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on the ALASKA PENINSULA:
The UGASHIK DRAINAGE, 1973-1975
WINFIELD HENN

University of Oregon
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BY
WINFIELD HENN

PREFACE
BY
DON E. DUMOND

APPENDIX
BY
GEORGE T. JONES

UNIVERSITY OF OREGON ANTHROPOLOGICAL PAPERS NO.14
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PREFACE

This report is the second of three that are intended to describe archaeological work on the Alaska Peninsula by the University of Oregon between 1960 and 1975. It represents a slightly edited version of the author's Ph.D. dissertation (Henn 1977), to which has been added the result of faunal identifications (Appendix VI, by George T. Jones) not available earlier. In the interests of succinctness some sections dealing with survey and tests of certain sites along the Ugashik River have been eliminated from this version; interested readers are referred to the original document.

Field crew members who worked at Ugashik during the field seasons of 1974 and 1975 were all graduate and undergraduate students of the University of Oregon. These are listed and thanked, and other acknowledgements of a personal nature are entered, in the original report.

Major financial support for the research detailed here was provided by the National Science Foundation in Grant SOC73-09051 AO1, granted and once renewed for field endeavors in 1973, 1974, and 1975 in both the Naknek and Ugashik regions of the Peninsula. Field support was generously furnished by personnel of the National Marine Fisheries Service--Michael Dahlberg in particular--through their King Salmon field station. At a time when the ownership of Alaskan lands was clouded during implementation of the Alaska Native Claims Settlement Act of 1971, permission to excavate was expedited by representatives of the Department of Interior and its Bureau of Land Management, and then was most graciously ratified by councils and corporations of Ugashik and Pilot Point Native villages, and by the Bristol Bay Native Corporation. Housing at Ugashik Narrows was made available by Win Condict, of Saratoga, Wyoming, and at Ugashik Village by the Alaska Packers Association. All radiocarbon dating was through the efforts of Robert Stuckenrath, Smithsonian Institution. Geological examinations were made by David Hopkins, U.S. Geological Survey, and Robert Black, University of Connecticut. Last, but by no means least, the existence of the site at Ugashik Narrows was called to my attention more than ten years ago by Wilbur Hartman, of what was then the Bureau of Commercial Fisheries. The crucial assistance of these agencies, associations, and individuals is acknowledged with the most extreme gratitude.

Don E. Dumond
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INTRODUCTION

As part of a lengthy research project focusing on the prehistoric development and distribution of Eskimo peoples on the Alaska Peninsula (Fig. 1), the Ugashik River and Lakes vicinity was one of several target areas examined between 1973 and 1975. The prehistory of the Ugashik area, as it is now known, spans a period of some 9000 years and is organized into five cultural phases. The following study attempts not only to describe and interpret the general trajectory of this long history, but also attempts to document certain continuous and discontinuities within chipped stone technology.

Analysis has indicated that between 7000 B.C. and 5500 B.C. the Ugashik Narrows was occupied by people who practiced a stone technology of microblade and blade production involving prepared cores. The culture of these people, who lived in a landscape made habitable only shortly before by glaciation, has been termed the Ugashik Narrows phase. At 3000 B.C. a different assemblage is present, one in which microblade production has diminished considerably, while blade production continues. This period, that of the Ugashik Knoll phase, witnesses the introduction of a wide variety of notched and stemmed points, as well as the use of slate for projectile tips. These two early phases are followed by a third that is representative of the Arctic Small Tool tradition with a distinctly different stone technology, as people of what is locally named the Hilltop phase occupied the Narrows during the second millennium B.C. Following another apparent hiatus in the history, the Narrows was populated by people of Norton culture affiliation, locally termed the Lakes phase. It was during this period, the first millennium B.C. and first millennium A.D., that evidence is first present to indicate that settlements were established at both the Narrows and along the Ugashik River itself. This pattern of settlement continued into the following Ugashik River phase, which lasted until historic times. It was at the late prehistoric time of the River phase that chipped stone technology, so characteristic of Norton times and earlier, was largely replaced by a ground slate technology. In many respects the last four millennia of this Ugashik history approximate the developments described for the Naknek vicinity, some 80 miles to the north (Fig. 1).

Before discussing the set of hypotheses that helped to guide research at Ugashik and elsewhere on the Peninsula, a brief review will be presented of the prior work which forms the conceptual underpinning for much of the research described here.

PREVIOUS INVESTIGATIONS

Beginning in 1960 and lasting until 1969, the University of Oregon conducted archaeological work on the northern Alaska Peninsula, principally in the Naknek River drainage and on the coast of Katmai National Monument (Fig. 1). Among the initial aims were the establishment of a cultural chronology representative of the Bering Sea side of the Peninsula on the one hand, and of a sequence representative of the Pacific side on the other. Two culture histories, distinct from each other as well as from that of the tip of the Peninsula, have been developed. The first apparently represents the Bering Sea coast Aglegmiut and Peninsula Eskimo, and the other the Pacific coast Konig. Both sequences are reported in some detail (G. H. Clark 1968, 1974, 1977; Dunond 1962, 1963, 1965, 1969a, 1971).

The Naknek drainage sequence consists of eight phases which are consolidated into four periods spanning some 4500 years. The earliest, the Kittawick period (2500 B.C. to 1900 B.C.), was originally represented by a single phase—the Brooks River Strand phase (Dunond 1971). More recent interpretation has divided the period according to its two original components, with the component characterized by slate projectiles and tamps remaining as the Brooks River Strand phase, and the chipped stone assemblage tentatively re-defined as the Brooks River Beachridge complex. They are apparently contemporaneous (Dunond and others 1976).

The following Gomer period (1900 B.C. to 1000 B.C.) includes a single entity—the Brooks River Gravels phase. Characteristic tools include small, chipped-stone points of chalcedony, usually double-pointed, a few burins and microblades, snub-nosed scrapers, and symmetrical knives of chalcedony or basalt (Dunond 1971:8). Strongest affinities lie with the Arctic Small Tool tradition and the Denbigh Flint complex as described by Giddings (1964, 1967) and Irving (1962, 1970). After 1000 B.C., the Brooks River area, where the only
materials of this phase have been located, was apparently abandoned, and it is not until about 300 B.C. that occupation resumed, this time by peoples of Norton affiliation. This seeming hiatus, which also occurs to a greater or lesser extent in northwestern Alaska, represents one of the problems upon which research at Ugashik was based.

The ensuing period, the Brooks River period (300 B.C. to A.D. 1000) consists of three closely related phases—Smelt Creek, Brooks River Weir and Brooks River Falls. The entire period is strongly reminiscent of Norton culture found elsewhere in Alaska, particularly at Cape Densigh and Cape Krusenstern (Siddings 1963, 1967). It is during this period that pottery, predominately check-stamped and organic-tempered, was introduced. Other diagnostic Norton traits found at sites along the Naknek River are sideblades of various forms, stone lamps, notched pebble sinkers, a few items of ground slate, and coat labrets. Many of the chipped stone implements of this period, including endblades and adzes, although differing somewhat stylistically, clearly have resemblances with the earlier Arctic Small Tool materials (Dumond 1971:9-14; 1974:10). It is during this time that there is evidence for a population expansion out of the Brooks River vicinity and along the middle course of the Naknek River. However, between 1960 and 1967, no Norton related sites were located during surveys of the lowest portion of the river or along the immediate Bering Sea coast.

The final prehistoric period in the Naknek drainage, the Naknek period (A.D. 1000 to A.D. 1900), includes three related phases—Brooks River Camp, Brooks River Bluff, and Pavlik. New traits include reliance on slate polishing for tools (i.e., inset blades, ulus, dartheads, lancets), large grinding slabs, constructed houses with sunken entranceways, and gravel-tempered pottery of thick and thin walled varieties (Dumond 1971:14-17). It is during this time that settlements were apparently first established at the mouth of the Naknek River and immediately upriver. With few major exceptions—perhaps most importantly the general paucity of implements associated with whaling and other forms of sea mammal hunting—the culture of this period most closely relates to what has been called Western Thule elsewhere in Alaska (Larsen and Rainey 1948).

While research continued during the 1960's in the Naknek drainage, a related program was initiated on the Pacific coast of Katchemak National Monument. Most of the work was conducted during 1963 and 1965, and major excavations were at three sites—one at Kukak Bay, and two at Takili Island (G.H. Clark 1974, 1977). Like that of the Naknek region, the Pacific coast sequence is divided into periods, each consisting of one or more phases. The initial Pacific period (4000 B.C. to 2500 B.C.) is the time of a single cultural entity—the Takili Alder phase. Diagnostic of the period are large lanceolate or ovate chipped stone knives, stemless or contracting-stem chipped stone points, heavy core-like scrapers, and bilaterally and unilaterally barbed bone projectile points. Faunal remains suggest a strong reliance on sea mammal hunting (G.H. Clark 1974:160).

The ensuing Takili period (2500 B.C. to ca. 800 B.C.) is represented by the Takili Birch phase only. The period is characterized by the following (G.H. Clark 1974:161).

... large ovate and lanceolate bifacially flaked knives, several forms of small stemmed and stemless knives, several forms of stemless and contracting stem flaked projectile points, large core-like scrapers, conical tang bilaterally barbed bone projectile points with trianguloid lashing spurs, tanged bone wedges, and a wide variety of polished slate knives and projectile points.

Diet continued to emphasize sea mammals.

Following an apparent hiatus of some 1000 years that is now presumed to result from inadequate sampling, the next cultural period on the Pacific coast is the Kukak period (ca. A.D. 200 to A.D. 1000). This period includes the time of the related Takili Cottonwood and Kukak Beach phases. The earlier phase is characterized by older forms of chipped stone knives and points, as well as slate points. New items include decorated oil lamps, fiber-tempered pottery, and small, finely chipped projectile points. New traits for the late phase include several forms of transverse and double-edged slate knives, new forms of small chipped points, tanged bone points, and toggle harpoon heads, as well as approximately small stone net-weights. Large chipped points and polished slate virtually disappear by the end of the period (G.H. Clark 1974:166). Subsistence apparently became more diversified, with an increasing use of land mammals and fish.
The final prehistoric period, the Katmai period (A.D. 1000 to historic contact), is represented by one prehistoric phase, the Yukon Mound phase. Innovations include gravel-tempered pottery, new forms of bone and antler points, and a resumption of the slate industry (G. H. Clark 1974: 166).

While this research at Naknek and Katmai was successful in revealing some 6000 years of local prehistory, certain broader questions regarding Eskimo prehistory remained to be answered. First, while it was clear that technological continuity in the Naknek drainage existed for some 4000 years, doubts remained that the sequence represented a single people of distinctly Eskimo affiliation. Specifically, there is no evidence that the drainage was occupied at all between 1000 B.C. and 300 B.C. This break in the sequence represents a hiatus between the Arctic Small Tool tradition and later Norton tradition. While insufficient sampling might be responsible for such a discontinuity, an interval of nomooccupation at roughly the same time exists elsewhere in Alaska, suggesting that some factor other than inadequate sampling might well be responsible. The second problem that resulted from research along the Naknek might be described as a hiatus in space. It became clear that, whereas elsewhere in northwestern Alaska Norton affiliated peoples establish a settlement-subistence regime that included coastal camps and the use of marine resources, Norton peoples of the Alaska Peninsula appear to have restricted their orientation to the interior rivers and lakes. However, it seemed also possible that inadequate sampling was responsible for the absence of Norton settlements along the coast and lower river as these localities had not been intensively surveyed and excavated. Third, it was evident that the Katmai coast sequence was largely independent of the Naknek drainage sequence before Norton times. Beginning in the first millennium A.D., new traits appear on the Katmai coast—traits such as pottery that must have somehow derived from contact with their Naknek neighbors across the Peninsula. This initial interaction climaxed about A.D. 1000 when the two sequences are virtually identical, sufficient to suggest that both localities were occupied by peoples who were culturally and linguistically Eskimo. However, it remained to be documented just what influence the Pacific coast cultures had on the development of Norton cultures across the Peninsula and farther north. Some Norton elements, such as lamps, slate, and sea mammal gear, have strong ressemblances to manifestations on the Pacific where they are generally earlier. It was thus clear that these problems could only be resolved by further sampling in the Naknek drainage, and—if the problems remained unresolved—by initiating work farther southwest along the Peninsula.

THE FOCUS OF RESEARCH AT UGASHIK

Based upon the fieldwork and analyses of the 1960's, a number of hypotheses were formulated to guide the proposed research on the Peninsula. While these statements were generated to guide work in some areas in addition to Ugashik, it is appropriate to state them here as they were originally framed by Dumond (1972a). First, "that there was continuity in a sociocultural sense between peoples of the Arctic Small Tool tradition and succeeding Norton culture." Second, "that there was a substantial change in subsistence orientation between the time of the Arctic Small Tool tradition and the succeeding Norton tradition, in the direction of increased use of resources of the open sea coast." Third, "that this change in resource use involved contact with an influence from contemporary peoples of the Pacific coast, which substantially affected the cast of Norton and later Alaskan coastal cultures." And fourth, "that this change in resource use coincided with the conversion of a stable population that manifested little cultural change through time, into a dynamic, expanding population that thereafter exhibited rather rapid change in material culture." A further guiding consideration was the degree of prehistoric interaction or relatedness between Aleut peoples of the tip of the Peninsula and the Aleutians, and Eskimo peoples farther north along the Alaska coast.

Renewed work in the Naknek drainage began in the summer of 1973. At the conclusion of the 1973 season it was clear that occupations transitional between the Arctic Small Tool tradition and the succeeding Norton tradition were not forthcoming from the Naknek drainage. Additionally, no Norton or Arctic Small Tool tradition assemblages were encountered along the lower course of the river as had been hypothesized. Thus, it became necessary to plan work farther southwest along the Peninsula, and an aerial survey was conducted of the Ugashik Narrows and River during August of 1973. Some 21 possible sites were located.

During the first five weeks of the 1974 summer season, tests were continued in the upper Naknek drainage at early Norton period sites that had been previously tested in 1963 but which were unavailable for excavation in 1973. It was hoped that at one of these sites some
evidence of transition between the Arctic Small Tool and Norton traditions would be recovered. Unfortunately, although more Norton materials were collected, the sites appeared to date to a time later than was desired. It was then that a move was made to the Ugashik drainage for the last five weeks of the season.

Work at Ugashik in 1974 was confined to sites at the Ugashik Narrows and the outlet of lower Ugashik Lake (Figs. 2, 9). Additionally, a brief reconnaissance was made by boat of sites along the Ugashik River which previously had been recorded during the aerial survey of 1973. Work at all sites during the 1974 season was of an exploratory nature, with major emphasis placed at one site, 49-Uga-1, at the Ugashik Narrows.

Preliminary analysis and radiocarbon dating of the 1974 Ugashik collections suggested a chronology spanning some 8000 years. Occupations assignable to the Norton tradition, as well as to Thule-related peoples, were located and there was some evidence, albeit meager, for occupation by Arctic Small Tool people. Somewhat unexpectedly, however, materials of much earlier people were also forthcoming. The earliest assemblage, radiocarbon dated at 5725 B.C. (see Table 2), consists of stone implements and debitage clearly related to the Campus or Denali complex from the interior of Alaska (Hodleigh West 1967) and to the American Paleol-Arctic tradition as defined at Onion Portage in northwest Alaska (Anderson 1968a, 1970). The other early assemblage recovered at Ugashik in 1974 consisted of, among other items, side-notched and stemmed points, which elsewhere in Alaska seem to date between 4000 B.C. and 3000 B.C. (Anderson 1968a; Campbell 1961, 1962; Giddings 1967).

It thus seemed possible that the Ugashik drainage, in particular the Ugashik Narrows, had the potential for resolving some aspects of the questions previously posed. Additionally, the Narrows might well provide new and important data on the more general question of Eskimo-Aleut origins.

And so work resumed at Ugashik for ten weeks during the summer of 1975. The major focus was again the Narrows, particularly sites 49-Uga-1, 49-Uga-2, and 49-Uga-6 (Fig. 2). As work at these sites was nearing completion, it was possible to move a small crew down river to Ugashik Village (Fig. 10) where surveys and tests could be made of sites along the river itself. It was anticipated that the lower drainage would yield, at a minimum, materials related to the Norton and Western Thule period. Also of interest was the possibility of finding Aleut occupations on the lower river, such as is indicated—although possibly erroneously—by some historic sources (Schanz 1893:53). Preliminary statements concerning the results of the 1975 season have appeared in brief form (Dumond and others 1976; Henk 1975b).

The data from these two seasons of surveys and excavations at Ugashik have been analyzed with two strategies in mind. The first was to generate spatio-temporal units, or phases, which would represent constellations of traits that might relate to the prehistory of adjacent areas, and thus provide relevant data to approach the problems enumerated above. The second strategy was to establish a means of evaluating the degree of cultural change between phases. The method used was to analyze change, or the lack of it, in certain aspects of stone technology, specifically the technology of stone core manufacture and the pattern of core usage.

Other problems of interest, particularly subsistence and settlement patterns, are not ignored, but any definitive treatment of these two topics, or any other environmentally based study, is made difficult by the extreme scarcity of organic remains associated with any but the latest phase. What is now known of the Ugashik landscape, both past and present, is outlined in the following chapter.
CHAPTER I

THE UGASHIK LANDSCAPE

GLACIAL HISTORY

The Ugashik River drainage is one of a number of river and lake systems on the Peninsula that owe their origin to Pleistocene glaciation. Others include the Naknek system, as well as the Egegik River which drains Bearpaw Lake (Fig. 1). The common features of these glaciated landscapes are one or more large lakes at the base of the Aleutian Range and a river system which drains the lakes westward into Bristol Bay and the Bering Sea. The lakes were formed as retreating glaciers deposited moraines, which in turn dammed up the large quantities of water released from the deglaciation. These lakes are now fed by snowmelt and drainage of the Aleutian Range.

The Ugashik system consists of two large bodies of water--Upper and Lower Ugashik Lakes--which are connected by a short, narrow body of water termed the Ugashik Narrows. The lakes themselves were formed by morainal deposits during retreat of Late Pleistocene glaciers, probably attributable to the Wisconsin maximum some 14,000 to 18,000 years ago. The end moraines which dammed the lakes are present along the western shores of both Upper and Lower Lakes. The Narrows itself as it lies now is the result of an interlobate moraine formed as glaciers converging after being deflected around a mountainous region to the east of the Narrows. Apparently, the Narrows as a landform has existed relatively unchanged since Pleistocene times.

The Ugashik River itself arises at the northwest corner of Lower Ugashik Lake (Fig. 9), where it cuts through one of the Late Pleistocene end moraines described above. High banks are present along the river immediately below the lake, and the river here is rather swift and locally known as "the Rapids." Below the rapids the river becomes sluggish and meanders through low lying, marshy tundra until it reaches Ugashik Bay and the Bering Sea some 25 miles to the west near the village of Pilot Point (Fig. 16). Along the lower course of the river, above and below the village of Ugashik, as well as around Pilot Point, the river cuts through other glacial moraines that were deposited during stages of the Pleistocene earlier than that represented by moraines at the Narrows. In these regions on the lower river the banks are relatively high, forming well-drained bluffs which are often the locations of alder thickets and high grass, as well as of archaeological sites.

The river is presently subject to tidal activity all the way to the Rapids. However, before sea levels rose following deglaciation, the river must have been considerably smaller and less affected by tides.

While the chronology of deglaciation at Ugashik is still under consideration by David Hopkins and Robert Black, who conducted separate field studies upon which most of the foregoing discussion is based, there is now at least some evidence available concerning the age of deglaciation at the Narrows. From the base of one stratigraphic column taken from a fossil bog located just northwest of the Narrows on Upper Ugashik Lake, a radiocarbon date has been obtained from peat directly overlying glacial till. The date, 8805±105 B.P. or 6035 B.C. (SI-2651), indicates that deglaciation must have taken place by 7000 B.C. Such an age is supported by the radiocarbon evidence from sites at the Narrows which indicate that human occupation began by about 9000 years ago.

FLORA

The Ugashik area, as well as much of the Peninsula to the south and north, is within the Arctic Life Zone. The other major zone on the Peninsula, the Hudsonian, is present at the base of the Peninsula around Naknek Lake, where spruce is plentiful (Osgood 1904:21). The general vegetation around Ugashik is low and tundra-like, with herbaceous plants, heaths, and grasses common. In some areas, mostly the higher and well-drained localities, the vegetation is characteristically alder brush. Dwarf willow and birch also occur in the region (Osgood 1904). Various edible berries also occur, such as salmonberries, crowberries and blueberries.
At the narrows and other localities along the river, it was commonly observed that
the alder brush present on the high bluffs where archaeological sites were located is replaced
by high grasses which prefer the disturbed soils of the sites. However, it was also observed
that at sites of some antiquity, the alder has begun to overtake the grasses. And at one site
at the Narrows, 49-Uga-6, the plant cover is low-lying tundra vegetation.

Although pollen studies of the Ugashik area are still in progress, it appears on
the basis of work in the Naknek drainage that the pattern of vegetation has not changed
remarkably in the last few millennia. Although spruce forests have been invading the Naknek
vicinity in recent centuries (Hussler 1963), they are not close to the Ugashik vicinity and it
appears that the Ugashik locality has retained its characteristic tundra vegetation for a
considerable time.

**FAUNA**

The Ugashik Narrows is a rather unique landform configuration which provides a
crossing for game travelling throughout the Lakes area. While camped at the Narrows in 1974
and 1975, both caribou and moose were seen crossing the Narrows. The Ugashik area is home to
a wide variety of animals, many of which were observed by the University of Oregon crew. A
number of biological surveys have been made on the Peninsula and although little scientific
work has been done at Ugashik itself, these surveys do indicate the general fauna of the area.
Based on these surveys by Osgood (1904), Murie (1959) and Scheffer (1959), the list provided
below is not exhaustive, and is primarily limited to the larger game animals. Those animals
sighted by crew members in 1974 and 1975 are also noted.

**TABLE 1**

**RECORDED FAUNA IN THE UGASHIK AREA
AND ALASKA PENINSULA**

| Peninsula Caribou*          | Pacific Right Whale**        |
| Alaska Moose*               | White Whale****              |
| Beaver*                     | Harbor Porpoise**           |
| Ground Squirrel             | Sea Otter**                 |
| Muskrat                     | Pacific Harbor Seal****     |
| Alaska Porcupine*           | Pacific Walrus***           |
| Alaskan Arctic Hare         | Silver Salmon*              |
| Northern Wolf*              | King Salmon                 |
| Alaska Red Fox*             | Red Salmon*                 |
| Peninsula Brown Bear*       | Arctic Grayling*            |
| Land Otter*                 | Lake Trout*                 |
| Kenai Mink                  | Dolly Varden Trout*         |
| Arctic Weasel               |                             |

* Seen by crew while camped at the Narrows
** Occurs on the Pacific only
*** Occurs on the Bering Sea only
**** Occurs on both shores

The Ugashik area and the Peninsula also provide habitat for a wide variety of
ovifauna too numerous to mention here. The reader is referred to Osgood (1904) and Murie
(1959) for lists of these species. Suffice it to say that the Ugashik vicinity is home to many
migratory waterfowl, including ducks and geese, as well as the bald eagle and ptarmigan, all of
which were observed during the two summers. Unfortunately, faunal remains were recovered archaeologically only for the latest prehistoric phase, and even then the sample seems incomplete (i.e., no fish are represented). Fauna obtained are treated in Appendix VI.

VOLCANISM

The Aleutian Range to the east of the Ugashik Narrows includes numerous active and inactive volcanoes (Coates 1950). Two, Mt. Peulik and Mt. Chiginagak, occur within 30 miles of the Narrows. The latter was observed puffing during the summer of 1974, and is locally known as "Old Smokey." While recent ash falls and eruptions of some magnitude have been noted for areas further north along the Peninsula, such as Mt. Katmai (Novarupta) in 1912 and Mt. Trident in 1935 (Muller, Juhe, and Coulter 1954), the volcanoes east of Ugashik are apparently now rather inactive. This was not the case in prehistoric times. At least one major ash fall, here termed for present purposes Ash I, occurs in sites excavated at the Narrows and along the river (see Chapter II) and has presumably been dated by radiocarbon at about A.D. 1450. A number of other apparent ash falls were noted at various depths in the middens. These horizons, discussed in the following chapter, are undated and some remain to be verified by microscopic analyses. While other archaeological sites on the Peninsula have a long record of ash falls (Nowak 1968), it is still unclear to what extent these eruptions disturbed the daily life of prehistoric peoples in the area.

CLIMATE

Although there are few recorded data on the climate of the Ugashik vicininty, there are data available for localities a short distance to the north (Katmai and Naknek) which have climates similar to that of the Ugashik area. The Bristol Bay coastal plain has an approximate mean annual temperature of 34-35° F. For the lowlands of Katmai National Monument, the warmest monthly mean temperature is about 55° F, while the lowest monthly mean is about 14° F. The Naknek vicinity receives some 24 inches of annual precipitation, with most of the rain falling during the summer months and with considerable snowfall during the winter. Much of the coast of Bristol Bay normally freezes during the winter, although the ice does not extend as far southwest as Port Moller (Fig. 1). The area is generally foggy and cloudy, with considerable wind along the coastal plains and at the base of the Aleutian Range. Across the Aleutian Range, on the Pacific side, the climate is considerably different, with Chignik (Fig. 1), recording a mean annual precipitation of 152 inches, and Kodiak (Fig. 1) a mean annual temperature of 41° F, with a warmest months mean of 55° F and a coldest monthly mean of 30° F (Thompson 1954).

The results of Heusser's work along the Naknek River indicate that some 5500 years ago the climate was one of rising temperatures and moderate humidity. Between 5000 and 2500 years ago, the climate became cooler and drier. After 2500 B.C., temperatures and humidity began to rise, reaching a maximum in recent centuries (Heusser 1963).

SUMMARY

While it has been possible to describe the general environment of the Ugashik area, it is considerably more difficult to characterize the human adaptation and establish the preferred resources of the recent aboriginal people of that specific locale. Ethnographic studies do not exist for this area. The more general historical accounts which exist for the Bristol Bay area describe peoples whose way of life was considerably altered by the Russian-American fur trade of the early nineteenth century, and later by the commercial salmon fishing industry (VanStone 1967).

What has emerged from studies of the historical accounts indicate that in all probability the aboriginal subsistence practices of peoples in the area of Bristol Bay was one in which caribou hunting and salmon fishing figured most prominently. There are also data which suggest that seal hunting, and to a lesser extent walrus hunting, was practiced at various locations around Bristol Bay. Migratory birds, such as ducks and geese, were also hunted (Oswalt 1967:127-128). Salmon fishing was, according to many sources, the single most important subsistence activity (VanStone 1967:xxii). It is unclear whether or not the pre-occupation with fur-bearing mammals (e.g. beaver, muskrat, land otter, fox) which characterized the early historic period had persisted from aboriginal times (VanStone 1968:309).
Virtually all of the animals inferred or documented as having been used at the time of contact by Eskimos about Bristol Bay are still present in the vicinity of Ugashik, or at least within a few days' journey. There is no reason to believe that the Ugashik area is in any way an impoverished biotic area. In fact, the Ugashik Narrows locale is one of the most popular spots on the Peninsula for salmon and grayling fish, as well as for hunting bear, moose, and caribou. There is also evidence that the Narrows has been a prime trapping locality, particularly for fox and beaver. For now it seems reasonable to believe that the aboriginal subsistence pattern of the Ugashik area differed little from that described above for other peoples about Bristol Bay.
CHAPTER II

DESCRIPTIONS OF SITES AND EXCAVATIONS

The field research conducted throughout the Ugashik drainage during 1974 and 1975 led to the discovery of some 30 prehistoric and historic sites. In fact, only one area of the drainage, the upper course of the river immediately below Ugashik Rapids, did not contain sites. All other localities surveyed—the Narrows, the Rapids, the lower course of the river, and Ugashik Bay—indicated the presence of prehistoric sites (Figs. 2, 9, 10). The information provided in this chapter includes descriptions of all excavations, survey data, site locations, and observations on surface phenomena.

The various components present at sites are also briefly described and appropriate radiocarbon dates included (see Table 2 for more complete radiocarbon data). Some five prehistoric phases spanning a period of 9000 years have been established for the region. The earliest, the Narrows phase, dates between 7000 B.C. and 5500 B.C. and is present in only one component at the Narrows (Site 49-Uga-1). A microblade and blade technology similar to that of this phase continues into the following Knoll phase, which is also found at only one site (49-Uga-6) at the Narrows, and dates about 3000 B.C. The following Hilltop phase, dating between 2000 B.C. and 1500 B.C., is present in two components at the Narrows, at sites 49-Uga-1 and 49-Uga-2. Both components have some affinity with the Denigh Flint complex and other assemblages of the Arctic Small Tool tradition (see Chapter V).

The Lakes phase, of Norton tradition affiliation, is represented at a number of sites at the Narrows, as well as along the lower course of the river and at Ugashik Bay. Two locally restricted entities of this phase have been defined, with the term sub-phase used to describe these units; one is restricted to the Narrows locality, while the other is restricted to the lower course of the river and Ugashik Bay. The evidence at present indicates that the two sub-phases are temporally distinct; however, this is probably a result of inadequate sampling, such that further work at the Narrows would produce occupations contemporaneous with those downriver. The inland sub-phase, which is present at all sites at the Narrows (49-Uga-1, 49-Uga-2, 49-Uga-3, 49-Uga-4, 49-Uga-5, 49-Uga-6), dates between 200 B.C. and A.D. 300. The Tidewater sub-phase consists of components at two sites (49-Uga-1, 49-Uga-15) along the lower course of the river and one site (49-Uga-25) on Ugashik Bay. The time represented by the Tidewater sub-phase is A.D. 400 to A.D. 1000.

The final prehistoric phase in the Ugashik area, the River phase, occurs in all four geographic localities surveyed. The phase dates between A.D. 1000 and the time of historic contact. Much of the material from components of this phase resembles assemblages which elsewhere in Alaska are referred to as Western Thule. Sites with historic components are located at the Narrows and along the lower course of the river near the village of Ugashik (Fig. 10).

The research of 1974 and 1975 was implemented by small crews camped at the Narrows, and for a briefer period, at the village of Ugashik. All work at the Narrows was directly supervised by the author. A brief program of surveying and sampling at the Ugashik Rapids in 1974 was supervised by Harvey Shields. Two weeks of surveying and testing along the lower course of the Ugashik River in 1975 was directed by Rick Minor, with overall supervision by Don Dumond. Work at Pilot Point in 1975 was the responsibility of Dumond.

A summary list of phase assignments of all components at the various sites is given in Table 4 at the end of this chapter.
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<td>Lakes</td>
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<td>Phase</td>
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</table>
UGASHIK NARROWS

Component A (6945 B.C., 6475 B.C., 5725 B.C.), Narrows Phase
Component B (1510 B.C.), Hilltop Phase
Component C (160 B.C., A.D. 65), Lakes Phase, Early Inland Sub-phase
Component D, Lakes Phase, Intermediate Inland Sub-phase
Component E (A.D. 1650), River Phase
Component F, Historic

Coordinates

T3O S., R66W, Seward Meridian (S.M.), 57°34'15" N, 156°47' W

Description

This extensive site is on the east bank of the Ugashik Narrows at a point where Upper Ugashik Lake constricts to form the Narrows (Fig. 2). The site occupies a high, grassy bluff overlooking the water's edge. The bluff slope itself is to some extent the result of midden deposition over the bluff edge, as high grass, characteristic of disturbed soils in the area, covers the slope. The site extends for some 125 m along the bluff edge, and for about 60 m east of the bluff (Fig. 3).

The site includes about 58 house-like depressions (Fig. 5). The dimensions and forms of the depressions were noted and are given in Table 3. None of the houseplots is characterized by standing sod walls, as occur in some sites of late prehistoric and historic age elsewhere in the drainage.

Site 49-Uga-1 was first recognized from the air during the summer of 1967, and was briefly visited at that time by Dumond. Again, in 1973, the locality was visited by Dumond and the author, and a program of extensive excavations was planned for the following season.

As the most extensive site at the Narrows, site 49-Uga-1 was given first priority during the summer of 1974. During the five week season, one major stratigraphic trench, a number of house depressions, and scattered small tests were excavated (Fig. 3). It was hoped that these excavations would provide a chronological framework representative of the Narrows vicinity and, for that matter, the entire Ugashik drainage.

The stratigraphic trench that was placed on an east-west axis across the length of the site, revealed a number of successive occupations, as well as a series of natural events. The midden deposit becomes deeper and more complex from east to west, until at the bluff's edge four different cultural strata are observable. The stratigraphy of the trench as revealed in profile (Fig. 4) generally exhibits the following characteristics. The surface has vegetation of high grass and wild flowers, below which is a layer of sod usually about 10 cm thick. Below the sod is a deposit of dark brown, sandy midden (Stratum I) that varies in thickness throughout the trench. In some areas it is only a few centimeters thick or even absent, while in other areas it is as much as 60 cm thick. Below this midden is a horizon of brown to grey-green, grainy volcanic ash that is now called Ash I. It was first thought, however, that this material might be a deposit of aeolian sand.

In order to confirm the origin of the deposit, which is distributed over much of the Ugashik area, four samples were submitted to the Museum of Natural History at the University of Oregon for analysis. Three of the samples were of the supposed sand, two from site 49-Uga-1 and the other from site 49-Uga-2. The fourth sample was composed of beach sand, a possible source of wind-blown deposit. The analysis indicated (Kittleman, personal communication) that:

The three samples from sites all contain grains of pumice, shards, feldspar, hypersthene, augite, and magnetite, in approximately that order of abundance. Pumice and glass shards, along with glassy inclusions, bubble-wall textures, adherent glass, and euhedral shape, indicate that the deposits are volcanic ash. The beach sand contains roughly
Fig. 4. 49-Uga-1, Profile of South Walls, Stratigraphic Trench.
the same assemblage of minerals, but the grain-size is greater, adherent glass and bubble-wall textures are rare, there is no pumice, some grains are rounded, and there are some grains that appear to be from a non-volcanic source. The conclusion is that Uga-2 sample at N102E97'-10 cm did not come from Ugashik beach.

Stratum I was apparently formed in one of two ways. First, when the latest prehistoric occupants (Ugashik River phase) constructed dwellings by digging pits, the soil was redeposited from its original position below Ash I to a position above Ash I, as well as destroying Ash I. This situation can be clearly seen in the wall profiles (Fig. 4). Secondly, Ugashik River phase midden was formed in situ above Ash I. Thus, a situation was created in which later materials were recovered at the same elevation as earlier materials or were found above, or even below, earlier materials.

The volcanic ash deposit, Ash I, therefore separates the Ugashik River phase (Component E) and Lakes phase (Component D) at site 49-Uga-1. Below Ash I is a deposit of mottled, reddish-brown soil or midden assigned to the Lakes phase (Fig. 4). This deposit was designated Stratum II in 1975, and ranges in thickness from 15 cm to 35 cm. The basal layer of Stratum II is a thin black band that is very irregular. Although it has been designated Ash II, it has not been microscopically verified as an ash or pumice, and could conceivably be an organic horizon or an occupation surface that was not recognized as such.

Below Ash II are the two earliest assemblages excavated at site 49-Uga-1--the Ugashik Hilltop and Narrows phases. The presence of the former at this site was not discovered until 1975. The earlier Narrows phase assemblage was known from 1974, and is designated Component A at 49-Uga-1. These materials occur in a compact, light-brown soil that resembles loess, and which was designated Stratum III during the 1975 season. Analysis subsequent to the 1975 field season determined that the uppermost level of this deposit contains items that pertain to the later Hilltop phase. The levels containing materials of the Narrows phase were then re-named Stratum IIB to differentiate them from the level assigned to the Hilltop phase (Stratum III), which is designated Component B of site 49-Uga-1. The entire Stratum III rests on glacial till (sand, gravel, cobbles) that is devoid of any cultural debris.

During the 1974 season, small tests (1 m²) were placed in midden areas inside and outside surface depressions (Fig. 3, 5). Tests in midden areas outside depressions included N110E89, N70E60 and N134E91. In all three units Ash I lies immediately below the surface soil. In N134E91 and N170E89 a deposit of mottled brown and black soil, about 50 cm thick, lies below the ash. This deposit represents Ugashik Lakes phase midden, of Component D. In N110E89, about 80 cm below sod, is a blackened band which is an occupation surface or a volcanic ash (Ash II?).

The first house depression tested during the 1974 season, Housepit #1, was a large, roughly circular pit with only a vague outline (Table 3). The gradual slope of the pit suggested a long period of abandonment and filling, and it was for this reason tests were conducted. Initially, a 1 m² test was placed in the approximate center of the depression, which was later expanded to a 2 m² excavation. Directly below the sod, Ash I was encountered, followed by about 20 cm of dark, pebbly fill and another 30 cm of brown midden fill. Throughout the fill were found scatters of flakes and artifacts of Lakes phase age. At a depth of 50 cm below sod a distinct floor was encountered composed of charcoal, chipping debris, and artifacts. In the north-western corner of the excavation, a hearth consisting of large, thermally-fractured rocks and charcoal was recorded. Below the floor was sterile (?) glacial till, suggesting that, perhaps, the house had been constructed by digging a depression into the till. This might account for the pebbly nature of the fill. The remains of this house, along with Housepit #7 discussed below, constitute Component C at 49-Uga-1. The Housepit #1 occupation is discussed in more detail in the following chapter under Early Inland sub-phase, Lakes phase.

A test in Housepit #16 (Table 3) revealed an irregular, patchy surface about 50 cm below sod and resting on sterile glacial till. Ash I was not observed during profiling, indicating that house construction may have destroyed the ash. For this reason, and because of the artifacts in the fill, the house is assigned to the Ugashik River phase.
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Table 3: Housepit Data, 49-Uga-1 (continued)

| Housepit No. | Maximum Dimension (Meters) | Pit Definition* | Entrance | Entrance Facing**
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* 1 = well defined, 2 = moderately defined, 3 = poorly defined
** Magnetic

Housepit #24 (Table 3) is a surface depression partially excavated in the stratigraphic trench (Figs. 3,5). Construction of the house clearly removed Ash I (Fig. 4). The floor surface of the house is located some 25 cm below the depth of Ash I, and some 60 cm below the surface sod. The materials from this housepit, along with more materials recovered in 1975, constitute one of the assemblages assigned to Component E of 49-Uga-1, which is assigned to the River phase. The associations on the house floor, along with one somewhat ambiguous radiocarbon date, are discussed in more detail in the following chapter.

The edge of Housepit #25 (Table 3) was also bisected by excavations in the stratigraphic trench, initially in unit N99E50, and during 1975, in N100E50 and N99E40 (Fig. 3). Construction of this house removed Ash I, suggesting a later age.

Housepit #22 (Table 3), also partially excavated as part of the stratigraphic trench, is a large rectangular depression. As in other late housepits, construction had disturbed Ash I. An apparent floor surface was recorded at a depth of approximately 50 cm below sod. Pottery, sherds, slate, and mammal bone were encountered in the fill of the depression, and the materials can be assigned with little doubt to the Ugashik River phase, that is, to Component E of 49-Uga-1.

A test was also located in Housepit #40 (Table 3), a large, roughly rectangular depression (Figs. 3,5). Excavations indicated that the pit is not actually a house but rather an area where clay-lined pits, about 40 cm in diameter, had been dug through Ash I and into a deposit of Ugashik Lakes phase fill. No artifacts were located in the pits.

During the 1974 season, one large depression, Housepit #54 (Table 3), was selected for total excavation with the hope of revealing architectural features. The pit was large, presumably late, with well-defined walls. Excavations revealed that it was, in fact, an early historic house depression of aboriginal design, which had been dug into earlier Lakes phase (?) fill. Above, and on, the floor were numerous large timbers patterned in such a way as to suggest that a roof had collapsed on the floor.

During the summer season of 1975, excavations at site 49-Uga-1 were confined to the Narrows phase deposit at the western end of the stratigraphic trench, as well as to two housepits. Continued excavations in the 1974 trench revealed a stratigraphy which is in essential agreement with the previous work (Fig. 4). Two features of River phase age which cut through Ash I were again encountered--Housepits #24 and #25. This late deposit is designated Stratum I at 49-Uga-1, and the artifacts are assigned to Component E. Below Ash I an extensive deposit of Lakes phase materials from the trench, as well as small collections from tests near the trench, are the basis for the Intermediate Inland sub-phase at 49-Uga-1 (Component D). This component, and the single radiocarbon date associated with it, is discussed in the following chapter. In Stratum IIb, the Narrows phase deposit, a thin band of darkened soil and scattered charcoal was encountered just above glacial till. This horizon, which probably represents one of the actual occupation surfaces, was recorded in various areas of units N100E52 and N100E50. Artifacts, microblades, and debitage were recovered from this surface, as well as from other depths in the loess.

As mentioned earlier, while analyzing materials found in 1975 from the top of the Stratum III soil deposit, it was discovered that the uppermost level contains a small collection of items that are most closely identified with the Hilltop phase component at site 49-Uga-2 across the Narrows, as well as with Arctic Small Tool tradition assemblages else-
where. Radiocarbon dating of this horizon, discussed more thoroughly in Chapter III, indicates that this level, now termed Stratum IIIA, belongs to an encampment dating to the second millennium B.C. It is designated Component B at 49-Uga-1.

Tests during 1975 were also conducted in Housepit #7 and #53 (Table 3). Housepit #7 (Fig. 3) was a large, poorly defined surface depression lacking an obvious entranceway. It was very similar to Housepit #1 in these respects. An initial 1 m by 2 m test revealed a deep, charcoal-stained floor with artifacts characteristic of the Lakes phase. Excavations were expanded to encompass all of the observable depression. Below the sod in Housepit #7, but above Ash I, two late prehistoric hearths of thermally-fractured rock were encountered. Elsewhere, immediately below the sod was a uniform band of Ash I. At a depth of approximately 80 cm below surface sod, an extensive charcoal covered floor was recorded (Fig. 12). Some 10 cm below this floor was another charcoal-stained floor, separated from the first by what is assumed to be roof fall from the earlier house. Both of these floors in Housepit #7 included materials that, in part, were used in defining the Early Inland sub-phase of the Lakes phase. They were designated, along with the materials from Housepit #1, as Component C at 49-Uga-1, and will be discussed in more detail in Chapter III.

At the end of the 1975 season, an attempt was made to locate and excavate a late prehistoric house. With this in mind, a test was placed in Housepit #53 (Fig. 3,5), a well-defined rectangular depression with a north-facing entranceway. Excavation revealed that the depression represents a historic house, similar in age to Housepit #54 excavated during 1974 for the same reason. These historic houses compose Component E at the site, a historic component that on the basis of bottle identification appears to date to the early twentieth century.

Summary

The results of two seasons of intermittent fieldwork at site 49-Uga-1 have produced a sequence spanning some 9,000 years. Six components have been recognized. The earliest, Component A, of the Narrows phase, occurs only in the west end of the stratigraphic trench. Component B, of the Hillside phase, is present in the west end of the trench also, but restricted to Stratum IIIb. Component C, representing occupation of the Early Inland sub-phase, is based upon excavation of two house remains (Housepits #1, #7). Remains assigned to the Intermediate Inland sub-phase of the Lakes phase, Component D, occur in the stratigraphic trench and various small tests at the site (Stratum I). The final prehistoric component, Component E, of the River phase, exists in the stratigraphic trench (Stratum I) and in a number of surface house depressions. Component F, the historic period occupation, occurs only in Housepits #53 and #54.

49-Uga-1

Components and Radiocarbon Dating

Component A (1930 B.C., 1665 B.C., 1575 B.C.) Ugashik Hilltop Phase
Component B (A.D. 285), Ugashik Lakes Phase, Late Inland Sub-phase
Component C, Ugashik River Phase

Coordinates

T30S, R46W, S.M., 57°34'55" N, 156°47'15" W

Description

This site is situated on the west bank of the Narrows at a point where Upper Ugashik Lake constricts to form the Narrows (Fig. 2). The midden occupies an area of high grass which is surrounded on all sides by alder brush. Three surface depressions were recorded here, and all were tested. The site itself is a narrow shelf of land below a higher bluff, and the shelf was apparently formed as the result of midden accumulation.

During the summer of 1974, two small tests were placed in what appeared to be house depressions. The first test, Testpit #1, produced materials primarily of late prehistoric age (River phase), designated Component C. The second test, Testpit #2, produced late materials which had displaced Ash I. Remains of an earlier midden was apparently also reached by this test, ranging in depth from about 20 cm to 50 cm below the surface sod, and
clearly below Ash I. It produced a distinctively Lakes phase assemblage, which includes numerous stone implements, pottery sherds, and small net-sinkers. No earlier occupation surface was observed at this time, although a thin black band was recorded during the profiling at the base of the excavation of Testpit #2, some 90 cm below the sod.

In the autumn of 1974, during laboratory examinations of materials from this second test at site 49-Uga-2, a small number of artifacts were recognized which appeared to be pre-Lakes phase in age, most closely resembling materials of the Arctic Small Tool tradition. It was concluded that this small collection from 49-Uga-2 had come from the black band, just above sterile (?) that had been recorded during profiling.

One of the major objectives of the 1975 season was to expose further this probable Arctic Small Tool tradition surface. To accomplish this, a 1 m wide trench some 4 m long was placed directly north of the 1974 test (Fig. 6). When it became clear that there was in fact a deeply buried occupation level, additional area was exposed. At the same time, a test was made of Housepit #1, a shallow depression at the northern end of the site (Fig. 6). In this latter test Ash I appeared just below the sod, although in one location some late prehistoric debris occurred in the sod above the volcanic ash. Below this ash was a deposit of thinly scattered artifacts, as well as chipped stone debris, that resembles a Lakes phase component; however, pottery, so characteristic of other Lakes phase deposits, was absent. Although the absence of pottery in a Lakes phase house would be unusual, the chipped stone materials of this assemblage from Housepit #1 suggests that it does belong with other Late Inland sub-phase materials at the site (Component B).

The stratigraphy as revealed in the major excavation area of Housepit #2 (Fig. 11) begins with a layer of sod some 10 cm thick. Immediately below the sod is a band of Ash I, below which is a stratum of dark-brown, loosely compacted soil remains of decomposed midden that varies in depth from 20 cm to 40 cm. It is assigned to the Lakes phase, Late Inland sub-phase, and is Component B at the site. At the base of this deposit is a horizon of volcanic ash, designated Ash IV, that resembles Ash II at site 49-Uga-1. Below the Lakes phase levels and Ash IV is a stratum of light-brown, compacted soil in which debitage and artifacts were relatively scarce. This deposit lies on a band of tan colored ash, designated Ash V, that was apparently cut through by construction of the Hilltop phase house (Fig. 11).

Lakes phase materials appeared in all units excavated in Housepit #2. This upper component likely did not result from occupation of a constructed house, but probably from re-use of the earlier depression that is associated with Component A.

The floor of the Hilltop phase house was uncovered at a depth that ranged between 80 cm and 90 cm below surface sod, and was easily recognized by the charcoal rich and ochre-impregnated soil horizon which rested directly upon glacial till. Between 70% and 90% of the surface area of this floor was exposed. The materials from this excavation are Component A at 49-Uga-2, and were the basis for the initial definition of the Hilltop phase. The house will be described more fully in the next chapter.

49-Uga-3

Component
Component A, Ugashik Lakes Phase, Intermediate Inland Sub-phase
Component B, Historic Period

Coordinates
T30S, R16W, S.M., 57°34'N, 156°47'20"W

Description
The second site recorded on the west bank of the Narrows, 49-Uga-3, was located opposite and slightly downstream from 49-Uga-1 (Fig. 2). Like most other sites at the Narrows, this one was easily recognized by its cover of high grass and surrounding alder. Two 2 m² tests were placed here, one in a housepit with standing sod walls and a north-facing entranceway, the other is what is thought to have been midden.
The test in midden deposit, Testpit #1, was located about 40 m north of the housepit, and was rather unproductive, although flakes and a few bifacial tool fragments were found. In Testpit #2, the house depression, a historic floor (Component B) was uncovered immediately below the surface sod. Below the historic materials was a deposit of mottled brown, sandy soil with scattered charcoal. Although only a few diagnostic artifacts were found in this deposit, it can be assigned to the Lakes phase, and forms Component A at site 49-Uga-3.

Below the cultural deposit is glacial till consisting of yellow, gravelly sand. It begins at a depth of 60 cm below surface sod.

49-Uga-4

Components

Component A, Ugashik Lakes Phase, Intermediate Inland Sub-phase

Coordinates

T30S, R46W, S.M., 57°33' N, 156°47'30" W

Description

Located on a grassy terrace overlooking the west bank of the Narrows, site 49-Uga-4 faces the south end of the Narrows and Lower Ugashik Lake (Fig. 2). Preliminary testing of this large grassy area revealed that a presumed area of midden was confined to the bluff adjacent to the Narrows, and that much of the surrounding grass was the result of very wet soil. Two 1 m² tests were placed here.

The stratigraphy is as follows. Below the surface soil is a band of Ash I. About 25 cm below soil is a midden deposit, some 35 cm thick, and light to dark brown in color. In this deposit, a few chipped stone tools and pottery sherds were found which are assignable to the Ugashik Lake phase, Intermediate Inland sub-phase.

Sterile (?), consisting of glacial till, was encountered at a depth of 70 cm below surface soil.

49-Uga-5

Components

Component A, Ugashik Lakes Phase, Late Inland Sub-phase
Component B, Ugashik River Phase

Coordinates

T30S, R46W, S.M., 57°33'53" N, 156°46' W

Description

This site is situated on a small knoll about 0.4 km east of the Ugashik Narrows (Fig. 2). The midden area is delineated by high grass, while the surrounding vegetation is either alder brush or low-lying tundra plants. One possible housepit was recorded here in 1974 just south of the crown of the knoll.

During the 1974 season one test was placed at the site. In this test, midden was present within and immediately below the surface soil (Component B). Below this thin deposit is a layer of Ash I, below which is what was once apparently another midden deposit that is assigned to the Ugashik Lakes phase (Component A). Sterile (?), consisting of glacial till, was reached in this unit at a depth of some 50 cm below the sod.

During the 1975 season, more extensive work was conducted at site 49-Uga-5. A 1 m wide trench, some 4 m long, was located in the presumed house depression recorded during the previous season. Another test, 1 m by 2 m, was excavated just west of the original 1974 test.
Materials from this unit are very similar to the items recovered in 1974. Another 1 m by 2 m unit was located east of the crown of the knoll. Just below sod in this test, and above Ash I, a large number of recent mammal bones were found along with fire-cracked rocks. A few flakes and bifacial tool fragments were encountered below the volcanic ash horizon to a depth of some 30 cm, where glacial till was reached. The few materials from below the ash are probably of Lakes phase age (see following chapter).

Excavations in the house-like depressions were sufficient to establish that there is an extensive occupation present, including rock hearths, but it was not possible to confirm whether or not the depression was that of an aboriginally constructed house. The materials associated with the depression are characteristic of the Lakes phase implements. The single radiocarbon date from this depression, of modern age, will be discussed along with other aspects of the component in Chapter III.

Below this late deposit is a small sample of chipped stone materials probably of Lakes phase affiliation. This earlier deposit rests directly on glacial till.

49-Uga-6

Components and Radiocarbon Dating

Component A (3105 B.C., 2890 B.C., 2860 B.C.), Ugashik Knoll Phase
Component B, Ugashik Lakes Phase, Intermediate Inland Sub-phase

Coordinates

T30S, R46W, S.M., 57°33'59" N, 156°46'49" W

Description

This site lies on a high knoll and ridge approximately 0.6 km east of the Narrows (Fig. 2). Unlike all other sites in the vicinity, 49-Uga-6 has a surface cover of tundra vegetation rather than high grass. It has presumably been abandoned for quite some time. The main area of habitation is a small knoll on a ridge formed as glacial moraine. The knoll itself apparently formed as a result of midden accumulation. Elsewhere along the ridge, and on flat expanses off the ridge, artifacts and debitage are found in blowouts (Fig. 7). The blowouts, formed by wind action, have exposed surfaces of glacial cobbles and gravel, and are thought to have been used as quarries, as numerous finished and unfinished artifacts of chipped stone, often weathered, are found in all of them; it is possible, but less likely, that the wind, which formed the blowouts, exposed what were previously buried activity areas.

During 1974, seven 1 m² tests were excavated on the knoll and in a nearby blowout (Fig. 7). This work revealed two assemblages, both of which occur below a deposit of Ash I. The upper assemblage (Component B) restricted primarily to tests in the western end of the knoll, is characterized by small, thin chert points with contracting stems. Also recovered from the upper, as well as the lower, component were numerous weathered chert cores, bifaces and flakes. The lower assemblage (Component A), with large side-notched points of basalt and chert, was present in both the weathered midden deposit and in blowouts.

A portion of the 1975 season was devoted to enlarging the earlier collections and securing radiocarbon samples from the Knoll phase deposit. A trench 2 m wide and 10 m long was located parallel to the tests of 1974, and then was expanded at the eastern end to further expose the Ugashik Knoll phase occupation.

The stratigraphy of the trench excavations can be summarized as follows. A thick, compact layer of tundra vegetation covers the entire area. Immediately below this sod-like layer is a deposit of Ash I. Below the volcanic ash is a deposit of mottled brown and black soil, loosely compacted (Fig. 8). This deposit, the lower boundary of which is a tan colored volcanic ash (Ash II), varies in thickness from 10 cm in the eastern end of the trench to a maximum of 35 cm in the western end. It is within this stratum, mainly in the western end, that the Lakes phase component was found (however, see qualifying comments in Chapter V). The tan ash occurs sporadically throughout the excavation area as if it might have been disturbed by Lakes phase occupation. Immediately below the volcanic ash is midden of dark
Fig. 7. 49-Uga-6, Excavations and Topography.
Fig. 8. 49-Uga-6, Profile of Stratigraphic Trench.
brown soil and debitage, which represents the Ugashik Knoll phase deposit. Within this deposit is a dark, organic band with charcoal (Fig. 8) that is likely the actual occupation surface, and it is this surface from which virtually all the side-notched points were recovered. Below this fully decomposed midden deposit lies a sterile (?) deposit of glacial till consisting of cobbles, boulders, and gravel.

UGASHIK RAPIDS

49-Uga-7

Components

Component A, Ugashik River Phase

Coordinates

T30S, R40W, S.M., 57°34'5" N, 157°5" W

Description

Located on the south bank of the Ugashik River, this site lies some 0.6 km downstream from the outlet of Lower Ugashik Lake (Fig. 9), where it occupies the edge of a low bluff facing the river, which at this point is a series of interconnected channels and small rapids. The midden is covered by high grass and surrounded by alder brush. The deposit extends along the bluff for some 30 m.

Located originally during the 1973 aerial survey, this site was visited during August of 1974. Four 2 m² tests were placed in the deposit, which was some 80 cm in depth. Tests #1 and #2 were located in shallow, roughly square surface depressions--presumably housepits. Test #2 uncovered an apparent hearth and floor surface at a depth of 20 cm, which consists of thermally-fractured rocks, packed midden and charcoal. The general stratigraphy at site 49-Uga-7 begins with a layer of recent superficial sod, below which is a thin band of Ash I. All of the materials recovered, assignable to the River phase, were found within the sod or immediately below the sod.

49-Uga-8

Components

Component: A, Ugashik River Phase

Coordinates

T30S, R40W, S.M., 57°34'10" N, 157°50" W

Description

Located approximately 1.5 km downstream from the outlet of Lower Ugashik Lake on the north bank of the river (Fig. 9), this site occurs on the top of a high grassy bluff, where the midden zone extends for some 200 m along the bluff edge. One surface depression was noted. Four 1 m² tests were placed in the deposit--two at the northern end and two at the southern end.

The stratigraphy at 49-Uga-8 is as follows. Below the surface is a shallow deposit of brown, sandy midden in which mammal bone and a few artifacts were recovered. At a depth of about 20 cm below the surface is a layer of volcanic pumice (Ash 1?), below which is an extensive layer of brown sandy soil and midden. Flakes, chipped stone tools, and a few sherds of gravel-tempered pottery were found in this lower deposit. Sterile (?) was reached at a depth of 75 cm to 100 cm below the surface.

Based upon the preservation of the mammal bone and the occurrence of gravel-tempered pottery, including one very thick sherd, all materials from site 49-Uga-8 have been assigned to the River phase.
Fig. 9. Ugashik Rapids, Site Locations.
UGASHIK RIVER

In the sites along the river tests were without exception brief, and a number of sites were for reasons of time and location not tested at all. For this reason, only those sites will be described here that are of particular importance to the definition of phases and sub-phases as it is set out in the chapter following. For descriptions of all sites recorded see Henn (1977: 65-85).

49-Uga-11

Components

Component A, Ugashik Lakes Phase, Tidewater Sub-phase

Coordinates

T30S, R49W, S.M., 57°34' N, 157°17'30" W

Description

On a grassy bluff overlooking the east bank of the Ugashik River (Fig. 10), this site consists of eight well-defined house depressions. The site is 50 m east-west and 75 m north-south. Tests were placed in seven depressions. Three tests were unproductive. Three others produced thermally-fractured rocks, but no artifacts. The seventh test, in Housepit #1, a 2 m depression, yielded materials to a depth of 25 cm. One sherd of Ugashik Narrows Plain pottery and some chipped stone debris were found. The single component here is assigned to the Tidewater sub-phase of the Lakes phase.

49-Uga-15

Components and Radiocarbon Dating

Component A (A.D. 415), Ugashik Lakes Phase, Tidewater Sub-phase
Component B, Ugashik River Phase

Coordinates

T30S, R50W, S.M., 57°33' N, 157°24' W

Description

This large site is situated on a high bluff overlooking the north bank of the Ugashik River, about 5.7 km north of Unashik Village (Fig. 10). Twenty-five surface house depressions were recorded here in an area 100 m by 200 m. Three of the depressions are very large, measuring some 10 m on one side and up to 14 m on another. The vegetation at the site is low grass, while alder brush encircles the site.

Excavation in Housepit #1, a 4 m depression, was carried to a depth of 100 cm. Only light brown, unproductive soil was encountered. A test of Housepit #2, the largest depression at the site, produced a rock hearth just below surface sod, below which was sterile (?). A test of Housepit #3 produced a rock hearth just below sod, below which was sterile (?). A similar test of Housepit #4, 3 m by 4 m, also produced nothing of note. Housepit #5, a circular depression 6 m across, produced an apparent occupation surface some 25 cm below surface sod with flakes, slate, and a net-sinker. At a depth of 70 cm, a further occupation was encountered with slate, flakes, and bifacial tools. Tests in Housepit #6 produced an apparent floor surface at 30 cm below sod. At 50 cm below sod another surface was recorded with red, compacted soil, a rock hearth, slate, bone, and bifacial tools. At 65 cm a third occupation was uncovered with charcoal, ochre, slate, and a slate point. Housepit #7, a 4 m depression, revealed a thin floor of charcoal and ochre at 50 cm below sod. Excavation of Housepit #8, a circular depression 5 m across, produced a single tool and flakes before sterile (?) was reached at a depth of 70 cm. Housepit #9 was a circular 5 m depression, overgrown with tundra and alder, with an east-facing entrance. A volcanic ash (Ash 1?) lies just below surface sod. Excavation revealed an apparent occupation surface at 20 cm below sod.
that produced net-sinkers, flakes of basalt, and bifacial tools. Tests in Housepit #10 produced a charcoal floor at 50 cm on which were basalt (?) flakes.

Two components have been defined for this site. The first, Component A of the Tidewater sub-phase of the Lakes phase, comes from the lower surface of Housepit #5 and from Housepits #6, #7, #8, #9 and #10. A radiocarbon date of A.D. 415 (see Table 2) comes from Housepit #9. The basis for assignment of the other samples to the Lakes phase is the character of the chipping debris and the absence of slate. The samples of River phase age, Component B, are characterized by slate. There is some hesitancy in separating these two components. More work needs to be done here to establish the time depth of slate-bearing deposits and the age and location of volcanic ashfalls.

49-Uga-23

Component

Component A, Ugashik River Phase

Coordinates

T30S, R50W, S.M. 57°32'30" N, 157°25'20" W

Description

This large site occurs on a grassy bluff on the east bank of the Ugashik River some 3.5 km north of Ugashik Village (Fig. 10). Fifty housepits were recorded here in an area 300 m by 30 m. Most of the depressions are poorly defined and lie close to the bluff edge.

A test of Housepit #1, a 3 m depression, uncovered a charcoal floor at a depth of 50 cm below surface sod. A test of Housepit #2, also 3 m across, was unproductive. A similar test in Housepit #4, 3 m by 4 m with an east-facing entrance, produced a hearth and floor just below sod. Gravel-tempered pottery sherds were found in association with this floor. A test in Housepit #5, a well-defined depression 3 m across, revealed a hearth just below sod with ground slate and gravel-tempered pottery sherd. In Housepit #6, a 4 m depression, a test yielded slate pieces just below sod.

On the basis of the occurrence here of gravel-tempered pottery and slate, this site has been assigned to the River phase.

49-Uga-27

Component

Component A, Ugashik River Phase
Component B, Historic Period

Coordinates

T31S, R50W, S.M., 57°30'20" N, 157°23'40" W

Description

This large site is situated just south of the Ugashik cannery at Ugashik Village on the east bank of the river (Fig. 10). Some 80 depressions occur here in a grassy area which extends for some 300 m along the river bank. Six depressions are what seems from surface indications to be multi-room dwellings, with four or five rooms apparently connected to form a complex housepit.

Tests in the northern end of the site, primarily in housepits, were as follows. A small test in Housepit #1, a depression with one large room and three adjoining rooms, produced bone and flakes immediately below surface sod. A similar test in Housepit #3, a single room dwelling 3 m by 5 m, produced some large mammal bones. Another test in Housepit #4, a 3 m by 4 m depression, yielded only bone. Mammal bone was also found in Housepit #5, a 2 m by 3 m depression. Housepit #6 is another multi-room depression, with one main room and three
adjoining rooms. The main room is 4 m across, while the adjoining rooms are 2 m by 3 m across. An entrance, facing the river, connects the smaller rooms with the largest room. Only historic materials were found in tests conducted here. A test in Housepit #7, another multi-room depression, yielded historic materials also, as well as stone. A test in Housepit #2, a multi-room depression with standing sod walls and an entrance, produced only mammal bone.

Tests conducted in the southern end of the site, both inside and outside housepits, are as follows. Test 1A, a non-housepit test, was unproductive. Test 2B, in an ill-defined depression in the southern end of the site, produced historic materials about 30 cm below sod. Test #3B also in the southern end of the site yielded nothing. Test #4B, in a depression, yielded historic materials. Test #5C, in a depression, produced historic materials. Test #6C, yielded bone immediately below the sod. Test #7C yielded potsherds and other prehistoric materials.

Two components are recognized here. Of these, Component B is historic, and occurs in Housepits #6 and #7, both multi-roomed dwellings, as well as in tests 2B, 4B, and 5C. The style of the historic materials, particularly the glass, suggests that this historic component dates to the early decades of the twentieth century. The prehistoric component, Component A, was found in five housepits, #1 through #5, and tests 6C and 7C at the southern end of the site. On the basis of the gravel-tempered pottery, mammal bone preservation, slate, and character of the dwellings, these materials have been assigned to the River phase.

UGASHIK BAY

49-Uga-29

Components

Component A, Ugashik River Phase

Coordinates

T30S, R51W, S.M., 57°33'20" N, 157°34'30" W

Description

This site is located about 0.9 km south of the Pilot Point cannery, in an area of old beach ridges (Fig. 10). Sixty depressions were recorded here in an area of high grass and alder. Test #1 was located in a depression about 5 m across. Some 20 cm below the surface, large sherds of gravel-tempered pottery were found directly below a horizon of volcanic pumice or beach sand. At a depth of 65 cm, more sherds, some slate, and a flake scraper were located. Both clusters of pottery appeared on charcoal stained surfaces. Sterile (?), composed of glacial gravels, sand, and clay, was reached at 90 cm.

The presence here of gravel-tempered pottery and slate has led to assignment of these materials within the River phase. The pottery here, thick and decorated, is unique in the drainage. For reasons stated in the following chapter, it appears that this component may date to just before the beginning of the following River phase, ca. A.D. 1000.

49-Uga-29

Components and Radiocarbon Dating

Component A (A.D. 895, A.D. 1020), Ugashik Lakes Phase, Tidewater Sub-phase
Component B, Ugashik River Phase

Coordinates

T30S, R51W, S.M., 57°33' N, 157°34'20" W
Description

This site lies some 1.5 km south of the Pilot Point cannery on Ugashik Bay (Fig. 10), and is separated from site 49-Uga-28 by an area of alder and willow some 200 m in length. The occupation at site 49-Uga-29 is evidenced by numerous house-like depressions or blowouts on old, grassy beach ridges.

A number of small tests at this site revealed two different assemblages. The first test at the site, Test #2, revealed both of these assemblages. The first assemblage (Component B), the later of the two, occurred just below a surface layer of sod and sand. From this surface came a pumice abrader and a slate point. The lower occupation (Component A) is separated from the upper by a thin, black organic horizon. Found within this lower deposit were polished stone chips, small net-sinkers, a sideblade, and a projectile point. Test #3 at the site was located about 1 km south of Test #1, at site 49-Uga-28. A charcoal layer with chips was encountered at a depth of some 25 cm below the surface in Test #3. At 45 cm below the surface of this test, a hearth constructed of vertical stone slabs was uncovered on beach sand. Found with the lower deposit were numerous flakes, small pebble net-weights, bifacial tools, and a coal labret. In Test #6, close to the willows that separate site 49-Uga-29 from site 49-Uga-28, a thick sherd of pottery was uncovered from a depth of 25 cm. Below this was a lower occupation with chipped stone debris, but no pottery. Other tests at the southern end of site 49-Uga-29 were unproductive.

The earlier component at this site, Component A, is one of the assemblages used to establish the Tidewater sub-phase of the Lakes phase. This component includes materials from the lower surfaces revealed in Test #2 and Test #3, as well as the test (#6) completed close to site 49-Uga-28. All of the assemblages lack pottery, but do include basalt debris, net-weights, and chipped stone tools characteristic of Lakes phase components at the Narrows. The earlier radiocarbon date was collected from the lower surface of Test #6, while the later date came from the lower surface in Test #3.

The River phase component at this site was defined on the basis of materials from the upper occupations in the tests. These materials are mostly of slate, and include as well a large, thick sherd of gravel-tempered pottery with stamped impressions on the exterior (Ugashik Bay Stamp Impressed).

<table>
<thead>
<tr>
<th>TABLE 4</th>
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<tr>
<td>PREHISTORIC COMPONENTS AND PHASE ASSIGNMENTS</td>
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<table>
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<tr>
<th><strong>Ugashik Narrows Phase</strong></th>
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<tr>
<td>Component A, 49-Uga-1</td>
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<td><strong>Ugashik Knoll Phase</strong></td>
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<td><strong>Ugashik Hilltop Phase</strong></td>
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<td>Component A, 49-Uga-15</td>
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CHAPTER III

THE UGASHIK SEQUENCE: PHASES AND COMPONENTS

The principal means for organizing the temporal and spatial diversity of the prehistoric Ugashik artifactual assemblages has been to employ the constructs "phase" and "component." The former has been described as a unit of culture history delimited in space and time, while the latter term refers to one or more related encampments or assemblages at a particular site, normally representing one specific phase (Willey and Phillips 1958:21-22). The concept of assemblage, as used in this and other chapters, refers to collections of artifacts and debitage which have some typological integrity and stratigraphic association, in other words "an associated set of contemporary artifact types" (Clarke 1968:205).

Components were defined on the basis of stratigraphic, typological, and chronometric evidence, although not necessarily all three in all cases. These components represent particular artifact assemblages excavated from either a constructed house feature, an occupation surface, or from what is thought to have once been midden fill. In some cases, such as the Lakes and River phases, a number of related assemblages from a single site were grouped to form a component. At a particular site, components are designated "Component A," "Component B," etc.

The various Ugashik phases were constructed from one or more components, and in all cases have some radiocarbon evidence indicating their age. The two earliest phases (the Ugashik Narrows and Knoll phases) are each composed of a single assemblage and component. However, it is assumed that other components and assemblages of these two phases also exist, since there is no reason to believe that the Narrows locality was the only settlement node in what were probably spatially dispersed systems. The chronometric evidence from these two early assemblages indicates that materials of the Ugashik Knoll phase most likely resulted from a short duration occupation, while the Ugashik Narrows phase is more likely composed of a set of transitional assemblages that remain to be sorted out. Actual evidence for intra-phase diversity is first apparent in the Ugashik Hilltop phase wherein there are two components at the Narrows. Again, however, these are not believed to be the only spatial and temporal entities that composed the phase during the millennium or more of its duration.

Only the Ugashik Lakes phase has sufficient data for establishing regional and temporal variants, here termed "sub-phases." The Inland sub-phase encompasses all Ugashik Lakes phase components at the Narrows, while the Tidewater sub-phase includes all Ugashik Lakes phase components along the lower course of the river and Ugashik Bay. The Inland sub-phase has been further subdivided into three temporal variants on the basis of radiocarbon evidence and typological discontinuities. The data available now suggest that the Inland sub-phase precedes the Tidewater sub-phase in the drainage; however, while it is hypothesized that the latter settlements were the result of a movement downriver from the Narrows locality, it is also expected that occupation at the Narrows continued during the time of the Tidewater sub-phase, although this is not as yet substantiated. When such evidence is forthcoming from the Narrows, then the relationship between the two localities might more accurately be represented by the concept of "facies" (Beardsley 1954) rather than sub-phase.

The latest of the Ugashik phases (the River phase) is composed of a considerable number of components located at the Ugashik Narrows, the Rapids, along the lower course of the river and on Ugashik Bay. However, for various reasons (e.g., small samples) it has not been possible to subdivide the phase into spatial or temporal variants as has been done for the previous phase.

The sequence as developed consists of five phases separated from each other by actual or apparent hiatuses. The intermittent nature of this record, of course, has contributed to the unique configuration of each phase. There is reason to believe, based upon comparisons with adjacent areas, that most of the intervals separating phases are artificial and the result of inadequate sampling. It is expected that further sampling will reveal assemblages transitional among most, if not all, of the Ugashik phases.

The Ugashik sequence and chronology as it is now understood was depicted on Table 2 in the previous chapter. A list of components assigned to each phase was also given in Table 3. For a complete description of artifact types, as well as inventories, see Appendices I-V. The distribution of artifact forms throughout the drainage is given in the outlines to
Appendices I, II, and III for the Ugashik Narrows, Knoll, and Hilltop phases, respectively. The frequency distributions for the Ugashik Lakes phase types are presented on Table 24 (Appendix IV), while those for the Ugashik River phase are given on Table 25 (Appendix V).

**UGASHIK NARROWS PHASE**

The earliest phase in the Ugashik sequence has been named after the location where it was first discovered during the 1974 season. It is represented by a single component from one site (Component A, 49-Uga-1) at the Narrows. The first discoveries which suggested the presence of this early assemblage were two finds of wedge-shaped microblade cores recovered in later Ugashik Lakes phase deposits. The stratum from which the overwhelming majority of Ugashik Narrows phase artifacts were excavated (Stratum IIIb) is located at the base and west end of the stratigraphic trench. This deposit is composed of a loess-like soil some 30 cm thick that lies directly on glacial till (gravels).

During the 1974 season, excavation revealed that those materials were distributed in the basal levels of three units of the trench (N98E54, N98E52, N98E52). No distinct band of occupation was observed at this time, although small concentrations of artifacts, primarily microcores, were noted. Sufficient charcoal was obtained from Stratum IIIb during 1974 to provide one radiocarbon date, which was determined as 7675 B.P. or 5725 B.C. (Table 2). The charcoal for this sample came from a number of levels in Stratum IIIb of units N98E52 and N98E52.

During the 1975 season, one of the primary goals was to expand the Ugashik Narrows phase collection and to obtain more charcoal for dating. This was accomplished by opening an area 6 m by 2 m directly north of the 1974 discovery, as well as by extending the original trench some 4 m to the west. This area included five new excavation units. Ugashik Narrows phase materials were recovered from throughout Stratum IIIb in this excavation, although artifacts and debitage diminished considerably in the westernmost unit. More concentrations of artifacts were noted during the 1975 excavations, particularly concentrations of microblades, microcores, and blade cores. Additionally, a thin, dark band was exposed directly above glacial till in one of the units (N100E52) that is thought to be part of the earliest occupation surface.

Charcoal from this band produced a radiocarbon date of 8995 B.P. or 7045 B.C. (Table 2). This is considered to be a more reliable date for the beginning of the component than the date discussed above, although the latter date does provide some indication of the terminal age for the phase at site 49-Uga-1. A further sample of scattered charcoal was collected from a depth of some 50 cm below Ash I in Stratum IIb, some 10 cm above SI-2492. It was not apparently associated with a distinct organic surface, but nevertheless came from a deposit producing typical Narrows phase artifacts and debitage. It has been determined as 8425 B.P. or 6475 B.C. (Table 2).

The artifact varieties of this phase are listed in Table 5, with those that are found only in the Ugashik Narrows phase indicated as "diagnostic" and those that also occur in other phases listed as "non-diagnostic."

The principal features which distinguish this phase are the microblade, burin, and blade technologies. Some 705 microblades, both complete and fragmentary, were collected from the Stratum IIb excavations. Microblades (Plate III, c-f) are readily identified from other forms of flakes by their elongated form, parallel lateral edges, dorsal ridges, uniformly narrow width (4-6 mm) and by their proximal ends which commonly have evidence of platform preparation. These microblades were struck from two, and possibly three, types of microcores. The most prevalent core is a small, wedge-shaped variety (Plate I, a-e) that has sometimes been termed the "Campus core" (Anderson 1970a). A total of 16 of these microcores were recovered. A very few of the microblades were also produced from small, haphazardly fashioned microcores (core Type #2) and from what are now classified as dinedenal burins (Plate III, 1, m).

The second feature that characterizes this assemblage is the burin technology. The most common form is the transverse burin (Plate III, n-o), while another form, the dinedenal burin, occurs only rarely. The transverse burin was made on a thick flake, either chert or chalcedony, by striking a single transverse blow perpendicular to the long axis of the flake, thus truncating either the distal or proximal (bulbar) end of the flake.
TABLE 5
UGASHIK NARROWS PHASE ARTIFACT FORMS

<table>
<thead>
<tr>
<th>Diagnostica</th>
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<tbody>
<tr>
<td>Wedge-shaped microblade core, Type 1</td>
</tr>
<tr>
<td>Small, haphazard microblade core, Type 2</td>
</tr>
<tr>
<td>Large, wedge-shaped blade core, Type 3</td>
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<tr>
<td>Face-faceted, bifacial blade core, Type 6</td>
</tr>
<tr>
<td>Edge-faceted blade core, Type 7</td>
</tr>
<tr>
<td>Core biface</td>
</tr>
<tr>
<td>Projectile point, Type 1</td>
</tr>
<tr>
<td>Transverse burin, Type 1</td>
</tr>
<tr>
<td>Dihedral burin, Type 2</td>
</tr>
<tr>
<td>Large flake unifaces</td>
</tr>
<tr>
<td>Endscraper, Type 1</td>
</tr>
<tr>
<td>Bifaced knife, Type 1</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Non-diagnostica</th>
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<tbody>
<tr>
<td>Conical, Polyhedral blade core, Type 4</td>
</tr>
<tr>
<td>Face-faceted blade core, Type 5</td>
</tr>
<tr>
<td>Pebble flake core, Type 6</td>
</tr>
<tr>
<td>Cobble flake core, Type 9</td>
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<tr>
<td>Biface</td>
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<tr>
<td>Edge-modified flake</td>
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<tr>
<td>Edge-ground Pebble</td>
</tr>
</tbody>
</table>

An additional attribute of this phase, and one which also occurs in the following Ugashik Knoll phase in modified form, is the blade industry. These distinctive flakes were also removed from prepared cores, but are considerably larger than microblades, having a mean that approaches 16 mm (Plate III, a,b). Some five forms of blade cores have been identified. Two of these core varieties, face-faceted and polyhedral (Plate II, a-c), continue into the following phase. The blades are thought to have been used as blanks which were in turn fashioned into various forms of finished tools, such as endscrapers. The microblades, on the other hand, are presumed to have been produced to function as insets in grooved projectile shafts of wood or bone which have not survived. This practice of microblade inserting has been proposed for a number of other microblade assemblages of the same age elsewhere in Alaska (Anderson 1970a; Larsen 1968). The microblade, blade, and burin technologies are discussed further in Chapter IV.

Other less common traits in this assemblage are the endscrapers made on blades (Plate III, h), a thin bifacial knife of basalt, a single, large projectile point of chaledony with basal thinning (Plate III, i) and unifaces fashioned from large flakes of chert. These are all diagnostic of the Narrows phase. Forms not diagnostic, which are also found in one or more later phases, are various forms of blade and flake cores, bifaces and other implements (Table 5).

As noted above, there are three radiocarbon dates for the Narrows phase (Table 2). The earliest is 7045 B.C. and will be accepted as a reliable date for the beginning of the phase at the Narrows. The dating of peat lying on glacial till in a nearby stratigraphic column (see Chapter I) indicates that the Ugashik Narrows area may not have been habitable much earlier than 9,000 years ago. The second date, 6475 B.C., provides an age estimate for the intermediate level of Stratum IIIb. The last date, 5725 B.C., may well be too young, since the dated charcoal may be partly from the Hilltop phase deposit of Stratum IIIa; nevertheless, until this can be more accurately established, the date will be used as a tentative estimate of the end of the Ugashik Narrows phase at site 49-Uga-1. Therefore, it is suggested that the beginning of the phase is approximately 7000 B.C. and the apparent end is about 5500 B.C. As discussed in Chapter V, such an age for an assemblage of this composition is quite acceptable in light of dated materials of similar kind elsewhere in Alaska.
Discussion

During the one and a half millennia of the supposed span of the Ugashik Narrows phase, there are few data to indicate any significant change in the assemblage. Preliminary analyses of vertical distributions of artifacts and debitage indicate that the composition of the assemblage remained relatively unchanged. Microblades, blades and flakes are distributed throughout Stratum IIIB, and it is thought that the technologies represented by this debris existed in conjunction with one another. There is no evidence at the present state of research that would indicate a replacement of one technology by another. It is concluded that all three of these technologies performed relatively separate functions that continued throughout the time of occupation, although there may have been overlap in function between blades and a special form of flake, the ridged flake (see Chapter IV). It is inferred that microblades were produced primarily for use as blanks, that blades were produced for use as blanks for various finished tools, while flakes were produced for other tools (e.g., blanks for Type #1 cores, burins).

There is also no evidence at present to indicate that other traits of this phase, such as burins, core bifaces, or flake unifaces, underwent any significant modification. The functions of such implements as these just noted can only be speculated upon. The large core bifaces and flake unifaces are commonly characterized by numerous small flake scars on their edges, perhaps indicating a form of use such as in butchering (cf. Anderson 1970a), although other uses could be inferred (e.g., woodworking or bone working). The burins, specifically the transverse burins, usually have retouch along one edge adjacent to the burin facet, as well as flake scars along one edge of the burin facet itself (Plate III, n-g). The scars on the facet edge are most likely the result of use as a scraper (i.e., like an endscraper), while the retouch along the adjacent edge may have functioned in preparation for the burin blow itself (cf. Algren 1970; Anderson 1970a; Cook 1968; Mauger 1969).

While the present analysis indicates little evidence for intra-phase change, further research may well alter this tentative conclusion. It was noted earlier in this chapter that an entity with a long duration such as the Narrows phase ought to exhibit both spatial and temporal variation. While it may be true that the Ugashik Narrows phase partakes of a relatively stable technological tradition, it is unlikely that no change at all took place. As analyses continue, it is likely that changes in the relative frequencies of type complexes (e.g., burins and microcores) and changes in the relative frequencies within type complexes (e.g., cores) will be found to exist.

Until pollen studies of stratigraphic cores and columns from the Ugashik area are completed, little specifically can be said regarding the local environment of 8,000 to 9,000 years ago. There is some reason to believe, however, that the local environment may have been somewhat different than the present day (Jane Gray, personal communication, based on preliminary examination of pollen samples), reflecting no doubt the deglaciation at the Narrows sometime before 9,000 years ago.

The lack of faunal remains from Stratum IIIB at 49-Uga-1 makes speculative any statement concerning the local fauna and resources. There are some data from other early sites of this tradition elsewhere in Alaska which provide an idea of the fauna that might have existed in a recently deglaciated landscape. At Trail Creek Caves (Fig. 16), a collection of faunal remains has been identified that includes caribou, moose, wolf, fox, hare, and various small mammals and birds. The materials come from the microblade bearing Layer II in Cave 2 dated at 7120 B.C. There is also evidence for horse at 13,800 B.C. and bison at 11,120 B.C. (Larson 1968). Caribou has also been identified at Onion Portage in northwest Alaska (Fig. 16) dating to about 8000 B.C. (Anderson 1970a). While it is only conjecture that these fauna were also present in the Ugashik area immediately after deglaciation, they do provide at least a hint of what might have been hunted at the Narrows between 8,000 and 9,000 years ago.

UGASHIK KNOLL PHASE

During the summer of 1974, a brief survey of blowouts on a high ridge overlooking the Ugashik Narrows produced a single, large side-notched point, as well as considerable chipping debris which suggested the presence of an assemblage dating earlier than 2000 B.C. Further tests at this site, 49-Uga-6 (Figs. 2, 7), during that summer resulted in more such points being found in stratigraphic position below a deposit yielding artifacts apparently of Lakes
phase affiliation. Unfortunately, no definite occupation surface was encountered at this
time, nor was sufficient charcoal recovered for radiocarbon dating.

Work here in 1975 considerably expanded the sample of the previous year and provided
the necessary charcoal for dating. It was also possible during the 1975 excavations to trace
a buried organic or habitation surface throughout most of the excavation area. The surface
lies in a stratigraphic position below a band of tan-colored volcanic ash that separate this
early assemblage (Component A) from a later Lakes phase (?) assemblage which itself lies
below a band of volcanic ash (Ash I).

The artifact forms of the Ugashik Knoll phase are listed on Table 6.

| Table 6 |

| **UGASHIK KNOLL PHASE ARTIFACT FORMS** |

**Diagnostic**
- Split pebble microblade core, Type #10
- Large, side-notched points of basalt, Type #2
- Large, side-notched points of chert, Type #3
- Stemmed points, Type #4
- Graver
- Slate darthead, Type #1
- Slate darthead, Type #2
- Basalt flakeknife

**Non-diagnostic**
- Conical, polyhedral blade core, Type #4
- Face-faceted blade core, Type #5
- Cobble flake core, Type #9
- Proto-biface
- Biface
- Bifaced knife, Type #2
- Edge-modified flake
- Endscraper, Type #2
- Pebble pounder

There is evidence in this assemblage to indicate that microblades were produced in some
numbers, although not in the quantities of the previous phase. Not only are there fewer
absolute numbers of microblades, but there are only a few microblade cores. These microcores
(Type #10) appear to have been rather haphazardly made from chert pebbles by a procedure which
involved splitting the pebble in half and casually retouching one end for a platform (Plate
IV, a,b). Additionally, there are no core tablets or flake element rejuvenation flakes that
would indicate refurbishing of the core for further use. Nor were the cores rotated.

The two varieties of blade cores present in the Ugashik Knoll phase assemblage (Plate
IV, f,g) are also present in the Ugashik Narrows phase collection, although the Ugashik Knoll
phase specimens are smaller in overall size (see Chapter IV). It is inferred that blades from
this phase, as well as the microblades, functioned in a manner similar to that proposed for
the Narrows phase.

The specimens which particularly distinguish this assemblage are the projectile points.
Most frequent are the large side-notched varieties of chert and basalt (Plate V, a-i). The
basalt points are characterized by ground notches. Some large stemmed points are also present
(Plate V, j), but these lack the distinctive notches and are not ground. Other diagnostic
forms are the ground and polished slate dartheads, three in number, which were apparently
sawn into initial shape and then ground and polished into final form (Plate V, k). Less
common diagnostic implements are the flake gravers and a large, edge-retouched knife of
basalt (Plate V, m).
Non-diagnostic forms, besides the faceted and polyhedral blade cores noted previously, include chert bifaces, edge-modified flakes and a bifaced knife (Table 6). With the exception of the bifaced knife, all of these implements occurred in the previous phase. Items new to the Ugashik Knoll phase, and which occur in later phases, are the flake endscrapers, bifaced knives and pebble pounders.

It was possible during the 1975 field season at site 49-Uga-6 to collect a number of charcoal samples from the side-notched point horizon. The first sample submitted produced a date of 5055 B.P. or 3105 B.C. (Table 2). The second sample dated at 4910 B.P. or 2860 B.C., while the third was 4840 B.P. or 2990 B.C. The first date is probably the most accurate for the occupation of surface itself as it is composed of charcoal collected entirely within the thin horizon. The other two dated samples had charcoal from slightly above and below this surface.

Discussion

The radiocarbon evidence of this phase, as well as the single site location on a high ridge east of the Narrows, confirms the evidence from the assemblage itself that the occupation was probably of limited duration. The three radiocarbon dates are consistent with one another and it is difficult to imagine, at least on this evidence, that the site was occupied for more than a few centuries, and then only intermittently. A duration between 2900 B.C. and 3100 B.C. is proposed, although one might alternatively suggest that the narrow range of the dates indicates an even shorter duration.

The artifacts and debitage of this assemblage are believed to be the result of a rather limited range of activities. The numerous cores, the plentiful debitage (microblades, blades, flakes), bifaces, and proto-bifaces are interpreted as evidence for manufacturing activities. Some of these forms (i.e., cores, bifaces, flakes) were also abundant in the numerous blowouts which surround the midden area itself and indicate that manufacturing was also carried out in these areas. In fact, it appears that the blowouts were used as quarries for raw materials, such as chert pebbles and cobbles, which had been deposited as a result of glacial activity and then later exposed by wind action. The collection from these blowouts does not have any diagnostic forms of the later Lakes phase assemblage found nearby, but does include some diagnostic Knoll phase items such as side-notched points in addition to the materials noted above. For this reason, all blowout materials are tentatively assigned to the Ugashik Knoll phase.

The presence of slate implements in assemblages of this age has been documented at various sites in Alaska (Anderson 1966b; G.H. Clark 1974, 1977, with references). The Ugashik Knoll phase includes three fragmentary ground slate dartheads (Plate V, k) and some slate debris, all of which occurred in apparent association with the chipped stone side-notched points and other chipped stone debitage of Component A at site 49-Uga-6. While there are some questions regarding the relationships of ground slate and chipped stone assemblages of this general age on the Alaska Peninsula (Dumond and others 1976), the association of these two technologies at the Narrows site 49-Uga-6 cannot now be questioned.

The projectile points in the Ugashik Knoll phase collection are taken as evidence for hunting, presumably for large mammals such as caribou, although no actual faunal remains were recovered at this site. The location of the site on a high ridge overlooking the Narrows provides an excellent and unobstructed view of the game crossing (see Chapter I). The ridge itself is covered with game trails, and a variety of wildlife (e.g., caribou, brown bear, fox, moose, ptarmigan) were observed in this locale either feeding or travelling along the high ground that the ridge provides.

While a number of varieties of side-notched and stemmed points have been described for this assemblage (see Appendix II), there is no conclusive evidence from the vertical distributions and radiocarbon dating to indicate a sequential development of projectile point styles as has been documented for the related Northern Archaic side-notched point complexes in northwest Alaska (cf. Anderson 1966b).

There is also no definite evidence that the relative frequencies of microblades and blades were undergoing any significant change during the time the site was apparently occupied. It was noted previously that microblades are considerably reduced in numbers from the time of the Ugashik Narrows phase. Although the time represented by the Ugashik Knoll phase is
significantly less than the previous phase, this change in absolute numbers of microblades from one phase to the following is interpreted to mean that there was a significant change in the importance of microblade technology, and that the introduction or development of various forms of notched and stemmed points was in some manner responsible for the observed diminution in numbers. If the microblade sections were originally used as projectile points, then the introduction in large numbers of notched and stemmed points for the first time may have hastened the demise of the former implementers. The presence of small numbers of microblades in association with numerous points might then indicate a time when projectile point shafts were characterized by both forms of insets. An assemblage that lacks microblades entirely then represent the final stage in this process of replacement during the time of the Northern Archaic tradition (cf. Anderson 1986b).

**UGASHIK HILLTOP PHASE**

Materials dating to the second millennium B.C. at the Narrows include two assemblages with some Denigh flint complex and Arctic Small Tool tradition affinity (see Chapter V). The first assemblage to be described is a large collection of primarily chipped stone items from Component A at 49-Uga-2 on the west bank of the Narrows. The first evidence of this assemblage came from a small test conducted there in 1974. On the basis of this small, undated sample and the importance of such an assemblage to the working hypotheses of the research (see Introduction), an extensive program of excavations was carried out in 1975 at the site.

The 1975 work was sufficient to reveal the presence of a roughly square house, now represented only by a charcoal- and ochre-stained floor. Excavations also revealed that the original house had been dug into a deposit of glacial till (Fig. 11) in a semi-subterranean fashion. Although only about 70% of the area of the floor was uncovered, it is possible to suggest that the original dimensions were on the order of some 5 m from wall to wall. The walls were generally straight as revealed by cuts into the glacial till, and the corners were rounded giving the appearance of a square house aligned north-south (Figs. 4a, e, g). No indications of an entrance, sunken or otherwise, were present. Debitage on the floor was of two kinds—minute flakes of bright-colored chaledony and larger flakes of chert (Fig. 11). The former occurred as clusters or light scatter, while the latter occurred as light scatter everywhere on the floor. In the center of the floor a large concentration of thermally-fractured rocks was uncovered that is no doubt the central fireplace or hearth.

While exposing this floor it was possible to collect a number of radiocarbon samples of charcoal from the floor itself and from near the hearth. The first sample submitted produced an unquestionably erroneous date of 6995 ± 355 radiocarbon years B.P. (SI-2493). It is now suspected that a part of one or more earlier soil samples containing unsorted charcoal from other Ugashik sites was inadvertently mixed with sample SI-2493 in the laboratory. Because of this apparent error, two further samples were submitted, one from the floor near the hearth and another from slightly above the floor. The first was determined as 3080 B.P. or 1930 B.C. (Table 2), while the second was dated as 3615 B.P. or 1665 B.C. The earlier date of the two is probably the more accurate for the floor itself, while both dates indicate that the first date submitted was truly in error.

The various artifact forms from this house feature, along with those from a small assemblage from site 49-Uga-1, are listed on Table 7. Of particular interest at 49-Uga-2 are the flakeknives. These are small, steeply retouched tools made on ridged flakes of chaledony (Plate VI, e-k). This implement form was first described by Giddings (1964) at the Denigh flint site at Iyatayet. At Brooks River on the Alaska Peninsula, similar implements are termed "sidescrapers" (cf. Dumond 1971). The Ugashik flakeknives or sidescrapers appear to have been used in a "right hand" manner, as the working edge is always on the right side of the tool when the implement is held with the dorsal surface facing the viewer. A number of these implements resemble a variant form of flakeknife at Iyatayet, the "keeled scraper" (Giddings 1964:226).

Also appearing for the first time in the Ugashik sequence are the large sideblades (Plate VI, c, d). These appear to be too large to have functioned as insets for projectile shafts as has been inferred for a smaller variety of Denigh flint complex sideblades at Iyatayet (cf. Giddings 1964, 1967). The ones from Ugashik are more likely to have been used as insets for large knives, similar to the "ulii" of recent times in the Arctic.
Fig. 11. 49-Uga-2, Ugashik Hilltop Phase House Excavations.
Also new are the cortex flake knives of chert, which have cortex remaining on their dorsal surfaces (Plate VI, b). Other implements appearing for the first time in this phase are the overall flaked, unifacial endscrapers (Plate VI, a), siltstone whetstones, and a single burin made on a previously snapped chalcedony flake. All of these artifact forms occur in the 49-Uga-2 assemblage of the Ugashik Hilltop phase.

**TABLE 7**

**UGASHIK HILLTOP PHASE ARTIFACT FORMS**

<table>
<thead>
<tr>
<th>Diagnostico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ellipsoidal cores, Type #11</td>
</tr>
<tr>
<td>Burin, Type #3</td>
</tr>
<tr>
<td>Cortex flake knife</td>
</tr>
<tr>
<td>Sideblade, Type #1</td>
</tr>
<tr>
<td>Flakeknife, Type #1</td>
</tr>
<tr>
<td>Flakeknife, Type #2</td>
</tr>
<tr>
<td>Projectile point, Type #7</td>
</tr>
<tr>
<td>Projectile point, Type #10</td>
</tr>
<tr>
<td>Projectile point, Type #11</td>
</tr>
<tr>
<td>Endscraper, Type #2</td>
</tr>
<tr>
<td>Endscraper, Type #3</td>
</tr>
<tr>
<td>Siltstone whetstone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Diagnostico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pebble flake core, Type #8</td>
</tr>
<tr>
<td>Cobble flake core, Type #9</td>
</tr>
<tr>
<td>Drill</td>
</tr>
<tr>
<td>Proto-biface</td>
</tr>
<tr>
<td>Biface</td>
</tr>
<tr>
<td>Unclassified lanceolate, chert bifaces</td>
</tr>
<tr>
<td>Adze bit chips</td>
</tr>
<tr>
<td>Projectile point, Type #5</td>
</tr>
<tr>
<td>Projectile point, Type #6</td>
</tr>
<tr>
<td>Projectile point, Type #8</td>
</tr>
<tr>
<td>Projectile point, Type #9</td>
</tr>
<tr>
<td>Projectile point, Type #12</td>
</tr>
<tr>
<td>Edge-modified flakes</td>
</tr>
</tbody>
</table>

The various points from the 49-Uga-2 component include a wide range of stemmed and unstemmed varieties that are small and finely flaked. Stemmed points are the most common. None of these point varieties were present in the previous phase; however, some are found in the following Lakes phase. Stemmed varieties include those with contracting stems less than one-half the total length of the point (Plate VII, g,h), as well as specimens with contracting stems about one-half the length of the point (Plate VII, q,r). Both large and small lanceolate points are also present (Plate VII, a,b,k-o). One unique specimen in this collection is a large point with shallow side-notches on the stem and a base which is concave (Plate VII, p). It could be a hafted knife blade rather than a point, but this is conjecture.

The technology of flake production is represented primarily by small, ellipsoidal cores of chalcedony (Plate Fl, l-q). Cores of this form are smaller than either the pebble or cobble flake cores described for the previous phases. The flake scars on the ellipsoidal cores are smaller than the size of the flakes which must have been removed for the production of finished tools such as points and flakeknives, suggesting that these cores are mostly expended. No other core types made of chalcedony, one of the preferred materials for points and flakeknives, were recovered. A very few chert pebble and cobble flake cores (Types #8 and #9) were also found, but these are not considered to be the diagnostic variety for the phase as they occur in earlier and later phases as well.
Non-diagnostic implements (Table 7) are the protobifaces, bifaces, edge-modified flakes, and the pebble and cobble flake cores just mentioned, as well as some point styles that continue into the following phase. Also recovered were a number of small flakes that have polish on their dorsal surfaces. These are presumably waste flakes from re-sharpening or breakage during use of some form of polished stone tool, such as an adze blade, although no complete specimens of this type implement were found.

While the 49-Uga-2 assemblage is extensive, the collection from 49-Uga-1 is composed of only six artifacts. These specimens constitute Component 8 at this site and came from the top of the loess-like soil of Stratum III. The level of this stratum assigned to the Ugashik Hilltop phase is Stratum Illa. A single radiocarbon date from this band has been determined as 1510 B.C. (Table 2). The 49-Uga-1 assemblage was not recognized as a distinct stratigraphic level during excavation, but was revealed during later analyses. It seems likely that people responsible for this assemblage camped on top of the earlier Ugashik Narrows phase deposit originally termed Stratum III and now termed Stratum Illb. In fact, the radiocarbon sample just noted was originally submitted to date the termination of the Ugashik Narrows phase. It is also conceivable that the yet to be verified band of volcanic ash (Ash Ill) that was noted as separating the Ugashik Lakes and Narrows phase deposits is instead an organic surface associated with the Ugashik Hilltop phase component.

The specimens of this phase from site 49-Uga-1 are two multi-blow burins fashioned on endblades of black chaledony (Plate VII, s), a flakeknife of similar material which is bifacially flaked (Plate VII, g), a multi-colored chaledony ellipsoidal core (Type #1), an overall flaked endscraper of chaledony that is unifacially flaked (Plate VII, u), and a unifacial flakeknife of chaledony (Plate VII, t). The flakeknives of this assemblage differ from the flakeknives at site 49-Uga-2 in the following ways. One of the 49-Uga-1 specimens is bifacially flaked over most of both faces and has a somewhat different working edge than the 49-Uga-2 specimens. The other flakeknife from site 49-Uga-1 has a concave, unifacial edge rather than the convex edge that is characteristic of 49-Uga-2 flakeknives.

There are also a number of point fragments from site 49-Uga-1 (Housepit #7) and 49-Uga-6 (Lakes phase component) that are finely flaked, small, made of chaledony, and which resemble points found in ASI t assemblages elsewhere in Alaska, but which are not present in the recognized Hilltop phase assemblages at the Narrows. These appear to be either aberrant Ugashik Lakes phase forms or forms which might represent unidentified Ugashik Hilltop phase components. They are included in the Ugashik Lakes phase inventory in Appendix III under the category "unique" points.

Discussion

While little can be said about the nature of the 49-Uga-1 Ugashik Hilltop phase occupation, it is evident that the component from site 49-Uga-2 represents an encampment with one constructed house and abundant debris. It is also apparent from the wide variety of tools and debitage found on the house floor that a number of activities took place within the confines of the house. For instance, there are three recognizable concentrations of minute chaledony flakes on the floor (Fig. 11) which might represent some form of manufacturing task areas. Near to the westernmost cluster, three ellipsoidal cores of chaledony were also located. The chaledony flakeknives (Type #1) and the cortex flake knives were both present on the floor, although not in any definite cluster or association. From these knives some form of maintenance activity might be inferred. The numerous points, both complete and broken, suggest both manufacturing and hunting activities. However, there were few faunal remains preserved in the house, and one can only speculate that such game animals as caribou were the target.

While the chipped stone technology of this assemblage is discussed in the following chapter, a few comments are appropriate here. First, most of the point styles of this phase are not like typical Denbigh Flint complex varieties which are characteristically unstemmed and lanceolate (cf. Giddings 1964). The Ugashik Hilltop phase points appear to have more in common with those from later Norton-like assemblages such as the Ugashik Lakes phase or the Brooks River period in the Naknek drainage (cf. Dumond 1971). In fact, the character of these Hilltop phase points first suggested that an ASI t-Norton transitional assemblage had been found. This was the interpretation before radiocarbon dating. The evidence from dating indicates that while the Hilltop phase assemblage at site 49-Uga-2 does have a
transitional cast. In a formal sense, it is not transitional or intermediate in age (see Chapter V). The configuration of this phase, specifically the 49-Uga-2 assemblage, might have resulted also from some form of mixing between the Lakes phase component at site 49-Uga-2 and the Hilltop component from the house floor. However, it has been concluded that mixing was very unlikely because none of the typical Hilltop phase artifacts were found in the upper Lakes phase levels and none of certain diagnostic Lakes phase artifacts, such as pottery, were found in the lower levels of the Hilltop phase house floor. There were also a number of intervening levels between the two components that were virtually devoid of artifacts.

The duration of the Hilltop phase at the Narrows is suggested by the radiocarbon dating of the 49-Uga-2 and 49-Uga-1 components. The two radiocarbon dates from site 49-Uga-2 indicate that the phase began at the Narrows about 1900 B.C., and the date from site 49-Uga-1 indicates that the phase lasted until at least 1500 B.C., a duration of some 400 years. The importance of these two Hilltop phase assemblages to the problems discussed in the Introduction will be taken up in later chapters.

**UGASHIK LAKES PHASE**

Following an apparent hiatus of some 1,300 years, evidence for occupation of the Narrows locality is again present in some quantity. Unlike the two earliest phases which are represented by one component each, and unlike the previous Hilltop phase that is known in two components, the Lakes phase consists of some ten components occurring at the Narrows, along the lower course of the river, and at Ugashik Bay.

The first data suggesting the presence of Norton-like assemblages came to light during the summer of 1974 in excavations at site 49-Uga-1. These materials were recovered from the stratigraphic trench, from a number of small tests, and from a partially excavated house. Collectively, these samples include Ugashik Narrows Stamp Impressed and Plain pottery (organic temper), chipped stone sideblades, adzes, larsps, stone net-weights, bifaced knives of various sorts, and chipped stone points, mostly stemmed, which, taken together, have strong resemblances with Norton tradition assemblages from the base of the Alaska Peninsula and elsewhere. Radiocarbon dating of this 1974 collection supported the notion of Norton related encampments at the Narrows about 100 B.C., and it was on this basis that the Lakes phase was first established. In 1974, Lakes phase materials were also recovered from the following sites at the Narrows: 49-Uga-2, 29-Uga-3, 49-Uga-4, 49-Uga-5 and 49-Uga-6 (Fig. 2). In these sites it was possible to segregate Lakes phase assemblages from later materials (River phase) with the aid of a volcanic ash horizon (Ash I) that capped all in situ Lakes phase deposits.

When work resumed at the Narrows in 1975, further samples of this phase were obtained from an enlargement of the trench at site 49-Uga-1, as well as from a virtually complete excavation of a house of Lakes phase age. Work in the trench confirmed that a Lakes phase deposit, now labelled Stratum II, occurred below Ash I. No obvious structures or other features relating to this phase were found in the trench excavations of that year; rather, it appeared that Lakes phase deposits in the trench were formed as refuse and, perhaps, through redepot in haphazard diggings by the aboriginal occupants of this and later times. Work elsewhere at the Narrows in 1975 uncovered Lakes phase assemblages at site 49-Uga-2 and 49-Uga-6 where previous work had indicated the presence of such materials. Testing along the lower course of the river and at Ugashik Bay in 1975 also produced assemblages which are now part of the Lakes phase.

While it was not possible through the research of 1974 to establish any temporal or spatial subdivisions of the Lakes phase, this did become possible in 1975. The phase as it is now defined has two sub-phases, designated the Inland sub-phase and the Tidewater sub-phase. The former encompasses all Lakes phase components at the Narrows, while the latter includes components at two sites—49-Uga-11 and 49-Uga-15—along the lower course of the river, as well as one component at site 49-Uga-29 on Ugashik Bay. The Inland sub-phase has, in turn, been subdivided, on the basis of radiocarbon dating and typological discontinuities, into three sequential entities—Early, Intermediate, and Late. The dating and characteristics of all four Ugashik Lakes phase variants will be described in the following pages, beginning with the earliest.
Early Inland Sub-phase

Assemblages which compose this entity come from two house excavations at site 49-Uga-1, which together make up Component C at that site. The earlier assemblage was recovered from Housepit #1 excavated in 1974. Although only the central area of this house feature was uncovered, the work did reveal a substantial charcoal-stained floor with a large hearth of thermally-fractured rocks in the approximate center of the depression. This feature has been radiocarbon dated as 160 B.C. (Table 2). The artifact sample from the floor of the house includes Ugashik Harrows Stamp Impressed pottery sherds, sideblades, adze blades with polished bits, various forms of flake cores, chipped stone points, bifaces, whetstones, cobble net-weights, and a unique form of side-notched, bifaced basalt knife (Plates VIII, IX). While the entire floor of this house was not excavated, the dimensions of the surface depression (Table 3) suggest a floor diameter of some 6 m.

The other assemblage of the Early Inland sub-phase comes from excavation of Housepit #7 in 1975. It was originally recognized as a rather large surface depression, circular in outline and shallow. In these respects it resembled Housepit #1. Below the sod in this depression was an undisturbed band of Ash I followed by an extensive deposit that apparently formed as the result of roof fall and erosion. Scattered throughout the fill were various artifacts and debitage of lakes phase affiliation. At an approximate depth of 80 cm below Ash I, a charcoal covered floor was located with a considerable amount of Ugashik Harrows Stamp Impressed pottery (Fiber-temper) and large net-weights. Most of these weights occurred as pairs with the end-notches aligned in such a way as to suggest that the net may have been composed of paired weights distributed at some interval. On the floor surface, in the approximate center of the depression, were two features which are interpreted as an emptied hearth basin and the original hearth contents—thermally-fractured rocks—which had been emptied from the basin after use and never replaced. The rock pile lay some 1 m to the west of the basin. The actual extent of this floor, termed the "upper floor," was never convincingly determined.

The upper floor was constructed over an earlier, lower, Lakes phase floor which was the initial occupation of the house. The lower floor, about 90 cm below Ash I, was dug into a deposit of glacial sand and gravel, as well as through Ash II (Fig. 12). This floor is much like the first, with a charcoal stained surface and a central hearth; however, the lower hearth still had its contents of thermally-fractured rocks intact. Charcoal collected near this lower hearth has produced a radiocarbon date of 1885 B.P. or A.D. 65 (Table 2). The lower surface also contained an abundance of artifacts such as Ugashik Harrows Stamp Impressed potsherds, large cobble net-weights, and various forms of chipped stone tools such as sideblades, points, and bifaced knives. There appears to be no significant difference between the assemblages of the upper and lower floors in Housepit #7, and although the two surfaces were separated by some 10 cm of fill, presumably roof fall, it is thought that the two assemblages were essentially contemporaneous, so that they have been combined for analytic purposes.

The extent of the lower floor and the locations of cuts into glacial till (Fig. 12) indicate that the approximate dimensions of the earlier house, and no doubt the later house, were some 5 m by 6 m. This conforms favorably with the estimated dimension of Housepit #1 discussed previously. No entrance was noted during the excavation of Housepit #7, but not all of the wall surfaces were uncovered so that an entrance cannot be ruled out on the basis of the present evidence.

The artifacts present in Housepits #1 and #7 which comprise the material configuration of the Early Inland sub-phase are listed in Table B. The first list on this table is of the diagnostic artifacts, those that occur in these two assemblages only. The second list of diagnostic artifacts is of those that occur both in the Early Inland sub-phase and other Lakes phase assemblages. Those that occur in the intermediate Inland sub-phase are followed by an "I" on the table, while those which are present in late Inland assemblages are noted by an "L," and those from the Tidewater sub-phase that also occur in the Early Inland assemblages are followed by a "T." The non-diagnostic artifacts are those forms which are also present in other phases in addition to the Early Inland sub-phase.

One of the most distinctive attributes of the Early Inland assemblages is the presence of basalt tools. Flakeknives or sidescrapers (Plate VIII, m), some varieties of projectile points (Plate IX, c,d), and bifaced knives (Plate VIII, d,e) are all fashioned of basalt. It appears that this material was obtained as large flakes or blanks from other localities, as no basalt cores and little basalt debitage is present in the assemblages.
TABLE 8
EARLY INLAND SUB-PHASE, LAKES PHASE ARTIFACT FORMS

**Diagnostic (Occur Only in Early Inland Sub-phase)**
- Conical, ridged flake core, Type #12
- Bifaced basalt knife, Type #3
- Sideblade, Type #4
- Sideblade, Type #7
- Discoidal scraper
- Flakeknife, Type #4
- Endscraper, Type #4
- Cobble net-weight

**Diagnostic (Occur in Other Lakes Phase Entities)**
- Bifaced basalt knife, Type #4 (1)
- Bifaced basalt knife, Type #5 (1)
- Sideblade, Type #3 (1)
- Sideblade, Type #6 (1, L)
- Adze blade, Type #2 (1, L)
- Projectile point, Type #15 (1)
- Projectile point, Type #18 (1)
- Projectile point, Type #19 (1)
- Projectile point, Type #21 (1)
- Projectile point, Type #23 (1)
- Flakeknife, Type #3 (T)
- Sidescraper, Type #1 (1)
- Ugashik Narrows Stamp impressed pottery (1)
- Ugashik Narrows Plain pottery (1, L, T)

**Non-diagnostic (Occur in Other Phases)**
- Pebble flake core, Type #8
- Cobble flake core, Type #9
- Proto-biface
- Biface
- Miscellaneous lanceolate chert and basalt bifaces
- Projectile point, Type #8
- Projectile point, Type #9
- Edge-modified flakes
- Scratched, grooved whetstones
- Polished whetstone
- Scratched abrader
- Polished abrader
- Fired clay tube

Another characteristic of these collections is the ground stem margins on such implements as bifaced knives and points (Plate IX, c-f,k). This was done presumably to enhance the hafting qualities.

The sideblade forms are all smaller than the earlier Ugashik Hilltop phase variety and exhibit more asymmetry with respect to the outline form and the character of the chipping on the opposed edges (Plate VIII, f-i). Whereas sideblades of the previous phase are seemingly too large to have served as projectile shaft insets, a number of Early Inland specimens are small enough to have functioned as such (Types #3 and #7). The net-weights, which appear for the first time, were fashioned from large beach cobbles and are flat and end-notched bifacially (Plate VIII, n). As previously noted, they occurred often in situ as aligned pairs.

Another trait introduction of the Lakes phase is pottery. The potsherds from the two Early Inland sub-phase assemblages are organic-tempered and generally less than 10 mm in thickness. Vessel form was probably vase-like with a restricted opening (cf. Dumond 1969a).
Many of these potsherds are check-stamped, usually with small, square impressions, although diamonds and rectangles occur sporadically on the sherds. This variety of pottery, the characteristic one for the Early Inland sub-phase, has been termed Ugashik Narrows Stamp impressed. Also appearing in some numbers are unimpressed sherds. While it is entirely likely that many of these plain sherds, if not all, came from stamped vessels on which the impressions had become obscured, the unimpressed sherds form a separate type, Ugashik Narrows Plain (see Appendix IV). This variety constitutes the only form of pottery during the Late Inland sub-phase.

The technology of flake production, discussed in more detail in Chapter IV, is represented by three core types, as well as plentiful debris. The cobble and pebble flake cores of chert (Plate VIII, a,b) are frequent in both assemblages. The Early Inland sub-phase also has another core form, found only in Housepit #7, that resembles the polyhedral blade cores of previous phases; however, these type #12 cores (Plate VIII, c) are thought to have been used to produce ridged flakes rather than blades (see Chapter IV). A number of tool forms mentioned above--flakeknives, points, sideblades, scrapers--were apparently fashioned from ridged flakes, and although ridged flakes are present in other components of the phase, the distinctive ridged flake cores are not.

**Intermediate Inland Sub-phase**

The establishment of this entity is based primarily upon a large assemblage from the trench and other tests at site 49-Uga-1. Some difficulty was initially encountered in defining this unit as the assemblage was first considered to be mixed, containing both Early and Late Inland type artifacts. Additionally, samples of this aspect at other Narrows sites are small and undated. However, until further sampling is conducted at the Narrows and reliable radiocarbon dates are obtained for the components now assigned to the Intermediate Inland sub-phase, it will not be possible to determine if this entity is composed of mixed assemblages or, alternatively, transitional assemblages as it is now envisioned.

The Intermediate Inland component of the trench and small tests at site 49-Uga-1 (Component D) does not represent a distinct occupation surface or surfaces, nor are there readily identifiable house features associated with this component. Rather, it appears that these various materials accumulated as fill or refuse, in many areas of the stratigraphic trench this deposit, termed Stratum II, was disturbed by later house construction of the Ugashik River phase, such that mixing probably took place. One radiocarbon date, collected from the top of this stratum, just below Ash I, in the west end of the trench, has been determined as 875 radiocarbon years B.P. or A.D. 1075 (SI-2080). While this sample, consisting of bone, did rest on top of the Ugashik Lakes phase deposit, it is considered to provide a questionable date for this phase component, as it was partially embedded in Ash I and may have been on the original surface for some time and become contaminated with more recent organic matter before being covered by the volcanic ash fall.

The materials from Component D at site 49-Uga-1 include a number of varieties found in the previous Early Inland assemblages, as well as a number of new forms. Bifaced knives (Types #4 and #5) continue to be present, as do some forms of contracting stem points (Types #8, #13, #18, #19, #21). New traits are stone lamps (Plate IX, bb), the use of slate in limited quantity, one form of point (Type #5, Plate IX, n). Ugashik Narrows Stamp impressed and Plain pottery also continue.

A number of artifact forms that are manifest for the first time in this component at site 49-Uga-1, such as small net-weights, large adze blades (Type #1), sideblades (Type #2), and points (Type #16 and #22), also continue into Late Inland sub-phase times. A list of artifact types found in the 49-Uga-1 component is given on Table 9 along with forms from all other intermediate components.

Two assemblages from the west side of the Narrows (49-Uga-3, 49-Uga-4) have been included in this sub-phase, and while the collections are small and undated, they do contain a number of varieties characteristic of the Ugashik Lakes phase in general and the Intermediate Inland sub-phase, as defined at site 49-Uga-1, in particular. These assemblages have Ugashik Narrows Plain pottery, sideblades (Type #3), pebble flake cores, bifaces, bifaced knives (Type #2), and points (Types #8, #19). Neither sample from these two sites came from a definite floor surface, and neither site has evidence of surface depressions which might indicate constructed dwellings.
### TABLE 9

**INTERMEDIATE INLAND SUB-PHASE, LAKES**  
**PHASE ARTIFACT FORMS**

- **Diagnostic** (Occur in Intermediate Inland Sub-phase Only)
  - Sideblade, Type #5  
  - Burin-like tool  
  - Endscraper, Type #2  
  - Slate rod  
  - Stone lamp  
  - Flakeknife, Type #2

- **Diagnostic** (Occur in Other Lakes Phase Entities)
  - Bifaced knife, Type #4 (E)  
  - Bifaced knife, Type #5 (E)  
  - Sideblade, Type #2 (L)  
  - Sideblade, Type #3 (E)  
  - Adze blade, Type #1 (L,T)  
  - Projectile point, Type #13 (E)  
  - Projectile point, Type #15 (E)  
  - projectile point, Type #18 (E)  
  - Projectile point, Type #19 (E)  
  - Projectile point, Type #21 (E)  
  - Projectile point, Type #22 (L)  
  - Projectile point, Type #23 (L)  
  - Projectile point, Type #24 (T)  
  - Endscraper, Type #1 (E)  
  - Pebble net-weights (L)  
  - Ugashik Narrows Stamp Impressed pottery (E)  
  - Ugashik Narrows Plain pottery (E,L,T)

- **Non-diagnostic** (Occur in Other Phases)
  - Pebble flake core, Type #8  
  - Cobble flake core, Type #9  
  - Proto-biface  
  - Biface  
  - Miscellaneous lanceolate chert and basalt bifaces  
  - Bifaced knife, Type #2  
  - Projectile point, Type #5  
  - Projectile point, Type #6  
  - Projectile point, Type #8  
  - Projectile point, Type #12  
  - Edge-modified flakes  
  - Worked slate  
  - Scratched, grooved whetstones  
  - Polished abraded  
  - Scratched abraded  
  - Polished whetstone  
  - Pounder  
  - Edge-ground cobble  
  - Fired clay tube

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The other assemblage of this period comes from site 49-Uga-6 east of the Narrows. Like other Intermediate Inland components, there is no evidence for constructed dwellings at this site. The materials here were scattered throughout the soily deposit just below sod and Ash I (Fig. 7), but unlike other assemblages of the Intermediate sub-phase, there is no pottery.
Considering the location of the site and the limited range of tool forms present in Component B, the absence of pottery is not surprising if the activities were limited in scope, as for example to hunting, quarrying, and manufacturing.

Materials now assigned to the Intermediate Inland sub-phase at site 49-Uga-6 are numerous pebble flake cores, plentiful chipping debris, bifaces and proto-bifaces in considerable quantities, side scrapers (Types #1, #3), a bifaced knife with slight shoulders, and various small points with contracting stems (Types #15, #23).

The assignment of this assemblage to the Intermediate Inland sub-phase is based primarily on the small contracting stem points, particularly the rhomboid-shaped Type #16, which occur at site 49-Uga-2 in the Late Inland assemblage, as well as the presence at 49-Uga-6 of larger stemmed points which also occur in the Housepit #7 assemblage of the Early Inland sub-phase. In other words, it was the presence of both Early and Late Inland sub-phase points that was used to infer that Component B at 49-Uga-6 was transitional. However, there is some hesitation in assigning all of this assemblage to this sub-phase, since the larger stemmed points (Types #15 and #23) and, perhaps, the stemmed knife are rather like materials from the Shelikof Strait region that date to some two or three millennia before the Ugashik Lakes phase (see Chapter V)—in other words to a time roughly contemporaneous with the earlier component at the site, the Ugashik Knoll phase Component A. Until the dilemma can be resolved, however, the entire assemblage from Component A at site 49-Uga-6 will be provisionally assigned to the later phase.

The general character of the various assemblages which compose the Intermediate Inland sub-phase is one of transition. Most of the assemblages have artifact types which occur in earlier and later Ugashik Lakes phase components, and it is primarily the "mixed" appearance of these collections that has been used, in the absence of chronometric dating, as criteria for definition and inclusion. As indicated, there are regrettably no reliable radiocarbon dates for the Intermediate Inland components at present. However, if these are transitional and not mixed, then they ought to date to a time between the Early Inland and Late Inland sub-phase, in other words to a time around the second century of the Christian era. Of course, it is possible that some of the components have durations greater than now indicated, and more research will be needed to clarify the relationship between these components and other components of the Ugashik Lakes phase.

**Late Inland Sub-phase**

During work on the west bank of the Narrows in 1975, two assemblages were recovered that along with one from site 49-Uga-5, are grouped together as the Late Inland sub-phase of the Lakes phase. Both assemblages from the west bank came from site 49-Uga-2 (Component B), the first from levels above the Hillside phase house described previously, and the second from a test of Housepit #1 at the north end of the site (Fig. 6).

The assemblage from above the Hillside phase house was recovered in decomposed midden directly below Ash 1 (Fig. 11), and there is no evidence that the occupation represents a constructed house, as no actual floor or hearth was uncovered. It appears instead to be an encampment that made use of an abandoned house depression. Charcoal in association with tools from this Late Inland facies deposit has been dated as 1665 B.P. or A.D. 205 (Table 2). This assemblage is the primary basis for establishing the Late Inland sub-phase.

The implements in this deposit include a wide variety of forms present earlier in the Intermediate Inland sub-phase and a number of new varieties. Continuities with the Intermediate Inland sub-phase are Ugashik Narrows Plain pottery, small net-weights, adze blades (Plate IX, a), bifaced knives (Type #6), sideblades (Types #2, #3, Plate IX, u), and point Types #16 and #22 (Plate IX, v, y, z). Forms found in the Early Inland sub-phase as well are sideblades (Type #6) and adze blades (Type #2). This assemblage from site 49-Uga-2 is generally like the earlier Lakes phase assemblages from across the Narrows, and the differences are mostly stylistic. There is no major artifact type class (e.g., pottery, adze blades, points, side blades, cores) that does not continue into the time of the Late Inland sub-phase (Table 10).
TABLE 10
LATE INLAND SUB-PHASE, LAKES
PHASE ARTIFACT FORMS

Diagnostica. (Occur Only in This Sub-phase)

- Projectile point, Type #17
- Projectile point, Type #20
- Endscraper, Type #6

Diagnostica. (Occur in Other Lakes Phase Entities)

- Bifaced Knife, Type #6 (1)
- Sideblade, Type #2 (1)
- Sideblade, Type #3 (1)
- Sideblade, Type #6 (E,T)
- Adze blade, Type #1 (I,T)
- Adze blade, Type #2 (E)
- Adze preform (E)
- Projectile point, Type #16 (1)
- Projectile point, Type #22 (1)
- Pebble net-weights (1)
- Ugashik Narrows Plain pottery (I,T)

Non-diagnostica (Occur in Other Phases)

- Pebble flake core, Type #8
- Cobble flake core, Type #9
- Proto-biface
- Biface
- Miscellaneous, lanceolate chert and basalt bifaces
- Bifaced knife, Type #2
- Projectile point, Type #6
- Edge-modified flakes
- Endscraper, Type #2
- Worked slate
- Scratched, grooved whetstones
- Polished whetstone
- Scratched abrader
- Polished abrader
- Fired clay tube

The other assemblage from site 49-Uga-2 that is assigned to the Late Inland sub-phase is a small collection from Housepit #1. While the sample was excavated from within a houselike depression, and below Ash 1, no actual floor surface or hearth was noted. Additionally, no pottery and few tools were found. This suggests a rather brief encampment. While the assemblage is undated, it does include a number of items found in other assemblages of the Late Inland sub-phase, such as sideblades (Plate IV, o), bifaces, an adze preform, small netweights, abraders, pebble flake cores, proto-bifaces, and certain styles of points such as Types #16 and #17 (Plate IX, s). A list of this assemblage is included in Table 10.

The third assemblage of this period is a small collection from site 49-Uga-5 east of the Narrows (Fig. 2). Characteristic Lakes phase traits found here include bifaces, pebble cores and whetstones. The presence of one form of projectile point (Type #17), that is also present at site 49-Uga-2, is the rationale for assigning this assemblage to the Late Inland sub-phase.

On the basis of the single radiocarbon determination from site 49-Uga-2 discussed above, the duration of this Late Inland sub-phase is tentatively proposed as A.D. 200 to A.D. 300. Further sampling at the Narrows may well extend the dating to later in the first millennium A.D.
Tidewater Sub-phase

Lakes phase settlements were also located along the lower course of the Ugashik River and at Ugashik Bay near Pilot Point during a survey and testing program in the summer of 1975. Three assemblages were recovered that now compose the Tidewater sub-phase. They are Component A at site 49-Uga-11, Component A at site 49-Uga-15 and Component A at site 49-Uga-29 (Fig. 10). The reasons for defining the Tidewater sub-phase as a separate entity within the Lakes phase are the late dating of these components, the restriction of settlements to localities along the tidal portion of the river, the relative scarcity of pottery, the reliance on basalt as a raw material, and the infrequency of projectile points which are abundant at the Narrows during the Inland sub-phase.

The undated "collection" from site 49-Uga-11 is limited to one sherd of Ugashik Narrows Plain pottery and some basalt-like chipping debris. The sample comes from a single small test dug into a surface depression. The site, however, may well contain a much more extensive Tidewater occupation as a number of surface depressions, as well as extensive midden, are present there.

The 49-Uga-15 component of the Tidewater sub-phase includes a number of small samples from buried floor surfaces below superficial depressions. The limited sampling and numerous shallow depressions, sometimes overgrown with elder brush at this site suggest a rather widespread occupation. From one of the tests a collection of charcoal was made from a floor surface that has been dated as 1535 B.P. or A.D. 415 (Table 2). The assemblage associated with this date has a few sherds of Ugashik Narrows Plain pottery, very small net-weights (Plate X, g), an adze blade, bifaces, pumice abraders, a sideblade (Type #6), a flakeknife (Plate X, d), and a number of basalt bifaced knives such as Types #7 and #8 (Plate X, c-e). The absence of any chipped stone projectile points, even considering the small sample size, is noteworthy and will be discussed later. Artifacts of this assemblage, along with those from sites 49-Uga-11 and 49-Uga-29, are listed on Table 11.

Farther downriver at Ugashik Bay, another assemblage of the Tidewater sub-phase is found that has also been radiocarbon dated. Like the assemblage from site 49-Uga-15, the 49-Uga-29 materials were recovered from deeply buried floor surfaces below surface depressions. Two charcoal samples from these floors have been dated. One is 930 B.P. or A.D. 1020, and the other is 1055 B.P. or A.D. 895 (Table 2). Found associated on these floors were very small pebble net-weights, pumice abraders, a few pieces of worked slate, bifaces, adze chips, and bifaced basalt knives (Types #6, #8, #9). Also found were a number of point forms such as Types #5, #9 and #25 (Plate X, a-c) and a single coal labret with a ground hematite insert (Plate X, h). No pottery of any sort was associated with these 49-Uga-29 assemblages, although Ugashik Bay Stamp Impressed (see Appendix V) was found in a later component of the site.

The duration of the Tidewater sub-phase is indicated by the three radiocarbon dates cited above. The date from site 49-Uga-15 suggests that the sub-phase may have begun about A.D. 400, while the dates from site 49-Uga-29 are taken to imply that the facies terminated about A.D. 1000.

Discussion

A number of general observations may now be made concerning the relationships between the various subdivisions of this phase and its settlement and subsistence patterns. A discussion concerning patterns of core manufacture and flake production is reserved for the following chapter.

It is during this phase that evidence is first present for the use of aquatic resources (i.e., fish). This use may be inferred from the numerous end-notched pebbles and cobbles, presumably net-weights. These appear first in the Early Inland component at 49-Uga-1 and continue throughout the phase. As discussed in the following chapter, there is a definite change in both size and weight of these sinkers throughout the Ugashik Lakes phase. The sinkers are initially large and heavy, then become progressively smaller and lighter. They occur as matched pairs in the Early Inland sub-phase and later are found more commonly as clusters or scatters. It is proposed that some change in fishing practices took place during the phase and culminated in the Tidewater sub-phase, where the sinkers are the lightest and smallest. It is presumed on the basis of historical accounts that salmon were the primary target of these fishing activities.
TABLE 11
TIDewater SUB-PHASE, LAKES PHASE
ARTIFACT FORMS

**Diagnostic** (Occurs Only in This Sub-phase)

- Bifaced basalt knife, Type #7
- Bifaced basalt knife, Type #8
- Bifaced basalt knife, Type #9
- Projectile point, Type #25
- Coal labret
- Very small net-weights
- Lancet

**Diagnostic** (Occur in Other Lakes Phase Entities)

- Bifaced knife, Type #6 (L)
- Sideblade, Type #6 (E, I)
- Adze blade, Type #1 (I, L)
- Projectile point, Type #24 (I)
- Flakeknife, Type #3 (E)
- Ugashik Narrows Plain pottery (E, I, L)

**Non-diagnostic** (Occur in Other Phases)

- Projectile point, Type #5
- Bifaces
- Miscellaneous lanceolate chert biface
- Edge-modified flakes
- Worked slate
- Scratched abrader
- Polished abrader

The Early Inland sub-phase also witnessed a dramatic increase in the use of basalt. While this rock was in use during the previous phases, it was restricted to the manufacture of sideblades (knife blades) during the Ugashik Hilltop phase and was used for projectile points during the earlier Ugashik Knoll phase. Beginning in the Ugashik Lakes phase, basalt was used for projectile points, bifaced knives, flakeknives, and scrapers. The large bifaced knives of basalt, in particular, became very abundant in the Early Inland sub-phase, and it is quite possible that these large knives were in some manner related to fishing activities, such as for cleaning and splitting fish. These knives are most abundant in the Early Inland component and the Tidewater sub-phase components, but are rather uncommon in other Ugashik Lakes phase assemblages.

It is tentatively suggested that the populating of the lower course of the river, as well as Ugashik Bay, is somehow related both to innovations in subsistence practices (i.e., salmon fishing) and to changes in the density of occupation of the Narrows during the Inland sub-phase. The date for this shift in settlements may be derived provisionally from a number of lines of evidence. First, the radiocarbon date from site 49-Uga-15, the earliest of the Tidewater components, indicates that the shift probably took place prior to about A.D. 400. Second, the occurrence of only very small net-weights in assemblages of the Tidewater sub-phase indicates that the shift ought to date to a period after the Early Inland assemblages wherein these forms are absent. Third, the presence only of Ugashik Narrows Plain pottery sherd locally in the two assemblages from sites along the river indicates that the "event" probably happened after the disappearance of check-stamped pottery (i.e., Ugashik Narrows Stamp Impressed), in other words after the Early Inland sub-phase. Fourth, the prevalence of large bifaced knives of basalt in Tidewater assemblages suggests that the shift ought to date to a time when such knives were still common at the Narrows (i.e., Early Inland sub-phase). Fifth, if the density of settlement was in some manner a factor in shifting settlements, then the
time of the Intermediate inland sub-phase is the most probable candidate for this downriver displacement since at the Narrows there are four components of this entity, one of the Early inland sub-phase and two late inland components.

Taken together, this evidence may be very tentatively used to suggest that if the displacement occurred, as is proposed, it was likely during the time now represented by the Intermediate inland sub-phase. Unfortunately, this is the only Ugashik Lakes phase occupation that does not have a radiocarbon date, and it is the most insecurely established entity of the phase. Further work is needed to clarify the dating of the initial occupation of the lower drainage and Ugashik Bay and its relationship to inland sub-phase components at the Narrows.

If population density was in some fashion a factor in affecting shifts in settlement locations, the question remains—why the lower course of the river and Ugashik Bay? Two answers can be proposed. First, if salmon fishing had become a significant aspect of subsistence activities during certain months, such as June through September, then the lower course of the river would seem to be a logical choice for new settlements. Of course, so would the Ugashik Rapids, but this inadequately sampled locality has yet to produce any definite Lakes phase assemblages. The river itself has a number of advantages over the Narrows locality as a place for fishing, given the proper technology. The river is subject to a larger run of salmon since not all salmon that enter the Ugashik drainage spawn at the Narrows or in Upper Ugashik Lake. Additionally, the river has at least one variety of salmon, the King or Chinook, that spawns only in tributaries of the river itself and not in or out of the lakes as do the Red Salmon. The King Salmon is also the largest variety of salmon to spawn in the drainage.

The Ugashik River is also, unlike the Narrows, subject to tides. And not only do the salmon move up the river in conjunction with the incoming tide, but the tides are also used by local people today when “set-netting.” The nets are strung at low tide, float at high tide, and are picked at the next low tide. This practice is so efficient for subsistence fishing (other methods are used in the bay for commercial fishing) that few fishermen make use of the lakes for salmon. Thus, the lower river and Ugashik Bay may have become a focal point for new settlements during the Lakes phase because of the greater possibilities for higher productivity and efficiency in fishing for salmon, a resource that can be stored for long periods when dried.

Of course fishing must not have been the only subsistence activity during the Lakes phase times. Based upon the abundant points and knives in the assemblages, it is evident that hunting must also have been an important activity. While there is no direct evidence to indicate what animals were hunted, the pursuit of caribou may be inferred if the faunal remains from the River phase components at the Narrows are any indication of what was available and used during earlier times. One Lakes phase component in particular, Component B at site 49-Uga-6, is characterized by an assemblage in which projectile points are very frequent. It is thought that this component, like the earlier Knoll phase component at the site, represents a hunting camp situated on a high ridge overlooking the Narrows game crossing. Sites of Lake phase affinity along the lower course of the Ugashik River and Ugashik Bay are noteworthy by their dearth of points, and it is unclear whether this is a feature of sampling or represents different activities.

By way of concluding this section, it may be noted that this phase, the Lakes phase, is a time of significant developments in subsistence, settlement, and technology. Many of these innovations (e.g., pottery, lamps, salmon fishing) are forerunners of what is to characterize the following River phase and to a large extent the historic Eskimo as well.

**UGASHIK RIVER PHASE**

The final prehistoric phase in the Ugashik sequence is represented by a number of components at the Narrows, the Rapids, the lower course of the river, and Ugashik Bay. The distribution of sites during this phase is similar to the pattern of the previous Lakes phase, although the River phase provides the first evidence for use of the Rapids near Lower Ugashik Lake. Based upon the sampling along the river, sites of this period appear to be more abundant than during any previous phase, and it is apparent that the size of sites, exemplified by both the number of surface dwellings and the general midden extent, may be larger than during any preceding phase.
The first trace of late prehistoric occupation was obtained during the 1974 season at site 49-Uga-1 where some 58 surface depressions were recorded. River phase materials were recovered from three of these depressions, as well as from midden areas (Stratum I) bisected by the stratigraphic trench.

In the trench, features dating to this phase were clearly visible as cuts through Ash I. For instance, Housepit #24 is a depression tested while excavating the trench. On the surface, this depression is roughly circular with no obvious entrance. During construction of the house, Ash I was entirely removed. The floor itself, consisting of dark compacted soil, was some 60 cm below what is now the surface. In the approximate center of the depression, a large hearth of fire-cracked rocks was uncovered in association with the floor along with a number of crisscrossed timbers which likely formed the original superstructure of the house. Some of this wood (alder?) was submitted for dating and produced a determination of 103% modern (SI-2077). Either the house remains are very recent (i.e., nineteenth century) or the timbers were contaminated with excessive amounts of modern rootlets. Artifacts in association with this feature were a slate ulu (Plate X, p), a large grinding slab or whetstone, Ugashik River Plain pottery (gravel-tempered), and a unilaterally barbed antler arrowhead (Plate X, r).

Near Housepit #24, but apparently outside the depression, another hearth was uncovered in unit Y98E52 that had also been placed through Ash I. Charcoal from this feature was dated at 335 B.P. or A.D. 1615 (Table 2). Found near the hearth in the same deposit (Stratum I) were slate pieces, numerous fragments of large mammal bone (caribou?), and an unground slate point (Type #26).

Other tests in the trench revealed late prehistoric midden in a position stratigraphically above or cut through Ash I. Scattered materials in this segment of the midden included slate pieces, a virtually complete vessel of Ugashik River Plain pottery, mammal bone, slate inset blade fragments, and some chipped stone items. The chipped stone materials, mostly chert, may have been displaced from the earlier lakes phase deposit (Stratum II) during construction of River phase houses.

Two additional River phase assemblages were recorded at the Narrows in 1975, one of them Component C at site 49-Uga-2 and one Component B at site 49-Uga-5. The 49-Uga-2 component is limited to a rock hearth, mammal bone and a slate ulu (Plate X, q). River phase materials at site 49-Uga-5 were recovered from a surface depression in high grass first recorded in 1974 and partially excavated in 1975. Work in this depression was sufficient to indicate that there was an extensive occupation here, but it was not established whether or not the depression was that of a constructed house. In the central area of the depression a small hearth was exposed that consisted of fire-cracked rocks and charcoal. In the sod above the hearth were numerous broken mammal bones, most likely from caribou. Another rock hearth was uncovered some 20 cm below the first. A third hearth, below the first two, was encountered at a depth of about 50 cm and extended to 80 cm. A sample of charcoal from the first and uppermost hearth produced a date of 102.7% modern (SI-2647). Like the modern date from Housepit #24 at site 49-Uga-1, the 49-Uga-5 date indicates that either the encampment was very recent or the sample was heavily contaminated with modern rootlets. Materials associated with these 49-Uga-5 hearths included many small slate inset blades (Plate X, l,m), whetstones, slate pieces, chipped stone biface fragments, and slate darthead fragments (Plate X, n).

Other late components were recorded during surveys and tests at the Ugashik Rapids in 1974. The two sites here, 49-Uga-7 and 49-Uga-8, were minimally tested, and while only River phase materials were recovered, it is entirely possible that further testing will reveal earlier components. Materials found at these two sites were slate pieces, pumice abraders and Ugashik Village Plain pottery (see Appendix V).

Surveys and tests during 1975 also produced late prehistoric components along the lower course of the river and at Ugashik Bay near Pilot Point. Some eleven River phase sites were located along the river itself, particularly above and below the village of Ugashik (Fig. 10) where the river cuts through high ground and forms well drained bluffs. As at the Rapids, work along the lower course of the river was exploratory with no large scale excavations. Some of the single component River phase sites might reveal earlier occupations, such as of the Tidewater sub-phase, if they were to be more adequately tested.
Materials from the components along the river were primarily obtained from housepit tests. Specimens include ground slate pieces, whetstones, bone and antler tools, Ugashik River Plain pottery, large adze blades, ground slate ulu fragments, slate inset blades, and Ugashik Village Plain pottery, the latter found only at sites 49-Uga-23 and 49-Uga-27. Materials from these assemblages, as well as from other River phase collections, are listed in Table 12.

Table 12

UGASHIK RIVER PHASE ARTIFACT FORMS

iate (Occur Only in This Phase)

Bifaced knife, Type #10
Adze blade, Type #3
Adze blade, Type #4
Projectile point, Type #26
Polished slate inset blade, Type #1
Polished slate inset blade, Type #2
Polished slate darthead, Type #3
Polished slate darthead, Type #4
Polished slate darthead, Type #5
Polished slate ulu, Type #1
Polished slate ulu, Type #2
Polished slate ulu, Type #3
Edge-sharpened slate flake
Faceted whetstone
Faceted pumice abrader
Ugashik Village Plain pottery
Ugashik Bay Stamp Impressed pottery
Ugashik River Plain pottery
Unilaterally barbed antler arrowhead
Antler wedge
Bone awl
Bone scraper
Bone and antler handles
Antler spoon

Non-diagnostic (Occur in Other Phases)

Pebble flake core, Type #8
Cobble flake core, Type #9
Proto-biface
Biface
Miscellaneous, lanceolate chert and basalt bifaces
Bifaced knife, Type #5
Projectile point, Type #5
Edge-modified flakas
Cut and polished slate pieces
Scratched and grooved abraders
Polished whetstone
Polished abrader
Pounder
Fired clay tube
Pebble net-weight

One of the readily identifiable characteristics of these late sites along the Ugashik River is the presence of house depressions which still retain traces of the original sod walls and sunken entrance. The few historic houses of semi-subterranean design tested along the river were also characterized by these features, although most of these historic period houses, such as at site 49-Uga-27, appeared to be composed of interconnected rooms.
Tests at Ugashik Bay revealed two assemblages that have been assigned to the River phase. The collections from sites 49-Uga-28 and 49-Uga-29 include Ugashik Village Plain pottery, slate pieces, pumice abraders, net-weights and a polished slate darthead (Plate X, o). One of these assemblages, from site 49-Uga-29, has the only example of Ugashik Bay Stamp Impressed pottery (gravel-temper) found in the drainage.

Discussion

The individual components of the River phase are the least well known of the entire Ugashik sequence since virtually all of these components are composed of small samples. This circumstance was a consequence of the research design, which focused upon earlier period sites. However, while individual River phase assemblages are small, they are very abundant throughout the drainage. Thus, while little can be inferred about the specific features of isolated occupations, it is possible to make some overall statements about the phase.

The principal technological attributes which characterize this phase are the preference for polishing and grinding of slate over bifacial chipping of chert, chalcedony and basalt for stone tools, the replacement of fiber-tempered pottery by gravel-tempered varieties, and the appearance (as a result of the preservation factor) of various sorts of bone and antler tools.

The slate industry includes a wide range of tools, and it is thought that many of these functioned in a fashion analogous to some of the chipped stone tools of previous phases. Two varieties of slate inlay blades are present in collections of this phase (Plate X, k-m), in addition to numerous fragments. The most common form (Type #2) is a small, polished variety typified by the presence of triangular butt facets on each face which were formed by rubbing lengthwise along the stem and blade until a concave facet was made for hafting. The slate dartheads (Plate X, n-q) are less common. All of these have rubbed facets, and two of the types are characterized by distinct barbs. The polished slate ulus are both tanged and untanged (Plate X, p-q), and two specimens have perforations for a handle or for stringing. Two new whetstone forms appear in this phase, both probably for grinding slate. One is a large slab similar to a "metate," while the other is a form with long, adjacent facets, resembling a "peeled carrot." The latter variety also occurs in pumice as an abrader.

The pottery of this phase includes three varieties, all gravel-tempered. One form (Ugashik Village Plain) that occurs infrequently, and only at the Ugashik Rapids and along the lower river, has relatively thick walls, averaging 10 mm, and is typified by large gravel inclusions. Another variety (Ugashik Bay Stamp Impressed), also thickwalled, is represented by a single specimen from site 49-Uga-29 near Pilot Point. It also has inclusions of gravel but, in addition, has large checks stamped on the exterior of the sherd. The most common pottery form (Ugashik River Plain) is one with thin walls, ca. 8 mm to 9 mm, with inclusions of sand and fine gravel, and is undecorated. A single, virtually complete vessel of this type was collected at site 49-Uga-1 from Stratum I. This thin variety of pottery was frequent both at the Narrows and at sites along the river.

Tools fashioned from bone and antler appear in some quantity for the first time in this phase. The most ubiquitous tools of this material are bone scrapers, haphazardly fashioned from split long bones (caribou?). A single, unilaterally barbed arrowhead of antler (Plate X, 4) was recovered from Housepit #24 at the Narrows. Some other bone and antler implements (e.g., awls, handles) occurred infrequently, but are abundant in archaeological assemblages of River phase age elsewhere on the Alaska Peninsula. It seems rather surprising that so few implements of bone and antler were recovered from the Ugashik drainage, particularly items associated with sea mammal hunting. This might provisionally be explained by the limited sampling of sites along the lower course of the river and Ugashik Bay, areas which seals are known to frequent.

Establishing the duration of the River phase has proved to be difficult. The terminal date coincides with the time of historic contact and acculturation; however, there is no precise date for this event in the Ugashik area. Historic materials from sites along the river and at the Narrows are all of early twentieth century vintage, but this age seems too recent a time for initiation of the historic period. A time in the early 1800's seems more probable as a date for the termination of the River phase, but remains to be substantiated. A beginning date for the phase is also difficult to pinpoint. The radiocarbon evidence suggests only that the phase was in progress by A.D. 1600. The presence of thick, gravel-tempered pottery is
indicative of a somewhat earlier date. This variety of pottery first appears on the Alaska Peninsula between A.D. 900 and A.D. 1100 (Dumond 1971; McCartney 1974), and since radiocarbon dates for the tidewater facies indicate that the Lakes phase may have lasted into the first century of the second millennium A.D., it will be provisionally proposed that the River phase began about A.D. 1000.
CHAPTER IV
FLAKE STONE TECHNOLOGIES: CONTINUITIES
AND DISCONTINUITIES

Based upon the sequence described in the previous chapter, it is now possible to make some statements about the prehistoric technologies at Ugashik. The discussion that follows will first describe the production processes involved in the stone flaking of each phase and will then compare and contrast the technologies as they developed through time. The emphasis here is on core technology and the various forms of flakes made from cores (i.e., microblades, blades, ridged flakes, flakes). The discussion will focus on this production process because it represents the best approach to developing statements about technological continuities and discontinuities (Hayashi 1968: 129). Cores and their various by-products occur frequently in all phases and would seem to be an integral feature of the tool kit production in the assemblages. Finished tool forms (e.g., scrapers, knives, points, etc.) are often stylistically unique for each phase, or occur in only specific types of occupations which may not be represented in the excavated components of all phases. Thus, their utility for inter-phase comparison is often limited. However, some mention of these tool forms will be made as they relate to the production processes and to the chipped stone technology in general.

UGASHIK NARROWS PHASE

As described previously, the earliest Ugashik phase is characterized by a wide range of cores. There are three kinds: microblade cores (two types), blade cores (five types), and flake cores (two types). All these varieties are described and inventoried in Appendix 1. In the discussions which follow, three specific core variables are used for comparative purposes. The first, core height, is a dimension measured from the platform of the core to the base. The second, platform angle, is a measurement of the angle between the platform and the flake or blade scars. The third variable, platform width, is a measurement of the width of the platform where flakes were removed.

The most frequent microcore in the collection is the wedge-shaped variety (Plate 1, a-e). Dimensions are given in Table 13. These were most commonly fashioned by bifacially flaking a thick flake to form a keel on the end opposite where microblades were to be removed. The platform was created either by extensive retouch or by removing a large flake (core tablet) from the edge adjacent to the keel. Rejuvenation of the core for further removal of microblades was done by removing another core tablet from the platform or by extensively retouching the platform. There is little apparent evidence that the core itself was rotated to create new platforms for flake removal.

This core variety produced microblades which themselves were never modified beyond edge retouch and snapping. Most of the microblades in the collection are snapped on one or both ends thereby removing the original bulb of percussion and pointed tip. The most common microblade section is one with both ends removed (37%). Also occurring in some numbers are sections which have had only the distal tip removed (18%). It has been hypothesized elsewhere that sections such as these functioned as insets in bone shafts (Larsen 1968; Anderson 1970a). Ugashik microblade sections differ to some extent from other described collections by the infrequency of retouch. Only about 3% of the Ugashik microblades are obviously retouched, and all of these are snapped sections. However, there is little reason to think that sections which lack retouch were significantly less useful for inserting than were retouched specimens.

The various blade cores of the Narrows phase exhibit more variation than do the microcores. The general forms are conical and faceted. Among the conical cores are two types, polyhedral (Plate 111, a) and large wedge-shaped (Plate 1, f, g). Dimensions are presented in Table 14. The latter variety of conical cores has a number of attributes which are shared with the small wedge-shaped microblade cores. Both types have a keel opposite the fluted end; however, the keel of the larger variety is somewhat different. It is formed by unidirectionally flaking the right side of the core when the core is held with the keel facing the viewer. Additionally, the keel on the larger variety (Type #3) does not give the core a
### TABLE 13
MEASUREMENTS OF WEDGE-SHAPED MICORBLADE CORES, NARROWS PHASE

<table>
<thead>
<tr>
<th>Specimen Number</th>
<th>Core Height (mm)</th>
<th>Platform Angle (degrees of arc)</th>
<th>Platform Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-3-20</td>
<td>33</td>
<td>85</td>
<td>19</td>
</tr>
<tr>
<td>M-3-1</td>
<td>26</td>
<td>70</td>
<td>11</td>
</tr>
<tr>
<td>K-11-37</td>
<td>22</td>
<td>80</td>
<td>36</td>
</tr>
<tr>
<td>B-3-1</td>
<td>25</td>
<td>85</td>
<td>23</td>
</tr>
<tr>
<td>K-11-28</td>
<td>19</td>
<td>80</td>
<td>18</td>
</tr>
<tr>
<td>J-11-11</td>
<td>20</td>
<td>87</td>
<td>18</td>
</tr>
<tr>
<td>K-11-38</td>
<td>23</td>
<td>90</td>
<td>12</td>
</tr>
<tr>
<td>J-2-3</td>
<td>42</td>
<td>80</td>
<td>31</td>
</tr>
<tr>
<td>V-7-13</td>
<td>25</td>
<td>80</td>
<td>18</td>
</tr>
<tr>
<td>V-7-16</td>
<td>25</td>
<td>70</td>
<td>14</td>
</tr>
<tr>
<td>V-8-15</td>
<td>20</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>V-7-4</td>
<td>21</td>
<td>70</td>
<td>13</td>
</tr>
<tr>
<td>V-3-6</td>
<td>39</td>
<td>80</td>
<td>26</td>
</tr>
<tr>
<td>V-8-16</td>
<td>22</td>
<td>80</td>
<td>14</td>
</tr>
<tr>
<td>W-8-53</td>
<td>27</td>
<td>80</td>
<td>16</td>
</tr>
<tr>
<td>W-7-3</td>
<td>27</td>
<td>80</td>
<td>13</td>
</tr>
</tbody>
</table>

### TABLE 14
MEASUREMENTS OF BLADE CORES, NARROWS PHASE

<table>
<thead>
<tr>
<th>Specimen Number</th>
<th>Core Height (mm)</th>
<th>Platform Angle (degrees of arc)</th>
<th>Platform Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-faceted, Bifacial Blade Cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V-4-1</td>
<td>61</td>
<td>80</td>
<td>49</td>
</tr>
<tr>
<td>L-14-16</td>
<td>62</td>
<td>75</td>
<td>37</td>
</tr>
<tr>
<td>X-2-10</td>
<td>65</td>
<td>80</td>
<td>74</td>
</tr>
<tr>
<td>Face-faceted Blade Cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U-6-1</td>
<td>60</td>
<td>60</td>
<td>49</td>
</tr>
<tr>
<td>U-6-2</td>
<td>63</td>
<td>60</td>
<td>62</td>
</tr>
<tr>
<td>V-6-13</td>
<td>85</td>
<td>80</td>
<td>45</td>
</tr>
<tr>
<td>J-587-7</td>
<td>45</td>
<td>75</td>
<td>41</td>
</tr>
<tr>
<td>Large Wedge-shaped Blade Cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W-7-4</td>
<td>52</td>
<td>90</td>
<td>30</td>
</tr>
<tr>
<td>T-6-1</td>
<td>45</td>
<td>90</td>
<td>34</td>
</tr>
<tr>
<td>Polyhedral Blade Cores</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>R-4-2</td>
<td>79</td>
<td>90</td>
<td>46</td>
</tr>
<tr>
<td>V-8-5</td>
<td>63</td>
<td>90</td>
<td>39</td>
</tr>
<tr>
<td>Edge-faceted Blade Cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W-5-32</td>
<td>47</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>
Fig. 13. Bivariate Plots of Narrows Phase Microblades, Blades, and Ridged Flakes.
distinctly wedge-shaped appearance when viewed from above. The two other differences between the large and small varieties of wedge-shaped cores are the overall size of the two core forms and the presence of blade-like flutes (over 10 mm) on the larger variety of core which are well outside the size range for microblades (Fig. 13).

The various forms of faceted blade cores were fashioned from large chert cobbles and have platforms which were created by a single blow. The three varieties of faceted blade cores (Types #5, #6, #7) differ primarily in the location of the blade scars on the cores and in the cross-section of the cores (Plate II, b-d). Dimensions are given in Table 14. In contrast to other core forms of the Uashik Narrows phase, the faceted varieties appear to have been rotated in such a manner that a new platform was created for the removal of additional blades. Many of these faceted cores still retain some of the original cortex of the cobbles, and were apparently used to produce a few large blades and were then discarded.

Although the Uashik Narrows phase collection has only a few finished tools made from blades, it is thought that blade cores may have been used to produce blanks for a wide range of tools, some of which are not represented in this assemblage. The heterogeneous nature of the blade core collections suggest that the different cores could have been fashioned with the intention of producing blades with specific qualities, such that the unmodified blades functioned as blanks that required little additional modification for use.

The ridged flakes of this phase are more frequent than the blades, although much less common than microblades. This variety of flake differs from blades by having customarily only one dorsal arris and only roughly parallel edges. In overall size both are similar (Fig. 13). A t-test was done to compare these two forms of flakes to see if any significant differences in size existed that might suggest different patterns of manufacture. The test is one designed for samples of different size (Morehouse and Still 1975:166-171). A comparison between a sample of blades (n=14) and ridged flakes (n=22) using the variable of thickness indicated a significant difference, t(34) = 2.08, p < .05 (critical value of t = 2.03). A similar test using width produced no difference, t(34) = 0.98, p < .05. The difference in size suggests that either the ridged flakes were among the first flakes removed during preparation of a blade core, or they were detached from cobbles flake cores with the intention of producing a flake with blade-like dimensions. No t-test was performed for blades versus microblades or microblades versus ridged flakes, as obvious attribute differences exist (Fig. 13).

Although many of the finished tools of the Narrows phase are made on flakes other than blades, the cores which produced such flakes are less frequent than either blade cores or microcores. The most common flake core variety was fashioned from a chert cobbles with little platform preparation. Dimensions are given in Table 15.

| TABLE 15 |
| MEASUREMENTS OF COBBLE FLAKE CORES, UGASHIK NARROWS PHASE |

<table>
<thead>
<tr>
<th>Specimen Number</th>
<th>Core Height (mm)</th>
<th>Platform Angle (degrees)</th>
<th>Platform Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-2-6</td>
<td>68</td>
<td>75</td>
<td>50</td>
</tr>
<tr>
<td>W-8-12</td>
<td>82</td>
<td>90</td>
<td>49</td>
</tr>
<tr>
<td>W-7-22</td>
<td>75</td>
<td>90</td>
<td>72</td>
</tr>
<tr>
<td>W-8-24</td>
<td>49</td>
<td>90</td>
<td>70</td>
</tr>
<tr>
<td>V-17-17</td>
<td>81</td>
<td>90</td>
<td>69</td>
</tr>
<tr>
<td>V-8-14</td>
<td>44</td>
<td>90</td>
<td>46</td>
</tr>
<tr>
<td>V-3-1(7-12)</td>
<td>43</td>
<td>90</td>
<td>42</td>
</tr>
<tr>
<td>V-6-23</td>
<td>35</td>
<td>70</td>
<td>75</td>
</tr>
</tbody>
</table>

These cores were only infrequently rotated to create new striking platforms and were more commonly rejuvenated by platform retouch. The most abundant tool type manufactured from flakes is the transverse burin (Plate III, n-q).
The raw materials utilized for finished tools of this phase are predominately varieties that abound on the lake shores at the Narrows. Excluding cores and edge-modified flakes, the following figures represent the relative abundance of materials used for finished tools: chert, 81%; chalcedony, 17%; basalt, 2%.

**UGASHIK KNOLL PHASE**

Many of the production patterns which characterized the Narrows phase are also present some 3,000 years later in the Knoll phase. Again, the three general core forms are microblade cores (one type), blade cores (two types) and flake cores (one type).

The microcores were fashioned on pebbles of chert by a procedure that involved splitting the pebble in half and using the newly created surface as a platform (Plate IV, a,b). Microblades were then removed from one end of the pebble. There is no evidence that the cores were rotated to create new platforms, and no core tablets or complete flute elements are present to indicate that rejuvenation involved more than platform retouch. Dimensions are given in Table 16.

**TABLE 16**

MEASUREMENTS OF MICROBLADE AND BLADE CORES, UGASHIK KNOLL PHASE

<table>
<thead>
<tr>
<th>Specimen Number</th>
<th>Core Height (mm)</th>
<th>Platform Angle (degrees)</th>
<th>Platform Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microblade Cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-2-7</td>
<td>25</td>
<td>75</td>
<td>36</td>
</tr>
<tr>
<td>M-4-25</td>
<td>29</td>
<td>70</td>
<td>40</td>
</tr>
<tr>
<td>P-3-25</td>
<td>40</td>
<td>80</td>
<td>35</td>
</tr>
<tr>
<td>K-1-3</td>
<td>38</td>
<td>80</td>
<td>45</td>
</tr>
<tr>
<td>Contour Blade Cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-6-2</td>
<td>44</td>
<td>100</td>
<td>34</td>
</tr>
<tr>
<td>J-3-43</td>
<td>62</td>
<td>100</td>
<td>45</td>
</tr>
<tr>
<td>Faceted Blade Cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-4-5</td>
<td>47</td>
<td>90</td>
<td>24</td>
</tr>
<tr>
<td>H-25-25</td>
<td>50</td>
<td>80</td>
<td>42</td>
</tr>
<tr>
<td>D-6-2</td>
<td>47</td>
<td>80</td>
<td>42</td>
</tr>
</tbody>
</table>

A number of t-tests were done to compare the Knoll and Narrows phase microcores using the attributes core height, platform angle and platform width (Table 17). A comparison using height produced a significant difference, $t(18) = 4.66, p < .05$ (critical value of $t = 2.10$). A comparison of platform widths also produced a significant score, $t(16) = 7.16, p < .05$. There was no significant difference between the groups with respect to platform angle, $t(18) = .72, p < .05$.

Dimensions of the microblades are plotted on Fig. 14 along with blades and ridged flakes. The $t$-test comparisons between the microblades from the Ugashik Knoll and Narrows phases indicate a significant difference with respect to width, $t(40) = 3.57, p < .05$, but not with respect to thickness, $t(40) = .89, p > .05$ (critical value of $t = 2.02$).

The Knoll phase blade cores resemble those of the Narrows phase, although there are no wedge-shaped forms. A comparison of the faceted and polyhedral blade cores from the two phases shows few significant differences (Table 17).
Fig. 14. Bivariate Plots of Knoll Phase Microblades, Blades, and Ridged Flakes.
The blades and ridged flakes of the Knoll phase were compared to one another, as was done for the previous phase. Using the attributes of width and thickness, no significant differences were found (Table 17). It was previously suggested that ridged flakes may have been produced from both flake and blade cores. This may be the case for Knoll phase ridged flakes also.

A comparison of the cobble flake cores from the Knoll phase (Table 18) with the same form from the Narrows phase indicates no significant differences (Table 17).

### Table 17
**t Scores of Knoll Phase and Narrows Phase Comparisons**

<table>
<thead>
<tr>
<th>Core Type</th>
<th>t</th>
<th>df</th>
<th>Critical Value of t, p &lt; .05</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Microcores</strong></td>
<td></td>
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</tr>
<tr>
<td>Core height</td>
<td>4.66</td>
<td>18</td>
<td>2.10</td>
</tr>
<tr>
<td>Platform width</td>
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<tr>
<td>Platform angle</td>
<td>.72</td>
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<td></td>
</tr>
<tr>
<td><strong>Microblades</strong></td>
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<tr>
<td>Width</td>
<td>3.57</td>
<td>40</td>
<td>2.02</td>
</tr>
<tr>
<td>Thickness</td>
<td>.89</td>
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<tr>
<td><strong>Conical Blade Cores</strong></td>
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</tr>
<tr>
<td>Core height</td>
<td>.56</td>
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<td>2.77</td>
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<tr>
<td>Platform width</td>
<td>.48</td>
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</tr>
<tr>
<td>Platform angle</td>
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</tr>
<tr>
<td><strong>Faceted Blade Cores</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Core height</td>
<td>2.16</td>
<td>9</td>
<td>2.26</td>
</tr>
<tr>
<td>Platform width</td>
<td>1.91</td>
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</tr>
<tr>
<td>Platform angle</td>
<td>.89</td>
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</tr>
<tr>
<td><strong>Blades</strong></td>
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</tr>
<tr>
<td>Width</td>
<td>3.19</td>
<td>26</td>
<td>2.05</td>
</tr>
<tr>
<td>Thickness</td>
<td>2.36</td>
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<tr>
<td><strong>Cobble Flake Cores</strong></td>
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<td>Core height</td>
<td>.28</td>
<td>11</td>
<td>2.20</td>
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<tr>
<td>Platform width</td>
<td>1.46</td>
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<td></td>
</tr>
<tr>
<td>Platform angle</td>
<td>.18</td>
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<td></td>
</tr>
</tbody>
</table>

### Table 18
**Measurements of Cobble Flake Cores, Ugashik Knoll Phase**

<table>
<thead>
<tr>
<th>Specimen Number</th>
<th>Core Height (mm)</th>
<th>Platform Angle (degrees)</th>
<th>Platform Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-25-7</td>
<td>60</td>
<td>90</td>
<td>31</td>
</tr>
<tr>
<td>M-4-3</td>
<td>36</td>
<td>80</td>
<td>62</td>
</tr>
<tr>
<td>K-3-6</td>
<td>77</td>
<td>100</td>
<td>34</td>
</tr>
<tr>
<td>J-4-9</td>
<td>66</td>
<td>70</td>
<td>65</td>
</tr>
<tr>
<td>J-3-25</td>
<td>78</td>
<td>90</td>
<td>44</td>
</tr>
</tbody>
</table>
Chert continues to be the preferred raw material, although the use of basalt has increased markedly, and slate appears for the first time. Exclusive of cores, bifaces and edge-modified flakes, the relative abundance of raw materials used for finished tools are as follows: chert, 64%; basalt, 28%; slate 6%; chalcedony, 2%. Since the basalt is not represented in the core collection, it appears that this material was acquired as either very large flakes or as partially finished blanks from some other locality. Basalt occurs very rarely as beach cobbles along the shore of the Narrows and is also infrequent in the numerous blowouts that surround site 49-Uga-6.

UGASHIK HILLTOP PHASE

The microblade technology that dominates the Ugashik assemblages some 9,000 years ago, and which is present in diminished form some 5,000 years ago, is noticeably absent from the extant Ugashik collections of the second millennium B.C. In fact, the predominant core technology of the Hilltop phase as it is now represented has no clear precedents, either at Ugashik or in Arctic Small Tool tradition assemblages of northwest Alaska.

The Hilltop phase cores are characteristically small ellipsoidal forms of chalcedony (Plate VI, 1-q). All were used to produce flakes, and all appear to have been rotated a number of times to create new platforms for flake removal. The rotation process gives these cores their bi-convex or ellipsoidal outline. Dimensions are presented in Table 19.

<table>
<thead>
<tr>
<th>Specimen Number</th>
<th>Core Height (mm)</th>
<th>Platform Angle (degrees)</th>
<th>Platform Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-4-3</td>
<td>34</td>
<td>83</td>
<td>27</td>
</tr>
<tr>
<td>E-12-17</td>
<td>38</td>
<td>67</td>
<td>22</td>
</tr>
<tr>
<td>G-6-19</td>
<td>28</td>
<td>90</td>
<td>31</td>
</tr>
<tr>
<td>O-8-5</td>
<td>21</td>
<td>100</td>
<td>29</td>
</tr>
<tr>
<td>O-8-5</td>
<td>27</td>
<td>100</td>
<td>25</td>
</tr>
<tr>
<td>I-4-2</td>
<td>15</td>
<td>80</td>
<td>27</td>
</tr>
<tr>
<td>E-12-2</td>
<td>20</td>
<td>90</td>
<td>18</td>
</tr>
</tbody>
</table>

Various t-tests were made for differences between the ellipsoid cores from the Hilltop phase and the pebble flake cores from the previous Knoll phase. A comparison of core heights showed significant differences, t(10) = 3.42, p < .05 (critical value of t = 2.23). A comparison of platform widths was also significant, t(10) = 5.06, p < .05, while a comparison of platform angles was not, t(10) = .14, p < .05.

Other characteristics which set this phase apart from previous phases are the manufacture of small, carefully flaked projectile points of chert and chalcedony, the use of large cortex flakes of chert for knives, and the use of grinding to shape or sharpen the functional ends of certain tools. The use of grinding was present in the earlier Knoll phase, but was restricted to the notches on the stems of side-notched points, a technique that is not present in the Hilltop phase collections.

In other aspects of technology, there is continuity with earlier phases. One of the continuing trends is the use of ridged flakes, which were used in the Hilltop assemblages for flakeknives (Plate VI, e-k) and probably for projectile points. Burns reappear in this phase (Plate VII, v,w), although they are a different form than that which characterized the Narrows phase. Preferred raw materials continue to be chert and chalcedony. Relative percentages, computed as before, are as follows: chert, 61%; chalcedony, 34%; basalt, 5%.
UGASHIK LAKES PHASE

The technology of core manufacture and flake production which characterizes the Lakes phase is in some respects more similar to the much earlier Knoll phase than it is to the intervening Hilltop phase. For instance, the most common Lakes phase cores are the pebble and flake core varieties (Plate VIII, a,b). While a few of these are present in Hilltop assemblages, they are not the dominant form. In the Knoll phase, cobble flake cores are common, although there are also blade and microblade cores as well which are not present in the Lakes phase. The preferred raw material for cores in the Lakes phase is chert, the same material that was preferred in the Knoll phase. The dimensions of one sample of Lakes phase cores are presented on Table 20.

TABLE 20
MEASUREMENTS OF LAKES PHASE Flake CORES,
HOUSEPIT #7, EARLY INLAND SUB-PHASE

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Core Height (mm)</th>
<th>Platform Angle (degrees)</th>
<th>Platform Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pebble flake cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE-2-5</td>
<td>36</td>
<td>80</td>
<td>48</td>
</tr>
<tr>
<td>EE-2-8</td>
<td>36</td>
<td>90</td>
<td>48</td>
</tr>
<tr>
<td>DD-2-25</td>
<td>42</td>
<td>70</td>
<td>36</td>
</tr>
<tr>
<td>DD-2-26</td>
<td>45</td>
<td>90</td>
<td>47</td>
</tr>
<tr>
<td>Z-4-7</td>
<td>48</td>
<td>90</td>
<td>28</td>
</tr>
<tr>
<td>DD-2-3</td>
<td>31</td>
<td>80</td>
<td>30</td>
</tr>
<tr>
<td>EE-2-7</td>
<td>35</td>
<td>80</td>
<td>54</td>
</tr>
<tr>
<td>DD-1-4</td>
<td>49</td>
<td>80</td>
<td>45</td>
</tr>
<tr>
<td>FF-3-37</td>
<td>32</td>
<td>90</td>
<td>42</td>
</tr>
<tr>
<td>FF-4-3</td>
<td>39</td>
<td>90</td>
<td>46</td>
</tr>
<tr>
<td>FF-4-1</td>
<td>41</td>
<td>50</td>
<td>42</td>
</tr>
<tr>
<td>DB-4-4</td>
<td>44</td>
<td>70</td>
<td>45</td>
</tr>
<tr>
<td>cobble flake cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE-2-4</td>
<td>40</td>
<td>100</td>
<td>56</td>
</tr>
<tr>
<td>EE-4-99</td>
<td>70</td>
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<td>42</td>
</tr>
<tr>
<td>AA-2-2</td>
<td>59</td>
<td>90</td>
<td>42</td>
</tr>
<tr>
<td>DD-2-1</td>
<td>46</td>
<td>90</td>
<td>64</td>
</tr>
<tr>
<td>EE-3-8</td>
<td>31</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>FF-3-56</td>
<td>71</td>
<td>105</td>
<td>60</td>
</tr>
<tr>
<td>EE-4-64</td>
<td>38</td>
<td>70</td>
<td>87</td>
</tr>
<tr>
<td>DD-5-26</td>
<td>57</td>
<td>90</td>
<td>46</td>
</tr>
<tr>
<td>DD-3-5</td>
<td>65</td>
<td>90</td>
<td>28</td>
</tr>
<tr>
<td>ridged flake cores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD-2</td>
<td>47</td>
<td>90</td>
<td>35</td>
</tr>
<tr>
<td>HH-5-2</td>
<td>55</td>
<td>80</td>
<td>36</td>
</tr>
<tr>
<td>DD-1-2</td>
<td>60</td>
<td>100</td>
<td>35</td>
</tr>
<tr>
<td>DD-4-11</td>
<td>48</td>
<td>80</td>
<td>56</td>
</tr>
</tbody>
</table>

The abundance of Lakes phase cores and core debris has made it possible to reconstruct the sequence of manufacture. Two alternative approaches were taken during the initial stage. The first method involved splitting a chert nodule in two, such that a specimen was created with a plano-convex cross-section (Variety #3 cores). Subsequent flaking created a usable platform on one end of the nodule (Variety #4 cores). The alternative method was to begin with a chert nodule and remove two flakes from one end to create two perpendicular surfaces (Variety #2 cores). This form was then subjected to more flaking which created a usable platform for flake removal (Variety #4). Cores which have been subjected to continued flake removal are termed Variety #1 cores.
A sample of pebble flake cores from Housepit #7 (Early Inland sub-phase) was used in a comparison with the ellipsoidal cores of the Hilltop phase. Using the same core attributes as before, a significant difference was found for core height, $t(17) = 4.33, p < .05$, (critical value of $t = 2.11$) and for platform width, $t(17) = 5.34, p < .05$, but not with respect to platform angle, $t(17) = 1.23, p < .05$.

Comparisons were also made between the cobble flake cores of the Lakes and Knoll phases. In this comparison, no significant differences were found with respect to core height, $t(12) = 1.15, p < .05$ (critical value of $t = 2.18$), platform width, $t(12) = .89, p < .05$, or platform angle, $t(12) = .30, p < .05$.

One other core type occurred in the Lakes phase, although only in Housepit #7 of the Early Inland sub-phase. In some respects this type resembles the polyhedral blade cores of earlier phases. It is characterized by a single oval platform, tapering sides and long, narrow flake scars which extend most of the way around the circumference (Plate VIII, c). The reasons for classifying this type as a ridged flake core instead of a polyhedral blade core include the irregular appearance of the flake scars and the absence of blades among the Lakes phase debris. However, although these form a distinct type separate from blade cores, the measurable differences between these two forms are slight. The four ridged flake cores from Housepit #7 of the Lakes phase (Early Inland sub-phase) were compared to the two polyhedral or conical blade cores of the Knoll phase assemblage. Although the combined sample is small ($n=6$), the comparisons indicate that there are no significant differences between the two groups with respect to core height, $t(4) = .06$, $p < .05$ (critical value of $t = 2.79$), platform width, $t(4) = .11$, $p < .05$, or platform angle, $t(4) = 1.94, p < .05$.

The ridged flakes themselves were found in some numbers ($n=79$) in all of the Lakes phase components, although the cores were not. The abundance of ridged flakes in assemblages with only pebble and cobble flake cores suggests that ridged flakes were produced from more than one variety of core. The relative abundance of ridged flakes is probably related to the special structural properties of these flakes which make them an ideal blank for such Lakes phase tools as flakeknives, sidescrapers, points, and endscrapers.

Certain other technological features which were present in earlier phases continue into the Lakes phase time also. These include the application of grinding or polishing to the stems of projectile points, particularly stemmed points made from basalt. The biface and protoiface preforms, which were present in all earlier phases, are present in the Lakes phase assemblages in numbers that are sometimes astounding. The frequent use of basalt, which characterized only the Knoll phase of previous phases, is again present in the Lakes phase, particularly in the Early Inland sub-phase where this material was used for points and knives.

There is also continuity between the Hilltop phase technology and that of the Lakes phase. For instance, the polishing of the functional ends of certain tools such as adze bits continues into the time of the Lakes phase. Asymmetrical knives or sideblades continue to be present in assemblages of the Lakes phase as they were in the Hilltop phase assemblage from site 49-lba-2, although the size of the Lakes phase forms is considerably reduced in comparison with Hilltop phase sideblades. A further continuity between the two phases exists in the use of ridged flakes for particular forms of flakeknives. Perhaps the clearest continuity between the two phases is in the various projectile points from the two phases. A number of specific point types that first appear in the Hilltop phase, such as Types #5, #6, #8, #9, and #12, continue into the Lakes phase times without any obvious modification. More generally, the accent on small, carefully flaked points, often with contracting stems is a trait that characterizes both phases.

The pattern of raw material use during the Lakes phase continues the trend of reliance on chert for finished tools. Some new forms, such as obsidian and quartz, appear in the Lakes phase. The relative percentages of raw materials used for chipped stone tools, as defined previously, are as follows: chert, 60%; chalcedony, 11%; basalt, 20%; other dense igneous rock, 12%; slate, 8%; obsidian, 2%; quartz, 1%. The absence of cores made of such materials as basalt or obsidian suggests that these varieties may have been acquired as blanks or preforms from non-local sources.
One other aspect of Lakes phase technology deserves attention—the chipped stone net-weights. These objects are made from beach pebbles and cobbles and were fashioned by notching both ends by bifacial or unifacial flaking. Many of the net-weights also exhibit grinding in the area of the flaked notches. Three Lakes phase varieties, differing in size and weight, have been defined (see Appendix IV). When certain attributes of these tools, the distance between notches and the weight, are plotted on a bivariate graph, a pattern of clusters is apparent (Fig. 15). The plotted specimens on the figure include a sample of Lakes phase cobble net-weights from Housepit #7 of the Early Inland sub-phase, the very small pebble sinkers from the Tidewater sub-phase, and the small pebble net-weights from the Late Inland sub-phase component at site 49-Uga-2. The Early Inland sub-phase sinkers are quite obviously heavier and larger than the other two varieties (Fig. 15). The collections from the Tidewater sub-phase and the Late Inland sub-phase overlap each other on the graph, although those from the Tidewater sub-phase appeared to be generally smaller and lighter. To confirm this difference, a t-test was done with these two varieties of pebble sinkers using the attribute of weight. The samples consisted of those plotted on Fig. 15 as well as some that were not plotted because they duplicated existing points on the graph. A significant difference was found to exist between the two groups of net-weights, t(31) = 2.72, p < .05 (critical value of t = 2.04).

It was noted in the previous chapter that the cobble sinkers from the Early Inland sub-phase were commonly found as matched pairs, while the pebble sinkers from other Lakes phase components were more commonly found as clusters or scatters. These two lines of evidence suggest that there may well have been some change in fishing practices during the Inland sub-phase, specifically in the form of the net. Exactly what this development was is not readily apparent.

**UGASHIK RIVER PHASE**

In contrast to the preceding phase, assemblages of this phase are smaller and probably reflect less well the complete range of tool forms that characterized the occupations. However, the evidence that is available does suggest that the flake core forms of this phase are essentially the same as the Lakes phase cobble and pebble varieties. Missing from this phase, however, are the ridged flake cores and the ridged flakes themselves. With this exception, it seems likely that the Lakes phase flake production processes continued relatively unmodified into the River phase, although in very diminished scale.

The practice of using bifacial preforms of various sorts also continues. Bifaces, in particular, continue to be common. The River phase bifaces are inferred to represent different stages in the manufacture of such bifacial tools as points, knives and adze blades.

The most obvious dissimilarity in stone technology between this and the earlier phase is the extensive use of slate, although many of the River phase slate tools (e.g., inset blades, ulus) appear to be functional analogues to the Lakes phase chipped stone forms of chert, chalcedony and basalt. Slate tools, of course, are not without precedent, as they occur in the Knoll phase. However, the extensive reliance on this raw material must have significantly contributed to the demise of stone chipping during the River phase. The production processes applied to slate tools, grinding and polishing, were also present earlier, but were limited in their application (e.g., to basal edges of points and to adzes).

The extensive use of bone and antler for tools during this phase also sets these assemblages apart from previous times, although the limited preservation of this material makes comparison difficult.

**SUMMARY**

The major emphasis in this chapter has been the delineation of various aspects of chipped stone technology in each of the five prehistoric Ugashik phases. Of special interest has been the patterns of core manufacture and flake production (i.e., blades, microblades, flakes, ridged flakes). It is appropriate now to discuss certain general continuities and discontinuities in the various chipped stone technologies during the nine thousand years of human occupation of the Ugashik River drainage.
Fig. 15. Bivariate Plot of Lakes Phase Net-weights.
The earliest Ugashik entity, the Narrows phase (ca. 7000 B.C. to 5500 B.C.) is characterized by blade and microblade technologies, although the production of flakes and ridged flakes existed also. It was noted that the microblade industry is one with a particular form of core, the wedge-shaped or Campus type. The blade industry of the Narrows phase is more varied, with some four core types, including faceted and polyhedral varieties. Virtually all of the blade cores were fashioned from chert cobbles, whereas the microblade cores are both chert and chalcedony. The flakes of this phase were produced from chert cores formed either of small pebbles or larger cobbles. Ridged flakes, a specialized form of flake with blade-like attributes, were probably produced from both flake cores and blade cores. The various end-products of these stone technologies include both bifacial and unifacial tools, such as scrapers, burins, points, and knives. One particular form of Narrows phase tool, the core bifaces, resulted from a different technological sequence, in that the end-product is the core itself rather than the flakes or blades which were detached during the manufacturing of the tool.

The following Knoll phase (ca. 3000 B.C.) is also characterized by three general forms of cores--microblade, blade and flake. However, during this phase microblade production had fallen off: the microblade cores of this assemblage are rather haphazardly fashioned and the microblades are few in number. Blade cores continued to be represented by both faceted and polyhedral varieties, all of chert. Flakes and ridged flakes are present in the Knoll phase assemblage also, as are cobble flake cores. The predominant bifacial tool form of this assemblage, the side-notched point, was apparently fashioned from flakes or blades, possibly both. Other chipped stone tools are bifacial preforms (bifaces, proto-bifaces). Not present during the time of the Knoll phase are burins and core bifaces, two traits that characterized the previous phase. It is thought that this assemblage of the Knoll phase is a specialized one, representing only a certain subset of activities such as hunting and manufacturing, and that other forms of finished tools would be found to characterize this phase if other sites and assemblages were located.

Some 1,000 years later, a distinctly different stone technology is evident in the Hilltop phase (ca. 1900 B.C. to 1500 B.C.). Both blade and microblade technologies have apparently disappeared and flake production is represented by a unique form of core, the ellipsoidal variety. Less frequent cores in the assemblage are the pebble and cobble flake varieties. Virtually all of the chipped stone tools of this phase were manufactured from flakes or ridged flakes. Finished tools include numerous small and stemmed points, a new form of burin, flake-knives, cortex flake tools, scrapers and sideblades. The use of bifacial tool preforms, which was present in both earlier phases, is also present in the Hilltop phase. However, these bifaces and the cobble flake cores represent about the only continuities in chipped stone technology with the earlier Knoll phase. This distinct change in technology, taking into account the 1,000 years that separate the phases, is the most abrupt of the entire Ugashik sequence.

The Lakes phase (ca. 200 B.C. to A.D. 1000) continues the emphasis on flake technology, although the characteristic Hilltop phase core, the ellipsoidal type, is absent. The most obvious continuities between the time of the Lakes phase and the previous Hilltop phase are in the projectile point collections and, to some extent, the flakeknives. The Lakes phase stone technology is both unifacial and bifacial, with the majority of tools fashioned of chert. The use of bifacial preforms continues into the time of the Lakes phase also.

The last of the prehistoric Ugashik entities, the River phase (ca. A.D. 1000 to contact) is the time when the polishing and grinding of slate becomes predominant, while the frequency of chipped stone tools of chert and other materials has diminished considerably.

One of the general trends that can be seen throughout the Ugashik sequence is the diminishing variety of core forms. For instance, there are some nine core types in the Narrows phase assemblage, some four core types in the Knoll phase, two in the Hilltop phase assemblages, two in the Lakes phase, and only one core type in the River phase (see Appendix VI). The decreasing variety of cores is related, of course, to the decreasing variety of flake forms. All four types of flakes (i.e., microblades, blades, ridged flakes, flakes) occur in the two earliest phases, while only flakes and ridged flakes occur in the phases after 2000 B.C. However, while the variety of cores was decreasing through time, the variety of finished tool forms of chipped stone was increasing. While this may, to some extent, be a reflection of the generally larger sample sizes of the later phases, it would still seem to be a trend worth noting. For instance, there are only about ten forms of finished chipped stone tools in the Narrows phase assemblage, while in the Lakes phase assemblages there are over 40.
There are two conclusions that might be reached from these trends. First, during the two earliest phases, the Narrows and Knoll, the emphasis in chipped stone technology was in producing a wide variety of cores which could be used to manufacture a wide variety of "ready made" blanks for tool production. During the last three phases of the Ugashik sequence, the emphasis was not on producing a wide range of cores and flake blanks, but rather on producing a wide variety of finished chipped stone tools from flakes alone, as well as from flake-biface preforms.
CHAPTER V

COMPARATIVE STATEMENTS: SOUTHWEST

ALASKA AND BEYOND

The various prehistoric Ugashik phases and components described in the previous chapter are not unlike other cultural systems in having their own internal history as well as having external relationships with other neighboring systems. The intent of this chapter is to describe the levels of affinity between the Ugashik assemblages and other prehistoric Alaskan complexes and traditions, and to see to what extent these various degrees of external relationship and contact may or may not account for changes and phenomena observed within the Ugashik sequence itself.

UGASHIK NARROWS PHASE

Before 1970, sites of latest Pleistocene or early Holocene age were unknown on the Alaska Peninsula. The first evidence to suggest this antiquity came from a disturbed site at Igiugig (Fig. 1) near the outlet of Iliamna Lake (Dixon and Johnson 1971). In 1974, the same year that materials of the Ugashik Narrows phase were first discovered, a small collection of artifacts, primarily blade cores anddebitage, dating to some 8,000 years ago was recovered at Kogiug (Fig. 1) on the Alaska Peninsula (Humond and others 1976). The findings at Ugashik in 1974 and 1975 confirmed the evidence from Kogiug and Igiugig which suggested that by 9,000 years ago the Alaska Peninsula was characterized by a tradition of blade and burin industries.

Assemblages of this composition and antiquity have been found throughout Alaska ever since the discovery of the Campau site materials in the 1930's (Nelson 1937; Rainy 1939, 1940). The first site in Alaska that actually provided a long-term record of this technology was Onion Portage on the Kobuk River in northwest Alaska (Fig. 16). Of particular interest at Onion Portage are the two earliest assemblages, the Kobuk complex with radiocarbon dates of ca. 8200 B.C., and the Akmak complex with a single date of ca. 8000 B.C. (Anderson 1968a, 1970a). The Akmak date was secured from bone found in an area of re-deposition and apparently can provide only an approximation of the actual age of the Akmak artifacts themselves (Hamilton 1970). The Kobuk assemblage is rather small and includes only a few wedge-shaped microblade cores and flake burins. The Akmak assemblage is considerably larger and is characterized by many forms that have a remarkable similarity to those of the Ugashik Narrows phase. Common to both collections are the small, wedge-shaped microblade cores, large core bifaces, burins, flake unifaces, faceted blade cores, and end-of-blade scrapers (Anderson 1970a). The Akmak burins were originally described as having been fashioned on flakes by the removal of a burin spall from the lateral margin of a flake—in other words parallel to the long axis of the flake. These burins commonly have a retouched notch adjacent to the burin facet (Anderson 1970a:42-46). In these respects, the Akmak burins most closely resemble what have been termed "Donnelly burins" (Mauger 1969; Hadleigh West 1967:369). The flake burins from Ugashik more closely resemble what have been called "transverse burins" (Cook 1968). This form, like the Donnelly burins, frequently has a retouched edge or notch adjacent to the burin facet; however, this variety has a burin facet that is perpendicular (transverse) to the long axis of the flake. In a later report, Anderson (1972) has indicated that the Akmak complex does have at least one transverse burin, discovered after the initial site report was published in 1970.

Based upon the Akmak and Kobuk complexes from Onion Portage, as well as some small and undated assemblages from the Noatak River drainage, Anderson (1972:83,99) has defined the American Paleo-Arctic tradition. Diagnostic traits are the wedge-shaped microblade cores (Campau cores), faceted blade cores, a heavy stone tool industry that includes core bifaces, microblade insets, flake burins, and bifacial knives (Anderson 1970a:64). He suggests the tradition flourished between 8000 and 9000 B.C., and indicates also that he would consider such assemblages as Trail Creek Caves (Fig. 16) dated at about 7000 B.C. (Larsen 1968) and the Denali complex sites dated to ca. 8000 B.C. (Hadleigh West 1967, 1975) as likely representatives of the tradition.
Fig. 16. State of Alaska, Locations of Archaeological Sites.
One of the unquestionably early sites in Alaska that Anderson would not include in the tradition is the blade and core site of Anangula near Unmak Island in the Aleutians (Fig. 16). The large Anangula assemblage has often been described as one in which unifacial flaking and large cores are predominant. Although some writers have suggested that microblades are also present in the collection, Aigner has stated that microblade production is not a feature of the Anangula industry (1970:63). Of particular interest are a number of Anangula specimens described as a variety of scraper that "was formed by removal of a transverse spall using the burin technique" (Aigner 1970:68). However, according to Aigner, "there is not an 'Anangula transverse burin'" (1970:63). After further work at the site in 1974, a number of revisions were apparently made in opinions regarding the nature of the Anangula industry. William Laughlin proposes seven Anangula traits with demonstrable Asiatic relationships. These include transverse burins and small (ca. 2-3 cm high) Gobi or Torzovi cores which would appear, on the basis of their size, to be microblade cores (Laughlin 1975:513). This, the more recent interpretation of the Anangula assemblage, suggests that there are more and closer similarities than previously recognized between Anangula and collections elsewhere in Alaska.

A considerable amount of discussion has taken place concerning the significance of the Anangula site as representing a maritime based population who were "remnants" of the Bering Land Bridge population (Laughlin 1967). Most of the evidence for this adaptation, unique in Alaska at this early time, comes from geophysical studies and not from the artifacts themselves (Aigner 1970:56). Apparently, the early residents of Anangula were adapted almost exclusively to a maritime environment because few other resources were available. As Robert Black states (1974:264-265):

It is concluded that the ancient Aleuts that settled Anangula...about 8400 y.a. used boats...sea level would have been close to present level, and the deep water passes of the Aleutians were flooded...those ancient Aleuts did not have available the major food resources of the currently exposed strandflats, yet they must have been maritime oriented, for land-based food resources would have been limited.

If, as seems the case, Anangula was occupied by a maritime-oriented population whose settlement of the Aleutians was by boat, then it might be expected that similar occupations could be found along the Bering Sea coast of the Alaska Peninsula.

As previously indicated, there are now known to be three assemblages on the Peninsula characterized by microblade and blade cores which date between 6000 B.C. and 7000 B.C. Both the Koggiung and Igiugig collections have blade or microblade cores which are generally larger than many of the Campus cores that have been described (e.g., Campus, Denali collections). In overall dimensions (Table 21), these cores from the Peninsula more closely resemble what are termed Large, Wedge-shaped Blade cores (Type #3) at Ugashik.

<table>
<thead>
<tr>
<th></th>
<th>Koggiung (n=2)</th>
<th>Igiugig (n=2)</th>
<th>Ugashik (n=2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform Length</td>
<td>36-45</td>
<td>42-48</td>
<td>40-43</td>
</tr>
<tr>
<td>Platform Width</td>
<td>29-45</td>
<td>33-38</td>
<td>30-34</td>
</tr>
<tr>
<td>Core Height</td>
<td>47-51</td>
<td>48-49</td>
<td>45-52</td>
</tr>
</tbody>
</table>

TABLE 21

MEASUREMENTS OF LARGE, WEDGE-SHAPED BLADE CORES FROM KOGGIUNG, IGIUGIG AND UGASHIK (Ranges in Millimeters)
This form, at all three sites, is characterized by a keel fashioned by unifacial flaking of the right-hand side of the core when the keel is facing the viewer and the platform is facing up (Plate I, f,g). This variety of blade core, at least in overall size, is very similar to other blade cores from both Anangula and Onion Portage (Morlan 1970:Table 2).

Blade cores are not the only items that would seem to link early Holocene sites from the Alaska Peninsula, Anangula and Onion Portage. Such traits as transverse burins, blade scrapers and pebble tools are also present in these assemblages. While one might choose to emphasize the differences between these assemblages or the particular contexts in which they occur—differences such as the unique unifacial industry and the presumed maritime adaptation at Anangula—it is not on the other hand unreasonable to propose that all of these early blade-core sites in southwest Alaska, as well as others such as the Donali and Campus sites, fit within a broadly conceived definition of Anderson’s American Paleo-Arctic tradition.

A number of writers have stressed the resemblances to Asiatic sites of many of these blade and microblade sites in Alaska (cf. Chard 1974; Morlan 1967; Mueller-Beck 1967; Smith 1974). For instance, Hans-Georg Bandh has proposed that the early technological tradition that includes microcores and burins originated in East Asia as the Siberian Gravettian and spread to Alaska across the then-exposed Bering Land Bridge between 15,000 and 10,000 years ago (1963:176-177). Although the early Narrows phase collection from Ugashik would fit comfortably within what Bandh terms the Epi-Gravettian, the complex discussion of Asiatic origins is beyond the scope of this report.

UGASIRK KNOLL PHASE

For two or three millennia following the demise of the American Paleo-Arctic tradition on mainland Alaska, there is a general absence of evidence for occupation of any kind. Throughout most of Alaska the tradition that first appears following this hiatus is one with a very distinctive horizon marker, the side-notched point. The horizon may begin as early as 4000 B.C. in the Brooks Range at Anaktuvuk Pass (Anderson 1965b; Campbell 1962), about 4000 B.C. at Onion Portage (Anderson 1966a), and by 3000 B.C. on the Alaska Peninsula (Dumond and others 1976).

The most detailed sequence of this tradition has been developed at Onion Portage in northwest Alaska. The earlier aspects of the side-notched point tradition at this site have been termed Palisades (sometimes Palisades II) and last from 4000 B.C. to 2600 B.C. (Anderson 1966a). The first few centuries of the time of Palisades is characterized by asymmetrical side-notched points with ground notches, endscrapers, unifacially retouched knives fashioned on large flakes, bifaces of various sorts, and worked slate. By 2600 B.C., side-notched points have become infrequent, stemmed points are common, and oblongate points first appear. By the time of the Portage complex (2600 to 2400 B.C.), both side-notched and stemmed points had disappeared and the prevailing point form is "high shouldered oblongate" (Anderson 1966b). Whereas earlier in the Palisades chart and obsidian were the preferred raw materials, basalt has now become the most frequently used raw material for points.

The Palisades and Portage materials from Onion Portage, dating between 4000 and 2400 B.C., are the basis for Anderson's definition of a Northern Archaic tradition, which is characterized by new forms of stone technology, as well as by innovations in subsistence and settlement. Anderson suggests that the technology of this tradition, with its notched points, net-sinkers, its use of slate, of stone grinding, and its frequent use of coarse-grained rocks, is more akin to assemblages of the Eastern Archaic of North America than it is to any previous Arctic assemblage (Anderson 1966a:30; 1966b). He proposes that the mechanism that accounted for these ultimately southern traits in Arctic Alaska was the northward spread of people and forests during a time of climatic amelioration (cf. Dumond 1969c). Additionally, he believes that the materials dating to this period in northwest Alaska represent people of northern Indian ancestry, as opposed to people of Eskimo ancestry who more commonly inhabited unforested or tundra habitats (Anderson 1966a:30-31; 1966b).

There are a number of other assemblages in northwest Alaska that Anderson would include within the tradition. For instance, at Cape Krusenstern (Fig. 16) Giddings has described a collection that includes side-notched points, scrapers, various forms of bifaces and "parallel-edged, unifaced forms...resembling true blades" (Giddings 1961:159-160, 1967). Interestingly, most of the chipped stone implements of this assemblage, originally termed Palisades II, are characterized by patination, a form of surface alteration that is present on many of
the Ugashik Knoll phase artifacts. Anderson would also include a number of small and undated collections from the Noatak River drainage in the tradition. Additionally, some of the Noatak River sites described by Anderson have notched and stemmed points in association with microblades. While Anderson (1972) does not assign these microblade and notched point assemblages to the Northern Archaic tradition, they do provide some evidence that microblades may not have disappeared between the time of the American Paleo-Arctic tradition and the later Denigh Flint complex.

Farther east in the Brooks Range, there is also an assemblage that includes both side-notched points and microblades. This collection, the Tuktu complex, has a number of traits that are also present at Onion Portage, such as endscrapers, notched pebbles, bifaces, as well as the notched and lanceolate points. However, the Tuktu complex deviates from Palisades at Onion Portage by having tubular or polyhedral microblade cores (Campbell 1961, 1962). The single radiocarbon date for Tuktu is 4560 B.C. (Anderson 1968b).

In southwest Alaska, there are only three assemblages with side-notched points, and only the Ugashik Knoll phase has a definite association of microblades and cores with these notched points. At the previously mentioned Kogligun or Graveyard Point side, Dumond has recovered a small collection of bifaces, scrapers and flake debris that also includes one side-notched point. A single radiocarbon date suggests an age of about 3000 B.C. for the assemblage that is termed the Graveyard complex (Dumond and others 1976). Across Bristol Bay from Kogligun, Ackerman has recovered a surface collection with side-notched points that is designated the Security Cove phase. In addition to the points, there are bifaces of various sorts, scrapers and notched stone sinkers (Ackerman 1964:19). The notched points of this assemblage are clearly like the notched forms at Ugashik and additionally have the surface patination that typifies not only the Ugashik Knoll phase chipped stone materials, but those from the Palisades II assemblage at Cape Kruzensenst.

The collection from the Ugashik Narrows, with three radiocarbon dates of about 3000 B.C., lends some support to the notion that a microblade technology continued into the time of the Northern Archaic tradition. It also expands the known distribution of this tradition well beyond the past or present limits of the spruce forests, and there is good reason to believe that the Graveyard Point and Security Cove sites were also beyond this boundary as it existed some 5000 years ago (cf. Heusser 1963).

Thus, at least on the Bering Sea coast of the Alaska Peninsula, complexes with Northern Archaic affinity may have been situated in a landscape considerably different from that of their relatives to the north (e.g., Onion Portage), while at the same time sharing in a generalized Archaic technology.

During the time of the Northern Archaic tradition around the Bristol Bay area, a separate, although perhaps related, tradition characterized the Shellikof Strait area across the Aleutian Range. The earliest assemblages known from this area are those of the Taklal Ader phase from the Katmai National Monument coast and the Ocean Bay I complex of the Kodiak island group, both dating about 3800 B.C. or slightly earlier (D.W. Clark 1966b; G.H. Clark 1974, 1977). Both complexes have been grouped together in the Pacific cultural period (ca. 4000 B.C. to 2500 B.C.), which is characterized by "large lanceolate or ovate bifacially flaked knives, several forms of stemless and contracting-stem flaked projectile points, heavy core-like scrapers, bilaterally and unilaterally barbed bone projectile points...and a terminal blade and core industry" (G.H. Clark 1976:160). The following Early Takl phase of the Shellikof Strait area (ca. 2500 B.C. to 1500 B.C.) includes assemblages at Pedro Bay (Townsend 1970) and the Katmai National Monument coast (early Takl Birch phase) on the Alaska Peninsula, the B.R. Strand phase across the Aleutian Range at Brooks River (Dumond 1971), and the Ocean Bay II complex of the Kodiak Island group (D.W. Clark 1966b). According to G.H. Clark (1974:161ff), the Early Takl period is the time of the introduction or innovation of ground slate artifacts such as large knives and dartheads, both stemmed and unstemmed. These slate implements were found in all the assemblages just noted and are used to demarcate them from the previous Alder phase on the Katmai coast (which does not apparently have any slate) and the earlier Ocean Bay I complex of the Kodiak group (which has only slight amounts of slate) (D.W. Clark 1966b:361).
It was noted that one of the diagnostic traits of the Northern Archaic tradition was the use of slate in limited quantities, although no standardized slate artifact forms exist for the Northern Archaic tradition assemblages in northwest Alaska (Anderson 1966b). However, the Ugashik Knoll phase does have well fashioned slate artifacts in the form of sawed and ground dartheads which are remarkably like such artifacts from the Early Birch phase (cf. G.H. Clark 1977: Plate IV), from Ocean Bay II (cf., D.W. Clark 1966b: Fig. 3), as well as from the Strand phase at Brooks River (Dumond 1971: Fig. 2). There are also a limited number of artifacts from Component B at 49-Uga-6, presumably to be stratigraphically separate and later than the Knoll phase component at the site, that have resemblances with certain artifacts from the Alder and Birch phases on the Katmai Monument coast and from Ocean Bay I on the Kodiak Islands. Specifically, this would include the Types #15 and #23 chipped stone projectile points of the Intermediate Inland sub-phase component at 49-Uga-6 (Plate IX, g.m; Dumond and others 1976, Fig. 5h) which are clearly like the large, contracting stem points from both Ocean Bay I at the Sitkalidak Roadcut site (D.W. Clark 1966b: Fig. 2) and those in the Taki Birch and Alder phases (G.H. Clark 1977: Plates I and II). These large, contracting stem points were included in the Lakes phase inventory at site 49-Uga-6 because similar forms also occur in the Early Inland sub-phase component (Housepit #1) at 49-Uga-1. There is a possibility that the occupation of Housepit #7 disturbed an assemblage that is more properly of Knoll phase age, and this might help to account for the presence of polyhedral cores with blade-like facets found in the same house feature, as a very similar form of core is found in the Knoll phase assemblage at 49-Uga-6.

**UGASHIK HILLTOP PHASE**

One of the landmark discoveries in Alaskan prehistory was Giddings' description of the Denbigh Flint complex at the Iyatayet site near Cape Denbigh (Fig. 16). Since its original conception (Giddings 1951), the Denbigh Flint complex has been extended to include collections from a number of other sites of the second millennium B.C. in northwest Alaska. Irving (1962: 56) and Anderson (1970b:10) suggest the following traits for this complex: cuboid or conical microblade cores; burins and retouched burin artifacts; steep-edged flakeknives; absence of pottery; small inset sidblades; small, bifacially flaked points without stems or notches; thumbnail endscrapers; lack of overall grinding or polishing on stone implements; exceedingly fine flaking on stone tools. The presence of related and contemporary assemblages elsewhere in the American Arctic, such as the Gravels phase in southwest Alaska (Dumond 1962, 1973), the Sarqeq, Pre-Horset and Independence I complexes in Arctic Canada and Greenland (Giddings 1964), has led to the definition of the Arctic Small Tool tradition (Irving 1962, 1970).

The distribution of Arctic Small Tool tradition sites in Alaska, including the Hilltop phase sites at the Ugashik Narrows, indicates that settlements were restricted to the zone of coastal tundra. Sites along the coast itself, such as at Cape Denbigh and Cape Krusenstern, appear to be temporary encampments (Giddings 1964:274), while sites with constructed dwellings have only been found in the interior, between 30 and 150 miles from the coast (i.e., Onion Portage, Itivilik Lake, Brooks River, Ugashik Narrows). This total distribution of Arctic Small Tool tradition sites in Alaska not only duplicates rather closely the distribution of later Norton or Inuktuk sites, but also duplicates the distribution of historic Eskimo. In fact, this conformity has been suggested as compelling evidence that the Arctic Small Tool tradition is in some sense ancestral to Eskimo people generally (Dumond 1965, 1969b).

When the materials from the Hilltop phase at Ugashik are contrasted with the Denbigh Flint complex at Iyatayet, it is clear that while the Ugashik materials are generally similar, some outstanding differences are present. For instance, the closest similarities between Ugashik and Iyatayet occur among the flakeknives or sidescrapers (cf. Giddings 1964: Plate 69, 70a), endscrapers (cf. Giddings 1964: Plate 70b) and the careful workmanship on the endblades (points) and sideblades. Also present at Ugashik, although only in the small Hilltop phase assemblage at site 49-Uga-1, are the "sitten-shaped" burins (cf. Giddings 1964: Plates 66a, 66b). Perhaps the most notable difference between the Ugashik and Iyatayet assemblages is the absence of microblades in the sample available from Ugashik. Other differences are found in the projectile point or endblade collections, which at Ugashik are generally stemmed and larger than the small lanceolate varieties at Cape Denbigh.
A number of these characteristic Denbigh Flint complex traits which are absent at Ugashik in the Hilltop phase are also absent or rare in the Brooks River Gravels phase in the Naknek drainage, some 80 miles to the north. For instance, the B.R. Gravels phase has few microblades, apparently no microcore, few burins, and no burin spall artifacts (Dumond 1971:8). Like Ugashik, however, the B.R. Gravels phase does have some small, contracting stem points, as well as some small, bi-pointed endblades more like those from the Iyatayet site at Cape Denbigh (Dumond 1971:8; Giddings 1964).

When the difference between the Ugashik Hilltop phase assemblage and the Arctic Small Tool tradition assemblages from Iyatayet and Brooks River are considered, it is apparent that not only are some diagnostic Denbigh Flint complex artifacts rare or absent at Ugashik and Brooks River (i.e., burins, microblades, cores), but the projectile point and sideblade forms at Ugashik, and to some extent Brooks River, are clearly more like later Norton varieties than they are like any from the Denbigh Flint Complex at Iyatayet. In fact, it was this Norton-like appearance in certain chipped stone artifacts that suggested, before radiocarbon dates were obtained, that an assemblage transitional between the Arctic Small Tool tradition and succeeding Norton tradition had been found. It is possible, of course, that the "transitional" cast of the Hilltop phase assemblage at 49-Uga-2 was a result of mixture with the later Norton-like assemblage at the site. However, the radiocarbon dating of the 49-Uga-2 Hilltop phase house-floor, as well as careful analysis (see Chapter III), indicates that in all probability the Hilltop phase is both generally contemporaneous with, and related to, the Iyatayet and Brooks River Arctic Small Tool tradition sites. It is thus apparent that some other explanation is necessary to account for the divergent appearance of the Hilltop phase assemblage, and for that matter, the Brooks River assemblages also.

It has been suggested that the Arctic Small Tool tradition materials from Brooks River are evidence for a southerly expansion of the tradition onto the Alaska Peninsula shortly after the beginning of the second millennium B.C. (Dumond 1972b, with references). The evidence from the Ugashik Hilltop phase assemblages generally lends credence to this proposition. However, the variant cast of the second millennium B.C. assemblages on the Bering Sea side of the Peninsula (i.e., Brooks River Gravels phase, Ugashik Hilltop phase) indicates that some differentiation took place between these complexes and those of the Arctic Small Tool tradition in northwest Alaska.

It is noteworthy in this regard that the Ugashik Hilltop phase is the most southerly representative of the Arctic Small Tool tradition in Alaska and occurs at what might be interpreted to be a frontier or interface with contemporary but different cultural traditions of the Pacific coast (i.e., along Shelikof Strait and in the Kodiak Island Group) and the lower Alaska Peninsula (cf. G.H. Clark 1974:161). At least one deviant aspect of the Ugashik Hilltop phase, the contracting stem points at site 49-Uga-2, occur in modified form in the second millennium B.C. assemblages (early Talik Birch phase) on the Pacific coast of Katmai National Monument (G.H. Clark 1974:52), as well as at the Hot Springs site at Port Molier at the same approximate time (Okada and Okada 1974; Okada and others 1976). It might then be suggested that representatives of the Arctic Small Tool tradition on the Alaska Peninsula (i.e., Brooks River, Ugashik Narrows) participated in a sphere of cultural interchange that included influences from a number of neighboring regional traditions (i.e., those of the Katmai coast, Kodiak Island, lower Alaska Peninsula) which acted as a source of variety that was absent in the Denbigh Flint complex of the second millennium B.C. in northwest Alaska.

UGASHIK LAKES PHASE

Throughout much of coastal western Alaska, the time following the Arctic Small Tool tradition is characterized by a brief or prolonged hiatus that lasts until the appearance of complexes typified by pottery. In northwest Alaska, these assemblages are first known as the Choris complex, which dates to 700 B.C. in the Kotzebue Sound (Band 1969:63; Giddings 1967:215) and to about 800 B.C. at Trail Creek caves (Larson 1968:68). The Choris complex is the earliest representative of a long-lived tradition that continues through later aspects such as Norton and Ipiutak. It has been suggested that all of these related sites and assemblages be subsumed under the concept of a Norton tradition which would be characterized by oil lamps, specific forms of chipped stone implements, the occasional use of slate, and the use of pottery that is typically organic-tempered and check-stamped (Dumond 1975a:169).
The Norton tradition was first recognized as a distinct complex or "culture" by Giddings during his work at Cape Denbigh and was later extended by him to include related assemblages at Cape Kruisenstern. The Cape Denbigh Norton materials are dated at ca. 400 B.C. and include such traits as polished adze blades, labrets, abraders, whetstones, sidescraper, net-weights, lamps, and organic-tempered pottery (Giddings 1964:244-245). All of these traits also characterize the Lakes phase at Ugashik. Remarkably close similarities between Ugashik and Iyatayet Norton assemblages are found in the Cape Denbigh flakeknives or sidescrapers (Giddings 1964: Plate 54), discoidal scrapers (cf. Giddings 1964: Plate 56), and contracting stem points (cf. Giddings 1964: Plate 48). Additionally, like Ugashik, many of the Iyatayet points are fashioned from basalt and have basal grinding on the stems. While Cape Denbigh Norton does have some features, such as extensive bone and slate industries, which are not represented in the Lakes phase collection from Ugashik, the overall similarity of the two complexes is unquestionably close.

There are yet other series of assemblages in northwest Alaska with Norton affinities—the Ipiutak and Near Ipiutak materials at Point Hope (Fig. 16). The earlier Near Ipiutak, with radiocarbon dates of 120 B.C. and 20 B.C. (Larsen 1968:67), also occurs at Cape Kruisenstern (Giddings 1967) and Traill Creek Caves (Larsen 1968). Near Ipiutak is distinguished from the later Ipiutak, dated at A.D. 339 at Point Hope, by the presence in Near Ipiutak of lamps, whaling harpoons, slate and, apparently, pottery (Larsen and Rainey 1948). While the Ipiutak collections from Point Hope are best known for their spectacular bone and ivory industries, the similarities that exist among these assemblages and those of the Lakes phase at Ugashik are primarily in chipped stone. For instance, the flakeknives from Ugashik closely match what are termed "scrapers" at Point Hope which occur in Ipiutak association (cf. Larsen and Rainey 1948: Plates 16, 17). Also similar are the discoidal scrapers which occur in the Early Inland sub-phase of the Lakes phase at Ugashik and in both Ipiutak and Near Ipiutak association at Point Hope (cf. Larsen and Rainey 1948: Plates 15, 85). A further concordance can be noted in some of the chipped stone points from both collections, specifically the rhomboidal, contracting stem points (cf. Larsen and Rainey 1948: Plate 80), the square based and unstemmed points, and the unstemmed points with asymmetric and concave bases (Larsen and Rainey 1948: Plate 35).

Complexes with Norton affinities have also been located farther south along the coast of Alaska at Unalakleet and Chagany Bay (Fig. 16). Norton tradition materials from the first millennium A.D. have been described from both areas, and such characteristic Norton or Ipiutak traits as flakeknives, net-weights, adze blades, small stemmed points, and organic tempered pottery are found in both Chagany Bay (Ackerman 1964:23-28) and Unalakleet (Lutz 1973:155-156) assemblages.

The only extensive Norton tradition collections from the Alaska Peninsula besides those at Ugashik are the materials from the Naknek drainage (Fig. 16). The Ugashik assemblages of the Early and Intermediate Inland sub-phase most clearly resemble materials of the Smelt Creek and B.R. Weir phases (Brooks River period) that date between 200 B.C. and A.D. 600. Co-occurrences between the Ugashik and Naknek assemblages during that time include sunken houses, contracting stem points, adze blades with polished bits, lamps, organic-tempered and check-stamped pottery, sidescraper, and cobble net-weights (Dumond 1971:9-12). The Late Inland assemblages of the Ugashik Lakes phase, with its barbed, chipped stone points and plain, organic-tempered pottery, is more akin to the last of the Brooks River period phases, the B.R. Falls phase of the latter half of the first millennium A.D. (Dumond 1971:12-13).

During the time when Norton-related occupations prevailed along the Bering Sea coast, a different regional tradition characterized the Shellfisk Strait coast of the Alaska Peninsula and Kodiak Island Group in what is termed the Kukak period (G.H. Clark 1974), while still another tradition was dominant on the lower Peninsula and the Aleutians. Occupations of the Shellfisk Strait coast during the early first millennium A.D. is represented by the Takil Cottonwood phase of Katmai National Monument (G.H. Clark 1974). These assemblages have plain, organic-tempered pottery, lamps, adze blades, and various forms of contracting stem points, which resemble those of the Inland sub-phase of the Ugashik Lakes phase. A close parallel is also found at this time in the overall flaked, side-notched knives of basalt (Variety #2) of Shellfisk Strait (cf. G.H. Clark 1974: Plate IV, 41) and the bifaced basalt form (Type #3) at Ugashik (Plate VIII,d). Also present in the Takil Cottonwood phase but absent at Ugashik during the Lakes phase, are well-developed slate and bone industries (cf. G.H. Clark 1974:64-69), although their absence at Ugashik could be due to poor preservation. On the Kodiak Island Group, assemblages contemporaneous with the Inland sub-phase at Ugashik are represented by the Three Saints phase. Like the Peninsula coast assemblages of Katmai National Monument, the Three Saints phase is characterized by extensive industries of slate and bone (G.W. Clark 1968:175, 1968b:363-365), which are apparently missing at Ugashik during the Lakes phase.
Evidence for the third cultural tradition on the Alaska Peninsula at that time, besides the Kukak tradition of the Shelikof Strait area and the Norton-related assemblages of the Ugashik and Naknek drainages, comes from work at the Hot Springs site near Port Moller and from research around Chignik across the Peninsula (Fig. 16). The chipped stone industry at Port Moller and Chignik is primarily of basalt, although there is also a bone and antler industry known at Port Moller (Dumond and others 1976; Workman 1966a). The chipped stone points from these two localities are generally stemmed and resemble to some extent points of Norton affiliation found elsewhere in Alaska, while other points from Chignik and Port Moller more closely approximate types found in the Aleutians, such as at Chaluka (cf. Demiston 1966).

Similarities between assemblages of the Lakes phase at Ugashik and the Hot Springs site collection include tanged and untanged knives of basalt, end-notched net-weights, adze blades, and abraders (Okada and Okada 1974:120; Workman 1966a). Unlike Ugashik, the Hot Springs site provides abundant evidence for a bone and antler industry (Okada and Okada 1974:120-121; Workman 1966a:140-143). The radiocarbon evidence indicates that the Port Moller site was occupied as early as 1500 B.C., with occupation persisting until at least A.D. 1300 (Okada and others 1976:10). Both Workman and Okada have suggested that the Hot Springs site has a distinct Aleutian cultural affinity (Okada and Yamaguchi 1975:26; Workman 1966a:145).

Recent work by the University of Oregon at Chignik has led to the discovery of assemblages remarkably like the Hot Springs collection. Excavations along the Chignik River have produced an assemblage characterized by chipped stone tools almost exclusively of basalt, no pottery, and little slate (Dumond and others 1976). Radiocarbon evidence indicates that this chipped stone assemblage dates from the first millennia A.D. and B.C.

It was proposed in the preceding section that the unique location of Ugashik settlements at a frontier or interface between a northern-oriented Arctic Small Tool tradition and southern-oriented Pacific and Aleutian traditions may have contributed to the transitional cast of the Ugashik Hilltop phase. A similar situation may have also existed during the time of the Lakes phase at Ugashik as well, with Lakes phase cultures participating in a sphere of exchange that was composed of a Bering Sea Norton tradition, a Shelikof Strait tradition (Kukak period) and a Lower Peninsula or Aleutian tradition. The strongest influence during this time at Ugashik, during the time of Inland sub-phase (200 B.C. to A.D. 400), was probably from the north as witnessed by such traits as pottery, flakeknives, discoidal scrapers, and some point varieties. However, there must also have been southern influence during the Inland sub-phase as evidenced by the various forms of basalt knives and some varieties of points. During the Tidewater sub-phase of the Lakes phase at Ugashik (ca. A.D. 400 to 1000), affinity with the lower Alaska Peninsula and Aleutian cultures is more strongly felt as witnessed by the predominant basalt industry in the assemblages of the Tidewater sub-phase components along the lower course of the Ugashik River and near Pilot Point.

UGASHIK RIVER PHASE

In previous descriptions of the River phase (Henn 1975a, 1975b) it was indicated that these materials are most closely like what has been termed the Western Thule "culture" or tradition elsewhere in Alaska. The first description of Western Thule was given by Larsen and Rainey after their work at Point Hope. This complex is characterized by multi-roomed, sunken houses, particular forms of barbed and open-socketed harpoons, tanged antler arrowheads, thick-walled pottery vessels, often with concentric impressions, ground slate ulus and inset blades, and a few varieties of chipped stone implements. The subsistence orientation was primarily maritime with a focus on whaling and sealing (Larsen and Rainey 1948:170-175).

Various other collections from western Alaska have been subsumed within the Western Thule tradition. These include materials from Cape Kruzenstern thought to date between A.D. 800 and A.D. 1400 (Giddings 1964:25; 1967:89). A somewhat related form of Western Thule was found by Giddings along the Kobuk River and around Kotzebue Sound (Fig. 16). In contrast to the Point Hope and Cape Kruzenstern Western Thule, the evidence from the Kobuk area indicates a reliance upon river fishing (salmon) and caribou hunting rather than maritime activities. The Western Thule of the Kobuk and Kotzebue localities apparently dates to as early as A.D. 1250 and is typified by extensive industries in bone, antler, and slate. The pottery of these assemblages is commonly tempered with sand or pebbles, is rather thick, and is often decorated with concentric circles like the pottery at Cape Kruzenstern and Point Hope (Giddings 1952:95).
While certain features of Western Thule as it is known in northwest Alaska are as yet undocumented at Ugashik, there are notable similarities. For instance, polished slate ulus and inset blades, gravel-tempered pottery and unilaterally barbed antler arrowheads from the River phase at Ugashik are all similar to forms of the Western Thule further north, such as along the Kobuk (cf. Giddings 1952: Plates I, XVII, XXXVII). More generally similar are the Ugashik net-weights, bone awls, large chipped stone adze blades, antler wedges, abraders, houses, whetstones, and a settlement pattern with sites concentrated along the tidal portion of rivers and bays.

In southwest Alaska, assemblages of late prehistoric Western Thule affinity have been recorded at Chagvan and Nanvak Bays (Ackerman 1964), as well as along the Naknek River. The Thule-related period in the Naknek, the Naknek period (A.D. 1000 to A.D. 1900), shares numerous traits with the Ugashik River phase, such as polished slate ulus and inset blades, large adze blades, slate dartheads, gravel-tempered, thick and thin pottery, large grinding slabs, and bone tools (Dumond 1962:66-67; 1971:14-17).

Late prehistoric collections from the Pacific coast of Katmai National Monument also have resemblances with the Western Thule tradition in the Naknek drainage (of the Naknek period) and at Ugashik (the River phase). This period on the Katmai coast is represented by the Kukak Mound phase with two radiocarbon dates of A.D. 1175. Correspondences with the Ugashik River phase, phases of the Naknek period and the Kukak Mound phase include gravel-tempered pottery, tanged and unilaterally barbed antler arrowheads, polished ulus, large adze blades, large and faceted polished slate dartheads, small and barbed slate inset blades, bone wedges, and awls (G.H. Clark 1974:94-103).

Near the tip of the Alaska Peninsula, McCartney has located and excavated a number of sites in the Izembek National Wildlife Refuge (Fig. 7), the collections from which have some similarities with those of the Ugashik River phase, although notable differences are also present. The Izembek assemblages are radiocarbon dated about A.D. 1000 (McCartney 1974:64). Similarities with the Ugashik River phase assemblages are thick, gravel-tempered pottery, large ground slate projectile points, large adze blades, slate ulus, end-notched net-weights, whetstones, bone wedges, pumice abraders, rubbing stones and grinding slabs (McCartney 1974:69-79). McCartney notes that the slate industry and gravel-tempered pottery from Izembek show close resemblance to Brooks River Camp phase materials from the Naknek River drainage and to the Mound phase materials of the coast of Shelikot Strait. Other aspects of the Izembek collections, such as the chipped stone industry, are more like materials from Port Moller and the Aleutians (McCartney 1974).

The various late prehistoric assemblages of the Alaska Peninsula, such as those from Ugashik, Naknek, the Katmai Monument coast and Izembek, provide strong evidence that during the second millennium A.D. there was a distinctive Western Thule horizon throughout much of the region. The widespread distribution of certain contemporary artifact styles, such as thick, gravel-tempered pottery, ground slate tools and specific forms of bone and antler tools, is support for such an idea. The continuous distribution of various artifact forms on the Peninsula at this time, indicating some form of cultural homogeneity, is not matched by the discontinuous nature of the historic languages spoken on the Peninsula. This disconformity in language and material culture on the Alaska Peninsula between Eskimo groups on the one hand, and Aleuts on the other, has been the cause of some discussion (see Dumond 1974a, Dumond and others 1975; McCartney 1969, 1974). Whatever the outcome of this discussion, it is clear that the assemblages of the River phase have strong ties in all directions on the Peninsula during the second millennium A.D.

**SUMMARY**

Throughout the previous pages an attempt has been made to indicate the various external relationships between the prehistoric Ugashik phases and assemblages and complexes and traditions elsewhere in Alaska. It has been shown that the earliest of the Ugashik phases, the Narrows phase (ca. 7000 B.C. to 5500 B.C.), has strong relationships with the American Paleo-Arctic tradition that existed throughout much of Alaska during the first few millennia following the end of the Pleistocene. The following Ugashik entity, the Knoll phase (ca. 3000 B.C.), is clearly akin to what has been termed the Northern Archaic tradition that was spread throughout much of Alaska between about 4500 B.C. and 2500 B.C. The next of the Ugashik phases, the Hilltop phase (ca. 2000 B.C. to 1500 B.C.), shares elements with the Arctic Small Tool tradition.
which occurs at various coastal and inland sites in Alaska between about 2500 B.C. and 1000 B.C. The following phase at Ugashik, the Lakes phase (ca. 200 B.C. to A.D. 1000), is most closely related to the Norton tradition of Bering Sea coast of Alaska (ca. 500 B.C. to late as A.D. 1000), although the Lakes phase also shares some important elements with the Norton-related Ipiutak assemblages at Point Hope, in addition to having affinity with some lower Alaska Peninsula assemblages of a different tradition. The final prehistoric phase at Ugashik, the River phase (ca. A.D. 1000 to contact) may be said to partake of the Western Thule tradition as it is known throughout much of coastal Alaska in the second millennium A.D.
It is evident from the preceding chapter that the prehistory of the Ugashik drainage reflects in many respects the general trend of prehistory as it has been described for the Bering Sea coast of Alaska. The purpose of this concluding chapter will be to indicate the significance of the external affinities noted in the previous chapter and to relate the prehistory of the Ugashik region to the research problems outlined in the Introduction.

The relationship of the earliest assemblage, the Ugashik Narrows phase (ca. 7000 B.C. to 5500 B.C.), is clearly with sites and assemblages of the American Paleo-Arctic tradition which occur not only near the coast of the Bering Sea--such as at Trail Creek, Koggling, and Anangula--but also in the interior of Alaska at such locations as Onion Portage, Donnelly Dome, Healy Lake, and Campus. This early tradition was a pan-Alaskan phenomenon characterized by a distinctive blade and burin technology that lasted for two or three millennia following the end of the Pleistocene some 10,000 years ago. While the specific history of this tradition in terms of its relationship to later Alaskan complexes of ultimately Eskimo or Indian affinity remain to be worked out for various regions, it seems reasonable to think that the American Paleo-Arctic tradition is in some sense ancestral to them all (cf. Dumond and others 1976). In fact, this tradition now represents the only plausible early Holocene source for these later Alaskan developments, unless one is to derive much of Alaskan prehistory from areas south of the Arctic or west across the Bering Strait, a postulate that is not favored here except for the ultimate origin of the American Paleo-Arctic tradition itself.

The radiocarbon dating of the Ugashik Narrows phase suggests that this assemblage was most likely later—and as much as 1,000 years later—than related assemblages of the American Paleo-Arctic tradition north and east in Alaska. Additionally, the dating of deglaciation at the Narrows at about 7000 B.C., and the dating of flooding of the Bering Sea Land Bridge at ca. 8000 B.C., serve to indicate that the Ugashik area was occupied after deglaciation and after flooding of the Bering Sea Land Bridge connection between Asia and America. It therefore seems probable that the earliest occupation of the Narrows resulted from a spread of the American Paleo-Arctic tradition onto the Alaska Peninsula from areas to the north. This conception would rule out any notion of the Ugashik Narrows phase as a "remnant" population of peoples who crossed the Bering Sea Land Bridge and would stress that the immediate ancestry of the phase would lie with already established populations on mainland Alaska to the north.

If the Ugashik Narrows phase is the earliest assemblage of its kind on the Alaska Peninsula, and if it was derived from a spread of the American Paleo-Arctic tradition populations into recently deglaciated areas of southwest Alaska, then it might be proposed that the phase is a link between such complexes to the north—e.g., Akmak, Trail Creek, Denali, Campus—and related assemblages in the Aleuts, such as Anangula. While it is entirely possible that the early blade and core site in the Aleuts manifests a unique unifacial industry and maritime adaptation, it is also apparent that the fundamental blade and burin technology of the American Paleo-Arctic tradition remained little changed during its dispersion onto the Alaska Peninsula and out into the Aleuts.

The sequential hiatus that exists in the chronology between the time of the Ugashik phase and the time of the Ugashik Knoll phase (ca. 3000 B.C.) is also evident elsewhere in southwest and northwest Alaska between the time of the American Paleo-Arctic tradition and the ensuing Northern Archaic tradition. Neither the local hiatus at Ugashik nor the more general interval that existed throughout western Alaska can be adequately explained except through reference to insufficient sampling. Currently, however, only the presence of a diminished microblade technology in such assemblages as the Ugashik Knoll phase provides a connection between the earlier American Paleo-Arctic tradition and the later Northern Archaic tradition in western Alaska (cf. Dumond 1969c).

I concluded previously that the presence of certain key Northern Archaic traits in the Ugashik Knoll phase assemblage (e.g., side-notched points, the use of slate) was sufficient to indicate its affiliation with that tradition, and I observed that the Narrows locality some 5,000 years ago was not situated within a forest or forest-edge setting such as has been proposed for certain Northern Archaic tradition sites in northwestern Alaska (cf. Anderson 1968b). In fact, several assemblages elsewhere in Alaska which can be assigned
to this same tradition—the Graveyard complex at Kogliugn on Kvichak Bay, the Security Cove materials from Cape Newenham, and the Palisades assemblage from Cape Krusenstern—are on the sea coast in areas that apparently always have been characterized by a tundra vegetation. Regardless of the local environments of these sites, there is no question that between 3000 B.C. and 4000 B.C. western Alaska north of the Aleutian Range was characterized by a horizon of Northern Archaic traits including large, side-notched points, some ground slate tools, net-sinkers, some other stone-grinding, and the use of coarse-grained rocks for making tools.

One point of concern, at least in southwest Alaska, is the relationship of the Northern Archaic complexes to contemporaneous or slightly later assemblages from the Pacific coast of the Alaska Peninsula and the Kodiak Island Group which are characterized by a well developed ground slate industry alongside, or following upon, chipped stone industries. It was noted in the previous chapter that the earliest assemblages of the Shelikof Strait region, those of what has been termed the Pacific period (ca. 4000 to 2500 B.C.), generally lack polished slate and are instead typified by industries of chipped stone. Polished slate became common only during the following period of this region, the Takh period (ca. 2500 to 1500 B.C.), when ground slate tools such as knives and projectile tips occur either in assemblages that are almost exclusively slate (e.g., Ocean Bay II in the Kodiak Island Group) or in assemblages which also have chipped stone (e.g., the Takh Birch phase on the Katmai Monument coast).

One other polished slate-bearing assemblage, the Brooks River Strand phase from the Bering Sea side of the Peninsula, that was originally thought to be a single entity characterized by both chipped stone artifacts as well as numerous slate implements, has more recently been subdivided into a chipped stone assemblage (B.R. Beachridge complex) and a slate-bearing phase (B.R. Strand), with the latter retaining the original phase description (Dumond and others 1976).

It is relevant here to note that the Ugashik Knoll phase at the Narrows apparently combines both a chipped stone industry and a polished slate industry that are seemingly contemporaneous, with the former resembling complexes of the Northern Archaic tradition and the latter resembling the polished slate collections of the Shelikof Strait region. However, the number of slate implements in the Ugashik Knoll phase assemblage is small and conceivably such a site as 49-Uga-6 should have been the scene of brief encampments by peoples from rather different regions of the Peninsula (i.e., the Pacific shore and the Bering Sea shore).

The time between the Ugashik Knoll phase and the following Ugashik Hilltop phase is now represented by an apparent hiatus of some 2,000 years. However, the evidence from such localities as Brooks River and Onion Portage suggests that this interval at the Narrows may be spurious and might be eliminated with further sampling. It was indicated that the two Ugashik Hilltop assemblages at the Narrows, one from the west bank (49-Uga-2) and one from the east bank (49-Uga-1) are related to the Arctic Small Tool tradition; however, it was also noted that there are differences between the Ugashik assemblage—and to some extent the Brooks River assemblage—of the Alaska Peninsula and the Arctic Small Tool tradition assemblages from farther north in Alaska (e.g., Cape Denbigh, Onion Portage).

It was concluded in the preceding chapter that the Ugashik Hilltop phase assemblages (ca. 2000 to 1500 B.C.), particularly the 49-Uga-2 collection, deviate from the Arctic Small Tool tradition assemblages from northwest Alaska primarily by the apparent absence at Ugashik of a microlithic technology and the presence at Ugashik of small, stemmed points. This deviation is such that the Ugashik Hilltop phase has a certain Norton-like cast in chipped stone. However, it was also concluded that sufficient affinity existed with the Arctic Small Tool tradition—as, for instance, in flakeknives, small bi-pointed points, burins, the extensive use of chalcedony, and characteristic fine flaking on stone tools—to suggest that the phase was in some manner affinely related to the tradition.

The Brooks River Gravels phase materials on the Peninsula, some 80 miles to the north, have been proposed as evidence that people of the Arctic Small Tool tradition were expanding onto the Peninsula shortly after the beginning of the second millennium B.C., and that this expansion affected an indigenous population of the Brooks River Strand phase (Dumond 1971, with references). While it seems to be the case that both the Ugashik Hilltop phase and the Brooks River Gravels phase provide compelling evidence for this expansion of the Arctic Small Tool tradition from farther north in Alaska, it also would seem to be the case that during that expansion some characteristic traits of the tradition (i.e., Denbigh Flint complex microblades and microcores, burn spall artifacts) were lost or downgraded in importance.
While the Ugashik Hilltop phase of the second millennium B.C. does have a certain Norton-like appearance in stone technology (e.g., projectile points), a hiatus of 1,300 years now separates materials of the phase from those of the following Norton-related Ugashik Lakes phase.

This latter phase at the Narrows is represented by the Inland sub-phase with three sequential variants: Early, Intermediate, Late. The Early Inland component (ca. 200 B.C. to A.D. 200) witnessed the introduction of organic-tempered pottery (Ugashik Narrows Plain and Stamped varieties), various forms of bifaced basalt knives, cobble net-weights, small side-blades, and certain forms of small, contracting stem points, some with ground stem margins. Apparent continuities with the earlier Ugashik Hilltop phase are constructed dwellings, bifacial flakeknives or sidescrapers, pebble and cobble flake cores, certain forms of small, contracting stem points, and possibly adze blades with polished bits. The following Intermediate Inland components continue the emphasis on small, contracting stem points, now without basal grinding; side-blades; Ugashik Narrows Plain and Stamp Impressed pottery; adze blades; and net-weights. The Intermediate Inland components are also interpreted to be represented by activities emphasizing salmon fishing, for which evidence was first present in the Early Inland component in the form of cobble net-weights and bifaced basalt knives. The Late Inland components are differentiated from the earlier Ugashik Lakes phase entities just discussed by the presence in the Late Inland assemblages of only one variety of pottery (Ugashik Narrows Plain), as well as frequent small, rhomboid-shaped, contracting stem points.

It is proposed that the three Ugashik Lakes phase entities at the Narrows represent a continuous line of development that can be clearly related to the Norton tradition as it is known elsewhere in northwestern and southwestern Alaska. It was noted earlier, however, that certain elements of the Inland sub-phase—particularly the use of large bifaced basalt knives and to a lesser extent the presence of certain forms of contracting stem points—have similarities with relatively early assemblages from the Katmai National Monument coast and lower Alaska Peninsula, assemblages which represent traditions other than the Norton.

The other regional variant of the Ugashik Lakes phase is the Tidewater sub-phase, represented by two components on the lower course of the river and one at Ugashik Bay. This sub-phase—dating, as now represented, between about A.D. 400 and A.D. 1000—presents the first available evidence for the consistent use of the tidal course of the river, and it has been proposed that this downriver development was the result of an expansion of the Inland sub-phase population at the Narrows during the first few centuries after the beginning of the Christian era. It was also suggested that this expansion into the tidal portion of the Ugashik River was a consequence of the relatively greater productivity and efficiency of salmon fishing along the river than at the Narrows.

The assumed continuity between the Tidewater sub-phase and the Inland sub-phase is based primarily upon the presence in the former assemblages of Ugashik Narrows Plain pottery, flake-knives or sidescrapers, chipped stone adze blades with polished bits, side-blades, small net-weights, constructed dwellings, and bifaced basalt knives. However, the relatively small sample sizes of the Tidewater sub-phase assemblages is such that there is some doubt in this assumption of direct transition. For instance, the predominance in the Tidewater sub-phase components of a chipped stone industry using basalt, the general infrequency of typical Inland sub-phase stemmed points, and the relative scarcity of pottery are all features that characterize some lower Alaska Peninsula assemblages (i.e., Port Moller, Chignik) that are considered to represent a tradition not directly related to the widespread Norton tradition (Dumond and others 1976: Okada and others 1976; Workman 1966a). It is conceivable then, although beyond substantiation as yet, that the Tidewater sub-phase represents a development of lower Peninsula origin, resulting from a spread of peoples or traits northward along the Bering Sea coast of the Alaska Peninsula. Although this conception of the derivation of the Tidewater sub-phase is not preferred at the present time, it must be kept in mind for future research.

The final prehistoric development in the Ugashik River drainage, the Ugashik River phase (ca. A.D. 1000 to historic contact), represents the time of Western Thule tradition influence in the Ugashik area. Innovations during this phase include the widespread use of ground slate (e.g., inset blades, ulus), gravel-tempered pottery of various sorts (Ugashik Bay Stamp Impressed, Ugashik River Plain), as well as bone and antler tools, the latter, perhaps, being a feature of preservation and not innovation. This phase also continues the trend begun during the Tidewater sub-phase of the establishment of large settlements along the lower course of the river and at Ugashik Bay near Pilot Point. Other Ugashik River phase components, in lesser numbers, occur at the Narrows and the Ugashik Rapids.
Finally, it remains to be pointed out how the archaeology and prehistory of the Ugashik River drainage has contributed specific evidence relating to the research problems outlined in the Introduction. The first hypothesis that guided research at Ugashik and elsewhere on the Peninsula between 1973 and 1975 was that there was a sociocultural continuity between peoples of the Arctic Small Tool tradition and the succeeding Norton tradition on the Bering Sea side of the Peninsula (Dumond 1972a, 1974a). Related to this proposition were the notions that a major change in subsistence orientation occurred between the time of the Arctic Small Tool tradition and the time of the Norton tradition, and that this change was manifest in an increased use of resources of the open sea coast. Further, it was suggested that this change in subsistence practices involved interaction with contemporary peoples of the Pacific coast of the Peninsula.

The substantiation of the first hypothesis—that there was sociocultural continuity between peoples of the Arctic Small Tool tradition and the Norton tradition—required locating assemblages that date to the early and middle first millennium B.C. Such assemblages would manifest attributes of both the earlier Arctic Small Tool tradition and later Norton tradition as they are known in southwest Alaska. The Ugashik Hilltop phase does contain certain elements characteristic of the Arctic Small Tool tradition (e.g., burins, flakeknives, extensive use of chalcedony, small and finely flaked, bi-pointed projectile points), while at the same time having elements that are Norton-like (e.g., small, contracting stem points, absence of microblade technology). At least in material culture, then, the Ugashik Hilltop phase is "transitional" between the two traditions.

The Ugashik Hilltop phase, however, does not date to the first millennium B.C. as would be expected in light of its artifactual configuration. The phase, in fact, dates to the second millennium B.C., and there is a hiatus of approximately 1,300 years between this phase and the following Norton-related Ugashik Lakes phase. Considering that only two seasons of fieldwork were conducted in the drainage where some 30 sites have already been located, it might be premature to explain the present hiatus as anything more than the result of inadequate sampling. However, during nine seasons of fieldwork in the Naknek drainage, some 80 miles to the north, no evidence has been found for occupation between 1000 B.C. and about 400 or 300 B.C., even after extensive efforts to find it. Thus, one of the original aims of research on the Peninsula remains to be successfully fulfilled.

Related to the first hypothesis discussed above is the idea that the transition between the two traditions involved the increased use of the open sea coast. The use of such resources cannot now be documented in the archaeological record of the Ugashik area. The limited evidence so far available suggests, further, that the apparent occupation of the Bering Sea coast (i.e., Ugashik Bay) did not take place until the time of the Tidewater sub-phase, in other words after about A.D. 400. However, it has been suggested that during the time of the Ugashik Lakes phase there is evidence for both a shift in settlement patterns, as well as an intensification of one form of subsistence activity—salmon fishing. Therefore, at least for the Ugashik area it might be proposed that a significant shift in settlement practices took place during the Norton-related Ugashik Lakes phase and not, perhaps, prior to that time. It would seem, then, that the use of open-coast resources might not be a crucial factor in the transition from the Arctic Small Tool tradition to the Norton tradition as had been hypothesized. However, the subsistence activity that was directly related to a shift in settlement patterns during the Ugashik Lakes phase (i.e., salmon fishing), may well have developed during the first millennium B.C., if not before, and could be a factor in the transition from the Arctic Small Tool tradition to the Norton tradition.

The foramative period of the Ugashik Lakes phase, as well as other Norton-related phases in southwest Alaska, must have also involved some diffusion of elements, as proposed earlier, from the Pacific shore and lower Alaska Peninsula. Such elements—lamps, slate, bifaced basalt knives—are apparently earlier in the latter areas than they are in assemblages from the Bering Sea side of the Peninsula. This time (i.e., first millennium B.C.) must have also witnessed the diffusion of organic-tempered pottery from regions to the north, where pottery of Choris affiliation is dated about 800 B.C. (Giddings 1967:200ff).

The more general question that guided research at Ugashik, and which involved some of the discussion just presented, concerns the long-term relationships between Eskimos and Aleuts on the Alaska Peninsula and elsewhere in southwest Alaska. It was hypothesized previously in this chapter that the oldest of the Ugashik phases, the Ugashik Narrows phase (ca. 7000 to 5600 B.C.), can plausibly be considered part of a widespread tradition in Alaska that was in
some manner ancestral to both later Eskimo and Aleut cultural traditions. It has been argued for many years that the blade and core site on Anangula Island in the Aleutians, here considered a variant of the pan-Alaskan American Paleo-Arctic tradition, provides evidence for the ancestors of the present day Aleuts (cf. Atgner 1970; Laughlin 1967). While such a proposition is not directly contradicted by any evidence recently forthcoming from the Ugashik drainage on the Alaska Peninsula, it also seems clear that both Anangula and the Ugashik Narrows phase, as well as other blade and core sites on the Peninsula, were part of an early Holocene technological pattern that was distributed throughout much of the area of historic Eskimos and Aleuts.

It was only after the time of the American Paleo-Arctic tradition that there is convincing evidence for the development of two, and possibly three, regionally distinct cultural traditions, all of which likely had their derivation in the earlier tradition. On the Bering Sea side of the Peninsula, such assemblages as those represented by the Ugashik Knoll phase, the Graveyard complex at Kogiug, and the Security Cove phase near Platinum are all characterized by large, side-notched points. These assemblages date to about 3000 B.C. and are principally related to the North Archaic tradition. In the Shelikof Strait region, a second tradition characterized southwest Alaska in the third millennium B.C., including assemblages of what is termed the Pacific period of that zone. The industries represented are typically chipped stone, with large, stemmed points common and a local adaptation that is inferred to be maritime. Following upon this manifestation in the Pacific area, and related to it, is that of the Takil period, of the late third millennium B.C., that witnessed the widespread use of polished slate. This tradition is represented at sites such as those in the Kodiak Island group and on the Alaska Peninsula (i.e., Pedro Bay, Brooks River, Katmai Monument coast). A third cultural tradition apparently also characterized southwest Alaska at that time and is represented by the Chaluka materials from Umak Island in the Aleutians (Denniston 1966) and perhaps those from the lower Alaska Peninsula at Port Moiler (Okada and others 1976).

The assemblage of the Ugashik Knoll phase would seem to contain elements of two of the traditions just outlined. The large side-notched points (Northern Archaic tradition), clearly have a northern distribution, while the slate implements (Pacific or Early Takil period) have a southern distribution. A similar dichotomy led to the division of the original Brooks River Strand phase of the late second millennium B.C. into two separate entities (Dumond and others 1976). While there is no compelling reason at present to do that with the Ugashik Knoll phase materials, it does seem evident that the prehistory of that millennium is not yet well understood.

One possible way of representing the data from the third millennium B.C. in southwest Alaska is to suggest that the Bering Sea side of the Peninsula was an interface between two traditions—one northern and the other southern. This interpretation suggests that some time prior to 2000 B.C. the Aleutian Range represented some form of boundary, however porous, between cultural traditions of the Pacific area and the Bering Sea area. It is relevant here that the ethnic boundaries of the historic period reflect to some degree those earlier pre-historic distributions.

The developments of the second millennium B.C. on the Alaska Peninsula continued to magnify those earlier demarcations. At about 2000 B.C. it is evident that peoples of the Arctic Small Tool tradition, or at least with the major elements of that tradition, spread onto the Peninsula where their remains are clearly represented at such localities as Brooks River and the Ugashik Narrows. The distribution of these few sites is much like the distribution of Northern Archaic-related sites on the Peninsula, in other words on the Bering Sea side of the Aleutian Range and northeast of the Ugashik River drainage. This spatial configuration apparently continued into the time of the Norton tradition on the Peninsula, with such materials found primarily along drainage that flow into the Bering Sea.

It was not until about A.D. 1000, with the onset of the Western Thule tradition, that previous boundaries were breached to any degree (Dumond 1971, with references). However, the inferred cultural boundaries that were evident in earlier millennia were still apparent in the nineteenth century, with Eskimo-speaking Aglegmuut on the upper and Bering Sea side of the Peninsula, the Eskimo-speaking Koniag south of the Aleutian Range, and the Aleut on the lower Peninsula below Port Moiler (Dumond 1974b; McCartney 1974).
It may then be concluded that the prehistoric peoples of the Ugashik River drainage were participants in a long tradition of Eskimo history, extending back at least to the time of the Ugashik Hilltop phase of the Arctic Small Tool tradition, and perhaps even as far back as the Ugashik Knoll phase of the Northern Archaic tradition at ca. 3000 B.C. During these five millennia, the strongest affinities were primarily to the north along the Bering Sea coast of Alaska, although contact and interaction with cultures of the Pacific coast and lower Alaska Peninsula was maintained. Before about 3000 B.C., however, the Peninsula and the Aleutians were characterized by a pan-Alaskan blade and burin tradition that extended back to the end of the Pleistocene some 10,000 years ago.
APPENDIX I

DESCRIPTION OF UGASHIK NARROWS

PHASE ARTIFACTS

OUTLINE OF CONTENTS

I. MICROBLADE CORES
   A. Wedge-shaped microblade cores, Type #1 (n=16)
   B. Small, haphazard microblade core, Type #2 (n=1)
   C. Microblade core fragments
      1. Core tablets (n=3)
      2. Flute element rejuvenation flakes (n=3)
      3. Platform margin rejuvenation flakes (n=4)
      4. Platform rejuvenation flake (n=1)
   D. Microblade core preform (n=1)

II. BLADE CORES
   A. Large, wedge-shaped blade cores, Type #3 (n=3)
   B. Conical, polyhedral blade cores, Type #4 (n=2)
   C. Face-faceted blade cores, Type #5 (n=4)
   D. Face-faceted, bifacial blade cores, Type #6 (n=4)
   E. Edge-faceted blade core, Type #7 (n=1)
   F. Blade core fragments
      1. Flute element rejuvenation flakes (n=2)
      2. Platform rejuvenation flakes (n=2)
      3. Miscellaneous core fragments (n=2)

III. FLAKE CORES
   A. Pebble cores, Type #8, Variety #1 (n=2)
   B. Cobble cores, Type #8, Variety #1 (n=8)
   C. Flake core fragments
      1. Flute element rejuvenation flakes (n=10)
      2. Platform rejuvenation flakes (n=4)
      3. Platform margin rejuvenation flakes (n=4)
      4. Miscellaneous core fragments (n=13)

IV. BIFACED FLAKE TOOLS
   A. Knife, Type #1 (n=1)
   B. Biface fragments (n=15)

V. BIFACED CORE TOOLS
   A. Core bifaces (n=10)
VI. BIFACIAL BLADE OR RIDGED FLAKE TOOLS

A. Projectile point, Type #1 (n=1)
B. Projectile point fragment (n=1)

VII. UNIFACIAL FLAKE TOOLS

A. Burins
   1. Transverse burins, Type #1 (n=13)
   2. Dihedral burins, Type #2 (n=2)
   3. Burin spalls (n=10)
B. Large flake unifaces (n=2)
C. Edge-modified flakes
   1. Retouched (n=12)
   2. Used (n=16)
   3. Cobble flakes (n=5)

VIII. UNIFACIAL BLADE TOOLS

A. Endscrapers, Type #1 (n=3)

IX. MICROBLADES

A. Unmodified (n=685)
B. Retouched or used (n=20)

X. BLADES (n=14)

XI. RIDGED FLAKES

A. Retouched or used (n=19)
B. Unmodified (n=34)

XII. EDGE-GROUND PEBBLES (n=2)

DESCRIPTIVE SECTION

I. MICROBLADE CORES

A. Wedge-shaped microblade cores, Type #1 (n=16; Plate 1, a-e)

These small cores, also called "Campus" or "Tonzovi" cores, have a wedge-like outline when viewed from above and a triangular outline when viewed from the side. They exhibit a single fluted element where microblades were removed, and it is this fluted end which forms the convex end of the wedge. The opposite end, or keel, usually exhibits bifacial or unifacial flaking, although in two specimens this retouched keel is lacking. The cores were apparently fashioned from thick flakes or pebbles which were split to form a flat surface for platform preparation. The platform, fashioned after the keel was made, was prepared principally one way, which was to retouch the platform edge by removing a series of small flakes along one edge. The technique was also used to rejuvenate the platform surface. Rejuvenation of the platform surface was also done by removal of the entire platform (core tablet), or by directing a blow parallel to the platform edge which removed the edge of the platform which atrophied as microblades are removed. The fluted element was rejuvenated by removing a flake parallel to the face of the core.
Platform Length: Range 16-39 mm
Platform Width: Range 10-26 mm
Core Height: Range 19-42 mm
Platform Angle: Range 70-90°

R. Small, haphazard microblade core, Type #2 (n=1)

The single specimen that comprises this type is fashioned from a chalcedony pebble on which cortex is still visible. Platform preparation is restricted to unifacial retouch. Two platforms are evident on the specimen, suggesting that the core was rotated at least once.

Platform length: 17 mm
Platform width: 10 mm
Core height: 26 mm
Platform angle: 80°

C. Microblade core fragments

1. Core tablets (n=3; Plate III, g)

These specimens are thick flakes which have been struck off the platform of a wedge-shaped microblade core. The bulbous end of two of the flakes exhibit small flutes where microblades were removed prior to platform rejuvenation. One specimen has been subsequently made into a dihedral burin.

2. Flute element rejuvenation flakes (n=3)

These core rejuvenation flakes were struck from microblade core platforms in the fashion of a microblade, but the blow removed a major portion of the fluted element, as well as a portion of the platform. One specimen appears to result from a blow that removed the entire flute element of a wedge-shaped microblade core.

3. Platform margin rejuvenation flakes (n=4)

Another technique for core rejuvenation is represented by these flakes, which were removed by a blow directed along the platform edge and parallel to the platform surface, producing a ridged flake.

4. Platform rejuvenation flakes (n=7)

These specimens are all small flakes, predominately chalcedony, which have evidence of core platform surface on their dorsal surfaces. They were presumably removed from the core during platform preparation or rejuvenation by a blow struck from the margin of the platform toward the center of the platform itself.

D. Microblade core preform (n=1)

This thick flake of chalcedony appears to represent a wedge-shaped core preform. Both surfaces show evidence of thinning, and one edge has been extensively retouched unifacially as if for a keel.

II. BLADE CORES

A. Large, wedge-shaped blade cores, Type #3 (n=2; Plate I, f,g)

Both of these specimens have a unifacially retouched keel, although when viewed from above they have an oval outline rather than the wedge-shaped outline of Type #1 cores. In the two specimens of this type the keel retouch is on the right side of the core if the keel is facing the viewer. They differ from Type #1 cores in having blades removed from the side of the core as well as the front. Both are chert.
Platform length: Range 40-43 mm
Platform width: Range 30-34 mm
Core height: Range 45-52 mm
Platform angle: Range 90°

B. Conical, polyhedral cores, Type #4 (n=2; Plate II, a)

These large chert cores have an almost circular outline when viewed from above. Platform preparation took the form of retouch directed from the edge of the platform toward the center of the cores. Scars of previously removed blades cover the entire circumference of the core. One specimen has two platforms on the top and bottom of the core, indicating that the core was rotated at least once.

Platform length: Range 49-55 mm
Platform width: Range 39-46 mm
Core height: Range 63-79 mm
Platform angle: Range 90°

C. Face-faceted blade cores, Type #5 (n=4, Plate II, b,c)

These large blocky chert cores were fashioned from cobbles, with much of the original cortex still remaining. The platforms were created by removing one large flake, with occasional retouch on the platform edge. Blades and ridged flakes were then removed from the face of the core. Three specimens show platform rotation.

Maximum width: Range 63-84 mm
Platform width: Range 41-62 mm
Core height: Range 45-88 mm
Platform angle: Range 60-80°

D. Face-faceted, bifacial blade cores, Type #6 (n=4, Plate II,d)

These chert cores, with one exception, were apparently made from large, thick flakes, with some of the original cortex remaining. They differ from type #5 in that they have a double convex cross-section formed by bifacial flaking. The platform was created by removal of a flake from the edge of the biface. Blades were then detached from the platform across the face of the biface. One specimen has two platforms, indicating that it was rotated at least once.

Maximum width: Range 47-82 mm
Platform width: Range 31-74 mm
Core height: Range 61-65 mm
Platform angle: Range 40-80°

E. Edge-faceted blade cores, Type #7 (n=1)

This core is fashioned from a chert cobbie, with some cortex still visible. The platform was fashioned by removal of a large flake from the edge of the cobbie. The platform was subsequently retouched along its edge. Blades and ridged flakes were then removed from the platform by striking a blow along the edge of the cobbie. The core was rotated at least once.

Maximum width: 71 mm
Platform width: 50 mm
Core height: 47 mm
Platform angle: 100°

F. Blade core fragments

1. Flute element rejuvenation flakes (n=2)

These short, thick flakes are characterized by blade scars on their dorsal surfaces. Both specimens have a hinge fracture on their distal ends and show evidence of use along their lateral margins.
2. Platform rejuvenation flakes (n=2)

These specimens are thin flakes that were removed from the surface of the platform by striking a blow parallel at the edge of the platform. Both have evidence of the platform on the dorsal surfaces.

3. Miscellaneous blade core fragments (n=2)

These large, thick flakes have bifacially worked faces and appear to be fragments that resulted from the original core and platform preparation.

III. Flake Cores

A. Pebble cores, Type #8, variety #1 (n=2)

These specimens were fashioned from small pebbles. Much of the original cortex still remains. On one specimen the platform is the original cortex surface, with some retouch along the edge of the pebble. The other specimen has a platform created by the removal of a flake. Flakes were struck off the faces of the pebbles. One specimen was rotated at least once.

<table>
<thead>
<tr>
<th>Description</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum width</td>
<td>34-35 mm</td>
</tr>
<tr>
<td>Platform width</td>
<td>42-44 mm</td>
</tr>
<tr>
<td>Core height</td>
<td>36-40 mm</td>
</tr>
<tr>
<td>Platform angle</td>
<td>80-90°</td>
</tr>
</tbody>
</table>

B. Cobble cores, Type #8, variety #1 (n=8)

These large, flake cores were fashioned from cobbles. Platforms were made two ways. Either a large flake was removed from the cobble to form a platform, or the original cortex surface was used as a platform. All specimens have retouch along the platform edge, presumably to prepare the edge prior to removal of the flakes. Two of the specimens have two platforms indicating the cores were rotated.

<table>
<thead>
<tr>
<th>Description</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum width</td>
<td>67-89 mm</td>
</tr>
<tr>
<td>Platform width</td>
<td>42-75 mm</td>
</tr>
<tr>
<td>Core height</td>
<td>35-82 mm</td>
</tr>
<tr>
<td>Platform angle</td>
<td>70-90°</td>
</tr>
</tbody>
</table>

C. Flake core fragments

1. Flute element rejuvenation flakes (n=10)

These thick flakes were apparently removed from the flute element of the core to rejuvenate the core for further use after the flute element had become irregular. All specimens show evidence of previous flake removal on their dorsal surfaces.

2. Platform rejuvenation flakes (n=4)

All of these specimens show evidence of core platforms on their dorsal surfaces. They were likely removed to rejuvenate the core platform, although it is possible they were removed during the original preparation of the platform.

3. Platform margin rejuvenation flakes (n=4)

Like other rejuvenation flakes, these specimens appeared to have been removed to rejuvenate the core, in this case the platform edge. The dorsal surfaces of the flakes show the original platform edge. They were removed from the core along a plane parallel to the platform edge.

4. Miscellaneous core fragments (n=13)

All of these specimens are large, thick flakes that show platform and/or flute surfaces on their dorsal surfaces. They are apparently the result of either core breakage or core preparation.
IV. BIFACIAL FLAKE TOOLS

A. Knife, Type #1 (n=1)

This large, bifacially flaked basalt tool has a double convex cross-section with convex cutting edges. Both edges appear to have been intentionally broken to form transverse ends. The edges have been extensively retouched.

| Length:       | 108 mm |
| Width:        | 44 mm  |
| Thickness:    | 8 mm   |
| Edge angle:   | 300°   |

B. Biface fragments (n=15)

These specimens, primarily chert, appear to be fragments of bifacial blanks or preforms that were in the process of being fashioned into bifacial tools such as knives or points. The two specimens are small flakes that have been removed from the edge of a bifacial tool, either as the result of sharpening of the edge of the tool, or from wear and associated breakage of the edge. Both specimens have polish on the edges resulting from prolonged use.

V. BIFACIAL CORE TOOLS

A. Core bifaces (n=10; Plate III, J,k)

All of these specimens were fashioned from either chert pebbles or cobbles. Cobbles are the most common. All have cortex on one or more surfaces. In cross-section, these artifacts are either plano-convex or double convex. The convex side is usually the original cortex surface of the cobbles. They exhibit bifacial retouch on the edges and bifacial flaking over much of both faces. Some show evidence of considerable wear in the form of small, irregular flake scars on the edges.

| Maximum width:     | Range 41-100 mm |
| Maximum length:    | Range 46-112 mm |
| Maximum thickness: | Range 20-48 mm  |
| Edge angle:        | Range 55-80°    |
| Proximal width:    | Range 36-88 mm  |
| Distal Width:      | Range 27-91 mm  |

VI. BIFACIAL BLADE OR RIDGED FLAKE TOOLS

A. Projectile point, Type #1 (n=1; Plate III, 1)

The only complete point of this phase is a large, lanceolate variety with a squared base. One side has basal thinning. The basal margins are both ground. It is made of chalcedony.

| Length:       | 70 mm |
| Width:        | 27 mm |
| Thickness:    | 11 mm |
| Weight:       | 21 gm |

B. Projectile point fragments (n=1)

This specimen is a bifacially worked tip section of a chert point.

VII. UNIFACIAL FLAKE TOOLS

A. Burins

1. Transverse burins, Type #1 (n=13; Plate III, n-q)

These burins are all made on small, thick flakes. The burin facet was created by a blow struck transversely across either the proximal (i.e., bulbar) or distal end of a flake.
In other words, the burin facet is perpendicular to the long axis of the flake. In three cases the facet is on the bulb end, while the rest are on the distal end. On eight specimens there is wear on one of the edges of the burin facet, usually the dorsal side. On most specimens there is one edge adjacent to the burin facet that has been retouched. It is not clear whether the retouch was an attribute of the burin manufacture, or whether the retouch was related to the use of the flake edge.

<table>
<thead>
<tr>
<th>Facet edge angle:</th>
<th>Range 90-125°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facet length:</td>
<td>Range 17-31 mm</td>
</tr>
<tr>
<td>Maximum length:</td>
<td>Range 19-36 mm</td>
</tr>
<tr>
<td>Maximum width:</td>
<td>Range 19-33 mm</td>
</tr>
<tr>
<td>Maximum thickness:</td>
<td>Range 7-14 mm</td>
</tr>
</tbody>
</table>

3. Burin spalls (n=10)

These small, narrow flakes represent debris from preparation of the burin facet. Five of the specimens appear to be primary spalls, in other words, the first spall removed from the burin. The other spalls are secondary, in other words, flakes that were removed after the first spall had been struck.

B. Large flake unifaces (n=2)

These large, flake tools exhibit flaking on one face only, usually the dorsal surface. The edges have been retouched and show considerable wear. Although both specimens are fragments, they appear to have been made on large thick flakes of chert. Both have convex cutting edges and both have plano-convex cross-sections.

C. Edge-modified flakes

1. Retouched (n=12)

Five of these tools are made on chalcedony flakes, while the rest are chert. They are generally small flakes which have one edge either unifacially or bifacially retouched.

2. Used only (n=16)

Of these flake tools, four are chalcedony and the rest chert. The edges have been altered by wear, not retouch. They are somewhat larger than the retouched flakes. In most cases only one edge has been used. During use small irregular chips were removed from the edge of the flake.

3. Retouched and used large, cobble flakes (n=5)

All five specimens are primary flakes that were struck from chert cobbles. One face still retains the original cortex. Two of the specimens have retouched edges, while the rest are used only. They range in size from 62 mm to 87 mm.

VIII UNIFACIAL BLADE TOOLS

A. Endscrapers, Type #1 (n=3; Plate III, h)

Made on both large and small blades, these unifacial tools have one steeply retouched edge on the dorsal surface of the blade. In all cases the worked edge is the distal end of the blade. One specimen appears to be missing the proximal end.

<table>
<thead>
<tr>
<th>Length:</th>
<th>Range 13-43 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width:</td>
<td>Range 18-39 mm</td>
</tr>
<tr>
<td>Thickness:</td>
<td>Range 7-11 mm</td>
</tr>
<tr>
<td>Edge width:</td>
<td>Range 16-34 mm</td>
</tr>
</tbody>
</table>
IX. MICROBLADES (n=705; Plate III, c-f)

Microblades are defined here as elongated flakes, less than 10 mm in width, with parallel edges made from prepared cores. Usually the microblades have two arisises or ridges, and thus at least three facets where microblades have been previously removed from the core. Modified and unmodified microblades were subdivided into the following categories: complete; midsections; distal fragments; proximal fragments, which include the bulb of percussion but little more; proximal halves, which have had only the tip section removed. Measurements are presented in Table 22.

TABLE 22
MEASUREMENTS OF NARROWS PHASE MICROBLADES

<table>
<thead>
<tr>
<th>Form</th>
<th>Length Mean (Millimeters)</th>
<th>Width Mean</th>
<th>Thickness Mean</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximal Halves</td>
<td>19</td>
<td>6</td>
<td>2</td>
<td>129</td>
</tr>
<tr>
<td>Midsections</td>
<td>12</td>
<td>5</td>
<td>1</td>
<td>239</td>
</tr>
<tr>
<td>Distal Fragments</td>
<td>--</td>
<td>4</td>
<td>1</td>
<td>83</td>
</tr>
<tr>
<td>Proximal Fragments</td>
<td>--</td>
<td>5</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>Complete</td>
<td>23</td>
<td>5</td>
<td>2</td>
<td>54</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Form</th>
<th>Range</th>
<th>Range</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td>12-38</td>
<td>1-10</td>
<td>1-4</td>
</tr>
</tbody>
</table>

A. Unmodified microblades (n=605)

B. Retouched or used microblades (n=20)

Microblades which have been used to such an extent that wear is apparent on the edges, or microblades that have been retouched or "backed," are very infrequent in the collection. The retouch is usually limited to one edge, and most commonly is found on the ventral surface. Additionally, the retouch is usually on microblades which have had the proximal ends snapped off.

X. BLADES (n=14; Plate III, a-b)

Blades are defined as elongated flakes made from prepared cores, with parallel edges, and at least one central aris, often two. Additionally, they are at least 10 mm wide, and up to 30 mm in width. None of the blades appear to have been retouched. They may have functioned as blanks for other tools, such as end scrapers and points.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length: 40-70 mm</td>
<td>55</td>
</tr>
<tr>
<td>Width: 10-32 mm</td>
<td>16</td>
</tr>
<tr>
<td>Thickness: 2-9 mm</td>
<td>5</td>
</tr>
</tbody>
</table>
XI. RIDGED FLAKES

A. Retouched or used (n=9)

Ridged flakes are elongated flakes with at least one central ridge or arris, rarely two, and never three or more as with some of the microblades. The edges are roughly parallel, although not approaching the uniformly parallel edges of microblades and blades. Additionally, these flakes were probably not produced from prepared, polyhedral cores, but rather from cobbles and pebble flake cores.

However, it is possible that some of the ridged flakes were struck from polyhedral cores that were in the process of manufacture or rejuvenation. Many of these ridged flakes still retain cortex on their dorsal surfaces. In cross section, they lack the prismatic configuration that is characteristic of blades. Edge modification of these flakes is limited to edge wear and occasional retouch. All of these specimens are chert.

B. Unmodified (n=34)

All of these are made of chert, and conform to the above definition, with the exception of wear or retouch on their edges.

XII. EDGE-GROUND PEBBLES (n=2)

These specimens are the only ground stone artifacts in the collection. The ends of the pebbles show wear.
APPENDIX II

DESCRIPTION OF UGASHIK KNOLL

PHASE ARTIFACTS

OUTLINE OF CONTENTS

I. MICROBLADE CORES
   A. Split pebble microblade cores, Type #10 (n=4)
   B. Microblade core fragments
      1. Flute element rejuvenation flake (n=4)
      2. Platform rejuvenation flake (n=1)

II. BLADE CORES
   A. Conical, polyhedral cores, Type #4
   B. Face-faceted blade cores, Type #5
   C. Blade core fragments
      1. Flute element rejuvenation flake (n=1)
      2. Unclassified core fragment (n=1)

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   A. Cobble
      1. Variety #1 (n=5)
      2. Variety #2 (n=1)
      3. Variety #4 (n=1)
   B. Flake core fragments
      1. Flute element rejuvenation flakes (n=21)
      2. Platform rejuvenation flakes (n=5)
      3. Platform margin rejuvenation flakes (n=16)
      4. Unclassified core fragments (n=56)

IV. BIFACIAL FLAKE TOOLS
   A. Proto-bifaces (n=10)
   B. Bifaces (n=33)
   C. Biface fragments (n=97)
   D. Bifaced knife, Type #2 (n=1)
   E. Basalt flake knife (n=1)
V. BIFACIAL BLADE OR RIDGED Flake TOOLS

A. Projectile points
   1. Type #2
      a. Variety #1 (n=6)
      b. Variety #2 (n=1)
      c. Variety #3 (n=2)
      d. Variety #4 (n=2)
      e. Variety #5 (n=3)
   2. Type #3
      a. Variety #1 (n=9)
      b. Variety #2 (n=1)
      c. Variety #3 (n=2)
   3. Type #4 (n=4)

B. Projectile point fragments (n=15)

VI. UNIFACIAL FLAKE TOOLS

A. Edge-modified flakes
   1. Retouched (n=17)
   2. Used (n=21)

B. Endscrapers, Type #2

C. Gravers

VII. MICROBLADES

A. Unmodified (n=14)

B. Retouched (n=4)

VIII. BLADES

A. Unmodified (n=14)

B. Retouched (n=2)

IX. RIDGED FLAKES

A. Unmodified (n=45)

B. Retouched (n=2)

X. GROUND SLATE TOOLS

A. Dartheads
   1. Type #1, unstemmed (n=2)
   2. Type #2, stemmed (n=1)

B. Worked Slate (n=2)

XI. SCRATCHED WHEISTONES (n=2)

XII. FOUNDERS (n=3)
DESCRIPTIVE SECTION

I. MICROBLADE CORES

A. Split pebble microblade cores (n=4; Plate IV, a,b)

These microcores were fashioned from chert pebbles. The platform was created by splitting a pebble in half, and retouching the edges of the newly created platform. All but one of the specimens retain some of the original cortex. Like wedge-shaped microcores, these show microblade removal from one end of the platform only. There is no evidence of platform rotation. The microcores are roughly cone-shaped in side view, while viewed from above they are oval or circular.

| Platform length: | Range 41-60 mm |
| Platform width:  | Range 35-40 mm |
| Core height:     | Range 25-40 mm |
| Platform angle:  | Range 70-80°   |

B. Microblade core fragments

1. Flute element rejuvenation flake (n=4) See Appendix I
2. Platform rejuvenation flake (n=1) See Appendix I

II. BLADE CORES

A. Conical, polyhedral cores, Type #4 (n=2; Plate III, f) See Appendix I

| Platform length: | Range 38-50 mm |
| Platform width:  | Range 34-45 mm |
| Core height:     | Range 44-62 mm |
| Platform angle:  | Range 100°    |

B. Face-façeted blade cores, Type #5 (n=3; Plate IV, g) See Appendix I

| Maximum width:   | Range 56-64 mm |
| Platform width:  | Range 24-59 mm |
| Core height:     | Range 47-48 mm |
| Platform angle:  | Range 80-90°   |

C. Blade core fragments

1. Flute element rejuvenation flake (n=1) See Appendix I
2. Miscellaneous core fragment (n=1) See Appendix I

III. FLAKE CORES

A. Cobble cores, Type #9

1. Variety #1 (n=5) See Appendix I

| Maximum width:   | Range 67-93 mm |
| Platform width:  | Range 31-65 mm |
| Core height:     | Range 60-78 mm |
| Platform angle:  | Range 70-100° |

2. Variety #2 (n=1)

This variety of cobble core is an unfinished form in which only one or two large flakes were taken off a cobble to begin platform preparation. This form represents the initial stage in manufacture of the type #9 core. The specimen is chert.
B. Face-faceted blade cores, Type #5 (n=3; Plate IV, g) See Appendix I

<table>
<thead>
<tr>
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<th>Range</th>
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<tbody>
<tr>
<td>Maximum width:</td>
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<td>Platform width:</td>
<td>24-59 mm</td>
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<td>Core height:</td>
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<tr>
<td>Platform angle:</td>
<td>80-90°</td>
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</table>

C. Blade core fragments

1. Variety #1 (n=5) See Appendix I

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<thead>
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<th></th>
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<tbody>
<tr>
<td>Maximum width:</td>
<td>67-93 mm</td>
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<tr>
<td>Platform width:</td>
<td>31-65 mm</td>
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<tr>
<td>Core height:</td>
<td>60-78 mm</td>
</tr>
<tr>
<td>Platform angle:</td>
<td>70-100°</td>
</tr>
</tbody>
</table>

2. Variety #2 (n=1)

This variety of cobble core is an unfinished form in which only one or two large flakes were taken off a cobble to begin platform preparation. This form represents the initial stage in manufacture of the Type #9 core. The specimen is chert.

3. Variety #4 (n=1)

Another stage in the process of core manufacture is represented by this variety. After a few flakes were removed from the end of a cobble, one or more flakes were then removed at a right angle to the first flaked surface. This produces a platform and flute element which are roughly perpendicular.

B. Flake core fragments

1. Flute element rejuvenation flake (n=21) See Appendix I
2. Platform rejuvenation flakes (n=5) See Appendix I
3. Platform margin rejuvenation flakes (n=16) See Appendix I
4. Miscellaneous core fragments (n=56) See Appendix I

IV. BIFACIAL FLAKE TOOLS

A. Proto-bifaces (n=10)

Made principally on large, chert flakes, these specimens are not strictly tools, but appear to be the first stage in the manufacture of bifaces which are described below. Proto-bifaces are characteristically a large flake which still retains much of the original cortex of the cobble. Around the periphery numerous flakes were removed bifacially to begin shaping of the flake to its desired form.

B. Bifaces (n=33)

Specimens designated as bifaces are a development out of proto-bifaces, differing in their more complete workmanship, smaller size and general absence of cortex. They are presumed not to be tools, but rather preforms for various bifacial tools. No obvious wear is apparent on the edges.

C. Biface fragments (n=97)

These are simply flakes or chunks which have been detached from bifaces during the process of manufacture. All are chert.

D. Bifaced knife, Type #2 (n=1)

This tool has a plano-convex edge constructed by bifacially chipping. The convex edge has small chips which resulted from use.
E. Basalt flake knife (n=1; Plate V, m)

This specimen is a large flake of basalt that has one long edge chipped bifacially to form a long convex cutting edge. Small, irregular chips are present on both the dorsal and ventral faces of the cutting edge, suggesting wear.

| Length:   | 93 mm |
| Width:    | 46 mm |
| Thickness:| 7 mm  |
| Edge angle:| 10°   |

V. BIFACIAL BLADE OR RIGGED FLAKE TOOLS

A. Projectile points

1. Type #2

These are large points, mostly side-notched and made of basalt. They have been subdivided into the following varieties.

a. Variety #1 (n=6; Plate V, a)

The variety of Type #2 points has large notches on the sides of the base. In most cases, the notches exhibit grinding, presumably to dull the edge for hafting. The base is generally straight. Bifacial flaking extends completely across the faces of the point. The edges of the blade are convex, forming an almost oval blade.

b. Variety #2 (n=1; Plate V, b)

This specimen has a very distinctive convex base. The hafting notches on the sides of the base are ground. The blade has convex edges, giving the blade an almost oval appearance.

c. Variety #3 (n=2; Plate V, c)

The specimens that comprise this variety are rather small, slender points with small, side notches. The base is straight to slightly convex. The notches are almost straight.

d. Variety #4 (n=2; Plate V, d)

Like the other varieties of this type, variety #4 has large side notches. The blade is most like Variety #3, in that the edges are only slightly convex, almost straight. The distinctive attribute of this variety is the notched base. One of the notches has been ground.

e. Variety #5 (n=3; Plate V, e)

This variety comprises points which are the longest of the type. They have large, shallow notches. The distinguishing attribute of this variety is the shallowness of the notches, and the fact that the base approaches being a stem with expanding sides. The bottom of the base is straight to slightly convex. Grinding of the notches is evident on one of the specimens.

| Length:   | Range 33-63 mm |
| Width:    | Range 18-31 mm |
| Thickness:| Range 6-10 mm  |
| Notch width: | Range 13-18 mm |

2. Type #3

Included in this category are side-notched points made only of chert. It is the material which distinguishes these from the previous type. They also lack ground notches and are often heavily patinated or weathered.
a. Variety #1 (n=9; Plate V, f,g)

This variety is composed of chert points on which the side notches are very distinct. The bottom of the base is rather straight, and the outline forms range from lanceolate to triangular.

b. Variety #2 (n=1; Plate V, h)

This variety resembles Variety #4 of Type #2 described above. On the bottom of the base is a central notch, giving the base an "eared" appearance.

c. Variety #3 (n=2; Plate V, i)

Specimens in this category are like Variety #5 described above. They lack deep side notches, although the notches are present, and the points are not stemmed. The bottoms of the bases are slightly convex. One specimen is heavily weathered. The other specimen may have been reworked after breakage.

<table>
<thead>
<tr>
<th>Measurement</th>
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<tbody>
<tr>
<td>Length</td>
<td>34-60 mm</td>
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<tr>
<td>Width</td>
<td>21-28 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>6-13 mm</td>
</tr>
<tr>
<td>Notch width</td>
<td>13-18 mm</td>
</tr>
</tbody>
</table>

3. Type #4 (n=4; Plate V, j)

These are points, made from various materials, having a rounded shoulder and a straight to slightly contracting stem. The bottoms of the base are straight to slightly convex. The basalt specimen has lateral grinding on the stem. In general, the blades are slightly convex and relatively small.

<table>
<thead>
<tr>
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<tbody>
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<tr>
<td>Width</td>
<td>19-27 mm</td>
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<tr>
<td>Thickness</td>
<td>7-10 mm</td>
</tr>
<tr>
<td>Stem width</td>
<td>14-17 mm</td>
</tr>
</tbody>
</table>

B. Projectile point fragments (n=15)

All but one of these are tip sections of large points. Most appear to be fragments of chert, side-notched points. The single base fragment is from a stemmed, basalt point which has grinding on the lateral edges of the base.

VI. UNIFACIAL Flake TOOLS

A. Edge-modified flakes

1. Retouched (n=17)

Most of these flakes are large and appear to have been struck from dorsal surfaces, suggesting that they were the first flakes removed from the cores. The retouch is generally limited to one edge, although a few have two retouched edges. The retouch is usually unifacial, although a few specimens have bifacial retouch.

2. Used (n=21)

Like the flake tools just described, these are mostly chert flakes from cobble cores, although one is chalcedony and another is basalt. Edge modification is limited to small chips along the edges resulting from wear.

B. Πολυτριχημένα, Type #2 (n=2; Plate V, l)

These specimens are made on flakes which have the end opposite the bulb of percussion steeply retouched, forming a convex working edge. The retouch is on the dorsal surface. Both are chert.
C. Gravers (n=2)

These tools are characterized by the presence on one edge of a small pointed beak fashioned by careful retouch. One is chert, the other chalcedony.

VII. MICROBLADES

A. Unmodified (n=18; Plate IV, c-e)

As previously described, these microblades are all less than 10 mm in width, and have at least one, and most commonly two or three arisises on their dorsal surfaces. Nine of the microblades are chert, the rest are chalcedony.

B. Retouched or used (n=4)

These microblades have retouch, or use wear, on one edge. One specimen has retouch on the dorsal surface, while the other three have retouch on the ventral surface. All have at least one end snapped, and three are medial sections having both the distal and proximal ends removed. One specimen is chalcedony, the others are chert.

Length: Range 9-40 mm
Width: Range 4-10 mm
Thickness: Range 1-4 mm

VIII. BLADES

A. Unmodified (n=14; Plate IV, h,i)

As previously described, blades are essentially elongated flakes with parallel edges, more than 10 mm wide, and have at least one central arris and two facets on the dorsal surface. All of the blades from this phase are from prepared, chert cores. They are generally wider and thicker than the blades described for the previous phase. They probably served as blanks for side-notched and stemmed points.

Length: Range 34-70 mm
Width: Range 12-35 mm
Thickness: Range 4-10 mm

B. Retouched (n=2)

The two specimens of this category, one of chert and one of chalcedony, are small blades which have been retouched bifacially on the margins. They may represent tools in the process of being manufactured, rather than tools themselves.

IX. RIDGED FLAKES

A. Unmodified (n=45)

These elongated ridged flakes all have at least one arris, and often two. In this group, there are three general kinds. The first are small, about the size of microblades, but very irregular. The second group are larger specimens, about the size of blades. The third group are also about the size of blades, but have cortex on one of their dorsal facets, as if they were the first flakes struck from a core.

B. Retouched (n=2)

One of these is a distal end of a broken ridged flake on which the tip has been retouched from a point. The other specimen is a ridged, cortex flake which has had one edge steeply retouched. It resembles a side scraper, although the worked edge is rather long, more like a knife.
X. SLATE TOOLS

A. Dartheads

1. Type #1, unstemmed (n=2)

These two slate projectile points are both basal fragments which have slightly contracting sides. Both are ground and polished, and there is no obvious evidence that they are sawed to shape. The bottom of the bases, which are square, are both about 17 mm across.

2. Type #2, stemmed (n=1; Plate V, k)

The single specimen of this variety has a large expanding stem which has evidence on the edges of being sawed to shape. The dorsal and ventral surfaces of the darthead have been ground and polished, while the edges are left unfinished.

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<td>Length</td>
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</tr>
<tr>
<td>Thickness</td>
<td>7 mm</td>
</tr>
<tr>
<td>Width</td>
<td>27 mm</td>
</tr>
<tr>
<td>Stem width</td>
<td>20 mm</td>
</tr>
</tbody>
</table>

B. Worked slate (n=20)

These broken pieces of slate all show evidence of cutting and grinding, and are no doubt debris from the manufacture of slate dart heads.

XI. SCRATCHED WHETSTONES (n=2)

These are cobbles of grainy rock, probably sandstone, which have numerous scratches on one flat face. They are otherwise unmodified.

XII. POUNDERS (n=3)

These specimens, one cobble and two pebbles, show evidence of pounding or hammering on one or both ends.
APPENDIX III

DESCRIPTION OF UGASHIK HILLTOP

PHASE ARTIFACTS

OUTLINE OF CONTENTS

I. FLAKE CORES
   A. Pebble core, Type #8, Variety #2 (n=1)
   B. Cobble cores, Type #3, Variety #1 (n=2)
   C. Ellipsoidal cores, Type #11 (n=8)
   D. Core fragments
      1. Flute element rejuvenation flakes (n=7)
      2. Platform margin rejuvenation flake (n=1)
      3. Platform rejuvenation flake (n=1)

II. BIPARTIAL FLAKE TOOLS
   A. Burin, Type #3 (n=1)
   B. Cortex flake knives (n=3)
   C. Drill, polished bit (n=1)
   D. Proto-bifaces (n=2)
   E. Bifaces (n=12)
   F. Biface fragments (n=28)
   G. Miscellaneous, lanceolate chart bifaces (n=9)
   H. Polished adze bit chips (n=22)
   I. Sideblades, Type #1 (n=3)

III. BIPARTIAL RIDGED FLAKE TOOLS
   A. Projectile points
      1. Type #5 (n=5)
      2. Type #6 (n=2)
      3. Type #7 (n=2)
      4. Type #8 (n=2)
      5. Type #9 (n=2)
      6. Type #10 (n=6)
      7. Type #11 (n=11)
      8. Type #12 (n=2)
   B. Point fragments (n=48)
   C. Burins, Type #4 (n=2)
   D. Flakeshelf, Type #2 (n=1)
IV. UNIFACIAL RIGGED FLAKE TOOLS

A. Flakeknives, Type #1 (n=7)
B. Flakeknife, Type #3 (n=1)
C. Cortex flake knife (n=1)

V. UNIFACIAL FLAKE TOOLS

A. Endscrapers, Type #3 (n=2)
B. Edge-modified flakes
   1. Retouched (n=15)
   2. Used (n=27)

VI. SILTSTONE WHETSTONES (n=7)

DESCRIPTIVE SECTION

I. FLAKE CORES

A. Pebble core, Type #8, Variety #1 (n=1) See Appendix I

| Maximum width: | 40 mm |
| Platform width: | 30 mm |
| Core height: | 25 mm |
| Platform angle: | 90° |

B. Cobble cores, Type #9, Variety #1 (n=2) See Appendix I

| Maximum width: | Range 53-67 mm |
| Platform length: | Range 52-53 mm |
| Core height: | Range 63-70 mm |
| Platform angle: | Range 75-90° |

C. Ellipsoidal cores (n=8; Plate IV, 1-q)

These unique cores were made from either chert or chalcedony pebbles, most frequently chalcedony. Cortex is still visible on two of the chert specimens. All of the cores have been rotated at least once, and often more, so that the form takes on a double convex appearance, almost like a thick blocky biface. It is thought that these cores were the source of blanks for most of the projectile points and flakeknives of the Hillside phase collections.

| Maximum width: | Range 28-42 mm |
| Platform width: | Range 18-31 mm |
| Core height: | Range 15-30 mm |
| Platform angle: | Range 67-100° |

D. Core fragments

1. Flute element rejuvenation flakes (n=7) See Appendix I
2. Platform margin rejuvenation flake (n=1) See Appendix I
3. Platform rejuvenation flake (n=1) See Appendix I

II. BIPACIAL FLAKE TOOLS

A. Burin, Type #3 (n=1)

This tool was created by two blows which formed facets at right angles. The first blow, either a burin stroke or a snap, split a thin flake of chalcedony in two. The second blow, a burin stroke, was struck at right angles to the first facet, forming a thin but strong projection which shows evidence of use.
B. Cortex flakeknives (n=3; Plate VI, b)

All three of these specimens were fashioned from large, cortex flakes, the first flakes removed from a cobble core. On two specimens the edges are bifacially retouched to form a sharp point. The work is primarily on the dorsal or cortex surface. The third specimen is retouched bifacially to form an oval tool. All are chert.

Length: Range 46-64 mm
Width: Range 31-41 mm
Thickness: Range 7-13 mm
Edge angle: Range 50-60°

C. Drill, polished bit (n=1)

The single drill from this phase is formed on a large thick flake which has been bifacially chipped to a roughly lanceolate shape. The narrow end shows evidence of polish resulting from wear in a rotary motion.

D. Proto-biface (n=2) See Appendix II

E. Biface (n=12) See Appendix II

F. Biface fragments (n=28) See Appendix I

G. Miscellaneous lanceolate, chert biface (n=9)

Unlike bifaces which are large, usually oval, and thick, these specimens are all small, thin, and have a lanceolate outline. They are presumably projectile points in the process of manufacture.

H. Polished adze bit chips (n=22)

Both large and small, these flakes have polish on all or most of their dorsal surfaces. They appear to be chips removed during use or sharpening of the bit end of a polished adze. They are all hard igneous rock.

I. Sideblades, Type #2 (n=3; Plate VI, c,d)

The distinguishing attributes of these bifacial tools are their large size and asymmetric edges, with one edge being relatively straight while the other is convex. The convex edge is assumed to be the cutting edge, while the straight edge was presumably inserted into a handle. Unlike some sideblades described elsewhere in Alaska which were apparently inserts for projectiles, these sideblades are probably analogous to the historic ulu or knife. One is basalt and two are chert.

Length: Range 65-77 mm
Width: Range 31-34 mm
Thickness: Range 6-10 mm

III. BIFACIAL RIDGED FLAKE TOOLS

A. Projectile points

1. Type #5 (n=5; Plate VII, a,b)

These small bifacial points are roughly chipped to a leaf-shaped form. The base of the point often retains part of the original platform. The distal end of the flake is more sharply pointed. It is possible that these are unfinished points. All are chert.

Length: Range 37-45 mm
Width: Range 16-19 mm
Thickness: Range 3-5 mm
2. Type #6 (n=2; Plate VII, c,d)

Both of these specimens are rather large, finely flaked points with a contracting stem. The juncture of the stem and blade forms a distinct, small shoulder. The base of the stem is straight to slightly convex. The stem is almost one half the length of the point. Both are chert.

| Length:     | Range 51-60 mm |
| Width:      | Range 19-20 mm |
| Thickness:  | Range 5 mm     |
| Stem length:| Range 24 mm    |

3. Type #7 (n=2; Plate VII, e,f)

These are long, slender points with a slightly contracting stem. The bases are square to slightly convex. The stem is one half the length of the point. Both are finely chipped, and made of chert.

| Length:     | Range 43-50 mm |
| Width:      | Range 12 mm    |
| Thickness:  | Range 3 mm     |
| Stem length:| Range 22-27 mm |

4. Type #8 (n=2; Plate VII, g,h)

These are stemmed points in which the stem is not quite half the length of the point. The stem is sharply contracting, but there is no shoulder. The bases are straight, and appear to have been snapped. The flaking is relatively less fine than in the types just described. One is chert, the other is chalcedony.

| Length:     | Range 40-43 mm |
| Width:      | Range 13-16 mm |
| Thickness:  | Range 3- 4 mm  |
| Stem length:| Range 15-17 mm |

5. Type #9 (n=2; Plate VII, i,j)

Both of these specimens are slender, finely chipped points with straight sides and a distinctly rounded point. The bases are missing, and it is presumed they were unstemmed. Both are chert.

| Length:     | Range 8-12 mm |
| Thickness:  | Range 3- 4 mm |

6. Type #10 (n=6; Plate VII, k-o)

Specimens of this type are bipointed or lanceolate. They are also small, an attribute which differentiates them from Type #5. They are also more finely chipped than Type #5 points. It is possible that this type is the end product towards which Type #5 points were being made. Three are chert, and three are chalcedony.

| Length:     | Range 24-39 mm |
| Width:      | Range 11-13 mm |
| Thickness:  | Range 3- 5 mm  |

7. Type #11 (n=1; Plate VII, p)

This aberrant chert specimen has a very distinctive stem and base. The bottom of the base is concave, and the stem resembles a side-notched point, although the notches are very shallow. It is the largest point in this collection, and could well be a hafted knife blade rather than a point.
Length: 63 mm
Width: 26 mm
Stem width: 16 mm
Thickness: 7 mm

8. Type #12 (n=2; Plate VII, q,r)

Both of these points have stems which are more than half the length of the point. The stem is contracting, but no shoulder is present. They are both finely chipped and have square bases. In outline, the form is "boat-shaped". One is chert, the other is chalcedony.

Length: Range 29-32 mm
Width: Range 10-13 mm
Thickness: Range 3-5 mm
Stem length: Range 15-19 mm

B. Point Fragments (n=48)

These specimens are base and tip sections of chert and chalcedony points, but are otherwise unclassifiable.

C. Burins, Type #4 (n=2; Plate VII, v,w)

Both of these are tip fragments of small, chalcedony, bifacial points which have had burin blows directed at the tip. One specimen had at least four burin spalls removed from the top to form a jagged point or working edge. The blows were directed along both edges of the point. The other specimen has had two burin spalls removed from the tip forming a sharp projection.

D. Flakeknife, Type #9 (n=1; Plate VII, s)

This variety of flakeknife is a bifacially worked, ridged flake of chalcedony which has one thin convex edge and one thick, very slightly concave edge. The thick edge has been steeply retouched bifacially. In some respects it resembles an asymmetric side blade.

Length: 39 mm
Width: 17 mm
Thickness: 4 mm
Edge angle: 40°

IV. UNIFACIAL RIGGED FLAKE TOOLS

A. Flakeknife, Type #1 (n=7; Plate VII, e-k)

Most of these distinctive tools resemble what has sometimes been called "keeled scrapers". On the dorsal surface of the flake is a medial ridge which terminates the edge retouch. On all but one specimen the retouch is unifacial, and on most specimens the retouch is on the right edge if the tool is held dorsal face up and with the bulb of the flake closest to the viewer. The edge is steeply retouched and forms a slightly convex working surface. Although classified as knives, the steep edge retouch suggests they may have functioned alternatively as scrapers. Two are chert, and the rest are chalcedony.

Length: Range 21-44 mm
Width: Range 13-21 mm
Thickness: Range 5-8 mm
Edge angle: Range 50-80°

B. Flakeknife, Type #3 (n=1; Plate VII, t)

This specimen resembles Type #1 flakeknives in having one thick, curving edge steeply retouched. However, the edge on this variety is concave rather than convex. The curved edge forms a sharp "beak" or projection which shows wear. The worked edge on this specimen, like the Type #1 flakeknives, is the "right hand" edge as defined previously. It is made of chalcedony.
C. Cortex flake knife (n=1)

The single specimen of this variety is a large, ridged chert flake which retains some of the original cortex on the dorsal surface. One long edge has been extensively used, but not retouched.

V. UNIFACIAL FLAKE TOOLS

A. Enderaopera, Type #3 (n=2; Plate VI, a; Plate VII, u)

These chert tools are characterized by steep unifacial retouch on the distal ends of the flakes. The retouched ends of both specimens show considerable polish from prolonged use. The dorsal surfaces have been extensively flaked, so that the original shape of the flake has been modified to form an oval tool with a thin butt, presumably for hafting. In cross-section, these scrapers are plano-convex.

\[\begin{array}{ll}
\text{Length:} & \text{Range 35 mm} \\
\text{Width:} & \text{Range 23-24 mm} \\
\text{Thickness:} & \text{Range 5-7 mm} \\
\text{Edge angle:} & \text{Range 60-75°}
\end{array}\]

B. Edge-modified flakes

1. Retouched (n=15)

Flakes in this category all have at least one edge retouched. All but three are chert, with the others being chalcedony. A few are cortex flakes.

2. Used (n=27)

Flakes in this category are mostly chalcedony and are probably debitage from point manufacture. At least one edge has been used to such an extent that small, irregular flakes have been removed, usually from the dorsal surface.

VI. SILTSTONE WHETSTONES (n=7)

These pieces have at least one flat surface with evidence of having been used as a whetstone to polish or sharpen other artifacts. The wear is either slight polish, striations, or shallow grooves.
APPENDIX IV

DESCRIPTION OF UGASHIK LAKES

PHASE ARTIFACTS

INLAND SUB-PHASE

OUTLINE OF CONTENTS

I. Flake Cores
   A. Pebble cores, Type #8
      1. Variety #1 (n=62)
      2. Variety #2 (n=6)
      3. Variety #3 (n=8)
      4. Variety #4 (n=24)
   B. Cobble cores, Type #9
      1. Variety #1 (n=40)
      2. Variety #2 (n=11)
      3. Variety #3 (n=9)
      4. Variety #4 (n=30)
   C. Conical, ridged flake cores, Type #12 (n=4)
   D. Core fragments
      1. Flute element rejuvenation flakes (n=67)
      2. Platform rejuvenation flakes (n=20)
      3. Platform margin rejuvenation flakes (n=14)
      4. Miscellaneous core fragments (n=203)

II. Bifacial Flake Tools
   A. Proto-bifaces (n=141)
   B. Bifaces
      1. Type #1 (n=17)
      2. Type #2 (n=13)
      3. Type #3 (n=23)
      4. Unclassified (n=186)
   C. Biface fragments (n=756)
   D. Miscellaneous lanceolate, basalt bifaces (n=17)
   E. Miscellaneous lanceolate, chert bifaces (n=77)
   F. Bifaced knives
      1. Type #2 (n=5)
      2. Type #3 (n=5)
3. Type #4 (n=5)  
4. Type #5 (n=5)  
5. Type #6 (n=1)  

G. Sideblades  
1. Type #2 (n=6)  
2. Type #3 (n=3)  
3. Type #4 (n=1)  
4. Type #5 (n=1)  
5. Type #6 (n=3)  
6. Type #7 (n=2)  

H. Adze blades and preforms  
1. Type #1 (n=2)  
2. Type #2 (n=1)  
3. Adze blade preforms (n=3)  
4. Adze bit chips (n=3)  

I. Discoidal scraper (n=1)  

J. Burin-like tools (n=2)  

K. Flakeknife, Type #4 (n=1)  

III. BIFACIAL RIDDGED FLAKE/FLAKE TOOLS  

A. Projectile points  
1. Type #5 (n=10)  
2. Type #6 (n=2)  
3. Type #8 (n=5)  
4. Type #9 (n=1)  
5. Type #12 (n=1)  
6. Type #13 (n=5)  
7. Type #14 (n=2)  
8. Type #15 (n=5)  
9. Type #15 (n=2)  
10. Type #17 (n=4)  
11. Type #17 (n=2)  
12. Type #19 (n=13)  
13. Type #20 (n=2)  
14. Type #21 (n=2)  
15. Type #22 (n=5)  
16. Type #23 (n=2)  
17. Type #24 (n=1)  

B. Unique points (n=7)  

C. Point fragments (n=86)  

IV. UNIFACIAL RIDDGED FLAKE TOOLS  

A. Flakeknife, Type #2 (n=1)  

B. Flakeknife, Type #3 (n=1)  

C. Endscraper, Type #4 (n=1)  

D. Sidescraper, Type #1 (n=1)  

V. RIDDGED FLAKES (n=79)
VI. UNIFACIAL FLAKE TOOLS

A. Edge-modified flakes
   1. Retouched (n=100)
   2. Used only (n=166)

B. Sidescrapers, Type #2 (n=1)

C. Endscrapers
   1. Type #2 (n=2)
   2. Type #5 (n=1)
   3. Type #6 (n=1)

VII. SLATE IMPLEMENTS

A. Slate rod (n=1)

B. Worked slate (n=6)

VIII. WHETSTONES

A. Scratched, grooved whetstones (n=13)

B. Polished whetstones (n=33)

IX. PUMICE ABRADERS

A. Scratched abraders (n=10)

B. Polished abraders (n=4)

X. POUNDERS (n=14)

XI. LAMPS (n=2)

XII. NOTCHED SINKERS

A. Cobble sinkers (n=59)

B. Pebble sinkers (n=41)

XIII. EDGE-GROUND COBBLE (n=1)

XIV. CERAMICS

A. Fired clay tubes (n=3)

B. Ugashik Narrow Stamp Impressed Pottery (n=53)

C. Ugashik Narrow Plain Pottery (n=70)

DESCRIPTIVE SECTION

I. FLAKE CORES

A. Pebble cores, Type #6

1. Variety #1 (n=62; Plate VIII, a)

These cores, less than 64 mm in maximum dimension, were fashioned primarily from chert pebbles. On many of the specimens the original cortex still remains. The platform
was normally created by the removal of one or more large flakes to form a flat surface, which
was then retouched before and during use. The flakes were then removed from one or more
faces. This variety of Type #8 core represents the finished core, while the varieties
described below represent different stages in the manufacture of Type #8, Variety #1 cores.
All but two, which are chalcedony, are chert.

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<tr>
<td>Platform width</td>
<td>18-64 mm</td>
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<tr>
<td>Core height</td>
<td>22-61 mm</td>
</tr>
<tr>
<td>Platform angle</td>
<td>50-100°</td>
</tr>
</tbody>
</table>

2. Variety #2 (n=6)

This variety of core has one or two large flakes removed from the end of the
pebble. This is the initial stage in manufacturing the platform. All specimens are chert.

3. Variety #3 (n=8)

An alternative approach to initial platform preparation is represented by this variety
of pebble core, in which the pebble has been split in half by a single blow, forming a large,
flat surface for further platform preparation.

4. Variety #4 (n=24)

The second stage in core preparation is represented by this variety. In this group,
two flat surfaces, roughly perpendicular to one another, have been created by the removal of
a number of flakes from the end of the pebble. The newly formed platform occasionally has
dge retouch, but does not have evidence that flakes were removed from the core face in the
manner of Variety #1 cores. It is possible that some of the cortex and ridged flakes removed
from this variety were later used for tool production, or used as simple, edge-modified flake
tools. All are chert, except one of basalt.

B. Cobble cores, Type #9

1. Variety #1 (n=40; Plate VIII, b)

In all respects except size, these cores are similar to Type #8, Variety #1 cores
described above. All are chert. Their distinguishing attribute is their size, over 64 mm in
maximum dimension. The flakes produced from this variety of core were larger than pebble core flakes.

<table>
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<td>Core height</td>
<td>27-63 mm</td>
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<tr>
<td>Platform angle</td>
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</table>

2. Variety #2 (n=11)

In all respects except size, this variety is similar to Type #8, Variety #2 pebble
cores. All specimens are chert.

3. Variety #3 (n=9)

This variety is similar to Type #8, Variety #3 pebble cores, except for the larger
size. All are chert.

4. Variety #4 (n=30)

In all respects but size, these are like Variety #4 pebble flake cores. All are chert.

C. Conical, ridged flake cores, Type #12 (n=4; Plate VIII, c)

Like the polyhedral blade cores described above, these cores have a conical outline
with flutes running most of the way around the core. They differ from blade cores in that the
scar are of irregular blade-like flakes, defined as ridged flakes. The platform was prepared by the removal of a single large flake. The platform edges were then retouched prior to the removal of the flakes. In one case the platform has been created by the removal of at least four flakes from the edge of the core. Another specimen has much of the cortex remaining on the faces of the core, and all the flakes struck from the core were ridged, cortex flakes. Two of the cores have been rotated at least once.

- **Platform length:** Range 40-68 mm
- **Platform width:** Range 35-60 mm
- **Core height:** Range 48-60 mm
- **Platform angle:** Range 80-100°

**D. Core fragments**

1. Flute element rejuvenation flake (n=67) See Appendix I
2. Platform rejuvenation flakes (n=20) See Appendix I
3. Platform margin rejuvenation flakes (n=14) See Appendix I
4. Miscellaneous core fragments (n=203) See Appendix I

**II. BIFACIAL FLAKE TOOLS**

**A. Proto-bifaces (n=141) See Appendix II**

**B. Bifaces**

Unlike other phase collections in which bifaces are relatively infrequent, bifaces from the Lakes phase are extremely common—in fact they are the most common artifact. It was possible to sub-divide the collection into a number of types. These are described below. It should be noted that the bifaces were probably a direct development from the proto-bifaces described above. Bifaces, as opposed to proto-bifaces, tend to be smaller, more carefully flaked, and generally lack cortex surfaces. A further category of biface preforms (miscellaneous chert and basalt, lanceolate bifaces) are described below and differ from the bifaces described here in being more carefully worked, smaller, and having a lanceolate shape. It is thought that these more lanceolate bifaces were preforms for certain tool forms (e.g., points), while the bifaces described here represent preforms for other tools (e.g., knives, sideblades).

1. **Type #1 (n=17)**

Bifaces of this type are round to oval in shape, with the widest dimension occurring near the mid-point. They are thin and well-shaped with a pointed distal end and a rounded proximal end. They are the most likely preforms for sideblades.

- **Mean length:** 60 mm
- **Mean width:** 40 mm

2. **Type #2 (n=13)**

These specimens tend to be more elongated than the previous type, with the distal end more pointed. They are generally less well-flaked than the previous type, with percussion blows characterizing the edges. They are not as wide as the previous type. They are most likely preforms for knives.

- **Mean length:** 60 mm
- **Mean width:** 30 mm

3. **Type #3 (n=23)**

This type is characterized by bifaces which are smaller than the two previous types and somewhat thicker. In outline form they are leaf-shaped, with one pointed, distal end and one rounded proximal end. They are probably preforms for projectile points, and grade into the category of bifaces designated miscellaneous lanceolate chert bifaces.

- **Mean length:** 45 mm
- **Mean width:** 25 mm
4. Unclassified bifaces (n=186)

These include all bifaces from the Inland sub-phase that are not included in the three types described above. These tend to be more poorly manufactured and more commonly grade into proto-bifaces. Many are likely rejects from the manufacturing process that begins with proto-bifaces and goes through bifaces and into finished forms.

C. Biface fragments (n=756) See Appendix I

D. Miscellaneous lanceolate, basalt bifaces (n=17)

These differ from the bifaces and proto-bifaces described above in their lanceolate outline form and small size. They are generally flaked bifacially over the entire surface of both faces, and are usually double convex in cross-section. They are presumed to be preforms for bifacial knives and projectile points.

E. Miscellaneous lanceolate, chert bifaces (n=77)

These specimens differ from the lanceolate bifaces described above only in material. They are also assumed to be preforms for points or knives.

F. Bifacial knives

1. Type #2 (n=5)

These bifacial tools are roughly lanceolate and usually flaked by percussion. The edges show careful retouch. The material is characteristically chert. One or both edges show evidence of use in the form of polish or small, irregular chips.

Length: Range 57-87 mm
Width: Range 27-32 mm
Thickness: Range 7-11 mm
Edge angle: Range 30-50°

2. Type #3 (n=1; Plate VIII, d)

This unique bifacial knife of basalt has large, shallow side notches on the base. The blade is long, slender, and tapers to a rounded point. Both the base of the knife and the notches have been ground, presumably to dull the edges for hafting. Alternatively, it is possible that the grinding is a result of wear which would mean that the tapered end was the hafted end, and that the large notches and base were the working edges.

Length: 100 mm
Width: 41 mm
Thickness: 8 mm
Edge angle: 40°

3. Type #4 (n=5)

These bifacial knives are fashioned from basalt and are similar to Type #1 knives. One specimen has a slight, tapering stem. All specimens have straighter edges than Type #1 knives. All are broken, and no measurements are presented.

4. Type #5 (n=5; Plate VIII, e)

The specimens of this type are bifacially chipped and made from basalt. They were carefully flaked to a quadrilateral or triangular shape, much like a ulu.

Length: Range 49-117 mm
Width: Range 25-69 mm
Thickness: Range 6-10 mm
Edge angle: Range 30-40°
5. Type #6 (n=1)

This knife is made on a thick cortex flake of basalt. The distal margin of the flake is bifacially retouched forming a sharp cutting edge. The cutting edge angle suggests it might be a preform for an end scraper or adze, if it is not a finished tool.

Length: 48 mm  
Width: 49 mm  
Thickness: 12 mm  
Edge angle: 45°

G. Sideblades

1. Type #2 (n=6; Plate IX, u)

These sideblades, although not made on blades, have an asymmetrical outline, with one relatively straight edge and one edge with a small, pronounced bulb near the base. The straight edge is more carefully flaked and thinner than the bulb edge. The straight edge is presumed to be the hafted edge and the bulb edge is presumed to be the cutting edge. Three are chert and three are chalcedony.

Length: Range 38-53 mm  
Width: Range 16-24 mm  
Thickness: Range 4-7 mm

2. Type #3 (n=3; Plate VIII, f,g)

Like the previous type, these sideblades have asymmetrical edges, with one straight edge and one edge bulb, forming a "D-shaped" blade. It differs from the previous type in that the bulb edge forms a convex curve on the entire edge, not just at the base. The straight edge is generally thicker, and both edges are carefully retouched. One is chert, one is basalt, and one is chalcedony.

Length: Range 38-54 mm  
Width: Range 27-31 mm  
Thickness: Range 5-6 mm

3. Type #4 (n=1; Plate VIII, h)

The single specimen of this sideblade type has distinctly asymmetrical edges, with one convex edge and one concave edge. The concave edge is the thicker of the two edges, and both edges are equally well flaked. It is made of chert. The concave edge is presumed to be the hafted edge.

Length: 42 mm  
Width: 31 mm  
Thickness: 5 mm

4. Type #5 (n=1)

The blade of this type is symmetrically lanceolate, but one edge is thick and carefully flaked, while the opposite edge is thin and less well flaked. The base is transverse. The thin edge has a slight protrusion near the tip, which is well polished from use. The thin edge of this sideblade type with the polished protrusion is inferred to be the cutting edge, and the thick edge is thought to be the hafted edge. It is fashioned from chert.

Length: 45 mm  
Width: 31 mm  
Thickness: 5 mm

5. Type #6 (n=3)

This is the most nearly symmetrical of the sideblade types. The form is slender and lanceolate, with one edge having a convex appearance. The straighter of the two edges is
slightly thicker and more carefully flaked. The straight edge is presumed to be the hafted edge. All specimens are chert.

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Length</td>
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</tr>
<tr>
<td>Width</td>
<td>14-23 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>5-6 mm</td>
</tr>
</tbody>
</table>

6. Type #7 (n=2; Plate VIII, 1)

These small chert and chalcedony sideblades have one straight edge and one almost pointed edge, such that the blade is almost triangular. The base of the blades are roughly straight, and the tip is convex. One is chert and one is chalcedony.

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>20-23 mm</td>
</tr>
<tr>
<td>Width</td>
<td>8-10 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>2 mm</td>
</tr>
</tbody>
</table>

H. Adze blades and preforms

1. Type #1 (n=2; Plate IX, aa)

Both of these specimens are chert and roughly chipped to shape bifacially. They are square in outline form and polished only on the bit. The bit is acute, and the cutting edge is slightly off-centered, with the bottom face having a less beveled surface.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Length</td>
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<tr>
<td>Width</td>
<td>35-50 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>10 mm</td>
</tr>
<tr>
<td>Bit angle:</td>
<td>40-50°</td>
</tr>
</tbody>
</table>

2. Type #2 (n=1; Plate VIII, 1)

This adze type is distinctly smaller than the type described above, and is polished not only on the bit, but also on the faces of the blade. The bit angle is less acute. The cutting edge is off-centered, with the bottom face having less of a bevel. It is chipped bifacially from metamorphic rock. One appears to have been re-used as an end scraper.

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>27-34 mm</td>
</tr>
<tr>
<td>Width</td>
<td>23-27 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>8-10 mm</td>
</tr>
<tr>
<td>Bit angle:</td>
<td>60-70°</td>
</tr>
</tbody>
</table>

3. Adze blade preforms (n=3)

These are assumed to be bifacial blanks or preforms for adzes of various types. No polishing is evident on either the bit or the blade. Two variants can be distinguished. The first are large quadrilateral bifaces, presumably preforms for Type #1 adze blades. The second is a small, quadrilateral biface of chert, more rectangular than the first variant, and having a convex end and a square, narrow butt. It is probably a preform for a Type #2 adze blade.

4. Adze bit chips (n=3)

These are small, igneous chips which have polish on their dorsal faces. They were presumably removed during use or sharpening of the bit.

I. Diagonal scraper (n=1; Plate VIII, j)

This specimen is a nearly spherical bifacially worked tool with very sharp edges. In cross-section, it is double convex unlike other scrapers which are usually plano-convex. The scraper, which is made of black chalcedony, is extremely well chipped and has wear polish around the circumference. Functionally, it may not be a scraper, but rather a unique form of knife.
Length: 33 mm
Width: 27 mm
Thickness: 10 mm
Edge angle: 70°

J. Burin-like tools (n=2)

These two specimens resemble burins in having two faceted edges. Unlike burins, these facets appear to have been made by snapping, rather than by a blow directed downward along the edge of the tool. Both have wear polish along the edge of the facets. One is fashioned on a chert sideblade, the other is fashioned on a thick flake of basalt.

K. Flakeknife, Type #4 (n=1; Plate VIII, m)

This knife most closely resembles Type #2 flakeknife described above, but differs in having biaxially trimmed edges rather than being totally biaxially flaked. It is made on a long, ridged flake of basalt. One edge has been trimmed to form a slightly concave cutting edge. The two edges meet at the distal end of the flake to form a sharp point.

Length: 66 mm
Width: 27 mm
Thickness: 9 mm
Edge angle: 50°

III. BIFACIAL, RIDGED FLAKE/FLAKE TOOLS

A. Projectile points

1. Type #5 (n=10, Plate IX, p)

These small, bifacial points are roughly flaked to a lanceolate form. Two specimens are only edge retouched on their dorsal surfaces. The proximal end of these points are generally convex, while the tips are pointed. It may be that these are unfinished points or preforms for other types. One is quartz, while the rest are chert.

Length: Range 22-50 mm
Width: Range 12-23 mm
Thickness: Range 3-5 mm

2. Type #6 (n=2; Plate IX, q)

Both of these are large, finely flaked points with a distinctly contracting stem. The juncture of the blade and stem forms a slight shoulder. The bottom of the stem is convex. The stem is approximately one-third of the length of the point. One is chert, and the other is chalcedony.

Length: Range 43-55 mm
Width: Range 16-17 mm
Thickness: Range 3-6 mm
Stem length: Range 16-17 mm

3. Type #8 (n=5; Plate IX, a)

This type comprises stemmed points in which the contracting stem is more than one-third, but less than one-half, the length of the point. No distinct shoulder is present. The bases are generally straight, one is chalcedony, and the rest are chert.

Length: Range 30-45 mm
Width: Range 13-19 mm
Thickness: Range 3-5 mm
Stem length: Range 13-20 mm
4. Type #9 (n=1; Plate IX, b)

The single specimen of this type is a tip section of a very finely chipped point. The distinguishing attribute of this point is the form of the tip, which is convex, although the actual edges do form a sharp point. It is made of chert.

Width: 13 mm
Thickness: 3 mm

5. Type #12 (n=1; Plate IX, r)

The single specimen of this type is a stemmed point in which the stem is more than one-half the length of the point. The stem is sharply contracting, but there is no shoulder. The base is square, and in outline the point has a "boat-shaped" form. It is made of chert.

Length: 30 mm
Width: 12 mm
Thickness: 4 mm
Stem length: 20 mm

6. Type #13 (n=5; Plate IV, c,d)

These are all stemmed points in which the stem is sharply contracting without a shoulder. In one case the stem is half the length of the point, while the other specimens have a stem which is one-third or less the length of the point. Two attributes distinguish these points. They are all made of basalt, and they all have ground stem margins.

Length: Range 31-65 mm
Width: Range 13-17 mm
Thickness: Range 3-5 mm
Stem length: Range 15-21 mm

7. Type #14 (n=2; Plate IV, e,f)

These two specimens have sharply contracting stems which are approximately one-third the total length of the point. The bases are both straight, and the stem margins are ground. Both are carefully flaked, and both are made of chert.

Length: Range 61-75 mm
Width: Range 20 mm
Thickness: Range 6 mm
Stem length: Range 20-21 mm

8. Type #15 (n=5; Plate IV, g)

Specimens of this type have sharply contracting stems which are less than one-half the length of the point. In three cases the stem is a third or more the length of the point. The distinguishing attributes are their size. The bases are straight, and all are chert.

Length: Range 45-52 mm
Width: Range 22-25 mm
Thickness: Range 5-7 mm
Stem length: Range 10-20 mm

9. Type #16 (n=21; Plate IX, v)

These are small, stemmed points in which the stem is between one-third and one-half the total length of the point. The stems are sharply contracting, and the bases are snapped, perhaps intentionally. Their distinguishing attributes are their small size and their outline for which is rhomboid. They are somewhat similar to Type #15 points, only smaller and have stems that are more commonly one-half the length of the point. One is chalcedony, and the rest are chert.
Length: Range 22-44 mm
Width: Range 10-20 mm
Thickness: Range 2-5 mm
Stem Length: Range 10-20 mm

10. Type #17 (n=4; Plate IX, s)

These small points are unstemmed, and have relatively straight sides with square bases. They are both made of chert.

Length: Range 23-30 mm
Width: Range 10-11 mm
Thickness: Range 3-4 mm

11. Type #18 (n=2; Plate IX, h)

These specimens are lanceolate points with relatively straight edges. One specimen has fine serrations along the edges and is carefully flaked all over. This same specimen has a burinated tip with use wear. The distinguishing attribute of these points is the base which is distinctly concave with one edge of the base having a long barb, so that the base is asymmetrical. Both are chert.

Length: Range 40-47 mm
Width: Range 13-15 mm
Thickness: Range 3-4 mm

12. Type #19 (n=13; Plate IX, i,j)

Specimens of this type are lanceolate and unstemmed. The bottoms are straight, so that the bases are square. All of these points are missing tips which appear to have been snapped off, although on one specimen the tip appears to have been burinated. Two are chalcedony, and the rest are chert.

Length: Range 30-55 mm
Width: Range 9-21 mm
Thickness: Range 2-5 mm

13. Type #20 (n=2; Plate IX, w,x)

These very small points have contracting stems and convex bases. The distinguishing attribute is their small size. Otherwise, they resemble some of the Type #16 points. Both are chert.

Length: Range 14-15 mm
Width: Range 5-6 mm
Thickness: Range 2 mm
Stem Length: Range 6-7 mm

14. Type #21 (n=7; Plate IX, k,l)

The distinguishing attribute of these stemmed points is their ground stem margins. They are generally narrow, lanceolate points with slight contracting stems. All have snapped bases, presumably from use. All are chert.

Length: Range 38-40 mm
Width: Range 11-16 mm
Thickness: Range 4 mm
Stem Length: Range 9-15 mm

15. Type #22 (n=5; Plate IX, y,z)

All these points have distinct shoulders and contracting stems. On two of the specimens the shoulders form small barbs. The bases are either convex or square. In general, the blades have a "Christmas tree" form. They are small, and one is made of chalcedony, while the rest are chert.
Length: Range 20-30 mm
Width: Range 10-15 mm
Thickness: Range 3-4 mm
Stem width: Range 6-10 mm

16. Type #23 (n=2; Plate IX, m)

Both of these large, bifacial chert points have contracting stems with a straight base. Slight, beveled shoulders are formed at the juncture of the stem and blade. They most closely resemble stemmed Types #14, #15 and #16, but are larger and broader. In fact, their large size suggests that they may be stemmed knives, although no wear is evident.

Length: Range 65-67 mm
Width: Range 28-30 mm
Thickness: Range 7-8 mm
Stem length: Range 20-24 mm

17. Type #24 (n=1; Plate IX, t)

This specimen is a small, narrow point of basalt with slight shoulders. The stem contracts little, if at all. The edges of the stem, as well as the stem faces are ground.

Length: 30 mm
Width: 10 mm
Thickness: 4 mm
Stem length: 11 mm

B. Unique points (n=7)

Included in this collection are points which are either one of a kind or too fragmentary to classify. Two of these points are made of obsidian. One is stemmed, and the other is probably bi-pointed. Two other points are basalt, one stemmed, the other lanceolate, which are probably unfinished Type #13 points. Four of the points in this group are small, narrow, finely made points of chalcedony. Although they are all tip sections, they resemble Arctic Small Tool tradition types and may be intrusive in the Lakes phase where they were found.

C. Point fragments (n=66)

These are all fragmentary points, mostly bases and tips, many from contracting stem points.

IV. UNIFACIAL, RIDGED FLAKE TOOLS

A. Flakeknife, Type #8 (n=1)

Like other flakeknives or sidescrapers, this type is made on a small ridged flake. The dorsal face has been flaked to form a pointed tool, with steep retouch along the edges. It shows wear along the edges. It most closely resembles two of the Type #1 flakeknives that might also be called "keeled scrapers". This specimen is made of chalcedony.

Length: 27 mm
Width: 18 mm
Thickness: 5 mm
Edge angle: 60°

B. Flakeknife, Type #3 (n=1; Plate VIII, k)

This chalcedony knife resembles the Type #1 flakeknives in having one thick, curving edge steeply retouched. However, the edge on this type is concave rather than convex. The curved edge forms a sharp "beak" or projection that shows wear. The worked edge on this specimen, like the Type #1 flakeknives, is the "right-hand" edge as previously defined.
Length: 27 mm  
Width: 26 mm  
Thickness: 5 mm  
Edge angle: 50°

C. Endscraper, Type #4 (n=1)

Made on a ridged flake of chert, this variety of endscraper has been steeply retouched on the distal end of the flake. It is otherwise unmodified. It most closely resembles the Type #1 endscrapers which are made on blades.

Length: 27 mm  
Width: 11 mm  
Thickness: 6 mm  
Edge angle: 75°

D. Sidescraper, Type #1 (n=1)

The single specimen of this type is a large flake of chert that has one lateral edge steeply retouched. It is otherwise unmodified. The retouched edge is parallel to the single ridge that forms the backbone of the flake.

Length: 66 mm  
Width: 38 mm  
Thickness: 17 mm  
Edge angle: 40°

V. RIDGED FLAKES (n=79) See Appendix I

VI. UNIFACIAL FLAKE TOOLS

A. Edge-modified flakes

1. Retouched (n=100) See Appendix I  
2. Used (n=166) See Appendix I

B. SideSCRAPER, Type #2 (n=1)

The single specimen of this type is a unifacially flaked tool that has retouch on the sides of the flake and on much of the dorsal surface. One retouched edge is slightly convex. The original shape of the flake has been modified to form an elongated, oval tool of chert.

Length: 42 mm  
Width: 24 mm  
Thickness: 16 mm  
Edge angle: 50°

C. EndsCrapers

1. Type #2 (n=2)

This type of endscraper is made on a relatively flat flake which has been steeply retouched on the end opposite the bulb of the percussion. The retouch is on the dorsal surface of the flake. The specimen is made of chert.

Length: 30 mm  
Width: 39 mm  
Thickness: 6 mm  
Edge angle: 70°
2. Type #5 (n=1)

This variety of endscraper is made on a large, thick flake of basalt. The end opposite the bulb of percussion is steeply retouched, forming a convex working edge. The retouch is on the dorsal surface.

| Length: | 61 mm |
| Width:  | 49 mm |
| Thickness: | 8 mm |
| Edge angle: | 40° |

3. Type #6 (n=1)

Unlike other scraper types, this flake scraper is manufactured on an elongated, blade-like, cortex flake. The dorsal surface of the flake is covered with cortex, except at the distal end, which is steeply retouched. The working edge is convex, and the material is chert.

| Length: | 69 mm |
| Width:  | 32 mm |
| Thickness: | 9 mm |
| Edge angle: | 70° |

VII. SLATE IMPLEMENTS

A. Slate rod (n=1)

The only complete slate implement from the Lakes phase is a small rod, 62 mm long, which has been ground to shape. In cross-section, the rod is rectangular. On either square end are small notches ground on the narrow sides of the rod.

B. Worked slate (n=6)

These are simply small pieces of slate which exhibit scratches and grooves. They are presumably debris from the manufacture of tools which have not been found.

VIII. WHETSTONES

A. Scratched, grooved whetstones (n=13)

These are generally flat or oval pebbles and cobbles of sandstone or siltstone which have scratches and/or grooves. Scratches are the most common. They are assumed to be stones for polishing the edges of other tools.

B. Polished whetstones (n=33)

Like the whetstones just described, these are otherwise unmodified stones that have polish on one or more surfaces. Most of these are elongated pebbles and cobbles. One is slate or siltstone which has a number of facets on one flat surface. All of these tools are thought to have been used for grinding the faces of other tools, such as adzes.

IX. PUMICE ABRADERS

A. Scratched abraders (n=10)

All these are unshaped pieces of pumice that have either grooves or scratches. The scratched abraders are assumed to have been used in a fashion similar to scratched whetstones. The grooved abraders probably functioned to shape shafts of various sorts.

B. Polished abraders (n=4)

Unlike most of the pumice abraders just described, these abraders are usually shaped only by prolonged use. The most common form is a faceted pebble or cobbie exhibiting a number of flat, adjoining facets. They are presumed to have been used to sharpen and polish tools in the same fashion as polished whetstones.
X. FOUNDER (n=14)

These are simply pebbles or cobbles that have battering on one or both ends. They are otherwise unmodified.

XI. LAMPS (n=2; Plate IX, bb)

One of these lamps is a large cobble which has been pecked to a "D-shaped" form. On the upper surface is a basin which shows considerable charring. It is approximately 85 mm wide. The other specimen is a small lamp which has been ground and polished to an oval shape. The basin is uncharred. The lamp is 75 mm long.

XII. NOTCHED SINKERS

A. Cobble sinkers (n=59; Plate VIII, n)

These sinkers are almost without exception flat beach cobbles (see Table 23) which have a single notch on either end. The notches are formed by bifacial flaking and are occasionally ground. Most are made from sedimentary rock. They were presumably used as net-weights and were often found in pairs.

B. Pebble sinkers (n=41)

In most respects these are similar to the sinkers just described, except they are made on pebbles (see Table 23). However, they are generally oval rather than flat in cross-section and are more commonly ground on the notches. They were not found in pairs, but more commonly in clusters.

| TABLE 23 |
| MEASUREMENTS OF NET-SINKERS, UGASHIK LAKES PHASE, INLAND SUB-PHASE |

<table>
<thead>
<tr>
<th>Distance Between Notches</th>
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<th>Thickness</th>
<th>Weight</th>
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<td>Mean Range (mm)</td>
<td>Mean Range (mm)</td>
<td>Mean Range (gm)</td>
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<tr>
<td>Cobble Sinkers 49-Uga-1</td>
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<td>64</td>
<td>14</td>
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<td></td>
<td>55-112</td>
<td>41-81</td>
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<td>Pebble Sinkers 49-Uga-1</td>
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<td>6-19</td>
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<tr>
<td>Pebble Sinkers 49-Uga-2</td>
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</tr>
<tr>
<td></td>
<td>20-59</td>
<td>17-51</td>
<td>8-19</td>
</tr>
</tbody>
</table>

XIII. EDGE-GROUND COBBLE (n=1)

This single specimen is a cobble of sandstone which has been ground and battered on its edges.

IX. CERAMICS
A. Fired clay tubes (n=3)

All of these are hollow tubes of baked clay which range in diameter from 9 mm to 15 mm. They may have functioned as mouth pieces for inflatable skin floats or as stems for pipes.

B. Pottery, Ugashik Narrow Stamp Impressed (n=53; Plate VIII, o,p)

This variety of pottery is characterized by temper composed primarily or organic matter, probably grass or fibers, and, less frequently, sand. The sherd count includes only those pieces that have both the interior and exterior surfaces intact. Many small fragments are thus not included in the total count. Of the 53 sherd, five are rim sherds, one is a base sherd, and the rest are body sherds. All have stamped exterior surfaces. The most common impressions are small squares, approximately 3 mm across. Four sherd have rectangular impressions, and five have diamond stamps. The mean thickness of body sherds is 9.6 mm. From the rim sherds which exist, it is possible to suggest that the vessel form is an opening forming a vase-like vessel (cf. Dumond 1969a). Many of the plain, unogared sherds discussed below, particularly those from the Early Inland sub-phase, are likely from stamped impressed vessels on which the decoration has become obscured.

C. Pottery, Ugashik Narrow Plain (n=70)

This variety of fiber-tempered pottery includes sherd from most components of the Inland sub-phase, whereas the previous variety is restricted to two components of the Lakes phase at 49-Uga-I. It has been indicated that some of the sherd assigned to this variety may actually be from stamped vessels. Most of the plain sherd from Lakes phase components other than at 49-Uga-I exhibit more sand temper than the stamped sherds, although organic matter is still the predominant temper. Based upon the few rim sherds that exist, primarily from the late and intermediate Inland sub-phase components, the vessel form appears to be more like a "barrel" with rims that do not constrict noticeably, whereas the stamped rim sherds indicate a constricted opening suggesting a "vase".

TIDEWATER SUB-PHASE

OUTLINE OF CONTENTS

I. BIFACIAL FLAKE TOOLS

A. Bifaces (n=3)

B. Biface fragments (n=6)

C. Miscellaneouse lanceolate chert bifaces (n=1)

D. Bifaced knives

1. Type #6 (n=1)
2. Type #7 (n=1)
3. Type #8 (n=3)
4. Type #9 (n=1)

E. Sideblade, Type #6 (n=1)

F. Lancet (n=1)

G. Adze blade, Type #1 (n=1)

1. Adze bit chips (n=3)

II. BIFACIAL RIDDEN FLAKE/FLAKE TOOLS
A. Projectile points
   1. Type #5 (n=1)
   2. Type #24 (n=1)
   3. Type #25 (n=2)

B. Point fragments (n=5)

III. UNIFACIAL RIDGED FLAKE TOOLS
   A. Flakelike, Type #3 (n=1)

IV. UNIFACIAL FLAKE TOOLS
   A. Edge-modified flakes
      1. Retouched (n=1)
      2. Used only (n=3)

V. WORKED SLATE (n=3)

VI. PUMICE ABRADERS
   A. Scratched, grooved abraders (n=1)
   B. Polished abraders (n=7)

VII. COAL LATHER (n=1)

VIII. SMALL, NOTCHED PEBBLE SINKERS (n=9)

IX. POTTERY, UGASHIK NARROWS PLAIN (n=5)

DESCRIPTIVE SECTION

I. BIFACIAL FLAKE TOOLS
   A. Biface (n=3) See Appendix II
   B. Biface fragments (n=6) See Appendix I
   C. Miscellaneous lanceolate short bifaces (n=1) See Appendix IV
   D. Bifacial knives
      1. Type #6 (n=1)

      Like the previously described specimen of this type, this knife is made on a large, thick cortex flake of basalt. The distal margin has been bifacially trimmed to form a sharp, convex cutting edge.

      Length: 60 mm
      Width: 45 mm
      Thickness: 12 mm
      Edge angle: 45°

   2. Type #7 (n=1; Plate X, e)

      Bifacially flaked of basalt, this knife has a lanceolate outline form with straight sides and a transverse distal end which is the cutting edge. The proximal end has slight shoulders to form a stem for hafting.
3. Type #8 (n=3; Plate X, f)

These bifacially chipped knives of basalt are all fashioned from large flakes. They have been edge-trimmed bifacially to an elongated or "ulu-like" form. The flaking is limited to the margin only.

Length: 60 mm
Width: 45 mm
Thickness: 12 mm
Edge angle: 45°

Length: Range 95-105 mm
Width: Range 47-57 mm
Thickness: Range 8-10 mm
Edge angle: Range 30-50°

4. Type #9 (n=1)

Also made of basalt, this knife was fashioned from a small, thin flake. The bifacial edge-trimming has produced a lanceolate tool with one long, convex cutting edge. The other edges, which are untrimmed, also have polish from use as does the trimmed edge.

Length: 50 mm
Width: 23 mm
Thickness: 4 mm
Edge angle: 30°

E. Sideblade, Type #6 (n=1) See previous description in Appendix IV

The material is basalt.

Length: 65 mm
Width: 25 mm
Thickness: 6 mm

F. Lancet (n=1)

This small tool has a long pointed blade that is lenticular in cross-section. The base is poorly flaked, is oval, and is larger than the blade. It is presumably a small, hafted cutting tool. It is made of basalt.

G. Adze blade, Type #1 (n=1) See previous description in Appendix IV

The material is basalt.

Length: 56 mm
Width: 31 mm
Thickness: 13 mm
Edge angle: 40°

1. Adze bit chips (n=3) See previous description in Appendix IV

II. BIFACIAL RIDGED FLAKE/FLAKE TOOLS

A. Projectile points

1. Type #5 (n=1) See previous description in Appendix IV

The material is basalt.

Length: 45 mm
Width: 19 mm
Thickness: 4 mm
2. Type #24 (n=1; Plate X, c)

This specimen differs from the other Type #24 point described in Appendix IV (p. 321) only by the absence of grinding on the faces.

| Length:  | 35 mm |
| Width:   | 11 mm |
| Thickness: | 4 mm |
| Stem length: | 10 mm |

3. Type #25 (n=2; Plate X, a,b)

These two points are similar to Type #9 points in having a distinctly rounded tip. However, these specimens have grinding on the faces and are made of basalt.

| Length:             | Range 44 mm |
| Width:              | Range 13 mm |
| Thickness:          | Range 3-4 mm |

B. Point fragments (n=5)

These are all tip or medial fragments too broken to classify.

III. UNIFACIAL RIDGED FLAKE TOOLS

A. Flakelife, Type #3 (n=1; Plate X d) See previous description in Appendix IV

| Length:  | 33 mm |
| Width:   | 20 mm |
| Thickness: | 5 mm |
| Edge angle: | 45° |

IV. UNIFACIAL FLAKE TOOLS

A. Edge-modified flakes

1. Retouched (n=1)
2. Used only (n=3)

V. WORKED SLATE (n=3) See previous description in Appendix IV

VI. PUMICE ABRADERS

A. Sartched, grooved abraders (n=1) See description in Appendix IV

B. Polished abraders (n=7) See Appendix IV

VII. COAL LABRET (n=1; Plate X, h)

The single specimen from this phase is made of coalized wood (lignite?) and is shaped like a "top hat". The small end, which would have been the visible end when worn, has been shaped to form a small concavity. Found with the labret was a lens-shaped piece of red hematite that has been shaped to fit into the concavity on the labret.

| Length:  | 36 mm |
| Maximum width: | 34 mm |

VIII. SMALL, NOTCHED PEBBLE SINKERS (n=9; Plate X, g)

These sinkers are all extremely small, less than 40 mm long, and made on pebbles that are generally flat or slightly double-convex. Both ends have been notched by bifacial flaking, and some of the notches have been ground.
Mean distance between notches: 36 mm
Mean maximum width: 30 mm
Mean thickness: 10 mm
Mean weight: 17 gm

IX. POTTERY, UGASHIK HARROWS PLAIN (n=5)

These sherds are all characterized by some form of organic temper and are generally less than 10 mm in thickness. As no sherds of Ugashik Harrows Stamp Impressed pottery were found in any of the Tidewater sub-phase components, it is assumed that the pottery of this Sub-phase conforms in most respects to the Ugashik Harrows Plain variety discussed earlier in this Appendix.

<table>
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|                    | 5     |        |      |    |       |     |     |     |     |     |
|                    | 6     |        |      |    |       |     |     |     |     |     |
|                    | 7     |        |      |    |       |     |     |     |     |     |

| Adze Blades        | 1     | 1      | 1    | 1  |       |     |     |     |     |     |
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*Variety #1 cores only
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APPENDIX V
DESCRIPTION OF URASHIK RIVER
PHASE ARTIFACTS

OUTLINE OF CONTENTS

I. FLAKE CORES
   A. Pebble cores
      1. Type #8, Variety #1 (n=1)
      2. Type #8, Variety #4 (n=2)
   B. Cobble core, Type #9, Variety #1 (n=1)
   C. Core fragments
      1. Flute element rejuvenation flakes (n=2)
      2. Platform rejuvenation flakes (n=1)
      3. Platform margin rejuvenation flakes (n=1)
      4. Miscellaneous core fragments (n=15)

II. BIFACIAL FLAKE TOOLS
   A. Proto-bifaces (n=2)
   B. Bifaces (n=18)
   C. Biface fragments (n=50)
   D. Miscellaneous lanceolate chert bifaces (n=6)
   E. Miscellaneous lanceolate basalt bifaces (n=1)
   F. Bifaced knives
      1. Type #2 (n=2)
      2. Type #10 (n=1)
   G. Adze blades and preforms
      1. Type #3 (n=2)
      2. Type #4 (n=1)
      3. Adze blade preform (n=1)
      4. Adze bit flakes (n=6)

III. UNIFACIAL FLAKE TOOLS
   A. Edge-modified flakes
      1. Retouched (n=14)
      2. Used only (n=22)
IV. GROUND AND POLISHED SLATE TOOLS

A. Inset blades
   1. Type #1 (n=1)
   2. Type #2 (n=14)
   3. Inset blade fragments (n=7)

B. Dartheads
   1. Type #3 (n=1)
   2. Type #4 (n=1)
   3. Type #5 (n=1)

C. Ulus
   1. Type #1 (n=1)
   2. Type #2 (n=1)
   3. Type #3 (n=1)
   4. Ulus fragments (n=3)

D. Edge-sharpened slate flakes (n=3)
E. Cut and polished slate (n=81)

V. WHEATSTONES

A. Scratched and grooved wheatstones (n=11)
B. Polished wheatstones (n=44)
C. Faceted wheatstones (n=6)
D. Slab wheatstones (n=3)

VI. PUMICE ABRADERS

A. Scratched and grooved abraders (n=4)
B. Polished abraders (n=7)
C. Faceted abraders (n=1)

VII. FOUNDERs (n=3)

VIII. NOTCHED SINKERS

A. Cobble sinkers (n=1)
B. Small pebble sinkers (n=9)

IX. CERAMICS

A. Fired clay tube (n=1)
B. Pottery, Ugashik Village Plain (n=13)
C. Pottery, Ugashik Bay Stamped (n=1)
D. Pottery, Ugashik River Plain (n=47)
X. BONE AND ANTLER TOOLS

A. Antler arrowhead (n=1)
B. Antler wedge (n=1)
C. Bone awls (n=5)
D. Bone Scrapers (n=28)
E. Bone and antler handles (n=2)
F. Antler spoon (n=1)

DESCRIPTIVE SECTION

I. FLAKE CORES

A. Pebble cores

1. Type #8, Variety #1 (n=1) See Appendix IV for description.

   Maximum width: 47 mm
   Platform width: 47 mm
   Core height: 20 mm
   Platform angle: 90°

2. Type #8 Variety #4 (n=2) See Appendix IV for description.

B. Cobble core, Type #9, Variety #1 (n=1) See Appendix IV for description.

   Maximum width: 69 mm
   Platform width: 55 mm
   Core height: 35 mm
   Platform angle: 60°

C. Core fragments

1. Flute element rejuvenation flakes (n=2) See Appendix I
2. Platform rejuvenation flake (n=1) See Appendix I
3. Platform margin rejuvenation flake (n=1) See Appendix I
4. Miscellaneous core fragments (n=15) See Appendix I

II. BIPOLAR FLAKE TOOLS

A. Proto-bifaces (n=2) See Appendix II for description.

B. Bifaces (n=18) See Appendix IV

C. Biface fragments (n=50) See Appendix I for description.

D. Miscellaneous lanceolate chert bifaces (n=6) See Appendix III for description.
E. Miscellaneous lanceolate basalt bifaces (n=1) See Appendix IV for description.

F. Bifaced knives

1. Type #2 (n=2) See Appendix II for description.

   Length: Range 72-95 mm
   Width: Range 26-28 mm
   Thickness: Range 10 mm
   Edge angle: Range 40-60°
2. Type #10 (n=1)

The single specimen of this type is a "fan-shaped" tool which has the distal end of the flake carefully retouched to form a convex cutting edge. The sides of the flake are also bifacially trimmed forming a triangular knife. It is made of chert.

Length: 34 mm
Width: 39 mm
Thickness: 9 mm
Edge angle: 20°

G. Adze blades and preforms

1. Type #3 (n=2; Plate X, i)

These are both large adzes which have been roughly chipped to shape bifacially. Both the bit and the blade faces are polished. The cutting edge of the bit is off-centered.

Length: Range 90-135 mm
Width: Range 53- 60 mm
Thickness: Range 25- 30 mm
Bit angle: Range 70- 75°

2. Type #4 (n=1; Plate X, j)

Made of hard slate, this type of adze has been casually chipped only along the edges to form a triangular-shaped adze. The butt or hafted end is pointed, and the cutting edge is convex and polished. There is no polishing on the blade of the tool. The bit is acute with a central cutting edge.

Length: 74 mm
Width: 69 mm
Thickness: 10 mm
Edge angle: 40°

3. Adze preform (n=1)

This specimen is bifacially trimmed to a quadrilateral form with tapering sides. It is made from slate and appears to be a preform for a Type #4 adze.

4. Adze bit chips (n=6) See Appendix IV

H. Projectile points

1. Type #5 (n=3) See description in Appendix IV

One is chert, and the other is an unidentified metamorphic rock.

Length: Range 40-22 mm
Width: Range 15-19 mm
Thickness: Range 3- 6 mm

2. Type #26 (n=2)

These are both bifacially chipped basalt points with triangular blades and slight shoulders. One base is straight, and the other is convex.

Length: Range 34-35 mm
Width: Range 18-20 mm
Thickness: Range 5 mm
Stem length: Range 9-10 mm
III. UNIFACIAL FLAKE TOOLS

A. Edge-modified flakes

1. Retouched (n=14)
2. Used only (n=22) See Appendix 1 for description.

IV. GROUND AND POLISHED SLATE IMPLEMENTS

A. Inset blades

1. Type #1 (n=1; Plate X, k)

The single specimen of this type is a small, polished slate point with small shoulders, corner-notches, and a stem. Both faces have a rubbed triangular butt facet.

Length: 31 mm
Width: 14 mm
Thickness: 2 mm
Stem length: 2 mm

2. Type #2 (n=14; Plate X, 1,m)

These specimens are also small, polished slate points with triangular butt facets. However, these are unstemmed, and the butt facets are concave rather than flat. The bases are straight to slightly concave.

Length: Range 35-50 mm
Width: Range 15-20 mm
Thickness: Range 2-4 mm

3. Inset blade fragments (n=7)

These are primarily tip sections of what are probably Type #2 inset blades.

B. Dartheads

1. Type #3 (n=1; Plate X, n)

This variety has small shoulders and a slight contracting stem. Both faces have a raised center-line facet which tapers to a point on the stem.

Width: 15 mm
Thickness: 3 mm
Stem length: 13 mm

2. Type #4 (n=1; Plate X, o)

This large ground and polished projectile point has rubbed triangular butt facets on the stem only. The shoulders form slight barbs, and the stem is slightly contracting. The blade is double convex without distinct facets.

Length: 90 mm
Width: 27 mm
Thickness: 7 mm
Stem length: 17 mm

3. Type #5 (n=1)

Disregarding size, this stemmed slate point is similar to Type #4 darthead; however, this specimen lacks the distinct shoulders and small barbs. The stem has small facets on either side of the base. The blade has a narrow center-line facet on each side of which are flat facets which form the blade.
Width: 25 mm  
Thickness: 7 mm  
Stem length: 21 mm  

4. Darthead fragments (n=6)  
These are primarily stem and blade fragments of Type #4 and #5 dartheads.

C. Ulu

1. Type #1 (n=1; Plate X, p)
   
The distinguishing attribute of this ulu is the presence of a tang on the spine of the blade. The cutting edge of the blade is convex with one end more pointed. Both the tang and the blade are perforated for attaching a handle or for hanging.

   Length: 106 mm  
   Width: 40 mm  
   Thickness: 6 mm

2. Type #2 (n=1; Plate X, q)

   The single specimen of this type is untanged. The spine is straight, and the cutting edge is convex with one end rounded and the other end angled. The blade has a perforation formed by deep grooves on either side of the blade.

   Length: 84 mm  
   Width: 25 mm  
   Thickness: 3 mm

3. Type #3 (n=1)

   This ulu is untanged and unperforated. The edges are apparently still unfinished as flake scars are still present. The length of the cutting edge, unlike the other two ulu types, is the shorter of the two dimensions.

   Length: 102 mm  
   Width: 97 mm  
   Thickness: 8 mm

4. Ulu fragments (n=3)

   These are all blade fragments of what appear to be untanged ulus.

D. Edge-sharpened slate flake (n=1)

   In general form, this small tool resembles a ulu, but polishing is restricted to one convex edge, and the tool is considerably smaller than the ulu described above.

E. Cut and polished slate (n=81) See Appendix IV

V. WHETSTONES

A. Scratched and grooved whetstones (n=11) See Appendix IV

B. Polished whetstones (n=44)

   Many of these are unshaped pebbles and cobbles of sandstone which have an elongated shape, much like a cigar. Polishing is present on at least one surface. A number apparently were used to grind red ochre as this material still adheres to some.
C. Faceted whetstones (n=5)

These distinctive whetstones have at least two, often more, faceted surfaces which were shaped before use, or became faceted through prolonged use and rotation of the working surface.

D. Slab whetstones (n=3)

These large, thick slabs of sandstone are dished on one flat surface, much like a metate. They were presumably used to grind slate.

VI. PUNOLT ABRADERS

A. Scratched, grooved abraders (n=4) See Appendix IV

B. Polished abraders (n=7) See Appendix IV

C. Faceted abrader (n=1)

This specimen is like the faceted whetstone described above, only made of pumice.

VII. FOUNDERS (n=3) See Appendix IV

VIII. NOTCHED SINKERS

A. Cobble sinker (n=1) For description, see Appendix IV

- Distance between notches: 74 mm
- Width: 53 mm
- Thickness: 11 mm
- Weight: 79 mm

B. Small pebble sinker (n=9) See description in Appendix IV

- Mean distance between notches: 41 mm
- Mean width: 29 mm
- Mean thickness: 11 mm
- Mean weight: 19 gm

IX. CERAMICS

A. Fired clay tube (n=1) See Appendix IV

B. Pottery, Ugaishik Village Plain (n=13)

These sherds are all from relatively thick-walled vessels which were probably globular in shape. No decoration or impressions are apparent on the exteriors of the sherds. The temper is primarily sand and gravel, with inclusions reaching 10 mm in maximum size. The average thickness of the body sherds, which account for all but one of the sherds, is 18 mm. Not included in the sherd count are a number of vessel fragments too broken to be measured.

C. Pottery, Ugaishik Bay Stamped (n=1)

The single specimen of this variety is a large body sherd with a thickness of 12 mm. The temper is predominantly small inclusions of gravel, with the addition of a small amount of organic matter. The impressions on the exterior of the sherd are large, 10 mm by 5 mm.

D. Pottery, Ugaishik River Plain (46 sherds and one vessel)

This pottery type is characterized by thin walls, less than 10 mm thick, undecorated exteriors, and temper composed of sand and fine gravel. The gravel inclusions are small, not more than 6 mm in size. Of the tabulated sherds, four are rim sherds, five are base sherds, and the remainder are body sherds. The mean thickness of the body sherds is 8.5 mm. Not included in the sherd count are numerous fragments. The few rim sherds from incomplete
vessels suggest a vessel rim with a slightly extruding lip which in cross-section is convex. The single, virtually complete vessel, is a flat-bottomed pot with walls which curve out from the base and form gently curving sides. The rim has a lip which is extruding and convex in cross-section. The base diameter is 110 mm, while the opening is 185 mm from lip to lip. The approximate height of the vessel is 220 mm, and the wall thickness is 9 mm.

X. BONE AND ANTLER IMPLEMENTS

A. Antler arrowhead (n=1; Plate X, r)

This specimen is unilaterally barbed with a conical, pointed tang. The tang forms a distinct shoulder at the juncture of the tang and shaft. The shaft is oval in cross-section and has a long, flat facet on the barbed side. Straight-line incising, forming a "T" is present on the barbed side of the shaft. The overall length is 105 mm.

B. Antler wedge (n=1)

This tool is made on a sectioned piece of antler, presumably caribou. One end has been beveled and shows evidence of wear.

C. Bone awl (n=5)

These are simply small sections of bone which have been shaped and worn to a point. They are oval in cross-section.

D. Bone Scrapers (n=28)

These are all split sections of long bones, probably caribou, which have one end worn from use. None have been shaped into a distinct form.

E. Bone and antler handles (n=2)

One of these is a thick, cut section of antler, probably caribou, which has one end hollowed out, presumably for the insertion of a tool. The other specimen is a long slender object with a single notch on one end, presumably for the attachment of a tool.

F. Antler spoon (n=1)

This single, undecorated spoon has a slightly dished, oval blade and a flattened handle. It is 150 mm long.

TABLE 25
DISTRIBUTION OF UGASHIK RIVER PHASE ARTIFACTS
BY SITE AND COMPONENT

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<th>Unidentified Avian Specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>49-Uga-1</td>
<td>844</td>
<td>373</td>
<td>157</td>
<td>294</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>49-Uga-2</td>
<td>79</td>
<td>31</td>
<td>25</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49-Uga-5</td>
<td>521</td>
<td>56</td>
<td>176</td>
<td>209</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49-Uga-6</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>49-Uga-7</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>49-Uga-8</td>
<td>20</td>
<td>5</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>49-Uga-9</td>
<td>77</td>
<td>39</td>
<td>33</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>49-Uga-16</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>49-Uga-17*</td>
<td>89</td>
<td>32</td>
<td>10</td>
<td>46</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>49-Uga-23</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>49-Uga-27</td>
<td>21</td>
<td>12</td>
<td>2</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49-Uga-29</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>1671</td>
<td>554</td>
<td>413</td>
<td>681</td>
<td>16</td>
<td>7</td>
</tr>
</tbody>
</table>

*The test excavation of this site is not described in the text of the present report. See Renn (1977).
APPENDIX VI

UGASHIK FAUNAL REMAINS

by

George T. Jones
University of Washington

Components of the Ugashik River phase and of the historic period from twelve archaeological sites in the Ugashik River drainage yielded more than 1600 mammalian and avian skeletal elements. Of these, 554 specimens were identified from ten of the twelve sites (Table 26)*. Taxonomic identification followed standard comparative procedure, utilizing modern comparative specimens.

COMMENTS ON IDENTIFICATION

Unidentified mammalian specimens were divided into two subclasses. A large proportion of these fragmentary specimens are clearly large cervids (moose, Alces alces, or caribou, Rangifer tarandus). The subclass of "other" specimens probably contains numerous cervid bone fragments which are so badly eroded that they lack distinctive morphology for taxonomic assignment.

The skeletal remains of mature small canids could not be separated as to genus. Both red fox (Vulpes fulva) and arctic fox (Alopex lagopus) are reported to currently occupy this region. The available comparative specimens were insufficient to separate taxonomically significant characters from individual variation. Although the archaeological specimens are not morphologically inconsistent with either species their general size more closely matches red fox, the larger of the two species.

Large canids are represented only at Uga-17 by three bones of the fore limb, all probably from the same individual. These have been assigned to domestic dog (Canis cf. familiaris) because of their size. The specimens represent a fully mature individual. Though the elements are quite rugged, they are much smaller than comparable elements of wolf (C. lupus).

Archaeological remains of seal are probably contributed by harbor seal (Phoca vitulina), but because comparative materials of bearded seal (Erignathus barbatus) were not available to the author, specific identifications were not made. Only two elements are large enough to be within the size range of nature bearded seal, a metatarsal from Uga-1 and a thoracic vertebra from Uga-17. Osgood (1904) reports that the harbor seal is a more common species in the western peninsula region (see also Marie 1959).

The remains of cetaceans are limited to a single caudal vertebra lacking articular surfaces and chevrons which may be assigned to the suborder Mysticeti (Dale Rice, personal communications). In this taxa are three whales whose range includes the western shore of the Alaska Peninsula. The right whale (Eubalaena glacialis) and gray whale (Eschrichtius gibbosus) summer in Bristol Bay. The bowhead whale (Balaena mysticetus) remains near the ice-edge and occupies Bristol Bay during the winter months.

*Editor's note (DED): As was made clear throughout the text, the Ugashik excavations did not include a systematic attempt to sample deposits of the late prehistoric and historic periods (which produced all of the faunal remains that were recovered), and so the faunal materials encountered can only be described as incidental to the main thrust of the research. These historic and late prehistoric materials were simply combined when sent for the identification that is reported here.
Of the twenty-three avian specimens recovered from the excavations of three sites, Uga-1, Uga-8, and Uga-17, sixteen were identifiable. Several of the specimens exhibited sufficiently diagnostic characteristics to permit specific designation. Three cervical vertebra recovered at Uga-1 come from whistling swan (Cygnus cf. columbianus). Less distinctive skeletal elements of swan were left at the generic level. Seven elements of eagle, five attributable to bald eagle (Haliaeetus leucocephalus), were recovered in the excavation of Uga-1. While not assignable to a particular species, the remaining elements of eagle were recovered in the same excavation unit and stratum as four of the bald eagle specimens.

**QUANTIFICATION OF THE UGASHIK FAUNAS**

I have employed two measures to quantify the abundance of taxa represented in the Ugashik faunas: the number of identifiable specimens (elements) per taxon (E) and the minimum number of individuals per taxon (MNI). E is calculated simply by counting the identifiable elements of a taxon to determine its abundance in a collection. MNI is that number of individuals which are necessary to account for all skeletal specimens of a taxon in a faunal cluster (Shotwell 1955).

An understanding of the behavioral properties of these measures indicates distinctive methodological weaknesses in each approach (Grayson, in press). The principal problem with E values are their almost certain interdependence. Produced by the contribution to a sample of more than one bone by an individual animal, interdependence precludes statistical manipulations. MNI values, on the other hand, are dependent upon the criteria used to define the cluster of specimens from which they are calculated (Grayson 1973). For instance, different MNI values are produced when a fauna is treated as a single unit or more than one unit. Additionally, MNI values calculated from small numbers of identifiable elements per taxon overrepresent the abundance of those taxa when compared to values derived from larger samples of E (Grayson, in press). As no solution to these problems or alternative quantitative methods have been devised it is safest to base inference on data produced by both methods.

During excavation the Ugashik faunas were located by excavation unit and 10 cm level. This provenience record permits the faunas to be quantified using several definitions of faunal cluster. The maximum distinction method for calculating MNI (Grayson 1973), which uses excavation unit and stratigraphic level to define faunal clusters, is considered inappropriate for use since it cannot be assumed that elements of the same individual are entirely contained within the boundary of a single excavation unit. MNI values determined by this approach are subject to enhancement when faunal materials have been recovered from a site having numerous excavation units as is the case with Uga-1. Alternatively, the minimum distinction method may disregard important information for defining faunal clusters by treating faunal materials from a site as a single unit--as is done here at the request of the excavators. Indeed, Grayson (1973) has argued that an approach utilizing horizontal or stratigraphic distinctions to define faunal clusters is the best of several methods for calculating MNI, and this approach was used in information that has been furnished to the Department of Anthropology, University of Oregon, and is on file there, but which is not reproduced here.

The methodological problems associated with both E and MNI precludes interval level comparisons of taxonomic abundance within or between archaeological faunas (Grayson, in press). Instead, ranks of taxonomic abundance are relied upon to indicate the importance of members of each fauna.

**SEASONALITY**

Archaeological faunas commonly contain useful indicators of the season of the year during which sites were occupied or various subsistence activities were scheduled. Though attempts to determine the season of occupation of the Ugashik sites from their faunas produced problematic results, they are instructive of methods that should be followed in other studies of Alaska Peninsula faunas. Two approaches were followed: an examination of the presence of seasonal indicators among the migratory members of the faunas, and the use of aged specimens and comparisons to seasons of birth.
A substantial migratory bird population frequents the Ugashik drainage, yet the Ugashik archaeological avifaunas are depauperate in these species. Among the archaeological taxa only members of the genus Branta, which include the Canada goose (*B. canadensis*) and the black brant (*B. nigricans*), are migratory. They first appear on the Alaska Peninsula during April and May and again between late August and November. Murie (1959) reports a large breeding population in the Ugashik region during the summer months, however. Many taxa which are year-round residents of the Alaska Peninsula are most abundant in the Ugashik region during the spring and summer nesting months. These include whistling swan and several species of duck.

No members of the mammalian archaeofauna have migratory patterns that provide conclusive evidence for seasonality. Though caribou are migratory on the Alaska Peninsula, they are usually present throughout the year in the Ugashik region. Hardening behavior occurs during the spring and fall as caribou move to and from the calving grounds. It is during these periods that caribou may be most successfully hunted. Thus the presence of large numbers of caribou in an archaeofauna may indicate occupation during one of these seasons.

Caribou may be aged by replacement and eruption of mandibular teeth (Taber 1971). Banfield's formula for tooth eruption rates has been followed in this study (Banfield 1954, reproduced in Taber 1971), though other studies suggest that the schedule of eruption varies considerably between individual animals (Banfield 1960, Skoog 1968, Bergerund 1970, Hillier 1972). This is especially true of the time of eruption of permanent premolars which according to different studies erupt between 17 and 27 months. Molar teeth are the most sensitive measure of caribou age and have the greatest potential for determining the season of an animal's death.

Tooth eruption schedule as well as other cranial and post-cranial criteria have proven useful for estimating the ages of beaver (Cook and Maunton 1954, Robertson and Shadle 1954, Buckley and Libby 1955). The comprehensive study of Robertson and Shadle (1954), which defines six age classes is followed here.

### TABLE 27

<table>
<thead>
<tr>
<th>Site</th>
<th>10 Months</th>
<th>16 Months</th>
<th>18 Months</th>
<th>22 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>49-Uga-1</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>49-Uga-2</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>49-Uga-5</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>49-Uga-17**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Based on tooth eruption; dashed line shows the possible age range indicated by fragmentary materials.

**This site is described by Henn (1977).

An examination of the Ugashik faunas produced fourteen caribou mandibles to which the eruption formula could be applied. Only four were complete and could be placed in a single age class. Fragmentary specimens precluded exact determinations; these were given minimum ages. In Table 27 the entire age range for a specimen is indicated by a dashed line. Because of the insensitivity of the aging criteria, most of the specimens of beaver could not be attributed to a single age class (Table 28).
TABLE 28

AGES OF BEAVER SPECIMENS

<table>
<thead>
<tr>
<th>SITE</th>
<th>9-11 Months</th>
<th>21-23 Months</th>
<th>33-35 Months</th>
<th>45-47 Months</th>
<th>Over 47 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>49-Uga-1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49-Uga-17**</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49-Uga-27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Dashed line indicates the possible age range.

**This site is described by Henn (1977).

Since most specimens were contributed by adult individuals, aging studies yielded inconclusive evidence bearing on site seasonality. Similarly, the review of migratory records provided little information specific to problems of seasonality. Other interpretations of the Ugashik faunal data make use of these historical records, however.

DESCRIPTIONS OF FAUNAS BY SITE

49-Uga-1

This sample from seven strata contains the greatest taxonomic diversity among the Ugashik faunas (Table 29). Twelve taxa have been distinguished from 387 identifiable specimens, with an additional 157 specimens attributable to the family Cervidae. The most prominent taxon, caribou, is represented in this sample by 88% of the identifiable elements (E) and 47% of the individuals (MNI). Caribou is followed in order of identifiable elements by fox, beaver, bald eagle, whistling swan, porcupine, seal, eagle, river otter, brown bear, swan, raven, and common eider. The order presented by MNI values does not significantly alter taxonomic rankings, but is a much more conservative estimate of the abundance in the fauna. An examination of the taxonomic rankings by strata follows that of the combined strata with the exception in stratum 4 where fox predominates among identifiable elements.

Even though the Uga-1 fauna provides the most abundant data on seasonality among the Ugashik faunas, this study has not proven very satisfactory. A single element of Branta sp. recovered in stratum 2 indicates that the deposition of that specimen probably occurred sometime between April and October and possibly nearer the extreme dates than during mid-summer. Fifteen specimens of caribou and beaver were used to estimate the ages of thirteen individuals (Tables 27 and 28). No individual could conclusively be aged and thus proved of no value for these studies. Small juvenile caribou are represented in the Uga-1 collection as metapodials and other elements would indicate. This information, supplemented by scanty seasonality data, is not inconsistent with a late summer or early autumn occupation of Uga-1.

49-Uga-2, 49-Uga-3 and 49-Uga-9

These samples of intermediate size, having over thirty identifiable specimens each, were produced by limited excavations. The identifiable component is represented solely by caribou (Table 29), while the unidentifiable mammalian remains are largely cervid: Uga-2, 52% (25 elements); Uga-5, 33% (176 elements); Uga-9 87% (33 elements). Single mandibular fragments of caribou recovered at Uga-2 and Uga-5 (Table 27) represent mature individuals and cannot be implemented for seasonal study.
<table>
<thead>
<tr>
<th>Taxon</th>
<th>49-Uga-1</th>
<th>49-Uga-2</th>
<th>49-Uga-5</th>
<th>49-Uga-6</th>
<th>49-Uga-7</th>
<th>49-Uga-8</th>
<th>49-Uga-9</th>
<th>49-Uga-16</th>
<th>49-Uga-17</th>
<th>49-Uga-27</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E  MNI</td>
<td>E  MNI</td>
<td>E  MNI</td>
<td>E  MNI</td>
<td>E  MNI</td>
<td>E  MNI</td>
<td>E  MNI</td>
<td>E  MNI</td>
<td>E  MNI</td>
<td>E  MNI</td>
</tr>
<tr>
<td>Mammals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rangifer tarandus (caribou)</td>
<td>340 16</td>
<td>31 3</td>
<td>66 8</td>
<td>1 1</td>
<td>4 1</td>
<td>5 1</td>
<td>39 2</td>
<td>1 1</td>
<td>11 1</td>
<td>4 1</td>
</tr>
<tr>
<td>Castor canadensis (beaver)</td>
<td>11 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Erethizon dorsatum (porcupine)</td>
<td>2 2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Phocidae (seals)</td>
<td>2 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mysticeti (baleen whales)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 1</td>
<td></td>
</tr>
<tr>
<td>Vulpes Alopex (foxes)</td>
<td>17 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lutra canadensis (otter)</td>
<td>1 1</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ursus arctos (brown bear)</td>
<td>1 1</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Canis cf. familiaris (dog)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 1</td>
<td></td>
</tr>
<tr>
<td>Homo sapiens (man)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 1</td>
</tr>
<tr>
<td>Birds</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haliaeetus leucocephalus</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(bald eagle)</td>
<td>5 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haliaeetus or Aquila (eagles)</td>
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<td></td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Chlor cf. columbianus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(whistling swan)</td>
<td>3 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corvus corax (raven)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 1</td>
<td></td>
</tr>
<tr>
<td>Phalarocorax sp. (cormorant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 1</td>
<td></td>
</tr>
<tr>
<td>Branta sp. (brant, goose)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anatinae (ducks)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 1</td>
</tr>
</tbody>
</table>
The limited test excavations at these sites produced small samples of identifiable bone. With the exception of the Uga-8 sample which contains a single whistling swan humerus, the identifiable portions of each fauna is represented only by caribou.

Both samples are small, but contain a large number of taxa. Limited testing produced samples sharing three taxa, caribou, beaver and seal. In contrast to the Uga-1 fauna, taxa present in these assemblages are nearly equally represented (Table 29).

The Uga-27 assemblage contains two taxa worth noting. The single element of cetacean can only be identified to the suborder, but indicates the use of large whales. A small humerus and radius of Homo sapiens were apparently contributed by a young individual; however, both elements were eroded and missing articular ends, so a more precise age assignment is not possible.

These samples are comprised of few specimens of unidentifiable mammalian bone. The specimen in these samples are not cervid, but represent a small mammal in the case of 49-Uga-23 and a large sea mammal in the 49-Uga-29 sample.

INTERPRETATION OF THE FAUNAS

The underlying populations from which the Ugashik samples are drawn represent at least two distinct modes of resource use, one reflecting an emphasis on caribou hunting and the other a wider range of activities. Based on the relationship between sample size (E and MNI figures) and taxonomic diversity, these differences are illustrated by the six largest Ugashik assemblages in Fig. 17. The data appear to segment into two clusters. In the case of one group, 49-Uga-17 and 49-Uga-27, the small samples contain relatively high taxonomic diversity and a similar representation of each taxa. Assemblages of the second group may share with the first high taxonomic diversity as suggested by the 49-Uga-1 fauna, but the predominance of caribou overshadows the presence of other taxa. If curvilinear lines are fitted to these data, members of the first group fall on a line rising sharply from zero, while the line of the second group follows the horizontal axis at low taxonomic diversity until sample size increases to a point beyond the mean and modal values of the samples considered here.

Although there has been no statistical demonstration that the Ugashik faunas fall into two groups, the evidence presented is suggestive and warrants some remarks about cultural implications. These concern differences in cultural subsistence behavior, probably variations in the seasonal use of faunal resources and occupations of Ugashik sites.

Studies of Alaska Peninsula caribou show that to be migratory, but available in the Ugashik region during all times of the year (Hemming 1971). It is during the spring and summer migrations to and from the calving grounds south of the Ugashik drainage, however, that the caribou exhibit herding behavior; in the late summer and mid-winter they are highly dispersed. In these periods when caribou congregate to form intermittent streams of migrating animals, caribou hunting would probably provide the greatest return for energy expenditure among possible procurement activities. At times when caribou location and density are less predictable, the potential energy returns on caribou hunting would decrease proportionately to other subsistence activities.

Thus it is argued that the seasonal variation in the abundance of caribou owing to their migratory and dispersal behavior led to a particular hunting strategy. During migrations, when animal locations were best predicted, intensive use of this resource occurred. A more generalized pattern prevailed at other times, but with caribou contributing substantially to the resource base. Evidence bearing on this argument is best contributed by seasonal indicators. The Ugashik evidence is inconclusive in this regard. Additional evidence of site distributions may be called upon, however, to support this interpretation.
Sites of the first group, 49-Uga-17 and 49-Uga-27, are located near the mouth of the Ugashik River, while sites of the other group are clustered around the Ugashik Lakes. It is suspected that down-river and sea-coast settlement locations reflect seasonal population movements in times of maximum caribou dispersal.

ACKNOWLEDGMENTS

I wish to thank several individuals who contributed time and resources during the analysis of these faunas. Ms. Ellen Kritzman and Dr. Murray Johnson, University of Puget Sound Museum, Mr. John Radiolsky, Thomas Burke Memorial Museum, and Mr. Dale Rice, U.S. Marine Fisheries provided access to osteologic collections. Ms. Hella MacIntosh and Dr. Donald Grayson greatly assisted in the identifications of the mammalian and avian components of these assemblages. Dr. Grayson reviewed my identifications and subsequent write-up.
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Plate I
Ugashik Narrows Phase

a-e. Wedge-shaped microblade cores (Type #1).
   Lower right, side view; upper right,
   platform view; lower left, flute
   element view.

f-g. Large wedge-shaped blade cores (Type #3).
   Lower left, side view; upper left,
   platform view; lower right, flute
   element view.

Specimen Numbers

a. 49-Uga-1, V-8-15  b. 49-Uga-1, K-11-38  c. 49-Uga-1, K-11-34  d. 49-Uga-1, L-3-20
   e. 49-Uga-1, V-3-6  f. 49-Uga-1, W-7-4  g. 49-Uga-1, T-6-1
PLATE II

Ugashik Narrows Phase

a. Conical blade core (Type #4).
   Lower, flute element view;
   upper, platform view.

b-c. Face-faceted blade cores (Type #5).
    Lower, flute element view; upper,
    platform view.

d. Faceted, bifacial blade core (Type #6).
    Lower, flute element view; upper,
    platform view.

Specimen Numbers

a. 49-Uga-1, V-8-25   c. 49-Uga-1, U-6-1
b. 49-Uga-1, V-6-13   d. 49-Uga-1, U-4-1
PLATE III
Ugashik Narrows Phase

a-b. Blades
c-f. Microblades
g. Microblade core tablet
h. Endscraper (Type #1)
i. Projectile Point (Type #1)
j-k. Core bifaces
l-m. Dihedral burins (Type #2)
n-q. Transverse burins (Type #1; arrow indicates
direction of burin blow)

Specimen Numbers

a. 49-Uga-1, V-4a-9      i. 49-Uga-1, K-11-41
b. 49-Uga-1, W-7-25      j. 49-Uga-1, K-11-1
 c. 49-Uga-1, K-11-29     k. 49-Uga-1, W-8-54
d. 49-Uga-1, K-11-38a     l. 49-Uga-1, E-3-85
e. 49-Uga-1, I-9-2        m. 49-Uga-1, K-5-4
f. 49-Uga-1, P-6-1        n. 49-Uga-1, X-7-10
g. 49-Uga-1, W-3-85       o. 49-Uga-1, X-9-1
h. 49-Uga-1, K-11-26      p. 49-Uga-1, W-7-16
                          q. 49-Uga-1, U-5-9
PLATE IV

Ugashik Knoll Phase

a-b. Split pebble microblade cores (Type #10).
    Lower right, side view; upper right, platform view; lower left, flute element view.

c-e. Microblades

f. Conical blade core (Type #4).
    Lower, flute element; upper, platform.

g. Face-faceted blade core (Type #5).
    Lower, flute element; upper, platform.

h-i. Blades

Specimen Numbers

a. 49-Uga-6, N-2-7    f. 49-Uga-6, J-3-43
b. 49-Uga-6, P-3-25    g. 49-Uga-6, G-5-4
b. 49-Uga-6, P-5-19    h. 49-Uga-6, G-5-4
b. 49-Uga-6, P-5-19    i. 49-Uga-6, G-7-7
PLATE V
Ugashik Knoll Phase

a. Side-notched point, basalt
   (Type #2, Variety #1)
b. Side-notched point, basalt
   (Type #2, Variety #2)
c. Side-notched point, basalt
   (Type #2, Variety #3)
d. Side-notched point, basalt
   (Type #2, Variety #4)
e. Side-notched point, basalt
   (Type #2, Variety #5)
f-g. Side-notched point, chert
   (Type #3, Variety #1)
h. Side-notched point, chert
   (Type #3, Variety #2)
i. Side-notched point, chert
   (Type #3, Variety #3)
j. Stemmed point, basalt (Type #4)
k. Slate darthead (Type #2)
l. Endscraper (Type #2)
m. Basalt flakeknife

Specimen Numbers

a. 49-Uga-6, 0-7-4  h. 49-Uga-6, 0-7-3
b. 49-Uga-6, N-6-6  i. 49-Uga-6, L-4-2
c. 49-Uga-6, J-4-13  j. 49-Uga-6, J-4-1
d. 49-Uga-6, L-4-15  k. 49-Uga-6, 0-6a-16
e. 49-Uga-6, P-6-9  l. 49-Uga-6, 0-6a-8
f. 49-Uga-6, K-2-17  m. 49-Uga-6, H-5-10
g. 49-Uga-6, L-4-12
PLATE VI
Ugashik Hilltop Phase

a. Endscraper (Type #3)
b. Cortex flake knife
c-d. Sideblades (Type #1)
e-k. Flakeknives (Type #1)
i-q. Ellipsoidal cores (Type #11)

Specimen Numbers

a. 49-Uga-2, A-7-1  
b. 49-Uga-2, F-11-25  
c. 49-Uga-2, E-10-3  
d. 49-Uga-2, F-11-23  
e. 49-Uga-2, F-11-9  
f. 49-Uga-2, I-5-5  
g. 49-Uga-2, F-12-6  
h. 49-Uga-2, F-9-12  
i. 49-Uga-2, G-6-17  
j. 49-Uga-2, G-6-2  
k. 49-Uga-2, E-12-17  
l. 49-Uga-2, I-4-3  
m. 49-Uga-2, I-4-3  
n. 49-Uga-2, G-6-19  
o. 49-Uga-2, D-6-5  
p. 49-Uga-2, D-6-6  
q. 49-Uga-2, I-4-2
PLATE VII
Ugashik Hilltop Phase

a-b. Projectile points (Type #5)
c-d. Projectile points (Type #6)
e-f. Projectile points (Type #7)
g-h. Projectile points (Type #8)
i-j. Projectile points (Type #9)
k-o. Projectile points (Type #10)
p. Projectile points (Type #11)
q-r. Projectile points (Type #12)
s. Flakeknife (Type #2)
t. Flakeknife (Type #3)
u. Endscraper (Type #3)
v-w. Burinated projectile points (arrows indicate direction of burin blows)

Specimen Numbers

a. 49-Uga-2, G-6-13 m. 49-Uga-2, E-12-11
b. 49-Uga-2, I-4-4 n. 49-Uga-2, F-11-1
c. 49-Uga-2, I-5-9 o. 49-Uga-2, G-6-15
d. 49-Uga-2, G-6-7 p. 49-Uga-2, I-5-8
e. 49-Uga-2, G-6-11(16) q. 49-Uga-2, I-4-1
f. 49-Uga-2, F-11-21 r. 49-Uga-2, F-12-9
g. 49-Uga-2, F-11-24 s. 49-Uga-1, T-2-19
h. 49-Uga-2, F-11-13 t. 49-Uga-1, T-2-1
i. 49-Uga-2, A-5-5 u. 49-Uga-1, H-6-5
j. 49-Uga-2, D-8-19 v. 49-Uga-1, V-9-2
k. 49-Uga-2, I-5-5 w. 49-Uga-1, T-2-5
l. 49-Uga-2, F-11-7
PLATE VIII
Ugashik Lakes Phase, Inland Sub-phase

a. Pebble flake core (Type #8, Variety #1), Early
b. Cobble flake core (Type #9, Variety #1), Early
c. Rridged flake core (Type #12), Early
d. Bifaced basalt knife (Type #3), Early
e. Bifaced basalt knife (Type #5), Early
f-g. Sideblades (Type #3), Early
h. Sideblade (Type #4), Early
i. Sideblade (Type #7), Early
j. Discoidal scraper, Early
k. Flakeknife (Type #3), Early
l. Adze bit (Type #2), Early
m. Flakeknife (Type #4), Early
n. Large cobble net-sinker, Early
o. Ugashik Narrows Stamp Impressed (square) potsherd, Intermediate
p. Ugashik Narrows Stamp Impressed (rectangular) potsherd, Early

Specimen Numbers

a. 49-Uga-1, DD-1-4       1. 49-Uga-1, DD-5-11
b. 49-Uga-1, EE-4-54       j. 49-Uga-1, DD-4-1
 c. 49-Uga-1, DD-1-2       k. 49-Uga-1, FF-10-20
d. 49-Uga-1, M-2-35       l. 49-Uga-1, M-4-9
e. 49-Uga-1, Z-5-4        m. 49-Uga-1, HP #7, EE
f. 49-Uga-1, HP #1        n. 49-Uga-1, DO-4-34
g. 49-Uga-1, EE-4-61       o. 49-Uga-1, D-3-19
 h. 49-Uga-1, FF-5-14      p. 49-Uga-1, FF-5-2
PLATE IX

Ugashik Lakes Phase, Inland Sub-phase

a. Projectile point (Type #8), Early
b. Projectile point (Type #9), Early
c-d. Projectile points (Type #13), Early
e-f. Projectile points (Type #14), Early
g. Projectile point (Type #15), Early
h. Projectile point (Type #16), Early
i-j. Projectile points (Type #19), Early
k. Projectile point (Type #21), Early
l. Projectile point (Type #21), Intermediate
m. Projectile point (Type #23), Early
n. Sideblade (Type #5), Intermediate
o. Sideblade (Type #6), Late
p. Projectile point (Type #5), Intermediate
q. Projectile point (Type #6), Late
r. Projectile point (Type #12), Intermediate
s. Projectile point (Type #17), Late
t. Projectile point (Type #24), Intermediate
u. Sideblade (Type #2), Late
v. Projectile point (Type #16), Late
w-x. Projectile points (Type #20), Late
y-z. Projectile points (Type #22), Late
aa. Adze bit (Type #1), Late
bb. Stone lamp, Intermediate

Specimen Numbers

a. 49-Uga-1, EE-3-15  o. 49-Uga-2, M-2-5
b. 49-Uga-1, FF-4-18  p. 49-Uga-1, X-5-7
c. 49-Uga-1, EE-5-1  q. 49-Uga-2, L-4-1
d. 49-Uga-1, EE-5-2  r. 49-Uga-1, F-6-4
e. 49-Uga-1, H-2-28  s. 49-Uga-2, J-3-8
f. 49-Uga-1, M-2-52  t. 49-Uga-1, L-3-2
g. 49-Uga-1, D0-5-15  u. 49-Uga-2, C-4-7
h. 49-Uga-1, M-2-50  v. 49-Uga-2, F-3-10
i. 49-Uga-1, D0-4-40  w. 49-Uga-2, D-3-3
j. 49-Uga-1, M-4-10  x. 49-Uga-2, F-3-29
k. 49-Uga-1, M-2-105  y. 49-Uga-2, F-3-27
l. 49-Uga-1, D-3-1  z. 49-Uga-2, E-2-15
m. 49-Uga-1, FF-8-15  aa. 49-Uga-2, I-1-5
n. 49-Uga-1, J-7-1  bb. 49-Uga-1, F-8-1
PLATE X
Ugashik Lakes Phase (Tidewater Sub-phase) and Ugashik River Phase

a-b. Projectile points (Type #25), Tidewater Sub-phase
c. Projectile point (Type #24), Tidewater Sub-phase
d. Flakeknife (Type #3), Tidewater Sub-phase
e. Bifaced basalt knife (Type #7), Tidewater Sub-phase
f. Bifaced basalt knife (Type #8), Tidewater Sub-phase
g. Small pebble net-sinker, Tidewater Sub-phase
h. Coal labret, Tidewater Sub-phase
i. Adze bit (Type #3), Ugashik River Phase
j. Adze bit (Type #4), Ugashik River Phase
k. Slate insert blade (Type #1), Ugashik River Phase
l-a. Slate insert blades (Type #2), Ugashik River Phase
n. Slate darthead (Type #4), Ugashik River Phase
o. Slate darthead (Type #5), Ugashik River Phase
p. Slate ulu (Type #1), Ugashik River Phase
q. Slate ulu (Type #2), Ugashik River Phase
r. Unilaterally barbed antler arrowhead, Ugashik River Phase

Specimen Numbers

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a. 49-Uga-29, F-2-6 | j. 49-Uga-16, B-1-2 |
b. 49-Uga-29, B-2-6 | k. 49-Uga-1, G-3-2 |
c. 49-Uga-29, F-2-7 | l. 49-Uga-5, BC-1-70 |
d. 49-Uga-15, F-1-3 | m. 49-Uga-5, BC-1-70 |
e. 49-Uga-15, C-1-1 | n. 49-Uga-5, B-2-20 |
f. 49-Uga-15, F-1-1 | o. 49-Uga-29, B-1-1 |
g. 49-Uga-15, G-1-1 | p. 49-Uga-1, X-3-72 |
h. 49-Uga-29, C-2-1 | q. 49-Uga-2, I-9-1 |
i. 49-Uga-23, C-1-1 | r. 49-Uga-1, K-2-1 |