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VOLUME 62

NUSHAGAK AN HISTORIC TRADING CENTER IN SOUTHWESTERN ALASKA

JAMES W. VANSTONE

MARCH 17, 1972



FIELDIANA: ANTHROPOLOGY

A continuation of the

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VOLUME 62



FIELD MUSEUM OF NATURAL HISTORY
CHICAGO, U.S.A.

NUSHAGAK
AN HISTORIC TRADING CENTER
IN SOUTHWESTERN ALASKA

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Anthropology

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NUSHAGAK

AN HISTORIC TRADING CENTER IN SOUTHWESTERN ALASKA

JAMES W. VANSTONE

Curator, North American Archaeology and Ethnology

Chairman, Department of Anthropology

MARCH 17, 1972

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Acknowledgements

Historical and ethnographic information relating to the occupation of the Nushagak site was collected during five seasons of field work in the region between 1964 and 1969. Archaeological excavations at the site during the summer of 1969 were supported financially by a grant from the Wenner-Gren Foundation for Anthropological Research. Ethnographic specimens collected at Nushagak in the 1880's and now in the Smithsonian Institution were examined through the courtesy of Dr. William C. Sturtevant, Center for the Study of Man, Smithsonian Institution.

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For critical comments and helpful suggestions during the preparation of this study, I wish to express appreciation to my wife, Mary Helms VanStone.

Preface

The present study is the last of a series of publications dealing with the culture of the Nushagak River region in southwestern Alaska during the historic period. Earlier publications in the series include a monograph on the ethnohistory of the region (VanStone, 1967), an annotated ethnohistorical bibliography (VanStone, 1968a), a report dealing with nineteenth and early twentieth century settlement patterns throughout the river system (VanStone, 1971), and ethnoarchaeological studies of Tikchik near the mouth of the river of that name (VanStone, 1968b) and Akulivikchuk near the present-day village of Ekwak on the Nushagak River (VanStone, 1970).

Field work in the Nushagak River region was begun in the summer of 1964 with an archaeological survey of the river and three of its major tributaries, the Wood, Nuyakuk, and lower Mulchatna rivers. This survey suggested that throughout the period of historic contact there were centers of population along the upper, middle, and lower river, the latter including Nushagak Bay. Archaeological research was planned in each of these centers and initiated with the excavation of the Tikchik site in 1965. Akulivikchuk on the middle river was excavated in the summer of 1967.

There were several large settlements on Nushagak Bay in the nineteenth century (see VanStone, 1971), each one of which had something to recommend it for archaeological excavation. Nevertheless, it seemed unwise to concentrate research activity at any other site than Nushagak, the economic center for the entire river system from the time of earliest contact until well into the twentieth century. Although the archaeological potential of this important settlement was unknown, there exists a considerable body of published and unpublished historical data, some of which has been utilized in previous publications (VanStone, 1967; 1971). In fact, it could be said that without putting a shovel in the ground there is more information available concerning the occupation of Nushagak than for any other settlement in the entire region. In addition to the valuable historical data, there is also a sizeable collection of ethnographic specimens from Nushagak obtained by government em-

ployees at the settlement in the 1880's. This material adds a useful dimension to our understanding of life in the community; one not available for any other village in the region.

Because of the abundance of historical and ethnographic information about Nushagak, it was decided, perhaps unwisely, to limit archaeological excavations at the site. I believed that excavation of a small percentage of the total number of living structures would provide sufficient evidence of a kind not available from other sources. Unfortunately, the artifact collection from the houses is disappointingly small and of little value for comparative purposes. Nevertheless, this material provides some information that helps to fulfill the purpose of this study—to describe the changing settlement and its inhabitants through time.

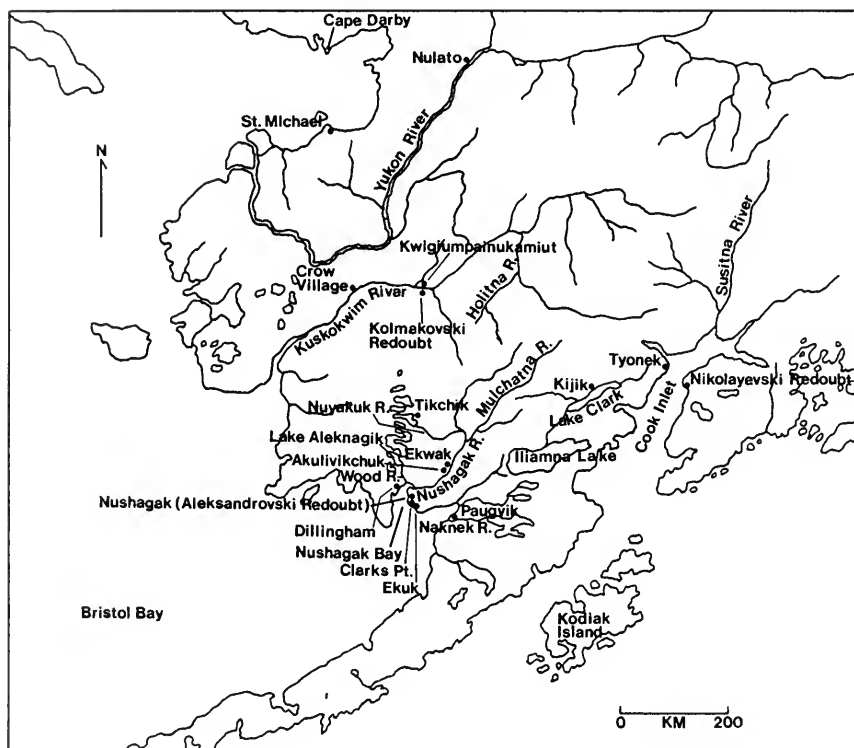


Fig. 1. Map of southwestern Alaska.

The Historical Dimension

The first well-documented contact between Yupik-speaking Eskimos of southwestern Alaska and Europeans took place in 1818 when a party of Russian-American Company employees was sent from Kodiak Island to explore the territory north of Bristol Bay. During these explorations, Aleksandrovski Redoubt, the Company's first post north of the Alaska Peninsula, was established at the mouth of the Nushagak River. Using the redoubt, later to be called Nushagak by Anglo-Americans, as a base of operations, Company employees explored the Nushagak and Kuskokwim rivers and opened the interior regions of southwestern Alaska to the fur trade (fig. 1). Details of these explorations and the role of Aleksandrovski Redoubt in the fur trade have been published elsewhere (VanStone, 1967, chs. I, III; 1968b, pp. 222-230). Therefore, the emphasis here will be on the history of the physical appearance of the community through time and the broad outlines of the changing settlement pattern.

For their new trading post the Russians chose a high bluff, the most prominent feature in the Nushagak Bay area. Such a location afforded a commanding view of the entire bay and no one approaching the mouth of the river could do so unobserved by personnel at the post. In front of the bluff is an extensive gravel and mud beach, the greater part of which is submerged by high tide. The remains of two salmon canneries stand in this beach area, both directly in front of the bluff.

Most of the Nushagak village was situated about 35 m. above the beach and the ascent, even when one of several paths is followed, is a steep one. Today eight buildings still stand on the formerly occupied area, including the church of St. Peter and St. Paul, last of three church buildings on the site following the construction of the first chapel in 1832 (VanStone, 1967, p. 22). Throughout the period of occupancy, it would appear that most of the houses and other buildings constructed by white or creole residents were located either along the beach below the bluff or on the front of the bluff

itself, particularly southwest of the standing church building. The Eskimo dwellings, on the other hand, were mostly toward the rear of the site and both southwest and northeast of the church (pls. 1, 2).

The Eskimo name for the Nushagak site is Tahlekuk (or Tathlekok) which means "elbow" and refers to the shape of the lower reaches of the Nushagak River. The inhabitants of Nushagak Bay called the river by the same name and the name Nushagak has no meaning to local people at the present time (Porter, 1893, p. 91).

It is not possible to determine with certainty whether the site was occupied by Eskimos prior to the construction of Aleksandrovski Redoubt in 1818. As previously noted, the location was a good one. Today, and presumably also in the past, fishing is excellent in front of the site and beluga are frequently seen along this section of shoreline. Drinking water is available from a small stream that flows down the bluff at the northeast end of the site, and there may have been other sources of water in the general area during the period of intensive occupancy. The Russians, however, did not normally establish their trading posts in the immediate vicinity of already existing villages. Tikhmenev (1939-1940, pt. II, p. 396) notes that Aleksandrovski Redoubt was not very far from a native village, but this is presumed to refer to the Aglegmiut settlement of Ekuk approximately 15 km. to the south. Whether or not the redoubt was constructed at the site of an existing village, a sizeable population of Eskimos and creoles rapidly grew up around the newly established post.

The first reference to Aleksandrovski Redoubt in the records of the Russian-American Company is on December 5 (OS), 1818 when the arrival of an undetermined number of "Aleuts" and 10 Russians "for settling on the Nushagak River" is recorded (Russian-American Company: Communications Sent, vol. 1, no. 289, folios 138-140).¹ The first manager of the new post was Fedor Kolmakov, an energetic creole trader who quickly established trade relations with the neighboring Aglegmiut and generally helped to spread the Company's influence in the region (VanStone, 1967, pp. 8-9).

Unfortunately, there is no plan or detailed description of the early Russian post, and it is impossible to say anything definite with reference to the nature or location of the earliest structures on the site. Conflicting opinions were obtained from informants on this subject. Some stated that the Russian structures were on the beach

¹ Russian-American Company will hereafter be abbreviated as RAC.

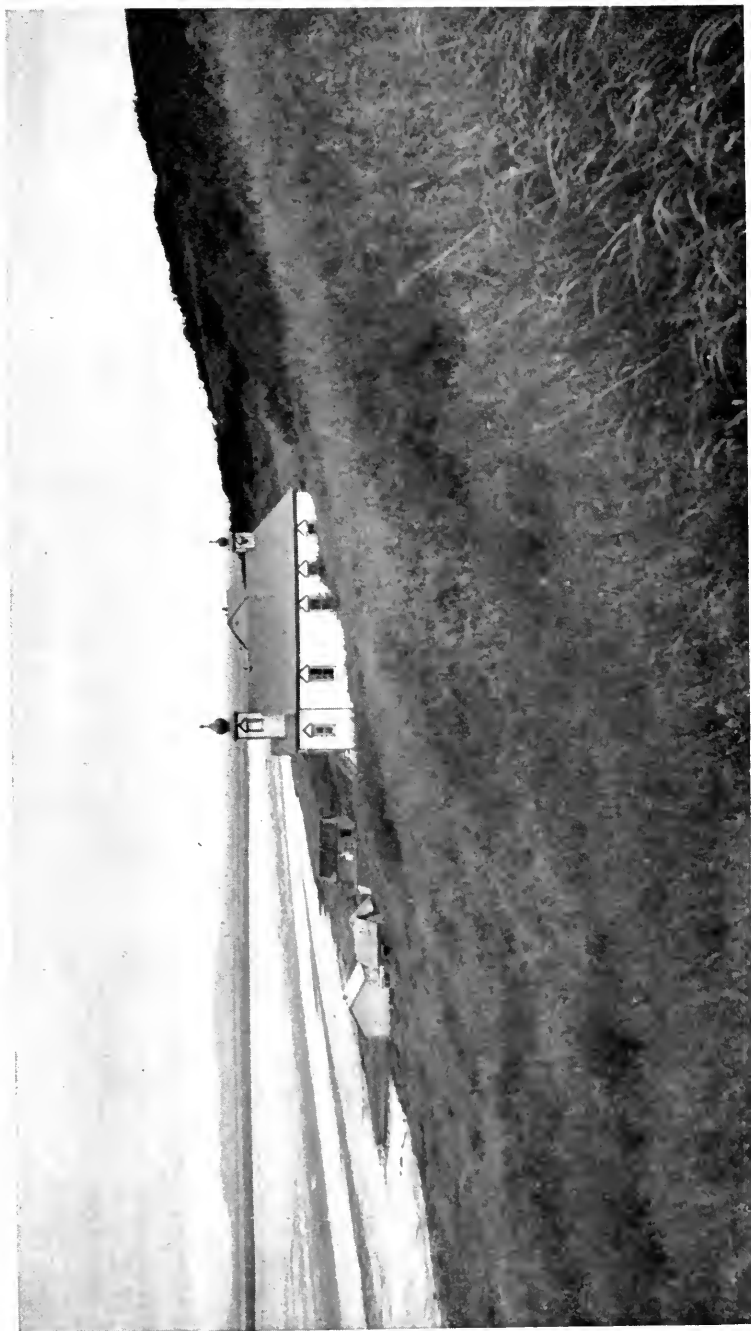


Plate 1. Nushagak in 1969.

set back against the bluff, while others believed them to have been located on the bluff at the southwest end of the site. Buildings constructed in more recent years have obliterated all traces of the older structures and possibly even extensive test excavations would not reveal remains of the original post and associated buildings.

Today the entire site clearly shows the disruption caused by the presence of two large salmon canneries in the area, both in continuous operation for more than 30 years. Everywhere just beneath the grass there are tin cans, bottles, sections of sheet iron, lengths of pipe, and other debris. Some of the old Eskimo house pits have been used as refuse dumps by later residents. A cursory examination of such materials indicated that most of this refuse belongs to the early years of the present century and is, in fact, contemporary with the material, to be described later, excavated from the houses. When the disruption caused by cannery operations and related activities is taken into consideration, it is not surprising that nothing remains of the earliest structures on the site.

In spite of the impossibility of obtaining exact information concerning location of the Russian buildings, there are some indications that they were situated on the beach in front of the bluff. In the records of the Russian-American Company for 1834 it is reported that "on October 29 of last year the water in the Nushagak River rose to such a height with a strong wind from the SW that the whole garrison and the redoubt's inhabitants were deprived of their barabaras and storehouses, and all the victuals that had been stored in the summer, all the wood which had been prepared for building had been carried away and several years labor reduced to nothing" (RAC: Communications Sent, vol. 11, no. 73, folio 97). Such floods were apparently fairly common, although probably not often as severe. Informants report, however, that in the fall of 1929 a high tide aided by a strong southwest wind caused a flood which reached almost to the top of the bluff and extensively damaged the canneries and other buildings on the beach.

It seems highly unlikely that the redoubt would have been damaged by the flood in 1833 had it been located anywhere on the bluff. Therefore, it was probably on the beach, perhaps back up against the bluff. This supposition receives support from a statement made

Plate 2. Air photograph of Nushagak taken in 1963. 1. Cannery foundations; 2. School (destroyed by fire, 1969); 3. Church; 4. House 1; 5. House 2; 6. House 3; 7. House 4.



by the French anthropologist A. L. Pinart who visited Nushagak briefly during the summer of 1871. In his diary under the date of June 1 he states that the redoubt was situated on the slopes of "cliffs" which form the banks of the river between two points that sheltered it from north and south winds (Pinart, MS, field notes). This location would appear to correspond to a point on the beach possibly a little to the southwest of the abandoned cannery foundations (pl. 2).

Nothing specific is known concerning the sizes or shapes of the original structures on the site. In 1829 Father Ivan Veniaminov, the Russian Orthodox missionary at Unalaska in the Aleutians and later Bishop of Alaska, visited Aleksandrovski and baptized a number of Eskimos. He returned in 1832 accompanied by Baron Ferdinand Petrovich von Wrangell, general manager of the Russian-American Company, and the latter ordered the construction of a small chapel completed that same year (VanStone, 1967, p. 22). It is in connection with the construction of this chapel that the first references to specific buildings at Aleksandrovski occur in the records. In July, 1832 Wrangell ordered Kolmakov not only to construct the above-mentioned chapel, but to build "a mill at the old site," put a new fence around the fort, and construct a new and more extensive barracks in place of the old one. He also advised the post manager concerning "a spacious house for lodging savages with their families when visiting here with furs to be built outside the fort in a suitable place where they are also to be entertained" (RAC: Communications Sent, vol. 9, no. 315, folios 472-473).

Later, in October of the same year, Wrangell advised the main office of the Company in St. Petersburg that he had found the redoubt in an extremely decayed condition. This, he explained, was because Kolmakov had not known whether the Company intended to retain the post at its original location (RAC: Communications Sent, vol. 9, no. 460, folio 346). On the basis of Wrangell's recommendations, it might be surmised that the original buildings constituting Aleksandrovski Redoubt were a small fort and barracks house, probably not connected.

Aside from the chapel completed in 1832, it is not known how much of the construction ordered by Wrangell was finished before the floods in the fall of 1833. On June 19 (OS) of the following year, the Company's boat *Bobr*, under the command of Lieutenant Nikolai Rosenberg, arrived at Aleksandrovski on an inspection trip. Acting on instructions from I. S. Kuprianov, Wrangell's successor as general

manager, Rosenberg inspected the redoubt and questioned Company employees. He learned that damage caused by the flood had been repaired and that a storehouse, bathhouse, fish-drying shed, *kashgee*, and a new fort surrounded by a fence had been built. A warehouse and barracks had been started (RAC: Communications Sent, vol. 12, no. 327, folio 310). The *kashgee* was probably the house for visiting Eskimos which Wrangell had instructed to be built. It thus would appear that by 1835 the Company's establishment at the mouth of the Nushagak River included eight structures. There is no indication that any further construction on a large scale took place during the Russian period.

Apparently sometime after this date, however, a priest's house was built which, about 1857, was turned over to the Company. At that time some consideration was given to enlarging the walls of the fort so as to include the house and also to construct a new fort since the old one was again in poor repair. Eventually, however, a decision was made simply to repair the old one as there was not enough timber remaining in the area for extensive new construction (RAC: Communications Sent, vol. 38, no. 138, folio 35).

In 1860 the Company, at the request of Orthodox Church authorities, ordered the construction of a new church to replace the small chapel built in 1832. This church was conceived on a comparatively grand scale and hired Eskimos, along with Company employees, hauled and prepared logs. Such materials as nail's, roof tiles, doors, and windows were sent from Sitka (RAC: Communications Sent, vol. 42, no. 53, folio 138). This new church was almost certainly the last structure of importance constructed at Aleksandrovski Redoubt during the Russian period (pl. 3). It may also have been the first European-style building on the bluff.

In 1846 a decision was made by the Company to reduce Aleksandrovski from a redoubt to an *odinochka* (trail house) and subordinate it to Nikolayevski Redoubt on Cook Inlet. The effects of this move on the Orthodox Church and the Company's operations have been discussed elsewhere (VanStone, 1967, pp. 26-28, 53-54). From that time on the post is consistently referred to as an *odinochka* in the Company's official correspondence, although Tebenkov's (1852) map of 1849 and Zagoskin's (1967) map of 1842-44 designate it as a "fort" (*krepost*). In the vital statistics of the Nushagak church there is a reference to Nushagak *Odinochka* as early as 1847, but by 1879 the community is regularly referred to as Aleksandrovski Redoubt (Alaska Russian Church Archives, accession 12,766, vital statistics,



Plate 3. The Russian Orthodox church at Nushagak around 1900.

Nushagak, 1842-1931). It would appear that the old name continued without reference to the reduced importance of the trading post. There is no doubt, however, that as early as 1842 the Company considered Aleksandrovski to be a fortified station. In that year two cannon were sent to the mouth of the Nushagak from the Company's establishment on Kodiak Island (RAC: Communications Sent, vol. 21, no. 43, folio 40).

The earliest recorded population figures for Aleksandrovski Redoubt occur about this time. In 1849 there were 74 men and 94 women living at the post and ten years later there were 76 men and 103 women (DRHA,¹ vol. 2, p. 3). These figures indicate that the village was probably the largest on Nushagak Bay even during the period when the redoubt was no longer a trading center of vital significance in southwestern Alaska.

In June, 1868 Captain J. W. White, in command of the United States Revenue Steamer *Wayanda*, visited Nushagak, as it is usually known in sources of the American period. One of the first Americans to visit the post after the purchase of Alaska by the United States, he simply mentions the decaying buildings of the Russian redoubt and notes that the assets of the Russian-American Company had been transferred to Hutchinson, Kohl and Company of San Francisco (White, 1869, p. 6). Within two years, this firm was reorganized to form the Alaska Commercial Company which continued to maintain a trading post at Nushagak.

Sometime between 1872 and 1874, during three seasons of work in Alaska, the historian and naturalist Henry W. Elliott visited Nushagak. He provided the most detailed description ever made of the settlement, and his comments are worth quoting in full.

The village itself is located on the abrupt slopes of a steep, grassy hillside which rises from the river's edge. The trading-stores and the residences of the priest, the church, log-huts of the natives and their baraboras are planted on a succession of three earthen terraces, one rising immediately behind the other. All communication from flat to flat is by slippery staircases, which are fraught with danger to a thoughtless pedestrian, especially when fogs moisten the steps and darkness obscures his vision.

¹ This is a reference to *Documents Relative to the History of Alaska*, 15 type-written volumes, copies of which are located in the University of Alaska Library and the Library of Congress. These volumes, the first four of which contain most of the Russian era materials, were compiled as part of the Alaska History Research Project (1936-1938) of the University of Alaska.

The red-roofed, yellow-painted walls of the old Russian buildings, the smarter, sprucer dwellings of our traders, with lazy, curling wreaths of bluish smoke, are brought into very picturesque relief by the verdent slopes of Nooshagak's hillside, caught up and reflected deeply by the swiftly moving current of the river below. The natives have festooned their long drying-frames with the crimson-tinted flesh of salmon; bleached drift-logs are scattered in profusion upon a bare sandy high-water bench that stretches like a buff-tinted ribbon just beneath them, and above, the dark, turbid whirl of flood and eddy so characteristic of a booming, rising river. A gleam of light falls upon a broad expanse of the estuary beyond that point under which the schooner lies at anchor, and brings out the thickly wooded bank of an opposite shore, causing us to note the fact that, for some reason or other, no timber seems ever to have spread down so far toward the sea on this side of the stream, or where the settlement stands, since nothing but scattered copses of alder- and willow-bushes grow on its suburbs or anywhere else as far as an eye can range up the valley (Elliott, 1886, pp. 375-376).

Elliott also drew a sketch of the village (1886, p. 374) in which the buildings of the Alaska Commercial Company and the Orthodox church are clearly shown (pl. 4). The proportions of the drawing, however, are such that it is difficult to relate the location of the structures shown to the site as it appears at the present time. Six buildings can be easily distinguished in Elliott's sketch and there would appear to be two or perhaps three additional structures at the northeast end of the settlement. Those closest to the beach are almost certainly associated with the Alaska Commercial Company, while those on the bluff would appear to be church-related buildings. Most of the Eskimo houses were presumably southwest of the church in the area where the drawing shows three elevated caches. Although Elliott indicates in his description that the settlement is situated on three terraces, the appearance of the site today indicates only two; the beach and the top of the bluff. It is true, however, that the bluff does slope upward and the structures could have been placed so as to suggest a third terrace.

An interesting feature of the Nushagak site described by Elliott (1886, p. 375) and shown on his drawing is a 20-foot cylindrical wooden shaft with a globe on the top which was erected to the memory of Fedor Kolmakov and stood on a small hill toward the rear of the site at the southwest end. This hill, which is in back and slightly to the southwest of the present church, is in reality an extension of the bluff and by no means as pronounced as indicated in Elliott's drawing. The Nushagak cemetery is located on top of this hill and it is here that Kolmakov was buried in 1840. The monument, which

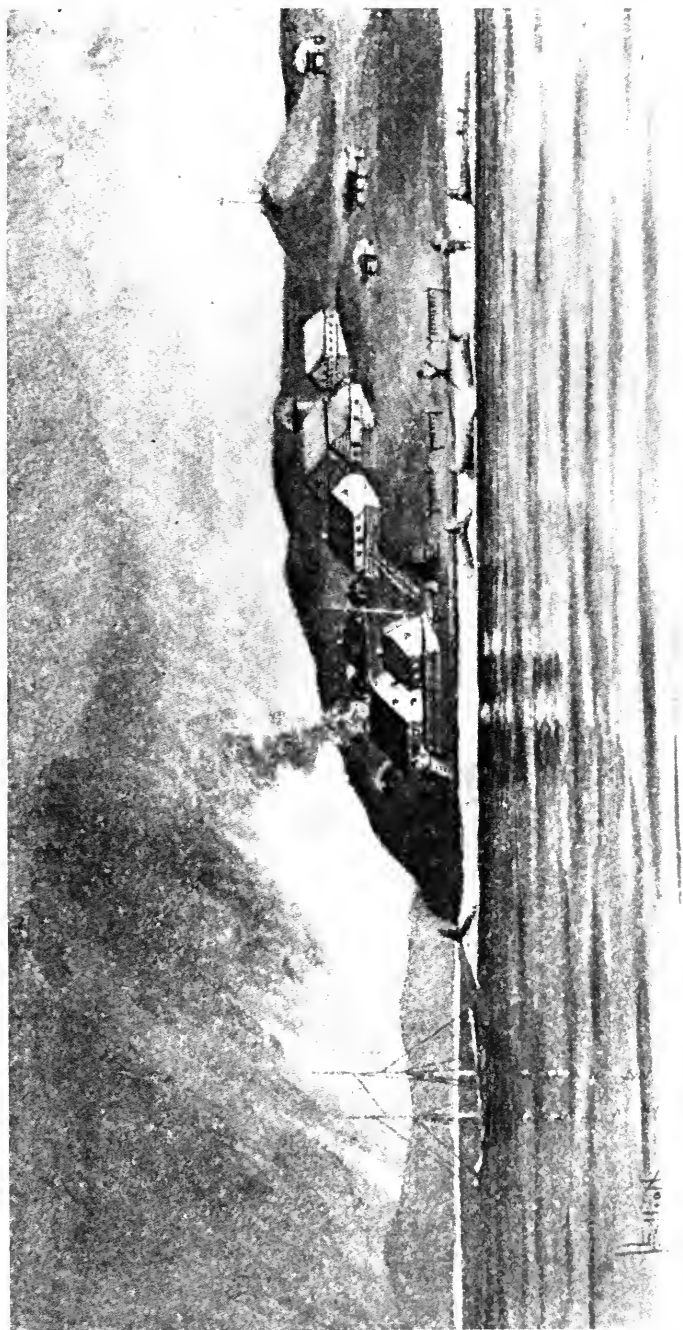


Plate 4. Nushagak in the 1870's.

presumably was erected over his grave, has long since fallen. Today a heavy growth of alder bushes obscures most of the cemetery and only the more recent graves are completely free from obstruction by these trees. These alders are spreading down the hill along the total length of the site and at the southwest end have encroached on some of the Eskimo house pits.

Elliott says nothing about the population of Nushagak at the time of his visit, nor does he, in fact, refer to his stay in the settlement in any detail. A few years later, however, in 1879, Captain G. W. Bailey of the United States Revenue Marine listed a population of 121 for the settlement divided as follows: 33 creoles, 12 Aglegmiut, and 76 "Kuskoquims" (Bailey, 1880, pp. 26-27). These figures, which were obtained from church records, indicate that the village maintained a fairly uniform population throughout the Russian period. They also suggest the extent to which Kuskowagamiut from the Kuskokwim River region were attracted to the area. These Eskimos, along with Aglegmiut from other settlements on Nushagak Bay, Kiatagmiut from villages along the Nushagak River, and the inhabitants of many communities throughout southwestern Alaska visited the post during the summer months to trade their furs. It was at this same time that the census takers collected their data.

A noticeable jump in population for Nushagak is indicated in statistics obtained for the tenth federal census in 1880 where 178 residents are listed including one Euro-American, 86 creoles, and 91 Eskimos (Petroff, 1884, p. 17). This increase, which is in the number of creoles rather than Eskimo residents, may simply reflect an awareness of racial admixture on the part of the enumerator.

Data for the eleventh census 10 years later gives a population of 268 living in 25 houses. This number is broken down into 64 whites, 20 creoles, 85 "Indians," and 99 "Mongolians" (Porter, 1893, pp. 5, 164). The ethnic category "Indians" refers to Eskimos visiting or living in the village, while "Mongolians" indicates Chinese cannery workers.

A final nineteenth century population listing for Nushagak was made by C. W. Elliott (1900, p. 740) from church records in 1898. He enumerated 63 men and 58 women for a total of 121. In the following year the Pacific Steam Whaling Company and Alaska Fisherman's Packing Company erected canneries directly in front of the settlement (VanStone, 1967, p. 70), and these must have had an important effect upon the village (pl. 5). This importance is probably reflected in the population figures for 1900 which were 324



Plate 5. Cannery of the Pacific Steam Whaling Company at Nushagak (from Moser, 1902, opposite p. 202).

(Thirteenth Census of the United States, vol. III, 1913, p. 1134). A marked decline to 74 is noted in 1910 which may reflect several factors, notably the season of the year in which the census data were gathered, the exact nature of the fishing industry in that year, and the growing importance of settlements on the west side of the bay which drew population away from Nushagak (Fifteenth Census of the United States: 1930, vol. 1, p. 1222). Regardless of the significance of these factors, however, it is apparent that Nushagak was decidedly in decline after 1900. In 1920 the population is given as 16 and in 1930 as 43 (Fifteenth Census of the United States: 1930, vol. 1, p. 1222). After 1930 the village is no longer listed in the census reports.

In the summer of 1888 the Governor of Alaska, A. P. Swineford, visited Nushagak and noted that the settlement consisted of a trading store, the church and parsonage, a few log cabins occupied by creole families, and from 30 to 50 subterranean houses. Governor Swineford also gives the only detailed description of a Nushagak area *kashgee*, or ceremonial house, and briefly discusses some of the activities which took place within it (Swineford, 1898, pp. 162-166; VanStone, 1967, pp. 125-126). An informant described this *kashgee* as having been located behind one of the standing structures on the site and this spot was examined during the summer of 1969. There is a deep pit in this location, certainly deep enough to have been a *kashgee*. Its main room, however, measures only five by six m. which is somewhat smaller than the *kashgee* in other Nushagak villages (see VanStone, 1968b, pp. 252-258; 1970, pp. 33-38). This particular structure, which was not excavated, has a short tunnel and small entryroom facing the bay. There could, of course, have been other *kashgees* at the site.

During the summers of 1900 and 1901 the United States Fish Commission Steamer *Albatross* continued explorations of stream and lake systems in the Bristol Bay region begun in 1888 (Moser, 1902). The vessel visited Nushagak on several occasions, and while there, a member of the crew apparently took a number of photographs, copies of which are now in the National Archives. One of these photographs (pl. 6), taken from the beach in front of the site looking inland, shows four structures, one frame and three of logs, on the beach up against the bluff. The large frame structure in the center is the Alaska Commercial Company, while one of the log houses, probably the one immediately to the south of the store, was the trader's residence. The other two log structures may have been storehouses. Earlier



Plate 6. Nushagak around 1900.

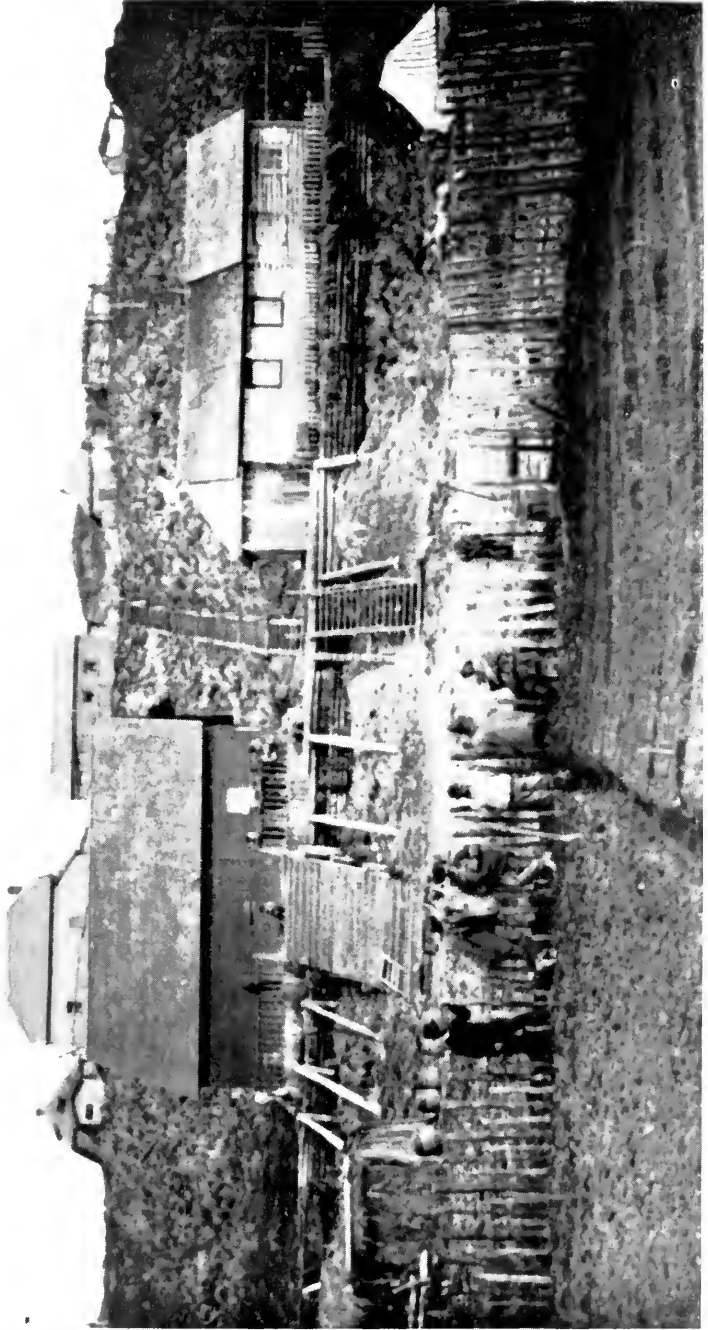


Plate 7. Nushagak in the 1880's.

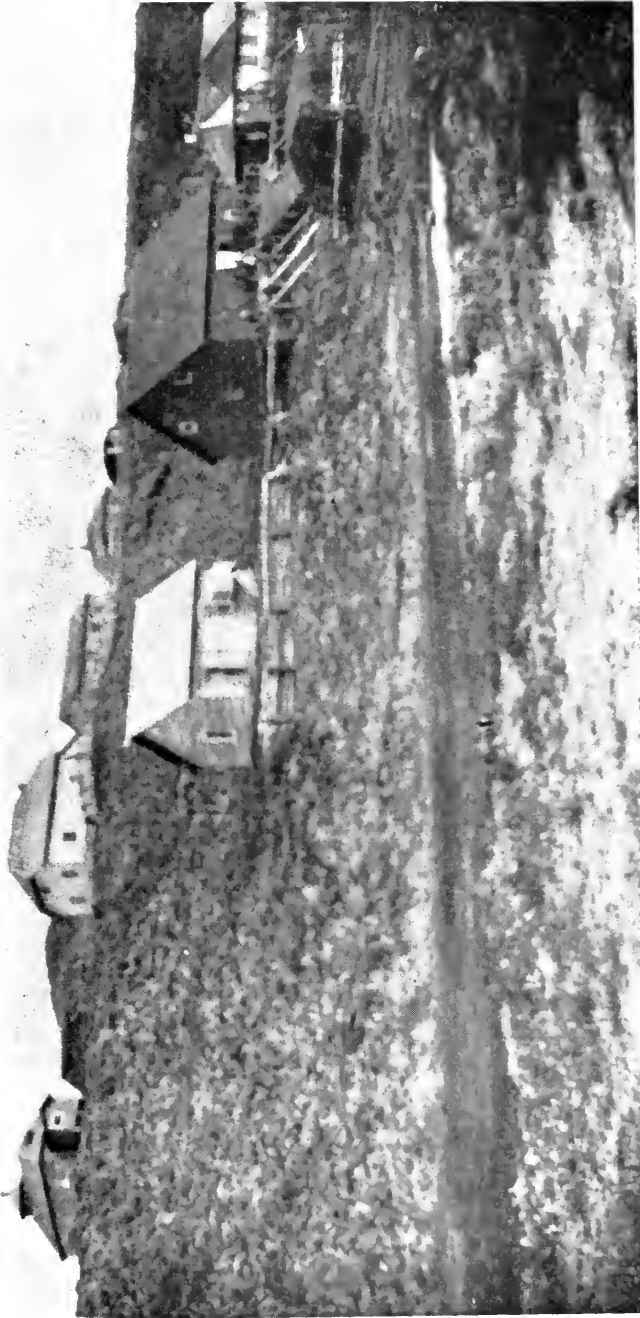


Plate 8. Nushagak in the 1880's.

photographs (pls. 7, 8), taken in June, 1884 by the Moravian missionaries William H. Weinland and Henry Hartmann (VanStone, 1967, pp. 37-38), show the same structures from a slightly different perspective. According to informants, the fenced-in area in front of these buildings at one time enclosed extensive gardens maintained by John W. Clark, agent for the Alaska Commercial Company at Nushagak from the middle 1880's until his death in 1897. These gardens appear in one of the Weinland and Hartmann photographs (pl. 7). As noted previously, it is probable that the Russian buildings stood in the same location as those just described and it is altogether possible that one or more of the log structures shown in these photographs was actually constructed during the Russian period. One informant stated that the Alaska Commercial Company store, and perhaps other buildings as well, burned about 1920.

Plates 6-8 also show several wooden structures on the edge of the bluff and these can be seen even more clearly in another *Albatross* photograph (pl. 9) taken from that area and looking to the northeast. Several Eskimo houses and caches are shown along with three frame houses, a church, and an uncompleted frame house. The largest house with a four-sided roof situated on the edge of the bluff just above the store was said by informants to have been the priest's residence.

The church building, shown in the above-mentioned photographs and in a separate Fish Commission picture (pl. 3), is almost certainly the one constructed in 1860 and indicated in Elliott's drawing of the settlement. It was northeast of the church that now stands and much closer to the edge of the bluff. According to informants, its location was, at one time, marked by a large white wooden cross which has since fallen. Informants also stated that the present church building (pl. 1) was constructed in 1904.

The status of Nushagak as the most important settlement in the bay area in the late nineteenth century was belatedly recognized with the appointment of the first postmaster in 1899. In January, 1927 the post office seems to have been discontinued and the mail sent to Dillingham. In December of the same year, however, another postmaster was appointed and service appears to have been continuous until the post office was closed and moved to Clarks Point in 1935 (Ricks, 1965, pp. 13, 48).

Some of the reasons for the decline of Nushagak are apparent in the data that has been presented, but it might be well to summarize them here. The influenza epidemic of 1918-1919 took its toll at Nush-



Plate 9. Front of the Nushagak bluff around 1900.

agak as it did at all other villages throughout the region (VanStone, 1967, pp. 103-104). Informants stated that so many people died their bodies were simply placed in a number of houses and the roofs of these structures deliberately caved in. Most of these structures are said to have been at the northeast end of the site. The two salmon canneries were abandoned during the 1930's and this doubtless was also an important factor, although, as previously noted, the settlement's decline began long before these establishments ceased to operate. Of much greater significance were the attractions of Dillingham which emerged as an important metropolitan center in the 1920's and 1930's. The population of the west side of the bay continued to grow throughout this period at the expense of the east side.

In 1916 Father Vasili Kashevarov, who, except for an interval of six years, had been the priest at Nushagak since 1896, died and was not replaced (VanStone, 1967, p. 48). Although a respected lay reader was in residence until 1963, people were drawn away from the historic church and attended services at the Orthodox church near Dillingham. A public school, operated continuously from at least as early as 1908, was closed sometime during the late 1940's (VanStone 1967, p. 97). In 1964 there were two families with houses at Nushagak and even they did not spend the entire year there. In 1969 one family remained.

Nushagak Material Culture

The material culture of the Eskimos who inhabited the Nushagak site during the nineteenth and early twentieth centuries will be examined through analyses of two categories of materials: ethnographic collections made at Nushagak in the late nineteenth century, and archaeological materials and information obtained during excavations at the site in the summer of 1969. It is apparent, for reasons that will be examined later, that both bodies of data are of approximately the same age. Nevertheless, because there is very little duplication from one to the other, it has seemed advisable to consider them separately. The ethnographic data will be presented first, followed by a consideration of those materials obtained through archaeological excavation. No exhaustive comparative treatment will be attempted at either level, but some comparative data derived from those published and unpublished reports dealing with sites and collections which are closest to Nushagak, both spatially and temporally, will be included with the descriptions when considered relevant. Comparative generalizations and conclusions will be reserved for a later section.

ETHNOGRAPHIC COLLECTIONS

The objects to be described are from four ethnographic collections made at Nushagak between 1882 and 1886 for the United States National Museum by Charles L. McKay and James W. Johnson. Nushagak was one of the early stations of the Signal Service of the United States Army, a program initiated through the efforts of Spencer Baird, at that time Secretary of the Smithsonian Institution. The observers selected for the stations were men interested in all aspects of natural history and qualified to devote themselves to such activity when not carrying out their meteorological duties. One of these observers was Edward William Nelson. During his tour of duty at St. Michael he travelled widely and made the finest collection of ethnographic specimens ever assembled from western Alaska (Nelson, 1899). Under orders issued in the spring of 1881, Charles L.

McKay was sent to establish the station at Nushagak. For two years he spent much of his time on natural history work, but in the spring of 1883 he drowned in Nushagak Bay under mysterious circumstances. McKay was succeeded by James W. Johnson who remained until 1886 when, apparently, the program was abandoned (Osgood, 1904, pp. 25-26; VanStone, 1967, pp. 13-14).

McKay's first collection was accessioned by the National Museum (no. 12164) in December, 1882 and the second (no. 13527) in September, 1883. Johnson's first collection was accessioned (no. 16879) in December, 1885 and the second (no. 18416) a year later. Although there are some letters and lists of specimens associated with the collections, they contain no ethnographic information and very little descriptive data relative to the individual specimens.

It cannot be said with certainty that all the objects in the McKay-Johnson collections were actually obtained at Nushagak. It is known that McKay travelled extensively throughout the Nushagak River region, probably ascending the Wood River and perhaps visiting Iliamna Lake and Lake Clark (Osgood, 1904, pp. 25-26). It is not known whether Johnson did any travelling in the region, but the short length of his stay at Nushagak makes it unlikely that he was able to go very far from his post. In any case, it is likely, if not certain, that the vast majority of the objects collected by these men were obtained at Nushagak from local residents or from those Eskimos from other villages in the general area who were visiting the settlement and trading post. Much of the hunting equipment to be described is of a type that would be associated with a coastal dwelling people. Although the population at Nushagak was admittedly heterogeneous, it is also true that considerable uniformity existed throughout the region with reference to aspects of material culture not associated with the hunting of sea mammals. Therefore, the collections can probably be considered characteristic of those Eskimos living at Nushagak, whatever the origin of some specimens.

In the spring of 1967 I examined the McKay-Johnson collections in the United States National Museum. Unfortunately, the Nushagak specimens were dispersed throughout the museum's Eskimo materials which include the large Nelson collection made between 1877 and 1881. Thus, it was not possible, in the time available, to find every object listed in the museum's catalogue as being in the McKay-Johnson collections. In addition, many specimens had been exchanged or sold, some apparently lost, and others had deteriorated

over time to the point where they were no longer recognizable by their original catalogue descriptions. As a result, many of the descriptions that follow are regrettably lacking in detail. Whenever possible, reference will be made to those objects which have been illustrated in National Museum publications, and to similar objects in the collections made by Nelson.

Although the ethnographic collections from Nushagak are neither as extensive nor as diversified as might be desired, the number of types represented is sufficiently numerous and varied so that the artifact descriptions can be discussed under the following headings: fishing, land hunting, sea hunting, tools, household equipment, transportation, clothing, personal adornment, tobacco complex, games and toys, and ceremonial equipment. It is hoped that by grouping the ethnographic specimens in this manner, their significance in understanding the pattern of living at Nushagak will be emphasized.

FISHING

There is evidence in the McKay-Johnson collections for five methods of fishing: hooking, spearing, trapping, dipping, netting, and shooting. A cottonwood stick 62 cm. in length has sinew line wrapped around it and a small, antler fish-shaped lure-hook with a metal barb fastened to the end. The hook is only 9 cm. in length. In addition to this *hook and line* assemblage, there are eight *lure-hooks* in the collection, all with antler or ivory fish-shaped shanks and metal barbs. The shanks range in length from 4 to 10 cm. Fish-shaped lure-hooks are widely reported throughout southwestern Alaska and are associated with river, lake or bay fishing with hook and line through the ice. It is likely that the Eskimos of Nushagak fished in the bay for lingcod and black fish during the late fall and winter. In November families from the various bay communities frequently travelled up the Wood River to Lake Aleknagik where they fished for trout through the ice (VanStone, 1967, p. 123).

Also associated with fishing through the ice are two *ice picks*. These consist of wooden shafts, both approximately 145 cm. in length, with split, pointed sections of antler at one end. Nelson (1899, p. 174) mentions that throughout the area of Alaska covered by his collecting trips such picks were extensively used to make fishing holes in the ice.

The widely distributed *three-pronged fish spear* is represented in the collections by two specimens 141 and 144 cm. in length, respec-

tively. Such spears were used for fishing through the ice in places where the water was clear. It would seem unlikely that such a method of fishing would prove successful in the murky waters of Nushagak Bay and it is probable that fish spears were used in neighboring lakes and streams. According to Nelson (1899, p. 194), whitefish and pike were frequently taken with the three-pronged fish spear.

The collections contain two models of *fish traps*, but both are so badly damaged that very little can be said concerning their construction. They appear, however, to be the usual cone-shaped form with a funnel-shaped mouth similar to those illustrated by Nelson (1899, pl. LXX, 13-14). Large traps of this type were used to take salmon and the smaller ones for blackfish. On the Nushagak River traps for whitefish were placed under the ice in winter (VanStone, 1968b, p. 338). It is unlikely that fish traps were ever used extensively in Nushagak Bay because of the swift tides and muddy bottom (Van Stone, 1967, p. 64).

The catalogue describes a "*dipper for blackfish*," but this specimen could not be located. The use of dip nets was widespread in southwestern Alaska. Residents of Nushagak Bay dip netted for smelt in late spring (VanStone, 1967, p. 127) and in certain locations on the river, salmon were taken in that manner. Such a method of fishing would have been particularly suitable in the muddy waters of Nushagak Bay.

Evidence for the use of gill nets is limited to six net *shuttles* and seven *mesh gauges*. The shuttles, two of wood and four of antler, range in length from 18.5 to 33 cm. There is some crude engraved line decoration on the antler specimens. All are similar to those illustrated by Nelson (1899, pl. LXXIII). Of the mesh gauges, only two wooden specimens could be located. One is 20 cm. and the other 25 cm. in length. The latter is double ended, both ends being the same size.

Fish were occasionally taken with bow and arrow, and the collections contain three *fish arrows*. They are three-pronged with spruce shafts and three feathers fastened with sinew at the ends. These arrows range in length from 89 to 95 cm. and their shafts are ornamented with bands of blue and red paint. Two are described and illustrated by Mason (1894, pl. LX, figs. 4-5). Nelson (1899, pp. 160-161, fig. 44) describes fish arrows from a number of locations in southwestern Alaska.

LAND HUNTING

There are six *sinew-backed bows* in the collections ranging in length from 95 to 144 cm. All are made of birch, are sinew-backed with caribou sinew, and belong to Murdoch's "southern" type (Murdoch, 1885, pp. 308-310). One of these bows is illustrated in Murdoch's (1885, pl. II, fig. 3) study. Another specimen has blue and red paint around the grip and stripes of the same colors at either end near the nocks.

Of the nine complete *hunting arrows*, two are illustrated by Mason (1894, pl. LII, fig. 122). Mason's Figure 1 has a cedar shaft which is painted with stripes of red paint. The feathers, middle portions of which are not glued to the shaft, are fastened at the end with sinew. Figure 2 has an unpainted spruce shaft but otherwise is similar to Figure 1. Both specimens have arrowheads with a single, pronounced barb, but the specimen illustrated in Figure 1 has an iron blade, while that in Figure 2 is of ivory. All the arrows in the collections range in length from 66 to 84 cm. In addition to the complete arrows, there are eight antler *arrowheads*. They are asymmetrically barbed with the number of barbs ranging from one to six. Most have metal blades, but one is of slate. All but two have sharp shoulders and plain conical tangs. The others are socketed to fit over the end of a wooden shaft.

As might be expected, trapping was an important activity for the residents of Nushagak just as it was for villagers throughout southwestern Alaska in the late nineteenth century. Unfortunately, most of the evidence for trapping in the McKay-Johnson collections is in the form of a series of wooden models nearly all of which have deteriorated in storage at the National Museum. In most cases this deterioration has reached the point where the trapping methods they illustrated can no longer be reconstructed. There are six models of *fox traps*, only one of which reveals anything concerning the methods involved. This model, although very badly damaged, shows a fox entangled in a net set upright between two stakes. It has, perhaps, been chased into the net by a hunter after first being led to the net by bait.

There are two models of *beaver traps*, one of which shows a beaver house with two runways and a beaver emerging from one of them. Although this model is also badly damaged, it seems to show the beaver caught in a sinew snare set just below the surface of the water at the point where the animal would emerge after coming out of its

house. Other model traps in the collections were intended to illustrate methods of taking wolverine, martin, bear, lynx, and otter. A model illustrating the taking of otter seems to show a samson-post type trap set over the animal's runway.

It is possible that most trapping methods illustrated in these models were not actually in use at the time the collections were made. McKay and Johnson may have requested that models be constructed to show the various methods of taking fur-bearing animals before the introduction of steel traps and firearms.

The collections contain 33 *squirrel snares*. They are strips of sinew which pass through small wooden cylinders and closely resemble a marmot snare from Cape Darby illustrated by Nelson (1899, pl. LI, 4). Four sets of *duck snares* also resemble one illustrated by Nelson (pl. LI, 1).

Evidence for the use of firearms at Nushagak includes a caribou skin *gun case* and two *ammunition belts*. One of the latter consists of the belt, powder bag, and shot pouch made from fish skin with caribou skin decoration. The powder bag has a wooden stopper and beaded decoration. There is also a small caribou skin *bullet bag* lined with cloth on the inside and with a drawstring so that it could be worn around the neck. A *bullet mold* consists of two pieces of wood held together with a wooden peg. A two-part, square stone inset with a circular depression in each half comes together to form the mold and there is an opening in the top into which the lead is poured.

SEA HUNTING

Virtually all of the sea hunting equipment in the McKay-Johnson collections appears to have been associated with the taking of seals, beluga, and sea otters. There are eight *sealing harpoons* intended for throwing from a kayak with the aid of a throwing board. All are approximately 130 cm. long and are similar in every way to the featherless specimens illustrated by Nelson (1899, pl. LIV, 2, 6-8). A smaller specimen 79 cm. in length is feathered and was intended to be shot from a bow at seals or sea otters. It is described and illustrated by Mason (1894, pl. LII, 6).

The eight *harpoon dart heads* in the collections are asymmetrically barbed with central line holes and plain, conical tangs. They range in length from 6 to 14 cm. and the number of barbs from one to four. The smallest specimens may be parts of fish arrows like those previously described. Mason (1902, p. 294, pl. 12) describes and illus-

trates a "sea otter harpoon" collected by McKay which does not differ greatly from those harpoons noted above. It has a small seal intestine float with an ivory stopper. There are five *throwing boards* of the usual Eskimo type which were used with these harpoons.

Sealing harpoons having removable foreshafts and toggle heads are represented by sections of six specimens. These are light implements with the heads, which have closed sockets and two or three spurs, ranging from 6 to 8 cm. in length. All have blade slits running parallel to the line holes and two have copper blades held in place with small rivets of the same material. Two-piece wooden caps held together with sinew covered the blades when the harpoons were not in use (see Nelson, 1899, pl. LVIII, b, 4).

Harpoons for beluga hunting were larger and heavier than those used for seals. A complete *beluga harpoon* in the collections is 155 cm. long. At one end is a hollowed-out walrus tusk with a metal ring in the end to which a line was attached. There is an ivory finger rest about midway along the thick, heavy shaft, and at the other end is a heavy bone socketpiece with a wedge-shaped tang. The foreshaft and harpoon head unfortunately are missing. Three additional socketpieces resemble the one just mentioned. One of these is illustrated by Mason (1902, fig. 92, p. 302). There is also a float made of a whole seal skin intended for use with a beluga harpoon. It is 66 cm. long, 41 cm. wide, and has an ivory plug with a wooden stopper.

The only other items in the collections associated with sea hunting are three wooden combination *eyeshade-snow goggles*. One specimen is painted green and red and has tufts of caribou hair extending from each side. On all specimens the slit through which the wearer sees is just below the visor. The visors on these specimens are more pronounced than any on those illustrated by Nelson (1899, pl. LXIV).

TOOLS AND MANUFACTURES

The fourteen *ulus* in the collections have slate or iron blades that fit directly into rounded handles with oblong holes for gripping. They range in length from 9 to 15 cm. and three specimens illustrated by Mason (1891, pl. LXIX, 1-3) are typical. A single ulu, also illustrated by Mason (1891b, pl. LXIX, 4) is quite different. The blade and handle are one piece of iron with the handle forming a small curve over the back. An identical one is in a private collection from the Paugvik village site at the mouth of the Naknek River. This form

would appear to have been traded to the Eskimos of the area, perhaps by the Russians.

Seven *crooked knives* do not differ from the familiar form of this characteristic Eskimo tool. Six have antler handles and one is of wood. They range in length from 15 to 29 cm. There is also a caribou skin *sheath* decorated with tufts of red yarn for one of the knives.

An important woodworking implement is the *beaver tooth tool*, of which there are eight in the collections. The teeth are either lashed with sinew or inserted into holes in the ends of wooden handles. There are also seven *engraving tools* that were presumably used as hand implements for drilling small holes in antler or ivory. Two, approximately 15 cm. in length, have small iron blades which fit directly into composite antler handles held together with pegs and spruce root lashing. A third tool is 8 cm. long with an iron point set into the end of a wooden shaft reinforced with a brass sleeve made from a rifle cartridge.

There are four *saws* ranging in length from 20 to 34 cm. All have narrow wooden handles with thin, finely notched, semilunar metal blades. The distal end of one handle is carved in the shape of an animal's head. One of these saws is illustrated by Hough (1922, pl. 17, no. 6). A single antler *wedge* resembles those recovered from archaeological sites in the region (VanStone, 1968b, pl. 5, 6-7; 1970, pl. 9, 18, pl. 10, 11-15) and the collection also contains an *adz*, the stone blade of which is lashed directly to a cottonwood handle.

Nine *whetstones* range in length from 10 to 16 cm. All are rectangular in cross-section, made of a fine-grained rock, and similar to specimens from archaeological sites along the Nushagak River (Van Stone, 1968b, pl. 1, 11-15).

Among the most interesting items in the McKay-Johnson collections are two complete sets of *fire-making equipment*. The first, illustrated by Hough (1890, pp. 567-568, fig. 40), consists of a prepared "hearth" with four holes opening upon a narrow platform, a spruce drill shaft, a seal skin strap with two spruce twigs for handles and a wooden mouthpiece with stone inset and a crescent-shaped gash on each side for gripping with the teeth. Included with this set is a narrow, rectangular tinder box which contains some fungus and larch cones presumably used for tinder. This box is 31 cm. long and 6 cm. wide.

The second set is very similar to the one just described and is also illustrated by Hough (1922, p. 4, pl. 2, 8). The mouthpiece associated with this set is carved in the shape of a seal and the drill bearing, or "hearth," is painted red. The illustration is useful because it shows the set in place as it would have been used. In addition to these two complete fire-making sets, the collections contain six drill bearings, five of wood and one of antler, which range in length from 24 to 34 cm. and are approximately 6 to 8 cm. wide. All have prepared platforms for the tinder. There are also two drill shafts on both of which slight charring and indications of wear can be noted at the distal end, a single drill handle in the shape of a seal, and a drill strap of caribou skin 77 cm. long with two spruce handles.

Four additional wooden drill shafts are for the typical Eskimo *bow drill*. They taper toward the proximal end and have small knobs over which the mouthpieces fit. The drill bits are made from nails which have been set into holes in the distal ends of the shafts and lashed with sinew. A fifth specimen, described and illustrated by McGuire (1896, fig. 101, pp. 697-98) is somewhat different, being much shorter with the bit fitting into a mortised socket in the side of the shaft. This socket is closed with a small plate of wood.

The 15 *skin scrapers* in the collections are remarkably uniform except for size; there is a length variation from 10 to 44 cm. Most have long spruce handles which curve naturally at the proximal end to form a grip. At the distal ends are raised lashing knobs and stone blades, usually slate or schist, are lashed to the handles with spruce root. Two of the largest of these scrapers are illustrated by Mason (1891a, pl. LXXXVIII, figs. 1, 3). One specimen has a two-piece handle including a knob at the proximal end.

A single *beaming tool* for scraping caribou skins is made from a strip of iron barrel hoop that has been enclosed between two strips of wood held in place with spruce root lashing at both ends. The iron is ground to a sharp edge along one side and the wood has been cut away to expose the blade. This specimen is illustrated by Mason (1891a, pl. LXXXVIII, fig. 2) who maintained that at the time he studied it, strands of caribou hair were wedged between the blade and handle.

An extremely interesting implement is a *fat scraper* made from a broad, thin strip of antler bent in the shape of a truncated cone. One end is cut to a triangular shape and fitted through a similarly shaped cut in the other end. This unusual specimen, which is ap-

proximately 9 cm. in diameter, is illustrated by Mason (1891a, pl. LXXXIX, fig. 2) who considered it to represent a type confined to Bristol Bay.

HOUSEHOLD EQUIPMENT

Although there are, or were, a large number of specimens in this category in the collections, only a relatively small number could be located and examined. The few types described below are nevertheless helpful in rounding out the picture of material existence at Nushagak in the late nineteenth century.

Of the four *wooden boxes* listed in the catalogue, only a single specimen was located. It is oval shaped, 32 cm. long and 13 cm. wide in the center, has a flat lid with beveled edges, and is painted red and black. Such a box may have been used as an all-purpose container in the home.

The five *wooden dishes* can probably be described as food containers. Four are of the two-piece type similar to those illustrated by Nelson (1899, pl. XXXII, 1-2). A fifth specimen, in the shape of a puffin, is made from one piece of spruce driftwood 27 cm. long and 10 cm. wide. There are also three wooden *dippers* ranging in length from 28 to 39 cm. They are made from one piece of wood bent to form the bowl and lashed with spruce root. Nelson (1899, pl. XXIX, 6) illustrates a very similar type of dipper.

Four *berry baskets* are each made of two pieces of wood; a bottom and a bent side piece sewn with spruce root. All are approximately 13 cm. high, have ivory handles, and are decorated with red and black paint. The two *birch bark dishes* are shallow, oval containers made from single pieces of bark folded at the ends.

There are a number of different *pouches* in the collections constructed from a variety of materials. Several are made of caribou skin and there is at least one of woven grass lined with a strip of seal intestine. Since none were actually examined, little detail can be given here. The collections also contain a number of *bags* of various types. Four grass bags are described in the catalogue as having been used to carry clothes while traveling, or to store provisions or skins in the house. There are also 13 bags which are described as women's work bags. Six are sewn from strips of seal intestines and decorated with quills, strips of worsted, and seal skin. At least one is made of sewn salmon skins and another from a whole loon skin with a caribou skin border where the head would be.

Sewing equipment is well represented in the collections. There are five ivory *thimbles*, all about 2 cm. high and decorated with parallel lines, spurs, and drilled dots. Three ivory *needle cases* range in length from 7 to 11 cm. The smallest is plain with a fitted ivory top. One is decorated with engraved circle dots and another with parallel lines and spurs. Also included are three bone *needles* and two *needle and thread pouches*. The latter are of caribou skin with wolverine trim. The needles are inserted in the skin and the whole rolled up and tied with a strip of hide.

A large, rectangular section of *grass matting* 148 cm. long and 84 cm. wide might have been used as bedding. Other objects of grass include a towel 51 cm. long used in the bathhouse and a small *scourge* used to start perspiration by beating one's self in the bath.

There are 20 *spoons* made of a variety of materials including ivory, wood, mountain goat horn, bone, and antler. All have pronounced, elliptical bowls and long handles. They range in length from 10 to 20 cm. and one specimen is illustrated by Hough (1922, pl. 9, 4).

Two *yokes* are carefully worked sections of wood approximately 45 cm. long which constrict in the middle and have knobs at opposite ends for the rope. Such an implement would appear to have been worn over one shoulder and buckets of water carried at each end. Certainly a yoke for water carrying would have been extremely useful at Nushagak where the sources of water are at the base of the hill on which the settlement was located.

The collections contain eight saucer-shaped clay *lamps* ranging in diameter from 9 to 20 cm. All have encircling lines around the rim on the side and one has a cross motif in the center. Two are illustrated by Hough (1898, pl. 18, figs. 3-4). Most of the lamps are encrusted with grease around the rims. Wicks for these lamps were of moss and since there are no well-marked wick ledges, it is probable that the wick floated in the center (Hough, 1898, p. 1053). There is a single stone lamp in the collection which is also illustrated by Hough (1898, pl. 20, fig. 3, pp. 1053-1054). Although somewhat deeper, it is very similar to a specimen recovered from the Akulivik-chuk site (VanStone, 1970, pl. 7, 2) and generally resembles the Kodiak type (Hough, 1898, p. 1054).

An elaborately decorated object identified in the catalogue as a "house hook, for hanging up utensils" is illustrated by Hoffman (1897, p. 813, pl. 42, fig. 5).

TRAVEL AND TRANSPORTATION

The only objects in the McKay-Johnson collections that are specifically associated with travel are two *snowshoes* which are not mates and a model birch bark canoe. The snowshoes are described and illustrated by Mason (1896, p. 394, pl. 13). He states that they were collected by McKay from the Tanaina Indians. This is possible, but these shoes closely resemble specimens which I have seen in communities along the Nushagak River.

The *model birch bark canoe* is covered with a single piece of bark which is fastened to the gunwales with spruce root. There are three single piece thwarts and two long ribs, one on each side parallel to the center board. Such a boat would have been used for river transportation throughout the region.

CLOTHING

Only the most general comments can be made concerning clothing in the collections. In general, those specimens which were located do not differ greatly from the clothing from southwestern Alaska described and illustrated by Nelson (1899, pp. 30-43).

Some information concerning *winter clothing* could be learned from a small male doll wearing knee-high caribou skin mukluks and a squirrel skin parka decorated with strips of the same material. There is caribou skin trim around the hood and cuffs. A female doll is wearing caribou skin mukluks that stretch above the knee and a squirrel skin parka decorated with strips of beaver fur painted red on the inner surface. The parka ruff is also of beaver fur and there are designs in white caribou skin on front and back.

In addition to the doll, two *women's parkas* and a coat provide more information concerning female winter clothing. The two parkas are made of squirrel skins and reach well below the knee. One is almost identical to the doll's parka and the other is decorated with strips of squirrel skin and has two strips of white caribou skin running down the center of the garment. The coat is of caribou skin decorated with strips of worsted and muskrat fur. Along the bottom the caribou skin has been slit to form a fringe. Strands of black, white, and red beads hang from the shoulders and there is no hood; just a fringe of worsted around the collar.

There are *six caps* in the collections. One specimen, 20 cm. long and 12 cm. wide, is a boy's cap of caribou skin with rows of beads

running around it. Six strands of beads hang down on either side in the vicinity of the ears. A single milk glass button and a metal button are also used as decoration. Another cap 25 cm. long and 17 cm. wide is made of seal intestine ornamented with bands of needle work. There are two squirrel skin caps with red cloth borders and tufts of red yarn and strips of squirrel skin at the back. A cap that is described as being for winter wear is made of beaver skin where it covers the head and has a cape of squirrel skin extending down the back. This cape would have reached approximately to the wearer's shoulders. A band of cloth and white beads separates the two kinds of skins. The area of beaver skin has been sewn in strips with tufts of red yarn between each strip. The whole cap is lined with cloth on the inside. The last specimen to be described is a small peaked cap made of sections of sewn salmon skins. There is caribou skin trim around the bottom and tufts of caribou hair have been used as decoration.

Two *belts* are strips of commercially prepared cowhide ornamented with caribou or reindeer teeth. A third is a strip of caribou skin decorated with rows of blue, white, black, and red beads. Brass buttons and the heads of shotgun shells have also been used as decoration. This type of belt is said to have been worn by women and girls.

A single pair of caribou skin *gloves* is decorated with rows of red, white, black, and green beads around the waist, and has parallel rows of white beads running up the back of the hand. Around the wrist is a trim of red worsted. The two gloves are attached by means of a beaded string. In addition to these gloves, the collections also contain two pairs of fish skin mittens and a single pair made of woven grass. There is also a pair of *socks* woven from the same material.

The final item of clothing to be mentioned is 15 carved ivory *belt toggles*. Several are in the shape of sea's and at least one is a beaver. All are extremely well carved and many are decorated with drilled dots.

PERSONAL ADORNMENT

Earrings in the McKay-Johnson collections closely resemble those illustrated by Nelson (1899, pls. XXIII, XXIV). Two sets have ivory ornaments in the shape of a human face together with white, amber, white-lined red, and blue faceted beads. Three additional sets are also of ivory with the characteristic circle dot ornamenta-

tion. These, too, are heavily decorated with beads. There are also two sets of sickle-shaped ivory *labrets* with two small bead suspension holes drilled on the side.

A *necklace* 45 cm. in length is made of commercially prepared cowhide ornamented with caribou incisors. Ten pendants of seal teeth are suspended on strings of white and blue beads. At one end of the necklace is a short strap to which is attached a large, translucent blue bead. This bead fits into a loop at the other end for the purpose of securing the necklace around the neck.

Several *dress ornaments* are included in the collections, but only one will be described. It is a strip of caribou skin decorated with beads of various colors and with two small brass bells secured as pendants at either end.

TOBACCO COMPLEX

Evidence for the use of tobacco is confined to five *snuff boxes* and a wooden *mortar* used for mixing tobacco with birch fungus or some other material. The snuff boxes are oval to round in shape and approximately 5 by 8 cm. in size. They have tight fitting lids flush with the rim and closely resemble specimens illustrated by Nelson (1899, pl. LXXXVI, 1-4).

TOYS AND GAMES

There are nine *tops* in the McKay-Johnson collections, seven of wood, one of bone, and one of ivory. Seven are similar in that they consist of round disks 3 to 12 cm. in diameter which fit over pegs 6 to 11 cm. in length. A single top is somewhat different, being one piece of wood which broadens and comes to a point at one end. This specimen and four others are described and illustrated by Culin (1907, pp. 737-738, figs. 973-977).

Three *buzzes* are rectangular pieces of wood from 8 to 10 cm. in length which have perforated edges and constrict at the center where pieces of sinew are attached. They are painted red and blue and presumably would have had small sticks attached to the sinew.

There are four wooden *whirlers* which have "handles" 30 to 40 cm. in length to which thin "wands" are attached by lengths of sinew. One specimen is painted with black and red stripes.

Four *dolls*, three wooden and one ivory, are crudely made and dressed in skin clothing. A single animal doll, possibly a squirrel, is made of sealskin stuffed with grass and decorated with beads.

A total of nine small *ivory carvings of animals* was located. They represent seals, walrus, and beavers, and all are extremely well made. An interesting carving of a seal illustrated by Hoffman (1897, pl. 56, fig. 2) is decorated with circle dot designs, the centers of which have been drilled to receive wooden pegs which hold tufts of caribou hair in place. Also illustrated (pl. 56, 5) is a walrus with circle dot designs on the sides and upper part of its body.

Three *storyknives* are made of curved, flat sections of antler which widen at the distal end to form a knife-like blade. Inverted chevron designs as well as circle dots occur on all specimens. Ethnographically, the telling of stories illustrated by means of a storyknife is confined to Eskimo girls living in southwestern Alaska (Oswalt, 1964, p. 310).

CEREMONIAL EQUIPMENT

The Nushagak Eskimos, as might be expected, used masks extensively in their ceremonies held in the *kashgee*. Unfortunately, no complete *masks* are preserved in the McKay-Johnson collections. There are, however, a number of mask hoops, plumes, and appendages for the type of elaborately carved mask characteristic of the Yukon-Kuskokwim delta region south to Bristol Bay. Such masks are extensively illustrated by Nelson (1899, pls. XCV-CV). The collections also contain two *finger masks* which, although badly damaged, appear to be the type with projecting feathers illustrated by Nelson.

Also apparently used in *kashgee* ceremonies were three so-called *dance wands* consisting of wooden platforms approximately 70 cm. in length and 3.4 cm. wide to which are fastened figurines of the same materials illustrating subsistence activities. Feather plumes also project from the platforms. All are in a poor state of preservation, but it is obvious that they were held at one end, perhaps while dancing. The first shows a man dragging two seals, the second depicts a man hunting walrus from a kayak, and the third shows a man hunting a caribou from a kayak. All are painted brown and gray. Nelson does not mention ceremonial paraphernalia of this type.

Somewhat similar are two wooden *carvings of animal-like figures* that are said to have been used in *kashgee* ceremonies. The first is

badly damaged, but is apparently intended to represent a mythological being. It appears to have the head of a seal with the eyes cut from thin pieces of metal and big front flippers. The back feet are human and there are movable wings. A small carving of a caribou protrudes from one side of its mouth and there probably was another animal in a similar position on the other side. Beneath the body of this creature a small maskette with a human face is suspended on a piece of sinew by means of a pair of caribou skin loops in the middle of the back. The body of the figure is painted black, but the appendages are red. It is 36 cm. long, 41 cm. wide, and 18 cm. high.

The second figure is a caribou with a human head and detachable legs and antlers. The body of the animal is painted black, the neck white, and the human head red. Tufts of human hair protrude from the head. The figure was suspended by a line in the center of the back and is 27 cm. long and 24 cm. high.

Wearing apparel associated with ceremonies includes three *circlets* said to have been worn on the heads of women and girls during dances. All are approximately 50 cm. in circumference and about 45 cm. wide. Two are simply strips of caribou skin with beadwork decoration, but the third consists of six black bear claws sewed to a strip of caribou skin with strips of red yarn for decoration. There is also a pair of *mittens* made of caribou skin and decorated on the outer surface with feathers and puffin beaks. These appendages are fastened to the surface of the mittens with small pieces of sinew and would make a rattling sound during a dance.

ARCHAEOLOGICAL DATA

EXCAVATIONS

The air photograph (pl. 2) shows that the bulk of the abandoned Eskimo houses at Nushagak are located to the southwest of the church. There are at least 18 house pits in this area, but outlines of the structures are difficult to determine because of the very tall grass which covers the site during summer months. It should be noted that this figure includes only those structures southwest of the path that parallels the front of the bluff. Thus, none of the buildings constructed by Euro-American and creole residents at the front of the bluff are included in this estimate.

In addition to the Eskimo dwellings just mentioned, there were probably many more, remains of which have been obliterated by

construction of the houses which still stand (pl. 2). At some time in the past, probably in the early 1930's in connection with the construction of the school (the largest building at the east end of the site), a bulldozer was brought to Nushagak to partially fill in the area behind the standing structures. This additional disturbance makes an accurate estimate of the number of structures in this area impossible.

In order to add an archaeological dimension to the historical and ethnographic research, test excavations were carried out at Nushagak during a two-week period (June 25-July 7) in the summer of 1969. In the absence of obvious midden deposits, four houses, selected at random from the area southwest of the church, were excavated.

A number of generalizations concerning these houses may be made before discussing them individually. It is virtually certain that not all the observable structures on the site were occupied at the same time and this, of course, includes those excavated. However, since the total period of occupancy at Nushagak was not much more than 150 years, and since the dwellings, despite certain variations, appear to be structurally similar, we can consider them a cluster of contemporary residences. In a later section, for reasons based

TABLE 1.—House Construction Features

Feature	House			
	H-1	H-2	H-3	H-4
Excavated foundation	X	X	X	X
Tunnel				
shallow floor	X	X	X	0
deep floor	0	0	0	X
horizontal wall logs	0	0	?	0
vertical wall planks	0	?	0	0
short, horizontally placed roof logs	0	0	?	X
tar paper sheets at roof level	X	0	0	X
wooden sill at inner end of tunnel	0	0	0	X
Tunnel entryroom	X	X	X	0
House				
dimensions square	0	0	X	0
dimensions rectangular	X	X	0	X
vertical wall planks	?	?	0	0
roofed without wall logs	0	0	?	?
central hearth or stove location	X	0	X	X
benches	0	X	0	X
dried grass on floor	X	X	X	X
four-post-center roof construction	0	X	0	X
four-corner-post roof construction	X	0	X	0
tar paper sheets at roof level	X	0	0	?
Attached bathhouse	0	0	X	X

primarily on the recovered archaeological materials, it will be suggested that the excavated structures probably were occupied in the early twentieth century.

All four houses were semi-subterranean dwellings and the wood employed in their construction was, as far as could be determined, spruce. Entrance tunnels were a characteristic feature of all the structures, although only in H-4 was the tunnel floor markedly lower than the floor of the living area. Three dwellings had entry-rooms or storm sheds at the outer ends of the tunnels, and two structures had attached bathhouses. Although logs used in construction have not been preserved in any abundance, it is apparent that the roofs of two houses were supported by four center posts, and those of the other two by posts in the four corners. The floors in all structures were partially covered with dried grass. Certain features of house construction at Nushagak not evident in the excavations but determined from other sources will be discussed later. The locations of the four excavated houses are indicated on the air photograph (pl. 2).

House 1 (Fig. 2)

The main chamber of this structure, dug into the hillside at the rear of the site, was rectangular with the long axis parallel to the tunnel. Although modified to some extent from the traditional Eskimo dwelling of the area, this house was nevertheless semi-subterranean; the excavation, however, was not deep. There were large posts in each corner of the main room suggesting that the roof consisted of stringers over which planks or split logs were placed. Pieces of tar paper appear to have been laid over the roof planks before blocks of sod were added. There is no indication of the kind of wall logs used, but vertically placed planks are a possibility. In any case, the entire structure would have been covered with sod blocks so that from the exterior it gave the appearance of a traditional Eskimo house.

The floor of the main room was indistinct, but not difficult to follow as the overlying fill separated easily from the gray to brown clay-like silt that underlies the site. In places grass had been spread on the floor, particularly along the back wall. A small, shallow area consisting of charcoal and discolored earth located in the center of the main chamber indicated the location of a small stove. The amount of charcoal was not sufficient for a hearth or fireplace.

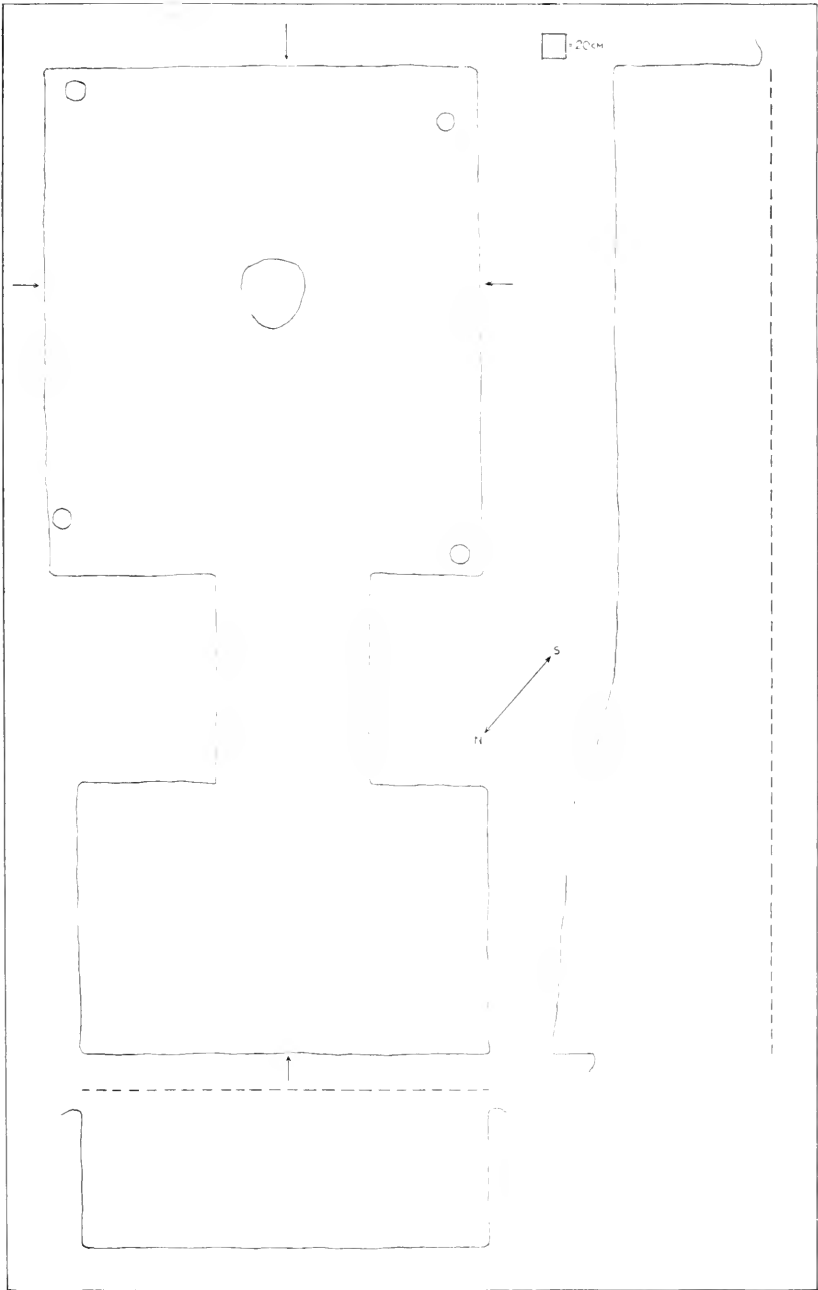


Fig. 2. House 1.

Very little can be said about the construction of the rest of the structure. The tunnel floor started out level with the floor of the main chamber and then sloped down sharply to the entryroom. There were no preserved structural features in either the tunnel or the entryroom and in these areas the excavations simply followed the outline that was apparent before digging began. The entryroom had a very indistinct floor and in that respect resembled houses excavated at the upriver sites of Tikchik (VanStone, 1968b, pp. 233–258) and Akulivikchuk (VanStone, 1970, p. 21). Although there are no definite indications as to how the entryroom was constructed, it doubtless resembled those of houses shown in late nineteenth century photographs of Nushagak (pls. 15–16)

House 2 (Fig. 3)

The main room of this dwelling was rectangular with the long axis running parallel to the tunnel. Very few structural features were apparent as a result of the excavation, but two posts were located in such a manner as to suggest four-post-center construction. No wall logs could be defined with certainty, but two vertical logs that appear to have fallen forward in the area near the tunnel suggest that vertical planks or split logs may have been used. The excavation is deep, the rear half of the main chamber having been cut into the hillside.

There appears to have been a narrow, poorly defined bench along the rear wall; simply an unexcavated area left to serve in that capacity. The floor of the main chamber was so thin and poorly defined that the excavators could follow it only by working through the overlying cultural material until sterile silt was encountered. In places grass was found at the floor level, perhaps laid down in the sleeping areas. There were no traces of a central fireplace or hearth.

The floor of the short tunnel extending from the main chamber was only slightly more than 20 cm. below the floor of the living area and thus did not form a cold trap. The tunnel extended well into the room and there was a gentle slope up to the floor of the main chamber. In contrast to the floor of the living area, the tunnel floor was well defined and consisted of a hard-packed, thin, gray layer from which the overlying material separated easily. A flat stone was in the center of the tunnel floor near the slope up into the main chamber. A pair of vertical posts on either side of the inner end of the tunnel may have been supports for the tunnel roof. It is diffi-

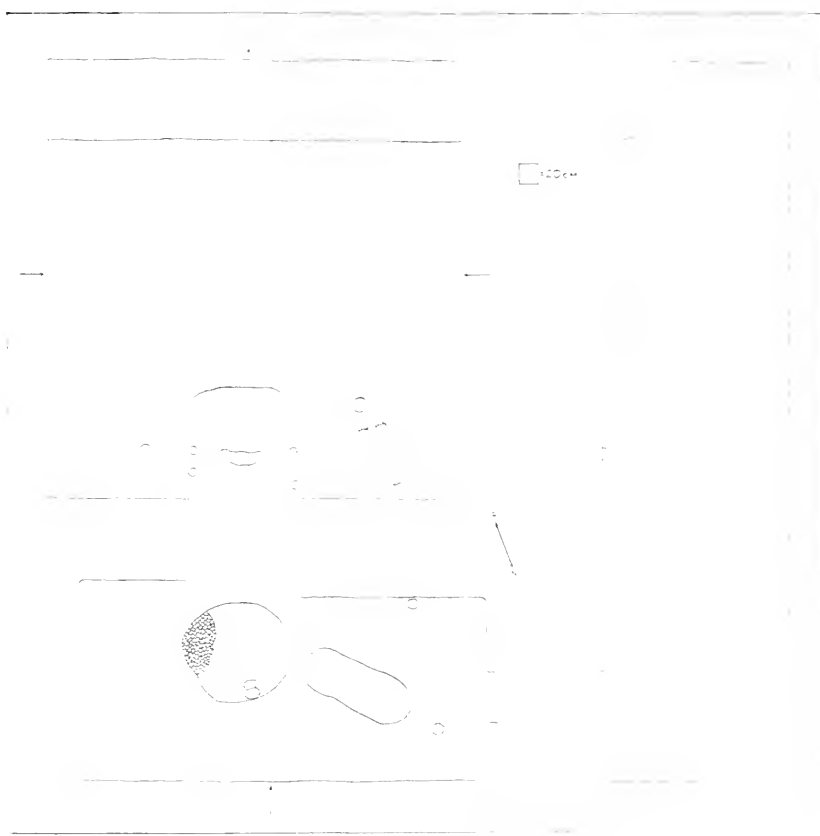


Fig. 3. House 2.

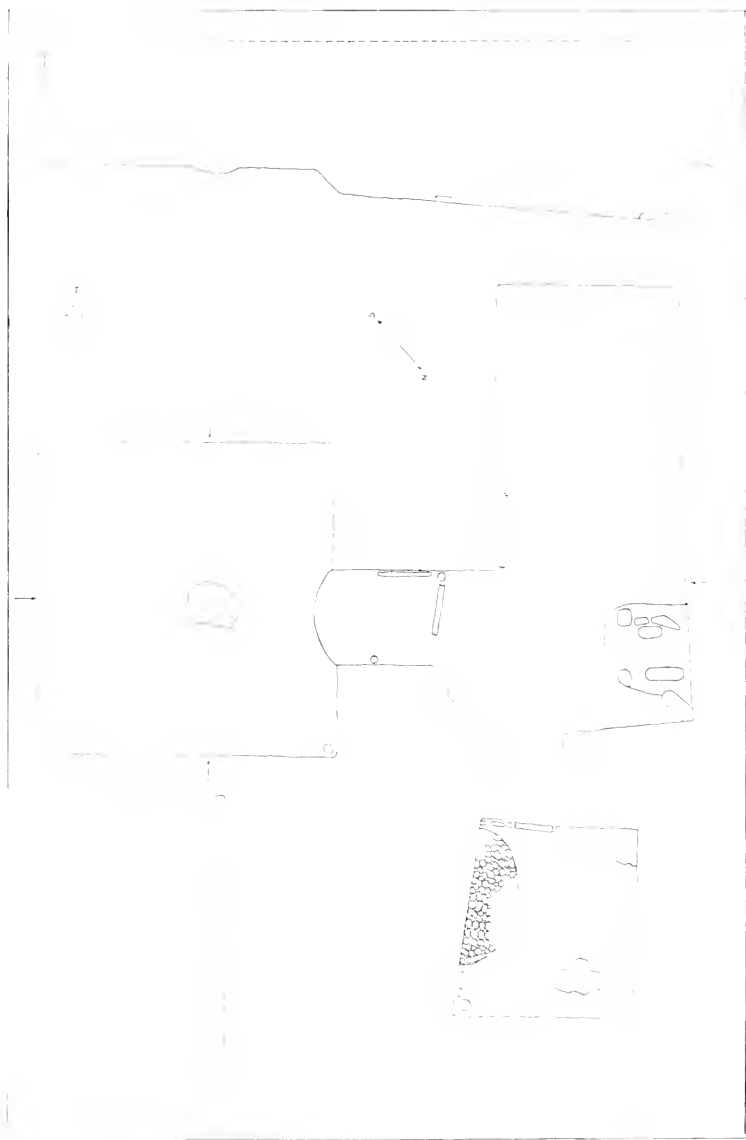


Fig. 4. House 3.

cult to say much about the tunnel walls, although a few wooden fragments suggest vertically placed logs or planks.

House 2 was characterized by a large, rectangular entryroom, the entrance of which faced the bay. The poorly defined floor of this area was roughly level with the floor of the tunnel. Two large posts were located on opposite sides near the door, but these were the only elements of construction preserved. The most interesting features in the entryroom were two large fire-darkened areas that suggested hearths or fireplaces. One was long, narrow, and about 15 cm. lower than the other which was virtually round and almost directly in front of the tunnel. It may have been that the former, characterized by deposits of charcoal and fire-darkened earth to a depth of 18 cm., was used earlier than the round one. The latter contained a large accumulation of fire-cracked rocks as well as charcoal and discolored earth. Underneath the rocks and throughout the entire area of this hearth were heavy concentrations of charcoal extending to a depth of 38 cm. It may have been that the entryroom was used occasionally as a bathhouse as well as cooking area. The narrower, shallower fire-darkened area could have indicated the location of a stove.

House 3 (Fig. 4)

The living area of this structure was virtually square. Posts were found in three corners and the room was small enough so that it could have been roofed with stringers. There were no indications of wall logs and the excavation may have been roofed without extensive wall supports since it is fairly deep. The floor in the main chamber was indistinct, but appeared to be covered in most places with grass resting directly on the silt underlying the site. In the center was a small burned area consisting of some charcoal and fire-darkened earth that may have been a fireplace.

The floor of the tunnel was approximately 40 cm. below the floor of the main chamber. Tunnel construction could not be determined with certainty but there were at least two vertical posts and a suggestion of horizontal wall logs. In addition, a number of horizontally laid planks were found in the debris overlying the tunnel floor and these may have been roofing planks. It was probably necessary to stoop only slightly when going through this short tunnel. The floor in this area was an easily discernible, hard-packed, gray layer similar to that encountered in other houses.

Opening off the tunnel was a large storm shed or entryroom, rectangular in shape and with a fireplace in one corner. Many of the

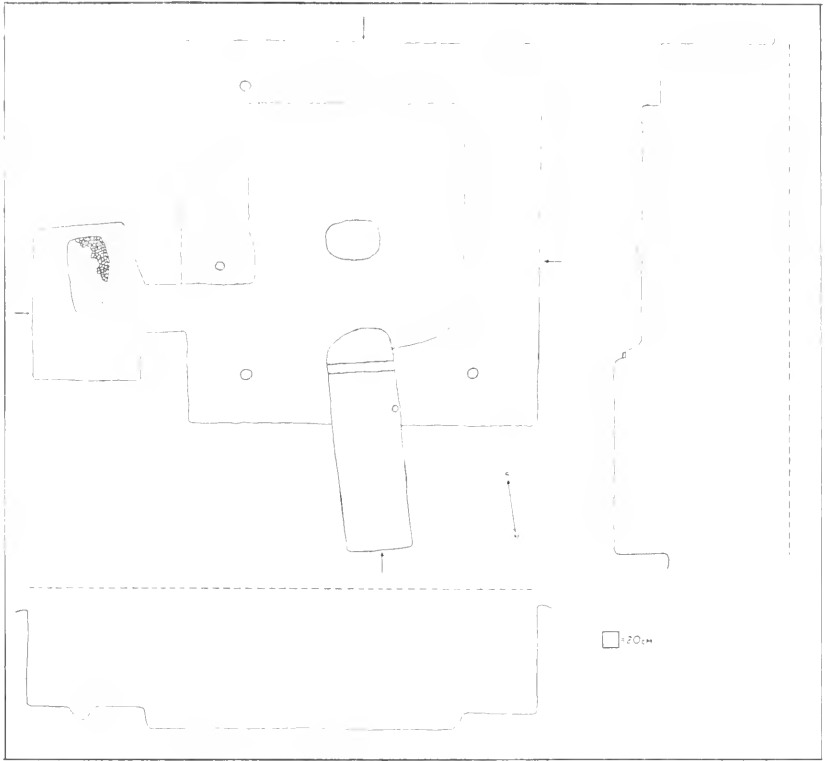


Fig. 5. House 4.

rocks forming this fireplace were still in place. The floor of the entryroom in the vicinity of the fireplace and tunnel was the same hard-packed, gray layer noted for the tunnel itself. At the other end of the entryroom, however, the floor was much more indistinct. This was probably a storage area without any well-defined floor. Virtually nothing can be said about the construction of the entryroom except that there was a fragment of horizontal wall log along one wall.

Opening off the entryroom was a small room that appears to have served as a bathhouse. Here there were three concentrations of ashes and charcoal, one of which had spread along one wall. It contained a large number of the rocks that would have been heated for a bath. This small room had three corner posts and a short plank at floor level near the entrance. The presence of a number of short, vertical planks suggests that the walls of this room were constructed of upright planks which may have been held in place by vertical supports.

House 4 (Fig. 5)

The deeply excavated main chamber of this structure, like the preceding one, was virtually square. No wall logs were recovered, and traces of split logs or planks just below the sod suggest that the roof timbers simply extended from the upper part of the excavated area.

The construction of the main chamber of this house is clearer than for any of the others. Three of the four posts for four-post-center construction were in place and there were distinct benches most of the way around the walls. On one side the bench sloped toward the floor in the vicinity of the tunnel, while on the other it ended abruptly at the entrance of a small room which apparently served as a bathhouse. The surfaces of the benches and the floor were distinct and characterized by a thin layer of grass in some places and a hard-packed, thin, gray layer in others. There was a central fire-darkened area without much ash indicating the location of a stove. The benches were not fill, but simply unexcavated areas.

The small room off the main chamber had no structural features and a very indistinct floor. The only real feature was a large area of charcoal and small rocks extending to a depth of approximately 22 cm. Although these rocks were few in number, very small, and not of a type that one would expect to find in a bathhouse, it is difficult to conceive of any other use for this room. The floor was approximately 30 cm. higher than that of the main chamber.

House 4 did not have an entryroom and the tunnel was short and extremely deep. No definite structural features were located except for a plank which served as a sill for the step up into the main chamber. There were also a few short plank fragments extending out of the tunnel walls, possibly roofing planks. Just below the sod, larger fragments of tar paper were recovered. This material may have been used as a cover, both for the roof of the tunnel and that of the main chamber, before sod blocks were added. The tunnel extended well into the house and its floor was a distinct, hard-packed, gray layer.

ARCHAEOLOGICAL COLLECTIONS

The artifacts recovered from the Nushagak excavations will be described under two headings: locally manufactured goods and imported manufactured goods. Within these categories, further subdivisions will be made on the basis of the material from which the

various artifacts were made. As was the case with the ethnographic specimens, only a limited comparative treatment will be attempted.

Locally Manufactured Goods

Under this heading are included those artifacts manufactured at the settlement, or at nearby settlements, by Eskimos. They are, for the most part, traditional Eskimo forms made from materials readily available in the environment. There are also, however, a few artifacts made locally from exotic materials introduced into the area by Europeans indicating an interest in perpetuating traditional forms in new materials.

Ground stone.—Eight fragmentary slate *end blades* all exhibit finely ground surfaces and bilateral cutting edges. Of this number, six are characterized by a hollow-ground groove running parallel to the length of the blade (pl. 10, 1, 8). All the fragments are of a size to suggest their use as arrow or lance blades. A single slate *end blade blank* has been chipped to the desired size and shape, but shows no indications of grinding (pl. 10, 2). Ground slate end blades with hollow-ground grooves are widely reported from southwestern Alaska (see VanStone, 1970, p. 45).

None of the four slate *ulu blade* fragments in the collection is complete enough to suggest the shape of the entire blade or to indicate the manner of hafting. All have convex cutting edges (pl. 10, 9) and it is likely that they were not tanged but, like the ethnographic specimens, had flat or convex proximal surfaces for insertion into the handle.

A *double grooved splitting adz head* of basalt was apparently broken in use and discarded; both fragments were recovered. The specimen has been roughly worked over most of its surface, but the convex working edge has been carefully ground (pl. 10, 7). This type of adz has a fairly wide distribution in late sites in southwestern Alaska (VanStone, 1970, p. 50).

There are six fragmentary *whetstones* in the Nushagak collection, five made from a fine-grained sandstone (pl. 10, 3,5-6). The sixth specimen is made from a slightly metamorphosed sedimentary rock like a schist that has a pronounced metallic sheen (pl. 10, 4). These whetstones, which show wear on two or more surfaces, have been worked to a rectangular form and range in length from 4 to 14 cm. One specimen (pl. 10, 3) has a narrow, V-shaped groove on one surface, probably cut with a stone saw. Although the collection con-



Plate 10. Stone, bone, and antler artifacts. 1. End blade (p. 50); 2. End blade blank (p. 50); 3-6. Whetstones (p. 50); 7. Double grooved splitting adz head (p. 50); 8. End blade (p. 50); 9. Ulu blade (p. 50); 10. Net weight (p. 52); 11. Sealing harpoon socketpiece (p. 52); 12. Net weight (p. 52).

tains no saws, this implement was probably used for the initial shaping of a variety of stone tools. The whetstones in the Nushagak collection were held in the hand and used for shaping and sharpening small stone, bone, and metal objects.

Bone, antler and ivory.—There are two complete *net weights*, one of bone (pl. 10, 10) and one of antler (pl. 10, 12). Both are roughly rectangular in outline with laterally drilled holes at each end for attachment to the net. The antler weight appears to be unfinished as one line hole has not been drilled.

Both bone *sealing harpoon socketpieces* are broken at the proximal end (pl. 10, 11), but a split tang is suggested for one poorly preserved specimen. The two specimens are drilled at the distal end to receive the dart head and one has a small wooden inset in this hole which served to wedge the tang of the dart head in place.

There is also a single bone *beluga harpoon socketpiece* which is heavy and bulbous with a wedge-shaped tang (pl. 11, 3). An incised line runs around the specimen near the distal end and the tang has a small hole drilled through laterally as an aid to hafting. This specimen closely resembles a previously described socketpiece in the ethnographic collection (p. 31; see Mason, 1902, fig. 92, p. 302).

A roughly worked section of mammoth tusk 10 cm. long and 4 cm. in diameter may be a *blank for a harpoon socketpiece*. Marks of a beaver-tooth tool can be seen on the specimen. Mammoth teeth and sections of tusks frequently wash out on the beach below the village of Ekuk, about 15 km. south of Nushagak.

Two *fishing ice picks* are made from split antler tines carefully flattened on one side to form a smooth contact with a wooden shaft (pl. 11, 7). Such picks were used to open holes in the ice for hook fishing and the setting of nets and traps.

A single antler artifact has been identified as an *arrowhead*, but it is so fragmentary and poorly preserved that the identification must be considered tentative. The specimen is 11 cm. in length, has two barbs along one side, and a sloping shoulder with conical tang.

Another tentative identification is a small antler *fish arrow or spear point* with a single barb (pl. 11, 10). The specimen narrows at the proximal end but there is no identifiable tang. If it is a fish spear point, it presumably would have been hafted to a long shaft similar to but much lighter than a specimen illustrated by Nelson (1899, pl. LXVII, 4).

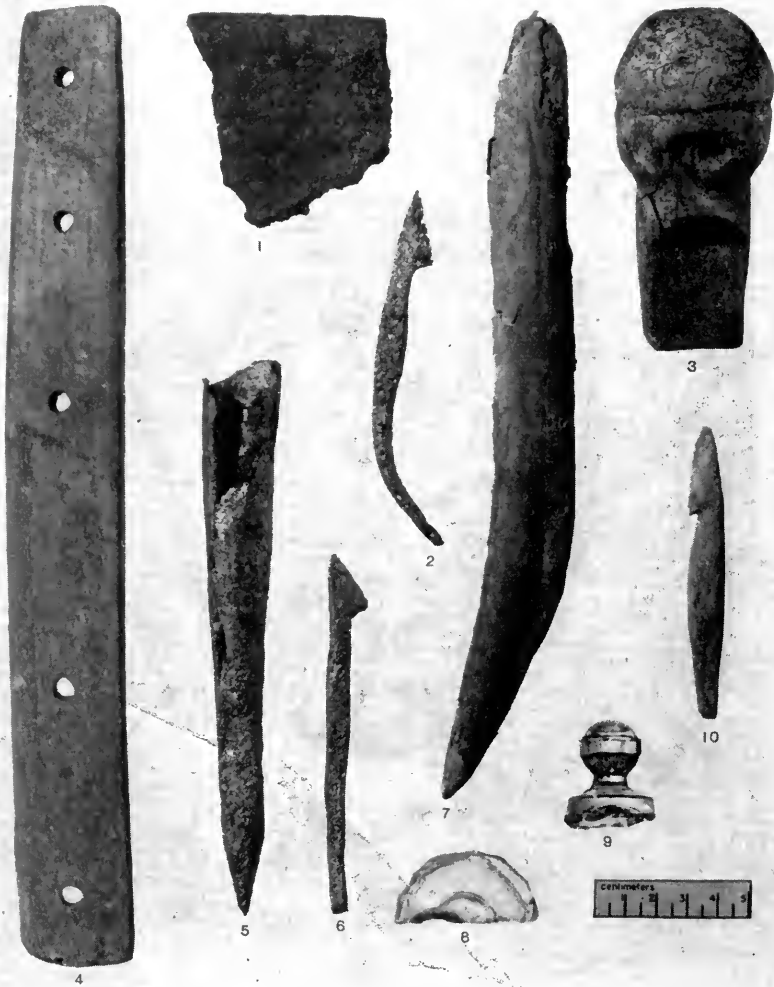


Plate 11. Artifacts of miscellaneous materials. 1. Pottery fragment (p. 54); 2. Fish spear point (p. 55); 3. Beluga harpoon socketpiece (p. 52); 4. Sled shoe section (p. 54); 5. Ice pick (p. 55); 6. Fish spear point (p. 55); 7. Fishing ice pick (p. 52); 8-9. Scrapers (p. 54); 10. Arrowhead (?) (p. 52).

Three bone *sled shoe sections* are drilled with irregularly spaced holes for pegging to the runner. One section, 31 cm. in length, appears to be complete (pl. 11, 4), but the other two are broken. The sections vary in width from 3.5 to 4.5 cm.

Clay.—At other historic sites excavated in southwestern Alaska in recent years, traditional pottery making appeared to be in its final stages (Oswalt and VanStone, 1967, p. 74; VanStone, 1968b, p. 312; VanStone, 1970, pp. 65–67). This is also the case at Nushagak where only 12 *potsherds* were recovered. By the end of the nineteenth century, the availability and ready acceptance of metal and crockery containers by the Eskimos was on the verge of rendering clay cooking and storage vessels completely obsolete.

On the basis of the 12 sherds recovered, nothing definite can be said concerning vessel shapes. The one rim sherd is from a straight-sided vessel with a very slight flare at the rim and a flat lip (pl. 11, 1). All the sherds are plain with the exception of one on which there are two parallel incised lines. If incised dots were associated with these lines, the complete vessel would show the Yukon Line Dot form of surface treatment which is common in southwestern Alaska and generally associated with the situla shape (Oswalt, 1955, p. 37).

All sherds were examined to determine the type of temper used in their manufacture. It proved to be exclusively inorganic consisting of sand, gravel, and small pebbles with the coarser material being the more common. The texture of the pottery is coarse, but tempering materials seem to be distributed fairly evenly throughout the ware. The sherds ranged between 6 and 8 mm. thick. All are gray-black or black in color, but the range is black to buff.

Glass.—Three glass fragments have been extensively retouched for use as *scrapers*. One is a large fragment of light green bottle glass 6 mm. thick and another is part of the thick bottom of a faceted bottle of unknown shape but approximately 4.5 cm. in diameter (pl. 11, 8). The third scraper has been made from the knob stopper for a small glass bottle (pl. 11, 9). Chipped glass scrapers have been reported from a number of historic sites in Alaska and are also found elsewhere in North America.

Metal.—The problem of identifying locally manufactured metal artifacts from historic sites has been discussed elsewhere (Oswalt and VanStone, 1967, pp. 48–49; VanStone, 1968b, pp. 284–285). The problem concerns the heavily rusted condition of such objects and the fact that they may look similar whether made in the village by Eskimos or imported as finished trade goods.

In the Nushagak collection there are only four metal artifacts that could possibly have been manufactured locally. An *ice pick* is pointed at one end and hollow at the other to fit over a wooden shaft (pl. 11, 5). There are also two objects that have been identified as *fish spear points*. Both are illustrated in order to show the differences that suggest local manufacture (pl. 11, 2, 6). They are strips of metal, presumably spikes or heavy nails originally, that have been flattened and then pounded out at one end to form a barb. The proximal end of one specimen is bent suggesting that it may have been intended for use with the three-pronged fish spear.

A single lead *musket ball* is misshapen to the point where it is difficult to determine its diameter. The specimen has a raised burr running around it medially indicating the division of the two halves of the mold in which it was made. There is also a single fragment of *melted lead* in the collection.

A section of barrel hoop has been cut in the form of a *crooked knife blade*. This badly corroded specimen is curved at the distal end. Near the proximal end is a small rivet hole to aid in hafting.

Although the actual number of locally made metal artifacts from the Nushagak excavations is small, there was ample evidence for the working of metal in the 151 cut can fragments that were recovered. Most of these were counted and discarded in the field.

Skin.—There are six fragments of seal or ugruk skin *mukluk bottoms*, the only items of traditional Eskimo clothing in the archaeological collection. None is large enough to show areas of crimping or the manner of sewing to the leg of the mukluk.

Imported Manufactured Goods

This section is devoted to descriptions of trade goods in the Nushagak archaeological collection. Since similar trade goods have been described for a number of nineteenth century sites in southwestern Alaska, it will be possible for the artifacts discussed here to be compared, when such comparisons are relevant, with similar recovered materials from the Crow Village site (Oswalt and VanStone, 1967) and Kolmakovski Redoubt (Oswalt, personal communication) on the Kuskokwim River; Kijik (VanStone and Townsend, 1970) on Lake Clark; Tikchik (VanStone, 1968b); Akulivikchuk (VanStone, 1970); and sites in the Glacier Bay area of southeastern Alaska (Ackerman, 1965; 1968).

Non-Eskimo pottery.—Excavations at Nushagak resulted in the recovery of 317 fragments of non-Eskimo pottery including a few

identifiable cup and saucer fragments, and some sherds that were parts of broad-rimmed soup plates. Virtually all the collected sherds from Nushagak, like those from other sites in southwestern Alaska, are fragments of ironstone china, a utilitarian stoneware variant that was popular in frontier areas during the nineteenth and early twentieth centuries.

Five types of surface treatment are represented: undecorated white ware, transfer-printed ware, hand-painted ware, a group of sherds showing both hand-painted and stamped decoration, and a ware characterized by stamped designs alone.

There are 220 undecorated white sherds, many of which may represent the undecorated areas of vessels with transfer-printed or hand-painted and stamped designs. The plain white sherds show considerable variation in thickness, firing and smoothness of the glaze. A sizeable number of sherds averaging 6 mm. in thickness are possibly fragments of a large teapot. Other vessel shapes represented are shallow soup plates with wide, slightly concave rims, and saucers, both shallow and deep. A single fragment is part of a cup with widely flaring sides. The small number of basal sherds all show pronounced foot rims that are rounded in profile.

Transfer-printed ware, with the print occurring under the glaze, is represented by a total of 31 sherds, all of which are so small that it is virtually impossible to describe the designs with any degree of certainty. Nevertheless, five decorative "types" have been delineated for purposes of description.

Type 1 (pl. 12, 4).—Blue willow ware. This is the most common transfer print, but there are only ten sherds, all of which are from the rims of saucers.

Type 2 (pl. 12, 11).—Green pictorial and floral. Two cup fragments have a light green village scene on the exterior and a stylized floral design on the interior.

Type 3 (pl. 12, 5).—Dark blue floral and geometric. Three very thin cup fragments show a combination of floral and geometric designs on both sides. The exterior has a geometric border.

Type 4 (pl. 12, 7).—Brown floral. Two small sherds, possibly from shallow, flat saucers, show leaves, flowers, and a round fruit or bud.

Type 5 (pl. 12, 10).—Purple flowered border. A single saucer rim has a series of white flowers a purple background running around on the rim.

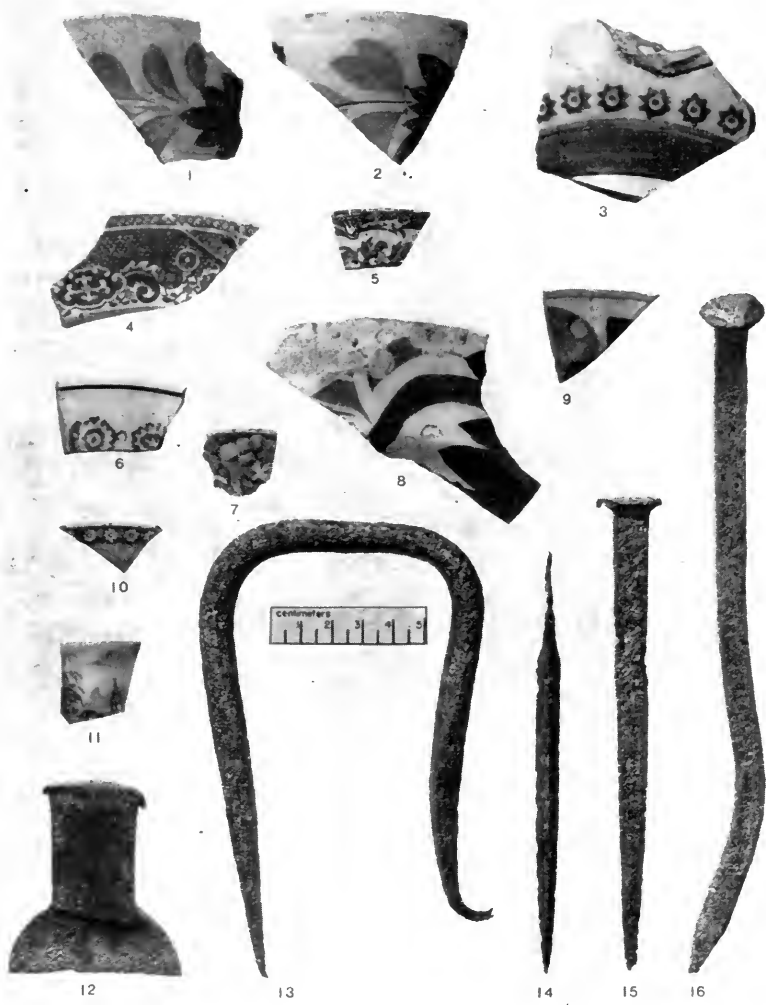


Plate 12. Metal and ceramic artifacts. 1. Hand-painted ware (p. 58); 2-3. Hand-painted and stamped ware (p. 58); 4-5. Transfer-printed ware (p. 56); 6. Stamped ware (p. 58); 7. Transfer-printed ware (p. 56); 8-9. Hand-painted ware (p. 58); 10-11. Transfer-printed ware (p. 56); 12. Iron wedge or chisel fragment (?) (p. 63); 13. Iron staple (p. 63); 14. File (p. 63); 15. Cut spike (p. 63); 16. Boat spike (p. 63).

The remaining 13 sherds are so small that nothing specific can be said with reference to their decoration. In general, the transfer-printed sherds are thinner than the undecorated white ware.

Hand-painted ware is the most common at the Nushagak site and it occurred in abundance at other historic sites excavated in southwestern Alaska (Oswalt and VanStone, 1967, p. 53; VanStone, 1968b, p. 289; VanStone and Townsend, 1970, pp. 78-80; VanStone, 1970, pp. 75, 77). There are 49 sherds, all of which are characterized by stylized or naturalistic floral patterns in red, green, purple, and blue. Painted lines around the rims of the vessels are also characteristic. Typical examples of this decorative type are illustrated (pl. 12, 1, 8-9). Saucers, soup plates, and cups are the vessel forms represented.

A number of sherds exhibit hand-painted design elements in combination with those applied by means of a small stamp. Because of the small size of the Nushagak sherds, some of those previously described as being hand-painted may actually be parts of vessels which also had stamped designs. One of the illustrated sherds (pl. 12, 2) clearly indicates the amount of painted decoration that can be shown with very little indication of a stamped design.

There are 12 hand-painted and stamped sherds in the collection which can be considered under the following descriptive types:

Type 1 (pl. 12, 3).—Broad green band, red flowers. The band is painted and the stylized flowers stamped. The seven sherds of this type average 5 mm. in thickness and are probably from a single large teapot. Stamped floral elements similar to the ones on these sherds are seen on sherds recovered from the Akulivikchuk site (VanStone, 1970, p. 77, pl. 13, 17).

Type 2 (pl. 12, 2).—Red and green leaves, blue flowers. The five sherds of this type represent a characteristic form of hand painting and stamping that has been found, in different color combinations, in collections of non-Eskimo pottery from other sites in southwestern Alaska. The leaves, stems, and other elements are painted while the flowers are stamped (see Oswalt and VanStone, 1967, pl. 13b; VanStone, 1968b, pl. 8, 28; 1970, pl. 13, 13; Van Stone and Townsend, 1970, pl. 16, 9). The few Nushagak fragments of hand-painted and stamped ware appear to be from cups with flaring sides and shallow soup plates with broad rims.

A single small sherd shows only stamped blue floral designs (pl. 12, 6). There is a painted black line around the rim. It seems probable that painted elements also occurred with the stampings on this sherd.

In addition to the decorated sherds that have been described, there are three fragments of a large jar with a thick brown glaze and a nearly complete, blue glazed Chinese rice bowl 13 cm. in diameter with a stylized leaf design.

The most accurate means of identifying pottery, of course, is by means of the maker's marks that sometimes are found on the bottoms of vessels. Four sherds in the Nushagak collection are so marked; all four marks are fragmentary and, unfortunately, only two are complete enough for identification. The first of these is printed and consists of a lion and unicorn coat of arms with the words "Royal Ironstone China" above and "Johnson Bros./England" below. This is one of the marks of Johnson Brothers (Hanley) Ltd., an English firm dating from 1758 which, in 1883, began to produce white ware for the American market. The mark as it occurs on the Nushagak sherd was used between 1883 and 1913 (Rhead, 1910, pp. 152-153; Thorn, 1947, p. 80; Godden, 1964, p. 355). This mark occurred on a sherd recovered from the Tikchik site (VanStone, 1968, pl. 8, 4).

The second marked sherd bears an impressed mark consisting of an oval outline within which are the words "Royal/Cockson, Chetwynd & Co./Cobridge." As indicated, this is a mark of Cockson & Chetwynd Globe Works, Cobridge in the Staffordshire Potteries which manufactured earthenwares between 1867 and 1875 (Godden, 1964, p. 159). This sherd also contains a fragmentary impressed English registration mark. Such marks were placed on English ceramics and other materials between 1842 and 1883. By means of a series of code numbers and letters, the month, day of month, and year of manufacture are indicated. Obviously, the presence of a registration mark makes the most precise dating possible (see Godden, 1964, pp. 526-527; Thorn, 1947, p. 82). Unfortunately, the code letter indicating the year is missing from this mark. However, because of a change in the code system that took place in 1867 and is reflected in this specimen, it seems likely that the vessel of which this sherd is a fragment was manufactured in the latter year, since that is the first year in which the previously described Cockson & Chetwynd mark was in use.

On the basis of these two identified marks, a respectable number in view of the small size of the sherd collection, it would appear that most of the ironstone china from the Nushagak site is of British manufacture. It is possible, however, that some of the ware is Amer-

ican since sherds with American maker's marks have been recovered from other historic sites in southwestern Alaska (Oswalt and Van Stone, 1967, p. 54; VanStone, 1970, p. 79). In the small Nushagak collection there are at least four basal sherds large enough so that some parts of maker's marks would be visible if they were present. At least some Nushagak pottery, therefore, was unmarked and could have been made in America or imported before 1891 (Ormsbee, 1959, pp. 16-17; Godden, 1964, p. 11; VanStone and Townsend, 1970, p. 81). In a previous publication (VanStone and Townsend, 1970, p. 85) it was noted that although some European pottery was included in trading inventories throughout southwestern Alaska during the Russian period, the bulk of it probably dates no earlier than 1880. Although design elements appear to be widely distributed throughout the area (see VanStone and Townsend, 1970, p. 84), it is not, at the present time, possible to attach any particular significance to these resemblances except to suggest a common source for much of the trade pottery coming into Alaska. Unfortunately, the small pottery collection from Nushagak does not provide new information relating to any of the chronological or distributional questions associated with this particular trade item.

Glass.—Objects of glass are not plentiful in the Nushagak archaeological collection and, in fact, provide very little information concerning the use of this material at the site, particularly in the form of containers.

There is a single, four-hole, milk glass shirt *button*, bi-convex in shape with a slight depression in one face; it is 1.1 cm. in diameter. Buttons of this type were first manufactured in France and introduced to the United States about 1860 (Fontana and Greenleaf, 1962, p. 98).

Most of the 51 *window glass* fragments in the collection are no more than 2 mm. in thickness. A few, however, are slightly more than 3 mm. thick. The thin fragments are clear, while the thicker ones have a slightly greenish color. A certain amount of window glass has been recovered from all the historic sites previously excavated along the Nushagak and Kuskokwim rivers. It appears to have been available to the Eskimos of the area as early as 1842 (Zagoskin, 1967, p. 255).

A sizeable number of *bottle glass* fragments were recovered but they do not provide a great deal of information about the types and sizes of bottles used by the inhabitants of Nushagak. Of the 141 fragments, three were retouched as scrapers and have been described

previously. Of the remaining 138, virtually all are of a dark brown or dark green color and associated with containers having long, thin necks. These were probably liquor bottles. There are five large, round basal fragments, the largest of which is 8.2 cm. in diameter. All are unmarked. A single basal fragment is from a nine-sided container, perhaps a condiment bottle, and is 6.2 cm. in diameter.

There are five complete neck fragments, three of which have rounded shoulders and are long and thin with thickened lips. A single neck fragment is much smaller with an everted lip. The fifth neck fragment is short with a thickened lip and appears to have been part of a small rectangular bottle no more than 3.5 cm. in diameter. A characteristic feature of these neck fragments is that they are all hand-finished. Scars from the mold from which they were made do not pass through the lip. Thus they can be said to date prior to 1903 when the first fully automatic bottling machine was invented. They were constructed so as to receive cork stoppers, a characteristic of nearly all bottles made before about 1900 when metal caps were introduced (Hunt, 1959, pp. 9-10; Jones, 1962, vol. 2; Ferraro and Ferraro, 1964, p. 79). The collection also contains a single *mirror* fragment.

A very few glass *trade beads* of various colors were recovered from the Nushagak excavations, most of them seed beads attached to a garment found in house 4. The small number of recovered beads and their extremely uneven distribution throughout the excavated structures make typological and comparative analysis of limited value. Therefore, comments concerning the beads will be restricted to a brief description.

A total of 465 beads was recovered from three of the four excavated structures. Virtually all of these (458) were of the seed form measuring less than 2 mm. in diameter and were attached to a garment fragment recovered from house 4. These seed beads belong to a shape that has been identified as type a in previous reports (Van Stone, 1968b, p. 294, fig. 19; 1970, fig. 14, p. 83; VanStone and Townsend, 1970, p. 94, fig. 26). Of the total number, 124 are white, 215 blue, 39 red, 53 green, and 27 black. The blue beads range from dark to light in color and from opaque to translucent. The color of the white beads is more uniform than the blue, but nevertheless varies from an extremely bright, hard whiteness to an almost clear translucence. The green beads are all translucent but the color variation is considerable. Most uniform in color are the red beads, all of which are translucent. Black beads are uniform in

color and are somewhat larger than the others in the seed category; none of them is translucent. These seed beads are identical to those sold in tubes throughout rural Alaska today for sewing into beadwork designs on cloth or skin garments.

In addition to the seed beads just described, there are four white beads approximately 5 mm. in diameter of which three belong to type a and one to type b (VanStone and Townsend, 1970, p. 94, fig. 26). There is also a single translucent blue bead belonging to type E as defined in the VanStone and Townsend report. The final beads to be described are a large yellow specimen of the type a shape which measures approximately 1.6 cm. in diameter, and a polychrome bead also belonging to type a. The latter is basically white and exhibits a variation between exterior and interior color. On the outside there are alternate red and green lines, two of each, running parallel to the stringing hole. The specimen is approximately 3 mm. in diameter.

Most of the beads described above are not unique for the Nushagak site, and since it has been virtually impossible to interpret the chronological significance of much larger assemblages, such as the one from the Kijik site (VanStone and Townsend, 1970, p. 97), no interpretive comments will be made here. A major difficulty in determining the chronological significance of trade beads in Alaskan historic sites seems to arise, at least in part, from the fact that most of the diagnostic forms were used extensively in other areas of North America and then, at a later date, were introduced gradually into the Alaska trade. Thus, even though it can be determined with some degree of certainty when specific forms were introduced into the North American trade, it as yet has not been possible to be equally certain with reference to their first use in Alaska.

Metal—Objects of metal are by far the largest and most important category of imported goods in the Nushagak collection. The actual number of types represented, however, is not great.

A total of 142 *nails* was recovered, most of them heavily rusted and corroded. Of this number, 117 were excavated from the fireplace in the entryroom of house 3. Thus the total number of nails is not distributionally significant. The large number found in the fireplace suggests that, at least to some extent, prepared lumber rather than driftwood was used as fuel. A great deal of such lumber was doubtless available as a by-product of activities going on at the two canneries.

All the nails collected could be identified as square-cut, the most common form used in the United States until the early 1880's when they began to be replaced by wire nails. After 1830 square-cut nails were produced by machines that cut and headed them uniformly (Fontana and Greenleaf, 1962, p. 55; Fontana, 1965, p. 89). Those from the Nushagak site appear to belong primarily to the form called common-cut which were made in sizes 2 to 60d. All square-cut nails have beveled shanks and are rectangular in cross-section at the point. A few are fencing nails and other types may be represented. The heads of many specimens were badly rusted making positive identification impossible. Thirty-six nails were suitable for sizing; the sizes represented and the number of nails of each is as follows:

4d - 2	8d - 13
5d - 1	12d - 8
6d - 1	16d - 4
7d - 3	40d - 4

Common-cut nails had more uses than any other form of square-cut nail. Some of the Nushagak specimens may have been used in house and cache construction, but the majority, as noted above, were doubtless extracted from prepared lumber. Many of the nails have been sharply bent without showing any sign of rupture. This indicates that they were annealed as part of the manufacturing process, a development that took place about 1879 (Fontana and Greenleaf, 1962, p. 57). There is no reason, however, to suppose that any of the nails in the collection are earlier than this date.

In addition to the nails described above, three complete but badly rusted *cut spikes*, 16 cm., 15 cm., and 12 cm. in length respectively were recovered from house 3 (pl. 12, 15). Five wrought *boat spikes* range in length from 11 to 22 cm. The largest specimen is illustrated (pl. 12, 16). The collection also contains a large *iron staple* (pl. 12, 13).

Metal tools include a small *file* that is triangular in cross-section (pl. 12, 14). It is machine made as were all files manufactured in the United States after 1850 (Fitch, 1883, p. 724). The proximal end of an *iron wedge or chisel* (pl. 12, 12) is mushroomed from extensive use. Another tentative identification is a *drawknife* fragment, also a wood working tool (pl. 13, 2).

Among household articles of metal is a large fragment of the lid of a cast iron *kettle* (pl. 13, 3). The loop handle is broken. There is also a large enameled sheet iron *pot lid* with the wooden knob missing; it is 23.7 cm. in diameter.

Porter (1893, p. 94) has noted that by the end of the nineteenth century the houses at Nushagak were heated with stoves. The collection contains a good example of a typical home-made *stove*. Two five-gallon kerosene cans have been cut and flattened to form the body of the stove, while the door is fashioned of sheet iron with hinges and a latch made from the same material. This stove, which presumably sat on rocks or bricks in the middle of the house, is approximately 25 cm. wide. Its length cannot be determined. There is also a single *cast iron stove* fragment. A *stove pipe protector* is made from a gasoline can flattened so as to be of double thickness. It measures 40 by 30 cm. and the round hole for the pipe is 16 cm. in diameter.

The only other household articles in the collection are a large *silver serving fork* (pl. 13, 7), a straight-sided, enameled *drinking cup*, and a fragment of a small pair of *scissors*.

A significant feature of the Nushagak archaeological collection is the virtual absence of artifacts associated with firearms. Only one spent *cartridge case* was recovered. It is a 44 Henry rimfire cartridge with a raised letter "H" in the center of the head. This cartridge was developed by B. Tyler Henry for the lever action, repeating rifle bearing his name, the forerunner of the first Winchester rifle. Manufacture of the 44 Henry began in 1860 and continued into the 1930's. Those cartridges with the raised letter "H" date earlier than 1900 (Barnes, 1965, p. 280). There is also a single iron *musket ball* (pl. 13,11) which measures slightly less than 3 cm. in diameter.

The collection contains a small brass *crucifix* (pl. 13, 4) similar to the type worn today by members of the Russian Orthodox Church in southwestern Alaska. The cross has no lettering, although there is a design in low relief. Such crosses, given to infants at the time of baptism, were worn around the neck all through life.

There are three metal *buttons* in the Nushagak collection. The first is a plain, brass, coin-shaped disc having an eye of the same material with the bent ends soldered to the back (pl. 13, 10). Around the eye is stamped the words "F. Barnes & Co./London." Unfortunately, it has not been possible to locate this firm in known lists of button companies, but buttons of this type were manufactured between 1812 and 1820 (Olsen, 1963, pp. 31-33). They were distributed among American Indian tribes and frequently were used as ornaments (Woodward, 1965, p. 26; VanStone and Townsend, 1970, pl. 14, 2). A cap decorated with metal buttons occurs in the previ-



Plate 13. Artifacts of miscellaneous materials. 1. Figure of a dog (p. 66); 2. Drawknife fragment (p. 63); 3. Kettle lid fragment (p. 63); 4. Crucifix (p. 64); 5. Pipe fragment (p. 68); 6. Clock weight (?) (p. 66); 7. Serving fork (p. 64); 8. Screw cap for gun powder can (p. 67); 9-10. Buttons (pp. 64, 70); 11. Musket ball (p. 64).

ously described ethnographic collections. The other two buttons are badly rusted and corroded, but appear to be of two-piece construction; a disc-shaped section and a knob which would penetrate the cloth and also the center of the disc. Buttons of this type are generally associated with overall pockets and straps. Other items associated with clothing are a *belt buckle* and a *fastener* of the type used with men's suspenders.

Two metal objects cannot be identified with certainty. The first is the small brass *figure of a dog* (pl. 13, 1). It is flat on one surface and was apparently fastened to something. It may be a clothing ornament. The other is a heavy, bulbous piece of iron which, at one time, had an eye at the narrow end. It looks very much like a *clock weight* (pl. 13, 6).

The number of identifiable *cans* in the Nushagak collection is sizeable and most of them were probably food containers. None has the dimensions of the modern double-seam cans, nor is it possible to refer any of them to a specific size of the earlier, soldered hole-in-top variety. These cans are of interest, however, because they give some idea of the canned food products available to the Nushagak Eskimos. For a more extensive and detailed discussion of cans from an Alaskan historic site, see VanStone and Townsend (1970, pp. 122-125).

Nine types of cans and can fragments can be identified as to shape with some degree of certainty. They are as follows:

Type 1.—Fragments of the tops and bottoms of five rectangular, single-seam, soldered, hole-in-top tapered meat cans. These somewhat resemble the modern corned beef can but are larger and are a type of can frequently found around late nineteenth century camp sites in many different areas. These cans were probably opened with a key.

Type 2.—Fragments of at least four rectangular, soldered sardine cans. These are of the roll-top variety and are probably domestic since foreign fish cans usually were stamped with the name of the country of origin. The key method of rolling a scored strip and thus opening the can was invented in 1895 (Fontana and Greenleaf, 1962, p. 71).

Type 3.—Fragments of two round cans 7.5 cm. in diameter and 11 cm. high that may be baking powder cans. They are not marked, however, as is usual with cans of this type (VanStone and Townsend, 1970, pp. 123-124; Oswalt and VanStone, 1967, pp. 63-64).

Type 4.—Two round cans 8.4 cm. in height and 7.5 cm. in diameter. Both are single-seamed, soldered, hole-in-top cans with holes approximately 3.3 cm. in diameter. Directly in the center of the hole covering is the tiny pin prick for the last drop of solder. These are evaporated or condensed milk cans.

Type 5.—Five single-seam, soldered, hole-in-top cans measuring approximately 12 cm. in height and 9 cm. in diameter. All have large holes, 7.5 cm. in diameter sealed with a fine line of solder, while a large drop of the same material seals a pinhole in the center. These were almost certainly vegetable cans.

Type 6.—A large, fragmentary, double-seam, round can approximately 17 cm. high and 12 cm. in diameter. The top of this can is missing so the manner of closing cannot be determined.

Type 7.—A rectangular can with a wire handle in the middle of the top and a raised neck approximately 2 cm. in diameter threaded for a flat, screw cap. This can could have contained syrup or molasses, or it may have been a one-gallon gasoline can.

Type 8.—A rectangular five-gallon can 35 cm. in height probably contained kerosene. Modern gasoline cans are of exactly the same size and shape.

Type 9.—A single can fragment is identified as a gun powder container. It is ovate and of the double-seamed variety. This is a type of can that has been reported from a number of historic sites in southwestern Alaska (Oswalt and VanStone, 1967, p. 64; VanStone, 1968b, pp. 297–298, pl. 9, 1; 1970, pp. 88, 90, pl. 15, 6; VanStone and Townsend, 1970, p. 118, pl. 21, 10-11). In the Crow Village report cans of this type were incorrectly identified as having contained tobacco. Reasons for the revised identification have been explained in detail elsewhere (VanStone, 1970, pp. 88, 90). Here it is sufficient to note that it was the recovery of lead caps for these cans that revealed their true use. The Nushagak collection contains such a threaded, lead cap with the stamped inscription "Hazzard's Powder" on the top (pl. 13, 8). An identical cap was recovered from the Tikchik site (VanStone, 1968b, p. 305, pl. 10, 7). In the Museum of the Fur Trade at Chadron, Nebraska there is an exhibition of gun powder cans used in the Indian trade, one of which is a one-pound Hazzard's can dated c. 1840 which, in shape, is similar to those recovered from Alaskan sites. It does not, however, have a lead cap. It is painted red and has a large, round, black and white label on one side. The label reads "Kentucky Rifle Gunpowder" across the top and "Haz-

zard Powder Co., Hazzardville, Conn." across the bottom. The label also contains the letters "FF" and "G," possibly a reference to the degree of fineness of the powder.

One of the most abundant types of artifacts in the collection is *barrel hoops* of which four complete and 39 fragmentary specimens were recovered. The complete hoops are 2 cm. wide and 40 cm. in diameter. The fragments range in width from 2 to 4 cm. and in length from 4 to 114 cm. Barrel hoops may have been an important source of metal for the manufacture of artifacts at this and other historic sites in southwestern Alaska. It will be recalled that there is a skin-scraping tool in the ethnographic collections with a blade made from a section of a hoop. Such food items as bacon and ham, as well as butter and a variety of other products must have come into the village store in barrels; salted fish would have been shipped out in them. Thus the inhabitants are likely to have had a good supply of these useful containers at all times.

In addition to the metal artifacts that have been described, the collection also contains a large piece of *lead foil* and eight sections of heavy *single strand wire* ranging in length from 13 to 34 cm. There are 18 unidentified iron and brass or copper fragments. One of the iron specimens is formed of two heavy rectangular bars approximately 21 cm. in length and 5 cm. wide which have been riveted together. Some of the brass or copper fragments are probably from kettles. Twenty-two unworked can fragments, too small or badly corroded to be useful in reconstructing can types, were also recovered.

Clay.—Fragments of 27 common red *fired bricks* were recovered from the house excavations, all of them unmarked. An "Aleut" brickmaker named Yakov Kashkap was brought to Nushagak by the Russian-American Company in 1836 and within a year had made about 3,000 bricks (RAC: Communications Sent, vol. 14, no. 199, folio 230). It is assumed, however, that the brick fragments in the collection are of a later date and were probably imported for cannery construction.

A white clay *trade pipe* fragment has the impressed letters "TD" on the side of the bowl facing the smoker and the stamped numbers "78" on the left side of the stem at the point where it joins the bowl (pl. 13, 5). The initials "TD" are commonly found on nineteenth century clay pipes made by a variety of European and American manufacturers and recovered from numerous archaeological sites throughout North America. According to Humphrey (1969, p. 18),

the number "78," which perhaps identified the style, is commonly found on pipes produced during the nineteenth century by the firm of William White and Sons of Glasgow. This number, which on the specimens mentioned by Humphrey is usually in relief, immediately preceded the name of the manufacturer. Unfortunately, the stem of the Nushagak pipe is broken just at the point where the manufacturer's name might have appeared. Pipes of the "TD" type with large, round bowls and without additional decoration on bowl or stem are believed to date post-1875 (Onwake, 1965, pp. 133-134).

Leather.—The relatively small number of leather fragments from the Nushagak site derive from commercially prepared cowhide. The largest number are from *shoes*. Women's footwear is represented by the sole, heel, and part of the upper leather of a right shoe. It measures approximately 22 cm. in length. The inner and outer soles of this specimen are held together with headless brass nails driven along the outer edges. Enough of the upper leather remains to indicate that it was a laced ankle boot. This upper leather was tacked between the inner and outer soles with a series of iron tackets. The heel was attached to the sole by means of short iron nails running around the outer edge and large ones toward the center of the heel.

Men's footwear is represented by numerous fragments of two individual shoes. The first is a more or less complete sole and heel section of a left shoe measuring 22 cm. in length and without the upper leather. The second is similar and of approximately the same length with part of the upper leather intact. Both show the tacketed form of construction, the inner and outer soles being fastened together with headless brass tacks. The second specimen was apparently a heavy work shoe.

Although a machine that would sew shoe soles to uppers with thread was invented in 1858, tackets and other metal fasteners continued to be used for some time. One source, however, is of the opinion that tacketed shoes were probably not made after about 1870 and if this is true, the shoes described above were manufactured before that date (Wilcox, 1948, p. 139).

In addition to the shoe fragments just described, there is a single section of *leather strap* approximately 18.5 cm. in length and 4.5 cm. wide. Eleven leather fragments are too small for identification with any specific leather good. Since most have rows of stitching holes, they are probably fragments of the upper leather of shoes or boots.

Rubber.—The only artifact of this material in the collection is a hard-rubber, four-hole *button* (pl. 13, 9). It is 2.2 cm. in diameter and has a raised ridge running around the outer surface.

Wood.—Items of wood include a fragment of *barrel top or bottom* and three sections of *sawed spruce planks*. The largest is approximately 17 by 27 cm. and has six badly corroded, square-cut nails in it. The other two fragments are much smaller.

Stone.—A small fragment of muscovite *mica* measuring approximately 2 by 3 cm. with one squared corner may have been part of the covering for a window. Zagoskin (1967, p. 186) mentions that mica was brought from Sitka to be used for window panes in the Russian-American Company buildings at Nulato on the Yukon. It could have been similarly used at Nushagak.

Paper.—The collection contains 12 sections of heavy paper with a bituminous content. These are presumably fragments of *tar paper*, possibly used as a roofing material.

Textiles.—Textile fragments in the Nushagak archaeological collection are all of mill manufacture and date no earlier than the middle of the nineteenth century. There are three fragments of fabric waterproofed with a linseed oil preparation which appear to be parts of a wide brimmed *rainhat*. Six similar fragments treated in the same manner, but apparently on one side only, are probably pieces of a *raincoat*; the foundation is a coarse cotton cloth. A single piece of coarse wool tabby with a slight nap raised on one side is a fabric suitable for a *jacket*, but would not have the wearing quality for trousers. One fragment of checked woolen 2/2 twill of average quality suggests *pants* material. Four large fragments of a good quality 2/1 worsted twill, possibly indigo-dyed, appear to be part of a *woman's long sleeved dress*.

Interpretations

Since 1963, four nineteenth century Eskimo settlements in southwestern Alaska have been excavated. The Nushagak site differs from the others, however, in two important respects. The settlements of Crow Village on the Kuskokwim River (Oswalt and Van Stone, 1967), Tikchik (VanStone, 1968b) and Akulivikchuk (Van Stone, 1970) on the Nushagak were occupied exclusively by Eskimos, while at the Nushagak site, Eskimos were but one part of a cosmopolitan population.

A related distinction between Nushagak and the riverine Eskimo communities mentioned above concerns location. The latter were located along rivers presumably in accordance with certain requirements of the Eskimo inhabitants. The location of Nushagak, on the other hand, reflects settlement determinants established by Europeans rather than Eskimos. Similarly, the community pattern with its emphasis on commercial, religious, and educational structures, is unique for the region.

In investigating the settlements of Crow Village, Tikchik, and Akulivikchuk, the emphasis was on excavated archaeological materials, although related ethnographic and historical data were utilized to the fullest extent possible. Indeed, the rationale for excavating sites as recent as those just mentioned centers around the opportunity to utilize a varied methodology to achieve a better understanding of nineteenth century Eskimo culture. Prior to excavations at Nushagak, however, it was anticipated that less emphasis would be placed on archaeological excavation as an aid to understanding community life. This prediction was based primarily on estimates concerning the quantity and variety of materials that were likely to be recovered. Experience during riverine excavations in the area suggested that the interpretive significance of recovered archaeological data would be small in proportion to the value of available historical and ethnographic information.

The amount of historical data related to the occupation of the Nushagak site far exceeds that available for any other settlement in

the Nushagak River region. This is not surprising when it is remembered that the settlement figured in the earliest explorations of the area and served as a major trading center for all of southwestern Alaska throughout much of the Russian period. Ethnographic data includes information obtained from informants during several seasons of field research in the region (see also VanStone, 1967, chs. VIII-IX), and from the collection of ethnographic specimens previously described. The latter has provided a data dimension not available for other nineteenth century settlements in the region.

This chapter is restricted to interpretive comments concerning the ethnographic collections and the archaeological data. These will be followed by some general conclusions concerning the occupation of the Nushagak site.

THE ETHNOGRAPHIC COLLECTIONS

At the outset it can be stated that the McKay-Johnson collections of ethnographic specimens, although much smaller, closely resembles the collection made by E. W. Nelson primarily in the Yukon-Kuskokwim region. Perhaps the greatest value of the Nushagak collections, therefore, is to indicate that the uniformity of coastal Yuk material culture extended to the southern limit of Yuk territory at Bristol Bay. The collections further suggest that the seasonal subsistence cycle of the Aglegmiut and Kuskowagamiut population at Nushagak in the nineteenth century was similar to that which has been described for the whole of Nushagak Bay (VanStone, 1967, ch. VIII).

Along with its value as an added dimension to an understanding of nineteenth century life at Nushagak, the ethnographic collections also provide some data concerning the influence of exotic materials on Eskimo material culture. This information, although slight, is valuable because it is largely lacking in the archaeological collection. Most prominent in this respect, of course, is the use of metal to replace stone for points and blades. Not a single bladed or pointed specimen in the collections utilizes stone for the purpose. Other exotic materials utilized by the Eskimos include glass beads for a variety of purposes, colored yarn, metal and glass buttons, the heads of shotgun shells for decoration, and cloth linings for items of clothing.

The ethnographic collections contain a relatively small number of new forms reflecting a changing material culture. The forms that do occur (gun case, ammunition belt, bullet mold, and bullet bag) are

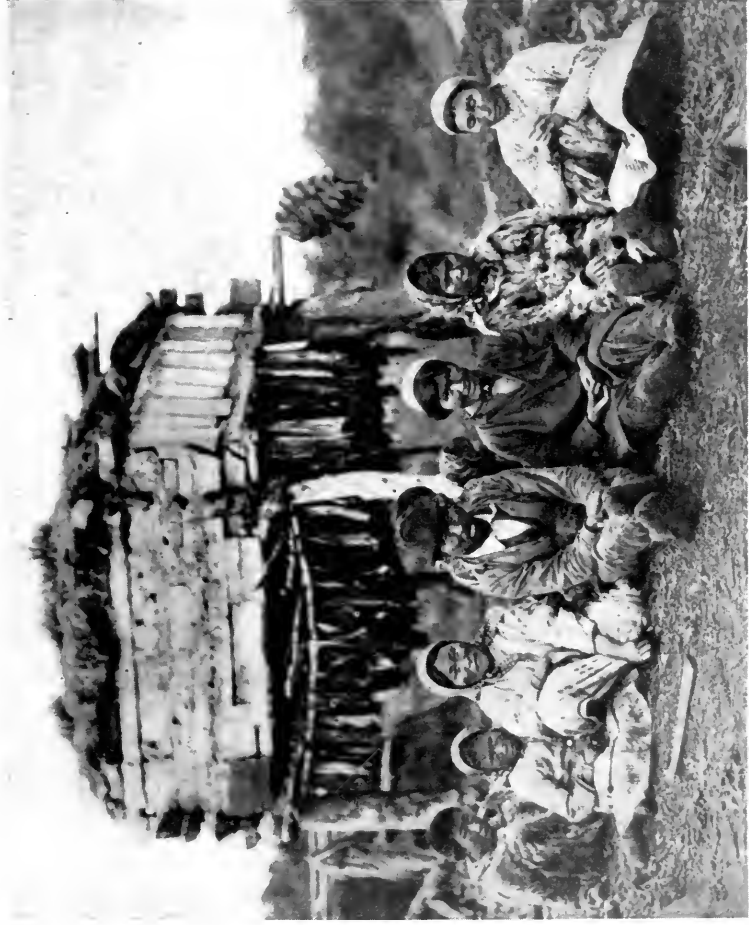


Plate 14. Eskimos at Nushagak in the late nineteenth century.



Plate 15. Eskimo houses at Nushagak, 1880's.



Plate 16. Eskimo houses at Nushagak, 1880's.

all associated with the introduction of firearms. On the basis of the ethnographic collections, at least, the tendency to use introduced materials and traditional materials for new forms had a relatively superficial effect on what is basically an assemblage of aboriginal material items.

It is noteworthy that the McKay-Johnson collections contain relatively few items of clothing and that what little information is available concerning traditional Eskimo clothing of the area must be derived from dressed dolls that were probably made specifically for the collectors. There can be little doubt that traditional clothing began to disappear throughout southwestern Alaska early in the Russian period; this disappearance would have been accelerated in those settlements closest to the trading centers. It was in the interest of the Russian, and later American, traders to import European clothing and encourage the Eskimos to wear it so that they would not be using valuable furs to clothe themselves. A photograph of Eskimos at Nushagak taken in the 1880's (pl. 14) shows people wearing traditional footgear and, occasionally, a skin parka, but little else that can be associated with the aboriginal period.

EXCAVATIONS AND THE ARCHAEOLOGICAL COLLECTION

Information concerning house construction obtained through excavation can be augmented from two late nineteenth century photographs taken at Nushagak which show Eskimo houses in some detail (pls. 15-16). It is, of course, true that an outside photograph of a semi-subterranean, earth-covered structure is not particularly revealing. Nevertheless, the photographs are valuable if only because they show entryrooms, sections of excavated structures at sites in the Nushagak area which are invariably poorly defined (VanStone, 1968b, pp. 236-237; 1970, p. 21). These entryrooms are shown to have had shallow excavations, sod-covered frameworks with frame doorways, and, occasionally, frame doors.

In addition to the obvious use of sod blocks in construction, it is also apparent from the photographs that, in contrast to the excavated structures, some of the houses at Nushagak were either wholly on the surface or only slightly excavated; one house pictured (pl. 16) has a framed window with glass panes. These above-ground structures clearly indicate that the Eskimos of the Nushagak River region went through a transitional stage in their shift from the traditional

house to the above-ground log house. This involved the construction of a log framework which was covered with sod in such a manner as to closely resemble the aboriginal type. These structures were without tunnels, but had large storm sheds (VanStone, 1971, pp. 132-133). Certainly, the Eskimos living at Nushagak had ample opportunity to observe European methods of log house construction at a very early date. It is probable that modifications in the traditional methods of house construction began soon after the arrival of the Russians, although the various innovations that took place cannot be documented in detail.

Incidentally, a careful examination of Plate 16 shows the hill behind the settlement to have had no cover of alders when this photograph was taken in 1901-1902. Also, the wooden column and orb erected to the memory of Fedor Kolmakov can be seen vaguely in Plates 7, 15 and 16.

The excavated structures at Nushagak had been almost totally robbed of their construction timbers, perhaps at the time they were abandoned and certainly prior to their collapse. The presence of some logs, particularly vertical wall supports in the tunnels, suggests that, in spite of the generally poor preservation at the site, construction timbers would have been preserved to some extent had they not been removed. One photograph (pl. 16) indicates that prepared planks, possibly obtained from the salmon canneries or from Euro-American residents of the settlement, were used extensively in house construction.

Since ash concentrations in the excavated structures were neither deep nor extensive, it has been suggested that they were not hearths but locations of metal stoves which rested on bricks or stones. The small amount of charcoal and soil discoloration noted was probably due to the residue of burned material falling out of the stoves when they were opened for refueling or cleaning. The fact that few nails were found in interior hearths supports this supposition, as does the fact that a chimney can be seen on a house in one of the old photographs (pl. 16).

It will be recalled that two of the excavated houses (H-3, 4) had attached bathhouses; informants noted that such attachments were very common at Nushagak. In upriver villages, however, attached bathhouses were not encountered and it has been assumed that residents of these villages took their sweat baths in the *kashgee*. The existence of small bathhouses attached to dwellings at Nushagak may

indicate a decline in the importance of the *kashgee* and the consequent stressing of smaller social units. Instead of all the men bathing in the *kashgee*, baths would then have been taken in the houses of nuclear or extended families. It is probable that the *kashgee* declined in importance sooner and more rapidly at Nushagak than at upriver villages. This would account for the absences of residential bathhouses at Tikchik and Akulivikchuk.

Another possible explanation for bathhouses attached to individual dwellings is that such an arrangement was a direct Russian innovation. During his explorations on the Kuskokwim River in February, 1834, Andrei Glazunov described a house which had an attached bath at Kwigiumpainukmiut built by either Fedor Kolmakov or his assistant and interpreter, Semen Lukin (VanStone, 1959, p. 46). Such houses are likely to have been built at Aleksandrovski Redoubt at the beginning of the Russian period. Since the decline in the importance of the *kashgee* as a ceremonial center was also due to Russian influence, it is certain that residential bathhouses were an early example of acculturation at Nushagak.

With reference to the unmodified bones recovered from the Nushagak excavations, very little can be said. The accompanying table of bone occurrences (Table 2), which includes every bone recovered from the four excavated structures, is revealing only from the standpoint of the small number recovered.

It is perhaps not surprising that the bones of large land animals and small fur bearers were not recovered in quantity from the excavations. Neither hunting nor trapping was particularly good in the immediate vicinity of the village, and it is likely that most animals would have been skinned and butchered some distance from the settlement. It is somewhat surprising, however, that more beluga bones were not recovered, since this important sea mammal must have been taken in large numbers by the residents of Nushagak. It may have been, of course, that most animal bones were thrown over the bluff, perhaps in a relatively restricted area since apparently from the earliest period of occupation there were structures along the beach in front of the settlement.

The Nushagak site covers a large area and it is quite possible that the normal disruption caused by a sizeable population of people and dogs served to scatter bone refuse to the extent that nowhere on the site could large concentrations be found without extensive

TABLE 2.—Animal Bones Recovered from the Nushagak Site.

Animal Bone	H-1	H-2	H-3	H-4
Beaver (<i>Castor canadensis</i>)				
mandible				1
clavicle		2		
pelvic bone		2		
Caribou (<i>Rangifer arcticus</i>)				
antler fragment		1		
mandible fragment		1		1
scapula		1		
radius		1		1
vertebra		14		
rib	4	5	1	
femur		1		1
tibia	1			1
tarsel				2
metatarsel				1
phlange	1			
Moose (<i>Alces alces</i>)				
scapula		1		
vertebra	1	1		
tibia				1
Beluga (<i>Delphinapterus leucas</i>)				
vertebra	3	3		2
Dog (<i>Canis familiaris</i>)				
vertebra	2			2
radius		1		2
tibia				2
Hare (<i>Lepus americanus</i>)				
femur				3

excavations. On the other hand, it should be remembered that throughout most, if not all, of its period of occupation, the Nushagak settlement was inhabited by some Europeans. It is at least possible that the Eskimos were encouraged to deposit bones and other refuse in rubbish heaps at the peripheries of the inhabited area.

A significant feature of the excavations at the Nushagak site was the small number of artifacts recovered. A possible explanation may be found by considering the indistinct nature of the floors in all four houses. This condition raises the possibility that floors of wooden planks or split logs were used, although Eskimo houses generally had floors of hard-packed dirt. Tightly constructed wooden floors would virtually eliminate the possibility of recovering artifacts in large numbers from the floor areas. The existence of stove or hearth areas under such circumstances, however, is difficult to explain.

A characteristic feature of the excavated Nushagak houses was a virtual absence of the wood used in their construction. These logs and planks could have been removed easily and systematically by later residents who would have had the incentive created by the

general lack of driftwood in the area. The availability of prepared lumber for new construction may have made abandoned houses an ideal source of firewood for steam baths. It is significant, perhaps, that during field work in the summer of 1969, members of the only family resident on the site were in the process of dismantling an old frame house to obtain firewood to heat their home and bath.

The dismantling of a house doubtless began with the removal of blocks of dried sod from the roofs and around the sides. This task would have been relatively easy, particularly if an undercover of bark, tar paper, or some similar material was used by the builders. Then the roof logs could be removed and the remainder of the structure easily dismantled. Individuals engaged in stripping a house of timber would almost certainly pick up anything else of use or interest that they happened to find in the abandoned structure. The few artifacts not picked up might be swept away when the floor boards and wall logs were removed. A large percentage of the artifacts recovered by the excavators was found in the corners and along the walls of the structures; virtually nothing was recovered from the center of the living areas. By the time looters had finished their work, it is conceivable that nothing would remain but the empty shell of sod surrounding the house walls. Into this cavity dust and other debris would blow to form the present sod level.

It should be remembered, too, that while abandoned houses stood empty, but before dismantling began, they might have been visited by cannery workers and fishermen who can be considered the tourists of their day. These persons would almost certainly take away as souvenirs anything in the houses that was readily movable, particularly objects of native manufacture or exotic looking trade items.

These factors may indicate why the Nushagak site is not a rich one for the archaeologist, and partially explain its disturbed condition with reference to the occupied area as a whole and to the individual structures. No other explanation for the small number of recovered artifacts seems possible. It is certainly true that preservation at the site was poor, but this cannot account for the small number of stone, metal, glass and crockery items recovered. One might have expected Nushagak to be the richest site in the region, particularly as far as trade goods were concerned. In reality, however, the archaeological collections reveal less about changing material culture at the settlement than was the case with similar but larger collections from the much smaller upriver settlements of Tikchik and Akulivikchuk.

Locally manufactured artifacts are so few in number that little can be said about them except that continuity with the past is demonstrated. Although the small size of the collection is almost certainly due to some or all of the factors mentioned above, it is also true that the traditional material culture can be expected to have disappeared more rapidly at a cosmopolitan trading center like Nushagak than at more remote settlements in the area.

It is necessary to turn now to a consideration of those artifacts which indicate change induced by the contact situation. In previous studies dealing with nineteenth century archaeological sites on the Nushagak River and adjacent Lake Clark (see VanStone, 1968b, pp. 320-323; 1970, pp. 97-102; VanStone and Townsend, 1970, pp. 141-146), sections dealing with changing material culture have followed the organization of a similar section in the Crow Village report (Oswalt and VanStone, 1967, pp. 74-75). There it was pointed out that "in situations where innovations occur as a result of contact we would expect things new to arise from: (1) exotic objects introduced, accepted, and added to the cultural inventory without formal changes; (2) the availability of new materials permitting a change of existing forms; and (3) the construction of new forms based on new models."

Concerning the first source of innovation, the artifact descriptions and trait list are surely a very poor indication of the extent to which trade goods were acquired by the residents of Nushagak and accepted into the cultural inventory without change. The absence of identifiable Russian trade items from the excavated dwellings is perhaps not surprising since such objects were not identified at the more extensively excavated sites of Tikchik and Akulivikchuk. It has been suggested elsewhere (VanStone, 1970, pp. 103-104) that perhaps by the time of the expansion of their influence into interior southwestern Alaska, the Russians were obtaining a large proportion of their trade goods from non-Russian sources. In any event, it can be said with certainty that the Eskimos resident in the vicinity of Aleksandrovski, being at the very center of trade good distribution for southwestern Alaska, are certain to have had a more detailed acquaintance with such materials than inhabitants of the upriver villages, many of whom visited the post no more than once a year.

It can be assumed that the number and variety of imported items available to the Eskimos and Indians of southwestern Alaska increased greatly at the beginning of the American period. Support for this assumption, although not available for Nushagak, does exist

for the Alaska Commercial Company post at Tyonek on Cook Inlet (VanStone and Townsend, 1970, pp. 141-142). There is also information concerning a sizeable and impressive inventory of trade goods sent to the various Alaska Commercial Company posts as early as 1869 (VanStone, 1970, pp. 98-99). Although by this time Nushagak no longer occupied the important position it once had with reference to trade in southwestern Alaska, there is no reason to believe that the local post did not share in this influx of trade items after 1867.

Only a small percentage of any inventory of trade goods would be preserved in an archaeological context. Nevertheless, it might be expected that a larger number of types would occur at a trading center like Nushagak than at upriver communities like Akulivikchuk and Tikchik. These latter communities were either abandoned or in decline by the time American trade goods in quantity were reaching Alaska, but this explanation cannot serve for Nushagak and it is necessary to fall back on explanations previously outlined to account for the small size of the archaeological collection in general.

Even allowing for those factors which presumably operated to reduce the number of artifacts recovered, it is nevertheless surprising to note that beads and pottery fragments were not recovered in greater quantity. These items, relatively abundant at other nineteenth century sites in southwestern Alaska, are not objects likely to have been carried off by persons entering or dismantling the houses after they were abandoned.

Somewhat less surprising, perhaps, is the virtual absence of artifacts associated with firearms. Only one spent cartridge case was recovered, indicating the effectiveness of the ban, until December, 1896, on the sale of breechloading weapons and ammunition to the Eskimos and Indians of Alaska. In fact, the Alaska Commercial Company did not secure permission to sell such weapons until 1900 (Alaska Commercial Company Records, University of Alaska Archives). Although this restrictive ruling was ineffective in some areas of Alaska, it was probably easiest to enforce at a coastal settlement like Nushagak where infringements could be detected by visiting government officials during the summer months. As late as 1884, James W. Johnson wrote to Spencer F. Baird at the Smithsonian Institution requesting a rifle "as there is nothing to be had here but army muskets" (Baird, private correspondence, Smithsonian Archives).

The second category of innovation has been of particular interest in the analysis of archaeological collections from other nineteenth century sites in southwestern Alaska since it involves the introduction of new raw materials and their effect on the manufacture of traditional artifact types. As might be expected, there are some examples of this type of innovation in the Nushagak collection. The few that are present are discussed below.

1) Scrapers made from bottle glass, which have been found in a number of historic sites in Alaska, resemble those of flinty materials (pl. 11, 8,9).

2) A section of cast iron has been reworked to form a fishing ice pick (pl. 11, 5).

3) Two strips of metal, perhaps originally spikes or heavy nails, have been flattened at one end to form a barb (pl. 11, 2,6). These objects have been identified as fish spear points.

4) A section of barrel hoop has been cut to form a crooked knife blade.

Turning to the third category of innovation, there is only a single example of an attempt by the Eskimos at Nushagak to reproduce locally a non-Eskimo artifact. This is a lead musket ball obviously made in the type of stone bullet mold that has been widely reported in both ethnographic and late archaeological collections from Alaska.

The types of innovation discussed above have been considered significant in dealing with archaeological materials from the Tikchik and Akulivikchuk sites because they indicate different responses to items of material culture introduced as a result of contact. The collection from Nushagak is too small to reveal useful information along these lines. It has been noted that the inhabitants of the upriver settlements exhibited a cautious approach to things new (VanStone, 1968b, p. 323; 1970, p. 102). This could also have been the case at Nushagak even though the Eskimos resident there were right at the source of trade goods for the area. The fact that the people had access to so many different trade items may be a partial explanation for the small number of recovered traditional Eskimo artifacts as well as the relatively few artifacts in the second and third categories of innovation. With the opportunity to accept so many new material items directly into their culture, there may have been little necessity or inclination to make the adaptations reflected in these kinds of innovations. Nevertheless, the examples in category two suggest

that the Nushagak Eskimos were not particularly innovative or experimental when they had access to new materials. The forms continue to be those of the traditional material culture. It is impossible to escape the conclusion, however, that whatever the reasons, both the ethnographic and archaeological collections reveal disappointingly little concerning the specifics of changing material culture at the settlement. Without such information, it is virtually impossible to make meaningful comparisons with the upriver villages.

CONCLUSIONS

Although it has proved almost impossible to make meaningful interpretive statements about change at Nushagak based on the ethnographic and archaeological collections, it is possible to draw some general conclusions concerning the over-all period of occupancy from a combination of historical, ethnographic, and archaeological information.

Occupation of the Nushagak site apparently encompassed most of the nineteenth century, and, indeed, it is not even totally abandoned at the present time. The settlement ceased to be of any importance, however, after about 1910. Whether or not it was occupied prior to the establishment of Aleksandrovski Redoubt in 1818 is a matter of conjecture. Although the village was an important Russian trading center from 1818 until at least 1845 and continued to be locally important until 1867, it has been impossible to isolate tangible manifestations of the Russian presence at the site. This is not surprising considering the amount of activity and consequent disruption that characterized occupancy during the late nineteenth and early twentieth centuries.

The departure of at least some Russians following the sale of Alaska to the United States probably did not bring about many profound changes at Nushagak. However, the construction of two salmon canneries in 1899, an economic expansion affecting all of Bristol Bay, greatly increased face-to-face contacts between Nushagak Eskimos and Euro-Americans. The canneries, with their annual influx of fishermen and laborers, operated commissaries and frequently distributed surplus food and other items to the Eskimo population. They also, from the earliest years, employed Eskimos as cannery workers. In addition, it is certain that individual fishermen and cannery workers traded with the local people. In short, it was the

coming of the canneries that introduced the Nushagak Eskimos to wage labor and greatly speeded the acculturation process.

At the beginning of field work at the Nushagak site it was hoped that structures could be selected for excavation so as to reveal several periods of the settlement's occupation. The shortness of the field season precluded the possibility of extensive testing, however, and the four excavated structures apparently represent much the same time period. Although precise dating is not possible, it is likely that the excavated structures were occupied around the turn of the century, the time of greatest activity and largest population at the settlement. Although no artifacts specifically associated with the canneries were found in any of the excavated structures, the use of prepared lumber for fuel and building, and the design of the houses, considerably modified from the aboriginal type, suggest a late occupation.

It is probable that the earliest houses on the site have been obliterated by later structures, particularly by those along the edge of the bluff. If the original Russian-American Company structures were on the beach up against the bluff, then it is probable that the community began to expand on the bluff just above these buildings as indicated in Elliott's drawing (pl. 4). Doubtless there was much rebuilding in this immediate area as is suggested to some extent by the Moravian and U. S. Fish Commission photographs. As the Eskimo population of the settlement grew, expansion would presumably have been to the northeast and southwest. Since those structures to the northeast were largely destroyed by bulldozer operations in connection with the construction of the school building shown in the air photograph (pl. 2), most of the large group of structures southwest of the church are presumably recent and were occupied when Nushagak was at its maximum size around the turn of the century.

In concluding this study of a nineteenth century trading center in southwestern Alaska, it might be well to review briefly the kinds of information that have been obtained and assembled here. The historical data concerning Nushagak, its physical appearance and the activities of its inhabitants, though far from complete, is sufficiently detailed to show the manner in which a small trading center grew and eventually encompassed the activities of all the agents of change operating in the region for a period of more than 150 years. Obviously, the ethnographic and archaeological dimensions of this study have not provided a great deal of information about Eskimo life at the settlement. It is hoped that what information is presented here

is adequately supplemented by previous ethnographic research in the area and by archaeological excavations at upriver sites. In any event, it seems certain that the daily round of traditional Eskimo life was at all times subordinated to the activities of the various agents of contact which, through the years, made Nushagak their headquarters.

The Eskimo population at the settlement varied considerably with the season of the year. Its sophistication with reference to white culture varied from the almost total involvement of those individuals living permanently in the settlement and deriving their livelihood, either directly or indirectly, from the activities of the Russians and later the Americans, to the more traditionally oriented residents of upriver villages who came to the post only once a year (VanStone, 1968b, pp. 229-230). All these Eskimos were helping to create the pattern of a cosmopolitan trading and distribution center that, as a result of the emergence of Dillingham on the west side of Nushagak Bay, is just as significant in the way of life of the present-day inhabitants of the area as it was shortly after the establishment of Aleksandrovski Redoubt in 1818.

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Appendix

Nushagak archaeological trait list with items listed in the sequence
of the text descriptions.

Item	Location			
	H-1	H-2	H-3	H-4
LOCALLY MANUFACTURED				
CHIPPED AND GROUND STONE				
End blade, slate fragment, tip, hollow-ground groove (pl. 10,1)	1	2	1	
fragment, center section, hollow-ground groove (pl. 10,8)	3			1
End blade blank, slate (pl. 10,2)		1		
Ulu blade fragment, slate (pl. 10,9)		3		1
Double grooved splitting adz head, basalt (pl. 10,7)	1			
Whetstone fragment, fine grained sandstone (pl. 10,3,5-6)		4		1
Whetstone fragment, schist (pl. 10,4)				1
BONE, ANTLER, AND IVORY				
Net weight, bone (pl. 10,10)		1		
Net weight, unfinished, antler (pl. 10,12)			1	
Sealing harpoon socketpiece, fragmentary, bone (pl. 10,11)		2		
Beluga harpoon socketpiece, bone (pl. 11,3)				1
Harpoon socketpiece blank (?)				1
Fishing ice pick, antler (pl. 11,7)		2		
Arrowhead (?), antler				1
Fish arrow or spear point (?) antler (pl. 11,10)		1		
Sled shoe section, bone (pl. 11,4)		1	1	1
CLAY				
Potsherd (pl. 11,1)		8		4
GLASS				
Bottle glass scraper (pl. 11,8,9)	1	1		1
METAL				
Ice pick (pl. 11,5)		1		
Fish spear point (pl. 11,2,6)			2	
Musket ball, lead	1			
Fragment of melted lead				1
Crooked knife blade		1		
Cut can fragment	19	30	80	22
SKIN				
Mukluk bottom fragment		2	4	
NON-ESKIMO POTTERY				
Plain white, undecorated	117	29	43	31
Transfer prints				
Blue "willow" ware (Type 1) (pl. 12,4)	6	1	1	2
Green pictorial and floral (Type 2) (pl. 12,11)		2		

Nushagak archaeological trait list with items listed in the sequence
of the text descriptions—*Continued.*

Item	Location			
	H-1	H-2	H-3	H-4
IMPORTED MANUFACTURED				
Dark blue floral and geometric (Type 3) (pl. 12,5)		3		
Brown floral (Type 4) (pl. 12,7)	2			
Purple flowered border (Type 5) (pl. 12,10)			1	
Miscellaneous small sherds	3	8		2
Hand-painted (pl. 12,1,8-9)	18		15	16
Hand-painted and stamped				
Broad green band, red flowers (Type 1) (pl. 12,3)			7	
Red and green leaves, blue flowers (Type 2) (pl. 12,2)	1			4
Stamped (pl. 12,6)	1			
Jar fragment, brown glaze	1			2
Chinese rice bowl, blue glaze	1			
GLASS				
Button, four-hole, white			1	
Window glass fragment	7	20	18	6
Bottle fragment	59	4	47	31
Mirror fragment				1
Bead				
White				128
Blue		1		215
Green				53
Translucent red				39
Black				27
Yellow				1
Polychrome				1
METAL				
Square cut nail	3	4	117	18
Cut spike (pl. 12,15)			2	1
Boat spike (pl. 12,16)			1	4
Staple (pl. 12,13)				1
File (pl. 12,14)			1	
Wedge or chisel fragment (?) (pl. 12,12)				1
Drawknife fragment (pl. 13,2)				1
Cast iron kettle lid (pl. 13,3)			1	
Enameled iron kettle lid			1	
Home-made stove			1	
Cast iron stove fragment				1
Stove pipe protector			1	
Serving fork (pl. 13,7)			1	
Drinking cup				1
Scissors fragment				1
44 Henry rimfire cartridge			1	
Musket ball (pl. 13,11)	1			
Brass crucifix (pl. 13,4)			1	
Brass button (pl. 13,10)		1		
Two-piece overall button				2
Belt buckle				1
Suspenders fastener				1
Brass figure of dog (pl. 13,1)			1	
Clock weight (?) (pl. 13,6)			1	

Nushagak archaeological trait list with items listed in the sequence of the text descriptions—*Continued.*

Item	Location			
	H-1	H-2	H-3	H-4
Cans and identifiable fragments				
Type 1	2			3
Type 2	2			2
Type 3	2			
Type 4	1			1
Type 5	1			4
Type 6				1
Type 7	1			
Type 8				1
Type 9				1
Lead screw cap (pl. 13,8)	1			
Barrel hoop, complete			4	
Barrel hoop, fragment	7	4	9	19
Lead foil, fragment				1
Single strand wire fragment			2	6
Unidentified metal fragment	1	6	4	7
Unworked can fragment	14	4		4
CLAY				
Common fired brick, fragment	13	6	7	1
Clay pipe fragment (pl. 13,5)			1	
LEATHER				
Shoe fragment, woman's		1		
Shoe fragment, man's		1		1
Leather strap fragment		1		
Leather fragment		11		
RUBBER				
Four-hole button (pl. 13,9)				1
WOOD				
Barrel top or bottom fragment				1
Spruce plank fragment	1		2	
STONE				
Mica fragment		1		
PAPER				
Tar paper fragment	8			4
TEXTILES				
Rainhat fragment		3		
Raincoat fragment		6		
Jacket (?) fragment	1			
Pants (?) fragment	1			
Woman's dress fragment				4

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