, though not abundant, in the Uyak site. Lower Levels finger rests of bone are illustrated in plate 80, p, q, and one made of a bear (?) tooth is shown in plate 80, p. The last is of indeterminate location, but probably derives from the Lower Levels.

In all, there are 9 harpoon finger rests in the collection: 3 from the Lower Levels; 4 from the Upper Level (pl. 80, r, s); and 2 of doubtful location.

It may be noted that no float mouthpieces were recovered from the Uyak site.⁶

⁶ Float mouthpieces and finger rests for harpoons are also absent in the Ipiutak culture (Larsen and Rainey, 1948, p. 77). Larsen and Rainey conclude that the Ipiutak people did not harpoon large mammals (e.g., whale, walrus) in open water from boats as did later Eskimos in the Bering Strait region.

Harpoon finger rests similar to those from the Uyak site are of very wide distribution, both in space and time, in Eskimo sites. For example, they occur in the Old Bering Sea culture at Miyowagh, St. Lawrence Island (Collins, 1937, pl. 32, figs. 7-8), Okvik site (Rainey, 1941, fig. 11, items 8-9), Kotzebue (Giddings, 1952a, pl. 38, figs. 18-23).

HARPOON BUTT-PIECE (?)

What may be a butt-piece for a small harpoon, set in a socket at the base of the harpoon shaft and used by more northerly Eskimo to break a hole in the ice, is shown in plate 54, e. Another similar piece is not illustrated. It is unlikely, however, that only two specimens of this sort would be found if this identification is correct. They may simply be specialized pieces made for a particular purpose which eludes us. (See also p. 66.)

BARBED DART HEADS

Barbed bone points used either on arrows or darts, or even sometimes hand-cast harpoons, were common in the Uyak site. Since the shape of the base (which was inserted into the socket-piece), the means of attachment of the retrieving line (either through a hole or by a line guard), and the barbs (either bilateral or unilateral) and

size (large or small) vary as independent features, a simple typology has been devised to facilitate discussion of the barbed heads (table 24).

These barbed points are actually harpoon heads, although the use of the word harpoon in Eskimo archaeology is usually restricted to spurred toggle harpoons (De Laguna, 1934, fn. p. 80). Various typologies for harpoons have been devised, and among these may be mentioned those of Mathiassen (1927, 2:11 ff.), De Laguna (1934, pp. 80 ff.), Drucker (1943, pp. 36 ff.), Rainey (1941, pp. 476 ff.), Leroi-Gourhan (1946, pp. 326 ff.), Bennyhoff (1950), and Collins (1937, *passim*).

The Uyak barbed dart points served various specific uses according to Holmberg (1856, p. 106) who mentioned six different kinds of arrows and darts. Examples of a hand-thrown sealing harpoon, an atlatl-thrown harpoon for sea otter, and harpoon arrows for securing sea otter are illustrated and described by Birket-Smith (1941) and Heizer (1952).

The larger barbed heads were used with the sealing harpoon, and ranged up to 25 cm. in length. The barbed head for sea otter is smaller, usually measuring not over 10 cm. in length. For present purposes I recognize two sizes, large (more than 10 cm. long) and small (less than 10 cm. long). Presumably these ancient pieces served, respectively, for seal hunting and sea otter hunting. De Laguna (1934, pl. 39, figs. 23-24, p. 83) points out that the large ethnographic Kodiak sealing harpoon form serves the Cook Inlet Athabascans

TABLE 24

Typology of Barbed Dart Heads

Type	Size	Description
Ia.....	Small	Simple expanded base, no line hole, unilateral barbs, simple tip, length under 10 cm.
Ib.....	Large	Simple expanded base, no line hole, bilateral barbs, simple tip, length over 10 cm.
	Small	Like Ib large, but length under 10 cm.
Ic.....	Large	Simple expanded base, no line hole, bilateral or unilateral barbs, flattened tip for attachment of penetrating blade, length over 10 cm.
	Small	Like Ic large, but length under 10 cm.
Id.....	Large	Simple expanded base, no line hole, bilateral barbs, grooved tip to receive penetrating point, length over 10 cm.
Ie.....	Large	Simple expanded base with two notches for line attachment cut into side of base, unilateral or bilateral barbs, simple tip, length over 10 cm.
	Small	Like Ie large, but less than 10 cm. in length.
If.....		Aberrant forms. For description see text.
IIa.....	Large	Simple expanded base which is usually assymetric, line hole in edge of base, unilateral barbs, simple tip, over 10 cm. in length.
	Small	Like IIa large, but less than 10 cm. in length.
IIb.....	Large	Like Ia large, but with bilateral barbs.
	Small	Like IIb large, but less than 10 cm. in length.
IIc.....	Small	Simple expanded base which is symmetrical, line hole in center of base, unilateral or bilateral barbs, simple tip, length under 10 cm.
IId.....	Large	Like IIc, but with bilateral barbs, length over 10 cm.
	Small	Like IId large, but less than 10 cm. in length.
IIe.....	Small	Flat, wide and short (less than 10 cm. in length) heads with wide base, 1-2 bilateral barbs, line hole in edge of base, simple point.
IIf.....		Aberrant

as a fish spear, and accordingly so classes her prehistoric examples. The Tanaina, however, according to Osgood (1937, fig. 16), have a sealing harpoon which is identical to that of the Koniag. De Laguna agrees with Holmberg on the small barbed heads as having served as tips for sea otter arrows.

Type I barbed dart heads.—The typology and tabulation of occurrence of barbed dart heads in the Uyak site give the essential data (tables 24 and 25). Lacking in the Uyak site are the following types: Ia large; Id small; Iic large; and Iie large.

Bilateral barbs on type Iib heads may be classified in accordance with the number of barbs on each side of the upper end, as either 1-1, 2-1, 2-2, 3-2, or 3-3. The following tabulation presents the data on complete specimens.

Type Iib dart heads: Occurrence

No. of barbs	1-1	2-1	2-2	3-2	3-3
Lower Levels	27	30	6	0	1
Upper Level	9	6	2	1	1

This tabulation is admittedly incomplete, largely owing to the fact that I did not consistently record this feature for individual pieces. However, it probably properly indicates the relative numerical strength of specimens having the various numbers of bilateral barbs.

Casual inspection of table 25 shows, first, that barbed dart heads total 318. From the Lower Levels come 234, from the Upper Level 84, a ratio of roughly 3 to 1. Type I dart heads total 228, of which 188 come from the Lower Levels and 40 from the Upper Level, the ratio being approximately 4.5 to 1. Type II dart heads total 90, of which 46 are Lower Levels and 44 Upper Level, the ratio here being 1 to 1. It appears that the dart with a retrieving line tied just above the expanded base was the preferred form during the Lower Levels occupation, and that in Upper Level times it persisted. Type II heads, which have a hole in the center or edge of the expanded base for attachment of the retrieving line, were known in the earlier period, but increased in popularity in the later period. The ratio of amount of midden in Lower Levels and Upper Level is approximately 3 to 1. Therefore, a specific type which is 3 times as abundant in the Lower Levels as in the Upper Level might be said to have had the same vogue in both periods. There is, therefore, a slight decrease in the vogue of type I dart heads in the later period as compared to the earlier (Lower Levels) horizon. Type II dart heads with a line hole are proportionately 3 times as abundant in the Upper Level as in the Lower Levels. These are admittedly statistics of the simplest and crudest kind, but they are all that it is possible to extract from the records.

The large unilaterally barbed type Ia dart for sealing, which was present in recent times on Kodiak Island (Birket-Smith, 1941, figs. 13, 14, f), does not occur in the Uyak site.

TABLE 25
Occurrence of Barbed Dart Heads

Type	Size	Total no. found	Lower Levels	Upper Level	Illus.
Ia	Small	71	63	8	Pl. 55, <u>a-c</u> ; fig. 35, <u>a</u>
Ib	Large	20	17	3	Pls. 56, <u>b</u> ; 55, <u>p-s</u> ; fig. 35, <u>b, c</u>
	Small	106	91	15	Pls. 56, <u>k-m, o</u> ; 55, <u>d-f, i, l, m, n</u> ; fig. 35, <u>d-f</u>
Ic	Large	12	10	2	Pl. 55, <u>g, h</u>
	Small	5	3	2	...
Id	Large	3	0	3	Pls. 56, <u>r</u> ; 55, <u>j, k</u> ; fig. 35, <u>g-i</u>
Ie	Large	2	0	2	Pl. 56, <u>a</u> ; fig. 35, <u>k</u>
	Small	3	1	2	Pl. 56, <u>g, j</u> ; fig. 35, <u>j</u>
If		6	3	3	Pls. 56, <u>c, d, f, n, p</u> ; 55, <u>o</u>
IIa	Large	21	10	11	Pl. 57, <u>b-f, r</u> ; fig. 36, <u>a</u>
	Small	28	16	12	Pl. 57, <u>n, o, q, s, t</u> ; fig. 36, <u>b-d</u>
Iib	Large	8	4	4	Pl. 57, <u>g-i</u> ; fig. 36, <u>e</u>
	Small	4	1	3	Pls. 56, <u>h</u> ; 57, <u>a, u, v</u> ; fig. 36, <u>f, g</u>
Iic	Small	6	3	3	Pl. 57, <u>m, p</u> ; fig. 36, <u>h</u>
Iid	Large	2	1	1	...
	Small	7	2	5	...
Iie	Small	12	7	5	Pl. 57, <u>j</u> ; fig. 36, <u>i, j</u>
Iif		2	2	0	Pl. 56, <u>i, q</u>
Total		318	234	84	

Average size of the same types occurring in both the Upper Level and Lower Levels differs very little, as demonstrated by the accompanying tabulation.

Average Length (cm.) of Barbed Dart Heads

Type	Lower Levels	Upper Level
Ia small	8.0	8.0
Ib large	15.0	13.5
small	7.0	7.0
Ic large	11.5	10.5
Ie large .....	...	17.0
Ie small .....	...	9.0
IIa large	12.0	13.0
small	7.0	7.5
IIb large	13.0	12.0
IIc small	7.0	8.0
IIE small	8.0	8.0

Types II d large and II e large are limited to the Upper Level, these being the only forms which occur in a single stratigraphic horizon.

Aberrant Type I f barbed dart heads.—The specimen in plate 56, c, a unilaterally barbed head 17 cm. long without any means of line attachment, came from the Upper Level. A somewhat similar point, but with different barbs, and a notch at the base (pl. 56, d), came from the Lower Levels. Two bilaterally barbed weapon points lacking means of line attachment (pl. 56, f) came from the Upper Level. The small bilaterally barbed point with a tapering base shown in plate 56, p from the Lower Levels may be allied to the somewhat larger points just described, though it is from the earlier horizon. The large and heavy barbed piece with a slotted tip shown in plate 55, o is atypical for the Uyak site and may be an imported piece. It came from the Lower Levels.

Aberrant Type II g barbed dart heads.—A small point (pl. 56, q) with two drilled holes in the tapering base is unique for the Uyak site. It came from the Lower Levels. The unilaterally barbed point shown in plate 56, i appears to be finished, but is probably a type Ia small point in which the line hole was never drilled.

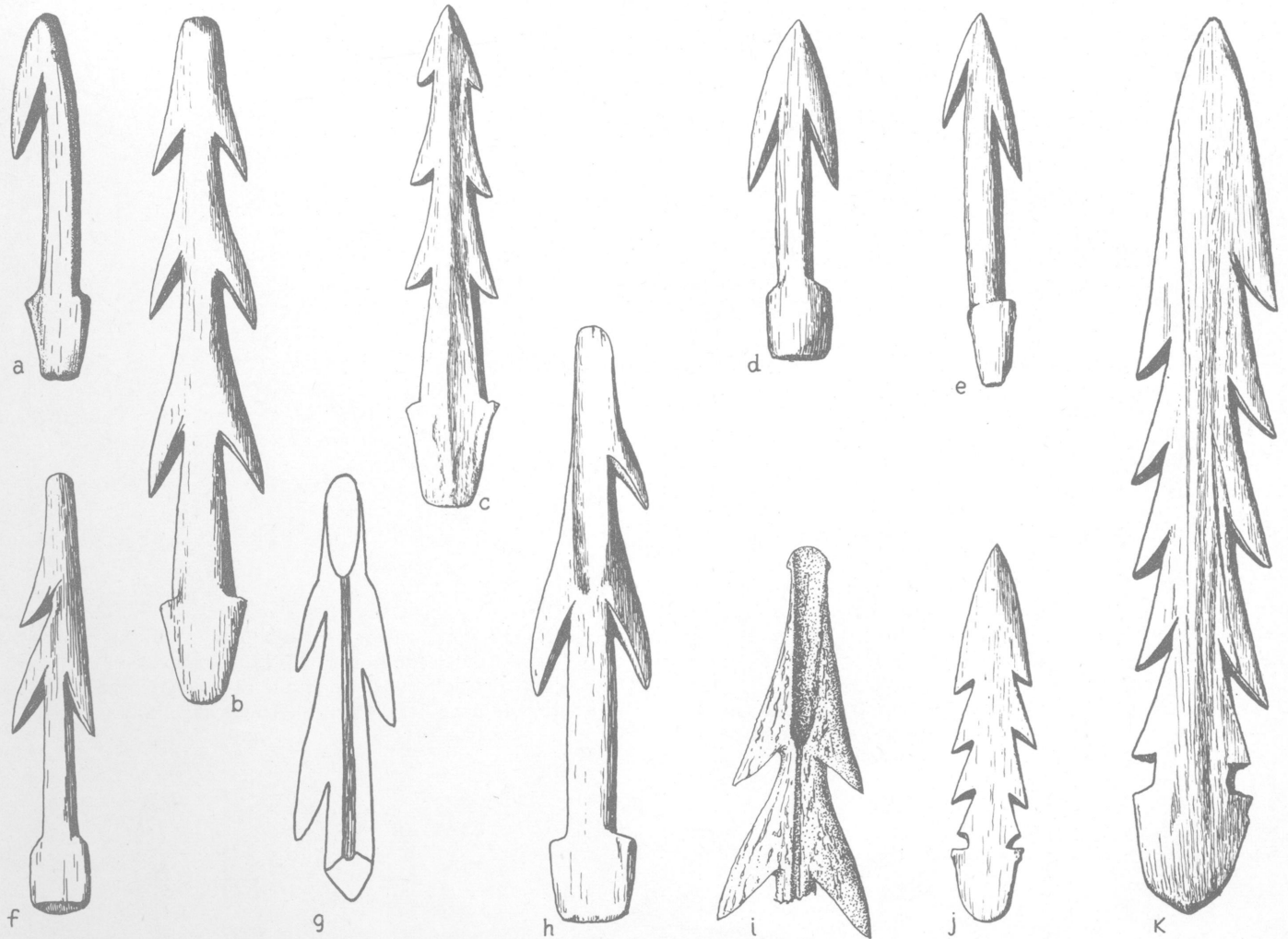


Fig. 35. Barbed dart heads. a. USNM 365429. Lower Levels. Type Ia, small. b. USNM 375650. Upper Level. Type Ib, large. c. USNM 375371. Lower Levels. Type Ib, large. d. USNM 375651. Upper Level. Type Ib, small. e. USNM 375651. Upper Level. Type Ib, small. f. USNM 375223. Lower Levels. Type Ib, small. g. USNM 365610. Type Id, large. h. USNM 375371. Lower Levels. Type Id, large. i. USNM 363743. Type Id, large. j. USNM 377705. Lower Levels. Type Ie, small. k. USNM 365606. Type Ie, large.

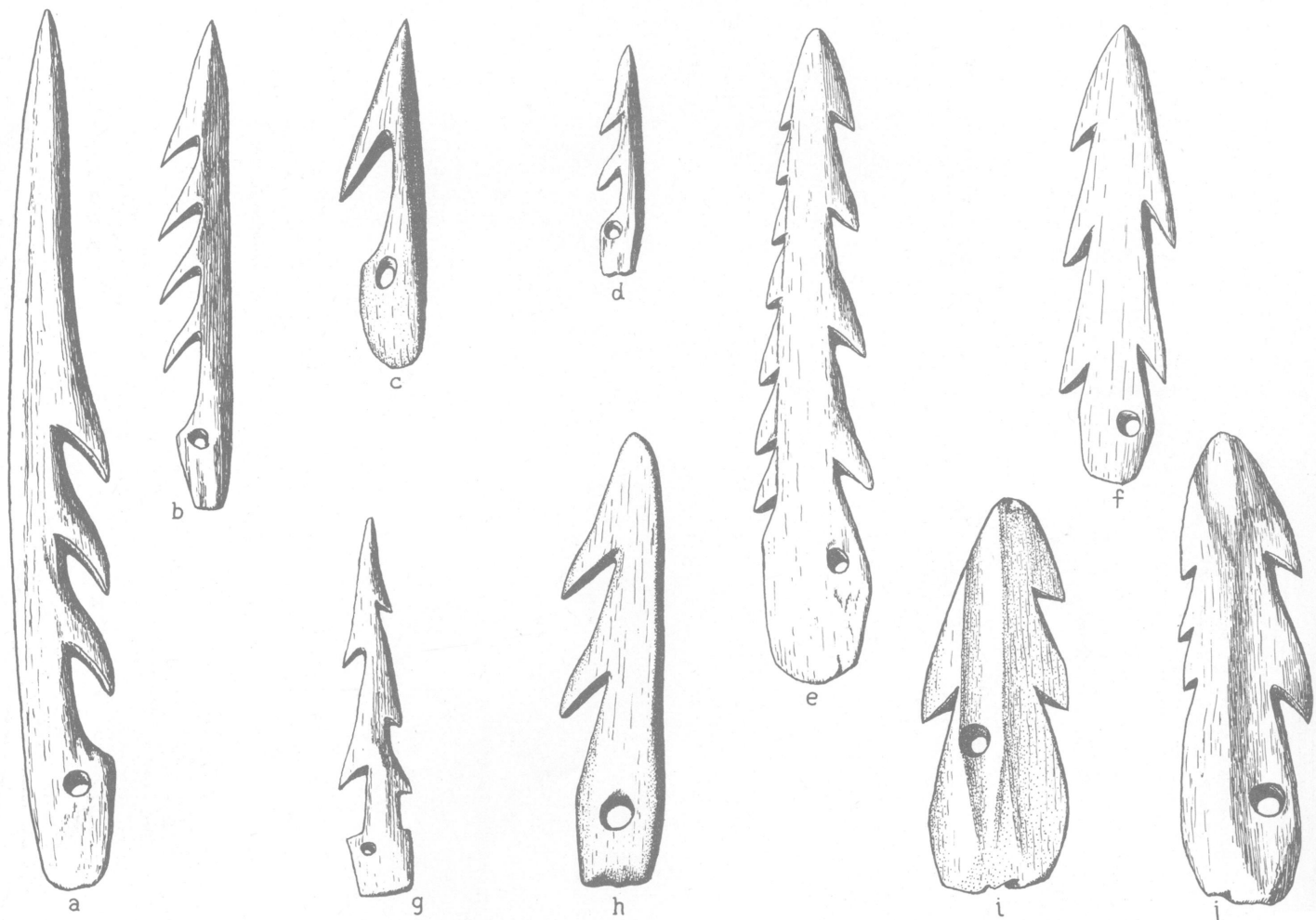


Fig. 36. Barbed dart heads. a. USNM 375652. Upper Level. Type IIa, large. b. USNM 365514. Lower Levels. Type IIa, small. c. USNM 375652. Upper Level. Type IIa, small. d. USNM 375652. Upper Level. Type IIa, small. e. USNM 377851. Upper Level. Type IIb, large. f. USNM 375652. Upper Level. Type IIb, small. g. USNM 375652. Upper Level. Type IIb, small. h. USNM 375652. Upper Level. Type IIc, small. i. USNM 375652. Upper Level. Type IIe, small. j. USNM 375370. Lower Levels. Type IIe, small.

SMALL TIPS FOR BARBED DART HEADS

What are probably to be interpreted as separate tips for barbed dart heads are shown in plate 73, v-y. The short form (pl. 73, v, w and fig. 37, a) is represented by only 3 examples, all from the Lower Levels. The long slender form (pl. 73, x, y and fig. 37, b) is represented by 15 examples, one of which is from the Upper Level and measures 4 cm. in length, and the rest are from the Lower Levels. These last average 5.5 cm. in length.

The forms described above are beveled, but there are a number of simple bipointed flat pieces which may have been either separate tips or gorge hooks (pl. 73, t, u).

TOGGLE HARPOON HEADS

Toggle harpoons with a line hole, spur, and basal socket are of as great importance in studies of Eskimo prehistory as ceramics in Southwestern archaeology. Their form is complex, they have been used in the Arctic since earliest times, and the shapes have under-

gone developmental change so that it has been possible to erect a chronological scheme of evolution and diffusion based upon harpoon heads.

Generally speaking, the Pacific Eskimo did not make as intensive use of toggle harpoons as did the peoples of the true Arctic farther north. The excavation by De Laguna at Cook Inlet, Jochelson in the Aleutians, Weyer at Port Möller, and Cahn at Amaknak Island (Quimby,

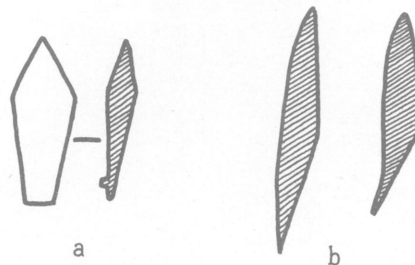


Fig. 37. Small beveled tips for barbed dart points. a. Short form. b. Long, slender form.

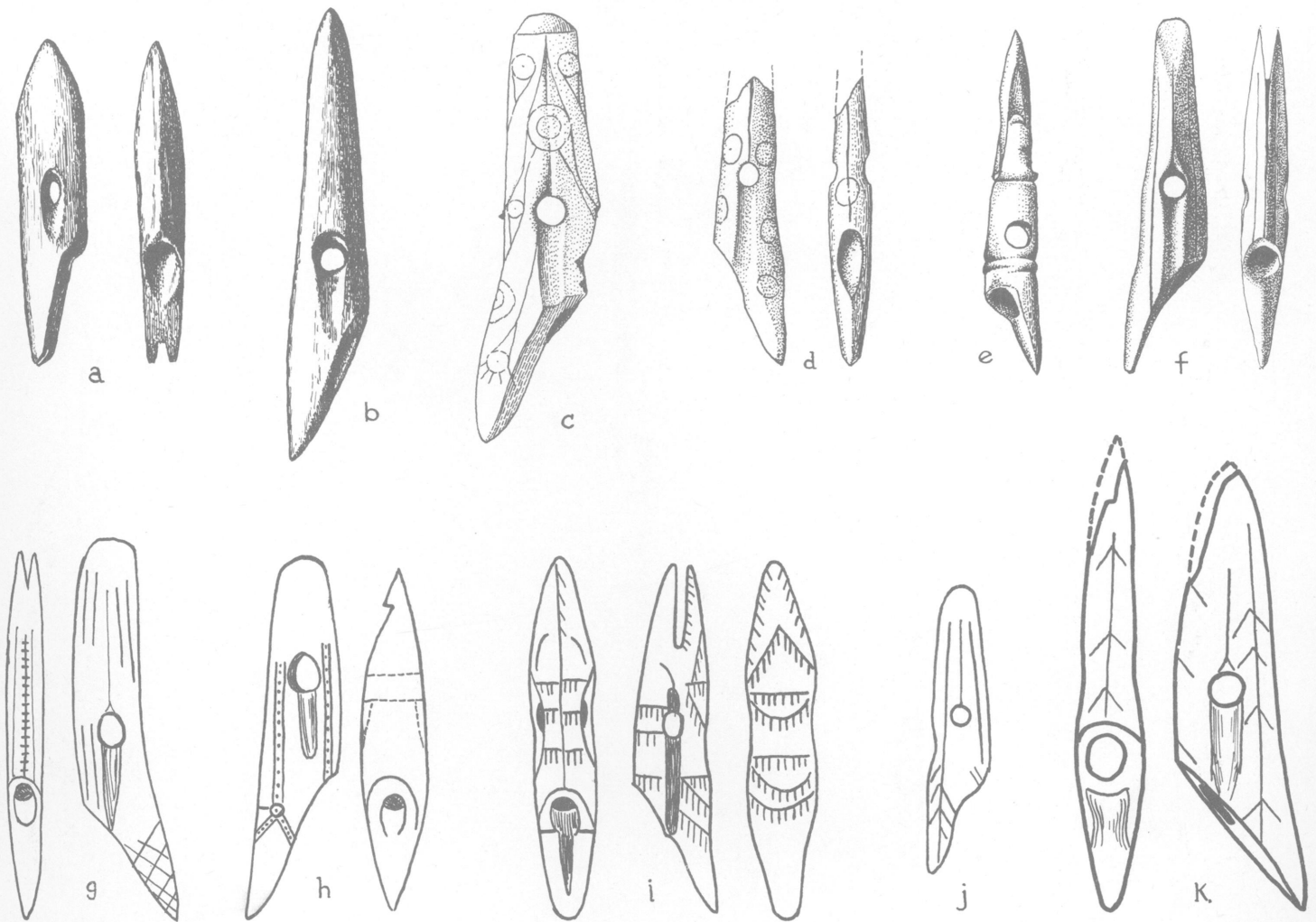


Fig. 38. Toggle harpoon heads. a. USNM 375374. Lower Levels. Type Ia. b. USNM 365427. Lower Levels. Type Ia. c. Uncat. Lower Levels. Type Ib. d. USNM 365427. Lower Levels. Type Ib. e. USNM 375221. Lower Levels. Type Ib. f. USNM 375219. Lower Levels. Type Ib. g. USNM 375375. Lower Levels. Type Ib. h. USNM 395191. Lower Levels. Type Ib. i. USNM 375375. Lower Levels. Type Ib. j. USNM 365603. Type Ib. k. USNM 375724. Type Ib.

1946) all produced such pieces, but not in large numbers. Considering the paucity of specimens, the wide variety of types displayed is remarkable. It appears that the toggle harpoon is old, and that it was used continuously throughout the past up to the historic era, but that no general and widespread standardization of forms ever developed. Local or regional diversity is therefore likely to have characterized the earliest harpoon forms, and attempts to find a basic or fundamental Pacific Eskimo prototype will, in my opinion, probably not succeed.

A total of 84 toggle harpoon heads were recovered from the Uyak site. Of these, 71 came from the Lower Levels and 14 from the Upper Level.

A simplified typology of Uyak harpoon heads has been established:

Type Ia. Simple shape, closed cylindrical socket, no lashing slot or groove, simple spur, round or ovoid line hole, simple pointed upper end, occasionally with incised decorations.

There are 43 specimens of this type, examples of which are illustrated in pl. 58, a-h. Seven are from the Upper Levels, the balance from the Lower Levels. The longest specimen (pl. 58, a) bears a single compass-inscribed dot and circle decoration. Straight lineal engraved lines on the surfaces of two pieces are visible in pl. 58, c, d. One harpoon (pl. 58, g) has two drilled line holes and a drilled pit, and one specimen has a slightly expanded or flattened tip (pl. 58, h). Two type Ia heads are shown, for the purpose of clearly illustrating the form, in fig. 38, a, b.

Type Ib. Much like type Ia, but with cleft tip for blade; line hole usually at right angles to line of blade; decoration variable.

There are 15 examples of this type, all of which come from the Lower Levels. This type is illustrated in pl. 58, i-k, m, n, a'-c'.

The lineal incised lines seen in type Ia occur in 5 type Ib pieces (pl. 58, i-j; fig. 38, f, g, j). An unusual specimen included in this type (pl. 58, a'; fig. 38, i) has an ovoid line hole in line with the plane of

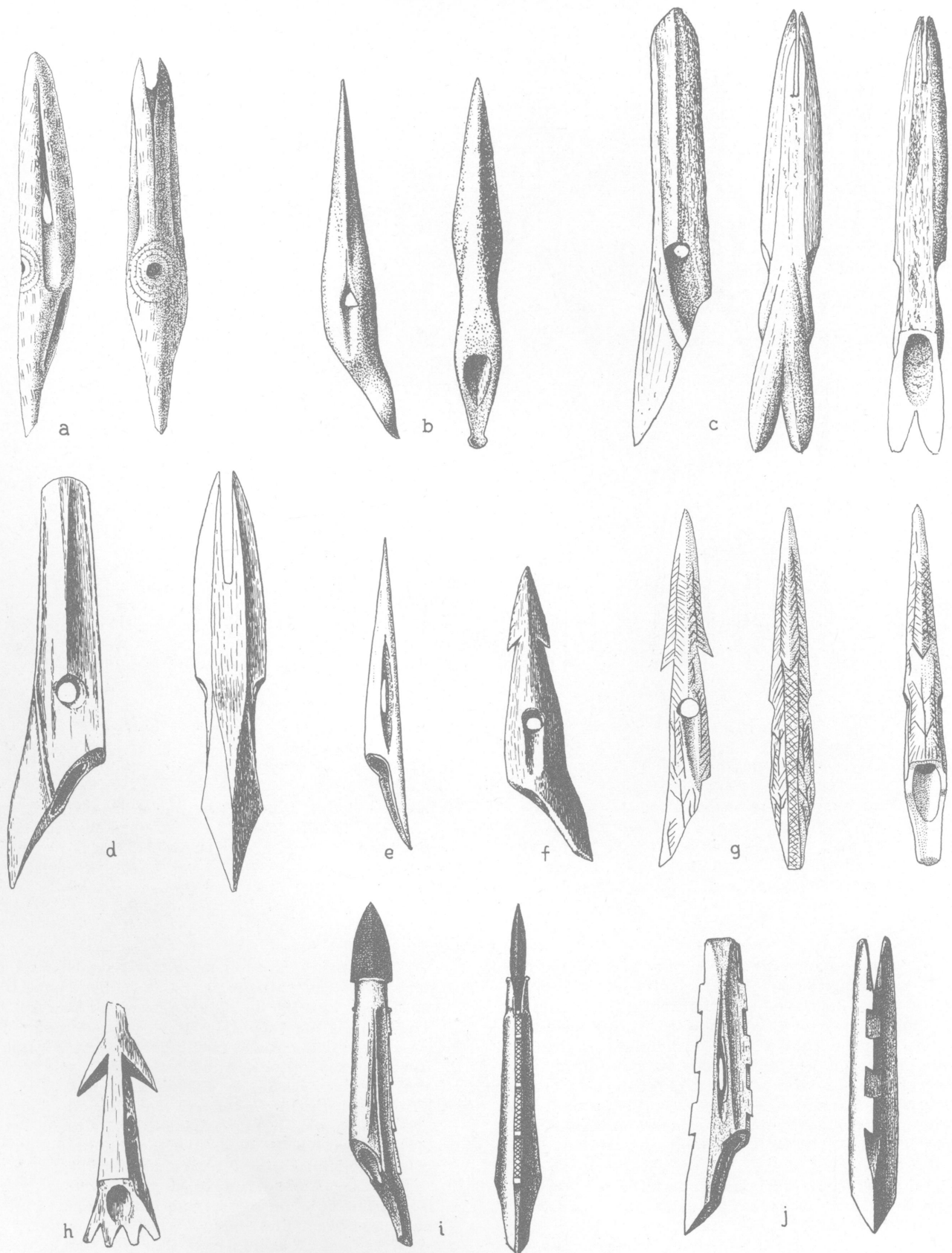


Fig. 39. Toggle harpoon heads. a. USNM 363765. Type Ic. b. USNM 375374. Lower Levels. Type Ic. c. USNM 365602. Type II. d. USNM 377708. Lower Levels. Type II. e. Uncat. Lower Levels. Type Ic. f. USNM 377844. Upper Level. Type IIIa. g. USNM 375376. Lower Levels. Type IIIa. h. USNM 377842. Upper Level. Type IIIb. i. USNM 375377. Lower Levels. Type IVb. j. USNM 375219. Lower Levels. Type IVc.

the blade and an elaborate spurred line decoration. Another unusual point (pl. 58, c'; fig. 38, e) was found complete, with the bone point still inserted in the cleft upper end. The spiraled groove just below the line hole may be decorative or may have some functional purpose. The point shown in pl. 58, n and fig. 38, k is decorated with slant-spurred lines and the original simple point has been reworked to form a flat "stepped" end, presumably for the purpose of lashing on a penetrating tip. Another harpoon head with a similarly reworked tip is shown in pl. 58, b' and fig. 38, h. The dot-and-circle design with the three radiating double lines with interlinear dots occurs on both sides. The harpoon head shown in pl. 58, m is unusual in having the line hole in the same plane as the blade slot. The two specimens illustrated in fig. 38, c, d conform to the general type Ib category (although one lacks the upper end and it is not possible to tell for certain whether the tip was plain or slotted) and are decorated with incised lines and compass-drawn dot-and-circle elements.

Type Ic. Generally similar to types Ia and Ib; of "thin" shape; with "wavy" spur which is either knobbed, simple, or bifurcated; line hole either elongate oval or triangular; decoration variable.

There are 13 examples of this type, all but one of which (length 6.5 cm., triangular line hole) come from the Lower Levels. This type is illustrated in pl. 58, r-t, z and fig. 39, b, e. Although the illustrations may not demonstrate to the satisfaction of everyone that this is a distinctive form, it appeared to be so when I handled and sorted the entire lot of harpoon heads. One specimen in particular (pl. 58, q and fig. 39, a), with a bifurcated spur, is worth special mention because of its decoration consisting of concentric spurred-line circles whose center is a drilled pit and a short parallel scratch design element repeated at random over the whole surface.

Type II. Rather large and heavy harpoon heads with ridged surface between line hole and tip; round socket; line hole at right angles to blade slot; single or bifurcated spur; slotted tip for insertion of penetrating point; undecorated.

There are only 3 specimens of this type, one of which is without depth provenience, the others come from the Lower Levels. Two are illustrated in pl. 58, l and fig. 39, c, d.

Type IIIa. Barbed form whose characteristic is two bilateral barbs at the tip; the socket is closed.

There are two examples from the Uyak site. From the Upper Level comes the point shown in pl. 58, v and fig. 39, f. The second (pl. 58, w; fig. 39, g) was dug from the Lower Levels. One is the most elaborately decorated harpoon head from the site. Birket-Smith (1941, fig. 14, a) illustrates an ethnographic Kodiak harpoon with two pairs of bilateral barbs and a single spur.

Type IIIb. Barbed tip; line hole in same plane as line of barbs; closed socket; multiple spur.

A single specimen (pl. 58, d'; fig. 39, h) has a wide spur, which has 3 deep notches cut into it so that the spur is actually quadrupartite. The tip is incomplete, but 2 bilateral barbs are present, and it is probable that a second set of paired barbs were on the harpoon head when it was complete. The shaft of the piece is subrectangular in cross section and the line hole is in line with the plane of the barbs.

What is interesting about this harpoon head is

that the form with a tripartite spur and two pairs of bilateral tip barbs occurs ethnographically on Kodiak Island (Birket-Smith, 1941, fig. 14, c). Since the Uyak specimen comes from the Upper Level, it can hardly be "recent" in the sense implied by Birket-Smith (1941, p. 144). In the Uyak site the form is definitely prehistoric.

Type IV. This class is to be considered tentative and subject to verification. It has been established more for convenience than because it is presumed to represent an actual distinction. Harpoon points of type IV are the dross, the miscellaneous left-over, unusual, or unique forms.

Type IVa. Represented by a single specimen is the waterworn harpoon head shown in pl. 58, u. The tip cannot be called barbed, and it is suggested that the penetrating point originally consisted of a separate piece riveted on through the upper drilled hole. It comes from the Upper Level.

Type IVb. What is certainly the best made and most artistic harpoon head from the site is the one shown in pl. 58, o and fig. 39, i. The line hole is very long and thin, and the spur is nicely rounded. Along the spine from the tip slot to the upper end of the spur runs a narrow stepped and flattened area decorated with fine cross-scratched incising. A well polished slate point was found in position in the slotted tip. This harpoon head came from the Lower Levels.

Type IVc. Somewhat like the type IVb head just described, but still distinct, is that shown in pl. 58, p and fig. 39, j. The line hole is similar, as are the profile of the spur and the slotted tip and the notched lateral edges. But the notching occurs on two edges, and the whole piece is angular rather than smoothly rounded like the better made type IVb harpoon.

Fortunately a record exists to the effect that in the central area of the site where the midden was deepest, this point was found in the lowest portion of the deposits, and it is therefore to be considered as ancient as any artifact from the Uyak site. The type IVb harpoon is listed as coming from the "Intermediate" level (i.e., in our terminology, middle Lower Levels) and therefore somewhat less old than the type IVc harpoon.

Type IVd. Two short (length 4.0, 4.5 cm.) open-socketed harpoon heads came from the Lower Levels. One of these is illustrated in pl. 58, x. This form is known from the Yukon Island I horizon in Cook Inlet. De Laguna (1934, p. 81, pl. 38, fig. 14) calls them Thule type I. The spur, when facing the open socket, slants down to the left.

Type IVe. A related form, somewhat longer and with two staggered barbs, a round line hole just above the open socket, and a spur which slants down to the right, is seen in pl. 58, y. This harpoon also comes from the Lower Levels. In Mathiassen's (1927, II:12) terminology this would be Thule type Ib.

Type IVf. A dwarfed toggle harpoon head (pl. 81, m) only 3.5 cm. long came from the Lower Levels. Such a piece could conceivably have been used for hunting, but it seems more likely to be a miniature example of the form. Collins (1937, pl. 23, figs. 15-16) illustrates two such pieces from St. Lawrence Island, Old Bering Sea culture. They also occur at Ipiutak (Larsen and Rainey, 1948, pl. 3, figs. 13-18). In the typology used here, the miniature harpoon would fit into type Ia.

Of the total 84 toggle harpoon heads, 1 lacks depth provenience, 10 are from the Upper Level and 73 from

the Lower Levels. Only 3 types (Ia, Ic, IIIa) are shared between the two stratigraphic levels, the other types being restricted either to the Upper Level (type IVa) or to the Lower Levels (Ib, II, IIIb, IVb, IVc, IVd, IVe, IVf).

There are 11 rough toggle harpoon "blanks" which had not yet been equipped with line hole or socket. Six of these are Upper Level and 5 Lower Levels.

The distribution of toggle harpoon heads is summarized in the following table.

TABLE 26

Summary of Occurrence of Toggle Harpoon Heads

Type	No. of pieces	Lower Levels	Upper Level
Ia.....	43	36	7
Ib.....	15	15	0
Ic.....	13	12	1
II.....	3*	2	0
IIIa.....	2	1	1
IIIb.....	1	1	0
IVa.....	1	0	1
IVb.....	1	1	0
IVc.....	1	1	0
IVd.....	2	2	0
IVe.....	1	1	0
IVf.....	1	1	0
Total.....	84	73	10

*One specimen without depth location.

COMPOSITE HARPOONS

This term is taken from Drucker (1943, p. 39, fig. 4), who found these two-piece spurred points along the northern Northwest Coast. From the Uyak site were recovered 11 halves of such points, all from the Lower Levels (pl. 59, l, n). They have simple points (see fig. 40) and average 6.5 cm. in length.

Harpoon heads of this general type are fairly common in Japan (Sugiyama, 1938, fig. 7), and it may be possible to classify this form as of "Circum-North Pacific" distribution (Leroi-Gourhan, 1946, pp. 356-359).

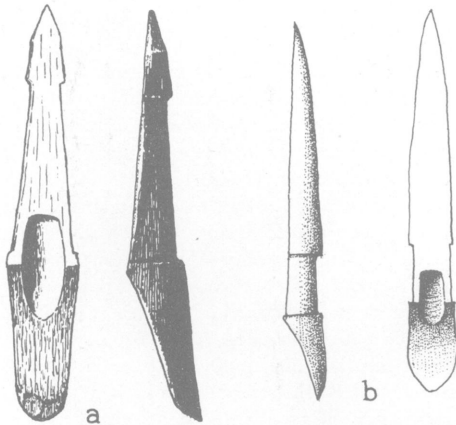


Fig. 40. Composite harpoons.
a. USNM 375843. Lower Levels.
b. USNM 375390. Lower Levels.

UNBARBED SOCKETED PROJECTILE POINTS

This is a distinctive type of point which appears most typical of Kodiak Island—it may be a local specialization. There are two main types: the first (types Ia, Ib) are one-piece points; the second (type II) are two-piece affairs. Examples of the several forms exhibiting size differences are shown in figures 41 and 42.

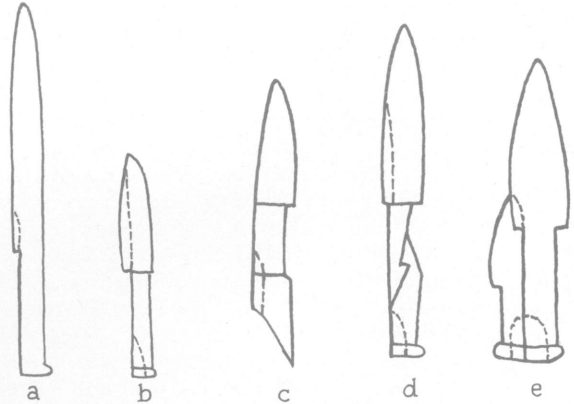


Fig. 41. Typology of unbarbed socketed projectile points. a. Type Ia, long. b. Type Ia, short. c. Type Ib. d. Type II. e. Hypothetical reconstruction of two type Ia points assembled to produce a closed socket point.

Type Ia. One-piece projectile point with simple sharpened tip; base cut off square and with open socket; wide recessed lashing groove for attachment to shaft (figs. 41, a, b, 42). There are 23 examples of this type, 9 of which are from the Upper Level (pl. 59, a, j) and 23 from the Lower Levels (pl. 59, b-d). As a group, these vary in length and width. The longest pieces (pl. 59, a, b) are rare, there being 2 from the Upper Level, which are 10.5 and 12.5 cm. long respectively, and one from the Lower Levels, 10.5 cm. long. The shorter specimens average about 6 cm. in length. It is possible that a long and a short Ia point were mounted together, as shown in fig. 41, e, but there is no evidence to prove this.

Type Ib pieces (figs. 41, c, 42, e, f) with angled or spurred base are much less common than Ia points. Unfortunately my records do not detail the count or Level occurrence of this variant form.

Type II points are shown in pl. 59, e-i and figs. 41, d, 42, h, i. The scarfed butt-piece is cut off square and has an open socket. When complete, it is equivalent to a type Ia point. What the reason for devising a complex point of this sort was, is impossible to say.

Of the tip end halves, there are 72 pieces, of which 7 come from the Upper Level and 65 from the Lower Levels (pl. 59, e, f, h). Of the short, open-socketed butt pieces, no accurate count was kept, but my notes state that these were not nearly so common as the tips.

BIRD DART POINTS

The western Eskimos have a multipointed type of spear and arrow which is variously used to throw at birds or fish (cf. Nelson, 1899, pls. LIX, LXVII, fig. 44). It is practically impossible to distinguish the function of prehistoric examples, as Larsen and Rainey (1948, pp. 77-78)

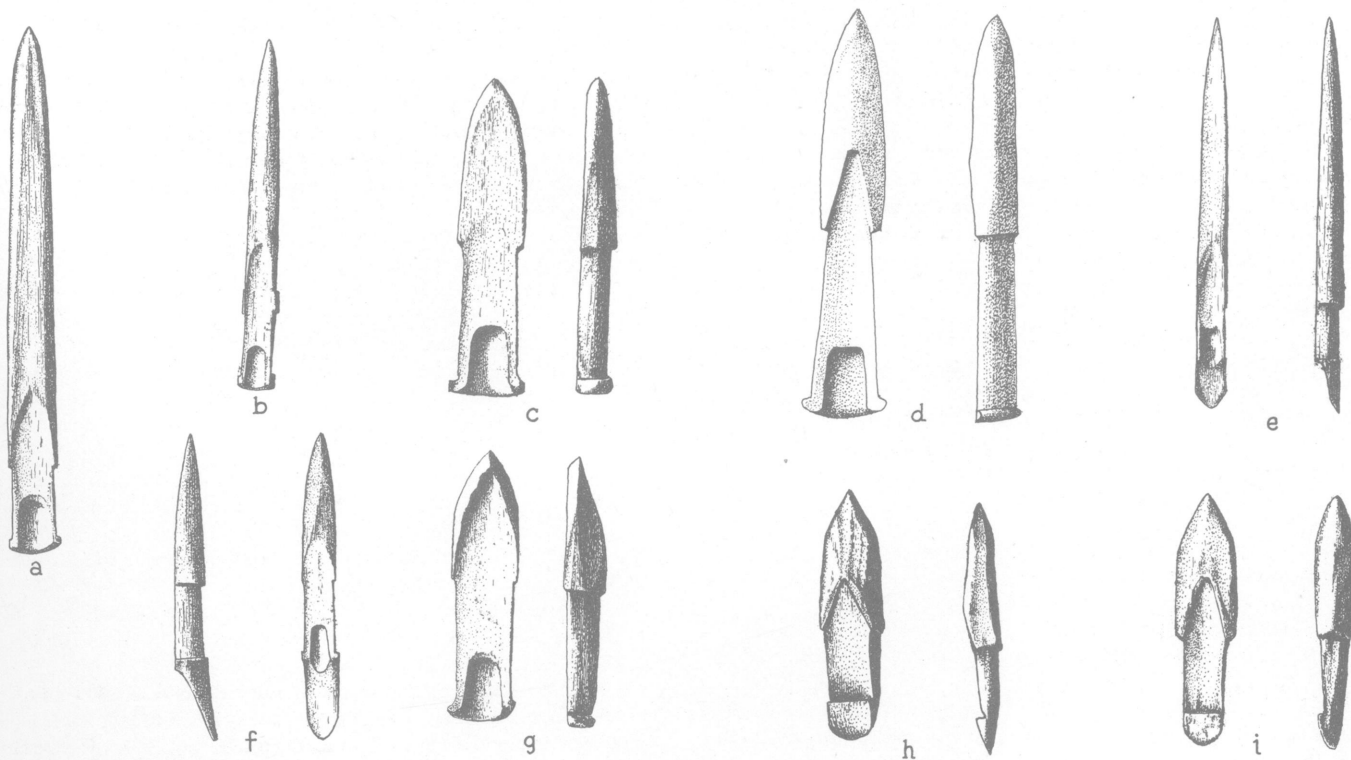


Fig. 42. Unbarbed socketed projectile points. a. USNM 375642. Upper Level. Type Ia. b. Upper Level. Type Ia. c. Upper Level. Type Ia. d. USNM 375390. Lower Levels. Type Ia. e. Upper Level. Type Ib. f. Upper Level. Type Ib. g. Type Ia. h. Lower Levels. Type II. i. Lower Levels. Type II.

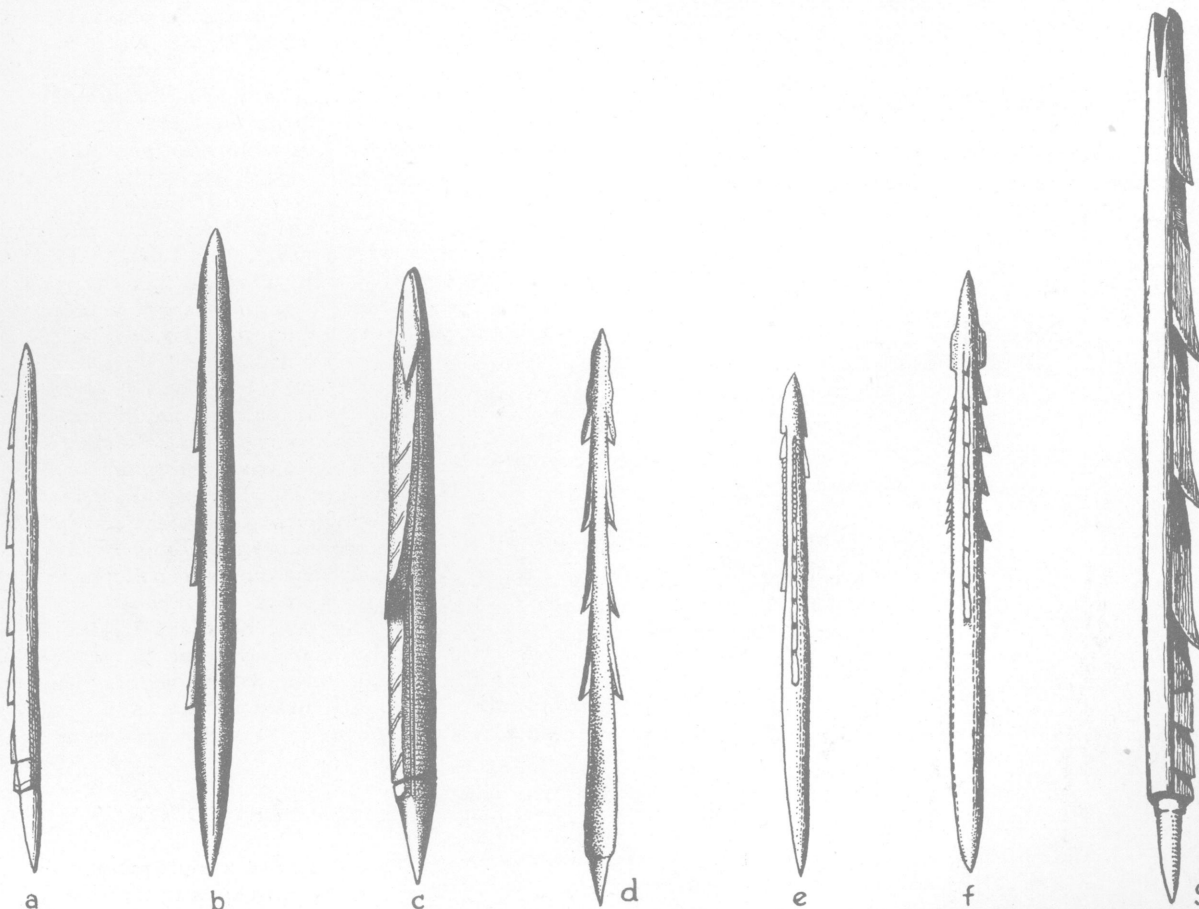


Fig. 43. Type III slender barbed points. a. Lower Levels. Type IIIa. b. USNM 365609. Type IIIa. c. USNM 375385. Lower Levels. Type IIIa. d. Lower Levels. Type IIIc. e. Lower Levels. Type IIId. f. Lower Levels. Type IIId. g. USNM 375387. Lower Levels. Type IIIe.

point out. The barbed points shown in plate 60 are points for such spears, the curved pieces identifiable as side prongs and the straight forms as center prongs (cf. Jochelson, 1925, pl. 24, figs. 30-32, 35-38, 40-41).

Included here are 6 rather distinctive pieces which may be leister prongs. Of these six, 3 from the Upper Level (pl. 60, b, c) have an average length of 11 cm., and 3 from the Lower Levels (pl. 60, a) average 13.5 cm. in length.

Bird dart prongs, exclusive of the 6 pieces just mentioned, total 32, of which 12 are from the Upper Level (pl. 60, e, g, i, j), and 20 are from the Lower Levels (pl. 60, d, f, h, k, l, m-p).

The 6 short barbed points shown in plate 61, u-z may have served as barbs affixed in some manner to a spear shaft, though this is merely a guess. The piece shown in plate 61, y is reminiscent of bone points collected by Stefansson at Cape Smythe (Wissler, 1916, fig. 31, b, e).

The fragile barbed head shown in plate 56, e may also be a bird dart prong.

BONE ARROWHEADS

Bone arrowheads from the Uyak site are abundant and vary in form. They may be barbed or unbarbed, with simple or slotted tips, and fall into either large or small size categories. All were fixed, nondetachable points. Occurrence and types are summarized in table 27.

Type Ia arrowheads could conceivably have served as fixed foreshafts for small toggle harpoons, but this seems unlikely. Upper Level specimens average 12.0 cm. in length; Lower Levels pieces (pl. 54, a-f; pl. 69, y) average 11.2 cm. in length. The length range is 7 to 18.5 cm. The possibility that the blunt-ended piece shown in plate 54, e is a harpoon butt-piece is discussed above.

Type Ib arrowheads with a slotted tip have either a simple conical base (pl. 54, k, m), peg butt (pl. 54, n), or are cut off square (pl. 54, l). All illustrated pieces referred to are from the Lower Levels, from which come 14 averaging 7.2 cm. in length. Two Upper Level arrowheads of this type measure 7.5 and 15.5 cm. in length.

Type IIa bone arrowheads have one barb just above the spike butt, and a slotted tip at right angles to the plane of the barb. The 4 Upper Level examples (pl. 56, s) average 15 cm. in length; the Lower Levels example (pl. 56, v) is 15 cm. long.

Type IIb multibarbed arrowheads from the Upper Level are illustrated in fig. 44, d-g. Two type IIb arrowpoints, one each from the Upper Level (pl. 56, x) and Lower Levels, have simple tips; all others have a slotted tip.

Type IIc arrowpoints are distinctive because of the sweeping barbs. Two tip end halves, both from the Lower Levels (pl. 56, t, u; fig. 44, a, b), comprise this class. They may be of outland origin and recovered from the body of a large migratory bird. They simply do not look like something made at the Uyak site.

TABLE 27

Bone Arrowheads: Types and Occurrence

Type	Description	Lower Levels	Upper Level
Ia	Simple point; unbarbed; conical butt for insertion into shaft; cylindrical shaft	119	92
Ib	Conical butt for insertion into shaft, unbarbed; cylindrical shaft, slotted tip	14	2
IIa	Slotted tip; conical butt; single barb just above butt; shaft ovoid in cross section	1	4
IIb	Wide, flat multi- or unilaterally barbed; conical butt; shaft flattened-ovoid in cross section; tip simple pointed or slotted	5	5
IIc	Like IIb, but with long, low sweeping barbs	2	0
IIIa	Slender points with conical butt; simple pointed tip. Number of barbs ranges from 1 to 4; rarely takes form of multiple serrations; barbs outlined with long continuous incised line on either side	139	3
IIIb	Like IIIa, but barbs not outlined with engraved lines	15	0
IIIc	Like IIIa, but with two rows of barbs, outlined with engraved lines	27	3
IIId	Like IIIa, but with 3 rows of barbs outlined with engraved lines	7	0
IIIe	Like IIIa, but larger and heavier, with one row of barbs usually outlined with engraved lines; with slotted tip	26	0
Total		355	109

Type IIIa points are called by De Laguna (1934) "slender barbed points." Table 27 gives the occurrence data; examples are illustrated in pl. 61, a-d, and fig. 43, a-c. The number of barbs is rarely 1, often 2 and 3, and most commonly 4, and very rarely the number runs to a score (cf. pl. 61, d). Upper Level type IIIa points average 7.5 cm. in length; those from the Lower Levels, 12.0 cm. These points are straight (not curved) and are not side prongs for darts but individual fixed points.

Type IIIb barbed points (pl. 61, p) look as though they had been made in a hurry, and if this is true, it may account for the absence of the engraved lines which usually run along either side of the line of the barbs. The Lower Levels points average 12.0 cm. in length.

Type IIIc points with two rows of barbs (pl. 61, e, f; fig. 43, d) are, as is usual with almost all classes of barbed points, more abundant in the Lower Levels. The one complete Upper Level piece

averages 8.0 cm. in length; those from the Lower Levels, 11.3 cm. (fig. 43, d).

Type III d points (pl. 61, g-j; fig. 43, e, f) are restricted to the Lower Levels. They average 9.0 cm. in length.

Type III e points are clearly affiliated with the general type III class, even though they resemble some type IIb barbed points. The Lower Levels examples (pl. 61, k-n; fig. 43, g) average 12.5 cm. in length.

Several atypical arrowpoints were noted. A heavy point with conical butt, two barbs and cleft point (pl. 56, w) comes from the Upper Level (cf. type IIb in fig. 44, d). Another heavy Upper Level point with tip missing is shown in pl. 56, z, and one from the Lower Levels is illustrated in pl. 56, y. The wide, beveled-tip piece with bilateral barbs (pl. 56, a') comes from the Lower Levels and is the only one of its kind from the site.

Type IIIa points occur at Cook Inlet (De Laguna, 1934,

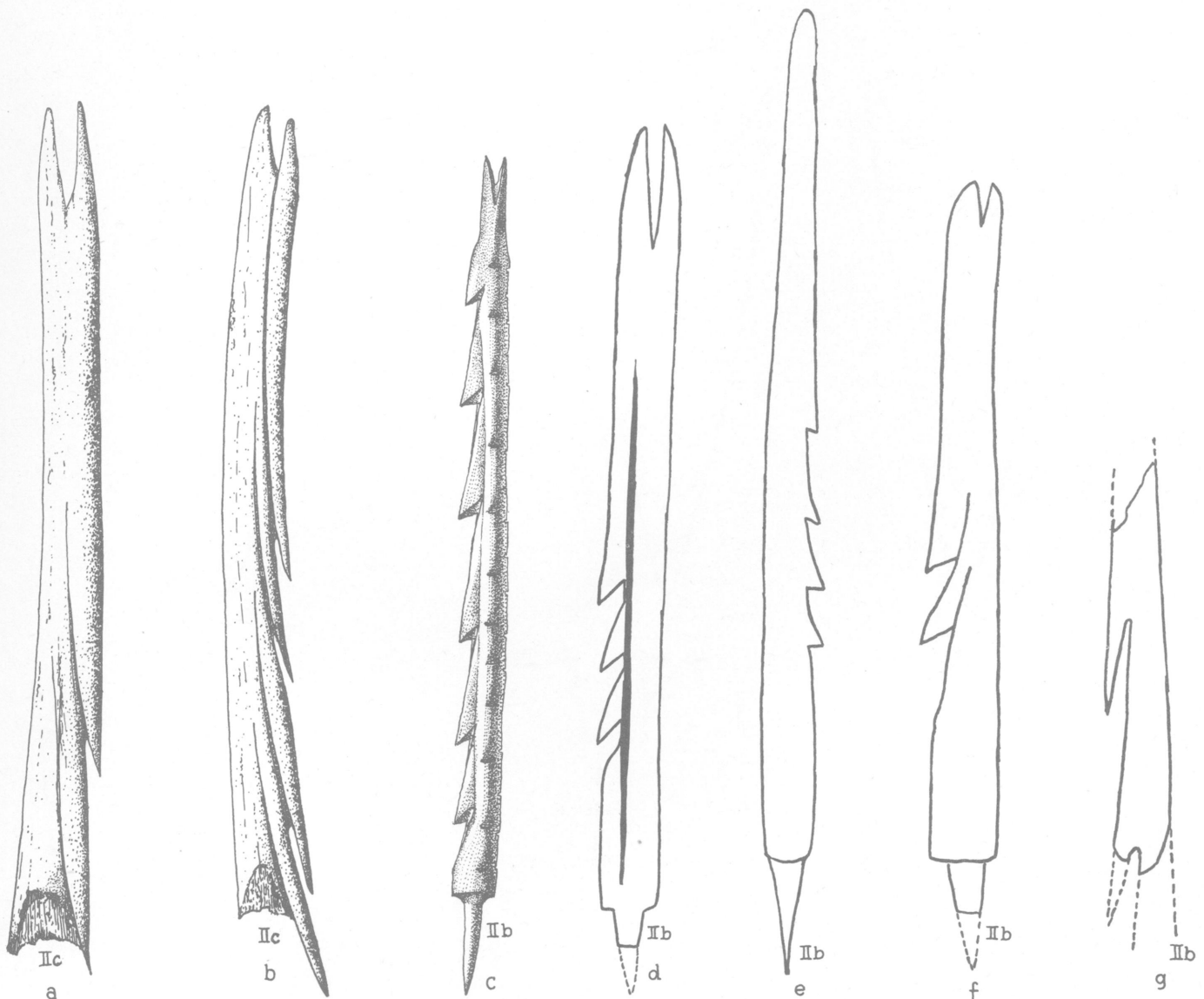


Fig. 44. Slender bone points. a. USNM 375228. Lower Levels. Type IIc. b. USNM 377707. Lower Levels. Type IIc. c. USNM 375387. Lower Levels. Type IIb. d. USNM 377849. Upper Level. Type IIb. e. USNM 377848a. Upper Level. Type IIb. f. USNM 377849. Upper Level. Type IIb. g. USNM 377849. Upper Level. Type IIb.

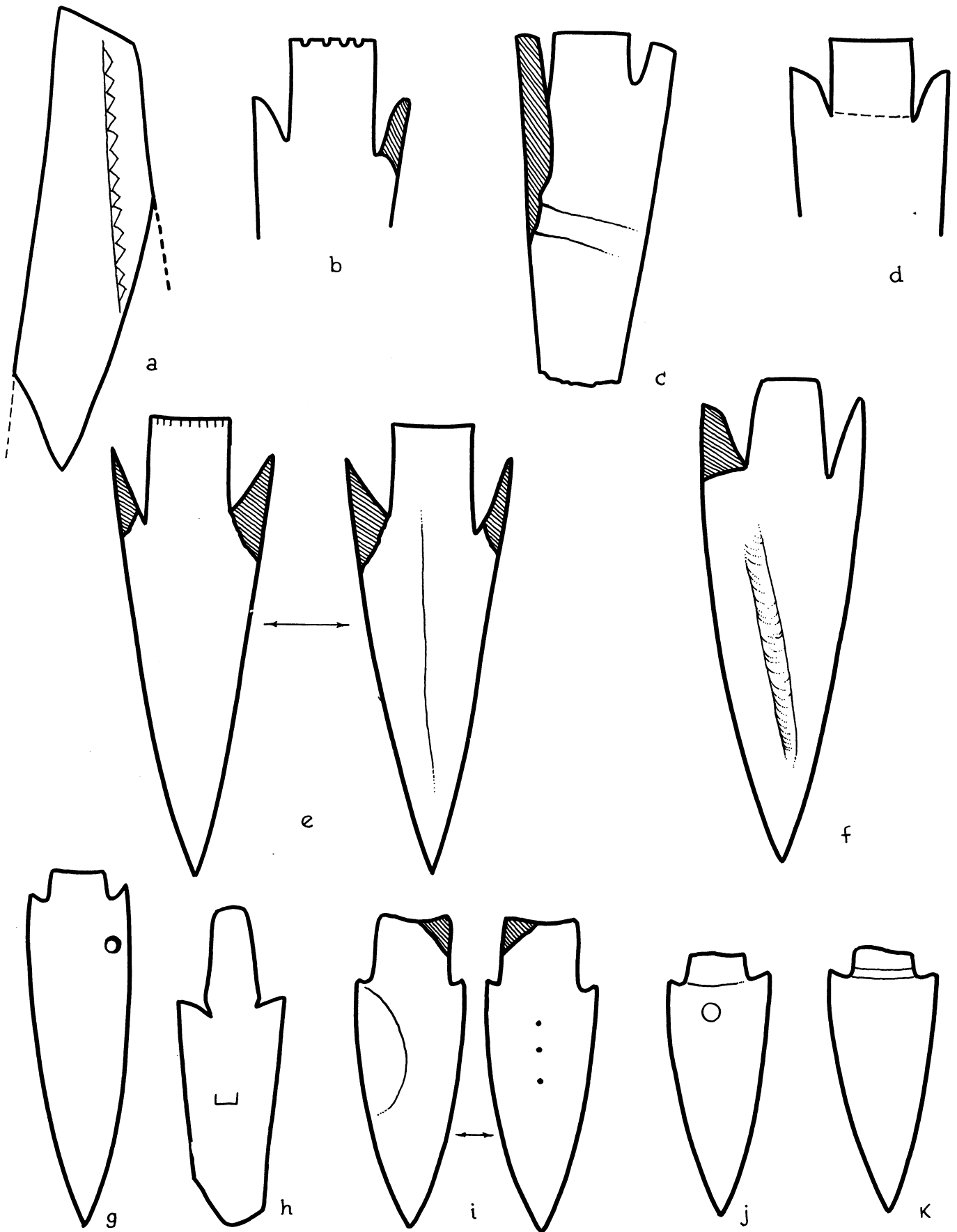


Fig. 45. Ownership marks.

pl. 42), Port Möller (Weyer, 1930, fig. 19), and Ipiutak (Larsen and Rainey, 1948, pl. 42, fig. 1). Weyer believed this type to be late at Port Möller, but it will be noted as early in the Uyak site.

HEAVY BARBED LANCE POINTS

These are massive points with a tapering wedge point for insertion into a socket, either in the wooden shaft itself or in a socket-piece. A few of the very largest socket-pieces from the Upper Level could have taken these points. All pieces are barbed on one side, and some have bifurcated tips for a cutting point which was either chipped stone or polished slate.

There are 24 heavy barbed lance points, 18 of which come from the Upper Level. Of the Upper Level pieces, 7 have slotted tips (pl. 54, o, u) and 10 are either broken at the tip or apparently had simple sharp points. The incised ring around the base of the point shown in plate 54, r, is paralleled in a very similar modern Kodiak specimen in the University of California Museum of Anthropology (Heizer, 1952). The incised lines on the piece shown in plate 54, u may be ownership marks. The blunted ends of several points (pl. 54, o, u) may be evidence of their having been cut off after the point was broken in use. More tip ends than bases were found, and some of these may have been recovered from sea mammals which carried broken weapons imbedded in their flesh. Lower Levels pieces with slotted tips number two, and one has a subcylindrical shaft and squarely cut off base (pl. 54, p).

BLUNT-ENDED PROJECTILE POINTS

There are 5 small blunt heads, which may have served as weapon tips for stunning game; 3 of them come from the Upper Level and 2 from the Lower Levels. A bifurcated attachment end occurs on one Upper Level piece (pl. 59, o) and one from the Lower Levels (pl. 59, s). The rest have a simple tapering base for insertion in a socket (pl. 59, p-r). The last specimen cited has two cleanly cut V-shaped notches set at right angles to each other to form 4 sharp tips.

OWNERSHIP MARKS ON WEAPON TIPS

The early historical literature and limited ethnographic accounts of the Koniag commonly refer to ownership marks which were engraved upon slate weapon points or bone harpoon heads (see Holmberg, 1856, p. 109; Pinart, 1872, pp. 12-13; Lisiansky, 1814, pp. 202, 206; De Laguna, 1934, p. 71; Volkov and Rudenko, 1910, fig. 16; Boas, 1899; Birket-Smith, 1941, p. 139, n. 58). Such marks were necessary since a dead animal might be recovered on the beach or in the water by someone other than the person who had killed it. The weapon point served to identify the killer and owner of the animal.

Figure 45 illustrates several polished slate points bearing engraved lines, designs, or perforations which are probably to be interpreted as ownership marks. Of the larger slate points, which were probably used as lance heads in poison whaling, the ownership marks are either straight engraved lines, a "ladder," a serrated or ticked base, or a discontinuous incised line. The smaller slate points bear engraved curved lines,

a symbol, \square , a row of dots, or an inscribed freehand circle. There are 2 large slate points with property marks from the Upper Level. From the Lower Levels come 4 large and 3 small points. There is one specimen (small) without depth location.

In plate 62, a-e are shown 5 polished slate whaling lance heads collected in 1851 by H. Holmberg on Kodiak Island and now in the National Museum of Denmark. These all bear incised line-and-dot designs which may be interpreted as ownership marks. The photographs and permission to reproduce them were kindly supplied by K. Birket-Smith.

SPOONS

Spoons were made by the ancient Uyak population of a wide variety of animal bones. A common Eskimo spoon form made of a bird sternum is lacking in the Uyak site.

Uyak spoons, of which 55 were recovered, are made of bear scapula or pelvis (4 examples, cf. pl. 63, m, n), of porpoise jaw (8 examples, cf. pl. 63, k), or solid whalebone (43 pieces).

Spoons of solid bone, generally whalebone, may have definite bowls and narrow handles (pl. 63, b-e); shallow linear bowls and a very short handle with decorated end (pl. 63, a, f); a scoop shape without definite handle (pl. 63, h, i, l); or be variable in form like the pieces illustrated in plate 63, j, k, o. Of the 43 spoons, 21 are from the Lower Levels and 22 are from the Upper Level. None of the several forms listed predominate in either level. The best made example (pl. 63, g) has a serrated handle and parallel incised lines on the surface. A suggestion of a whale's tail may affiliate this piece with the spoon shown in plate 63, f. Both are from the Upper Level.

WHALEBONE PLATES

Round, flat dishes with a low vertical rim, which are, one supposes, a prehistoric Kodiak Islander's version of a dinner plate, were fairly numerous in the Uyak site. From the Lower Levels came 25 complete or fragmentary examples, and from the Upper Level only one incomplete specimen. All but one of these are made of the thick, but fairly substantial, cancellous bone vertebral disks of the whale. Typical pieces are shown in plate 64, a, b; others are illustrated by Hrdlička (1944, figs. 110, 177, 205, 206). Plates range between 18 and 25 cm. in diameter. A fragmentary oval or elliptical plate or tray, from the Lower Levels, is shown in plate 65, f. The exception mentioned above is a flat, round plate cut from a whale scapula. It is 21 cm. in diameter with a raised rim 1.5 cm. wide and 0.8 cm. high. A large section of whale scapula with a cut-out arc 30 cm. in diameter was recovered; it is to be interpreted as a cast-off remnant from which a bone plate had been cut. This is the piece described by Hrdlička (1944, fig. 109).

Whalebone plates of this type are rare in Eskimo sites. They are not reported from the Aleutian Islands or Cook Inlet. From the Punuk horizon at Miyowagh, St. Lawrence Island, Collins (1937, pl. 60, fig. 1) recovered a fragmentary (ovoid?) plate similar to the Uyak type.

RECTANGULAR WHALEBONE DISHES OR TRAYS

Several rectangular flat trays were found. Not all were collected. One from the Upper Level (pl. 68, c) is made

of whale bone (probably a rib) with roughly hacked-off ends and a more carefully excavated interior which is 2 cm. deep. From the Lower Levels came 4 even cruder pieces made of whale rib sections by gouging out the cavity with an adze, the marks still being visible. In general these appear to be hasty or makeshift products whose form was dictated by the shape of the whale rib, which is flat, narrow, and long.

CRUDE WHALEBONE CONTAINERS

A number of rather crude "containers" made by excavating a cavity from a heavy piece of whalebone came from the Upper and Lower Levels of the Uyak site. None show much evidence of use, nor are they well finished, and they may be hastily manufactured receptacles which were discarded after their immediate purpose had been fulfilled. Support for this idea is to be seen in the fact that there are few examples of any single type. The various types may be listed as follows.

- I. Excavated end of whale rib (3 Lower Levels, 2 Upper Level)
- II. Halved vertebral centrum with excavated interior (2 Lower Levels)
- III. Carpal with oval excavation in side (1 Lower Levels)
- IV. Proximal humerus end with excavated interior (1 Lower Levels)
- V. Bowl with incurved sides (1 Lower Levels)
- VI. Vertebrae with spines cut off and with excavations of variable depth. These range from only slightly concave surfaces to deep, well made containers. (Abundant in Lower and Upper levels.)⁷
- VII. Shallow containers of a distinct form are represented by 2 Lower Levels (cf. pl. 65, k) and 1 Upper Level example. These are made of a side section of a large whale vertebra, the interior being scooped out. They are about 14 cm. square.

Type I pieces are illustrated in plate 66, a, b. Three type II pieces measure 19 to 25 cm. long and 10. cm. high. The type II example is shown in plate 66, c. Type IV (pl. 66, e), represented by one example, is 24 cm. high, and the oval interior cavity measures 14 by 7 cm. and is 20 cm. deep. The interior shows signs of burning, and the piece may have served as a lamp. The marks of a pointed tool are still visible in the spongy, cancellous interior of the container. A shallow round bowl of type V is 10.5 cm. in diameter and 4 cm. high. The walls curve in at the top. Type VI containers made from whale vertebrae were abundant, but there are no records of actual numbers recovered. Typical examples of Lower Levels pieces are shown in plate 66, f, h, and two Upper Level pieces are shown in g, i of the same plate. None of these pieces can be positively, or even probably, identified as to function. They do not appear to be mortars, nor are they oil lamps. Jochelson (1925, pl. 20, figs. 1, 6, 7) shows similar whalebone containers which he variously labels as "lamps" or "bowls." The piece illustrated by the same author (*ibid.*, pl. 19,

⁷ Numerous examples of these pieces were not saved. Note the "rejects" shown in Hrdlička (1944, figs. 83-84).

fig. 3) as a bowl for keeping edible roots is similar to some of ours, and some of our containers may have been used in this way.

BONE BOWLS AND DIPPERS

The objects in this class are of various forms. Included are 3 dippers from the Lower Levels made of bear skull (pls. 65, c; 67, d), a fragmentary dipper made of dense whalebone which shows drilled holes for crack-lacing to mend an old break (pl. 65, b), and a similar complete specimen also showing a crack-lacing repair (pl. 67, e).

A small bowl is fashioned from the dug-out epiphysis of a bear femur (pl. 65, j) and comes from the Lower Levels; there is an additional piece from the Uyak site illustrated by Hrdlička (1944, fig. 86). From Cook Inlet there are similar specimens (De Laguna, 1934, pl. 47).

PERFORATED WHALE VERTEBRA DISKS

The round, flat epiphyseal disks of whale vertebrae were sometimes used to make plates, and also as chopping or cutting boards. From the Lower Levels come 5 disks with roughly circular holes chopped through them (pl. 67, a-c). The edges of the holes are beveled, and all of the work was performed on one surface. In diameter these pieces range from 13 to 22 cm., the holes varying from 4 to 14 cm. in diameter. There are 3 Upper Level specimens.

FLAT BONE SCOOP

What may be a scoop or scraper is made from a heavy flat bone, probably whale scapula (pl. 67, f). It comes from the Lower Levels and is unique in the site.

WHALE VERTEBRA CYLINDERS

From the Lower Levels come 2 hollowed-out centroms of whale vertebrae. One (pl. 68, a) is 21.5 cm. outside diameter, 16.5 cm. inside diameter, and 12 cm. in height. The second (pl. 68, b) measures, respectively, 22, 15, and 10 cm.

It has been suggested that these are drum bodies (Hrdlička, 1944, p. 250), but there are no signs of such use, nor is this form of drum known in this part of northern North America.

WORKED WHALE RIB SECTIONS

Short sections of small whale ribs, 5 to 7 cm. in diameter and 5 to 10 cm. in length, exhibit grooves made by some sharp-pointed tool. Not only is the exterior surface abraded (pl. 65, h), but the cancellous interior has been excavated and scarred (pl. 65, g). Such pieces were very common finds in the course of excavation, but only a few examples were saved. There are in the collection 6 Upper Level specimens (pl. 65, g) and 7 from the Lower Levels (pl. 65, h). Similar pieces were recovered from the prehistoric levels of the Yurok sites at Trinidad Bay and Patrick's Point, Humboldt County, California, a fact worth mentioning since these represent the only other occurrences known to me.

BONE PINS

It is apparent to the present author that the grouping of numerous pointed bone artifacts into a single classificatory group does not take into account the wide variation in forms, and the presumably diverse original functions, of the total lot. My lack of familiarity with Alaskan prehistoric implement forms accounts, in part, for this grouping. Also, the summer of 1945 was short enough, at best, and with some thousands of specimens to inspect and classify, the tendency was to lump forms which a more experienced student with sufficient time available would have separated. An effort was made then to illustrate as many variant forms as seemed potentially significant.

Pins made of mammal bone have been divided into 3 classes: with both ends pointed (type I); with one end pointed and other end blunt and plain (type IIa); with one end pointed and other end decorated (type IIb).

Type I pins in our collection number 54. From the Upper Level there are 28 which average 6.5 cm. in length. There are 26 from the Lower Levels (pl. 69, b'), which average 10 cm. in length and range from 7 to 13 cm. in length.

Type IIa pins are made of dense mammal bone, and are worked over the entire surface. Some may have been basketry awls. Some are short enough (5-6 cm.) to have served as barbs; others are as much as 24 cm. long and must have been used for other purposes. They may be either flat or cylindrical. Examples of Lower Levels pins are shown in pl. 69, a', f'; an Upper Level example is shown in pl. 69, c'. Of the total of 55 type IIa pins, 53 come from the Lower Levels.

Type IIb pins made of mammal bone have a decorated end. There are 51 from the Uyak site, 8 of which are Upper Level and 43 Lower Levels. The end embellishment of Lower Level examples may be bilateral notches (pl. 69, l, m, q, r, e'), grooves (pl. 69, n-p, t), or T-ended (pl. 69, i-k).

BONE KNIFE HANDLES

Slotted bone handles for ulos were lacking in the Uyak site. The two Upper Level ulos with handles attached shown by Hrdlička (1944, fig. 112) are not from the Uyak site.

There were a few bone handles with narrow slots to receive a blade, which apparently could only have been of iron. Two handles with narrow slots from the Lower Levels are shown in plate 70, d, f and figure 46. In the first piece a thin, straight cutting blade was used; in the second a curved or arc-shaped blade would best fit the slot. The example in plate 70, d with two slots shows wear and polish on the sides in the area of the blades in a manner reminiscent of the "crooked knife" of the Eskimo (Wissler, 1923, fig., p. 160). Our



Fig. 46. Bone knife handle. USNM 365495. Lower Levels.

specimen is attributed to the Lower Levels of the Uyak site and therefore is prehistoric. Since the slot is too thin for anything but a metal blade, we may only conclude that the blade was made of iron secured from drift wreckage in pre-Russian times (Birket-Smith, 1941, p. 126; Rickard, 1939; Drucker, 1948), or perhaps by trade from the Eskimo farther north. Iron was known in the Bering Strait region to the Punuk and Ipiutak peoples of pre-Russian date. A third handle of this type, from the Upper Level, is shown in plate 70, c, the slot being on the narrow edge near the rounded end.

Handles with deep, narrow slots in the end, which would have held a cutting blade of metal or more probably a very thin stone blade, are represented by two pieces, one from the Upper Level (pl. 70, e) and one from the Lower Levels.

COMPOSITE KNIFE HANDLE

One half of a composite handle for a thin knife blade (of metal?) from the Lower Levels (fig. 47) is paralleled by similar finds in the Ipiutak site (Larsen and Rainey, 1948, pls. 8, fig. 14; 81, fig. 15), St. Lawrence Island (Collins, 1937, pl. 38, figs. 5-7, pl. 78, figs. 4-5; Rainey, 1941, fig. 8, items 1-4), and Ambler Island, Kobuk River (Giddings, 1952a, pl. 4, figs. 4-7).

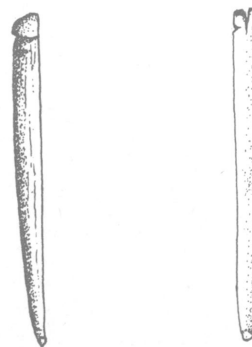


Fig. 47. Composite knife handle. USNM 377665. Lower Levels.

BONE CHISELS

Narrow flat bone woodworking chisels with a sharp, wedge-shaped point were fairly common, and we may take their abundance as evidence of the extensive development of woodcarving. From the Lower Levels there are 28 examples (pl. 71, b, g, i) and 13 are listed from the Upper Level (pl. 71, f, h). There seem to be no important differences between the two levels. With the exception of the seal metacarpal chisel (pl. 71, i, Lower Levels), all chisels are made of cut sections or fortuitously broken splinters of dense whalebone.

Two small chisel-pointed solid bone pieces may be classed provisionally as chisels. They are from the Upper Level (pl. 82, d, e).

SCAPULA SCRAPERS

There are 2 light and thin (caribou or deer?) scapula scrapers with a sharp, undulating edge, one from the Upper Level and one from the Lower Levels (pl. 70, b). A similar piece from the Upper Level with a concave

working edge is illustrated in pl. 70, k. A heavy caribou scapula scraper (pl. 71, a) is exactly paralleled by some found by De Laguna (1934, pl. 45, p. 98) at Cook Inlet. This form is known from other Eskimo sites—for example, Hooper Bay (Oswalt, 1952, pl. 4, fig. 4), Yukon River Indian sites (De Laguna, 1947, pl. 15, figs. 24-26), and Ekseavik (Giddings, 1952a, pl. 31, fig. 10). Its distribution in California is traced by Bennyhoff (in Heizer, 1953, pp. 298-299).

FLAT, HEAVY BONE KNIVES OR SCRAPERS

What may be either blunt-edged knives or scrapers for dressing skins are shown in plate 70, l-o. The working edge is blunt and rounded. There are 16 Lower Levels and 13 Upper Level examples. They range in length from 8 to 16 cm.

Another group of scrapers with the rounded end as the working edge tend, in form, to be thin, narrow and long. There are 13 examples from the Lower Levels (pl. 71, d, e) and 6 from the Upper Level. A heavy land animal (bear?) bone scraper from the Lower Levels is illustrated in plate 71, c.

A cut and trimmed bear mandible (pl. 71, b) is unique in the Uyak site collection. It came from the Lower Levels.

FLAKING TOOLS

Tips for composite flaking tools were abundant in the Uyak site, 46 in all being recovered. Of these, 28 come from the Upper Level and 18 from the Lower Levels. Upper Level pieces average about 13 cm., those from the Lower Levels being about 10 cm. in length. The examples shown in plate 70, i, j resemble those found by Jochelson (1925, fig. 41) in the Aleutian Islands. Compare with Ipiutak (Larsen and Rainey, 1948, pl. 11, figs. 14-18) and Old Bering Sea culture flakers (Collins, 1937, pl. 48, figs. 18-20). The type shown in plate 70, a, g, h is rectangular in cross section, tapers to a point at one end, and is blunt and rounded on the working end. In form these are identical to those found in archaeological sites in northwestern California (collections in UCMA) and used recently by the Yurok and Hupa (Goddard, 1903, pl. 12, p. 34).

We suggest that the local slate was chipped with these tools, and that the chipping process was used to give the initial form to the point or ulo, which was then ground and polished.

NEEDLES

Small and delicate needles may have perforated or grooved ends for thread attachment. These came only from the Lower Levels. There are 3 with perforations (pl. 69, x) and one with a grooved end (pl. 69, w).

Heavier perforated needles were not abundant, there being one from the Lower Levels (pl. 69, v) and 4 from the Upper Level (pl. 69, u), one of which is unusual in being of brown ivory and having a relief spiral carved end (pl. 69, s).

NET GAUGES

Four gauges used in net-making are made of whalebone. Three are from the Upper Level (pl. 59, t, v, w). One is complete and has a long handle roughened at the end. The other two Upper Level pieces are fragmentary. One specimen came from the Lower Levels (pl. 59, u) and is very similar to the Upper Level specimen shown in plate 59, t.

A gauge illustrated by Hrdlička (1944, fig. 185, fourth specimen from left) is not from Kodiak Island as stated.

AWLS

Under the general classification of awls there are, no doubt, some examples of implements used for other purposes than basketry or skin sewing. My rough classification was set up during study of the materials, and the incidence and description of types are given in table 28.

TABLE 28
Bone Awls: Types and Occurrence

Type	Description	Lower Levels	Upper Level
Ia	Of mammal bone; one end pointed	39	21
Ib	Of mammal bone; both ends pointed	2	
IIa	Of bird bone; one end pointed	242	70
IIb	Of bird bone; both ends pointed	2	
IIIa	Of mammal bone splinter; one end pointed	34	33
IIIb	Of bird bone splinter; one end pointed	4	17
Total ...		323	141

Type Ia pieces are commonly made by grinding down one end of the leg bone of the fox. There are 20 fox ulna awls (pl. 72, z, b') from the Lower Levels, and 9 from the Upper Level (pl. 72, a'). The fox tibia (pl. 72, o) is represented by 1 Upper Level and 2 Lower Levels specimens. Some of the points are bluntly beveled, and are probably to be interpreted as chisels for light woodworking (cf. Jochelson, 1925, pl. 28, figs. 7-12). Of some heavy unidentified mammal bone are the awls shown in plate 72, r, s, b'. Two fox (or dog?) tibia and ulna tools with double-bevel points (pl. 72, p, a') are probably also wood-working tools. One penis bone awl from the Upper Level is shown in pl. 72, q. Only 5 examples of awls worked down over the whole surface, and all from the Upper Level, were found (pl. 72, t, u).

Type Ib awls are not illustrated. Two examples from the Lower Levels are of some unidentified mammal bone with each end ground to a sharp point. These are 8.5 cm. long.

Type IIa awls of bird bone with one point and an articular knob left as an aid for grasping were the most common type in both the Upper and Lower Levels.

These showed a considerable range in length (10 to 26 cm.). Ten of these (pl. 72, h) made of bird ulna have double-beveled points and are probably wood-working tools. Bird-bone awls showing variation in length and shape of point of this type are shown in pl. 72, a-k.

Type IIb awls of bird bone are limited to 2 examples from the Lower Levels (pl. 72, m).

Type IIIa awls, made of a splinter of mammal bone with a ground point, have cylindrical tips, and were surely intended to serve as punches or perforators. Examples are shown in pl. 72, v-y.

Type IIIb awls, made of a bird-bone splinter (either a fortuitous fragment or a longitudinally cut strip of the shaft), are illustrated in pl. 72, l.

Types Ia and IIIa seem about equally divided between the Upper Level and Lower Levels and cannot be used to distinguish the two horizons. Types Ib and IIb are represented by only 4 examples, hence it can be proposed only most tentatively that the later peoples of the Upper Level did not know or use the form—all four may be chance manufactures without especial cultural significance. Type IIIa is most strongly represented in the Lower Levels, and it is therefore more typical of the earlier phase of occupation. Type IIIb is found in greatest quantity in the Upper Level and is therefore more typical of the later prehistoric period in the Uyak site.

FISHHOOKS

Three distinct forms of fishhooks occurred in the Uyak site. Represented by a single specimen is type I, the C-shaped single-piece bone hook. The bipointed bone gorge hook (type II) is the most common form. The distinctive two-piece bone hook with curved shank and separate barbed tip (type III) is abundantly represented from all levels.

Type I hooks are represented by one example (pl. 73, j) from the Upper Level. Jochelson (1925, pp. 87, 89, fig. 59A) mentions and figures a similar specimen from Umnak Island found at a depth of 3 feet from surface. The Umnak hook differs from the Kodiak specimen in having an external barb on the tip and a single line-attachment groove instead of the 3 grooves on the Uyak specimen.

Type II hooks have an off-center equatorial groove for line attachment. From the Lower Levels came 165 gorge hooks; from the Upper Level, only 35. The average length of type II hooks is 5.5 cm., few being more than 1 cm. longer or shorter than this figure. Perhaps this hook was used to catch a particular fish, and the hook length was determined by the shape or size of the fish's mouth. An ungrooved bipointed bone piece which would have served as a gorge hook is shown in pl. 69, z.

Type III hooks were known ethnographically on Kodiak Island (Birket-Smith, 1941, fig. 23) and archaeologically from the Aleutian Islands (Jochelson, 1925, p. 87, fig. 58C). In the Uyak site the curved shanks were distributed as follows: Lower Levels, 75; Upper Level, 36—(total 111). The barbed hook tips were slightly differently seriated—62 from the Lower Levels and 50 from the Upper Level.

First, the curved shanks of type III hooks. Some are large and heavy and are made of a slightly modified animal rib (pl. 73, a-c). There are 29 of these heavy shanks, 6 of which come from the Upper Level and 23 from the Lower Levels. The smaller shanks are often beautifully fashioned (pl. 73, d-f) out of a piece of dense bone. Of these, the great majority have the groove for binding on the barbed hook on the right side when the shank is held before the eye with the line-attachment grooves up and the concavity facing the person. An occasional shank is quite thin, or angular (pl. 73, h), or notably small (pl. 73, i). There are in the collection 12 curved rib sections, squarely cut off at each end, from the Lower Levels. They were probably intended for working down into fishhook shanks.

The fishhook barbs, or more properly barbed hook pieces, also vary somewhat in size and form. Some are straight (pl. 73, g, k, n, p) but the majority are slightly curved (pl. 73, l, m, o). Usually they have a single internal barb, though two barbs are not uncommon. Forms of barbing which appear most characteristic of the Aleutian Islands (cf. Jochelson, 1925, pl. 25) are represented by 10 examples from Kodiak (pl. 61, q-t), 7 of which come from the Upper Level and 3 from the Lower Levels.

ADZE HEADS

Made usually of whalebone, heads for mounting small planing adze blades can be divided into 3 main forms: type I, with open blade bed or open socket (pl. 74, a-e); type II, with closed socket (pl. 74, i, j); and type III, with open or closed socket and one or two square notches cut in the side (pl. 74, f-h). Total number of the three types in the Uyak site is 80 specimens, of which 35 come from the Lower Levels and 40 from the Upper Level. Five are not accompanied by records of Level provenience.

Type I heads may have a "handle" (e.g., pl. 74, d) or may be plain (pl. 74, e). Of the total of 63 type I pieces, 29 are from the Lower Levels, and of these, 12 are "handled" and 17 are simple. From the Upper Level come 34 type I adze heads, of which 13 are "handled" and 21 are plain. Typical Lower Levels heads are shown in pl. 74, e, and from the Upper Level those illustrated in pl. 74, a, c, d show the range of shape, finish, and size.

Type II adze heads have a closed socket into which the thin adze blade was set. There are 3 Upper Level examples (pl. 74, j) and one Lower Levels representative (pl. 74, i).

Type III pieces with a square side notch look, at first, like the familiar Eskimo drum handle (cf. Collins, 1937, pl. 81, fig. 6; Jochelson, 1925, fig. 76),⁸ but are identifiable as adze heads, and the side notch may have been used to attach the head to a handle. There are 9 type III heads, of which 5 are from the Lower Levels, 3 from the Upper Level, and 1 of unknown depth provenience. Two Upper Level examples, each with the socket broken away on one side as a result of pressure from the blade during use, are shown in pl. 74, f, g. A Lower Levels piece with two side notches (the only instance of two notches noted) is shown in pl. 74, h. This last piece is also remarkable in being made of antler, and we may suppose that the raw material, if

⁸ Circular hoops with a handle and a bladder drumhead are attested by Davydov (Davydov and Khvostov, 1810-1812, 1:203) and Holmberg (1856, p. 406) for the Koniag.

not the finished tool itself, was imported from the peninsular mainland. Another Lower Levels piece (fig. 48, c) is also made of antler.⁹

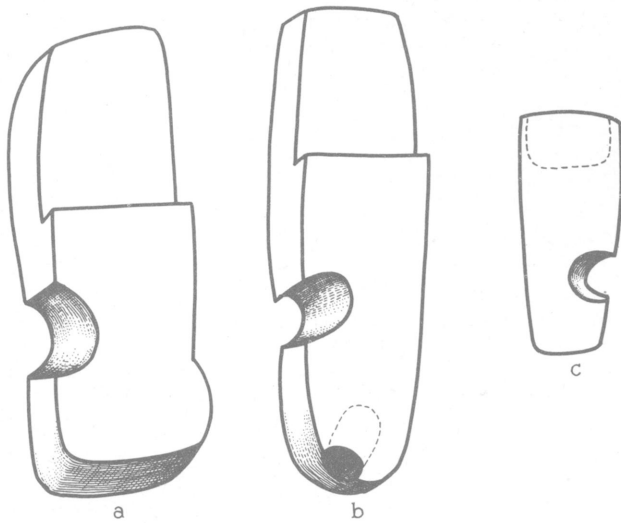


Fig. 48. Type III adze heads from the Lower Levels. a. USNM 36435. b. USNM 377684. c. USNM 375418.

Type III adze heads occur in the Ipiutak site (Larsen and Rainey, 1948, pl. 81, fig. 13; pl. 83, fig. 17) but apparently have not been reported from other Eskimo sites. Type I adze heads are known from the Old Bering Sea culture (Collins, 1937, pl. 46, fig. 4). Type II adze heads are reported from the Punuk culture (Collins, 1937, pl. 78, fig. 19), from modern St. Lawrence Island (Geist and Rainey, 1936, pl. 22, fig. 10), and Ambler Island, Kobuk River (Giddings, 1952a, pl. 3, figs. 1-3).

BAG HANDLES

Two types of curved bag handles came from the Uyak site. The form with notched ends (type I) is represented by 5 specimens, all of which come from the Upper Level. Three are shown in plate 59, x-z. The form with drilled perforations at the ends (type II) is also limited to the Upper Level, from which come the 3 representatives of this type (pl. 59, a', b').

GROOVED AND BEVELED BONE OBJECTS

This semidescriptive rubric is unhandy, and results from my inability (and that of several other students of Alaskan archaeology better qualified than I) to identify the function of the pieces in question. A series of these unidentified specimens is shown in plate 74; a slate object is illustrated in plate 50, n.

Two forms of these objects, totaling 33 pieces, may be recognized. The first (type I) is well made, has squared ends with end grooves and a central groove

⁹ After this paper was completed, records of 4 more open-socket side-notched adze heads were found. These 4 adze heads, all of whalebone, differ from those just described in having a stepped, open blade bed in which the adze blade was apparently lashed. Two from the Lower Levels are shown in fig. 48, a, b. One of the 4 is unaccompanied by depth location, but it is probably from the Lower Levels.

(pl. 74, k-n). The second form (type II) is clearly similar, but is not so carefully made; the ends are knobs, the center groove is lacking, and the piece is on the whole smaller.

Type I forms number 13 pieces, of which 10 come from the Lower Levels (pl. 74, k, l, o) and 3 from the Upper Level (pl. 74, m, n). The range of measurements of these pieces is as follows: length, 9 to 22 cm. (av. 18 cm.); thickness at top, 1.0 to 2.2 cm. (av. 1.5 cm.); width, 2.0 to 5.0 cm. (av. 3.5 cm.). These pieces may have been thread- or sinew-twisters used in the fashion of a turnbuckle, but this is only a mere guess as to their actual former use.

Type II forms number 16 pieces, of which 6 come from the Lower Levels and 10 from the Upper Level. Compared with type I forms, and entirely on the assumption that the two are equivalent, it would appear that both forms were present during the period of earlier occupation, and that, with the passage of time, the less carefully finished (II) came gradually to have greater vogue than the better made type (I), which predominated, numerically speaking, in the earlier period. The range of measurements of our type II pieces is as follows: length, 9 to 14 cm. (av. 8.0 cm.); thickness, 1.0 to 2.0 cm. (av. 1.5 cm.); width, 1.6 to 2.5 cm. (av. 2.1 cm.). Compared to the type I examples, those of type II are shorter and narrower, but of equal thickness. The type II pieces tend, thus, to approach a cylindrical cross section, as, indeed, does the example illustrated in pl. 74, q. This last piece is atypical by reason of the central equatorial groove; a more typical example with "knobbed" ends is shown in pl. 74, p.

BONE WEDGES

Flat wedges of whalebone with slightly curved thin points used for splitting wood were abundant in the Uyak site. A total of 421 examples accompanied by data are in the collection, and of these, 267 are from the Lower Levels and 154 from the Upper Level. Most specimens show battering on the blunted end (pl. 75, g). Generally speaking, the wedges from the Upper Level are cruder and less carefully trimmed and rubbed down—they appear to be more hastily made, without particular regard to finish and craftsmanship. Drill pits occur on the flat surface of some wedges (pl. 75, d). One or two pits is usual, but 5 or 6 pits are not uncommon. From the Lower Levels there are 14 such wedges, and from the Upper Level there are 23. Two types of wedges are distinguished.

Type I is simple (pl. 75, h); type II has a "handle" or offset end (pl. 75, c, d). There are 401 type I wedges, 251 from the Lower Levels and 150 from the Upper Level. Average length of Lower Levels wedges is 17 cm., of Upper Level specimens, 14 cm., though lengths of individual specimens in each level reach to 45 cm.

Type II wedges are rare, only 20 being found. From the Lower Levels came 16; from the Upper Level, 4. The average length of Lower Levels specimens is 23 cm.; for those of Upper Level provenience, 12 cm.

Examples of Uyak wedges are presented in plate 75: a specimen showing adze marks, apparently a wedge in the process of manufacture, in plate 75, a; a well finished wedge from the Lower Levels (pl. 75, b); long and short examples (pl. 75, e, h-i); and a unique example with a shouldered blade (pl. 75, f).

In summary, two types of wedges occur, each type being more abundantly represented in the Lower Levels. These Lower Levels pieces also show a degree of finish of manufacture better than those from the later period, as represented by Upper Level pieces. Drill pits in wedges occur on specimens from both strata, but are more common on those from the Upper Level.¹⁰ Type I (simple) wedges from the Upper and Lower Levels do not differ significantly in length, but type II (handled) wedges from the Lower Levels average twice as long as Upper Level examples.

COMBS

Three flat single-piece bone combs were found; all are made of dense whalebone. One (no. 375440, not illustrated) from the Lower Levels, is 5 cm. long, 4 cm. wide, and originally had 10 teeth before it was broken off at the base. The two other combs are shown in plate 71, n and o, and come from the Upper Level. One, like 375440, is plain. The other has a dentate-edged base with a sharply incised line running across it.

No composite combs or indications of them were found.

BONE WHISTLE

A single short bone whistle with a medial oval cut hole (pl. 80, h) was recovered from the Upper Level. There is no evidence of a stop.

DRINKING TUBES

Two well finished, undecorated bird-bone tubes from the Upper Level, 20.5 and 19.5 cm. long, are probably to be identified as drinking or sucking tubes (pl. 80, t).

BONE BALLS

Two round balls of whalebone are 5.5 and 4.5 cm. in diameter. One came from the Lower Levels (pl. 65, i), and the other from the Upper Level. They are like some stone specimens and may have been used in a game.

BONE DAGGERS AND SWORDS

It is recognized that some of the pieces described as "daggers" or "swords" may, alternatively, be long and heavy harpoon foreshafts, heavy lance points for dispatching sea mammals, or root-digging tools (cf. Jochelson, 1925, pl. 26, fig. 37). However, the shape and size of the specimens so classed as weapons make this function probable, if not provable. The early historical accounts are silent on the occurrence of such weapons.

A total of 11 specimens which measure 30 cm. or more in length fall into this class. Of these, 10 come from the Lower Levels and a single one from the Upper Level. Lower Levels pieces are illustrated in plate 77, a-d, j and plate 76, a-d. Those which seem to have been thrusting pieces are cylindrical in cross section;

¹⁰ The bowdrill is mentioned for the Koniag by Davydov (Davydov and Khvostov, 1810-1812, 2:105).

the only sword is the piece shown in plate 76, c. All of the implements are of whalebone, except the pieces shown in plate 77, j and plate 71, p, q. One of the last two pieces is perforated at one end; the other has one beveled and rounded end, which is serrated—the piece may have served as a combination knife and scraper.

LONG, HEAVY, POINTED BONE IMPLEMENTS

This is a miscellaneous group of heavy whalebone implements whose size and shape, and probably their original functions, vary. Some may be heavy foreshafts, though no socket-pieces or harpoon heads sufficiently large to match them were recovered from the Uyak midden. In general form they are cylindrical or subcylindrical in cross section, range in length from 16 to 29 cm., may have one or two or more side lugs at the blunt end or midpoint, and vary from quite blunt to quite sharp points. They may have served as root-digging implements, as lance points, as small prying tools, or any one of a hundred unsuspected special purposes which Eskimos seem to delight in contriving.

There is a total of 98 specimens of this class, of which 65 come from the Lower Levels and 33 from the Upper Level. Illustrative of the variety of form are pieces from the Upper Level (pl. 77, e, f, i) and Lower Levels (pl. 77, g, h).

WHALEBONE CLUBS

A heavy, crudely made curved club of whalebone (rib) came from the Lower Levels (pl. 76, e). It may have been a salmon club or a weapon.

Another specimen, somewhat better made, with a single side lug (pl. 71, j) from the Lower Levels may have been a club for killing fish, or perhaps served as a weapon.

POINTED BONE IMPLEMENTS WITH EXPANDED HEAD

Rather large pointed bone tools with flattened and expanded ends were uncommon. There are 3 examples (pl. 69, d') measuring 17, 14, and 11 cm. in length from the Lower Levels, and one example (pl. 69, g') from the Upper Level. They may have been used for cutting, scraping, or digging.

BONE RINGS

Sections of mammal bone with the cancellous interior partly removed (pl. 71, l, m) number four, all from the Lower Levels. One, which is 2 cm. thick, has an incised groove around the circumference.

RECTANGULAR "STAMP"

The unusual ivory piece shown in figure 49 comes from the Lower Levels. It is well made, but bears no relief or incised decoration. No function can be suggested for it.

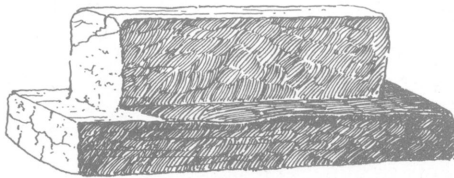


Fig. 49. Rectangular stamp. USNM 377691.
Lower Levels.

FLAT BONE SHOVEL BLADES

Four shovel blades were found in the Uyak site. A beautifully made specimen of whalebone (pl. 78, a) is 26 cm. long and has 2 oval holes near one end for lashing the handle. It is from the Upper Level. From the Lower Levels is a blade made of a bear scapula with the spine and edges trimmed, the proximal end notched, and with a single hole in the blade (pl. 78, b). The handle was probably inserted in the hole and bound flat by means of the notches. A similar, though unfinished, piece of the same type came from the Upper Level. The fourth specimen, of Upper Level provenience, is of whalebone, ovoid in shape, 30 cm. long, 25 cm. wide, and 8 mm. thick. It has 2 round holes at the narrow end for lashing on the handle.

Scapula shovel blades similar to those from the Uyak site are reported from other Eskimo sites— Ipiutak (Larsen and Rainey, 1948, pl. 21, fig. 5), Kukulik (Geist and Rainey, 1936, pl. 24, fig. 7), Okvik (Rainey, 1941, fig. 22, items 8-9), and Miyowagh (Collins, 1937, pl. 50, fig. 6; pl. 60, fig. 12).

A whalebone shovel blade from the Aleutian Islands is shown by Jochelson (1925, pl. 26, fig. 36).

BONE AND IVORY LABRETS

Labrets of bone or ivory are abundant and vary in form in the Uyak site. There are 18 stone and 56 bone or ivory labrets. These bone and ivory pieces are classified as follows:

Type I. Oval or round top; flattened or round body; usually referred to as "Novices labrets" (cf. De Laguna, 1934).

Type II. T- or hat-shaped; with short or long stud; round or ovoid top. Like types I and II stone labrets.

Type III. Long and narrow; with or without encircling groove.

Type IV. Ovoid and flat; with encircling groove. Like type III stone labrets.

Type V. Small; with angled stud.

Type VI. Of bear canine tooth; interior hollowed.

Type VII. Ovoid; thick and heavy.

Type VIII. Round; spool-shaped.

Type IX. Of hollow bone with expanded top rim; straight-sided stud.

Type X. Composite labret with recessed bone top into which is set, and affixed by a peg or rivet, a white stone stud; very thin. Much like type IV stone labrets.

Type I labrets total 19, of which 8 are from the Upper Level (pl. 79, v, w) and 11 are from the Lower Levels (pl. 79, r, y-a'). The longest specimen is 6.5

cm. and comes from the Upper Level; the shortest is 1.8 cm. long and comes from the Lower Levels.

Type II labrets total 14, of which 3 are from the Upper Level (pl. 79, t, u) and 11 are from the Lower Levels. The Lower Levels pieces have a wide range in size, from large (pl. 79, k) to small. The expanded top flange may be ovoid or circular in outline. The variety of Lower Levels sizes and shapes is shown in plate 79, o-q, s. The last mentioned labret is unique in form and should perhaps be classified separately.

Type III labrets total only 4 examples, of which 2 (pl. 79, h, i) are from the Lower Levels and 2 (pl. 79, f, g) are from the Upper Level. The largest labret (pl. 79, f) is 1.3 cm. wide and has a conical depression in one surface probably intended for a decorative inlay, and a conical pile on the other surface. The other examples are from 0.8 to 1.0 cm. thick.

Type IV labrets are ovoid in outline and flat. The four from the Uyak site all come from the Lower Levels. Two are of wood (pl. 79, b, c) and 2 are of ivory (pl. 79, d). The most distinctive specimen (pl. 79, a) has depressed surfaces which almost certainly once held decorative inlays.

Type V labrets are represented by two pieces, both from the Lower Levels (pl. 79, b'). These are similar to women's labrets from Hooper Bay in Bering Sea (Nelson, 1899, p. 46; pl. xxii, figs. 5-7).

Type VI labrets are made of the canine tooth of the bear. The interior is hollow and may originally have been filled with wood. There are 5 specimens: 3 from the Upper Level (pl. 79, l); one from the Lower Levels; and one without depth location.

Type VII labrets are represented by a single ivory example from the Lower Levels (pl. 79, e), which is distinctively heavy.

Type VIII labrets, which are round and grooved, are early in the site. Two examples from the deepest layers of the Lower Levels (pl. 79, m, n) were found.

Type IX labrets (not illustrated) are round, and were made of the limb bone of some animal. The cancellous interior has been removed, and the hollow interior was probably filled with wood. Three specimens, all from the Lower Levels, are 1.5 cm. high and 2.0 to 3.0 cm. in diameter.

Type X labrets are composite, though a two-piece form is suggested for type IX, both segments being made of imperishable material. In shape this type is paralleled by type IV stone labrets. The single example from the Uyak site (pl. 79, j) is not accompanied by depth location.

A labret is shown on the carved ivory face illustrated in plate 84, e. It may be a type IV or type VIII bone labret.

TUBES AND BEADS

A cylindrical bone section over 3 cm. in length is called a tube; when less than 3 cm. long, it is classed as a bead.

Tubes are either plain (type I) or decorated (type II). Type I tubes, of which 113 were found, were distributed as follows: Lower Levels, 62; Upper Level, 51. These vary from sections of bird bone with hacked off ends to pieces which show careful over-all polishing. Two Upper Level tubes are shown in plate 80, e, f, and one from the Lower Levels in plate 80, g. The average length of 50 complete Lower Levels type I tubes is 8 cm.; for 56 complete Upper Level tubes, 6.9 cm.

Type II tubes are not uniform in length or style of decoration. This lot is, functionally, probably heterogeneous. Of the total of 9 examples, 8 come from the Lower Levels and one from the Upper Level. The Upper Level piece bears 6 incised equatorial lines, 2 at each end and 2 in the center (pl. 80, a). A Lower Levels specimen shown in plate 80, b, is similar except that there are 4 center lines and added decoration in the form of short spurred lines. Another Lower Levels piece (pl. 80, c) is plain at the ends, but has a center equatorial line while each half has 4 longitudinal lines dividing the tube into lineal sections (see also fig. 50).

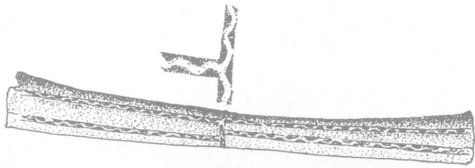


Fig. 50. Bird-bone tube. USNM 395188.
Lower Levels. Type II.

Plate 80, i shows a Lower Levels bead with short incised lines at each end and a series of spiraled lines along the tube. A similar, though simpler, example is shown in plate 80, j. The tube illustrated in plate 80, l has incised decoration limited to one end. Another short tube (Lower Levels) with the central and end lines so deeply cut as to form ridges between them is illustrated in plate 80, k. Decorated and plain bird-bone drinking tubes were found at Ipiutak (Larsen and Rainey, 1948, pl. 92, fig. 18).

Bird bone was commonly cut by means of scoring, with a sharp-edged stone, an equatorial groove. Long strips of thin bone were similarly cut by scoring a series of parallel lines along the length of the bone as shown in plate 80, d. The thin, narrow sections perhaps served as a blank from which needles or other small pointed instruments were made. There are 50 such scored bird bones from the Lower Levels and 19 from the Upper Level.

Beads made of cut sections of bird bone are less than 3 cm. in length, and are undecorated. They range in length from 1.5 to 3.0 cm. There are 15 examples from the Lower Levels and 7 from the Upper Level.

SPINNING TOP DISKS

Four whorls for spinning tops came from the Lower Levels. Two are of whalebone (pl. 81, h) and measure 4.5 and 5.0 cm. in diameter and 1 cm. in thickness. The other two are of ivory, one with two concentric compass-drawn (?) engraved circles on one surface (pl. 81, c); the other is plain (pl. 81, d). The ancient use of the top is attested at Cook Inlet by De Laguna (1934, p. 104, pl. 49).

HALIBUT VERTEBRA DISKS

The concave facing disks of halibut vertebrae were removed and probably served as beads. From the Lower Levels came an articulated necklace consisting of two whole halibut vertebrae in the center, with 11 disks on either side. See plate 85, a for a perforated vertebra from the Upper Level. Jochelson (1925, fig. 104A, p.

100) figures and describes a similar disk as employed in the fashion of a ripcord ring on the combination gutskin coat and hatch cover of the Aleut kayaker.

There are 158 Lower Levels disks, but only 12 from the Upper Level (pl. 85, b, c). Of whole vertebrae with central perforations and smoothed edges (pl. 85, a), there are 3 from the Upper Level and 2 from the Lower Levels. From a Lower Level cache came 19 unmodified, but selected, whole vertebrae of this type which were perhaps being saved for a special purpose.

One disk (fig. 51) is smoothed and decorated with parallel lines and cross-hatched incising (pl. 85, d). It is from the Lower Levels and is unique in the site.

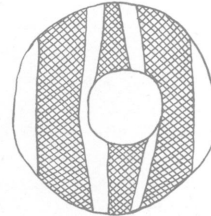


Fig. 51. Halibut vertebra disk.

ARTIFACTS OF HUMAN BONE

Dr. Hrdlička in three papers (1940, 1941a, 1941b) has adequately described human skulls from the Uyak site which exhibit evidence of the intentional (ritual) removal of canine or incisor teeth (1940, pp. 20-21). The custom was rather more common among the Pre-Koniags of the Lower Levels of the Uyak site.

Numerous skeletal parts (skull, mandible, scapula, innominate) have neatly drilled holes. These may possibly be related in some way to the ritual use of human corpses or mummified bodies in the Kodiak region (Lantis, 1938a, esp. p. 452).

Trephined skulls, although artifacts per se, are more properly aspects of primitive surgery (Hrdlička, 1941a, p. 7). One example came from the Uyak site, Lower Levels.

Four dippers or shallow bowls made of human skull came from the Lower Levels (Hrdlička, 1941a, pp. 12-13, pls. 9-11).

MISCELLANEOUS BONE AND IVORY OBJECTS

Under this title are discussed a number of artifacts whose function and identification are unknown to me, and which, so far as can be determined without undue effort, are not commonly met with in other Alaskan archaeological sites. If this last is true, as I strongly suspect it will prove to be in the main, the objects are of more particular significance than would be implied by their treatment in this paper, since they are probably specific and local forms which are part of the distinctive Kodiak Island culture. A few hours with some of the surviving island or peninsular Koniag would probably yield some ethnographic clues to the identification and use of these objects.

"Wicket"-shaped bone objects.—Two examples (pl. 81 i, j) resemble closely an unidentified Punuk period object of ivory illustrated by Collins (1937, pl. 81, fig. 13) from St. Lawrence Island. The short tenons or legs

are round and tapered. Both of the Uyak pieces came from the Lower Levels.

H-shaped objects.—The piece shown in plate 81, k may have served as a toggle, but this identification is uncertain. In all, 8 closely similar examples of this form were found, 4 each from the Upper Level and Lower Levels.

Buttons ?—What may be disk-shaped buttons are shown in plate 81, a (Upper Level), b, e (Lower Levels). The first two have a central and edge perforation; the third is ovoid with a central groove. The 2 bone pieces illustrated in plate 85, e, f may also be toggles, though the fact that each is broken squarely across the central waist indicates that some rather great force was applied, which is not likely with an object used to hold a garment on the body. The first of these pieces comes from the Upper Level; the second, from the Lower Levels.

Barrel-shaped bone object.—A bone section with 4 drilled pits spaced around the equator (pl. 81, n) came from the Lower Levels, as did the short bone tube with a drilled-out interior shown in plate 81, o.

Buckles.—Two beautifully made buckles came from the Lower Levels. The larger (fig. 52, b) is of ivory and has a slightly convex upper surface; the smaller piece, though similar in form, is of bone and is flat (fig. 52, a).

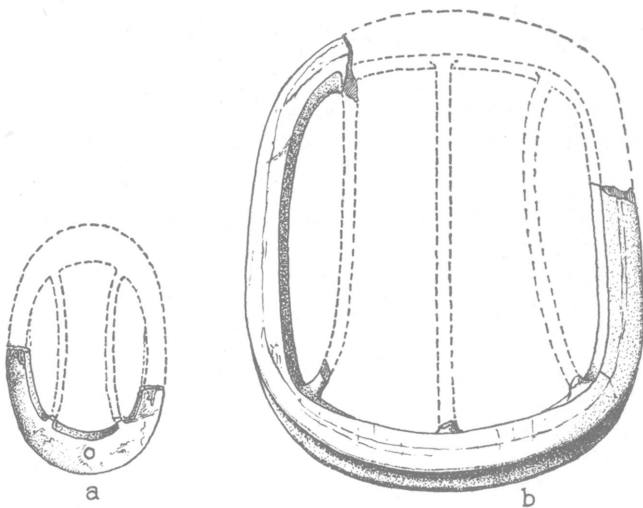


Fig. 52. Ivory and bone buckles. a. USNM 377644. Lower Levels. Bone. b. USNM 375421. Lower Levels. Ivory.

Flat bifurcated object.—The bone specimen shown in plate 82, c and figure 53 is 10.5 cm. long and 0.7 cm. thick. It came from the very lowest layers of the Lower Levels, and is probably as old as any object in the site. Both surfaces bear simple geometric line incising. No function can be suggested for the object.

Side barbs for salmon spear.—Two pointed barbs with lashing holes (pl. 82, f, g) were probably used as barbs for a salmon spear (cf. Nelson, 1899, fig. 42; Larsen and Rainey, 1948, pls. 7, figs. 21-24; 78, fig. 28). Although both pieces are catalogued as coming from the Uyak site, the type is unfamiliar in this area, and the bone is heavily charged with grease. Altogether, I entertain some doubt that these specimens were actually dug from the Uyak midden, and if they should ever become of significance in a distributional study, I should first want independent verification of the local occurrence of the

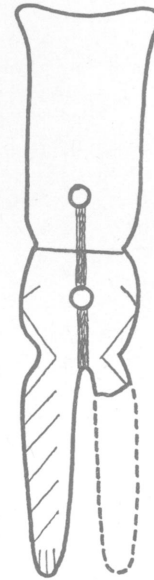


Fig. 53. Flat bifurcated bone object. USNM 375243. Lower Levels.

form before I accepted the two pieces in question as definitely of Uyak site provenience.

Decorated mammal bone tube.—A bone tube with constricted center and a simple incised geometric ornamentation from the Lower Levels is shown in plate 80, m and figure 54.

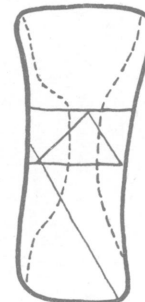


Fig. 54. Decorated mammal-bone tube. USNM 365595. Lower Levels.

Perforated whalebone shaft.—A cylindrical piece of whalebone from the Lower Levels has a flattened end (pl. 71, k) with a well made hole in the end. It is hardly to be considered a shaft wrench. It may be part of a handle.

Unique forms.—The flat whalebone object from the Upper Level shown in plate 82, h has rounded edges and a flat oblique end with 3 drilled slanting holes. It was obviously intended for lashed attachment to a flat surface.

The knob-ended whalebone piece illustrated in plate 82, i is 8 cm. long and the shaft is 2 cm. in diameter. It comes from the Upper Level and is complete in its present form; it was apparently intended for insertion in a hole. It may, however, be the stub of an originally longer piece.

The object shown in plate 82, j is flat on one surface, and rounded with grooved ends on the other. The piece

referred to is the single example from the Upper Level, and there are 4 from the Lower Levels which measure 7.5, 11.5, 13.0, and 16 cm. in length, respectively.

The 3 odd pointed forms shown in plate 82, k-m are, respectively, from the Upper, Lower, and Lower Levels.

The flat, pointed bone object shown in plate 82, r may be a needle or a pendant. It comes from the Upper Level.

The pointed bone object illustrated in plate 82, s, with a flat beveled expanded head, is from the Lower Levels.

A slightly curved whalebone disk with a rectangular tab (pl. 82, n) is 8 mm. thick and 6.5 cm. in diameter. It comes from the Upper Level.

A small flat ovoid whalebone cup (pl. 82, o) is from the Lower Levels.

Two Lower Levels objects, which may each be half of an identical pair lashed together to produce a short piece with socketed ends, are shown in plate 82, t, u. What may be one-piece forms are shown in plate 80, o and figure 55, a. Of these, there are 5 examples—3 from the Lower Levels measuring respectively 3, 3.2, and 3.5 cm. in length, and 2 from the Upper Level, each measuring 4 cm. long. Two pieces, similar but with slotted ends (pl. 80, n), from the Lower Levels, are 4 and 4.5 cm. long. The general similarity in form and size of these 3 types may indicate a similar use for all.

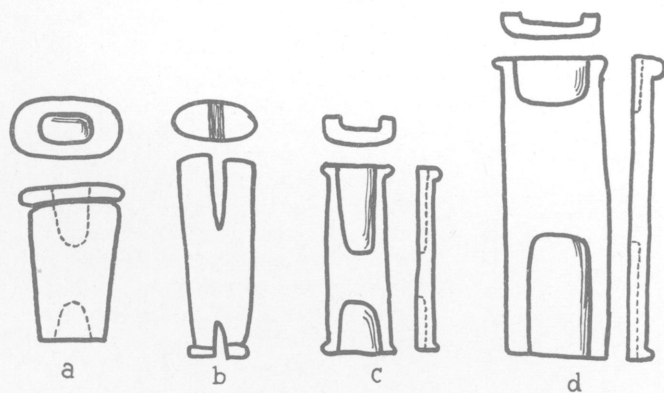


Fig. 55. Socketed and slotted bone pieces.

An animal's head has been ingeniously fashioned from a rounded piece of cancellous bone (pl. 82, v) by utilizing two natural foramina as eyes and incising the nose and mouth. It is probably from the Lower Levels, but level provenience is not recorded.

A flattened and sharp-edged ivory piece (pl. 82, x) and an incomplete grooved bone object (pl. 82, y) both came from the Lower Levels.

SMALL IVORY LADLES

Three miniature ladles made of ivory are in the Uyak site collection, but all the specimens are either incorrectly assigned or, if actually from the site, are to be looked upon as trade pieces derived from the Bering Sea region to the north. The three specimens are shown in plate 81, s, t, y. Dr. Hrdlička may have acquired these either through purchase or gift during the summers he was carrying out his Kodiak work, and in this way they may have been incorporated in the collection from the Uyak site.

H. B. Collins agreed with me in suspecting that these

pieces were not from Kodiak Island, but since they are catalogued from its Lower Levels, there is no alternative but to accept them provisionally. Further excavation on Kodiak Island will show whether or not other such presumed trade pieces are present. See Collins (1937, pl. 51, figs. 14, 15) for Old Bering Sea examples.

Two less well made ivory ladles (pl. 65, d, e), one from the Lower Levels with a ring at the end and one of subrectangular shape from the Upper Level, may represent the Kodiak type, since we have no reason to doubt these as having come from anywhere but the Uyak site.

IVORY DOLLS AND FIGURINES

Parts of dolls are shown in plate 83, a-g. The arms, head, and legs were movable and attached to the body with cords. These were also used in the Cook Inlet region (De Laguna, 1934, pp. 114-115). The piece shown in plate 83, m may be either a doll part, or a separate and complete object. Of 9 specimens, 4 are attributed to the Lower Levels and 5 are unaccompanied by depth provenience. I believe that it is reasonably safe to assume that most or all of the 5 unallocated specimens are from the Lower Levels, but I cannot be certain of this. At any rate, about half of the doll parts which are located are from the Lower Levels, and the same is true of the ivory and bone portraits.

A female figurine fashioned from an old ivory harpoon point still retains the socket in the top of the head. The sketch in figure 56 shows the breasts, navel, and external genitalia.



Fig. 56. Ivory figurine. USNM 363739. Lower Levels.

A small seated ivory human figurine (pl. 82, p) with folded arms is carefully made. Each ear has 2 small drilled holes, and 2 long labrets are shown lying diagonally alongside the mouth. It is from the Lower Levels.

FIGURINES OF FISH AND AQUATIC MAMMALS

Possibly to be interpreted as small fish lures are the miniature carved fish shown in plate 83, o-q, t. Fish lures of this type occur widely in archaeological sites in

the Eskimo area. For example, they are noted at Port Möller (Weyer, 1930, fig. 21). What are clearly meant to be salmon are shown in the Lower Levels specimens (pl. 83, o, p). The fish-shaped form with a perforation at each end (pl. 83, t) may be a clasp for a garment tie, or a pendant. The fish shown in plate 83, x probably represents some larger, more blunt-headed species than the salmon. A more generalized fish is represented by the object shown in figure 57, c, which lacks depth location but is from the Uyak site. A similar, though smaller, form made of bone, from the Upper Level, is shown in figure 57, b, and another Upper Level example (not illustrated) is 6 cm. in length.

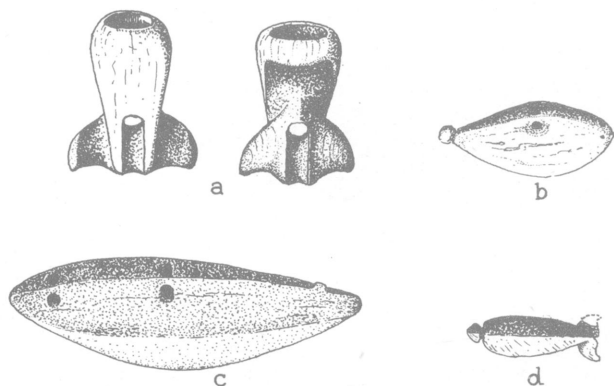


Fig. 57. Figurines of fish and aquatic mammals. a, Lower Levels. Whale. b, USNM 377811. Upper Level. Fish, small. c, USNM 375721. Fish. d, USNM 375428. Lower Levels. Whale.

Whales are represented in miniature by the small ivory forms with horizontal flukes shown in plate 83, s (Lower Levels) and in figure 57, d (Lower Levels). Also representative of the whale, and probably a toggle of some sort, is the gracefully carved, ivory piece with a perforation shown in figure 57, a (Lower Levels). An ivory figure from the Lower Levels, representing a seal or sea otter, is shown in plate 83, r. It may originally have been a punch or awl. Compare this piece to those found by Weyer (1930, fig. 16) at Port Möller and called by him nose ornaments.

The ivory heads of several animals, well carved and highly polished, came from the Lower Levels. The walrus is represented in plate 83, n, v, and birds in plate 83, u, w. They may have been decorations attached to masks or hunting hats (cf. Ivanov, 1930).

ANIMAL AND BIRD FIGURES

Small figures of birds and animals are common in Eskimo sites. The ivory birds with a flat, expanded base (pl. 83, h, i) may have been gaming dies (cf. Lisiansky, 1814), and possibly the same is true of the animals shown in plate 83, j, l. The birds are not identifiable, but may be raptors such as the eagle; the animals may be bears or large sea mammals. All specimens, with recorded depth location, come from the Lower Levels. Collins (1937, pl. 22, fig. 3) shows a flat-based bird head of Punuk culture from St. Lawrence Island which is strikingly similar to one from the Uyak site. The quadruped shown in plate 83, k is unique in being made of stone, a highly polished brown marble.

For similar examples from St. Lawrence Island, see Collins (1937, pls. 13, 22).

A crudely made animal's head of cancellous bone is shown in plate 82, v.

IVORY AND BONE PORTRAITS

On plate 84 are shown 7 whalebone and ivory carvings representing human faces or heads. They exhibit varying degrees of excellence, two being rather sketchy (pl. 84, a, g), the others equaling anything in Eskimo sculpture. All specimens are from the Lower Levels.

The whalebone face with a short tenon to form the neck (pl. 84, a), although crudely executed, is rather forcefully done, and sufficient care was taken to show the rounded cheeks. It is approximately paralleled by the example shown in plate 84, g, which lacks the tenon or neck.

Also of whalebone, but much better carved and smoothed, is the striking face shown in plate 84, b. The eyes, nose, mouth, and the prominent cheekbones combine to give us a realistic representation of some ancient Kodiak Islander.

Two similar faces made from old whalebone splitting wedges are illustrated in plate 84, c, d. Their physiognomy is unmistakably Mongoloid, and therefore presumably Eskimoid. Each has conical drilled pits to receive inset eye pupils; the first has drilled pits, on the side at the ear position, and the second has incised eyebrows and a pit for an inlay in the center of the mouth.

The most distinctive specimen is made of a sperm whale tooth of a mellow ivory color. The natural interior hollow of the tooth is apparent and there is a hole drilled through near the top and a recess drilled in the base where, apparently, a tenoned piece was inserted (see fig. 58). The ears are represented, and a round labret is set in the chin just below the mouth.



Fig. 58.
Ivory portrait.

The last piece (pl. 84, f) may represent a miniature mask. It is made of ivory and is thin, with the inner surface concave and the outer surface convex. The drilled holes—2 at the top and 2 along each side—may be for cord attachments. Two concentric compass-drawn incised circles have as their nucleus the drilled holes at the top and perforations on the upper side.

A small flat tan ivory face is shown in plate 82, q. The chin is "bifurcated," with a drilled hole in the center at the base. It is 5.0 mm. thick.

Pieces rather like some from the Uyak site are reported from other localities, among which may be noted Iputak (Larsen and Rainey, 1948, pl. 25, figs. 3-5; Rainey, 1941, fig. 29), and from the Snell site, New York (Owasco culture; Ritchie, 1951, p. 143).

The trait of inserting small pebbles in drilled holes of ivory, bone, or stone portrait heads to simulate eyes is also known from other Eskimo sites—e.g., Okvik (Rainey, 1941, fig. 29, item 4). A stone figurine from San Juan Islands (Washington), with inserted shell eyes, is pictured by Thomas (1897, pl. 8).

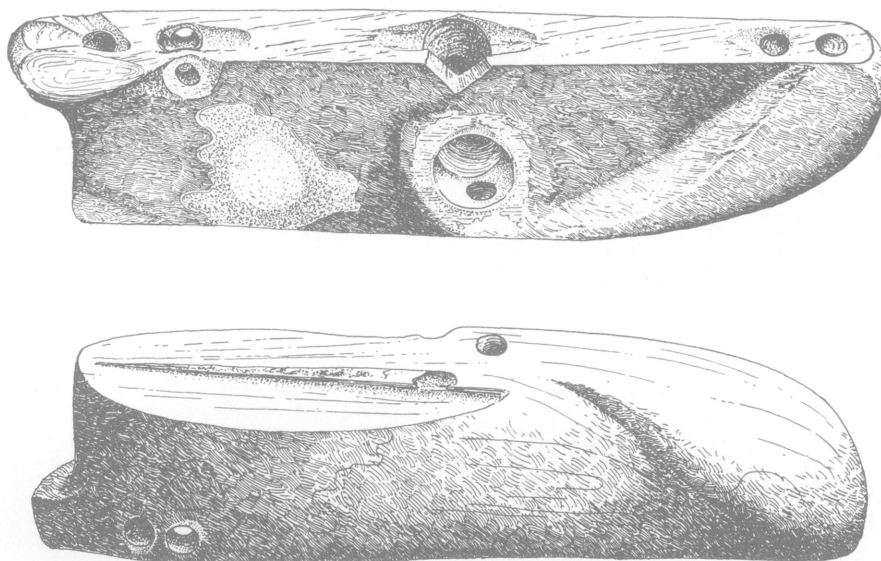


Fig. 59. Drill socket base. USNM 365444. Lower Levels.

CARVED IVORY PLAQUE

What probably ranks as the single most outstanding object from the entire Uyak site is the plaque shown in plates 82, a, and 85, c'. From the back projects an expanded lug, which may have been used to hold the piece, either in the hand or the mouth, though this last seems improbable since it is 19 cm. (nearly 4 in.) long. It is made of dark cream-colored ivory and has low relief carvings of a human face in the center, flanked by two cetaceans. The lower border is undulating, and the entire periphery is decorated by small drilled punctations. The ends are fashioned into birds' heads, perhaps representing the sea parrot or sea eagle. It came from the Lower Levels.

ENGRAVING TOOLS

Three definite engraving tools, at least one of which appears to have rust stains indicating the presence of an iron tip, came from the Uyak site.

One from the Upper Level (pl. 69, b and fig. 60, a) is 10.7 cm. long, 1.3 cm. in diameter and has one end pointed and the other with a short grooved pile for tying on the engraving tip. It is made of ivory and is decorated with 5 equatorial rows of drilled dots.

There are two engraving tools from the Lower Levels. The first (pl. 69, c and fig. 60, b), except for the wide central groove and absence of sharp pointed end, is similar to the Upper Level piece just described. It is 11.4 cm. long and bears a stain on the grooved tip which appears to be rust discoloration. The second example (pl. 69, a and fig. 60, c) has a "stepped" tip and on the surface irregularly spaced shallow pits for decoration.

Since very sharply cut lines and dot-and-circle designs, apparently cut with metal compasses or engraving tools, occur on artifacts from the Lower Levels of the Uyak site, we may suppose the presence of iron in small quantities in the prehistoric period. As pointed out by Larsen and Rainey (1948, pp. 83-84)

and Oswalt (1952, p. 60), who summarize the distribution of such engraving tools (Ipiutak, Okvik, Punuk, Ekseavik on Kobuk River, Hooper Bay, Aleutian Islands, and recent Kodiak Island), iron tips for engraving have been known since Old Bering Sea times. Holmberg (1856, p. 381) and Davydov and Khvostov (1810-12, 2:103) note that iron secured from drift wreckage was known to the Koniag in pre-Russian times.

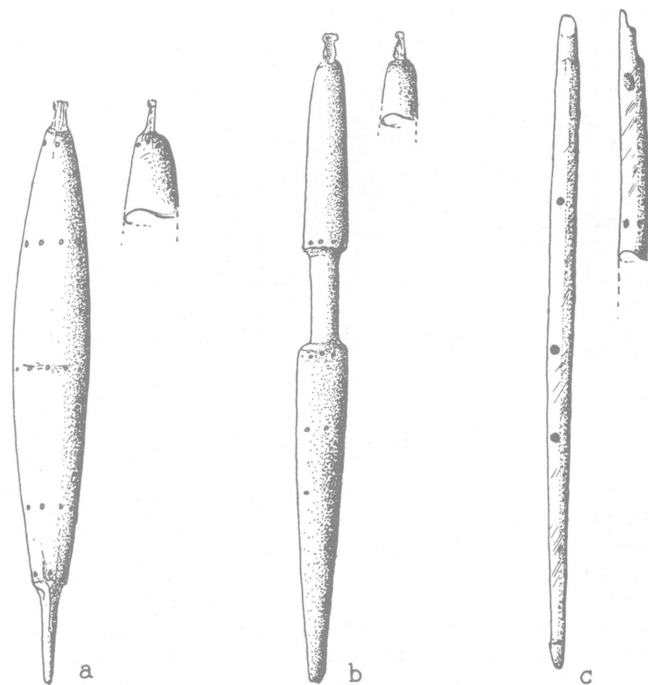


Fig. 60. Engraving tools. a. USNM 377820. Upper Level. See plate 69, b. b. USNM 365501. Lower Levels. See plate 69, u. c. USNM 377665. Lower Levels. See plate 69, a.

NOSE PINS (?)

Identification of certain pieces as nose ornaments is frankly a guess. Nine from the Upper Level are solid round bone shafts, one of which has a flat notch (pl. 69, f); another is step-notched like those shown in plate 69, e. Lower Levels examples, of which there are 9, are variable as to shape. Seven, all about 4.5 cm. long and made of ivory, are good pieces of work (pl. 69, d, h). The other two are round bone sections, one with an incised spiral (pl. 69, g) and one with a "step notch" (pl. 69, e).

DRILLED PENDANTS

Pendants with subcylindrical or subrectangular cross section, drilled at one end and fashioned of ivory, range in length from 3 to 8 cm., 6 cm. being average. From all levels there are 29 pieces, 2 from the Upper Level and 27 from the Lower Levels. Some occurred with burials, but are not catalogued in the U. S. National Museum as grave objects. One cache of 10 pendants came from the Lower Levels; their range in shape is shown in plate 85, m, p, r. Others are shown in plate 85, n, o, q, s.

IVORY AND BONE ORNAMENTS
AND INLAYS

The nicely shaped ivory object shown in plate 81, f is probably an ornament. The reverse side is flat; the obverse surface bears a series of spurred-line engraving.

Possibly an object of personal adornment is the bone specimen shown in plate 81, g. One surface is decorated with incised lines. It comes from the Upper Level.

Two complete ivory link ornaments, one representing the head of a blunt-snouted animal (whale?) from the Lower Levels (pl. 81, w), the other in the form of a sea parrot's head of unknown location, but probably Lower Levels (pl. 81, x), and a longer, but incomplete, tanged end (pl. 82, w; fig. 61) from the Lower Levels resemble specimens from St. Lawrence Island (Collins, 1937, pls. 81, 82), Puvuk period. Older examples are known from Okvik (Rainey, 1941, fig. 24) and Ipiutak (Larsen and Rainey, 1948, pl. 92, fig. 23). Recent Eskimo in the west also know chains and there are late archaeological specimens from Point Hope (Mathiasen, 1930, pl. 14, figs. 14-15).

What may be clothing toggles are shown in plate 85, g-k. Several miscellaneous objects which may have been ornaments or pendants are illustrated in plate 85, v-b'. These include a pendant (pl. 85-v) (cf. Collins, 1937, pl. 82, fig. 10) and a decorated bear's tooth (pl. 85, a'). An un-



Fig. 61. Part of bone chain. USNM 365504. Lower Levels.

finished bone chain (pl. 81, u), not accompanied with depth provenience, is unique to this site. It resembles

chains found in more northerly sites (Collins, 1937, pl. 12, fig. 10). The function of the well finished Lower Levels ivory specimen with ovoid holes at each end (pl. 85, c') cannot be identified, though its use as an ornament may be suggested. Possibly used as pendants are the 2 ivory pieces shown in plate 85, l, t, which come from the Lower Levels. What may be a crude bone bead is the specimen shown in plate 81, y from the Lower Levels.

Several small pieces which were intended as inlays vary in shape. The flat bar decorated with 3 compass-drawn nucleated concentric circles on one surface (pl. 81, l) comes from the Lower Levels. A thick ivory ring with a square tenon attached may also have been intended for insertion into a square mortise hole (pl. 81, p).

IVORY EYES

Two ivory eyes with inset pupils (pl. 81, q, r) were found with a human skull. Hrdlička (1941b; 1944, figs. 40-41) has described these and called attention to similar finds at Cook Inlet and Point Hope (see also Larsen and Rainey, 1948, pl. 49, figs. 9-13).

DRILL SOCKET BASE

The specimen shown in plate 82, b and figure 59 is unique in the site. It is made of mottled brown and white ivory, and has been much modified by shaping and sawing, and by having 10 holes drilled in it. The drill holes vary in diameter from 6 to 13 mm. One of its purposes may have been to serve as a base for a bowdrill. It comes from the Lower Levels.

ANTLER GRAVING CHISELS
OR GOUGE HANDLES

Two handles of antler, each with concave cutting-blade bed in which was lashed a beaver incisor, were probably hand-held woodworking tools. One (fig. 62, a) is without depth location, and the second (fig. 62, b) is from the Upper Level. These are generally referred to in the literature as beaver tooth gouges, and are considered an Indian tool (Giddings, 1952a, p. 78). It would appear to be late in the Uyak site, though in the forested zone it may be very early.

UNWORKED ANTLER TINES

About 30 horn tines of deer or caribou were found. None showed evidence of being worked, and it is curious that these were not utilized as flint flakers. They appear to be rejects and are not to be considered implements. The majority came from the Upper Level, and because these animals are not indigenous to Kodiak Island, the material must have been secured from the mainland by trade.

BEAVER INCISOR KNIFE (?)

A single beaver incisor, 5.3 cm. long, from the Lower Levels appears to show use on the beveled tip. There is no sign of its having been hafted, but such knives were known on Kodiak Island in the historic period (Birket-Smith, 1941, fig. 32, a).

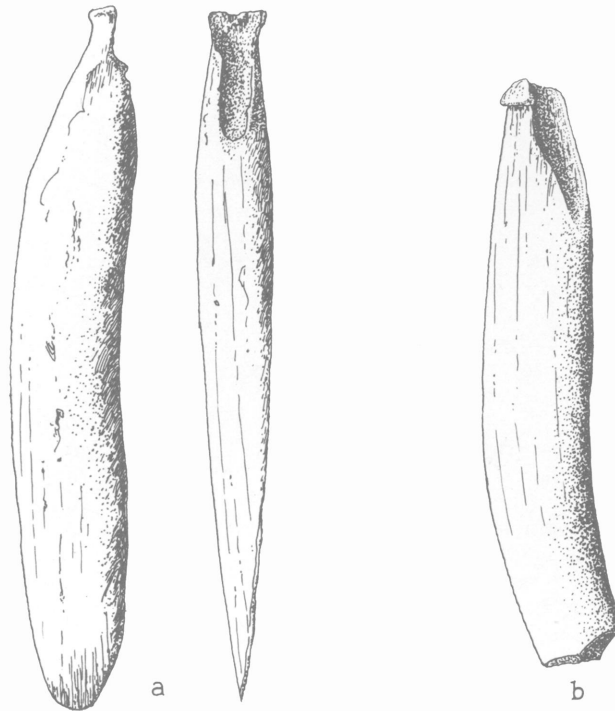


Fig. 62. Antler engraving tool handles.
a. USNM 375578. b. USNM 365639. Upper Level.



Fig. 63. Carved slate object, with pecked design. USNM 377736. Upper Level.

SUMMARY OF OCCURRENCE OF ARTIFACT TYPES

Table 29 attempts to summarize the occurrence of artifacts from the Uyak site, using a rough and admittedly arbitrary quantitative measure by which, in either Lower or Upper Levels, 1 to 5 specimens are considered "rare," 6 to 15 "common," and over 16 specimens "abundant." The ratio of Lower Levels—Upper Level occurrence was then calculated and, depending upon the level weighting, designated by letter ("L" for Lower Levels, "U" for Upper Levels) as distinctive to one or the other horizon.

The following types discussed in the text are not entered in table 29 because of doubtful level provenience or because it was known that large numbers of specimens of the type were not saved or because the type was too miscellaneous to make the entry meaningful: Type II splitting adze; hammerstone; Type Ib mauls; polishing stones; Type I labrets; paint mortars; Type IIIa and IIIb socket-pieces; flat, rectangular whalebone containers; Type VII crude whalebone containers; flat, heavy bone knives or scrapers; long, heavy, pointed bone implements; Type X labrets; Type VI (hunters') lamps; Type VII (natural) stone lamps; Type III, B lamps.

Side-barbs for salmon spears (described under "Miscellaneous Bone Objects") are not listed because there is some question whether these are actually from the Uyak site. The same obscurity surrounds the small ivory ladles attributed in the U. S. National Museum catalogue to the Uyak site, and they are therefore not tabulated.

The simple arithmetical ratio employed here is one which is reasonably effective if some judgment is employed in drawing inferences as to the significance of the variable weightings of occurrence in the two levels. A ratio of 0/1 or 1/0 is to be considered barely significant, for the ratio refers to a single specimen in one or the other level of the Uyak site, but here the significance of the occurrence will depend upon the nature of the specimen itself. A ratio of 2/1 or 1/2 means that the type is twice as frequent in one level as in the other, and ratios of increasingly weighted occurrence indicate a greater vogue in one level, with the implication that the type is more characteristic or typical of the level in which it is numerically predominant.

If we ignore all 1/1 ratios for the moment as being types common to both stratigraphic levels, we find that table 29 lists 177 types as characteristic of the Lower Levels¹¹ and 49 as typical of the Upper Level. Since the Lower Levels midden is about three times as thick as the Upper Level deposit, it would appear that artifacts per unit of cubic mass of deposit are about equally abundant in both levels. The 3/1 ratios would therefore indicate that a type was present in approximately equal strength in each stratigraphic level. A 1/1 ratio (there are 46 entries in table 29 in this class) would, by this measure of frequency per unit of mass, indicate that the type was relatively three times as abundant in the Upper Level as in the Lower Levels.

If we accept a ratio of Lower/Upper Level occurrence

¹¹ This number includes ratios classed as "L" not only for individual types, but also for general categories (e.g., notched and grooved stones, total occurrence of all types).

greater than 3/1¹² as indicating a trait characteristic of Lower Levels culture, we may list the following as distinctive to the Lower Levels.¹³ (Numbers in first column correspond to numbers of traits in table 29.)

List No. 1	
No.	Trait
1*	Neptunea columellae
2*	Smoothed <u>Protodesmus</u> shells
6	Type I. A. 2 stone lamps
7	Type I. B. 2, subtype a stone lamps
8*	Type I. B. 2, subtype b stone lamps
10	Type I. B. 2, subtype d stone lamps
11*	Type I. B. 2, subtype e stone lamps
12*	Type I. B. 2, subtype f stone lamps
13*	Type I. B. 2, subtype g stone lamps
14*	Type I. B. 2, subtype h stone lamps
23	Type IIa grooved stones
29*	Type V grooved stones
32*	Type VII grooved stones
35	Large, flat side-notched stones
37*	Large, flat single-notched stones
38	Teshoa flakes
46	Type Ia mauls
49*	Type IVa mauls
51*	Type IVc mauls
59*	Type II flaked knives
60*	Type III flaked spear or lance heads
66	Type IIIa chipped ulos
75*	Type Vc polished ulos
79	Type IIa slate lance or spear heads
81	Type III slate lance or spear heads
82*	Type IV slate dart points
83	Type V slate dart points
84	Type VI slate dart points
95*	Type XIVd slate lance or spear heads
100*	Type Ib slate flensing blades
102*	Type Id slate flensing blades
103*	Type IIa slate flensing blades
106	Type IIIa slate flensing blades
107*	Type IIIb slate flensing blades
114	Pitted anvils
125*	Type VI harpoon socket-pieces
130*	Type IIb harpoon foreshafts
132	Type Ia barbed dart heads
133	Type Ib large, barbed dart heads
134	Type Ib small, barbed dart heads
135	Type Ic large, barbed dart heads
149*	Type IIf barbed dart heads
150*	Short small tips for barbed dart points
151	Long small tips for barbed dart points
153	Type Ia toggle harpoon heads
154*	Type Ib toggle harpoon heads

¹² Treating single occurrence (1/0) as unique and perhaps due to special causes, but double occurrence (2/0) as indicative of an established type, the list of characteristic Lower Levels traits includes these ratios from table 29: 2/0, +3/0, +4/1.

¹³ Starred numbers in List No. 1 indicate traits occurring only in the Lower Levels.

<u>No.</u>	<u>Trait</u>	<u>List No. 3</u>	<u>No.</u>	<u>Trait</u>
155	Type Ic toggle harpoon heads			
156*	Type II toggle harpoon heads			
162*	Type IVd toggle harpoon heads		4*	Type I. A. 1 stone lamps
165*	Composite harpoons		26	Type IIIb notched stones
168	Type II, unbarbed socketed projectile points		36	Long, flat side-notched stones
172	Type Ib bone arrowheads		40	Type Ia planing adzes
175*	Type IIc bone arrowheads		42	Type IIa planing adzes
176	Type IIIa bone arrowheads		58	Type I flaked chopping disks
177*	Type IIIb bone arrowheads		89	Type XI ground slate lance or spear heads
178	Type IIIc bone arrowheads		97	Type XIVf ground slate whaling spear tip
179*	Type IIId bone arrowheads		109*	Incised slate tablets
180*	Type IIIe bone arrowheads		112	Type III stone labrets
184	Whalebone plates		113*	Type IV stone labrets
187*	Type II crude whalebone containers		117	Type II stone balls
194*	Whalebone vertebra cylinders		119	Type Ia harpoon socket-pieces
197	Type IIa bone pins		121*	Type Ic harpoon socket-pieces
198	Type IIb bone pins		137*	Type Id large barbed dart heads
205*	Small perforated bone needles		138*	Type Ie large barbed dart heads
211*	Type Ib bone awls		139	Type Ie small barbed dart heads
212	Type IIa bone awls		144	Type IIb small barbed dart heads
213*	Type IIb bone awls		147	Type IIc small barbed dart heads
218	Type II fishhooks		173	Type IIa bone arrowheads
233	Type II bone wedges		181	Heavy barbed lance points
238	Bone daggers and swords		203	Scapula scrapers
240*	Bone rings		204	Flaking tools
245	Type II bone and ivory labrets		207	Large perforated bone needles
247*	Type IV wood and ivory labrets		208	Net gauges
248*	Type V wood and ivory labrets		215	Type IIIb bone awls
251*	Type VIII bone and ivory labrets		223	Type II adze heads
252*	Type IX bone and ivory labrets		226*	Type I bag handles
255	Type II bone tubes		227*	Type II bag handles
256*	Spinning top disks		230	Type II grooved and beveled bone objects
257	Halibut vertebra disks		234	Bone combs
258*	Wicket-shaped bone objects		236*	Bone drinking tubes
262*	Bone buckles		242	Flat bone shovel blades
267*	Ivory and bone portraits		249	Type VI bear tooth labrets
270	Drilled ivory pendants			

Thus, 83 specific items may be said to characterize the Lower Levels culture of the Uyak site.

In the general class (i.e., forms with two or more subtypes) there are seven groups which are distinctive to the Lower Levels (List No. 2).

<u>No.</u>	<u>Class</u>	<u>List No. 2</u>
33	Flat side-notched pebbles	
45	Stone mauls	
57	Flaked implements (except ulos)	
62	Chipped ulos	
98	Slate flensing blades	
152	Toggle harpoon heads	
166	Unbarbed socketed projectile points	

Individual artifact types which may be considered definitely characteristic of the Upper Level of the Uyak site number 34.¹⁴ Here, in order to avoid doubtful ratios, we include in List No. 3 Lower/Upper Level ratios of 0/2, 0/3+, 1/2, and 1/2+.

¹⁴ Starred numbers in List No. 3 refer to types which occur only in the Upper Level.

Three classes of artifacts whose total of all types combined make them predominantly or exclusively Upper Level period forms are as follows.

<u>No.</u>	<u>Class</u>	<u>List No. 4</u>
110	Stone labrets	
118	Harpoon socket-pieces	
225	Bag handles	

Of our summary list of 271 entries, about 30 per cent (91) are distinctively early (Lower Levels), and about 12 per cent (37) are characteristically late (Upper Level). The balance of types (58 per cent) may be, with less certainty, suggested as belonging to one of several categories provided we assume that the Upper Level and Lower Levels represent cultural as well as stratigraphic divisions. In making this assumption, we are ignoring the fact that the superficial deposit (Upper Level) is only about one-third as thick as the deeper midden (Lower Levels). The categories are:

1. Types with a Lower/Upper Level ratio of occurrence of 1/1 are considered to be basic elements known throughout the history of the site and not capable of being designated as more distinctive of either horizon. These are tabulated below in List No. 5.

2. Types with a Lower/Upper Level ratio of 1/0, 2/1, and 3/1 are considered distinctive of the Lower Levels culture and times (tabulated below, List No. 7).
3. Types with a Lower/Upper Level ratio of 0/1 which occurred only once in the site are considered characteristic of the Upper Level (see List No. 9 below).

In group 1 (elements shared between Upper and Lower Levels) we have a list (No. 5) of 40.

List No. 5

<u>No.</u>	<u>Trait</u>
18	Type IV. A stone lamps
27	Type IIIc notched and grooved stones
28	Type IV notched stones
30	Type VIa grooved stones
34	Small flat side-notched pebbles
41	Type Ib planing adzes
43	Type IIb planing adzes
44	Type I splitting adzes
55	Type I whetstones
65	Type II slate ulos
73	Type Va slate ulos
80	Type IIb slate lance or spear heads
86	Type VIII slate lance heads
120	Type Ib harpoon socket-pieces
126	Harpoon finger rests
136	Type Ic small barbed dart heads
140	Type If barbed dart heads
141	Type IIa large barbed dart heads
142	Type IIa small barbed dart heads
143	Type IIb large barbed dart heads
145	Type IIc small barbed dart heads
146	Type IId large barbed dart heads
148	Type IIe small barbed dart heads
157	Type IIIa toggle harpoon heads
171	Type Ia bone arrowheads
174	Type IIb bone arrowheads
182	Blunt-ended bone points
183	Bone spoons
186	Type I crude whalebone containers
196	Type I bone pins
200	Bone knife handle for stone blade
214	Type IIIa bone awls
220	Type III fishhook tips
222	Type I adze heads
237	Bone balls
244	Type I bone and ivory labrets
246	Type III bone and ivory labrets
254	Type I bone tubes
259	H-shaped bone objects
271	Nose pins (?)

Of artifacts subdivided into two or more types, six are in group 1 (equally shared in Upper and Lower Levels).

List No. 6

<u>No.</u>	<u>Class</u>
39	Planing adzes
54	Whetstones
115	Stone balls
221	Adze heads
228	Grooved and beveled bone objects
253	Bone tubes

In group 2 (traits classed as probably more characteristic of the Lower Levels horizon than Upper Level deposit) we have 73 items. Starred numbers denote forms occurring only once in the site and from the Lower Levels.

List No. 7

<u>No.</u>	<u>Trait</u>
9	Type I. B. 2, subtype c stone lamps
15	Type II. A stone lamps
16*	Type II. B stone lamps
17	Type III. A stone lamps
19*	Type IV. B stone lamps
21	Type Ia grooved stones
22*	Type Ib notched stones
24	Type IIb notched stones
25	Type IIIa grooved stones
31	Type VIIb notched stones
47*	Type II stone mauls
50*	Type IVb stone mauls
52*	Type IVd stone mauls
53*	Stone saw
56	Type II whetstone
63	Polished slate ulos
64	Type I slate ulos
67*	Type IIIb slate ulos
68	Type IVa slate ulos
69	Type IVb slate ulos
70	Type IVc slate ulos
71	Type IVd slate ulos
74	Type Vb slate ulos
76	Type Vd slate ulos
78	Type I ground slate points
85	Type VII ground slate dart points
87	Type IX ground slate arrowpoints
88	Type V ground slate dart points
90	Type XII ground slate harpoon head tips
91	Type XIII ground slate arrowpoints
93*	Type XIVb ground slate lance or spear heads
94*	Type XIVc ground slate lance or spear heads
99	Type Ia flensing knives
104*	Type IIb slate flensing blades
108*	Slate mirror
111	Type II stone labrets
116	Type I stone balls
124	Type V harpoon socket-pieces
128	Type I harpoon foreshafts
129	Type IIa harpoon foreshafts
158*	Type IIIb toggle harpoon heads
160*	Type IVb toggle harpoon heads
161*	Type IVc toggle harpoon heads
163*	Type IVe toggle harpoon heads
164*	Type IVf toggle harpoon heads
167	Type Ia unbarbed socketed projectile points
169	Bird-dart prongs
188*	Type III crude whalebone containers
189*	Type IV crude whalebone containers
190*	Type V crude whalebone containers
191	Type VII crude whalebone containers
192*	Flat bone scoop
193	Perforated whale vertebra disks
199	Bone knife handles for metal blade
201*	Composite bone knife handles
202	Bone chisels
206*	Small grooved bone needles
210	Type Ia bone awls
219	Type III fishhook shanks

No.	Trait	Classification	No. of traits	Per cent of total
224	Type III adze heads	A. Strongly characteristic of Lower Levels (Lists 1, 2),.....	90	33.2
229	Type I grooved and beveled bone objects			
232	Type I bone wedges	B. Weakly predominant or single occurrence in Lower Levels, (Lists 7, 8)	86	31.7
239	Pointed bone implements with expanded head			
241*	Rectangular bone "stamp"	C. Equally present in Upper Level and Lower Levels (Lists 5, 6)...	46	16.9
250*	Type VII bone and ivory labrets			
260	Bone buttons	D. Strongly characteristic of Upper Level (Lists 3, 4)	37	13.6
261*	Barrel-shaped bone object			
263*	Flat bifurcated bone object	E. Single occurrence limited to Upper Level (List 9)	12	4.4
264*	Decorated mammal bone tubes			
265*	Perforated whalebone shaft			
266*	Ivory drill-socket base			
268*	Carved ivory plaque			
269	Ivory engraving tools			

Of categories of objects which have been subdivided into two or more types (e.g., notched and grooved stones), the total count of all types expressed in a numerical ratio of Lower/Upper Level occurrence, 13 belong to the same group of Lower Levels emphasis, as shown in the following list.

List No. 8

No.	Class
3	Stone lamps
20	Notched and grooved stones
61	Slate ulos
77	Ground slate blades and points
127	Harpoon foreshafts
131	Barbed dart heads
170	Bone arrowheads
185	Crude whalebone containers
195	Bone pins
209	Bone awls
216	Bone fishhooks
231	Bone wedges
243	Bone and ivory labrets

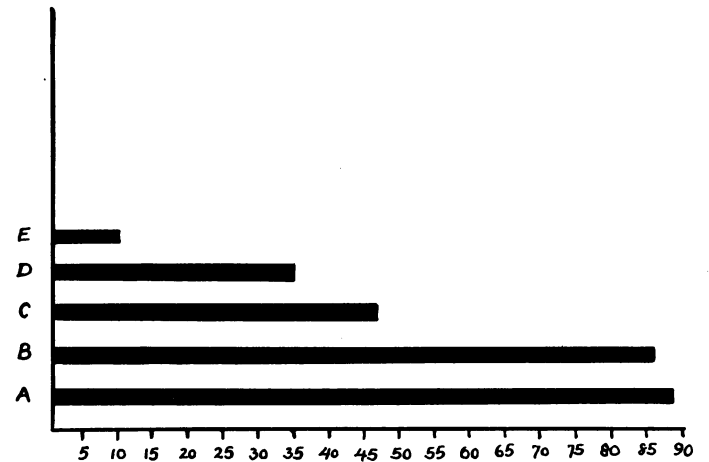
Our last lot of residual traits (group 3) consists of 12 (List No. 9) which occur as single specimens in the Upper Level of the Uyak site.

List No. 9

No.	Trait
5	Type I, B. 1 stone lamps
48	Type III stone mauls
72	Type IVe slate ulos
92	Type XIVa ground slate lance or spear heads
96	Type XIVE ground slate lance or spear heads
101	Type Ic slate flensing blades
105	Type IIc slate flensing blades
122	Type II harpoon socket-pieces
123	Type IV harpoon socket-pieces
159	Type IVa toggle harpoon heads
217	Type I fishhooks
235	Bone whistles

In final summary, we have found that 271 main classes and subclasses of artifacts from the Uyak site can be designated, with reference to variable numerical preponderance in one or the other stratigraphic level, as follows:

The simple graph below shows relative strength of the five categories (A-E).



Percentage strength of groups of traits according to occurrence in Upper Level and Lower Levels of Uyak Site.

One further extraction of table 29 is necessary. The starred numbers in lists No. 1 and No. 7 indicate those types whose occurrence was restricted to the Lower Levels. There are 78 such traits. Lists No. 3 and No. 9 show only 21 traits whose occurrence is restricted to the Upper Level. All unstarred traits in lists No. 1 to No. 8 occur in both levels, though with variable relative frequency.

What is shown by all of this rather tedious sorting and resorting of the data on level occurrence of artifact types is that there are certain real differences in culture content of the Upper Level and Lower Levels of the Uyak site. What is cited above as unique to or most characteristic of the Lower Levels horizon is the most precise summation which I have been able to extract from a museum collection for which exact provenience data within the site is wanting. Although mild skepticism has been expressed several times about Hrdlička's absolute equation of the "Pre-Koniag" population with the Lower Levels and the Koniag population with the Upper Level of the Uyak site, there can be no doubt that in the main the Pre-Koniag type preceded the Koniag population. Lack of accurate information on depth of occurrence of both cultural and skeletal materials makes impossible the desideratum expressed by Collins (1945, p. 361), namely, that when the archaeological materials from the Uyak site are studied, the results will "allow the

reader to form independent judgment of the author's [Hrdlička's] conclusions regarding type succession and relationships of skeletal materials in the middens."

Our data show not only elements of material culture restricted to one or the other of the two levels, but also elements which occur in both levels. Of the total of 271 entries in table 29, only 100, or 36 per cent, are exclusive to one or the other level; 171, or 64 per cent, traits are shared. If we possessed accurate stratigraphic data and accompanying depths of occurrence of this "residual" majority of artifacts, we might be able to suggest when, in the history of the site's occupation, the Koniag population succeeded the Pre-Koniag inhabitants of the village. This we cannot do, however, and, not possessing any special qualifications as a seer, I do not propose to attempt to explain how this undoubted population replacement was effected. With reference to this problem all that does stand out from the factual data at hand is the strong likelihood that the Koniag succession was gradual and not, as Hrdlička (1944, p. 395) states:

The Koniags themselves must have come to the island in large numbers, sufficient to annihilate and drive out the oldtimers, for apparently they suddenly took over the old sites everywhere and established themselves on the top of them, without any period of infiltration, transition or perceptible admixture.

Hrdlička's conclusion of the sudden replacement of population was, I believe, something which he gradually came to believe while excavating the Uyak site. Because the round-headed Koniag skeletal type was more common in the uppermost levels of the deposit, he equated the

Upper Level filled with burned slate rubble with the Koniag people.¹⁵ If an occasional Koniag-type skeleton was found below the Upper Level in the Lower Levels, he explained it as having been buried in a deep grave, and if a Pre-Koniag skeleton was found too near the surface, perhaps relic-hunters had brought it up from below or even the Koniag themselves might have dug it up out of a deep house pit or posthole. What might contribute to the solution of this problem would be an examination of the skeletal material from the Uyak site to see whether any instances of genetic admixture of Koniag and pre-Koniag are apparent.

It may be assumed (admitting the correctness of my identifications of artifacts) that, if a trait is not mentioned, it did not occur in the U.S. National Museum collections. To list all material forms not evidenced in the Uyak site would be tedious, but it may be worth specifically remarking that there was found no actual evidence of boats (cf. Holmberg, 1856, pp. 379-380, and Heizer, 1952, pp. 15-16, for ethnographic evidence of skin boats), pottery, spear-throwers, sledges, large whaling harpoon heads of bone or ivory, sealing scratchers, bird bolas, slat or rod armor, baleen objects, snow goggles, and two-handed scrapers. The material trait complex of the recent Koniag culture can be partly determined from the listings given in Hrdlička (1944), Birket-Smith (1941), and Heizer (1952).

¹⁵ The burned slate rubble is a by-product of the steam sweat bath. This type of sweat bath is obviously intrusive, and although the Koniag may have been responsible for its introduction, the appearance of the steam sweat bath was not necessarily coeval with the appearance of the Koniag themselves. This is precisely what needs to be proved or disproved on the basis of stratigraphic data—it cannot, as Hrdlička assumes, be taken for granted.

TABLE 29

Summary of Occurrence of Artifacts of the Uyak Site

No.	Trait and type	Lower Levels*			Upper Level*			Ratio L/U	Distinctive to
		+16	6-15	1-5	+16	6-15	1-5		
1.	<i>Neptunea columellae</i>	44						44/0	L
2.	Smoothed <i>Protodesmus</i> shells		8					8/0	L
3.	Stone lamps (all types)	87			24			3/1	L
4.	Type I. A. 1					8		0/8	U
5.	Type I. B. 1						1	0/1	U
6.	Type I. A. 2	34				6		5/1	L
7.	Type I. B. 2, subtype a	20					1	20/1	L
8.	subtype b		7					7/0	L
9.	subtype c			2			1	2/1	L
10.	subtype d						2	4/1	L
11.	subtype e		8					8/0	L
12.	subtype f		7					7/0	L
13.	subtype g			3				3/0	L
14.	subtype h			5				5/0	L
15.	Type II. A		8				3	3/1	L
16.	Type II. B			1				1/0	L
17.	Type III. A			2			1	2/1	L
18.	Type IV. A			1			1	1/1	L
19.	Type IV. B			1				1/0	L
20.	Notched and grooved stones (all types)	153			50			3/1	L
21.	Type Ia		14			8		2/1	L
22.	Type Ib			1				1/0	L
23.	Type IIa	44				8		5/1	L

*Traits are classed as rare (1-5), common (6-15), or abundant (+16). See p. 84.

TABLE 29 (Cont'd.)

No.	Trait and type	Lower Levels			Upper Level			Ratio L/U	Distinctive to
		+16	6-15	1-5	+16	6-15	1-5		
24.	Type IIb		15				5	3/1	L
25.	Type IIIa	54			17			3/1	L
26.	Type IIIb			3			5	1/2	U
27.	Type IIIc			1			1	1/1	
28.	Type IV		6				4	1/1	
29.	Type V		9					9/0	L
30.	Type VIa			1			1	1/1	
31.	Type VIb			3			1	3/1	L
32.	Type VII			2				2/0	L
33.	Flat, side-notched pebbles (all types)	25				6		4/1	L
34.	Small			3			3	1/1	
35.	Large	22					3	7/1	L
36.	Long, flat side-notched stones			1			3	1/3	U
37.	Large, flat single-notched stones			4				4/0	L
38.	Teshoa flakes	19					4	5/1	L
39.	Planing adzes (all types)	57			54			1/1	
40.	Type Ia		6			11		1/2	U
41.	Type Ib	57			54			1/1	
42.	Type IIa			3		7		1/2	U
43.	Type IIb		6				5	1/1	
44.	Splitting adzes Type I			1			1	1/1	
45.	Mauls (all types)		12				3	4/1	L
46.	Type Ia			5			1	5/1	L
47.	Type II			1				1/0	L
48.	Type III						1	0/1	U
49.	Type IVa			2				2/0	L
50.	Type IVb			1				1/0	L
51.	Type IVc			2				2/0	L
52.	Type IVd			1				1/0	L
53.	Stone saw			1				1/0	L
54.	Whetstones (all types)	32			24			1/1	
55.	Type I		13			13		1/1	
56.	Type II	19				11		2/1	L
57.	Flaked implements (all types)		15				3	5/1	L
58.	Type I			3		8		1/3	U
59.	Type II			3				3/0	L
60.	Type III			4				4/0	L
61.	Slate ulos (all types)	650			228			3/1	L
62.	Chipped	311			83			4/1	L
63.	Polished	339			145			2/1	L
64.	Type I	290			120			2/1	L
65.	Type II		7			8		1/1	
66.	Type IIIa	267			56			5/1	L
67.	Type IIIb			1				1/0	L
68.	Type IVa		15			9		2/1	L
69.	Type IVb			3			1	3/1	L
70.	Type IVc		10				4	2/1	L
71.	Type IVd		6				2	3/1	L
72.	Type IVe						1	0/1	U
73.	Type Va	28			18			1/1	
74.	Type Vb	17				8		2/1	L
75.	Type Vc			3				3/0	L
76.	Type Vd			3			1	3/1	L
77.	Ground slate blades and points (all types)	107			40			2/1	L
78.	Type I		12			6		2/1	L
79.	Type IIa		12				3	4/1	L
80.	Type IIb			2			2	1/1	
81.	Type III		9				1	9/1	L
82.	Type IV		7					7/0	L
83.	Type V		15				3	5/1	L
84.	Type VI		8				2	4/1	L

TABLE 29 (Cont'd.)

No.	Trait and type	Lower Levels			Upper Level			Ratio L/U	Distinctive to
		+16	6-15	1-5	+16	6-15	1-5		
84.	Type VI		8				2	4/1	L
85.	Type VII		15				5	3/1	L
86.	Type VIII			2			3	1/1	
87.	Type IX		6				2	3/1	L
88.	Type X		7				4	2/1	L
89.	Type XI			1			3	1/3	U
90.	Type XII			3			1	3/1	L
91.	Type XIII			2			1	2/1	L
92.	Type XIVa						1	0/1	U
93.	Type XIVb			1				1/0	L
94.	Type XIVc			1				1/0	L
95.	Type XIVd			2				2/0	L
96.	Type XIVE						1	0/1	U
97.	Type XIVf			1			2	1/2	U
98.	Slate flensing blades (all types)	32					5	6/1	L
99.	Type Ia			3			1	3/1	L
100.	Type Ib			5				5/0	L
101.	Type Ic						1	0/1	U
102.	Type Id			4				4/0	L
103.	Type IIa			4				4/0	L
104.	Type IIb			1				1/0	L
105.	Type IIc						1	0/1	U
106.	Type IIIa		10				2	5/1	L
107.	Type IIIb			5				5/0	L
108.	Slate mirror			1				1/0	L
109.	Incised slate tablets						2	0/2	U
110.	Stone labrets (all types)			5		10		1/2	U
111.	Type II			2			1	2/1	L
112.	Type III			3		7		1/2	U
113.	Type IV						2	0/2	U
114.	Pitted anvils			4			1	4/1	L
115.	Stone balls (all types)	23			17			1/1	
116.	Type I	21				13		2/1	L
117.	Type II			2			4	1/2	U
118.	Harpoon socket-pieces (all types)	18			33			1/2	U
119.	Type Ia			2		13		1/6	U
120.	Type Ib		11			15		1/1	
121.	Type Ic						2	0/2	U
122.	Type II						1	0/1	U
123.	Type IV						1	0/1	U
124.	Type V			2			1	2/1	L
125.	Type VI			3				3/0	L
126.	Harpoon finger rests			3			4	1/1	
127.	Harpoon foreshafts (all types)	178			50			3/1	L
128.	Type I	142			38			3/1	L
129.	Type IIa	29				12		2/1	L
130.	Type IIb		7					7/0	L
131.	Barbed dart heads (all types)	234			84			3/1	L
132.	Type Ia	63				8		8/1	L
133.	Type Ib large	17					3	6/1	L
134.	Type Ib small	91				15		6/1	L
135.	Type Ic large		10				2	5/1	L
136.	Type Ic small			3			2	1/1	
137.	Type Id large						3	0/3	U
138.	Type Ie large						2	0/2	U
139.	Type Ie small			1			2	1/2	U
140.	Type If			3			3	1/1	
141.	Type IIa large		10			11		1/1	
142.	Type IIa small	16				12		1/1	
143.	Type IIb large			4			4	1/1	
144.	Type IIb small			1			3	1/3	U
145.	Type IIc small			3			2	1/1	

TABLE 29 (Cont'd.)

No.	Trait and type	Lower Levels			Upper Level			Ratio L/U	Distinctive to
		+16	6-15	1-5	+16	6-15	1-5		
146.	(Barbed dart heads)								
	Type II d large			1			1	1/1	
147.	Type II d small			2			5	1/2	U
148.	Type II e small		7				5	1/1	
149.	Type III f			2				2/0	L
150.	Small tips for barbed dart points: short			3				3/0	L
151.	long		14				1	14/1	L
152.	Toggle harpoon heads (all types)	73				10		7/1	L
153.	Type Ia	36				7		5/1	L
154.	Type Ib		15					15/0	L
155.	Type Ic		12				1	12/1	L
156.	Type II			2				2/0	L
157.	Type III a			1			1	1/1	
158.	Type III b			1				1/0	L
159.	Type IV a						1	0/1	U
160.	Type IV b			1				1/0	L
161.	Type IV c			1				1/0	L
162.	Type IV d			2				2/0	L
163.	Type IV e			1				1/0	L
164.	Type IV f			1				1/0	L
165.	Composite harpoons		11					11/0	L
166.	Unbarbed socketed projectile points (all types)	88			16			5/1	L
167.	Type Ia	23					9	2/1	L
168.	Type II	65					7	9/1	L
169.	Bird-dart prongs	20					12	2/1	L
170.	Bone arrowheads (all types)	255			109			2/1	L
171.	Type Ia	119			92			1/1	
172.	Type Ib		14				2	7/1	L
173.	Type II a			1			4	1/4	U
174.	Type II b			5			5	1/1	
175.	Type II c			2				2/0	L
176.	Type III a	139					3	46/1	L
177.	Type III b		15					15/0	L
178.	Type III c	27					3	9/1	L
179.	Type III d		7					7/0	L
180.	Type III e	26						26/0	L
181.	Heavy barbed lance points		6		18			1/0	U
182.	Blunt-ended points			2			3	1/1	
183.	Spoons	21			22			1/1	
184.	Whalebone plates	25					1	25/1	L
185.	Crude whalebone containers (all types)		10				3	3/1	L
186.	Type I			3			2	1/1	
187.	Type II			2				2/0	L
188.	Type III			1				1/0	L
189.	Type IV			1				1/0	L
190.	Type V			1				1/0	L
191.	Type VII			2			1	2/1	L
192.	Flat bone scoop			1				1/0	L
193.	Perforated whale vertebra disks			5			3	2/1	L
194.	Whale vertebra cylinders			2				2/0	L
195.	Bone pins (all types)	122			38			3/1	L
196.	Type I	26			28			1/1	
197.	Type II a	53					2	26/1	L
198.	Type II b	43					8	5/1	L
199.	Bone knife handles:								
	for metal blade			2			1	2/1	L
200.	for stone blade			1			1	1/1	
201.	Composite bone knife handles			1				1/0	L
202.	Bone chisels	28					13	2/1	L

TABLE 29 (Cont'd.)

No.	Trait and type	Lower Levels			Upper Level			Ratio L/U	Distinctive to
		+16	6-15	1-5	+16	6-15	1-5		
203.	Scapula scrapers			1			2	1/2	U
204.	Flaking tools	18			28			1/2	U
205.	Bone needles:								
	small, perforated			3				3/0	L
206.	small, grooved			1				1/0	L
207.	large, perforated			1			4	1/4	U
208.	Net gauges			1			3	1/3	U
209.	Awls (all types)	323			141			2/1	L
210.	Type Ia	39			21			2/1	L
211.	Type Ib			2				2/0	L
212.	Type IIa	242			21			12/1	L
213.	Type IIb			2				2/0	L
214.	Type IIIa	34			33			1/1	
215.	Type IIIb			4	17			1/4	U
216.	Fishhooks (all types)	302			122			2/1	L
217.	Type I						1	0/1	U
218.	Type II	165			35			5/1	L
219.	Type III shanks	75			36			2/1	L
220.	Type III tips	62			50			1/1	
221.	Adze heads (all types)	35			40			1/1	
222.	Type I	29			34			1/1	
223.	Type II			1			3	1/3	U
224.	Type III			5			3	2/1	L
225.	Bag handles (all types)					8		0/8	U
226.	Type I						5	0/5	U
227.	Type II						3	0/3	U
228.	Grooved and beveled bone objects (all types)	16				13		1/1	
229.	Type I		10				3	3/1	L
230.	Type II		6			10		1/2	U
231.	Bone wedges (all types)	267			154			2/1	L
232.	Type I	251			150			2/1	L
233.	Type II	16					4	4/1	L
234.	Bone combs			1			2	1/2	U
235.	Bone whistles						1	0/1	U
236.	Drinking tubes						2	0/2	U
237.	Bone balls			1			1	1/1	
238.	Bone daggers and swords		10				1	10/1	L
239.	Pointed implements with expanded head			3			1	3/1	L
240.	Bone rings			4				4/0	L
241.	Rectangular "stamp"			1				1/0	L
242.	Flat bone shovel blades			1			3	1/3	U
243.	Bone and ivory labrets (all types)	37			16			2/1	L
244.	Type I		11			8		1/1	
245.	Type II		11				3	4/1	L
246.	Type III			2			2	1/1	
247.	Type IV			4				4/0	L
248.	Type V			2				2/0	L
249.	Type VI			1			3	1/3	U
250.	Type VII			1				1/0	L
251.	Type VIII			2				2/0	L
252.	Type IX			3				3/0	L
253.	Bone tubes (all types)	70			52			1/1	
254.	Type I	62			51			1/1	
255.	Type II		8				1	8/1	L
256.	Spinning top disks			4				4/0	L
257.	Halibut vertebra disks	158				12		13/1	L
258.	Miscellaneous bone objects:								
	Wicket-shaped objects			2				2/0	L
259.	H-shaped objects			4			4	1/1	
260.	Buttons			2			1	2/1	L

TABLE 29 (Cont'd.)

No.	Trait and type	Lower Levels			Upper Level			Ratio L/U	Distinctive to
		+16	6-15	1-5	+16	6-15	1-5		
	(Miscellaneous bone objects)								
261.	Barrel-shaped objects			1				1/0	L
262.	Buckles			2				2/0	L
263.	Flat, bifurcated objects			1				1/0	L
264.	Decorated mammal bone tubes			1				1/0	L
265.	Perforated whalebone shaft			1				1/0	L
266.	Drill socket base			1				1/0	L
267.	Ivory and bone portraits		7					7/0	L
268.	Carved ivory plaque			1				1/0	L
269.	Engraving tools			2			1	2/1	L
270.	Drilled ivory pendants	27					2	13/1	L
271.	Nose pins (?)		9			9		1/1	

APPENDIX

NOTES ON A POTTERY-BEARING SITE AT OLGA BAY, KODIAK ISLAND

In 1949 I published a description of some pottery fragments which had been collected by or through the efforts of Dr. Hrdlička from a limited series of archaeological sites at Olga and Horsemarine bays on the southwestern coast of Kodiak. These were similar in form and construction to the vessel from the same vicinity published earlier by De Laguna (1939), and were therefore important in verifying this ware as typical of Kodiak Island and of definite localized distribution. The idea was developed that the Kodiak pottery was recent in time, but lacking adequate excavation data this could only be suggested. The association of glass trade beads (fig. 4), iron, and "chinaware" (probably ironstone china) from the Olga

Bay sites seems to prove conclusively the historic use of pottery.

In 1953 Mr. Donald Clark, a student at the University of Alaska whose home is at Kodiak City, sent to me a collection of potsherds from two sites near Olga Bay, which he refers to as "Upper Station" site (cf. Hrdlička, 1944, p. 111, fig. 21) and "Upper Lake" site. Their locations are shown in fig. 1. Mr. Clark collected these sherds (fig. 5) while employed by the Bureau of Fisheries, and has written a brief report, which is printed below. The potsherds discussed here differ in no particular from those earlier described by me (Heizer, 1949).

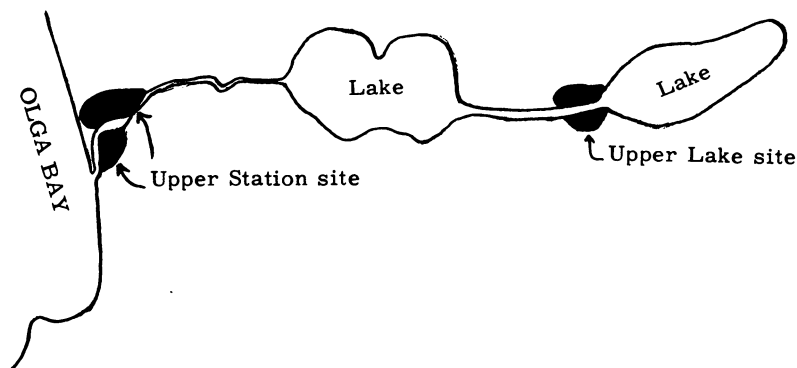


Fig. 1. Sketch map of Olga Bay sites. Not drawn to scale.

UPPER STATION SITE

By

Donald Clark

The site occupies several acres of both level and steeply inclined ground on both sides of the mouth of Upper Station Creek. The vegetation is the same as that on the surface of other Kodiak Island sites, alder-berry bushes in house depressions, nettles on the refuse deposits. Away from the site, grass and tundra predominate. Parts of the site appear as low mounds, but this is probably owing to house-pit rims and higher vegetation. I did not determine the depth of the refuse deposits. At the house depression where beads were found I was unable to find a sharp demarcation between the refuse accumulation and underlying soil and glacial till. I doubt if the deposits are more than a few inches deep on level ground. One important fact, which no doubt contributed to the frequency of surface finds, is that this area was not covered with Katmai volcanic ash erupted in 1912.

The site must have been built horizontally rather than vertically. Before the vegetation had grown too high I counted almost 80 house depressions, most of them with

side rooms. One group, having fairly clear outlines, is shown in the enclosed sketch (fig. 3.).

As to climate, the area has a large number of rainy days like most of Kodiak Island, with a larger number of windy days than most spots on Kodiak. The highly seasonal food supply, among other things, leads me to believe that the site was occupied mainly in the summer. This food supply consists mainly of three species of salmon, at present running from June 10 or slightly earlier to October, with spawning salmon available in the lakes until December. A number of seals come with the salmon, and a few birds, otter, and porpoise occur locally.

Alihak (an error for Alitak) is the name given for this village on Lisiansky's map (1814, pl. opp. p. 169), and the Geographic Dictionary of Alaska (Baker, 1906, p. 93) seems to indicate that it was still occupied in 1849.

When I arrived at Upper Station about June 1, the site was becoming bright green; almost all neighboring

vegetation was dead and brown. At this time I went over the surface of the site at least twice, finding several potsherds, slate knife fragments, sinkers, lamps, and a "bob" (cf. Hrdlicka, 1944, p. 317). One lamp, found in the side of a house depression, was the front half of a moderate-sized Koniag-type lamp,¹ the broken edges of which had been rounded.

Planting a garden, I found some tiny glass beads. Re-raking the garden provided a few more beads, but proved too slow a method of collecting. Screening did not work because the earth was too wet, and finally earth was carried in buckets to the stream and washed. By this method about 300 glass beads were collected. Along with these beads, whose concentration occurred from 3 to 6 inches below the surface, were found scraps of iron, two quartz crystal drills, chips of chalcedony, a chip of chinaware, and a cylindrical pellet of jet.

Since the beads were found just a few feet from a well-defined house depression with side compartments, I conjectured that the historic items came from there,

¹ Presumably what is called in the main report here type I. A. 1.

the only near-by house (in Area B, fig. 2). Accordingly I ran a shallow trench the width of a garden rake up to the house, through the entrance and across the floor of the main room. The results were not as anticipated. Beads were scarce in the house, there were no china fragments or iron objects. Because of the near-surface water table, I did not make the trench over two feet deep. Below the water table were found nondescript pieces of wood, a knife handle, and a large wood labret. The trench did yield several pieces of pottery, most of which belonged to four vessels. Pottery buried deeper than one foot was in bad condition, apparently owing to disintegration in the perennially wet soil.

Glass beads, pieces of iron, a fragment of a china saucer or dish were found across the creek in Area A.

Along the three-quarters of a mile of stream between the upper and lower lakes, inland from Upper Station, are abundant indications of campsites, including house depressions with side rooms. At the upper lake mouth the houses were clustered as closely as those at the Upper Station site near the bay. The Upper Lake site is a mound, but the elevation is probably largely natural.

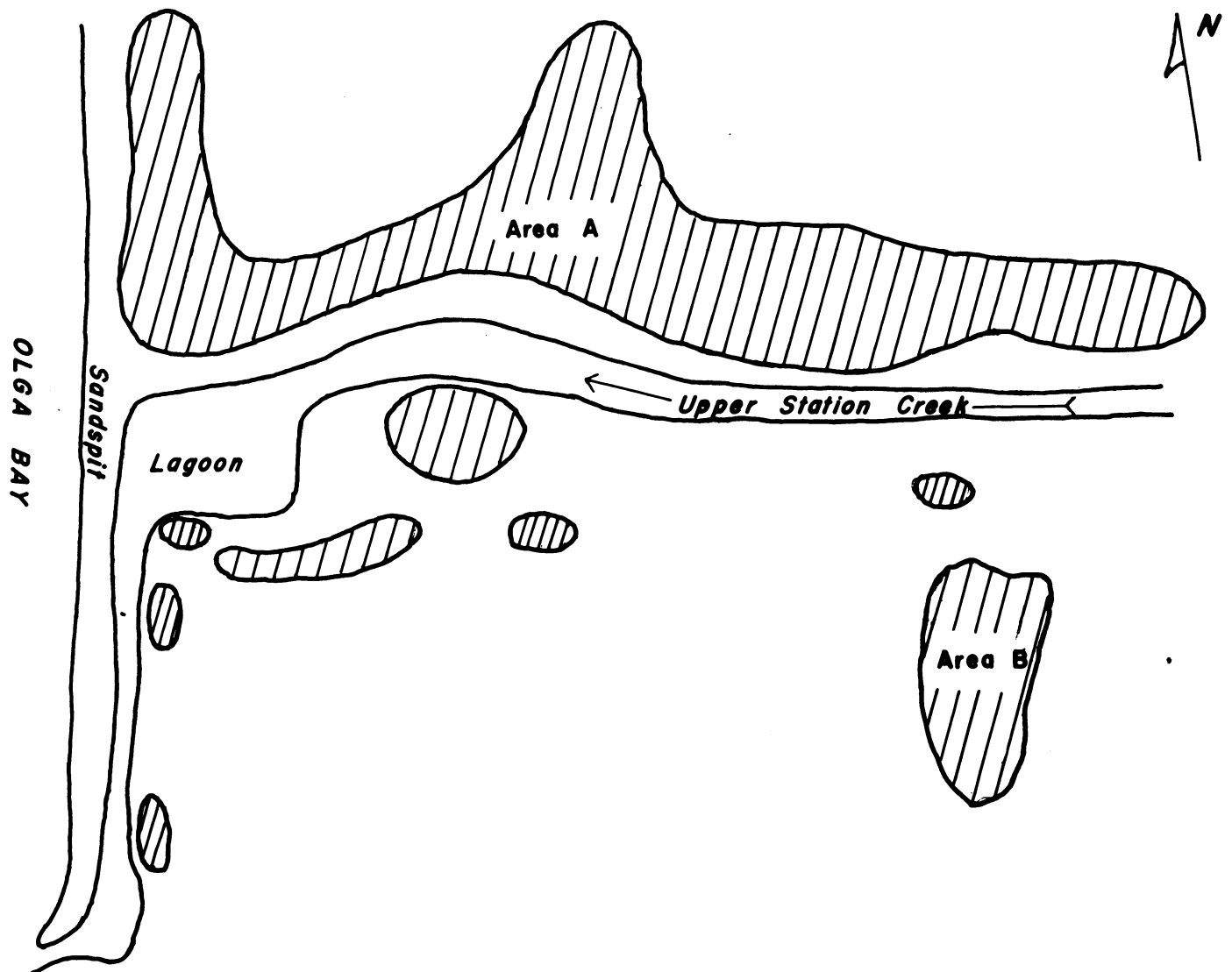


Fig. 2. Sketch map of Upper Station site. Length of site ca. 2000 ft. Site area is shown by hachuring.

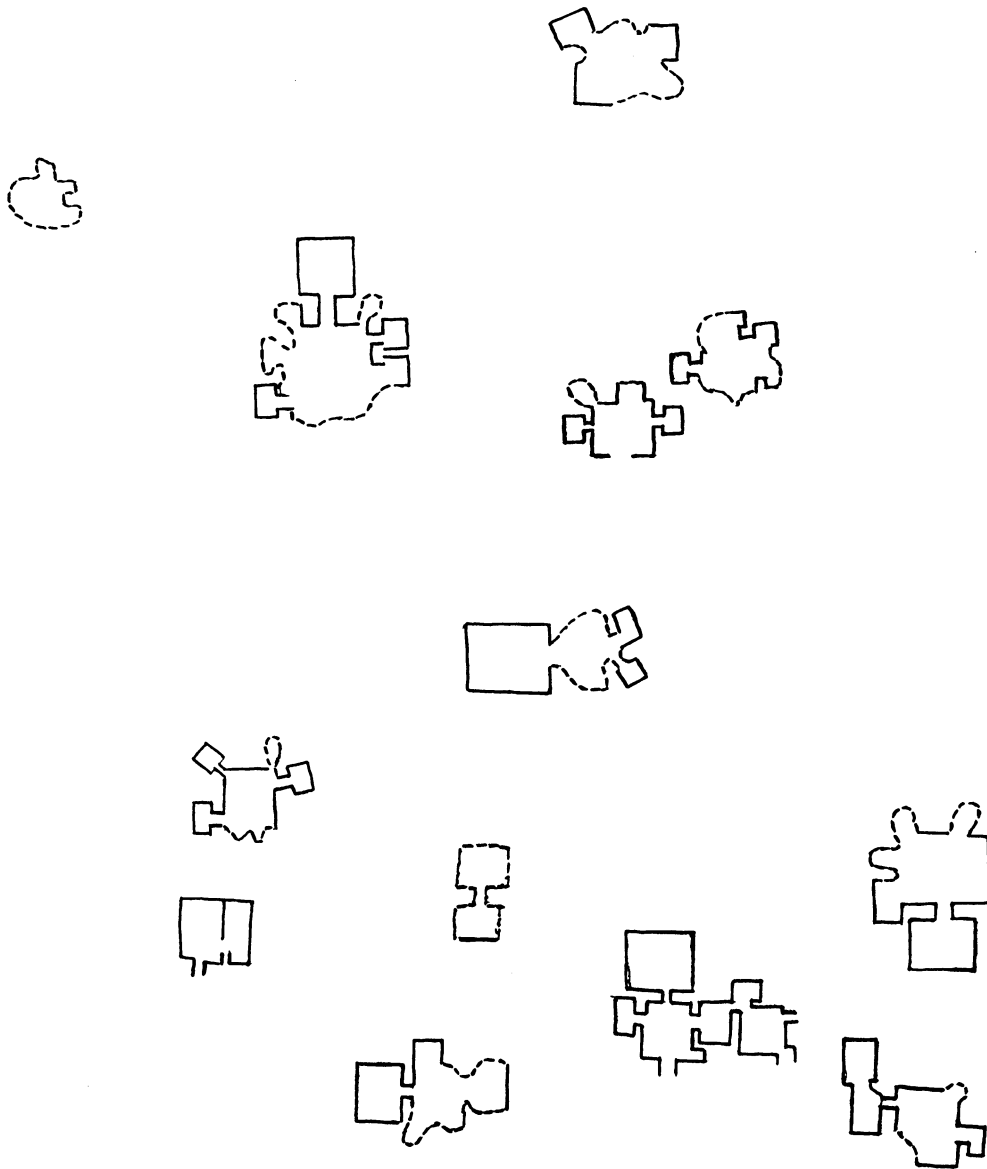


Fig. 3. Plan of arrangement and house outlines in Area B, Upper Station site.



Fig. 4. Glass beads from Upper Station site, Olga Bay. a. Opaque white, 1 specimen. b. Opaque light blue, 1 specimen. c. Clear blue, 1 specimen. d. Clear amber, faceted, 1 specimen. e. Opaque white, 7 specimens. f. Semi-opaque blue, 70 specimens; clear green, 1 specimen; opaque white, 11 specimens; amethyst, 2 specimens. g. Red opaque exterior with clear green interior, 9 specimens.

A couple of small test holes revealed only one foot of midden. Clamshells are numerous here, and it should be noted that clams do not now occur in Olga Bay, presumably because of the small tides. In this site I found sherds from five pots and a drilled slate knife.

Cannery Station site, also in Olga Bay, is partially covered by cannery buildings. Upstream, and beyond

the area covered by the photograph in Hrdlička (1944, p. 111) is a smaller site where fish could easily be taken. Potsherds, celts or adzes, and other artifacts have been found here. Binotched stone sinkers about two inches long are very abundant around the lagoons at both Upper Station and Cannery Station sites.

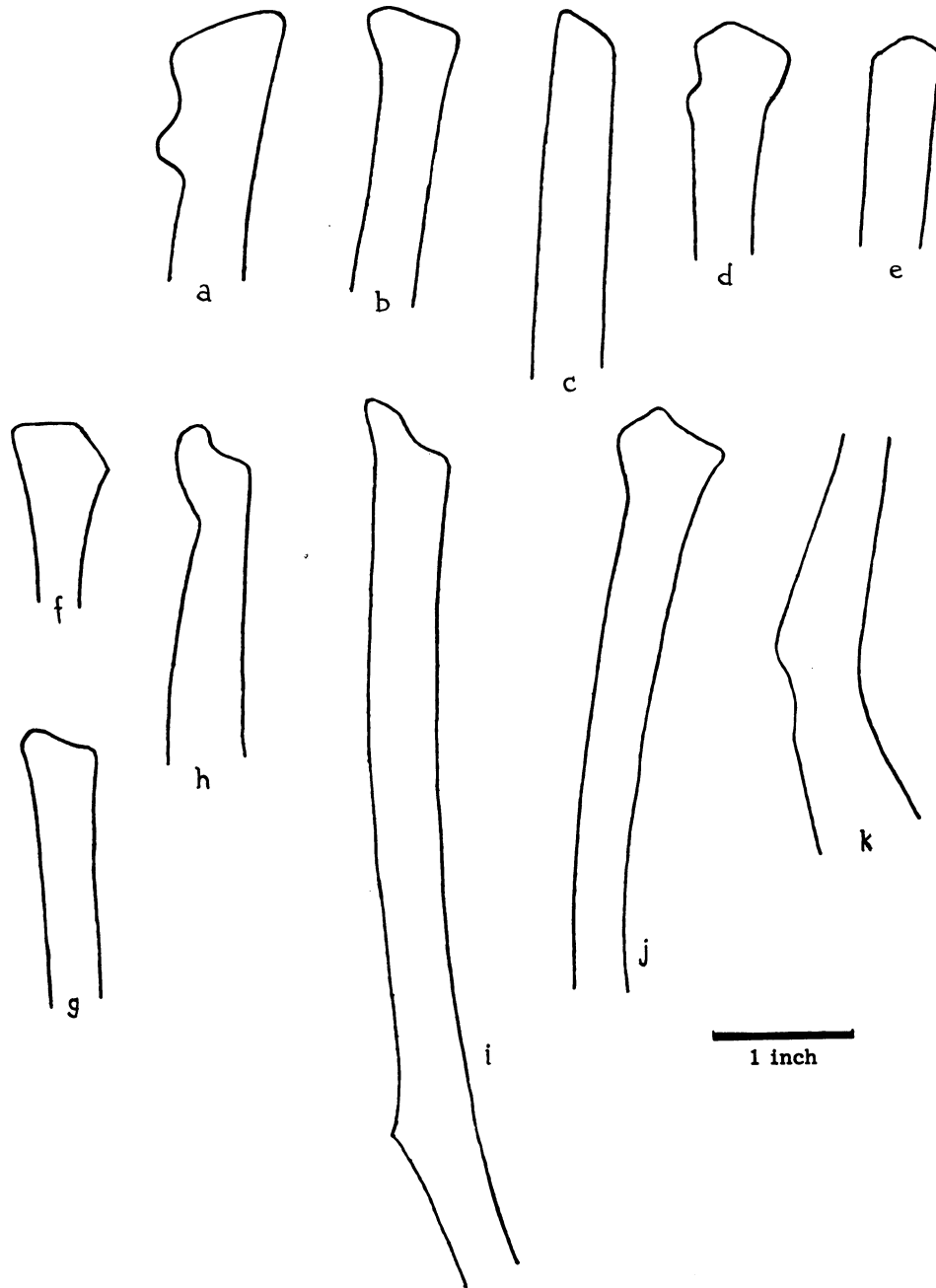


Fig. 5. Rims of Olga Bay potsherds. Numbers are temporary field numbers; collection now in Univ. Calif. Mus. of Anthropology, Berkeley. a. No. 045, Upper Station site. b. No. 013, Upper Station site, surface. c. No. 018, Upper Lake site, surface. d. No. 062, Upper Station site. e. No. 073, Upper Station site, depth 13 in. f. No. 023, Upper Station site, surface. g. Upper Station site, surface. h. No. 032, Upper Lake site, surface. i. No. 077, Upper Station site, depth 10 in. j. No. 074, Upper Station site, depth 8 in. k. No. 02, Upper Station site, surface.

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Abbreviations

AA	American Anthropologist
AAA-M	American Anthropological Association, Memoirs
A Ant	American Antiquity
AJPA	American Journal of Physical Anthropology
AMNH	American Museum of Natural History
-AP	Anthropological Papers
-B	Bulletin
-M	Memoir
APS-P	American Philosophical Society, Proceedings
BAE	Bureau of American Ethnology
-B	Bulletin
-R	Annual Report
CNHM-FA	Chicago Natural History Museum, Fieldiana, Anthropology
JAFL	Journal of American Folklore
MAIHF-INM	Museum of the American Indian, Heye Foundation, Indian Notes and Monographs
PMH-P	Peabody Museum, Harvard University, Papers
SAA-M	Society of American Archaeologists, Memoir
SI	Smithsonian Institution
-AR	Annual Reports
-MC	Miscellaneous Collections
UC	University of California Publications
-AR	Anthropological Records
-PAAE	American Archaeology and Ethnology
USNM-R	United States National Museum, Reports

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PLATES

EXPLANATION OF PLATES

PLATE 1

Air Photographs of Uyak Site, 1932

a. Near view of site showing initial excavations. Note rocky point, sand beaches, driftwood, and dark vegetation cover (nettles). b. Site is the dark grass-covered area in right center; it runs out on rocky point.

PLATE 2

Views of Uyak Site

a. The 1935 group. Left to right: McKee, Seib, Barton, Heizer, Bell, Hrdlička, Enslow, Merrill. b. The beach to east of Uyak site. c. Entrance of Uyak Bay looking toward Peninsula across Shelikof Straits. d. Hinterland of site. Uyak site is in center foreground.

PLATE 3

Views of Uyak Site

a. Last day of excavation, 1935. Depth at vertical arrow about 16 ft. b. Note yellow loess (butterclay) and occupation rubble. Vertical depth, 11 ft. 1934.

PLATE 4

Stratigraphy

a. Showing the Upper Level rubble. b. East edge of site showing mass burial on house floor. Note thinning out of the midden, 1935.

PLATE 5

Stratigraphy

a. Last day of excavation, 1934. b. Depth to skull, 7.5 ft. 1932. c. Stratification showing Upper Level loose shell and slate rubble and Lower Levels strata.

PLATE 6

Burials

a. Lower Levels burial. b. Flexed burial lying on slate slab in grave dug into glacial till. c. Mass burial. Note intentional alignment of four skulls. d. Upper Level burial associated with house no. 6. e. Unique dorsally extended burial. f. Upper Level burial. g. Lower Level burial on slate slabs.

PLATE 7

Mass Burials

a. Six individuals in one grave, Lower Levels, depth from surface 9 ft. b. Mass grave on house floor near top of Lower Levels, 1935.

PLATE 8

Mass Burials

a. Mass burial of six individuals incompletely articulated. Found at depth of 9 ft., Lower Levels. b. Upper Level burial. c. Lower Levels burial. d. Upper Level double burial.

PLATE 9

House Remains

a. House no. 1 lying in yellow butterclay subsoil. b. House no. 9; large slate slab fire pit. Man stands on floor of house. c. House no. 5. Note slab fireplace, lamp, storage pit. d. House no. 4 slab fireplace. e. House no. 7; profile indicated by shell fill.

PLATE 10

Sweathouse Features

a. Photograph of cut. b. Diagram of cut: (a) Upper Level midden, largely burned slate rubble; (b) Sweatbath fire pit full of burned slabs; (c) Lower Levels shell refuse strata; (d) Yellow loess (butterclay), base of site. c. Slate slab platform 9 ft. long, 4 ft. wide, lying on base of site (Lower Levels). d. Slate platform (left) and square slab "firebox" (right). Lower Levels.

PLATE 11

Clay-lined Pits and Slate Slab Fireplaces or Fireboxes

a. View of Upper Level clay-lined pit. b. View of Upper Level clay-lined pit (same as a). c. Upper Level slab-lined firebox. d. Lower Levels square firebox. e. Dr. Hrdlička looking at Lower Levels slab-lined firebox, 1932. f. Upper Level slab-lined firebox. Note heavy surface growth of nettles.

PLATE 12

Slate Slab Alignments

a. Slate slabs lying on glacial till base, depth about 6 ft. Mass burial lay on nearer slabs, 1932. b. Same as a. Note angle of the slabs. c. Shallowly buried slab alignment at west end of site, 1936. d. Same as c: top, different view; bottom, flat slab "wall" found at depth of about 5 ft. 1934.

PLATE 13

Slate Slab Alignments

a. Horizontal view of slate slab alignment. Note what appears to be a pit under center of slabs, 1934. b. Similar to a, but nearer the surface and on east edge of midden. Note also random slate slabs protruding from walls.

PLATE 14

Artifacts of Shell and Wood

a. Sharpened wooden stake. USNM 377529. Lower Levels. b. Sharpened wooden stake. USNM 377530. Lower Levels. c. Sharpened wooden stake. USNM 377530. Lower Levels. d. Cylindrical polished wooden peg. USNM 377531. Lower Levels. e. Sharpened wooden stake. USNM 377530. Lower Levels. g. Ladle or shallow wooden bowl fragment. USNM 363757. Upper Level (?). h. Pendant, Neptunea lyrata Gmelin, drilled hole. USNM 377640. Lower Levels. i. Pendant, Neptunea lyrata Gmelin. USNM 375488. Lower Levels. j. Pendant, Neptunea lyrata Gmelin. USNM 377640. Lower Levels. k. Pendant, Saxidomus giganteus Deshayes, chipped disk. USNM 377855. Upper Level. l. Pendant, Saxidomus giganteus Deshayes, whole shell. USNM 377855. Upper Level. m. Pendant, Protodesmus macroschisma Deshayes. USNM 377902. Lower Levels.

PLATE 15

Lamps

a. Type I. B. 1. USNM 375505. Upper Level. b. Type I. B. 2, subtype c. USNM 377863. Upper Level.

PLATE 16

Lamps

a. Type I. A. 1. USNM 365541. Upper Level. b. Type I. A. 2. USNM 1936-A. Lower Levels. c. Type I. A. 2. USNM 377631. Lower Levels. d. Type I. A. 2. USNM 377633. Lower Levels. e. Type I. A. 2. USNM 377627. Lower Levels. f. Type I. A. 2. USNM 1936-B2. Lower Levels.

PLATE 17

Lamps

a. Type I. B. 2, subtype a. USNM, uncat. Lower Levels. b. Type I. B. 2, subtype f. USNM 377503. Lower Levels.

PLATE 18

Lamps

a. Type I. B. 2, subtype a. USNM 363727. Lower Levels. b. Type I. B. 2, subtype a (profile of a). USNM 363727. Lower Levels. c. Type I. B. 2, subtype a. USNM 375186. Lower Levels. d. Type I. B. 2, subtype a (profile of c). USNM 375186. Lower Levels. e. Type I. B. 2, subtype a. USNM 375179. Lower Levels. f. Type I. B. 2, subtype a. USNM 377504. Lower Levels. g. Type I. B. 2, subtype a (profile of f). USNM 377504. Lower Levels. h. Type I. B. 2, subtype a. USNM 365403. Lower Levels. i. Type I. B. 2, subtype a (profile of j). USNM 377864. Lower Levels. j. Type I. B. 2, subtype a. USNM 377864. Lower Levels.

PLATE 19

Lamps

a. Type I. B. 2, subtype a. USNM 375272. Lower Levels. b. Type I. B. 2, subtype a. USNM 377626.

Lower Levels. c. Type I. A. 2. USNM, uncat. d. Type I. B. 2, subtype a. USNM 375181. Lower Levels. e. Type I. A. 1. USNM 1936-B5. Upper Level. f. Type I. B. 2, subtype a. USNM 375270. Lower Levels. g. Type I. B. 2, subtype a. USNM 375288. Lower Levels.

PLATE 20

Lamps

a. Type I. B. 2, subtype b. USNM 377502. Lower Levels. b. Type I. B. 2, subtype b. USNM 377862. Lower Levels. c. Type I. B. 2, subtype b. USNM 1936-A5. Lower Levels. d. Type I. B. 2, subtype b. USNM 375182. Lower Levels. e. Type I. B. 2, subtype b. USNM 365402. Lower Levels.

PLATE 21

Lamps

a. Type I. B. 2, subtype c. USNM 375273. Lower Levels. b. Type I. B. 2, subtype c. USNM 363166. Lower Levels. c. Type I. B. 2, subtype c. USNM 363166. Lower Levels. d. Type I. B. 2, subtype c. USNM 377863. Upper Level. e. Type I. B. 2, subtype b (profile of pl. 20, e). USNM 365402. Lower Levels.

PLATE 22

Lamps

a. Type I. B. 2, subtype d. USNM 375274. Lower Levels. b. Type I. B. 2, subtype d. USNM 375178. Lower Levels. c. Type I. B. 2, subtype d. USNM 375278. Lower Levels. d. Type I. B. 2, subtype e. USNM 375280. Lower Levels. e. Type I. B. 2, subtype e. USNM 365532. Lower Levels.

PLATE 23

Lamps

a. Type I. B. 2, subtype e. USNM 377861. Lower Levels. b. Type I. B. 2, subtype e. USNM 375692. Lower Levels. c. Type I. B. 2, subtype f. USNM 1936-A1. Lower Levels. d. Type I. B. 2, subtype h. USNM 375189. Lower Levels. e. Type I. B. 2, subtype h. USNM 377505. Lower Levels.

PLATE 24

Lamps

a. Type II. A. USNM 375185. Lower Levels. b. Type II. A. USNM 1936-B3. Lower Levels. c. Type II. A. USNM 375494. Upper Level. d. Type II. A. USNM 375195. Lower Levels. e. Type II. A. USNM 375286. Lower Levels. f. Type III. A. USNM 377745. Upper Level.

PLATE 25

Lamps

a. Type IV. A. USNM 375277. Lower Levels. b. Type IV. A. USNM 375501. Upper Level. c. Type V. B. USNM 377507. Lower Levels. d. Type VI. USNM 365543e. e. Type VI. USNM 365544. f. Type VI. USNM 375291. Lower Levels. g. Type VI. USNM

365546a. h. Type VI. USNM 375198. Lower Levels.
i. Type VI. USNM 365543. j. Type VI. USNM 363731.
k. Type VI. USNM 375198. Lower Levels. l. Type
 VI. USNM 365406. Lower Levels. m. Type VI. USNM
 365544. n. Type VI. USNM 375267. Lower Levels.

PLATE 26
Lamps

a. Lamp with decorated bowl. USNM 375349. Lower
 Levels. b. Type I. B. 1 (bottom of pl. 15, a). USNM
 375505. Upper Level. c. Type I. A. 1. USNM 375504.
 Upper Level. d. Type III. B. USNM, uncat. e. Type
 I. B. 1 (top of b). USNM 375505. Upper Level. f. Type
 I. A. 1. USNM 375498. Upper Level.

PLATE 27
Lamps

a. Animal form lamp. USNM 377501. Lower Levels.
b. Bottom of a. USNM 377501. Lower Levels.

PLATE 28
Lamps

a. Type I. B. 2, subtype c (bottom of pl. 21, d). USNM
 377863. Upper Level. b. Type I. B. 2. USNM 377511.
 Lower Levels.

PLATE 29
Stones with Pecked Notches or Grooves

a. Large, flat single-notched stone. USNM 365581.
b. Type VII. USNM 377495. Lower Levels. c. Type
 VII. USNM 395440. Lower Levels. d. Type VIa. USNM
 375519. Upper Level. e. Type IIIa. USNM 395446.
 Lower Levels. f. Type IIIa. USNM 377491. Lower
 Levels. g. Type IIb. USNM 377591. Lower Levels.
h. Type IIb. USNM 377591. Lower Levels. i. Type
 IIIb. USNM 395442. Upper Level. j. Type VIb. USNM
 377592. Lower Levels. k. Type VIb. USNM 377727.
 Upper Level. l. Type IIa. USNM 377490. Lower Levels.
m. Type IIIc. USNM 395444. Upper Level.

PLATE 30
Stones with Pecked Notches or Grooves

a. Type Ia. USNM 375306. Lower Levels. b. Type
 Ia. USNM 395443. Upper Level. c. Type V. USNM
 375309. Lower Levels. d. Type V. USNM 395439.
 Lower Levels. e. Type V. USNM 365567. f. Type
 VIa. USNM 377491. Lower Levels. g. Type VII (see
 also pl. 29, c). USNM 395440. Lower Levels. h. Type
 IIB. USNM 375519. Upper Level.

PLATE 31
Adze Blades

a. Miscellaneous form. USNM 395437. b. Type Ib.
 USNM 365454. Lower Levels. c. Type IIa. USNM
 395436. Upper Level. d. Type I. USNM 375529.
 Upper Level. e. Type I. USNM 365559. Lower Levels.
f. Miscellaneous form. USNM 375531. Upper Level.

g. Type Ib. USNM 377605. Lower Levels. h. Type Ib.
 USNM 377607. Lower Levels. i. Type Ib. USNM
 375566. Upper Level. j. Type Ib. USNM 365416. Lower
 Levels. k. Type Ia. USNM 375533. Upper Level. l.
 Type Ia. USNM 365456. Lower Levels. m. Type Ib.
 USNM 375533. Upper Level. n. Type Ia. USNM 363763.
o. Type Ia. USNM 377758. Upper Level.

PLATE 32
Adze Blades

a. Type IIb (planing). USNM 363790. b. Type IIb
 (planing). USNM 365559. c. Type Ib (planing). USNM
 375327. Lower Levels. d. Type Ib (planing). USNM
 377605. Lower Levels. e. Type Ib (planing). USNM
 365559. f. Type Ib (planing). USNM 365559. g. Type
 IIb (planing). USNM, uncat. h. Type II (splitting).
 USNM 377737. Upper Level. i. Type II (splitting).
 USNM 377528. Lower Levels.

PLATE 33
Stone Mauls

a. Type Ia. USNM 365421. Lower Levels. b. Type
 Ia. USNM 377595. Upper Level. c. Type II. USNM
 395448. Upper Level. d. Type IVa. USNM 373341.
 Lower Levels. e. Type IVa. USNM 377861. Lower
 Levels. f. Type IVd. USNM, uncat. Lower Levels.
g. Type IVb. USNM, uncat. h. Type IVc. USNM, un-
 cat. Lower Levels.

PLATE 34
Hammerstones

a. Hammerstone. USNM 377868. b. Hammerstone.
 USNM 365460. Lower Levels. c. Hammerstone. USNM
 365457. Lower Levels. d. Hammerstone (also a pitted
 anvil). USNM 375172. Lower Levels. e. Hammerstone.
 USNM 365456. Lower Levels. f. Hammerstone. USNM
 365460. Lower Levels. g. Hammerstone. USNM 395438.
 Lower Levels. Specimens e-g are also described under
 Adze Blades, Miscellaneous Forms.

PLATE 35
Miscellaneous Stone Artifacts

a. Chipped slate spear or knife blade. USNM 375571.
 Upper Level. b. Chipped slate spear or knife blade.
 USNM 377623. Lower Levels. c. Chipped slate spear
 or knife blade. USNM 377484. Lower Levels. d. Chipped
 slate spear or knife blade. USNM 377484. Lower Levels.
e. Chipped slate spear or knife blade. USNM 375571.
 Upper Level. f. Stone ball, Type II. USNM 395447.
 Upper Level. g. Stone ball, Type II. USNM 377733.
 Upper Level. h. Stone ball, Type II. USNM 365550.
 Lower Levels. i. Whetstone, Type IIb. USNM 365562.
 Lower Levels. j. Whetstone, Type IIb. USNM 377602.
 Lower Levels. k. Whetstone, Type IIb. USNM 363748.
 Lower Levels. l. Whetstone, Type IIa. USNM 395449.
m. Whetstone, Type I. USNM 377598. Lower Levels.
n. Whetstone, Type I. USNM 365565. o. Whetstone,
 Type IIa. USNM 395435. p. Whetstone, Type IIa. USNM
 377499. Lower Levels. q. Whetstone, Type IIa. USNM
 377598. Lower Levels. r. Polishing stone. USNM
 365564. s. Polishing stone. USNM 365564. t. Polishing

stone. USNM 365458. Lower Levels. v. Pumice ball with cut groove. USNM 365551. Lower Levels.

PLATE 41
Slate Ulos

PLATE 36
Flaked Implements

a. Type II. USNM 377613. Lower Levels. b. Type II. USNM 375163. Lower Levels. c. Type II. USNM 363751. Lower Levels. d. Type III. USNM 377484. Lower Levels. e. Type III. USNM 375162. Lower Levels. f. Type III. USNM 375492. Upper Level. g. Type III. USNM 365571. h. Type IV. USNM 375348. Lower Levels. i. Type IV. USNM 375348. Lower Levels. j. Type IV. USNM 375348. Lower Levels. k. Type IV. USNM 377620. Lower Levels. l. Type IV. USNM 377881. Lower Levels (?). m. Type IV. USNM 375343. Lower Levels. n. Type IV. USNM 377618. Lower Levels.

PLATE 37
Flaked Implements

Catalogue numbers and level of origin not recorded. Specimen f. USNM 365572.

PLATE 38
Slate Ulos

a. Type II. USNM 395453. Lower Levels. b. Type II. USNM 375562. Upper Level. c. Type IVd. USNM 365578. d. Type II. USNM 375562. Upper Level. e. Type II. USNM 375337. Lower Levels. f. Type IIa (variant or modified piece). USNM 365579. g. Type I (variant). USNM 375561. Upper Level. h. Type IVc. USNM 375579. Upper Level. i. Type IVe. USNM 375558. Upper Level.

PLATE 39
Slate Ulos (flaked)

a. Type V (unusual round shape). USNM 363768. b. Type V. USNM, uncat. c. Type V. USNM 375330. Lower Levels. d. Type V. USNM 363745. e. Type V. USNM uncat. f. Type V. USNM 363758.

PLATE 40
Slate Ulos

a. Type I (unique end notches). USNM 375334. Lower Levels. b. Type I. USNM 377748. Upper Level. c. Type I (with chipped back). USNM 395450. Upper Level. d. Type Vb (atypical in width). USNM 395454. Lower Levels. e. Type Vb. USNM 377609. Lower Levels. f. Type I (note early straight cutting edge). USNM 375331. Lower Levels. g. Type I (note rectangular form, straight cutting edge). USNM 395456. Lower Levels. h. Type I (very small). USNM 365411. Lower Levels. i. Type I (unusually small). USNM 377609. Lower Levels. j. Type I. USNM 395457. Lower Levels. k. Type I (note concave cutting edge). USNM 375334. Lower Levels. l. Type I (note wavy cutting edge). USNM 377485. Lower Levels.

a. Type Vb. USNM 377609. Lower Levels. b. Type I. USNM 395458. Lower Levels. c. Type I. USNM 375331. Lower Levels. d. Type Vb. USNM 395457. Lower Levels. e. Type I. USNM 365411. Lower Levels. f. Type I. USNM 377609. Lower Levels. g. Type IVb. USNM 377610. Lower Levels. h. Type I. USNM 375331. Lower Levels. i. Type I. USNM 377609. Lower Levels. j. Type I (eccentric). USNM 375331. Lower Levels.

PLATE 42
Slate Ulos and Miscellaneous Stone Objects

a. Type IIIa. USNM 377486. Lower Levels. b. Type IIIa. USNM 375153. Lower Levels. c. Type IIIa. USNM 375330. Lower Levels. d. Type Va. USNM 377468. Lower Levels. e. Type IIIa. USNM 365574. f. Type IIIa. USNM 365574. g. Long flat side-notched stone. USNM 365555. Upper Level. h. Teshoa flake (boulder chip scraper). USNM 365698. Olga Bay. i. Teshoa flake with battered edges. USNM 365561. Lower Levels. j. Sickle-shaped stone. USNM 395448. Upper Level.

PLATE 43
Drilled Ulos and Notched Flat Stones

a. Ulo, Type IVb. USNM 377750. Upper Level. b. Ulo, Type IVb. c. Ulo, Type IVb. d. Ulo, Type IVb (variant). USNM 363082. e. Ulo, Type IVb. f. Ulo, Type IVc. USNM 375336. Lower Levels. g. Large bilaterally side-notched pebble. Upper Level. h. Large bilaterally side-notched pebble. Upper Level.

PLATE 44
Slate Blades and Points

a. Type I. USNM 377616. Lower Levels. b. Type I. USNM 377616. Lower Levels. c. Type I. USNM 375342. Lower Levels. d. Type I. USNM 375342. Lower Levels. e. Type I. USNM 375342. Lower Levels. f. Type IIb. USNM 375342. Lower Levels. g. Type III. USNM 375342. Lower Levels. h. Type III. USNM 375342. Lower Levels. i. Type III. USNM 395450. Upper Level. j. Type III. USNM 377617. Lower Levels. k. Type III. USNM 375160. Lower Levels. l. Type IIa. USNM 375157. Lower Levels. m. Type XI. USNM 375570. Upper Level. n. Type XI. USNM 375570. Upper Level. o. Type XI. USNM 365462. Lower Levels.

PLATE 45
Ground Slate Blades and Points

a. Type VIII. USNM 377877. b. Type VIII. USNM 395459. c. Type VIII. USNM 395460. Upper Level. d. Type XIVd. USNM 377877. Lower Levels. e. Type XIVb. USNM 377478. Lower Levels. f. Type XIVc. USNM 377614. Lower Levels. g. Type XIVd. USNM 377614. Lower Levels. h. Type I. USNM 375569. Upper Level. i. Type I. USNM 375569. Upper Level. j. Type I. USNM 375342. Lower Levels. k. Type I. USNM 365461. Lower Levels. l. Type I. USNM 365461.

Lower Levels. m. Type I. USNM 365410. Lower Levels. n. Type I. USNM 377480. Lower Levels. o. Type XIVa. USNM 375569. Upper Level. p. Type I. USNM 375569. Upper Level. q. Type I. USNM 375569. Upper Level. r. Type I. USNM 375569. Upper Level. s. Type I. USNM 377617. Lower Levels. t. Type I. USNM 375569. Upper Level.

PLATE 46

Ground Slate Blades and Points

a. Type V. USNM 377617. Lower Levels. b. Type V. USNM 375342. Lower Levels. c. Type V. USNM 365461. Lower Levels. d. Type V. USNM 365461. Lower Levels. e. Type V. USNM 375736. Takli Island. f. Type V. USNM 375589. Upper Level. g. Type V. USNM 375565. Upper Level. h. Type VI. USNM 375342. Lower Levels. i. Type VI. USNM 377879. j. Type VI. USNM 377617. Lower Levels. k. Type VI. USNM 365410. Lower Levels. l. Type VI. USNM 377480. Lower Levels. m. Type XIVf. USNM 375341. Lower Levels. n. Type XII. USNM 365570. o. Type XII. USNM 375343. Lower Levels. p. Type IV. USNM 377617. Lower Levels. q. Type IV. USNM 375341. Lower Levels. r. Type IV. USNM 377480. Lower Levels. s. Type IV. USNM 377480. Lower Levels. t. Type XIVg. USNM 375342. Lower Levels. u. Type XIVg. USNM 377878. Lower Levels. v. Type XIII. USNM 375343. Lower Levels. w. Type XIII. USNM 375343. Lower Levels.

PLATE 47

Ground Slate Objects

a. Pencillike projectile tip. USNM 375345. Lower Levels. b. Pencillike projectile tip. USNM 377621. Lower Levels. c. Pencillike projectile tip. USNM 377621. Lower Levels. d. Ground slate blade, Type X. USNM 377619. Lower Levels. e. Ground slate blade, Type X. USNM 375569. Upper Level. f. Ground slate blade, Type X. USNM 377619. Lower Levels. g. Ground slate blade, Type X. USNM 377481. Lower Levels. h. Slender rough slate splinter. USNM 377481. Lower Levels. i. Slender rough slate splinter. USNM 377621. Lower Levels. j. Round slate shaft. USNM 377482. Lower Levels. k. Bar-shaped pendant. USNM 375340. Lower Levels. l. Small slate chisel. USNM 377764. Upper Level. m. Ground slate blade, Type X. USNM 375569. Upper Level. n. Ground slate blade, Type IX. USNM 375343. Lower Levels. o. Ground slate blade, Type IX. USNM 377619. Lower Levels. p. Ground slate blade, Type IX. USNM 377619. Lower Levels. q. Ground slate blade, Type VII. USNM 365466. Lower Levels. r. Ground slate blade, Type VII. USNM 377479. Lower Levels. s. Rough "dagger." USNM 377615. Lower Levels. t. Ground slate blade, Type VII. USNM 375568. Upper Level. u. Ground slate blade, Type VII. USNM 375569. Upper Level. v. Ground slate blade, Type VII. USNM 375342. Lower Levels. w. Ground slate blade, Type VII. USNM 375342. Lower Levels. x. Ground slate blade, Type VII. USNM 377618. Lower Levels. y. Parallel-sided knife. USNM 375158. Lower Levels. z. Parallel-sided knife. USNM 377476. Lower Levels. a'. Narrow sharp-edged knife. USNM 375574. Upper Level.

PLATE 48
Slate Flensing Blades

a. Type Ic. USNM 395452. Upper Level. b. Type Ib. USNM 375333. Lower Levels. c. Type IIb. USNM 375331. Lower Levels. d. Type Ib. USNM 377614. Lower Levels. e. Type Ib. USNM 375333. Lower Levels. f. Type IIb. USNM 395451. Lower Levels. g. Type IIIa. USNM 375490. Upper Level. h. Type IIIa. USNM 377611. Lower Levels.

PLATE 49
Slate Flensing Blades

a. Type Ia. USNM, uncat. b. Type Ia. USNM 375334. Lower Levels. c. Type Ia. USNM 375555. Upper Level. d. Type Id. USNM 375552. Upper Level. e. Type Id. USNM 375550. Upper Level. f. Type Id. USNM 365688. g. Type Id. USNM 375153. Lower Levels. h. Type IIc. Uncat. i. Type IIb. USNM 375556. Upper Level.

PLATE 50
Miscellaneous Stone Artifacts

a. Stone labret, Type III. USNM 375543. Upper Level. b. Stone labret, Type III. USNM 375542. Upper Level. c. Stone labret, Type III. USNM 395434. d. Stone labret, Type III. USNM 365424. Lower Levels. e. Stone labret, Type III. USNM 375350. Lower Levels. f. Stone labret, Type I. USNM 375541. Lower Levels. g. Stone labret, Type II. USNM 375541. Upper Level. h. Stone labret, Type I. USNM 375541. Upper Level. i. Stone labret, Type I. USNM 375351. Lower Levels. j. Stone labret, Type I. USNM 375703. k. Hexagonal piece of cancell coal. USNM 375703. l. Stone labret, Type IV. USNM 377807. Upper Level. m. Stone labret, Type IV. USNM 377806. Upper Level. n. Ground and grooved slate object. USNM 365628. Lower Levels. o. Stone bead, disk. USNM 365677. Chief Pt., Goose Island. p. Curved stone cylinder. USNM 377488. Lower Levels. q. Stone pendant, spade-shaped. USNM 375467. Lower Levels. r. Stone pendant, ring-shaped. USNM 377641. Lower Levels. s. Stone bead, globular. USNM 395433. Lower Levels. t. Stone bead, flattened disk. USNM 375616. Upper Level. u. Stone bead, short, tubular. USNM 375486. Lower Levels. v. Stone bead, hemispherical disk. USNM 377668. Lower Levels. w. Slate mirror. USNM 395440. Lower Levels.

PLATE 51
Miscellaneous Stone Artifacts

a. Large grooved cobble. USNM 365548. b. Long equatorially grooved cobble. USNM 377738. Upper Level. c. Type Ia maul. Lower Levels. d. Type Ia maul. Lower Levels.

PLATE 52
Harpoon Socket-Pieces

a. Type IIIa. USNM 375638. Upper Level. b. Type IIIa. USNM 375366. Lower Levels. c. Type IIIa. USNM 375366. Lower Levels. d. Type IIIa. USNM 375638.

Upper Level. e. Type IIIa. USNM 377698. Lower Levels. f. Type IIIb. USNM 377698. Lower Levels. g. Type IIIa. USNM 375218. Lower Levels. h. Type Ia. USNM 377699. Lower Levels. i. Type Ia. USNM 375640. Upper Level. j. Type Ic. USNM 375639. Upper Level. k. Type V. USNM 365488. Lower Levels. l. Type VI. USNM 375218. Lower Levels. m. Type Ia. USNM 377838. Upper Level.

PLATE 53

Harpoon Socket-Pieces and Foreshafts

a. Socket-piece, Type Ib. USNM 365617. Upper Level. b. Socket-piece, Type Ib. USNM 377713. Lower Levels. c. Socket-piece, Type Ib. USNM 375641. Upper Level. d. Socket-piece, Type Ib. USNM 375368. Lower Levels. e. Socket-piece, Type Ib. USNM 365437. Lower Levels. f. Socket-piece, Type Ib. USNM 375641. Lower Levels. g. Socket-piece, Type Ib. USNM 375641. Upper Level. h. Socket-piece, Type IV. USNM 365525. Lower Levels. i. Socket-piece, Type II. USNM 365617. Upper Level. j. Foreshaft, Type IIa. USNM 375380. Lower Levels. k. Foreshaft, Type IIa. USNM 375380. Lower Levels. l. Foreshaft, Type IIa. USNM 375381. Lower Levels. m. Foreshaft, Type IIa. USNM 395182. Upper Level. n. Foreshaft, Type IIa. USNM 377700. Lower Levels. o. Foreshaft, Type I. USNM 375379. Lower Levels. p. Foreshaft, Type I. USNM 377570. Lower Levels. q. Foreshaft, Type I. USNM 395223. Upper Level. r. Foreshaft, Type I. Lower Levels. s. Foreshaft, Type I. USNM 377712. Lower Levels. t. Foreshaft, Type I. USNM 375644. Upper Level. u. Foreshaft, Type I. USNM 377841. Upper Level. v. Foreshaft, Type I. USNM 375645. Upper Level. w. Foreshaft, Type I. USNM 375379. Lower Levels. x. Foreshaft, Type I. USNM 375379. Lower Levels. y. Foreshaft, Type I. USNM 395201. Upper Level. z. Foreshaft, Type I. USNM 375644. Upper Level. a'. Foreshaft, Type I. USNM 375382. Lower Levels. b'. Foreshaft, Type Ib. USNM 377573. Lower Levels. c'. Foreshaft, Type IIa. USNM 377841. Upper Level. d'. Foreshaft, Type Ib. USNM 377706. Lower Levels. e'. Foreshaft, Type Ib. USNM 395193. Lower Levels. f'. Butt-piece. USNM 375359. Lower Levels.

PLATE 54

Bone Arrowheads, Harpoon Foreshafts,
and Barbed Lance Points

a. Arrowhead, Type Ia. USNM 395188. Lower Levels. b. Arrowhead, Type Ia. USNM 375230. Lower Levels. c. Arrowhead, Type Ia. USNM 375386. Lower Levels. d. Arrowhead, Type Ia. USNM 377715. Lower Levels. e. Arrowhead, Type Ia; possibly butt-piece. USNM 365524. Lower Levels. f. Arrowhead, Type Ia. USNM 375230. Lower Levels. g. Foreshaft, Type I. USNM 375396. Lower Levels. h. Foreshaft, Type I. USNM 375396. Lower Levels. i. Foreshaft, Type I. USNM 375396. Lower Levels. j. Foreshaft, Type I. USNM 375396. Lower Levels. k. Arrowhead, Type Ib. USNM 375384. Lower Levels. l. Arrowhead, Type Ib. USNM 375384. Lower Levels. m. Arrowhead, Type Ib. USNM 395194. Lower Levels. n. Arrowhead, Type Ib. USNM 375384. Lower Levels. o. Heavy barbed lance point. USNM 375653. Upper Level. p. Heavy barbed lance

point. USNM 395189. Lower Levels. q. Heavy barbed lance point. USNM 365608. Upper Level. r. Heavy barbed lance point. USNM 377848. Upper Level. s. Heavy barbed lance point. USNM 375653. Upper Level. t. Heavy barbed lance point. USNM 377848. Upper Level. u. Heavy barbed lance point. USNM 375654. Upper Level.

PLATE 55
Barbed Dart Heads

a. Type Ia, small. USNM 375225. Lower Levels. b. Type Ia, small. USNM 365513. Lower Levels. c. Type Ia, small. USNM 365607. d. Type Ib, small. USNM 375651. Upper Level. e. Type Ib, small. USNM 375223. Lower Levels. f. Type Ib, small. USNM 365517. Lower Levels. g. Type Ic, large. USNM 375371. Lower Levels. h. Type Ic, large. USNM 375651. Upper Level. i. Type Ib, small. USNM 377702. Lower Levels. j. Type Id. USNM 365517. Lower Levels. k. Type Id. USNM 375371. Lower Levels. l. Type Ib, small. USNM 365606. m. Type Ib, small. USNM 375371. Lower Levels. n. Type Ib, small (variant). USNM 395180. Lower Levels. o. Type If. USNM 375223. Lower Levels. p. Type Ib, large. USNM 365517. Lower Levels. q. Type Ib, large. USNM 375223. Lower Levels. r. Type Ib, large. USNM 365517. Lower Levels. s. Type Ib, large. USNM 395203.

PLATE 56
Barbed Dart Heads

a. Type Ie, large. USNM 365606. Upper Level. b. Type Ib, large. USNM 365606. c. Type If. USNM 365608. d. Type If. USNM 365608. Lower Levels. e. Bird dart prong (?). USNM 365430. Lower Levels. f. Type If. USNM 395176. Upper Level. g. Type Ie, small. USNM 395173. Lower Levels. h. Type Ib, small. USNM 395178. Upper Level. i. Type If. USNM 375850. j. Type Ie, small. Upper Level. k. Type Ib, small. USNM 375373. Lower Levels. l. Type Ib, small. USNM 377597. Lower Levels. m. Type Ib, small. USNM 365517. Lower Levels. n. Type If. USNM 377587. Lower Levels. o. Type Ib, small. USNM 375373. Lower Levels. p. Type If. USNM 375373. Lower Levels. q. Type If. USNM 377705. Lower Levels. r. Type Id, large. USNM 363743. Upper Level. s. Bone arrowhead, Type IIa. USNM 395161. Upper Level. t. Bone arrowhead, Type IIc. USNM 377707. Lower Levels. u. Bone arrowhead, Type IIc. USNM 375228. Lower Levels. v. Bone arrowhead, Type IIa. USNM 365510. Lower Levels. w. Atypical arrowhead. USNM 375653. Upper Level. x. Bone arrowhead, Type Ib. USNM 375655. Upper Level. y. Atypical arrowhead. USNM 375385. Lower Level. z. Atypical arrowhead. USNM 375654. Upper Level. a'. Atypical arrowhead (?). USNM 365433. Lower Levels.

PLATE 57
Barbed Dart Heads

a. Type Ib, small. USNM 375370. Lower Levels. b. Type IIa, large. USNM 365608. c. Type IIa, large. USNM 375652. Upper Level. d. Type IIa, large. USNM 377850. Upper Level. e. Type IIa, large. USNM 375652. Upper Level. f. Type IIa, large. USNM 365608. g. Type

I**b**, large. USNM 395175. Upper Level. h. Type I**b**, large. USNM 365608. Upper Level. i. Type I**b**, large. USNM 377851. Upper Level. j. Type I**e**, small. USNM 365515. Lower Levels. k. Type I**c**, small. USNM 395174. Upper Level. l. Type I**c**, small. USNM 377572. Lower Levels. m. Type I**c**, small. USNM 375370. Lower Levels. n. Type I**a**, small. USNM 365608. o. Type I**a**, small. USNM 365608. p. Type I**c**, small. USNM 375371. Lower Levels. q. Type I**a**, small. USNM 375652. Upper Level. r. Type I**a**, large. USNM 365514. Lower Levels. s. Type I**a**, small. USNM 365514. Lower Levels. t. Type I**a**, small. USNM 395212. Lower Levels. u. Type I**b**, small. USNM 375652. Upper Level. v. Type I**b**, small. USNM 375370. Lower Levels.

PLATE 58
Toggle Harpoon Heads

a. Type I**a**. USNM 365427. Lower Levels. b. Type I**a**. USNM 365427. Lower Levels. c. Type I**a**. USNM 365518. Lower Levels. d. Type I**a**. USNM 377844. Upper Level. e. Type I**a**. USNM 375374. Lower Levels. f. Type I**a**. USNM 375374. Lower Levels. g. Type I**a**. USNM 375374. Lower Levels. h. Type I**a**. USNM 395170. Lower Levels. i. Type I**b**. USNM 375219. Lower Levels. j. Type I**b**. USNM 375219. Lower Levels. k. Type I**b**. USNM 375219. Lower Levels. l. Type I**l**. USNM 377708. Lower Levels. m. Type I**b**. USNM 395168. Lower Levels. n. Type I**b**. USNM 375724. Upper Level. o. Type I**v**. USNM 375377. Lower Levels. p. Type I**v**. USNM 375219. Lower Levels. q. Type I**c**. USNM 363765. r. Type I**c**. USNM 375220. Lower Levels. s. Type I**c**. USNM 375220. Lower Levels. t. Type I**c**. USNM 375374. Lower Levels. u. Type I**v**. USNM 377844. Upper Level. v. Type I**l**. USNM 377844. Upper Level. w. Type I**l**. USNM 375376. Lower Levels. x. Type I**v**. USNM 395179. Lower Levels. y. Type I**e**. USNM 375376. Lower Levels. z. Type I**c**. USNM 395192. Lower Levels. a'. Type I**b**. USNM 375375. Lower Levels. b'. Type I**b**. USNM 395191. Lower Levels. c'. Type I**b**. USNM 375221. Lower Levels. d'. Type I**b**. USNM 377842. Upper Level.

PLATE 59
Miscellaneous Bone Artifacts

a. Unbarbed socketed projectile point, Type I**a**. USNM 395162. Upper Level. b. Unbarbed socketed projectile point, Type I**a**. USNM 365605. Lower Levels. c. Unbarbed socketed projectile point, Type I**a**. USNM 375390. Lower Levels. d. Unbarbed socketed projectile point, Type I**a**. USNM 375390. Lower Levels. e. Unbarbed socketed projectile point, Type I**l**. USNM 377711. Lower Levels. f. Unbarbed socketed projectile point, Type I**l**. USNM 375390. Lower Levels. g. Unbarbed socketed projectile point, Type I**l**. USNM 377842. Upper Level. h. Unbarbed socketed projectile point, Type I**l**. USNM 377842. Lower Levels. i. Unbarbed socketed projectile point, Type I**l**. USNM 375390. Lower Levels. j. Unbarbed socketed projectile point, Type I**a**. USNM 395166. Upper Level. k. Composite harpoon. USNM 377843. Upper Level. l. Composite harpoon. USNM 375390. Lower Levels. m. Composite harpoon. USNM 375390. Upper Level. n. Composite harpoon. USNM 365522. Lower Levels. o. Blunt-ended point.

USNM 365525. Upper Level. p. Blunt-ended point. USNM 375662. Upper Level. q. Blunt-ended point. USNM 365516. Lower Levels. r. Blunt-ended point. USNM 395164. Upper Level. s. Blunt-ended point. USNM 377714. Lower Levels. t. Net gauge. USNM 375608. Upper Level. u. Net gauge. USNM 365500. Lower Levels. v. Net gauge. USNM 375608. Upper Level. w. Net gauge. USNM 395220. Upper Level. x. Bag handle, Type I. USNM 375605. Upper Level. y. Bag handle, Type I. USNM 377833. Upper Level. z. Bag handle, Type I. USNM 395198. Upper Level. a'. Bag handle, Type I**l**. USNM 377821. Upper Level. b'. Bag handle, Type I**l**. USNM 365639. Upper Level.

PLATE 60
Leister and Bird Dart Prongs

a. Leister prong. USNM 377586. Lower Levels. b. Leister prong. USNM 365615. Upper Level. c. Leister prong. USNM 365615. Upper Level. d. Bird dart prong. USNM 395196. Lower Levels. e. Bird dart prong. USNM 377833. Upper Level. f. Bird dart prong. USNM 375655. Lower Levels. g. Bird dart prong. USNM 395177. Upper Level. h. Bird dart prong. USNM 395211. Lower Levels. i. Bird dart prong. USNM 365518. Upper Level. j. Bird dart prong. USNM 365518. Upper Level. k. Bird dart prong. USNM 375386. Lower Levels. l. Bird dart prong. USNM 375413. Lower Levels. m. Bird dart prong. USNM 395197. Lower Levels. n. Bird dart prong. USNM 375373. Lower Levels. o. Bird dart prong. USNM 365518. Lower Levels. p. Bird dart prong. USNM 365518. Lower Levels. q. Bird dart prong. USNM 395198. Lower Levels. r. Bird dart prong. USNM 395172. Upper Level.

PLATE 61
Bone Barbs and Arrowheads

a. Arrowhead, Type I**l**. USNM 365609. b. Arrowhead, Type I**l**. USNM 375226. Lower Levels. c. Arrowhead, Type I**l**. USNM 365490. Lower Levels. d. Arrowhead, Type I**l**. USNM 377707. Lower Levels. e. Arrowhead, Type I**l**. USNM 375385. Lower Levels. f. Arrowhead, Type I**l**. USNM 375385. Lower Levels. g. Arrowhead, Type I**l**. USNM 375385. Lower Levels. h. Arrowhead, Type I**l**. USNM 375385. Lower Levels. i. Arrowhead, Type I**l**. USNM 377707. Lower Levels. j. Arrowhead, Type I**l**. USNM 375226. Lower Levels. k. Arrowhead, Type I**l**. USNM 375387. Lower Levels. l. Arrowhead, Type I**l**. USNM 375387. Lower Levels. m. Arrowhead, Type I**l**. USNM 365430. Lower Levels. n. Arrowhead, Type I**l**. USNM 375385. Lower Levels. o. Arrowhead, Type I**l**. USNM 377707. Lower Levels. p. Arrowhead, Type I**l**. USNM 375655. Upper Level. q. Aleut type fish barb. USNM 375606. Upper Level. r. Aleut type fish barb. USNM 375606. Upper Level. s. Aleut type fish barb. USNM 375413. Lower Levels. t. Aleut type fish barb. USNM 375224. Lower Levels. u. Bird dart barb or side prong. USNM 365520. Lower Levels. v. Bird dart barb or side prong. USNM 377850. Upper Level. w. Bird dart barb or side prong. USNM 377571. Lower Levels. x. Bird dart barb or side prong. USNM 375385. Lower Levels. y. Bird dart barb or side prong. USNM 375647. Upper Level. z. Bird dart barb or side prong. USNM 375660. Upper Level.

PLATE 62
Ethnographic Lance Points
and Harpoon Arrows

a-e. Polished slate whaling lance points. Holmberg Collection in National Museum, Copenhagen. f-j. Harpoon arrows of the Koniag of the midnineteenth century. Holmberg Collection, National Museum, Copenhagen. Photos by courtesy of K. Birket-Smith.

PLATE 63
Bone Spoons

a. Shallow linear bowl with short decorated handle. USNM 377791. Upper Level. b. Narrow handle. USNM 395221. Upper Level. c. Narrow handle. USNM 363781. Pawik, Naknik R. d. Narrow handle. USNM 377797. Upper Level. e. Narrow handle. USNM 375595. Upper Level. f. Shallow linear bowl with short decorated handle. USNM 365601. Upper Level. g. Serrated handle and incised lines on surface. USNM 377796. Upper Level. h. Scoop-shaped without definite handle. USNM 377795. Upper Level. i. Scoop-shaped without definite handle. USNM 365491. Lower Levels. j. Variable form. USNM 365599. k. Variable form. USNM 365601. l. Scoop-shaped without definite handle. USNM 377561. Lower Levels. m. Shallow ladle made of animal skull. USNM 375445. Lower Levels. n. Shallow ladle made of bear scapula (?). USNM 375446. Lower Levels. o. Variable form USNM 375594. Upper Level.

PLATE 64
Whalebone Plates

a. Circular plate. USNM 375472. Lower Levels.
b. Circular plate. USNM 377581. Lower Levels.

PLATE 65
Basketry, Bone, and Ivory
Containers

a. Twined basketry. USNM 365470. Lower Levels.
b. Dipper of whalebone showing repair holes. USNM 375255. Lower Levels. c. Dipper from a bear skull. USNM 375686. Lower Levels. d. Ivory ladle. USNM 377657. Lower Levels. e. Ivory ladle. USNM 377817. Upper Level. f. Ovoid whalebone plate or tray. USNM 377584. Lower Levels. g. Whale rib section, interior excavated. USNM 365649. Upper Level. h. Whale rib section, abraded. USNM 377671. Lower Levels. i. Bone ball. USNM 375460. Lower Levels. j. Bowl from epiphysis of a bear femur. USNM 375483. Lower Levels. k. Crude whalebone container, Type VII. USNM 377671. Lower Levels.

PLATE 66
Crude Whalebone Containers

a. Type I. b. Type I. USNM 365468. Lower Levels.
c. Type II. d. Type III. USNM 375475. Lower Levels.
e. Type IV. f. Type VI. Lower Levels. g. Type VI.

USNM 377858. Upper Level. h. Type VI. USNM 363735. Lower Levels. i. Type VI. USNM 375676. Upper Level.

PLATE 67
Bone Bowls and Dippers

a. Perforated whale vertebra disk. USNM 375678. Lower Levels. b. Perforated whale vertebra disk. USNM 375678. Lower Levels. c. Perforated whale vertebra disk. USNM 377673. Lower Levels. d. Dipper from a bear skull. USNM 375686. Lower Levels. e. Dipper from whalebone (cracked). USNM 377658. Lower Levels. f. Flat bone scoop (scapula). USNM 365597. Lower Levels.

PLATE 68
Whalebone Cylinders

a. Whalebone cylinder. USNM 375369. Lower Levels.
b. Whalebone cylinder. USNM 375730. Lower Levels.
c. Rectangular whalebone dish or tray. USNM 375677. Upper Level.

PLATE 69
Engraving Tools, Pins, Needles

a. Engraving tool. USNM 377665. Lower Levels.
b. Engraving tool. USNM 377820. Upper Level. c. Engraving tool. USNM 365501. Lower Levels. d. Nose pin. USNM 365589. Lower Levels. e. Nose pin. USNM 375435. Lower Levels. f. Nose pin. USNM 395183. Upper Level. g. Nose pin. USNM 377551. Lower Levels. h. Nose pin. USNM 375244. Lower Levels. i. Bone pin, Type IIb, T-ended. USNM 375423. Lower Levels. j. Bone pin, Type IIb, T-ended. USNM 365507. Lower Levels. k. Bone pin, Type IIb, T-ended. USNM 375404. Lower Levels. l. Bone pin, Type IIb, bilateral notches. USNM 375404. Lower Levels. m. Bone pin, Type IIb, bilateral notches. USNM 377663. Lower Levels. n. Bone pin, Type IIb, grooved notches. USNM 375404. Lower Levels. o. Bone pin, Type IIb, grooved notches. USNM 375362. Lower Levels. p. Bone pin, Type IIb, grooved notches. USNM 395205. Lower Levels. q. Bone pin, Type IIb, bilateral notches. USNM 365499. Lower Levels. r. Bone pin, Type IIb, bilateral notches. USNM 377663. Lower Levels. s. Heavy brown ivory needle with relief spiral. USNM 375629. Upper Level. t. Bone pin, Type IIb, grooved notches. USNM 375236. Lower Levels. u. Heavy needle, perforated. USNM 375629. Upper Level. v. Heavy needle, perforated. USNM 365437. Lower Levels. w. Small delicate needle, grooved. USNM 377550. Lower Levels. x. Small delicate needle, perforated. USNM 377664. Lower Levels. y. Arrowhead, Type Ia. USNM 375388. Lower Levels. z. Bipointed bone pin. USNM 377664. Lower Levels. a'. Bone pin, Type IIa. USNM 377664. Lower Levels. b'. Bone pin, Type I. USNM 365499. Lower Levels. c'. Bone pin, Type IIa. USNM 377852. Upper Level. d'. Pointed bone implement with expanded head. USNM 375214. Lower Levels. e'. Bone pin, Type IIb, bilateral notches. USNM 377548. Lower Levels. f'. Bone pin, Type IIa. USNM 377696. Lower Levels. g'. Pointed bone implement with expanded head. USNM 377822. Upper Level.

PLATE 70

Miscellaneous Bone Artifacts

a. Tip for composite flaking tool. USNM 375359. Lower Levels. b. Scapula scraper. USNM 375452. Lower Levels. c. Bone knife handle, narrow slot. USNM 375592. Upper Level. d. Bone knife handle, narrow slot. USNM 365495. Lower Levels. e. Bone knife handle, deep narrow slot. USNM 375579. Upper Level. f. Bone knife handle, narrow slot. USNM 365495. Lower Levels. g. Tip for composite flaking tool. USNM 377720. Lower Levels. h. Tip for composite flaking tool. USNM 375409. Lower Levels. i. Tip for composite flaking tool. USNM 365492. Lower Levels. j. Tip for composite flaking tool. USNM 377537. Lower Levels. k. Scapula scraper. USNM 375592. Upper Level. l. Blunt-edged knife or scraper. USNM 375216. Lower Levels. m. Blunt-edged knife or scraper. USNM 377690. Lower Levels. n. Blunt-edged knife or scraper. USNM 365483. Lower Levels. o. Blunt-edged knife or scraper. USNM 365486. Lower Levels.

PLATE 71

Miscellaneous Bone Artifacts

a. Caribou scapula scraper. USNM 375451. Lower Levels. b. Bone chisel or scraper of bear mandible. USNM 375454. Lower Levels. c. Heavy bone scraper. USNM 375451. Lower Levels. d. Rounded end scraper. USNM 377537. Lower Levels. e. Rounded end scraper. USNM 377544. Lower Levels. f. Bone chisel. USNM 375585. Upper Level. g. Bone chisel. USNM 375355. Lower Levels. h. Bone chisel. USNM 375565. Upper Level. i. Bone chisel. USNM 375355. Lower Levels. j. Whalebone club. USNM 377544. Lower Levels. k. Perforated whalebone shaft (handle?). USNM 377720. Lower Levels. l. Bone ring. USNM 375462. Lower Levels. m. Bone ring. USNM 375462. Lower Levels. n. Comb. USNM 375612. Upper Level. o. Comb. USNM 375612. Upper Level. p. Dagger. USNM 377689. Lower Levels. q. Possible handle part (bone dagger?). USNM 377720. Lower Levels.

PLATE 72

Bone Awls

a. Type IIa, bird bone. Upper Level. b. Type IIa, bird bone. USNM 377696. Lower Levels. c. Type IIa, bird bone. USNM 377549. Lower Levels. d. Type IIa, bird bone. USNM 377549. Lower Levels. e. Type IIa, bird bone. USNM 377549. Lower Levels. f. Type IIa, bird bone. USNM 375632. Upper Level. g. Type IIa, bird bone. USNM 375408. Lower Levels. h. Type IIa, bird bone. USNM 375408. Lower Levels. i. Type IIa, bird bone. USNM 375263. Lower Levels. j. Type IIa, bird bone. USNM 377696. Lower Levels. k. Type IIa, bird bone. USNM 375632. Upper Level. l. Type IIb, bird-bone splinter awl. USNM 375632. Upper Level. m. Type IIb, bird bone. USNM 377696. Lower Levels. n. Type Ia, fox tibia. USNM 375633. Upper Level. o. Type Ia, fox tibia. USNM 377696. Lower Levels. p. Type Ia, fox or dog ulna with double bevel. USNM 395204. Lower Levels. q. Type Ia, penis bone awl. USNM 375635. Upper Level. r. Type Ia, heavy animal leg bone. USNM 375405. Lower Levels. s. Type Ia, heavy animal leg bone. USNM 375636. Upper Level. t. Type Ia, whole surface worked. USNM 375631. Upper

Level. u. Type Ia, whole surface worked. USNM 375631. Upper Level. v. Type IIIa, splinter. USNM 377696. Lower Levels. w. Type IIIa, splinter. USNM 375631. Upper Level. x. Type IIIa, splinter. USNM 375405. Lower Levels. y. Type IIIa, splinter. USNM 375405. Lower Levels. z. Type Ia, fox ulna. USNM 377549. Lower Levels. a'. Type Ia, fox or dog ulna with double bevel point. USNM 375634. Upper Level. b'. Type Ia, heavy, USNM 375405. Lower Levels.

PLATE 73

Fishhooks

a. Type III, curved. USNM 377833. Upper Level. b. Type III, curved. USNM 365614. c. Type III, curved. USNM 365614. d. Type III, curved, smaller shank. USNM 377697. Lower Levels. e. Type III, curved, smaller shank. USNM 375411. Lower Levels. f. Type III, curved, smaller shank. USNM 377697. Lower Levels. g. Barbed hook, straight. USNM 377571. Lower Levels. h. Type III, curved and angular. USNM 377833. Upper Level. i. Type III, curved and angular, very small. USNM 377833. Upper Level. j. Type I. USNM 395185. Upper Level. k. Barbed hook, straight. USNM 375413. Lower Levels. l. Barbed hook, curved. USNM 365509. Lower Levels. m. Barbed hook, curved. USNM 375413. Lower Levels. n. Barbed hook, straight. USNM 375227. Lower Levels. o. Barbed hook, curved. USNM 375413. Lower Levels. p. Barbed hook, straight. USNM 375227. Lower Levels. q. Barb point. USNM 375394. Lower Levels. r. Barb point. USNM 377715. Lower Levels. s. Barb point. USNM 365512. Lower Levels. t. Possible gorge hook. USNM 377852. u. Possible gorge hook. USNM 377852. Upper Level. v. Tip for barbed dart point. USNM 377710. Lower Levels. w. Tip for barbed dart points. USNM 375390. Lower Levels. x. Tip for barbed dart point. y. Tip for barbed dart point. USNM 375233. Lower Levels.

PLATE 74

Adze Heads, Grooved and Beveled Bone Objects

a-j. Adze heads. a. Type I, open socket. USNM 395208. Upper Level. b. Type I, open socket. USNM 377684. Lower Levels. c. Type I, open socket. USNM 375576. Upper Level. d. Type I, open socket. USNM 377889. Upper Level. e. Type I, open socket. USNM 377684. Lower Levels. f. Type III, open or closed with side notches. USNM 395206. Upper Level. g. Type III, open or closed with side notches. USNM 377777. Upper Level. h. Type III, open or closed with side notches. USNM 375358. Lower Levels. i. Type II, closed socket. USNM 375357. Lower Levels. j. Type II, closed socket. USNM 375577. Upper Level.

k-l. Grooved and beveled bone objects. k. Type I, Lower Levels. l. Type I. USNM 365482. Lower Levels. m. Type I. USNM 375591. Upper Level. n. Type I. Upper Level. o. Type I. USNM 377685. Lower Levels. p. Type II. USNM 365486. Lower Levels. q. Type II. USNM 375449. Lower Levels.

PLATE 75

Bone Wedges

a. In process of manufacture. USNM 375354. Lower Levels. b. Well finished specimen. USNM 365478.

Lower Levels. c. Type II. USNM 377683. Lower Levels. d. Type II. USNM 375206. Lower Levels. e. Type I, short. USNM 365644. f. Shouldered blade. USNM 395225. Upper Level. g. Battering on blunted end. USNM 365644. h. Type I, long. USNM 375688. Lower Levels. i. Type I, long. USNM 365481. Lower Levels.

PLATE 76
Bone Daggers and Club

a. Dagger. USNM 377680. Lower Levels. b. Dagger. USNM 365480. Lower Levels. c. Dagger or sword. USNM 365434. Lower Levels. d. Dagger. USNM 377631. Lower Levels. e. Curved club of whalebone rib. USNM 375466. Lower Levels.

PLATE 77
Bone Implements

a. Bone dagger. USNM 375359. Lower Levels. b. Bone dagger. USNM 365480. Lower Levels. c. Bone dagger. USNM 375359. Lower Levels. d. Bone dagger. USNM 377680. Lower Levels. e. Heavy pointed bone implement. USNM 375359. Upper Level. f. Heavy pointed bone implement. USNM 375582. Upper Level. g. Heavy pointed bone implement. USNM 375359. Lower Levels. h. Heavy pointed bone implement. USNM 375209. Lower Levels. i. Heavy pointed bone implement. USNM 377834. Upper Level. j. Bone dagger. USNM 375363. Lower Levels.

PLATE 78
Flat Bone Shovel Blades

a. Shovel blade. USNM 395224. Upper Level. b. Shovel blade. USNM 375453. Lower Levels.

PLATE 79
Labrets

a. Type IV, bone and ivory. USNM 377896. Lower Levels. b. Type IV, wood. USNM 365593. Lower Levels. c. Type IV, wood. USNM 395213. Lower Levels. d. Type IV, ivory. USNM 365506. Lower Levels. e. Type VII, ivory. USNM 375424. Lower Levels. f. Type III, bone and ivory. USNM 377814. Upper Level. g. Type III, bone and ivory. USNM 377805. Upper Level. h. Type III, bone and ivory. USNM 375689. Lower Levels. i. Type III, bone and ivory. USNM 377557. Lower Levels. j. Type X, bone and ivory. USNM 363742. k. Type II, bone and ivory. USNM 365508. Lower Levels. l. Type VI, bone and ivory. USNM 377803. Upper Level. m. Type VIII, bone and ivory. USNM 377554. Lower Levels. n. Type VIII, bone and ivory. USNM 375250. Lower Levels. o. Type II, bone and ivory. USNM 365438. Lower Levels. p. Type II, bone and ivory. USNM 365595. Lower Levels. q. Type II, bone and ivory. USNM 375425. Lower Levels. r. Type I, bone and ivory. USNM 375618. Lower Levels. s. Type II, bone and ivory. USNM 377646. Lower Levels. t. Type II, bone and ivory. USNM 365505. Upper Level. u. Type II, bone and ivory. USNM 365505. Upper Level. v. Type I, bone and ivory. USNM 377804. Upper Level. w. Type I, bone

and ivory. USNM 377864. Upper Level. x. Type I, bone and ivory. USNM 375265. Lower Levels. y. Type I, bone and ivory. USNM 375423. Lower Levels. z. Type I, bone and ivory. USNM 375423. Lower Levels. a'. Type I, bone and ivory. USNM 375423. Lower Levels. b'. Type V, bone and ivory. USNM 365595. Lower Levels.

PLATE 80
Miscellaneous Bone Artifacts

a. Type II, bird-bone bead. USNM 377831. Upper Level. b. Type II, bird-bone bead. USNM 375403. Lower Levels. c. Type II, bird-bone bead. USNM 395188. Lower Levels. d. Scored bird bone. USNM 377693. Lower Levels. e. Type I, bird-bone bead. USNM 377830. Upper Level. f. Type I, bird-bone bead. USNM 377830. Upper Level. g. Type I, bird-bone bead. USNM 365439. Lower Levels. h. Bone whistle. USNM 375625. Upper Level. i. Type II, bead. USNM 395181. Lower Levels. j. Type II, bead. USNM 375400. Lower Levels. k. Type II, short, bead. USNM 377588. Lower Levels. l. Type II, short, bead. USNM 375400. Lower Levels. m. Decorated bone tube. USNM 365595. Lower Levels. n. Socketed piece with slotted ends. USNM 395190. Lower Levels. o. Socketed bone piece. USNM 377648. Lower Levels. p. Harpoon finger rest, of bear (?) tooth. USNM 377898. Lower Levels (?). q. Harpoon finger rest. USNM 375441. Lower Levels. r. Harpoon finger rest. USNM 375624. Upper Level. s. Harpoon finger rest. USNM 375624. Upper Level. t. Drinking tube. USNM 375399. Upper Level.

PLATE 81
Miscellaneous Ivory and Bone Artifacts

a. Disk-shaped button. USNM 375618. Upper Level. b. Disk-shaped button. USNM 377894. Lower Levels. c. Ivory whorl for spinning top disk. USNM 395186. Lower Levels. d. Ivory whorl for spinning top disk. USNM 395214. Lower Levels. e. Disk-shaped button. USNM 395218. Lower Levels. f. Ivory ornament. USNM 377893. g. Bone object. USNM 375613. Upper Level. h. Whalebone whorl for spinning top disk. USNM 375443. Lower Levels. i. Wicket-shaped bone object. USNM 377559. Lower Levels. j. Wicket-shaped bone object. USNM 375717. Lower Levels. k. Probable toggle. Upper Level. l. Bone bar. USNM 395209. Lower Levels. m. Type IVf, toggle harpoon head. USNM 377708. Lower Levels. n. Barrel-shaped bone object. USNM 375437. Lower Levels. o. Short bone tube. USNM 375436. Lower Levels. p. Ivory ring. USNM 395216. Upper Level. q. Ivory eye, jet pupil. USNM 363741. r. Ivory eye, jet pupil. USNM 363741. s. Small ivory ladle. USNM 377563. Lower Levels. t. Small ivory ladle. USNM 375444. Lower Levels. u. Bone chain. USNM 365587. y. Bone bead. USNM 395217. Lower Levels. w. Whale head. USNM 395187. Lower Levels. x. Sea parrot's head. USNM 365588. Lower Levels (?). y. Small ivory ladle. USNM 377655. Lower Levels.

PLATE 82
Miscellaneous Bone Artifacts

a. Ivory plaque. USNM 365592. Lower Levels. b. Drill socket base. USNM 365444. Lower Levels.

c. Flat bifurcated object. USNM 375243. Lower Levels.
d. Bone chisel, small. USNM 395184. Upper Level.
e. Bone chisel, small. USNM 377813. Upper Level.
f. Bipointed barb. USNM 365621. g. Bipointed barb.
 USNM 365621. h. Flat whalebone object. USNM 377783.
 Upper Level. i. Knob-ended whalebone object. USNM
 377772. Upper Level. j. Rounded and grooved bone
 object. USNM 377818. Upper Level. k. Odd pointed
 form. USNM 395161. Upper Level. l. Odd pointed
 form. USNM 395163. Lower Levels. m. Odd pointed
 form. USNM 395165. Lower Levels. n. Curved whale-
 bone disk. USNM 377784. Upper Level. o. Flat ovoid
 whalebone cup. USNM 377662. Lower Levels. p. Ivory
 human figurine. USNM 377892. Lower Levels. q. Ivory
 human face. USNM 375719. Lower Levels. r. Needle
 or pendant. USNM 375614. Upper Level. s. Pointed
 bone object. USNM 395167. Lower Levels. t. Curved
 socketed piece. USNM 395169. Lower Levels. u.
 Curved socketed piece. USNM 395171. Lower Levels.
v. Animal head. USNM 365590. w. Tanged end of link
 ornament. USNM 365504. Lower Levels. x. Ivory
 object. USNM 377803. Lower Levels. y. Ivory object.
 USNM 375613. Lower Levels.

PLATE 83

Dolls and Figurines

a. Ivory doll, part. USNM 365591. Lower Levels (?).
b. Ivory doll, part. USNM 377565. Lower Levels. c.
 Ivory doll, part. USNM 377653. Lower Levels. d. Ivory
 doll, part. USNM 375432. Lower Levels. e. Ivory doll,
 part. USNM 365583. Lower Levels (?). f. Ivory doll,
 part. USNM 377654. Upper Level. g. Ivory doll, part.
 USNM 375622. Lower Levels. h. Gaming die (?).
 USNM 365503. Lower Levels. i. Gaming die (?). USNM
 375426. Lower Levels. j. Ivory animal. USNM 375720.
 Lower Levels (?). k. Brown marble animal. USNM
 365585. Lower Levels (?). l. Ivory animal. USNM
 365584. Lower Levels (?). m. Part or whole ivory doll.
 USNM 395188. Lower Levels. n. Walrus head. USNM
 377891. Lower Levels. o. Fish lure figurine. USNM
 395206. Lower Levels. p. Fish lure figurine. USNM
 365502. Lower Levels. q. Fish lure figurine. USNM
 377890. r. Seal or otter figurine. USNM 377650. Lower
 Levels. s. Whale figurine. USNM 365586. Lower Levels.
t. Fish lure figurine. USNM 375429. Lower Levels.

u. Bird figurine head. Lower Levels. v. Walrus head.
 USNM 375620. Lower Levels. w. Bird figurine. USNM
 377589. Lower Levels. x. Fish figurine. USNM 377651.
 Lower Levels.

PLATE 84
Human Heads

a. Whalebone. USNM 375687. Lower Levels. b.
 Whalebone. USNM 363739. Lower Levels. c. Whale-
 bone. USNM 375686. Lower Levels. d. Whalebone.
 USNM 375688. Lower Levels. e. Ivory. USNM 365582.
 Lower Levels. f. Ivory. USNM 363740. Lower Levels.
g. Whalebone. USNM 377655. Lower Levels.

PLATE 85
Miscellaneous Bone Artifacts

a. Halibut vertebra. USNM 375683. Upper Level.
b. Halibut vertebra disk. USNM 375683. Upper Level.
c. Halibut vertebra disk. USNM 375683. Upper Level.
d. Halibut vertebra disk. USNM 375210. Lower Levels.
e. Possible toggle. USNM 375601. Upper Level. f. Pos-
 sible toggle. USNM 377556. Lower Levels. g. Clothing
 toggle. USNM 375617. Upper Level. h. Clothing toggle.
 USNM 375617. Upper Level. i. Clothing toggle. USNM
 365590. j. Clothing toggle. USNM 375433. Lower Levels.
k. Clothing toggle. USNM 377553. Lower Levels. l. Ivory
 pendant with grooved end. USNM 377693. Lower Levels.
m. Drilled pendant. USNM 375715. Lower Levels. n.
 Drilled pendant. USNM 375715. Lower Levels. o. Drilled
 pendant. USNM 377643. Lower Levels. p. Drilled pen-
 dant. USNM 375715. Lower Levels. q. Drilled pendant.
 USNM 377642. Lower Levels. r. Drilled pendant. USNM
 375715. Lower Levels. s. Drilled pendant. USNM
 375422. Lower Levels. t. Ivory pendant. USNM 375245.
 Lower Levels. u. Ornament or pendant. USNM 375248.
 Lower Levels. v. Ornament or pendant. USNM 375615.
 Upper Level. w. Ornament or pendant. USNM 375249.
 Lower Levels. x. Ornament or pendant. USNM 365612.
y. Ornament or pendant. USNM 375430. Lower Levels.
z. Ornament or pendant. USNM 395215. Lower Levels.
a'. Decorative bear's tooth. USNM 375690. Lower Levels.
b'. Bone ornament. USNM 365493. Lower Levels. c'.
 Carved ivory plaque. USNM 365592. Lower Levels.