A Summary of
ARCHAEOLOGY in the KATMAI REGION
Southwestern Alaska

D. E. DUMOND

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The description of the Pacific coastal sequence makes use of the work of two people to whom especial thanks and recognition are due. Material relating to the Alder, Birch, and Cottonwood phases--defined from excavations on Takli Island--draws heavily upon the analysis of Gerald H. Clark (1968, and unpublished), whose inventories and phase definitions I have followed. Information for the Beach and Mound phases--defined from excavations at Kukak Bay--rests to some extent on the analysis of Elliott A. Gehr (1970), whose inventories I have modified both by the elimination of undersized samples from certain tests and by the segregation of the yield from one complex house excavation into two components. I have adjusted artifact categories in all these phases to ease comparison of the Pacific collection with that from the Naknek drainage. Neither of these people, of course, can be held responsible for comparisons, conclusions, and opinions, which--like the description of the Naknek drainage material--are my responsibility alone.

I am grateful to A.C. Spaulding for his encouragement of the comparison contained in the Appendix (also in Dumond 1970), a comparison that entailed examination of a number of collections generously made available by James B. Griffin and the Museum of Anthropology of the University of Michigan, Clifford Evans and the United States National Museum, Mike Aamodt (who allowed me to examine his private collection from Shemya), and the staff of Archaeological Research, Inc.

I am also grateful to Robert E. Ackerman, who made available for examination the sample from Security Cove; to Joan B. Townsend, who kindly provided photographs of implements from Pedro Bay; and especially to Carol Steichen Dumond, who drew the illustrations and maps, including that on the cover. The map in Fig. 1, copyright 1969 by the American Association for the Advancement of Science, is reproduced here with permission.
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Fig. 1. The northern Alaska Peninsula (from Dumond 1969a).
I. INTRODUCTION

Between 1960 and 1967, in a continuing program of research into the prehistory of southwestern Alaska, the University of Oregon sponsored six field seasons of excavation on the northern portion of the Alaska Peninsula, chiefly within the boundaries of Katmai National Monument. Two separate archaeological sequences have been developed, each representing the culture of a distinct ecological zone, although from areas only about sixty miles apart (Fig. 1).

The sequence from the northwest, which has received most of the work and which spans approximately 4,500 years, represents the Naknek Lake and River drainage system—a major salmon-breeding system draining by way of a tundra-covered glacial outwash plain into Bristol Bay, itself the southernmost area to receive the winter drift ice of the Bering Sea. That from the southeast, still in rudimentary form but spanning nearly 6,000 years, represents the fjorded, rainy, sea-mammal-rich coast of Shelikof Strait, on the unfreezing north Pacific. Both areas were within the region inhabited by speakers of Western Eskimo, or Yupik, at the time of earliest European contact. The increasingly focused aim of the research has been to elucidate the relationships of peoples in the two areas.

Some research reports have been issued and interpretations from the data have been published, as will be indicated below in applicable sections. Unfortunately, it has become increasingly apparent that final presentation of the two sequences in a single publication is not feasible, simply because of the bulk of the material. The intent now is to issue two monographs, each of which will cover the cultural sequence on one side of the Peninsula, together with the relevant geological, climatological, and ethnohistorical material. Although the first of these (on the Naknek drainage) is substantially completed in draft, and the second (the Pacific coast) is in a stage in which it can be completed fairly rapidly, the process of publication is such that both of them together will not be available for several years. The present summary is therefore offered in the way of a progress report, one in which the chief aim is to indicate the apparent relationships between the two sequences.

The total counts of artifacts given here are drawn from the analytic collections that will be used in the final reporting. Specific details regarding sites, excavations, houses and other cultural features, as well as complete artifact inventories by component and phase, and detailed analyses of internal relationships within the sequences, will be deferred until the final publications. Obviously,
more conclusive statements regarding all relationships, internal and external, can be made when the quantitative data and all ecological and geological information have been presented.

A History of Research on the Northern Peninsula

The first excavations in the Naknek drainage were made in 1931, when Hrdlicka dug skeletons from a site identified as "Pavik," at the mouth of the Naknek River (Hrdlicka 1943: 348-53, 386-8). In 1948 Larsen tested the same site, concluding it to have been occupied in the nineteenth century (Larsen 1950). This conclusion was reinforced by an Oregon test in 1961.

The first reported visit with archaeological intent to any area within Katmai National Monument was in 1935, when Robert F. Heizer, then working with Hrdlicka at Uyak Bay on Kodiak Island, was dispatched to search for a reputed site on Tekli Island, a few yards off the south Peninsula coast (Fig. 1). There he located a single area of occupation--a site presumed to have been found, but not excavated, by an Oregon party in 1965--which he did not think impressive (Hrdlicka 1944: 131-3).

In 1953, the Katmai Project, initiated by the National Park Service in order to assess the potential of Katmai National Monument in a number of directions (Luntey 1954), included an archaeological test of four known sites--two on the Pacific coast and two in the Naknek drainage--by a party of two men from the University of Oregon (Davis 1954). The conclusion reached on the basis of a very small sample was that there was no apparent difference in the material culture of the two areas. In 1954, archaeological work for the Katmai Project was continued by the University of Alaska; a small site at Kafliia Bay on the Pacific coast was excavated, and a brief survey of the Monument coast was made by air (Oswalt 1955). With this burst of effort, archaeological research in the Katmai region lapsed.

In 1959, the University of Oregon (in the person of L. S. Cressman) was approached by the Bureau of Commercial Fisheries of the U.S. Fish and Wildlife Service (in the person of George Y. Harry), and offered support to conduct archaeological research in the vicinity of their salmon research station at Brooks River, in the hope of recovering information regarding fluctuations in prehistoric salmon migrations. Thus in 1960 the new project, the results of which are the subject of this report, was begun under my field direction.

In the seasons of 1960 and 1961, the aims of the project included both the recovery of fish remains from habitation sites, and the test of certain hypotheses regarding relationships between southern
areas of the Pacific Northwest and southwestern Alaska (see Cressman 1962). In neither of these aims was success noteworthy. On the other hand, the sequence developed in those two years suggested strongly that the prehistoric cultural sequences of the Naknek drainage and of the Pacific coast were substantially different from one another, indeed that the sites tested by the Katmai Project party in 1953 were, as luck would have it, all relatively late and thus among the scattering of sites in the Monument that could have given the results they reported. It now appeared that contact across the Peninsula was strong only after A.D. 1000, and in view both of the limited archaeological evidence then available and of information regarding the distribution of dialects of the Western Eskimo language (Hammerich 1958), it was concluded that there was no reason to think that the inhabitants of the so-called Pacific Eskimo area before the end of the first millennium A.D. were Eskimo or, for that matter, even Eskaleutian in speech (Dumond 1962; 1964; 1965).

Research during the seasons of 1963, 1964, and 1965 was specifically devoted to improvement of the Naknek drainage sequence, and to survey and excavation on the Pacific coast sufficient to develop a Pacific coastal sequence from an area as near the Naknek drainage as possible, so that comparisons across the Peninsula could be made. The hypotheses upon which that research was based were to the effect that during early times contact across the Peninsula had been almost non-existent, but that shortly after A.D. 1000 contact had become contrastingly strong—strong enough, indeed, to support an inference of at least modest population movement, and so to explain the modern distribution of the Western Eskimo language.

With the feeling that sufficient data had been collected for the purpose, work was presumed terminated after the very productive field season of 1965. In 1967, however, a small party returned to Brooks River at the request of the National Park Service to excavate a number of prehistoric habitations, some of which were to be consolidated as a tourist display. In addition to providing more complete information regarding houses in the Naknek drainage, this work resulted in the unforeseen recovery of additional material from the earliest known Naknek drainage occupation, material important to the evaluation of the hypotheses. The final trip to the field in 1968 was for partially reconstructing one of those houses excavated the previous year; no new excavations were made (Dumond 1969b).

The data obtained permit a reasonable test of the hypotheses; results will be discussed in the concluding section.
II. ARCHAEOLOGY

The two sequences will be described in turn, and some characteristic stone artifacts will be illustrated. Although implements of organic material are relatively plentiful in some components of a few phases, they are completely unrepresented in many phases and hence have not been useful for systematic comparisons. The pottery has been specifically discussed in some detail elsewhere (Dumond 1969c). Both pottery and organic artifacts will be characterized briefly in the text, but will not be illustrated.

Most of the excavations were in stratified sites in which a certain amount of aboriginal mixing was obvious. Consequently, artifact sample sizes specified in phase descriptions refer only to recognizable implements believed to be in situ; presumed intrusions are not included. Needless to say, the lists of "characteristic" objects in the phases are not exhaustive; the items listed were chosen because they were relatively plentiful, relatively diagnostic, and were found useful both for internal comparisons and for comparisons between the two sequences. The "ratio of chipped to polished implements" provided for each phase is calculated using all stone cutting, thrusting, scraping, drilling and grooving instruments (knives, projectile and lance blades, scrapers, adzes, drills, burins) whether or not they appear to be completely finished; excluded from the ratio are stone vessels, hammerstones, cores, used flakes, and decorative items like labrets and beads.

All phase names incorporate the location of the type site. In cases in which the definition of several phases at one locale makes necessary the use of double names, the location designator may be abbreviated—thus Brooks River becomes B.R., Takli Island becomes T., and Kukak Bay becomes K.

The Naknek Drainage

Some work was performed in this area during each of the six field seasons, and it was the sole focus of attention for four of them. Results of the first two seasons (1960 and 1961) were reported previously (Dumond 1962, 1963), in an analysis that has been generally confirmed in the later work.

The present formulation is based on a total of about 4,300 stone implements and 4,500 potsherds—more than double the original 1960-1961 samples—recovered from three principal site areas. Two of
these (Smelt Creek and Pavik) are located respectively in the approximate middle and at the mouth of the Naknek River. The third, higher up in the drainage, includes the entire one-and-one-half-mile length of Brooks River, a rapid stream draining Brooks Lake into Naknek Lake. The Brooks River locality has been divided for record purposes into twenty-one different "sites," on the basis of conformation of terraces marking the previous limits of the river and the two lakes. Because of the small area involved, these sites surely do not represent separable areas of aboriginal settlement, the limits of which are for the most part not determinable. In the descriptions that follow, both excavation units (separate trenches, broad but contiguous areas cleared, or sometimes separate habitation units) and sites are indicated.

Some of the small collections used in the first formulation (that of 1962) are not considered in the present attempt, where the analytic collection has been limited to those units of excavation yielding more artifacts. Specifically, this has resulted in the elimination of one small component previously included in the Brooks River Gravels phase and one previously included in the Brooks River Weir phase. (Dumond 1962, 1963).

Inasmuch as the bulk of the material was recovered from the banks of Brooks River, located approximately fifty airline miles from the mouth of the Naknek River, and inasmuch as a number of the occupations sampled must represent salmon-fishing or caribou-hunting camps, it is likely that a seasonal bias is inherent in much of the collection. So far, however, no major effects of such a bias have been noticed in attempting comparisons. Indeed, more extensive archaeological surveys in 1961 and 1963 indicate that with the possible exception of the first two phases, the sequence is representative of the entire portion of the Naknek drainage system itself. Such other comparative information as is available in the literature, or which has resulted from sporadic trips around the Bristol Bay vicinity, suggests that much of the sequence is representative of the Bristol Bay drainage area as far north as the Kvichak River and Iliamna Lake, and perhaps as far south as the Ugashik Lake and River system.

Dating is based chiefly upon radiocarbon dates, all of which have now been published (Buckley and Willis 1970; Stuiver and Deevey 1962; Trautman 1964). Those directly applicable to the excavation units included in the sample treated here are cited below. In addition, stratigraphic control at Brooks River was strengthened by the presence of a number of volcanic ash deposits, of which ten, deposited within the past 7,000 years, have been at least approximately dated and are recognizable to some extent in the field; these are designated A through J, and their relationships to cultural material are indicated in the descriptions that follow (see Nowak 1968 for a full discussion).
The sequence itself is now formulated in eight serial phases, which in turn are used to define four distinct periods. Specific descriptions of the phases follow, beginning with the earliest.

Brooks River Strand Phase

Sample: 146 stone implements (Fig. 2, page 30) from five excavation units at three Brooks River sites. No pottery. No implements of organic material.

Characteristic stone artifacts:

1. Large flaked lance or knife blades, either stemmed or leaf-shaped, of basalt or of shaly metamorphic rock that has been further altered since the time of tool manufacture (Fig. 2, e-h).

2. Large polished slate lance or knife blades with unthinned butts, both stemmed and unstemmed (Fig. 2, a-d).

3. Flaked side-notched knives (Fig. 2, i-j).

4. Scrapers of hard chert, relatively circular in outline form (Fig. 2, l-o).

5. Shallow, D-shaped, pecked stone lamps (Fig. 2, k).

Ratio of chipped to polished implements: 4.6 to 1.

Favored stone material: Grainy metamorphic; basalt; slate; chalcedony.

Type of occupation: One habitation zone was perhaps the floor of a tent, roughly teardrop-shape in plan, covered with crushed caribou bone and shale chips. Other habitation zones were more casual campsites; all included bits of caribou bone as well as charcoal. All were located on a single set of beach ridges which formed the edge of Naknek Lake sometime before 2000 B.C.; some sites were covered by gravel thrown up by the lake during formation of the beach ridge itself. Unlike all later phases, this material appeared in campsites located only around the mouth of Brooks River, and it seems possible that the use of the river changed with later occupants.

Stratigraphic position: Below volcanic ash G; sometimes beneath volcanic ash H.

Dating: 1890 B.C. ± 130 (I-1630); 1950 B.C. ± 120 (I-3114); 2290 B.C. ± 250 (I-1634); 2480 B.C. ± 110 (I-1946). It is presumed that the phase covered a span from 2500 ± 100 to 1900 ± 100 B.C.
Brooks River Gravels Phase

Sample: 839 stone implements (Fig. 2, page 30) from thirteen excavation units at seven Brooks River sites. No pottery. No implements of organic material.

Characteristic stone artifacts:

1. Small, chipped, chalcedony bipointed points, apparently end blades (Fig. 2, aa-hh).

2. Symmetrical, chipped chalcedony or basalt knives, with somewhat tapered butt (Fig. 2, vv, ww).

3. Chipped adze blades of metamorphic or igneous material, with ground bit (Fig. 2, uu).

4. Well-flaked snubnosed scrapers in 3 forms (Fig. 2, ii-nn).

5. Small burins on bifaces (Fig. 2, oo-pp).

6. Burin-like implements in which polished facets replace burin strokes (Fig. 2, qq-rr).

7. Occasional microblades (Fig. 2, ss-tt).

Ratio of chipped to polished stone implements: 14.5 to 1 (polished implements are virtually limited to adze blades and burin-like tools).

Favored stone material: Chalcedony.

Type of occupation: Sites located on twelve river and lake terraces formed by the date of this occupation have been substantially tested at Brooks River; nine of these have yielded recognizable remains of the gravels phase (two of the nine yielded only small amounts, not included in the analytic sample). Occupation was especially heavy in three sites, at which single-occupation habitations are common; it is estimated that at least one hundred such habitation remains are represented at Brooks River. Three of these have been fully dug, four more substantially completed, and three others tested. In form the habitations were roughly square and about 4 m. on a side, excavated into the contemporary surface from almost not at all to as much as 60 cm. The location of structural supports is uncertain, except in one case in which four center posts seem indicated. A sloping entranceway led into the houses, in which a central fireplace was usual, either with or without an outline of rocks. Apparently at least some sod was used in the roofs, which however were not massively heavy. These habitations are interpreted as probable winter dwellings. Other sites are
informal campsites which appear virtually all over the banks of the river. Fish bone and crushed mammal bone is found in a few campfires.

**Stratigraphic position:** Consistently above volcanic ash G, below volcanic ash F.

**Dating:** 1950 B.C. ± 130 (I-1629); 1500 B.C. ± 110 (I-1947); 1440 B.C. ± 110 (I-3115); 1300 B.C. ± 200 (I-518); 1175 B.C. ± 200 (I-517); 1138 B.C. ± 200 (I-1157); 1102 B.C. ± 250 (I-1159).

In view of the relationship of materials of this phase to the volcanic ash, of the C-14 dates here and from the preceding Strand phase, and of the large number of Gravels phase occupation sites on the river, it seems reasonable to assign this phase to a long period from 1900 ± 100 to 1000 ± 100 B.C.

**Comment:** In earlier descriptions (Dumond 1962, 1963) some of the material here included in the B.R. Gravels phase was divided between two phases--Brooks River Gravels and Brooks River Hilltop. Further research cast doubt upon the validity of the separation of these, and they are here combined. A radiocarbon date of 2022 B.C. ± 440 (Y-930), from site BR3, previously used in the dating of the Gravels phase, is now thought not to apply to the Gravels phase at all, but have proceeded from earlier occupation, probably of the Strand phase; it is not used here. The few implements from BR3 previously assigned to the Gravels phase are not considered here because of the extremely small size of the sample; those implements are still thought to pertain to the Gravels phase, but to have not been in valid association with the charcoal originally presumed to date them.

**Smelt Creek Phase**

**Sample:** 449 stone implements (Fig. 4, page 32) and 958 potsherds from two excavation units--one at Brooks River, the other on the lower course of the Naknek River (Smelt Creek site). No implements of organic material.

**Characteristic stone artifacts:**

1. Chipped projectile points with square-based, contracting stem and slight shoulders, or with contracting base; base and stem regularly exceed 10 mm. in length (Fig. 4, c-g).

2. Chipped bipointed projectile points, probably endblades (Fig. 4, a, b).

3. Chipped sideblades in various forms (Fig. 4, p-t).
4. Fully chipped drills (Fig. 4, j, k), and drill-like perforators with chipped body and polished tip (Fig. 4, l).

5. Occasional ground slate ulos, with tang (Fig. 4, i).

6. Small chipped adze blades with ground bit (Fig. 4, h).

7. Notched pebble sinkers (Smelt Creek site only) (Fig. 4, m).

8. (Probably) formed stone vessels (Fig. 4, o).

9. Coal labrets, shaped like a top hat, for insertion through a relatively small hole (Fig. 4, n).

**Ratio of flaked to polished stone implements:** 17.3 to 1.

**Favored stone material:** Basalt and related igneous rocks; chalcedony.

**Characteristic pottery:** Fiber-tempered, thin (less than 10 mm. thick), plain or impressed with small square or rectangular checks or diamonds, in a vase-like form with restricted opening (Dumond 1969c).

**Type of occupation:** The extensiveness of the Naknek River site suggests it may have been of year-round occupancy, but frost hampered the excavations (in 1961) so that no presumed permanent houses were explored. The site at Brooks River was apparently a temporary camp, without observable structures or substantial hearths. Survey work on the north side of Brooks River suggests that the single Smelt Creek phase occupation zone excavated there may underrepresent the actual extent of the total Smelt Creek occupation at Brooks River, but nevertheless the occupation does not appear to have been nearly so intensive as those of all succeeding phases.

**Stratigraphic position:** Above volcanic ash F at Brooks River, below ash E.

**Dating:** 190 B.C. ± 105 (I-1948); A.D. 50 ± 150 (I-508). This phase is assigned a span from 200 ± 100 B.C. to 100 ± 100 A.D.

**Comment:** The previous sherd count given for this phase (4,725, in Dumond 1962: 27), which applied only to the Smelt Creek site component has been drastically reduced through recounting, using criteria more in accord with those used in counting sherds from other phases. The single shaped stone vessel probably attributable to the phase was recovered from beach slough at the Smelt Creek site, so that its assignment is not fully validated.
Brooks River Weir Phase

Sample: 536 stone implements (Fig. 4, page 32) and 1,177 potsherds from six excavation units at five Brooks River sites. No implements of organic material.

Characteristic stone artifacts:

1. Small, chipped, stemmed projectile points with pronouncedly rounded shoulders (Fig. 4, cc-ff).

2. Chipped projectile points with contracting bases longer than 10 mm. (Fig. 4, aa, bb).

3. Chipped sideblades in various forms (Fig. 4, gg-jj).

4. Small flaked knives with slender point, termed "flaked lancets" (Fig. 4, pp, qq).

5. Drill-like perforators, with chipped body and polished tip (Fig. 4, nn, oo).

6. Ground slate tanged knives, with rounded to angular expanding blade sharpened on all sides, termed "angle knife" (Fig 4, 11).

7. Ground slate ulo, without tang (Fig. 4, mm).

8. Chipped adze blades with ground bit (Fig. 4, rr, ss).

9. Formed stone vessels, some used as lamps; one, with hematite-stained bowl, has a human face wearing labrets, carved in relief on the exterior (Fig. 4, kk).

Ratio of chipped to polished stone implements: 10 to 1.

Favored stone material: Fine-grained igneous and metamorphic rocks; chalcedony.

Characteristic ceramics: Fiber-tempered, thin, plain or impressed with small or large square or diamond checks, in barrel or cylindrical shape. One example of cord-wrapped-paddle impressed ware in the same shape probably pertains to this phase. Thin plain pots also appear in the restricted shape common in the preceding Smelt Creek phase.

Stratigraphic position: Above volcanic ash F, and probably consistently below volcanic ash E.
Type of occupation: One habitation, roughly square and approximately 3.5 by 4 m. in size, was found to have been excavated into the ancient surface about 20 cm., with scattered rocks and a small fire in the center floor, and probably equipped with a slight, sloping entrance. Other occupation remains were apparently of small, casual campsites; some were so torn up by succeeding occupation that it was not possible to determine the nature and extent of the Weir phase deposit.

Dating: A.D. 55 ± 140 (I-1631); A.D. 100 ± 100 (I-210); A.D. 160 ± 130 (I-1633); A.D. 260 ± 110 (I-3116); A.D. 720 ± 150 (I-526). A spread such as this would be expectable in determinations from a single source about one time in a thousand. A spread such as manifest in the four earlier dates, however, would be expected more than half the time. A weighted average of the first four--A.D. 147--would seem the most likely to date the major portion of the cultural materials accurately (see Comment, below). In view of evident continuity with preceding and succeeding phases, as well as of the radiocarbon dates, this phase is assigned a span from A.D. 100 ± 100 to 600 ± 100.

Comment: Previous descriptions (Dumond 1962) made use of the collection from site BR8-2, from which the A.D. 720 date mentioned above was obtained. Although thought on typological grounds to pertain to this phase, this particular collection is not a part of the collection analyzed here, simply because of its small size. The date is still applicable, and lies within one sigma of the close of the time assigned to the phase.

Brooks River Falls Phase

Sample: 919 stone implements (Fig. 6, page 34) and 1,271 potsherds from three excavation units at one Brooks River site. No implements of organic material.

Characteristic stone artifacts:

1. Small, chipped, stemmed projectile points with sharp shoulders or barbs, or unstemmed points with contracting base; the stem or base is less than 10 mm. in length (Fig. 6, a-g).

2. Chipped projectile points with indented base (Fig. 6, h, i).

3. Small flaked knives with slender point; this form is termed "flaked lancet" (Fig 6, q, r).

4. Fully chipped drills (Fig. 6, o), and drill-like perforators with chipped body and polished tip (Fig. 6, p).
5. Chipped sideblades in small quantity (Fig. 6, l-n), apparently being replaced by ulos and other knives of ground slate.

6. Ground slate ulos in considerable quantity (Fig. 6, k).

7. Ground slate tanged lance or knife blades in a variety of forms (Fig. 6, t, x, y), including those with expanded, angled blade, sharpened on all sides, termed "angle knife" (Fig. 6, j).

8. Small flaked adze blades with ground bit (Fig. 6, s).

9. Formed stone lamps (Fig. 6, w).

10. Two-notched pebble sinkers (Fig. 6, z).

11. Coal labrets shaped like a top hat, for insertion through a relatively small hole in the lip (Fig. 6, u, v).

Ratio of chipped to polished stone implements: 6.5 to 1.

Favored stone material: Fine-grained igneous and metamorphic rocks; chalcedony; slate.

Characteristic pottery: Fiber-tempered, thin (less than 10 mm.) or thick (10 to 20 mm.), plain or with large off-square to diamond-shaped impressions, in cylindrical shape.

Type of occupation: No constructed habitations were recognized. Occupation is largely confined to one major site which was also occupied by later people who successfully eradicated much of the form of the Falls phase occupation. Well-constructed slab hearths from this phase suggest that some reasonably permanent structures may have existed.

Stratigraphic position: Probably both above and below volcanic ash D, and above ash E; certainly above ash F and below ash C.

Dating: A.D. 725 ± 130 (I-521); A.D. 750 ± 170 (I-519); A.D. 775 ± 125 (I-522); A.D. 975 ± 120 (I-520). Based on these dates and other evidence, including comparisons with material from the Pacific coast of the Peninsula, the phase is assigned a span of A.D. 600 ± 100 to 1000 ± 100. The bulk of the artifact sample probably represents the last two or three hundred years of that time.

Comment: The earlier description (Dumond 1962) made a distinction between the Brooks River Falls phase and a slightly earlier Brooks River Knoll phase. Further excavation indicated clearly that the distinction had been the result of sampling error, so that the materials have now been combined. There is no longer a Brooks River Knoll phase.
Brooks River Camp Phase

Sample: 880 stone implements (Fig. 8, page 36), 683 potsherds, and 23 bone or antler implements from three excavation units at two Brooks River sites.

Characteristic stone artifacts:

1. Ground slate projectile insert blades with trapezoidal or triangular butt facet, or with shoulders or barbs (Fig. 8, e-h).

2. Ground slate dart and knife blades, with barbs or pronounced shoulders (Fig. 8, a-d).

3. Small ground slate knives with slender point; this form is termed "polished lancet" (Fig. 8, k, l).

4. Ground slate ulos (Fig. 8, n).

5. Flaked adze blades of slate, with ground bit and partially ground ventral and dorsal surfaces (Fig. 8, p).


7. Flaked bifaces, apparently blanks for items numbered 1 through 5 in this list (Fig. 8, i-j). Although appearing in large numbers, these are presumed to be unfinished; they constitute virtually all of the flaked stone implements of the phase.

8. Large flat sandstone grinding slabs, apparently for polishing artifacts (not illustrated). All phases include smaller whetstones; these grinding slabs are large, on the scale of milling stones.

9. Sandstone saws, which apparently were seldom used to saw slate or anything else represented in the sample (not illustrated).

10. Formed stone lamps (Fig. 8, o).

11. Wide coal labrets for wearing in a mouth-length slit (Fig. 8, m).

Ratio of chipped to polished stone implements: 1 to 1.

Favored stone material: Slate.

Characteristic pottery: Gravel tempered, thick (more than 10 mm.), plain or (seldom) concentric-circle-stamp impressed, in globular jar forms. Saucer-shaped lamps of unbaked clay.
Characteristic bone and antler artifacts: Unilaterally barbed dart heads with line hole and wedge-shaped tang, or without line hole and with slot for inserted endblade; unilaterally barbed arrow heads, with tapering, pointed base; clubs or large wedges of whalebone.

Type of occupation: At one locality two permanent houses with sunken entrances have been excavated completely, an additional one excavated in large part, and a probable three others encountered in a long trench. Houses were roughly square, from 3 by 4 m. to 4 by 5 m. in extent, excavated into the contemporary surface as much as 75 cm. Entry was through a sunken tunnel approximately 50 cm. below the floor level; the total length of the tunnel approaches or exceeds the length of the room itself. The structure was probably of four-center-post construction, roofed with timbers and mud. The existence of a low bench in the back or sides of the house is probable. Whether these were in fact occupied year-round is uncertain, but their suitability for winter occupation is clear. Other occupations were apparently casual campsites. The northern bank of Brooks River seems to have been rather heavily used by people of this phase. Clay-lined pits, some of which were probably used for making "stink fish," were extremely popular during this time. Extensive bone trash includes caribou and salmon remains in quantity, as well as other land mammal and occasional sea mammal bones. It is probable that five burials pertain to this phase.

Stratigraphic position: Below volcanic ash C, above volcanic ash D.

Dating: A.D. 1105 ± 100 (I-1635); A.D. 1270 ± 90 (I-525); A.D. 1280 ± 105 (I-1632); A.D. 1650 ± 75 (I-524). The spread of the four determinations would be expected in dates from a single source less often than one in one thousand times. A spread of the three earlier dates, however, would be anticipated around half the time; the arithmetic average of these three is around A.D. 1200. In view of the stratigraphic and typological aspects of the material, the single latest date is considered to be variant, and this phase is placed between A.D. 1000 ± 100 and 1400 ± 100.

Brooks River Bluffs Phase

Sample: 413 stone implements (Fig. 8, page 36), 222 potsherds, and 35 bone and antler implements from three excavation units at two Brooks River sites.

Characteristic stone artifacts:

1. Projectile insert blades of ground slate with triangular butt facets, or with shoulders (Fig. 8, s-v, y).
2. Ground slate ulos, both with and without tang (Fig. 8, r).

3. Slate adze blades, generally with extensive grinding on all faces (Fig. 8, w, x).

4. Splitting adzes (not illustrated).

5. Sandstone saws, accompanied by numerous sawed slate fragments (not illustrated).

6. Pecked stone vessels, including boat-shaped lamps (Fig. 8, q).

7. Wide coal labrets for wearing in a mouth-length slit in the lip (Fig. 8, z).

Ratio of chipped to polished stone implements: 1 to 2.

Favored stone material: Slate.

Characteristic pottery: Gravel tempered, thick (more than 10 mm.) or thin, plain or with a modeled external ridge, in globular jar shape, or with the shape of a flower pot.

Characteristic bone and antler artifacts: Unilaterally barbed harpoon dart heads with line hole and wedge-shaped tang; unilaterally barbed arrowheads, with pointed, tapering base; antler wedges.

Type of occupation: Three definite habitation structures have been substantially excavated. One of these, similar in form to those described for the preceding Camp phase, about 3.5 m. square, with a sunken entrance, was probably suitable for winter habitation. The other two, although constructed along similar lines, with a short, sunken entrance, were probably not: very small (less than 3 m. square), they had a poorly defined floor and no interior fire. In all cases, later people of the same phase had camped upon the remains of the houses. Clay-lined pits were extensively used. Bone waste was similar to that of the Camp phase. One burial pertains to this phase.

Stratigraphic position: Above volcanic ash C, and both above and below volcanic ash B.

Dating: A.D. 1470 ± 90 (I-523); A.D. 1500 ± 60 (Y-932); A.D. 1720 ± 80 (I-209). This phase is assigned a span from A.D. 1400 ± 100 to 1820—the approximate date of the arrival of the Russians.
Pavik Phase

Sample: 60 stone implements (Fig. 8, page 36), 355 potsherds, 8 bone and ivory implements (see Comment below), and numerous items of European manufacture, recovered from one excavation unit at one site on the lower Naknek River.

Characteristic stone artifacts:

1. Projectile insert blades of ground slate, with triangular facet deeply rubbed or carved into the butt (Fig. 8, aa-dd).

Ratio of flaked to polished artifacts: 1 to 17.

Favored stone material: Slate.

Characteristic pottery: Gravel tempered, thin (less than 10 mm.), plain, commonly in flower-pot shape, occasionally in globular jar form.

Characteristic bone and antler artifacts: Undecorated toggling harpoon heads probably with line hole parallel to blade slot; bilaterally barbed dart heads with line hole and pointed, pin-like tang; unilaterally barbed dart heads with line hole and wedge-shaped tange; unilaterally barbed dart heads with either wedge-shaped or pointed, pin-like tang, and with slot for endblade; unilaterally barbed arrowheads, with slender, pointed base; foreshafts; sled shoes; spoons with decoratively carved handles (see Comment below).

Other artifacts: Glass trade beads, presumably of the Russian period; steel axes and knives; projectile insert blades similar in outline form to those mentioned above, executed in thin iron (Fig. 8, ee); window glass; chinaware.

Type of occupation: Remains of a town of the Russian and early American period, known historically. Bone waste includes remains of moose, caribou, small land mammals, small whale, walrus, and salmon. Two other year-round settlements of the same period, known together as Ikkaghmiut, Seviernovsk, or Savonoski, and with a combined population of about 150, were located on the Savonoski River at the east end of Naknek Lake. These sites have been tested only briefly.

Stratigraphic position: Surficial, or below volcanic ash A (of A.D. 1912), but above volcanic ash B.

Dating: A.D. 1820 to about 1900, perhaps later.

Comment: The description of bone and antler artifacts from the site is based primarily upon examinations of collections possessed by local people.
Continuity and Discontinuity

Four distinct periods may be distinguished in the prehistory of the Naknek drainage, each of them consisting of the time represented by a single phase that stands apart from others in the sequence, or by a series of phases between which cultural continuity is unmistakable.

Kittewick period, 2500 ± 100 to 1900 ± 100 B.C. This includes the time represented by only the B.R. Strand phase, embracing all that is now known of cultural manifestations in the drainage earlier than about 1900 B.C. The collections of the period are characterized by the considerable use of ground slate, of large flaked knives, of flat oil lamps, and by the absence of pottery. The location of camps of this period only at what was then the mouth of Brooks River, rather than along the course of the river as was the case in later times, may combine with the plentiful fragments of crushed mammal bone to indicate that the purpose of the occupation was less for fishing than for caribou hunting.

Gomer period, 1900 ± 100 to 1000 ± 100 B.C. The period as now known is conterminous with the non-ceramic Brooks River Gravels phase, characterized by small chipped bifaces, burins, and microblades. The habitations located along the river during this time suggest both an orientation toward salmon fishing and a possible winter use of the area. The period is followed by an apparent break in occupation of the Brooks River area.

Brooks River period, 200 ± 100 B.C. to A.D. 1000 ± 100. This is the period of use of fiber-tempered pottery (locally termed Brooks River Ware; see also Dumond 1969c), of small chipped projectile blades, and of a steady increase in slate rubbing. It includes the time represented by three phases--Smelt Creek, B.R. Weir, and B.R. Falls--which are closely related to each other in developmental fashion.

Naknek period, A.D. 1000 ± 100 to 1900. This is the period of gravel-tempered pottery (termed Naknek Ware; see also Dumond 1969c) and of concentration on the manufacture of implements of polished slate. It includes the time represented by three phases, clearly related one to another--B.R. Camp, B.R. Bluffs, and Pavik. Habitations suitable for year-round occupation are present at Brooks River during this period.

Between the Kittewick and Gomer periods, the only typological continuities are in categories of small but haphazardly made scrapers that are so broadly defined that they are present in collections from all periods, and in a few unfabricated implements like hammerstones and small whetstones. There are no assemblages with intergrading forms, and the radiocarbon and stratigraphic evidence combines to indicate that the
transition from one period to the other was virtually instantaneous. This is taken to indicate a complete population replacement.

The apparent hiatus between the Gomer and Brooks River periods was thought for some years to reflect inadequate sampling, but continued effort with at least some exploration in virtually all of the major sites on Brooks River have finally forced the conclusion that the gap was probably a real one at that locality. In spite of it, indications of continuity between the Gravels phase of the Gomer period and the Smelt Creek phase of the Brooks River period are not lacking. These consist of similar double-pointed endblades (Fig. 2, dd-hh; Fig. 4, a, b), a persistence of identical small adze blades (Fig. 2, uu; Fig. 4, h, ss), an apparent evolution of some small double-pointed endblades of the Gravels phase (Fig. 2, dd) into the slightly squarer-based endblades of the Smelt Creek phase (Fig. 4, d), and the persistence of an identical house form, at least to judge from the evidence of the slightly later B.R. Weir phase. Thus in spite of the introduction of fiber-tempered pottery, the probable introduction of the stone lamp, and the hundreds of years separating the Smelt Creek phase from its predecessor, the degree of continuity between the cultures of the Gomer and the Brooks River periods is substantially greater than that between the Kittewick and the Gomer periods. For this reason, in part, it seems unlikely that the entire Naknek drainage was abandoned at the time use of Brooks River was apparently suspended. Although the plentiful new elements apparent in the Smelt Creek phase may indicate some influx of new people into the area, in a pattern of family group migration such as that known for recent Eskimos, there seems to be no compelling reason to infer anything like a complete replacement of the earlier people.

Between the Brooks River and the Naknek periods, change was again rapid—indeed, representing something of a technological revolution. And here temporal control is sufficient to indicate that there was no period of abandonment. Nevertheless, the new stone forms taken up in the Naknek period, involving an increased reliance upon polished slate, are almost without exception clearly foreshadowed in the earlier Brooks River period (e.g., compare Fig. 6, x, y; Fig. 8, d)—during which, for instance, there had apparently been a gradual functional replacement of chipped sideblades with polished ulos. In a parallel development Brooks River period pottery had become thicker, gravel inclusions had become more and more frequent, and at the time of the transition from one phase to another some sherds appear truly transitional (Dumond 1969c). With the beginning of the B.R. Camp phase, the replacement in stone artifacts was completed as polished inserts completely replaced the small chipped projectile blades of the B.R. Falls phase, and the pottery took on its later, characteristic globular shape. So although it seems likely that these relatively rapid changes accompanied an increased mobility of population, it again does not seem entirely reasonable to conclude that the major portion of the local population was replaced.
The Pacific Coast

As indicated above, the Pacific coast of Katmai National Monument was initially surveyed and tested during 1953 and 1954 (Davis 1954; Oswalt 1955). The large site at Kukak Bay was visited briefly in 1963 in the course of the project reported here, and was the location of intensive excavations in 1964 and 1965. The collections from the 1953 test at that site (Davis 1954) are also included in the present analysis.

Survey work in 1964 revealed the presence of rich archaeological remains on Takli Island, and excavations begun there at the end of the 1964 season were also continued in 1965. All together, the present analysis is based upon a total of about 4,700 stone artifacts and 135 potsherds from the two areas on the Pacific coast. Unfortunately, survey and testing on the coast have not been adequate to delimit satisfactorily the area to which the sequence may pertain. Reportage of the sequence has been begun (G. H. Clark 1968; Gehr 1970; see also Dumond 1968, 1970).

The account that follows will be given the same format as used for the Naknek drainage. Sites, however, are not from an area so compact as that of Brooks River and may reasonably be thought to represent actual aboriginal habitation areas, rather than mere archaeological record-keeping units.

Again, chronology is based chiefly upon radiocarbon dates. Although a sequence of volcanic ashes is present on the Pacific coast of the Peninsula, it was less useful for chronological control, in part because of the lesser extent of the work on the Pacific coast, and in part because the more scattered location of sites made ash correlations less trustworthy. Attempts to correlate ash deposits on the two sides of the Peninsula were only moderately successful (see Nowak 1968).

As one would expect, where bone waste is present in the coastal sites it is almost entirely that of sea mammals, chiefly seal and sea lion. Shellfish were used extensively. Although more artifacts of organic material were recovered--because of the occurrence of marine shell in middens--they have proved relatively insignificant in the overall analysis.

The sequence is now formulated in five cultural phases. Because of the smaller number of the phases, and because the details of the sequence are less well known than in that of the Naknek drainage, it has not proved profitable to define distinct periods analogous to those presented for the Naknek drainage. The sequence will be described from earliest to latest phase.
Takli Alder Phase

Sample: 507 stone implements (Fig. 3, page 31) and 34 bone implements from two excavation units at one site on Takli Island and one site at Kukak Bay. No pottery.

Characteristic stone artifacts:

1. Chipped projectile points with relatively long stem, rounded shoulders; stem is markedly triangular in cross-section with the flat side beveled at the extreme butt (Fig. 3, f-j; Fig. 13, c, d).

2. Chipped stemmed points with medium to strongly rounded shoulders and with a variety of stem treatments; stem has no triangular cross-section (Fig. 3, o-r; Fig. 14, f, h).

3. Symmetrically bipointed chipped points, with either convex or parallel sides; commonly 50 to 70 mm. in length (Fig. 3, c-e).

4. Large leaf-shaped and ovoid chipped bifaces, a substantial proportion of which are thin in cross-section, apparently finished implements (Fig. 3, a, b; Fig. 14, b, d).

5. Scrapers on blade-like flakes (Fig. 3, m, n).

6. Chipped gouge blades, the curved bits of which are dorsally beveled by chipping, and smoothed by polishing on the convex, unbeveled ventral side (Fig. 3, l).

7. Discoidal cores (Fig. 3, k).

8. Large plano-convex core-like objects, some of which show use on the edges and might be termed "scraper planes" (not illustrated).

Ratio of chipped to polished implements: 110 to 1.

Favored stone material: Basalt; chalcedony.

Characteristic bone implements: Bilaterally barbed dart heads with rectangular line guards and conical tang, some with open bed for end blade; wedges; birdbone or ivory awls.

Type of occupation: Coastal midden. At least one site may have included semi-permanent dwellings, from the amount of debris, but evidence of actual habitations consists only of post-molds in a curving pattern, identified in an excavation trench. If this was the side of a round structure, the size would approximate 8 m. in diameter. Sea mammal bones and shells were common.
Stratigraphic position: Below T. Birch phase material in both excavation units.

Dating: 3880 B.C. ± 120 (I-1945); 3700 B.C. ± 115 (I-1940). Arithmetic average of these two dates, from two different sites, is about 3790. A determination on charcoal either at the top of Alder phase deposits or at the bottom of Birch phase deposits (and considered to be probably the latter), was 2160 ± 160 B.C. (I-1639). Based on these dates, and on comparison with material from Kodiak Island and the Naknek drainage, this phase is loosely assigned to the period between 4000 and 3000 B.C.

Takli Birch Phase

Sample: 2,729 stone implements (Fig. 3, page 31) and 95 bone implements from three excavation units at two sites on Takli Island and one site at Kukak Bay. No pottery.

Characteristic stone artifacts:

1. Chipped, stemmed projectile blades, with shoulders sharp, rounded, or slightly barbed; length commonly greater than 30 mm. (Fig. 3, gg-ii).

2. Chipped, stemless projectile blades; length commonly greater than 50 mm. (Fig. 3, kk-mm; ll and nn are unusually small).

3. Chipped, leaf-shaped bifaces, generally cruder and thicker than those of the Alder phase, suggesting that the majority are unfinished implements (Fig. 3, nn).

4. Ground slate projectile and knife blades, with and without stems; butt is frequently unthinned and generally relatively square; occasionally barbed (Fig. 3, oo-uu).

5. Ground slate ulos, both tanged and untanged (Fig. 3, vv).

6. Chipped adze blades with polished bit (Fig. 3, jj).

7. Formed stone vessels, some used as lamps (fragmentary, not illustrated).

8. Occasional sandstone saws, with plentiful sawed slate debris (not illustrated).

9. Coal labrets to be worn in a relatively small hole in the lip; in one, the projection is shaped like a claw or curving bird's beak (Fig. 3, ee, ff).
Ratio of chipped to polished implements: 1.7 to 1.

Favored material: Medium to fine-grained basalt; slate.

Characteristic bone artifacts: Bilaterally barbed harpoon dart heads with rectangular line guards and conical tangs, some with open bed for end blade; shouldered wedges, apparently for hafting or for use with a sleeve; birdbone or ivory awls; leister parts.

Type of occupation: Coastal midden. At one site, hearths, stone patterns and post holes suggest the presence of at least three dwellings, but aboriginal digging confused both stratigraphy and house plans; best evidence of structures consists of an oval-to-rectangular arrangement of large rocks, and two possibly-associated post holes.

Stratigraphic position: Overlies T. Alder phase material at two sites, underlies T. Cottonwood phase material at a third.

Dating: 1520 ± 110 B.C. (I-1943); 960 ± 105 B.C. (I-1941); 860 ± 100 B.C. (I-3733). As indicated previously, a determination from the boundary between T. Alder and T. Birch phase deposits was 2160 ± 160 B.C. (I-1639), and in view of other evidence this date is believed to pertain to the early Birch phase (see Comment, below). The bulk of the deposits actually sampled, however, may reasonably be considered to date from between 1500 and 800 B.C.

Comment: Assignment of the 2160 B.C. date to the Birch phase is based in part on the fact that the Birch phase is discriminated from the Alder phase largely on the presence of polished slate. Polished slate forms similar to those of the Birch phase are apparently present in the B.R. Strand phase of the Naknek drainage by 2500 B.C., and in the Ocean Bay II assemblage from Kodiak Island (D. W. Clark 1966) at about the same time. It seems reasonable, therefore, to consider the polishing of slate to have begun on the Pacific coast of the Peninsula before 2500 B.C. (Dumond 1968). Although it would be obviously desirable to subdivide the Birch phase, a convincing division has not been possible with the present collections, from stratified and consequently somewhat mixed sites.

Takli Cottonwood Phase

Sample: 519 stone implements (Fig. 5, page 33; a high proportion are fragmentary), 2 nondescript bone implements, and 43 potsherds from one excavation unit at one site on Takli Island.
Characteristic stone artifacts:

1. Chipped, stemmed projectile points with moderate to strongly developed shoulders and contracting stem; frequently less than 30 mm. in total length (Fig. 5, e-j).

2. Chipped bipointed projectile points, 38 to 44 mm. in total length (Fig. 5, k-m).

3. Chipped leaf-shaped bifaces, most of them relatively thick and apparently unfinished (Fig. 5, d); some fragments are perhaps of more nearly finished implements (Fig. 5, c).

4. Ground slate stemmed projectile blades, frequently with barbs; sample includes only fragmentary specimens (Fig. 5, o-q).

5. Ground slate ulos, both drilled and undrilled (Fig. 5, n).

6. Chipped adze blades with ground bit (not illustrated).

7. Occasional two-notched pebble sinkers (Fig. 5, b).

8. Formed stone vessels, some used as lamps, some with decorated bowl and exterior (Fig. 5, a).

9. Abundant sawed slate and occasional stone saws (not illustrated).

Ratio of chipped to polished implements: 1.2 to 1.

Favored material: Medium to fine grained basalt; secondarily chalcedony and quartzite.

Characteristic pottery: Fiber tempered, thin to thick (9-12 mm.), in the shape of a slightly out-flaring cylinder.

Type of occupation: Coastal midden. One rather indistinct house was roughly square, about 5 m. on a side; postholes were scarce; no entrance was determined; a large rock-lined hearth apparently was situated near one wall.

Stratigraphic position: Overlay T. Birch phase materials in the single site.

Dating: A.D. 270 ± 100 (I-1942). Only one radiocarbon determination, from within the presumed house described above, was obtained. On the basis of ceramic comparisons with Brooks River, and comparisons within the Pacific sequence, the phase as known must fall somewhere between A.D. 200 and 500.
Kukak Beach Phase

Sample: 569 stone implements (Fig. 7, page 35), 77 bone implements, and 38 potsherds, from six excavation units at one Kukak Bay site.

Characteristic stone artifacts:

1. Small, chipped, stemmed projectile points with rounded shoulders, with sharp shoulders, or with slight barbs (Fig. 7, a-f).

2. Chipped projectile points with contracting base; base may have a squared butt and be more than 10 mm. in length (Fig. 7, i) as with some Smelt Creek and B.R. Weir points; base may have a rounded butt and be less than 10 mm. in length (Fig. 7, g, h) as with B.R. Falls phase points.

3. Small chipped projectile points with indented base (Fig. 7, j).

4. Relatively large, chipped, stemmed projectile blades with pronounced but relatively rounded shoulders (Fig. 7, m, n).

5. Small flaked knives with slender point; this form is termed "flaked lancet" (Fig. 7, l).

6. Flaked drills (Fig. 7, k).

7. Occasional ground slate projectile or knife blades of varied form (Fig. 7, v, w); two specimens are extremely broad basal fragments (Fig. 7, u).

8. Ground ulos of slate or made on large flakes of igneous rock, with the form of the flake still discernible (Fig. 7, q).

9. Ground slate tanged knife, with expanding blade, sharpened on all sides (Fig. 7, r).

10. Chipped adze blades, with ground bit, sometimes resharpened by flaking (Fig. 7, x).

11. Formed stone vessels, including lamps; one is a miniature (Fig. 7, s).

12. Two-notched pebble sinkers (Fig. 7, t).

13. Girdled pebbles, some with battering to suggest they served as mauls (Fig. 7, y).
14. Coal labrets shaped like a top hat, to be worn in a relatively small hole (Fig. 7, o, p).

**Ratio of chipped to polished implements:** 4 to 1.

**Favored material:** Basalt; chalcedony.

**Characteristic pottery:** Fiber tempered, thin to thick (7-17 mm.), barrel or cylinder shape.

**Characteristic bone artifacts:** Toggling harpoon heads, with open bed for end blade and with line hole parallel to plane of the bed; unilaterally barbed dart heads, with line hole and wedge-shaped tang; bilaterally barbed dart heads with bilateral line guards and wedge-shaped tang; unilaterally barbed arrowheads, with short, conical tang.

**Type of occupation:** Coastal village, with 88 presumed house depressions, more than half of which are believed to contain remains of the K. Beach phase. Form of the semi-subterranean houses was determined in three instances to be roughly square, from 5 to as much as 7 m. on a side, excavated into the contemporary surface from as little as about 20 to more than 80 cm. Digging by later inhabitants frequently rendered walls indistinct. The entrance appears to have been a simple sloping channel without a cold trap. A central fireplace was standard, and in one case was formed of upright stone slabs.

**Stratigraphic position:** Below K. Mound phase material in at least two excavation units.

**Dating:** A.D. 490 ± 95 (I-1944); A.D. 500 ± 130 (I-1637); A.D. 875 ± 100 (I-1638). In view of these determinations and of appropriate comparisons, this phase is assigned to the time between A.D. 500 ± 100 and 1000 ± 100. The bulk of the sample is thought to date in the earlier two or three centuries of that span.

**Kukak Mound Phase**

**Sample:** 410 stone implements (Fig. 9, page 37), 12 bone implements, and 54 potsherds from four excavation units at one site on Kukak Bay.

**Characteristic stone artifacts:**

1. Ground slate projectile insert blades with trapezoidal or occasionally triangular butt facet, or with shoulders or barbs (Fig. 9, a-e).
2. Ground slate dart and knife blades, with barbs or pronounced shoulders (Fig. 9, f-i).

3. Small ground slate knives with tapering blade; the form is termed "polished lancet" (Fig. 9, j, k).

4. Ground slate ulos, both drilled and undrilled (Fig. 9, o).

5. Adze blades of slate with ground bit and with grinding on dorsal and ventral surfaces (Fig. 9, n).

6. Flaked bifaces, apparently blanks for items 1 and 4, in this list (Fig. 9, l, m).

7. Formed stone lamps (Fig. 9, p).

8. Two-notched pebble sinkers (Fig. 9, q).

Ratio of chipped to polished implements: 1 to 3.

Favored material: Slate; basalt.

Characteristic pottery: Gravel tempered, plain, predominantly thick, in globular jar form. Thick clay lamp, apparently baked, paste similar.

Characteristic bone artifacts: Unilaterally barbed dart heads with line hole and wedge-shaped tang; unilaterally barbed dart heads with conical tang; leister parts.

Type of occupation: Same site as K. Beach phase. Much occupation of this phase was in the form of camps made in depressions remaining from earlier houses. One habitation, constructed on top of an earlier, Beach phase house, apparently was about 5 m. square, with a sunken entrance excavated some 50 cm. below the floor, which was itself about the same distance below the contemporary surface.

Stratigraphic position: Above remains of K. Beach phase in at least two of the four excavation units.

Dating: A.D. 1175 ± 95 (I-505); A.D. 1175 ± 110 (I-1636). These identical determinations were made on samples from two different excavation units. On the basis of comparative data from the Naknek drainage and from Kodiak Island this phase is assigned to the span A.D. 1000 ± 100 to 1400 ± 100.

Comment: One of the four excavation units used in this analysis was the trench excavated in 1953 (Davis 1954). One of the radiocarbon determinations was obtained (in 1961) on charcoal from that excavation. This phase was referred to in a single previous publication (Dumond
1970) as the "Kukak Knoll phase"; that designation has been changed to K. Mound phase.

Continuity Between Phases

None of the transitions here is taken to indicate a population replacement. Between the T. Alder and T. Birch phases the major changes are in the loss of distinctive early forms such as the small gouge-like adzes and the projectile blades with stems of triangular cross-section, and in the gain of slate polishing and perhaps of the oil lamp, although the Alder sample is small enough that the absence of lamp fragments may not be significant, particularly when lamps are reported from the contemporary and similar Ocean Bay I assemblage from the Kodiak Island group (D.W. Clark 1966). The forms of numerous chipped projectile blades continue with virtually no modification.

Between the T. Birch and the T. Cottonwood phases the transition is even more smooth, almost all classes of implements being retained (within the limits of determination from the samples available), and with the addition of infrequent pottery and with an increase in use of small projectile blades of chalcedony. For the transition from the T. Cottonwood to the K. Beach phase much the same can be said: there is retention of a majority of chipped and polished implement forms, but here the increase in use of small projectile blades of chalcedony is substantial, sudden, and noteworthy (see Fig. 10).

Between the K. Beach and the K. Mound phases the situation is somewhat similar to that between the Brooks River and Naknek periods of the Naknek drainage, with the paste and form of pottery changing, and with an almost total loss of the chalcedony-chipping industry. But the long history of slate polishing on the Pacific coast reduces the apparent sharpness of the transition, and causes the marked increase in stone chipping in the Beach phase—rather than the resumption of stone polishing in the Mound phase—to appear anomalous in the local sequence.
Figures 2 through 10 follow.
Fig. 2. Stone artifacts of the B.R. Strand and B.R. Gravels phases from the Naknek drainage. a through o, B.R. Strand (2500-1900 B.C.); description, page 7. aa through ww, B.R. Gravels (1900-1000 B.C.); description, page 8.
Fig. 3. Stone artifacts of the T. Alder and T. Birch phases from the Pacific coast. a through r, T. Alder (4000-3000 B.C.); description, page 21. aa through vv, T. Birch (2200-800 B.C.); description, page 22.
Fig. 4. Stone artifacts of the Smelt Creek and B.R. Weir phases from the Naknek drainage. a through t, Smelt Creek (200 B.C. to A.D. 100); description, page 9. aa through ss, B.R. Weir (A.D. 100-600); description, page 11.
Fig. 5. Stone artifacts of the T. Cottonwood phase (A.D. 200-500) from the Pacific coast. Description, page 23; width of a, 20 cm.
Fig. 6. Stone artifacts of the B.R. Falls phase (A.D. 600-1000) from the Naknek drainage. Description, page 12.
Fig. 7. Stone artifacts of the K. Beach phase (A.D. 500-1000) from the Pacific coast. Description, page 25.
Fig. 8. Stone artifacts of the B.R. Camp, B.R. Bluffs, and Pavik phases from the Naknek drainage. a through p, B.R. Camp (A.D. 1000-1400); description, page 14. q through z, B.R. Bluffs (A.D. 1400-1820); description, page 15. aa through ee, Pavik (A.D. 1820-1900); description, page 17.
Fig. 9. Stone artifacts of the K. Mound phase (A.D. 1000-1400) from the Pacific coast. Description, page 26.
Fig. 10. Cultural relationships across the northern Alaska Peninsula.
III. EXTERNAL RELATIONSHIPS

In this section are considered relationships across the Alaska Peninsula that are suggested by the two sequences described above (summarized in Fig. 10), and relationships apparent between those sequences and cultural manifestations elsewhere in Alaska. To begin with the more substantial evidence, I first consider the time after 2500 B.C., turning only then to the time before that date, and to consideration of possible relationships suggested by the T. Alder phase.

Prehistory After 2500 B.C.

Sometime early in the third millennium B.C., if not somewhat sooner, descendants of people represented by the T. Alder phase had begun to polish slate, and by 2500 B.C. tool kits had taken on the look of the T. Birch assemblage. Both chipped and polished implements are virtually identical to material from an early manifestation at Pedro Bay, on the upper end of Iliamna Lake and not far from the low pass leading to the Pacific, that is dated shortly after 2500 B.C. (Townsend 1970). The Birch phase polished implements also reflect those of the unfortunately very small collection known as Ocean Bay II, from the Kodiak Island group (D.W. Clark 1966). I conclude that the Birch phase represents a form of culture probably at home on the Pacific coast of the Alaska Peninsula and on Kodiak Island in the late third and early second millennia B.C.

At about 2500 B.C. the earliest-known inhabitants appeared in the Naknek drainage, with the B.R. Strand phase. Earlier analysis of this assemblage (Dumond 1968) led to the conclusion—Chiefly on the basis of the obviously-shared forms of slate thrusting implements—that these people were closely related to those of the T. Birch phase of the Pacific coast (compare Fig. 2 and Fig. 3). More recently, an examination of other collections has indicated that the non-polished portion of the Strand assemblage is strikingly reminiscent of corresponding implements—lanceolate bifaces and scrapers—from the Security Cove collection (Ackerman 1964; unfortunately the most substantially similar portion of this collection is not yet published), which in turn manifests strong resemblance to the Palisades complex from Cape Krusenstern and Onion Portage (Anderson 1968), as well as to other sites in the Alaskan interior characterized by the presence of side-notched projectile points and knives.

This same set of similarities is emphatically not visible in the T. Birch assemblage. Hence if the Pacific manifestation represented by T. Birch, Pedro Bay, and Ocean Bay II is taken as a model, the people represented by the Strand phase at Brooks River appear acculturated,
with a tool kit in which the flaked tools suggest relationships toward the Alaskan interior, but in which the large side-notched projectile blades such as found at Security Cove (Ackerman 1964) have been replaced by large lance blades of polished slate, and to which the oil lamp has been added. The Strand assemblage then could represent either a properly coastal group that has taken up some interior artifact styles, or an interior group that has assumed some Pacific coastal traits. I have chosen the latter interpretation as the more likely (Dumond 1969a) simply because I interpret the Alaskan ethnographic evidence to indicate that the assumption of coastal practices by interior peoples is the more common acculturative pattern.

Whoever they may have been, the Strand phase people were displaced in the Naknek drainage portion of the Peninsula around 1900 B.C., by people of the B.R. Gravels phase, whose arrival initiated the Gomer period. This occurrence represents the only case of actual population replacement hypothesized for the northern Peninsula.

The new inhabitants, with small bipointed projectile blades, burins, and microblades, manifest an obvious affiliation with the Arctic Small Tool tradition, the nearest exemplar of which is the Denbigh Flint complex of Cape Denbigh (Giddings 1964). Although the B.R. Gravels assemblage includes many more snub-nosed end scrapers and many fewer burins and microblades than the type collection of Cape Denbigh, the resemblance between the collections is unmistakable. These people may be considered the first speakers of Eskimo to enter the region (see Dumond 1965, 1969a, with additional references).

Interestingly, during the Gomer period there is virtually no contact of any kind evident between the B.R. Gravels people and their slate polishing and oil burning neighbors of the T. Birch phase. Indeed, of the nearly 3,000 implements of the Birch phase collection, there are four small, bipointed projectile points sufficiently well made to be reminiscent of Gravels phase artifacts (Fig. 3, 11, mm; compare Fig. 2)—barely enough of them to suggest that the radiocarbon evidence of contemporaneity is reasonable.

I have indicated above that in spite of the hiatus in the first millennium B.C., when Brooks River, at least, was probably not occupied, technological continuity between the Gravels phase and the ensuing Smelt Creek phase is suggested strongly by certain retentions in stone artifact forms. New with the Smelt Creek phase, however, are fiber-tempered pottery and (probably) the use of formed stone lamps—the former certainly an importation from the north, the latter likely a borrowing from the south. Obvious affiliation of this phase is with the Norton culture of Cape Denbigh; much of the pottery of that culture, in particular, is virtually indistinguishable from ceramics of the Naknek drainage (Dumond 1969c). And with the Smelt Creek phase was introduced the Brooks River period, a time in which the Norton-like Smelt Creek phase gives way to
the succeeding two phases as local descendants in clear and unbroken line. The nature of these three phases is such that they may be considered to represent a Norton tradition.

Meanwhile, slate polishing continued unabated on the Pacific coast. The T. Cottonwood phase is unmistakably the descendant of the preceding Birch phase, with the same forms of both flaked and polished implements continuing. Pottery—specifically, ware indistinguishable from that of the B.R. Weir and B.R. Falls phases of the Naknek drainage—appears in use, however; and there is a reduction in the size of the familiar Pacific coastal forms of projectile blades and an increase in the use of chalcedony for their manufacture—changes that seem very reasonably attributable to the technology of the Brooks River period in the Naknek drainage (compare Fig. 3, Fig. 5, Fig. 4). Acculturation of the Pacific people appears indicated.

During the K. Beach phase, this northern look of things intensifies. The foreign impact on the technology of the Pacific coast is indicated not only by the striking similarity now obvious between, especially, the smaller projectile blades of both the Naknek drainage and Kukak Bay, but also in the marked reduction in slate polishing in the K. Beach phase, compared with the earlier T. Cottonwood phase (Fig. 10). The degree of similarity between assemblages from the two sides of the Peninsula is greater than it has been since the Kittewick period in the Naknek drainage, with the assemblages now differing chiefly in the absence of chipped sideblades on the Pacific coast, and in the absence of some larger chipped projectile or knife blades and some polished slate implements in the Naknek drainage (compare Fig. 6, Fig. 7). Indeed these differences, together with the relative scarcity of pottery at Kukak, might for the first time be explained as no more than the result of seasonal differences between occupations by the same people. Yet it seems unlikely that Kukak Bay was wholly occupied by a northern population; the very Pacific coastal cast of the forms in use by the people of the K. Beach phase that were not in use by people of the B.R. Falls phase, bespeaks no complete population replacement, but rather a situation of active acculturation—active enough, nonetheless, that it seems reasonable to hypothesize the existence at this time at Kukak Bay of a mixed population of northerners and Pacific coastal people.

During this time on the Pacific coast of the Peninsula, from the T. Birch to the K. Beach phases, the steady increase in correspondence with Naknek drainage assemblages is matched by an equally steady decrease in degree of correspondence with collections from elsewhere on the Pacific—as, for instance, from Kodiak Island (see D.W. Clark 1966). This seems to indicate that the presumed northern influence, by whatever mechanism it was being transmitted, was largely confined thus far to the Pacific coast of the Peninsula itself.
The ensuing Naknek period of the Naknek drainage is a time of obvious similarity to late prehistoric Eskimos farther north, a time marked by a drastic increase in the polishing of slate and a shift to thick, gravel-tempered pottery scarcely distinguishable from pottery known as far north as Point Barrow. At around A.D. 1000, cultural change at Brooks River was rapid, but the smoothness of transition evident in the Naknek drainage collections, in which implements of the B.R. Camp phase are foreshadowed in the B.R. Falls phase, was construed as suggesting that no wholesale replacement of population occurred. The Naknek drainage phases of this period may be said to partake of a generalized Thule tradition.

Apparently, channels of communication already well established between people of the Naknek drainage and of the Pacific coast during the last days of the Brooks River period, served to facilitate contacts during the Naknek period. At any rate, collections of the B.R. Camp phase and the K. Mound phase are to all practical intents indistinguishable from one another (compare Fig. 8, Fig. 9), corresponding still more closely with one another than was the case in the previous period. It would be completely reasonable to apply the same name to these two phases, and indeed the term "K. Camp" was considered for the K. Mound phase. But because it is possible that further sampling and analysis will lead to a reinterpretation of the exact relationship between the immediately preceding phases of the two local sequences (B.R. Falls and K. Beach), it seems safer at this time to take the conservative position and maintain a terminological distinction between all assemblages of the two areas of study.

During this time, clearly, communication proceeded farther than the Pacific coast of the Peninsula; pottery came to be used on Kodiak Island, pottery of the type characteristic not only of the Naknek drainage at this period, but of virtually all of coastal Alaska (Dumond 1969c). Whether the upsurge of slate polishing in the Naknek drainage at this time is the result of northern influence, or whether in fact it represents extensive borrowing from the south, where the particular forms of the B.R. Camp phase seem to be so strongly forecast so long before, is not clear (see Dumond 1968). What is clear is that the early Naknek period was a time of increased communication throughout Eskimo Alaska (see also D.W. Clark 1968), the time which also saw a movement of Thule people from northern Alaska to Greenland.

Unfortunately, the period from A.D. 1500 to 1900 is not sampled on the Pacific coast of the Peninsula. Examination of collections of this period from Kodiak Island, however, suggests that there was probably little diminution of contact across the Peninsula—a conclusion at variance with one offered previously (Dumond 1962), but in accord with the conclusions of ethnographers (e.g., Lantis 1947) and with the fact that the people of the north Pacific spoke a dialect of the western Eskimo language (Hammerich 1958).
Thus the hypotheses upon which work after 1962 was based, that early contacts across the Peninsula were restricted, and that they developed in substantial strength around A.D. 1000, are generally confirmed, with a few modifications necessitated by the additional data. Specifically, the research reported here suggests that at no time between about 2500 B.C. and A.D. 1000 was there a single people inhabiting both sides of the Alaska Peninsula, although some acculturative contact occurred before 1900 B.C. Only some two millennia after their arrival in the Naknek drainage with the B.R. Gravels phase of the Arctic Small Tool tradition, did the northern people presumed to be ancestral Eskimos begin to show a tendency for expansion onto the north Pacific; this resulted in some population movement before A.D. 1000, and culminated in open communication across the Peninsula shortly after that date.

These conclusions are phrased somewhat differently from, but are not, I think, opposed to, those reached by D.W. Clark (1968) in his work with materials from Kodiak Island, when he concluded that an impulse from the north (that is, from Bering Sea) was instrumental in the formation of the late Konig culture of Kodiak Island, although southern (Pacific coastal) elements were held to be at least of equal importance. The present conclusions are apparently completely parallel with those of Lantis (1947) in her comparative study of Eskimo ceremonialism (and see also Oswalt 1967: 245-7).

Some reasons for this apparent expansion of northerners onto the north Pacific have been explored elsewhere and it was found to be potentially explicable by a shift toward greater use of resources of the unfrozen sea coast (Dumond 1969a). In view of the historic distribution of Eskimoan speech, that expansion may be presumed to have brought about the linguistic Eskimization of the north Pacific coast.

Relationships of the Takli Alder Phase.

None of the information presented so far has served to illuminate in any substantial way the problem—perhaps fanciful, but sufficiently compelling to have interested many people—of the origins of the Eskimos themselves. On the basis of linguistic connections between Eskimos and Aleuts it is clear that somewhere, sometime, there was a population directly ancestral to both. Based on these and other considerations I earlier hypothesized (Dumond 1965) that this ancestor had lived around 4000 B.C., or perhaps earlier; that the nature of the archaeological remains left by him would be such as to indicate ancestry on the one hand to people of the Arctic Small Tool tradition (attributed to Eskimos), on the other hand to early people represented by the remains in the Chaluka midden on Unnak Island (attributed to Aleuts); and that these remains would also manifest a relationship
with the early inhabitants of Anangula Island (Laughlin 1967) of around 6000 B.C. I expected that he would be found to have lived on the American side of the Bering Sea (or at least of the Bering Platform). I expected, as well, that any pre-Gravels phase implements discovered in the Naknek drainage would relate to such an ancestor, because the Alaska Peninsula seemed the most likely place for the ancestor of Eskimos and Aleuts to have lived.

But when the pre-Gravels occupation was discovered in the B.R. Strand phase, it was clear that it bore no relationship whatever to the later Gravels phase. Indeed, its nature and very presence suggested not an in situ development of Eskimoan people, but rather that the first ancestral Eskimos, in a linguistic sense, had arrived from the north after 2000 B.C. with the apparently intrusive Arctic Small Tool tradition.

Obviously, the evidence from Brooks River alone is not enough to justify the acceptance of a more northern origin for the people represented by the Arctic Small Tool tradition. Nevertheless, it is such as to suggest that alternative hypotheses should be explored. For instance it seems reasonable to wonder if perhaps there were after all dual entries of the Eskaleutian linguistic stock into the New World, the first dating from an early time—perhaps, indeed, representing early inhabitants of the southern edge of the Bering Platform before its inundation, as has been proposed (Laughlin 1967)—and the second representing a later arrival of bearers of a derived mesolithic stone technology. For other reasons this same possibility has been recently argued by another student (Irving 1970), who has made an identical suggestion.

Meanwhile, the early materials assigned to the T. Alder phase from the Pacific coast wanted further placement in the context of Alaskan prehistory. From the beginning it was clear that they bore a relationship to the Ocean Bay I complex, from Sitkalidak Island off the coast of Kodiak (D.W. Clark 1966), in the forms of projectile blades, in the relative absence of polished implements, in the occurrence of leaf-shaped and ovoid bifaces. Not present in the Ocean Bay I collection are the very distinctive projectile blades of the Alder phase with their long stem, triangular in cross-section, with beveled butt (Fig. 3, f-j), a lack here provisionally attributed to sampling error; the Ocean Bay collection is very small.

Interestingly, when the first Alder collection (from the 1964 season) was spread out in the laboratory, A. C. Spaulding, then at the University of Oregon, remarked that the high incidence of large bifaces reminded him of the collection he had excavated from the site at Krugloki Point, on Agattu Island in the western Aleutians. This comparison was carried no further until 1966. Then, when examining ceramics from the Norton deposits at Cape Denbigh in the Museum of Anthropology of the University of Michigan, I accidentally happened upon the materials from Krugloki Point. Not only did the high frequency of leaf-shaped bifaces
recall the collection from the Alder phase, but to my surprise many of the Krugloj Point projectile blades had relatively long stems, flatly triangular in cross-section, with beveled butts, strongly reminiscent of implements from the Alder phase collection. Study of the Krugloj material was pursued in 1967 at Ann Arbor, and a portion of the collection was obtained on loan for additional comparative study. In 1968 a paper was read summarizing the results of the comparison (Dumond 1970), some of which are recapitulated in the appendix to this report. Furthermore, the contracting-stemmed projectile blades and leaf-shaped bifaces in both collections are similar enough to those of the small Ocean Bay I assemblage (D.W. Clark 1966, Fig. 2) to suggest that the same comparison should apply also to early materials from the Kodiak area, even though no projectile blades with long stems of triangular cross-section are yet known from there.

Obviously, the difference in age (about 3,000 years) as well as the geographic distance (about 1,300 miles) between the T. Alder and Krugloj Point collections makes it difficult to ascribe a direct connection. Nevertheless, in view of the degree of similarity between the chipped stone implements, and of the fact that the Krugloj Point collection represents the farthest, most isolated, and archaeologically most variant of the Aleutian Island groups, it seems possible to propose the following hypothesis:

Around 4000 B.C., the culture represented by the T. Alder phase of the Pacific coast of the Alaska Peninsula and by the Ocean Bay I collection of Sitkalidak Island existed throughout most of the Pacific Eskimo area and the Aleutian Islands; this was an occupation of ancestral Aleuts.

Clearly, the hypothesis stretches the existing data about as far as they could be stretched, and it also strains the model of cultural retention within the westernmost Aleutian Islands about as far as it could be strained. It is proposed, however, for what seem cogent reasons: Although the Aleuts and Pacific Eskimos have often been lumped together as the "Southern Eskimos," and have been presumed to have a common ancestor, no one has ever been able to point to a specific, archaeologically-represented time and say that they were then a single people (Dumond 1964: 39, with references; compare Laughlin 1967). Yet if the arrival of the Arctic Small Tool tradition on the Alaska Peninsula does indeed represent the relatively late arrival of linguistic Eskimoans in southwestern Alaska, a separate and earlier genetic connection between the early coastal-oriented peoples of Kodiak and the Aleutians seems doubly reasonable. The presumption of a correlated development of the Eskimo-Aleut stock from a single American ancestor, while economical, seems unsuited to the explanation of some of the early cultural diversity evident in coastal Alaska (compare D.W. Clark 1966: 370, conclusion 3). The present hypothesis promotes
a conception of early cultural uniformity within each of the two major coastal ecological zones present after the inundation of the Bering Platform—coasts that freeze and coasts that do not—but not between them. It is, furthermore, testable, requiring only the excavation of Aleutian Island assemblages dating from 4000 B.C.

Not necessarily accounted for in this model are the early people of Anangula Island, whose occupation dates from around 6000 B.C. (Laughlin 1967). One might well hypothesize that they represent ancestors of the earliest Aleuts, hence ancestors of people of the T. Alder phase as well as of the earliest Aleuts represented at Chaluka midden on Umnak Island. There is, however, no direct artifactual evidence bearing on this; such a hypothesis would be based only on the fact that the Anangula people were in the area later occupied by Aleuts, thus on considerably less artifactual evidence than the hypothesis of a relationship between people of the T. Alder phase and Krugloï Point. In the absence of a systematic means to relate the Anangula finds to the archaeology of southwestern Alaska they will be considered no further here (see Aigner, Laughlin, and Black 1971; Dumond 1971).

And still not accounted for is that common ancestor of both Eskimos and Aleuts, an ancestor that their linguistic relationship as well as their shared Mongolid physical characteristics suggest should eventually be forthcoming. The present evidence, at any rate, suggests that this ancestor will not be found on the Alaska Peninsula.

Having developed the present framework—based partly on parameters of similarity between archaeological collections and partly on heuristic (that is, hocus-pocus) considerations—it seems reasonable to add that it accords with the late Morris Swadesh's conclusion that whereas the Eskaleutian languages of the New World and the Chukotan languages of eastern Siberia were related, the depth of the cleavage between these two stocks was approximately the same as that between Eskimoan and Aleutian (Swadesh 1962). If this is the case (and if Chukotan indeed remains identified as an Eskaleutian relative) it suggests that the actual separation of ancestral Aleuts and ancestral Eskimos occurred no later than did that between them and their Chukotan relatives.

Furthermore, and still more speculatively, the framework approaches another view of Swadesh, who in response to a draft of an earlier paper (Dumond 1965) indicated that his preliminary lexicostatistical studies suggested the Wakaskan Languages of coastal British Columbia to be related to Chukotan and Eskaleutian in about the same degree as those two languages are related to one another (Swadesh, personal communication 1964; compare Swadesh 1960, 1964, 1968). One may wonder if various lines of research will lead to the notion of a single early people who once inhabited the coast of the north Pacific—or its nearest habitable hinterland—as far southeast as the present southern boundary of Canada.
Summation

The hypotheses that have been presented above regarding contacts between peoples of the two sides of the Alaska Peninsula and elsewhere in Alaska, result in the model of relationships diagrammed in Fig. 11.

Briefly, the model suggest that a proto-Aleut-speaking stock of coastal-oriented hunters, presumably Arctic Mongoloid in physical type, had been located along the Pacific coastal arc formed by the Alaska Peninsula and the Aleutian Islands since 4000 B.C. By about 3000 B.C., there was local specialization in material culture, and those in the east took up the polishing of slate. By 1000 B.C. and after, there was considerable local diversity throughout that arc (see, for instance, D.W. Clark 1970: 89ff.; G.H. Clark 1968: 103ff.; McCartney 1969), with the inhabitants who lived the farthest west in the Aleutians exhibiting the greatest conservatism.

Around 2000 B.C., ancestral Eskimoans had arrived on the Alaska Peninsula from the north, where they had apparently already resided for some centuries. Adapting to life on the open coast only after 1000 B.C., they began a push southward toward the Pacific, where they were present as an acculturating influence in the first millennium A.D. Open contact across the Peninsula resulted after A.D. 1000, with the final Eskimization of the Pacific coast.
Fig. 11. Cultural relationships in southwestern Alaska.
APPENDIX

TAKLI ALDER AND KRUGLOI POINT: A COMPARISON

The comparison here of the T. Alder assemblage and material from Krugloi Point, located on Agattu Island in the Near Island group of the far western Aleutians, is largely drawn from an earlier paper (Dunmore 1970) published in a collection not always easily available. Since that paper was written, some additional specimens from Shemya, also in the Near Islands, have been examined, augmenting but not modifying the views expressed. Locations mentioned are given in Fig. 12.

As indicated in the descriptive section of the foregoing report, the T. Alder assemblage consists of 490 implements, of which 386 represent whole or fragmentary implements flaked from stone, 76 are other less formalized stone implements, and only 28 are of bone. The Krugloi Point collection, located at the Museum of Anthropology, University of Michigan, consists of 810 excavated specimens, including 384 implements of chipped stone, 289 of bone and tooth, and the remainder of pecked stone; in spite of the relatively large total count of organic implements, distinctive items are relatively few in number.

The Krugloi Point collection was studied at first hand in 1967, and selected implements were borrowed for further use and illustration. Although all implements of the collection were examined, time did not permit a reclassification of the entire collection to match the classification applied to material of the T. Alder phase. Rather, the categories used by Spaulding (1962) in his description of the collection were adhered to as much as possible, and were applied to the Alder collection. With classifiable and relatively distinctive implements of materials other than chipped stone being few in both assemblages, major reliance here is placed upon the products of the chipped stone industries.

**Implements of Chipped Stone**

Inventories of the collections by broad categories are set out in Table 1. Some similarities in proportions are immediately evident. The ratios of unifaces to bifaces are not significantly different at the 5% level ($X^2 = 2.18; 1$ d.f.). The proportions of lance and dart blades to other bifaces are also not significantly different at the 5% level ($X^2 = .71; 1$ d.f.). The proportions of ovoid, untanged knives to other bifaces are also high in both collections, although the proportions in this case are significantly different at the 5% level ($X^2 = 21.83; 1$ d.f.).
Fig. 12. The Aleutian Islands and the Alaska Peninsula (from Dumond 1970).

Fig. 13. Chipped stone dart blades and fragments of bone dart heads (from Dumond 1970). a-d, dart blades: a, b, Krugloj Point; c, d, T. Alder. e-f, portions of dart heads with open blade socket: e, Krugloj Point; f, T. Alder.
### Table 1

**MAJOR CATEGORIES OF CHIPPED STONE IMPLEMENTS**

<table>
<thead>
<tr>
<th></th>
<th>Krugloï Point</th>
<th></th>
<th>T. Alder</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>UNIFACE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>transverse scraper</td>
<td>58</td>
<td>15</td>
<td>10</td>
<td>3</td>
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<tr>
<td>lateral scraper</td>
<td>22</td>
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<td>24</td>
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<tr>
<td>graver</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>other (misc. scraper classes and unclassified uniface)</td>
<td>70</td>
<td>18</td>
<td>26</td>
<td>7</td>
</tr>
<tr>
<td>total uniface</td>
<td>153</td>
<td>40%</td>
<td>133</td>
<td>35%</td>
</tr>
<tr>
<td>BIFACE</td>
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<td></td>
</tr>
<tr>
<td>ovoid, untanged knife</td>
<td>133</td>
<td>34</td>
<td>91</td>
<td>23</td>
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</tr>
<tr>
<td>lance and dart blade</td>
<td>31</td>
<td>8</td>
<td>42</td>
<td>11</td>
</tr>
<tr>
<td>other (drill, adze, chisel, and unclassified biface)</td>
<td>53</td>
<td>14</td>
<td>82</td>
<td>21</td>
</tr>
<tr>
<td>total biface</td>
<td>231</td>
<td>60%</td>
<td>253</td>
<td>65%</td>
</tr>
<tr>
<td>total artifacts</td>
<td>384</td>
<td>100%</td>
<td>386</td>
<td>100%</td>
</tr>
</tbody>
</table>

On the other hand, some dissimilarity in proportions is also evident, especially in the scraper categories. The *transverse scraper* class (Spaulding 1962: 22) includes scrapers made on flakes in which the bulb of percussion appears on one of the long edges, rather than on a narrow side as in the case of a true blade; such flakes will be referred to here as *side-struck flakes*. Lateral scrapers are scrapers made on flakes in which the bulb of percussion is not located on one of the long sides. It is clear from the table that flakes of the side-struck type—integral to the transverse scraper category—predominate in scrapers from Krugloï Point. Indeed, the form of numerous well-retouched bifaces of the Krugloï Point assemblage suggests that side-struck flakes are basic to its entire technology. The T. Alder collection does not indicate a comparable popularity of this technique of detaching flakes, although similar flakes do appear as the basis of its small group of transverse scrapers.

But it is not on simple proportions of gross categories that comparisons of the chipped stone implements rest. The category ovoid *untangled knife*, large in both collections, includes "more or less ovate knife-like artifacts of various sizes and degrees of finish" (Spaulding 1962: 25). Published details of the Krugloï Point collections are not
such as to permit an exhaustive metrical comparison with T. Alder implements, but striking qualitative similarities are evident (Fig. 14, a-d); this is true even though a substantial proportion of the Kruglooi Point implements appear to have been made on side-struck flakes, while most of those from T. Alder do not. Were the raw materials represented in the two collections not different (Kruglooi Point, greenstone; T. Alder, basalt and andesite), virtually any artifact of this category would pass in either collection. This is especially noteworthy, since it is exactly for the presence of these very plentiful untanged knives and a corresponding absence of tanged knife forms, that Agattu has been said to stand apart archaeologically from other areas of the Aleutians (Hrdlicka 1945: 441; Spaulding 1962: 44).

Equally specific are similarities between flaked projectile blades. Of these, those Kruglooi Point artifacts termed lance points by Spaulding (1962: 27; see also Hrdlicka 1945: Fig. 19) differ from comparable items of the T. Alder collection mainly in their tendency toward serrated edges (Fig. 14, e, f). Even greater similarity is evident between shouldered dart points with a relatively flat, short, tapering stem (Fig. 14, g, h; see also Fig. 3, p-r).

Perhaps the most strikingly specific of all similarities is a morphological feature not included in the original description of the Kruglooi Point material (Spaulding 1962), but which was noticed when the collection was examined in 1967. Both assemblages include a class of dart point the comparatively long stem of which has been flattened on one side, producing a somewhat triangular cross-section; the stem's flat side has been distinctly heveled at the butt (Fig. 13, a-d; see also Fig. 3, f-j). This point of similarity is taken to outweigh some variation in general outline form among the same points (with the Kruglooi Point implements manifesting squarer shoulders and frequent serrations) and in material (Kruglooi Point, greenstone; T. Alder, cryptocrystalline quartz and dense igneous rock). And, interestingly, the proportion of dart blades manifesting this feature is not significantly different in the two collections (Kruglooi Point, 14 of 42; T. Alder, 8 of 31; X² = .17; 1 d.f.).

In summary, the case for similarity between the T. Alder and Kruglooi Point collections of chipped stone implements rests on a general resemblance in the proportions of major classes of implements, and on specific resemblance of knives, of dart blades, and of dart blade stems.

Other Implements of Stone

The Kruglooi Point collection includes numerous notched pebbles presumed to have served as sinkers, and four hemispherical lamps with pecked basins (Spaulding 1962: 30-33). Neither of these types is present
Fig. 14. Stone knives and projectile blades (from Dumond 1970). a-d, ovoid, untanged knives: a, c, Krugloi Point; b, d, T. Alder. e-f, lance blades: e, Krugloi Point; f, T. Alder. g-h, shouldered dart blades: g, Krugloi Point; h, T. Alder.
in the T. Alder collection, although lamps are represented in the presumably related Ocean Bay I complex from the Kodiak group of islands (D.W. Clark 1966). Neither collection includes polished knives or projectile blades; both include a few implements with restricted areas of grinding, such as adze blades.

The Alder assemblage in its turn includes a number of abrasive stones or whetstones, a class not reported at Krugloii Point, although the existence there of some stone implements with polished areas on them suggest that it should be present. The distinctive gouge-like adze blades of the Alder collection, with their curved cutting edges (Fig. 3, 1), are not matched exactly by the one or two examples in the Krugloii Point collection (Spaulding 1962, Plate 8, j) which have flat polished ventral surfaces, but are duplicated almost exactly by a specimen in a private collection from Shemya that was examined at the laboratory of Archaeological Research, Inc., in Costa Mesa, California, in November 1970; otherwise the Shemya collection contained only implements identical to those from Krugloii Point.

**Implements of Bone**

The proportionately low number of nine projectile heads in the Krugloii Point collection (of 289 bone specimens) is matched by nine projectile heads in the T. Alder collection (with only 28 specimens). Each collection includes a single example of the complete basal portion of a symmetrically- and bilaterally-barbed harpoon dart head with lateral line guards (Spaulding 1962, Plate 23, i; C. H. Clark 1968, Plate 7, n). Beyond this, similarity diminishes: four of the remaining fragmentary projectile heads of the T. Alder collection are barbed bilaterally, as against only one of the Krugloii Point specimens. Remaining specimens in both collections are unilaterally barbed (Krugloii Point, 7; T. Alder, 3).

Noteworthy on one bilaterally barbed tip fragment of the T. Alder collection is an open, cup-like blade socket, apparently designed for a projectile blade; this is matched by a similar open socket in a fragmentary piece from the Krugloii Point collection (Fig. 13, e, f). These sockets would receive one of the flat-sided stems of the projectile blades mentioned previously; the beveling of the butt of the stems should provide some security against the splitting of the bone head upon impact.

Both collections include bone wedges, awls, and what are often called "flakers." In view of the disparity in the sizes of the collections, it is not possible to push comparison further.
Space and Time

One must ask whether the collections, although drawn from sources approximately 1,300 air miles apart, simply partake of a common Aleutian Island-Alaska Peninsula culture. The answer draws upon a first-hand examination of collections from Agattu, Shemya, Amchitka, Umnak, Amaknak (off the coast of Unalaska), and Tigalda, and upon the few published materials available, especially those regarding the relatively complete sequences from the Chaluka midden on Umnak (Aigner 1966; Denniston 1966; Laughlin and March 1956) and from sites on Amchitka (Archaeological Research, Inc. 1970).

Spaulding (1962: 34) has pointed out the relative poverty of the Krugloj Point bone sample in the lack of leisters, bird darts, toggle harpoons, and specialized sea-mammal dart heads--lacks not common elsewhere in the Aleutians. But the bone dart heads that do appear in the Krugloj Point and T. Alder collections are of types familiar in the intervening area, as are open sockets for projectile blades (e.g., Aigner 1966; Archaeological Research, Inc. 1970, Fig. 89, a; Hrdlicka 1945: 459).

The case is different with implements of chipped stone. As indicated above, the Near Islands have been specifically reported to diverge from other Aleutian areas in respect to these, particularly in the frequency of large knives (Hrdlicka 1945: 312, 441). For although leaf-shaped bifaces appear in small numbers elsewhere in the Aleutians, nowhere do they approach the frequencies given in Table 1. Further, the Near Islands are set apart from the rest of the Aleutian zone by the presence of projectile blades with stems of triangular cross-section and beveled butts; these implements, aside from those in the T. Alder and Krugloj Point collections, I have encountered unmistakably only among materials from MacDonald Cove on Agattu itself (in the United States National Museum), and from Shemya, another of the Near Islands (in private collections examined at the University of Alaska in 1967, and in the laboratory of Archaeological Research, Inc., in 1970).

The ratio of bifaces to unifaces in both the T. Alder and Krugloj Point collections differs drastically from that reported for the materials from Chaluka, where the proportion of bifaces varies through time from an early low of 21% to a high of 52% (Denniston 1966: 92). These ratios for T. Alder and Krugloj Point were calculated and entered in my Table 1 (taken from Dumond 1970) because the high proportion of unifaces in early Chaluka levels has been used to support the derivation of that industry from the entirely unifacial industry represented at Anangula Island (e.g., Laughlin 1970). That this high frequency of unifaces at Chaluka may be the result of some factor other than descent from people of Anangula (some 4,000 years earlier) is now, however, suggested
by the collections only recently described from Amchitka (whose inhabitants should also be descended from Anangula people, if those of Chaluka were), in which the proportion of bifaces exceeds even that known from Krugloii Point and the T. Alder phase (Archaeological Research, Inc. 1970: 343-5). Hence this dimension is probably of less importance in distinguishing the T. Alder and Krugloii Point collections from other Aleutian assemblages than it once seemed. With a common high ratio of bifaces to unifaces, however, the T. Alder-Krugloii similarity with the Amchitka assemblage ceases.

Clearly, not all implements from T. Alder are identical to all implements from Krugloii Point. Thus the two collections fall short of what I have termed (Dumond 1965: 1238) the "site-unit similarity" from which a linguistic connection may be inferred. But some parameters of similarity should be evident from the foregoing discussion. And evidently the two chipped stone collections tend to diverge from assemblages known from the intervening islands in precisely those ways in which they are the most similar to each other.

The explanation for this situation would be relatively simple, in spite of the distance separating the two sites, if both of the collections could be shown to proceed from some single prehistoric time not represented by the intervening sample. This is not the case. It is clear from two directly applicable radiocarbon determinations and from all relevant stratigraphic and comparative cultural evidence that the T. Alder phase dates between 3000 and 4000 B.C., a time not represented by any dated Aleutian materials. On the other hand, the pair of radiocarbon determinations relevant to the Krugloii Point site strongly suggest that collection to date between 600 B.C. and 600 A.D. (Spaulding 1962: 12f.); it must, therefore, be 3,000 years younger than the T. Alder collection, and it must be approximately contemporary with collections known from elsewhere in the Aleutians--specifically, with those from Umnak (Denniston 1966: 111) and from Amchitka (Archaeological Research, Inc. 1970).

In spite of the extreme divergence in time between the collection from Krugloii Point and the T. Alder phase, the similarities adduced here are taken to be the most systematic set of such resemblances that have been put forward between relatively early assemblages from the area of Eskimoan speech on the one hand, and of Aleutian speech on the other. And although the two assemblages fall short of identity, it seems reasonable to wonder whether the resemblance may not point to the existence of a set of site-unit similarities as yet undiscovered, particularly when the far-outlying Near Islands form such a happy cul-de-sac for the nurture of cultural survivals.

Thus although the similarities across time and space will clearly not support a final conclusion of relationship, they should support a hypothesis presented for future testing.
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