

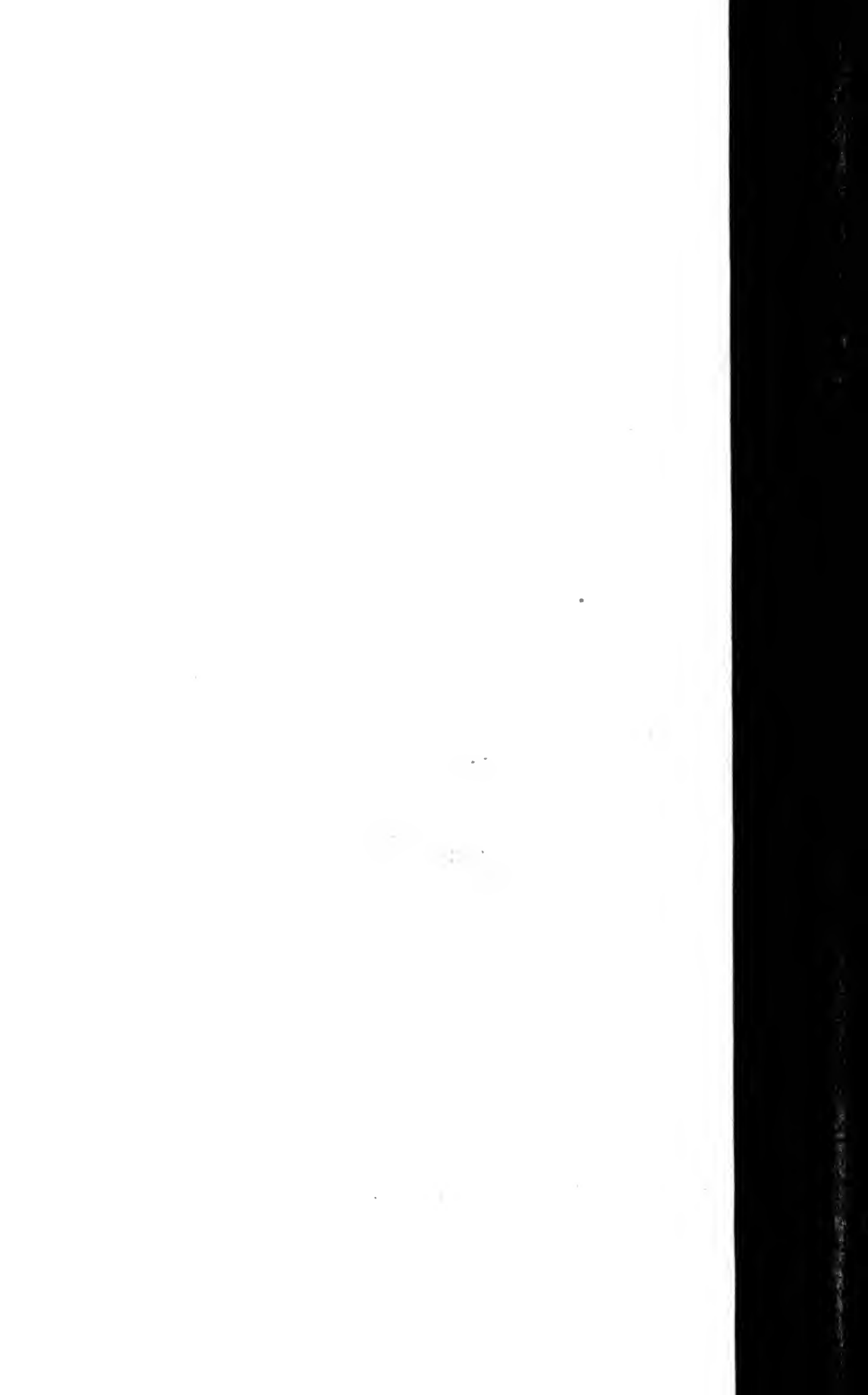
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## Anthropology

NEW SERIES, NO. 18

### Historic Pottery of the Kotzebue Sound Iñupiat

Charles V. Lucier

James W. VanStone

July 31, 1992

Publication 1436

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## Table of Contents

ABSTRACT .....	1
INTRODUCTION .....	1
KANGIGMIUT POTTERY MANUFACTURE AND USE .....	3
CONTEMPORARY ACCOUNTS OF POTTERY MANUFACTURE .....	6
LATE PREHISTORIC AND HISTORIC KOTZEBUE SOUND POTTERY IN AN ARCHAEOLOGI- CAL CONTEXT .....	10
REASSESSING KOTZEBUE SOUND POTTERY MARKINGS .....	13
SUMMARY AND CONCLUSIONS .....	14
ACKNOWLEDGMENTS .....	15
LITERATURE CITED .....	15

## List of Illustrations

1. Map of west-central Alaska .....	2
2. Map of Kotzebue Sound, Alaska .....	3
3. Pottery-marking baton, pottery smoother ..	17
4. Clay impressions of pottery-marking ba- ton .....	18
5. Potsherd, clay impression from Deering house .....	18
6. Potsherd, clay impression from Deering house .....	19
7. Pottery vessel from Cape Krusenstern ..	19
8. Clay impression from wall of Cape Kru- senstern pottery vessel .....	20
9. Clay impression showing rim from wall of Cape Krusenstern pottery vessel .....	20
10. Potsherd, clay impression from KTZ-111 ..	21
11. Potsherd from KTZ-149 .....	21
12. Potsherd from KTZ-149 with single-row clay impression .....	22
13. Clay impression of basal potsherd from KTZ-017 .....	22
14. Potsherd from KTZ-138 .....	23
15. Clay impression of potsherd from KTZ- 138 .....	23
16. Clay impression of potsherd from KTZ- 145 .....	24
17. Potsherds from vessel recovered at Aklaq site .....	25
18. Clay impression of potsherd from Aklaq site .....	25
19. Clay impression of potsherd from Cloud Lake village site .....	26
20. Print faces of pottery-marking tools .....	26





# Historic Pottery of the Kotzebue Sound Iñupiat

Charles V. Lucier and James W. VanStone

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## Abstract

A firsthand description of pottery making by the Kangigmiut of inner Kotzebue Sound, and the manufacture by an informant of a dentate-row pottery baton, serve as a point of departure for examining ethnographic and archaeological data related to the manufacture of pottery in the region during the historic period. The use of modeling clay impressions of marked sherds from historic sites makes possible a detailed discussion and reassessment of marking during a period when the ancient technology of pottery making was about to disappear.

## Introduction

The tradition of clay pottery manufacture is old among the Chukchi-Bering seas Iñupiat. Nowhere throughout this vast area is the prehistoric pottery record more complete than in the Kotzebue Sound region, thanks primarily to the work of Giddings and Anderson (1986) and the earlier research of Giddings (1952). Their definitive studies provided data on prehistoric Eskimo and proto-Eskimo house, camp, and other sites on sequential old beach lines, primarily at Cape Krusenstern on northern Kotzebue Sound (figs. 1, 2) but also elsewhere in the Sound region, and demonstrated a remarkably early presence of fired clay pots.

The earliest radiocarbon-dated pottery in the Kotzebue Sound region was obtained from a Choris period site on Choris Peninsula at the mouth of Eschscholtz Bay and yielded a date of  $2646 \pm 177$  B.P. (696 B.C.) (fig. 2). The sherds from this site were thin, well fired, fiber tempered, and marked on the surface with stamped striations. The vessels apparently had conical or rounded bottoms (Giddings, 1957, pp. 123-124, fig. 3; Giddings and Anderson, 1986, pp. 192-194). That Choris people probably produced pottery well before 700 B.C. is evident from the good quality of the sherds, indicating prior development.

Check-stamped pottery identified as Norton was found on Beach 38 at Cape Krusenstern. Apparently the dating of these sherds rests on their similarity to sherds found at Kugzruk Island sites on

Lopp Lagoon, near Cape Prince of Wales, reported to date from the 500s to 300s B.C. (Giddings and Anderson, 1986, p. 30, fig. 19). The succeeding Ipiutak occupation at Cape Krusenstern dates from about A.D. 6 to 750 (Giddings and Anderson 1986, p. 30, fig. 19). Neither here nor anywhere else that Ipiutak peoples are known to have lived is there convincing evidence for the use of pottery. It is interesting, however, that two sherds, one check stamped and the other linear stamped, were recovered from the Norton levels at Onion Portage. These sherds date from A.D. 400 to 600, dates that are contemporaneous with Ipiutak on the coast (Anderson, 1988, pp. 113, 116). This indicates that although Ipiutak people were apparently not using pottery, others within the same cultural tradition were doing so in the adjacent riverine interior.

Beginning with the Birnirk House 32 at Cape Krusenstern, dated about A.D. 770 (Giddings and Anderson, 1986, p. 30, fig. 19), pottery reappears on Kotzebue Sound in the thick-walled ware of the Northern Maritime Tradition, and this ware continues through early Western Thule (A.D. 880-1180). Henceforth, there is continuous pottery use, and although Anderson included these later phases of Eskimo pottery development under the Northern Maritime Tradition label, he may not have meant to equate all pottery made around the Sound from the A.D. 1400s onward with pottery of similar age found at Point Hope, Cape Prince of Wales, and Point Barrow.

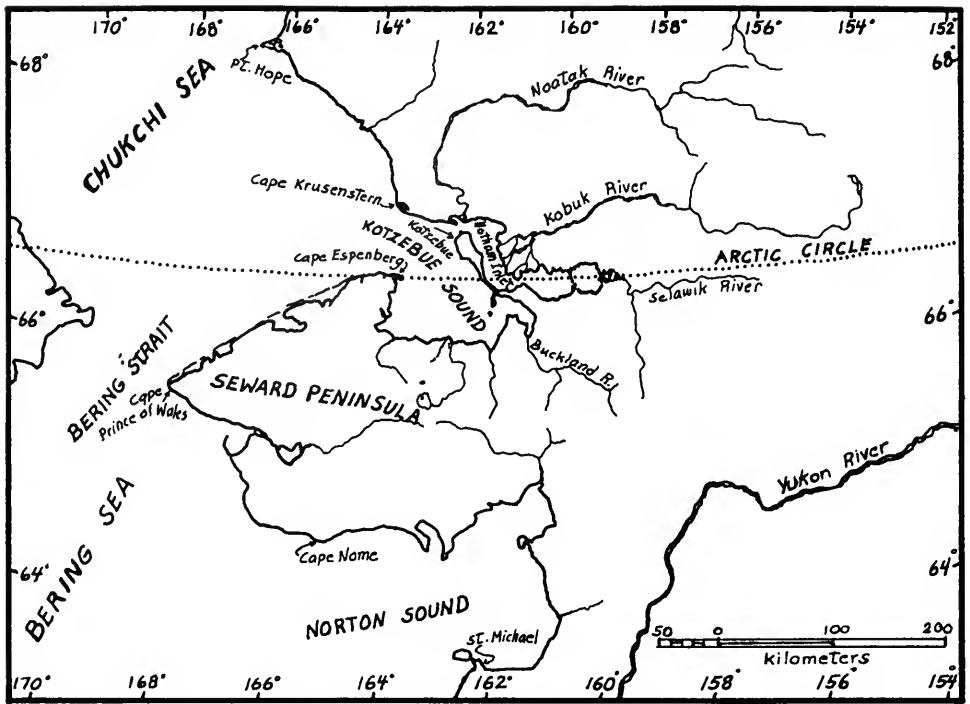


FIG. 1. Map of west-central Alaska.

Inner Kotzebue Sound and tributary rivers pottery developed differently from wares at locales where the Northern Maritime Tradition prevailed. Giddings (1952, pp. 94–95) described distinctive, variably marked, and well-made pots, dated by tree ring chronology to A.D. 1200, from the Ahteut site on the Kobuk River. Pottery from the next-later Ekseavik site (A.D. 1400) was similar to that from Ahteut, but sherds from the coastal Old Kotzebue site (also dated to A.D. 1400), although marked like those from Ekseavik, were coarser. Pottery from the more recent Intermediate Kotzebue site (A.D. 1550) was also of poor quality when compared to Ahteut and Ekseavik.

From Ahteut through Intermediate Kotzebue, a 300-year span, most or perhaps all cooking pots had rounded bottoms. At Giddings's most recent site, Ambler Island (A.D. 1730–1760) on the upper Kobuk River, vessels had either flat or slightly rounded bottoms, and the ware "appears to have been more varied in form and harder-fired than that of historic times" (Giddings, 1952, p. 49).

In the 1940s, Giddings (1952, p. 93) found no Eskimos on the Kobuk River who had firsthand remembrances of pottery making. He quoted Stoney (1900, p. 40), who observed that in 1885 Noatak River natives were relying on imported metal pots or clay vessels imported from the Se-

lawik River. Giddings did not address the possibility that any of the pottery excavated from his Kobuk River sites may have been traded from outside the Kobuk River drainage. Whether or not all Kobuk River pottery was locally produced may be less important than its clear line of development apart from pottery of the Northern Maritime Tradition, despite coastal influences from no later than A.D. 1250 through the 1700s. Future excavation of late prehistoric and historic sites on the Kobuk River may eventually reveal types of pottery that existed there in the late 18th and early 19th centuries and whether these were of local origin or imported.

It is not surprising that Giddings's Kobuk River informants had not personally observed the making of pottery vessels because it appears certain that Kotzebue Sound area potters ceased production of their wares no earlier than the 1870s nor later than the 1880s, when imported metal pots were readily available.

Although pottery making in Kotzebue Sound ended well before the era of professional anthropological inquiry, Lucier (1950–1952) obtained detailed information on pottery manufacture and use among the Kangigmiut of the Buckland River region in the eastern Sound in 1950–1951. There are also several useful, if incomplete, contempo-

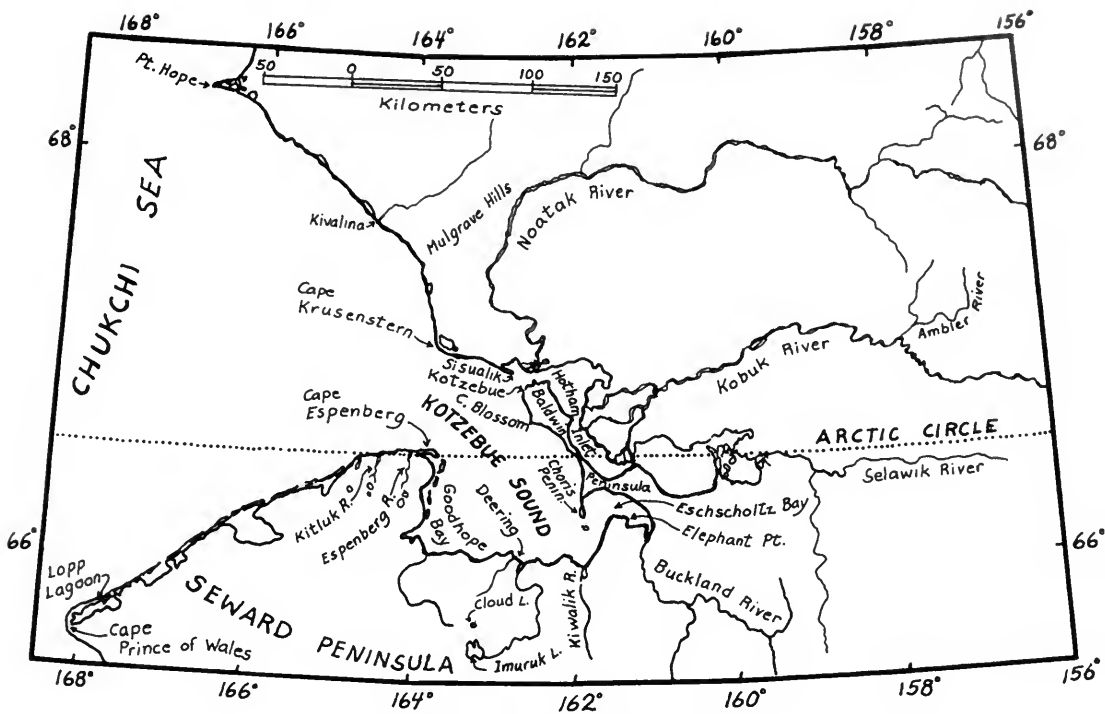


FIG. 2. Map of Kotzebue Sound, Alaska.

rary accounts of pottery making in the Kotzebue Sound–Norton Sound regions, and additional information has resulted from recent archaeological surveys and excavations on far southwestern Kotzebue Sound. In this paper, relevant ethnographic and archaeological data are examined in order to present as detailed a picture as possible of the technical and social aspects of pottery making and use in the Kotzebue Sound region early in the historic period, when this ancient technology was about to disappear.

### Kangigmiut Pottery Manufacture and Use

The attainments of prehistoric and historic craftsmen and -women and the persistence of particular crafts such as clay pottery manufacture clearly indicate the practical orientation of Kotzebue Sound Iñupiat. The Iñupiat craftsman adhered to traditional methodology but won prestige and profit by small but significant innovations. Women's products, like pottery, exhibited shifting styles as individual potters expressed themselves in old inherited forms but enhanced the appear-

ance of their vessels by application of different surface and rim markings. It is likely that some potters took as much pride in the shaping and surface treatment of clay pots as they did in the more intricate manufacture of skin clothing. Iñupiat pottery, however, given its utilitarian purpose, was "decorated"<sup>1</sup> simply or not at all. Among Kangigmiut on the Buckland River at least, pottery was commonly produced for export. Therefore, maintenance of quality and concern for the needs of users must have characterized the work of the better potters. Iñupiat pottery forms are generally more persistent than are the kinds of pot markings. The production of one or more styles

<sup>1</sup> We are reluctant to use "decoration" as a term for the incising, indenting, or wiping of vessel surfaces before firing. Our avoidance of this term arises from the certainty that some markings, such as those left by haired skins, relate largely to the basic pot-making process and other marks and rim form variations are or may be functional elements in construction, firing, and use apart from having aesthetic appeal. We are unable to sort out these functions with any degree of confidence, nor is it possible to rule out accidental or incidental origin of some seemingly decorative elements, for instance, grass mat impressions, finger and thumb impressions, etc. Therefore, we have settled on "markings" as a less restrictive term than "decoration."

of markings probably represents the period of market popularity of the product or, in some instances, the preferences of a particular potter and her pot-making heirs.

Historically, Iñupiat of northwest Alaska outside Kotzebue Sound and its hinterlands made rather crude clay vessels, which often were plain or scantily marked; sometimes they imported better constructed, marked vessels from the Buckland and Selawik rivers. Insofar as is known, those who made well-fired, marked pots did not import thicker, poorly fired vessels. This apparent one-way historic trade in pottery vessels was sustained by the relative superiority and appeal of the better fired marked ware from inner Kotzebue Sound.

Sannu (Andrew Sunno, born 1857–1859) described Buckland River pottery making to Lucier at Elephant Point in 1951 (Lucier, 1950–1952). He remembered watching women make clay pots when he was a small child, perhaps 5 years old, around 1862–1864. Sannu's is the only firsthand account of pottery making on the Buckland River, and there are none as detailed from anywhere else around Kotzebue Sound.

Buckland people used a kind of slick clay that they got on the other, the east side of the river, where it runs kind of straight. They got the clay at a little creek, a place called *Qiiichu* ['clay for pots']. It's a ways downstream from a creek they call *Qiuqtayuaaq*; at its mouth they got fine sand that they used to mix with their pot clay. Just upstream from the creek with fine sand is a bigger creek, *Qiuqtuaq* ['clipping hair']. The creek where they got sand, *Qiuqtayuaaq*, means 'smaller than *Qiuqtuaq*'.

To make a cooking pot, a woman would first lay out an ugruk [bearded seal, *Erignathus barbatus*] skin on the ground. Then she put a lump of this clay on it. Then she put that fine sand in with the clay and mixed it together with her hands. If the clay was too dry, she added water to it. She kneaded the clay and sand like you would bread dough. She'd stop now and then and poke a finger in it. That way, she could tell if she'd mixed in enough clay or water. Then she took some ptarmigan [*Lagopus lagopus*] breast feathers, but no down, and mixed these feathers in with the clay and sand, to make it strong.

She started building up the pot walls piece-by-piece. She used her bare hands and fingers to shape it. She made the walls come out a little from where the bottom would be. The finished pot was, oh, maybe 16 or 18 inches [41.0–45.0 cm] high and about eight or nine inches [20.5–23.0 cm] wide at its mouth. The walls were thin [at this point Sannu showed Lucier his glazed stoneware coffee mug, whose walls were about  $\frac{3}{16}$  inch (0.5 cm) thick, as an example of the Buckland clay pot's approximate thickness].

The woman worked the wet clay to make the pot's walls even and smooth. She worked with both hands, one on the outside and the other inside, behind the other. She rubbed and pressed the clay on the outside with one

hand, and she held a smoother [Iñupiaq word not obtained] and patted and smoothed it at the same time inside, opposite her other hand. The smoother tool had a carved wood part [disc] covered with sealskin with hair side out. It had a leather backstrap [fig. 3, bottom; Oswalt, 1953, p. 14, fig. 2]. She put her fingers and hand under the strap, and the smoother fit real good in the palm of her hand. She smoothed the walls inside and outside until she was satisfied with the job. She worked the clay even after it was dried a little.

Then she took this club [fig. 3, top; Oswalt, 1953, p. 14, fig. 2] and used it to make marks on the outside of the pot walls. [Sannu mimed the potter's action, striking the imagined pot wall with one of the toothed edges of the baton.] The wooden club was about so long, about 12 inches [30.0 cm]. It had a handle and three rows of teeth. Each tooth was pointed, all the same size. People were very particular about tools in the old days. That was how Buckland people decorated their clay pots.

When the pot's walls were all done nice, and the woman was satisfied, she let it dry partly in the air and sun. Then she built a little fire inside it, to dry it some more. When the walls cooled she made a bottom for it from the same mix of clay and sand and breast feathers. The pot bottom was thicker than the sides. She pressed around the joint between the bottom and pot walls to make the parts stick together.

Then she laid the pot on the ground, sideways. She built a real hot wood fire around it. The pot turned red in the fire. Now and then, she'd turn the pot on its side, so that it would get baked evenly all over.

After the pot baked long enough, she let it cool until it was only warm. Then she rubbed seal oil all over it, inside and outside, but mostly on the inside, to make it hold water. The pot was all ready to use.

Cooking pots were about eight or nine inches [20.0–23.0 cm] wide at the mouth, and about 16 to 18 inches [41.0–46.0 cm] high. Kangigmiut cooking pots were all made about the same size.

Sannu also described how a cooking pot was used. "For boiling, a woman set the clay cooking pot on a grass pad at the fire's edge. She filled it with enough water [and would add meat or fish]. The water would come to a boil quickly. She'd move the pot as little as possible. When she wasn't cooking, a woman would bail water out of the pot, and set it upside down to drain, away from the fire."

The Kangigmiut fall–winter house, where people ordinarily lived continuously for 3–4 months, had a center hearth that was only slightly raised above the plank floor. People brought special fire-resistant rocks from outside the village to ring their hearths. A pot, when in use, was set inside the rock border of the hearth, and, when not in use, it was placed bottom-up at the floor edge or stored safely out of the way elsewhere. The Kangigmiut pot of Sannu's youth had a slightly double-curved side

profile, a “situla” form. Usually the base was somewhat smaller in circumference than the walls, which were barrel shaped with a slightly constricted neck and flared rim.

Although Sannu said little about the handling of cooking pots, he did say that Buckland vessels had no holes for suspension and were made to sit on the ground. The flared rim of a pot was said to be advantageous because it provided a good finger hold when the vessel had to be lifted around the hearth or carried away. Despite Sannu’s statement that Buckland River pots were all much the same, we assume that there were variations in form and size.

Sannu and others agreed that the most common method of cooking large portions of food at Buckland was by stone boiling in large bentwood tubs that were made of white spruce (*Picea glauca*). These tubs had vertical, bent sides and tightly fitted, leakproof, flat bottoms (Nelson, 1983, pl. XXXII, opp. p. 82). Boiling in clay pots was accomplished by radiation near fire either indoors or outdoors; boiling in bentwood tubs was done outdoors using fire-heated, beach-worn stones.

Sannu did not say how pottery vessels were transported in late fall and winter, but they must have been carefully wrapped and cushioned with haired skins or grass mats in transit to avoid breakage. If pots became cracked, they sometimes were repaired with sinew, baleen, or iron wire lashings strung through opposing holes drilled alongside the fault.

Following his discussion of pottery making with Lucier, Sannu asked his fellow Elephant Point resident, John Konalook (Qunaaluq), to carve a birchwood reproduction of an 1860s pottery-imprinting baton with three separated rows of four-sided pyramidal teeth (fig. 3, top). The lower of the two toothed rows that show in the photograph has 17 uniform-size teeth plus, on the right side, one additional slightly smaller tooth. The tooth count of the other row is 18, and the tooth count of the one row on the baton’s back side, not visible in the photograph, is probably 17 or 18. Unlike a broader, curved pottery baton recovered from the Old Kotzebue site (A.D. 1400) (Giddings, 1952, p. 95, pl. XIII, 9), the baton made by Qunaaluq was useful only for marking pots and not for shaping the basic vessel.

According to Sannu, the original tool was used with a striking motion, but at times it may well have been used in a rocking manner that would allow surer alignment and more studied spacing of the parallel, horizontal tooth-row impressions,

some of which are overlapping. Figure 4 shows both struck (upper rows) and rocked (bottom rows) impressions from this baton on a smooth convex surface of artificial clay. Both striking and rocking motions produce pyramidal tooth markings that decrease in size away from the center of impact along the tooth row. Although not all of an 18-tooth row will impress on a convex pot wall, whether struck or rocked, rocking allows more of the row to register. Tooth markings of uniform size, shape, and position are clearly an indication of the skill of the potter as well as a reflection of the relative smoothness and composition of the vessel wall. It should be emphasized that the equal-sided pyramidal form of the tooth row on Sannu’s baton is only one example of a number of single- or multi-row dentate forms that theoretically can be made by notching carved V-shaped ridges.

Judging from Jacobsen’s (Woldt, 1977, p. 155, fig. 55) illustration of four pottery tools collected in 1883 “from Kotzebue Sound,” it would appear that Sannu remembered less than the entire assemblage of tools used by 19th century Kangigmiut potters. There can be little doubt that Jacobsen’s collection of pottery tools came from either the Buckland or Selawik rivers because these were his principal stops in Kotzebue Sound, and he spent more time along the Buckland River than on the Selawik. Jacobsen (Woldt, 1977, p. 157) reportedly also traveled on the Kiwalik River, the inhabitants of which were also Kangigmiut, but the physical features and place names he mentioned strongly indicate a trans-Buckland River route to and from Selawik.

The set of four pottery tools illustrated by Jacobsen includes a small, back-handled, round or oval, hair-covered object identified as an “instrument for smoothing inside of pots.” This tool closely resembles and is surely the equivalent of a haired smoother made by Qunaaluq under Sannu’s direction (fig. 3, bottom). Also illustrated is an “instrument for smoothing outer surface of pots” that has a roughly carved, rather narrow, solid wood handle. The distal end appears to be wrapped in stiff-haired skin (sealskin?). Jacobsen’s collection also includes an “instrument for drawing designs on moist clay pots” that is a simple pointed stick of wood or other material. His “tool used in forming clay dishes,” possibly an altered seal limb bone, would perhaps have been used to form rims and indent clay surfaces. No scale is provided for any of these objects.

The absence of a pottery-marking baton in the Jacobsen collection may not be significant. The

seller may not have had one to offer or was not inclined to sell one, or one may have been collected but not illustrated. Pottery tool sets may, moreover, have been individualized according to the user's technical or stylistic demands and preferences. Most likely, Jacobsen's pottery tool set, although collected in 1883, dates from earlier in the century. Iñupiat commonly kept and treasured old family tools for generations.

## Contemporary Accounts of Pottery Manufacture

There are few published accounts of historic pottery making and use by Kotzebue Sound Iñupiat or, for that matter, other Alaskan Eskimos. E. W. Nelson, who came into Kotzebue Sound aboard the revenue steamer *Corwin* in the summer of 1881 near the end of his 1877–1881 stay in western Alaska, observed Eskimo cooking pots when he visited a large summer camp there, probably at Sisualik on the far north shore. Of these vessels Nelson (1983, p. 201) wrote: "In a summer camp at Hotham Inlet a number of pots were seen, varying in capacity from two to three gallons. Several of the larger ones had the tops scalloped and were slightly constricted in outline below the rim. On the sides they were ornamented with short, parallel, horizontal lines, beginning near the rim and extending to the bottom. . . ."

One of the vessels described above, which was sketched by Nelson (1983, p. 202, fig. 60), has the situla form described by Iñupiaq informants from the Buckland, Kobuk, and Selawik rivers. Its outer wall markings—evenly spaced, horizontal, scratched or impressed lines in vertical series—have been termed Seward Striated by Oswalt (1953, p. 13; 1955, p. 36).<sup>2</sup>

In the summer of 1911, Vilhjalmur Stefansson discussed 19th century pottery making with "Ilavinirk," who may have been from Kotzebue vil-

lage or elsewhere in Kotzebue Sound. Kotzebue is located in a transitional zone between the outer and inner Sound. Prehistorically and historically, Kotzebue Iñupiat have depended more on seal hunting than, for example, have Iñupiat of the Buckland and Kiwalik rivers in the inner Sound. Kotzebue villagers (Qikiqtaḡrunḡmiut) were active in intersocietal trade and ceremonies that in summer and winter involved people from outside Kotzebue Sound, including those from Cape Prince of Wales, Point Hope, and Siberian coastal villages. The historic pottery of Kotzebue Iñupiat was more like the heavy, poorly fired or unfired pottery of whaling and walrus-hunting Iñupiat than that of more inland-oriented peoples such as those on the Buckland and Selawik rivers.

Stefansson (1914) described aspects of "Kigirk-taruk" (Kotzebue village) pottery making as follows:

Ilav.[inirk] says pottery was always made by women. An expert woman could make five large pots in a day. Pots were made only on warm sun-shiny days. The clay used was from a place south of Kigirk-taruk; any fine sand might be used; ptarmigan feathers were the third ingredient. A little sand was added to the clay 'as salt is added to flour' and the dough of the three ingredients was worked as white cooks work bread. When properly mixed, one hand was thrust inside the dough and the pot shaped by beating the outside of the mass with a stick held in the other hand. When shaped, the pot was set beside a small fire and slowly dried, being turned a quarter round every little while. A pot would dry between morning and evening. These pots broke easily and spoiled in long spells of wet weather. When Ilav.[inirk] was young metal pots were readily obtainable; the reason for making pottery was the prohibition against metal kettles when hooking for fish was going on. The pots were never burned, nor even allowed to get very hot in drying (Stefansson, 1914, pp. 312–313).

Ilavinirk and another informant identified only as "B" noted "that the clay was mixed only with the finest dry sand and ptarmigan feathers. Here [in sherds from an archaeological site] broken rock seems to have been used, and no signs are seen of feathers, which they say should be in evidence" (Stefansson, 1914, p. 313).

It is not certain that Stefansson's informants were describing pots typical of the 19th century Kotzebue area. The use of dried, unfired, "throw-away" pots when people were hooking fish may have reflected not only a prohibition against the use of metal kettles but also an earlier taboo against cooking by rock boiling in wooden tubs while hooking fish. "Hooking" at Kotzebue could refer to under-ice jigging for tomcod (Arctic cod, *Boreo-*

<sup>2</sup> Louis Choris (1822, pl. III, 2), a member of the Kotzebue expedition that visited and named the Sound in 1816, illustrated a complete, tall, tumbler-form pot with a narrow, flat base. This vessel's walls have evenly spaced, alternately staggered, vertical rows of horizontal lines, which are, perhaps, either stick drag marks or imprints of stick or ridged tool strikes. The image, drawn by Choris, lacks a scale or certain size reference. This vertical-row-marked pot, similar to those described by Nelson (1983, p. 202, fig. 60), is the earliest illustrated ceramic vessel from Kotzebue Sound.

*gadus saida*) just offshore from Kotzebue village. Another, perhaps better, possibility is that the pots were intended for use at fish camps on Hotham Inlet on the eastern, inner shore of Baldwin Peninsula. Here peoples from around the northeastern, eastern, and southeastern Sound camped in cold seasons to jig for the large schooling *sii* or sheefish (*Stenodus leucichthys*).

The location of the clay used to make Kotzebue area pottery in the mid- to late 1800s would seem, from Stefansson's account, to have been near or at Cape Blossom, which is formed of alluvial deposits. The mere drying of the clay pots is unlike the firing procedures described by Sannu at Buckland. Drying without firing is, however, similar to the process described by Gubser (1965, p. 233) in the manufacture of vessels on the Colville River for occasional or short-term use. If some Kotzebue families commonly obtained pots from the far eastern Sound, the manufacture of poor quality pots described by Stefansson's informants may have been wholly or partly a response to cessation of production of the better quality fired pottery at Buckland and Selawik in the late 19th century.

Edward S. Curtis (1930) provided a brief description of pottery making in the lower Noatak River region. His informant in 1927 was presumably a member of the Napaaqtuġmiut society, cold season occupants of the lower forested Noatak River and thaw season dwellers on the adjacent coast from Cape Krusenstern northward to the Mulgrave Hills. Like Buckland River Kangiġmiut, Napaaqtuġmiut were seasonally migratory inland hunters, fisherfolk, and sea hunters, but, unlike Kangiġmiut, they scarcely used their river's estuary in spring through early summer. This delta and near-delta region was utilized by the Nuataaġmiut of the middle to upper Noatak, lower Kobuk peoples, and others. Curtis's informant could also have been a Qikiqtaġrunġmiut, the Kotzebue area society whose members were closely related to and, in the 19th century, lived near the Napaaqtuġmiut in fall-winter.

According to Curtis,

Another kind of pot was made of clay mixed with ptarmigan-feathers as a binder. The wet clay was first kneaded into a ball with the fingers, and then the feathers were mixed in. The mass was next rolled out and shaped inside a willow frame, but at this stage the prospective vessel was without a bottom. The clay cylinder was then set on edge around a small fire to dry and harden. Finally, the bottom of still wet clay was set in place and the whole thoroughly rubbed with seal-oil. After being soaked again in water, it was set in a fire to dry and bake (Curtis, 1930, p. 197).

Curtis's short account resembles the previously described Buckland procedures. One basic difference is the use of a "willow frame," probably a basket, to provide outside support for the moist, pliable vessel walls. In the lower Noatak area, as at Buckland, the pot's walls and bottom were formed separately and the bottomless pot was heated a little to harden it before the bottom was attached.

As previously noted, in 1940-1941 J. L. Giddings was unable to find informants who could provide a full description of pottery making either at Kotzebue or along the Kobuk River. About Kobuk area pottery he wrote as follows:

*Pottery-making.* Pottery included only flat-bottomed cooking pots with slightly flaring sides. These were sometimes decorated by parallel grooving around a small portion of the circumference, but were otherwise plain and strictly utilitarian. A pair of holes were provided for suspension. Pegliruk says that clay pots were rare in the Shungnak region until just before the Europeans arrived [in the mid-1880s], and were then largely procured in trade from downriver. Kahkik, on the other hand, knew of good clay deposits at the mouth of the Ambler River and in the Kiana area where women had habitually gone to make their utensils. A kind of blue clay was mixed with duck, or ptarmigan, feathers and a coarse river sand, kneaded well to mix, and then molded. The mixture was then molded in one piece, or patch-molded, by pressing the fingers and palms together from inside and out. The finished pot was scraped with a smooth stick and then painted with animal blood inside and out. It was first dried in the sun, and then placed on coals with liquid inside (Giddings, 1961, p. 143).

Giddings's sketchy information on lower and middle Kobuk River pottery manufacture in the 19th century is at least a beginning toward understanding historic pottery from that distinctive region of Kotzebue Sound. Because he described the pot modeling as being accomplished "by pressing the palms together from inside and out," perhaps the potter's bare hands worked instead of tools to form the "parallel grooving." This certainly differs from reported historic vessel wall treatment on the Buckland and Selawik rivers.

According to Giddings, historic Kobuk vessels were pierced for suspension, which differs from reported Buckland/Selawik practices but agrees with archaeological evidence from elsewhere on Kotzebue Sound. His account also indicates use of both one-lump and patch-modeling methods of vessel construction. The former method seems to have been used at Kotzebue, northward on the Noatak River, and at Kivalina, whereas the latter was used to the south on the Buckland and Selawik

ivers. Possibly individual potters used their own methods of vessel building regardless of locale. Giddings (1952, p. 94) had earlier published his 1940s notes on Kobuk River historic pottery. That account was briefer and did not cite specific informants or contain the unusual statement about the raw clay vessel having been fired “with liquid inside.”

Giddings’s notes from the Kobuk River and Lucier’s (1950–1952) Sisualik notes obtained from an upper Kobuk and upper Noatak River informant, Aluniq (Jenny Mitchell), suggest that historically both upper river peoples made little or no pottery. Pottery, particularly fired pottery, that is present in mid- to late 19th century sites in these two areas—and probably in adjacent Arctic Slope areas as well—must therefore largely, if not entirely, represent imports. It will be recalled that Giddings (1952, p. 93) referred to the long-standing absence of locally made pottery on the Kobuk River, and that when Stoney visited the upper Noatak River in 1883–1885, he reported that cooking was done in metal pots but “in their absence pots made of clay from the Selawik River are used” (Stoney, 1900, p. 40). It is possible to infer from these reports that Kobuk people obtained pottery from the neighboring Selawik River Siilvingmiut or other outsiders even earlier, and that the pottery-making tradition was weaker at Kobuk than at Selawik, or for that matter at Buckland, in the historic period.

It is difficult and sometimes impossible to know whether ethnographic accounts of pottery making refer to usual societal practices or only to a particular pot maker’s or extended family’s practices. It is unlikely that the traditional clay technologies among historic Kotzebue Sound Iñupiat will ever be much better known through ethnography because there are no clear firsthand descriptions of pot making from the Sound other than Sannu’s.

Although incompletely known, Kobuk River pottery methodologies and vessel forms in the 19th century appear to have been similar to those on the Buckland, lower Noatak, and Selawik rivers. The situla, flared-rim form with flat bottom occurred and may have prevailed in those three places and at Kotzebue as well.

As previously noted, the middle and upper Noatak River peoples, the Nuataaġmiut, whom several writers called “Nunamiut,” probably made either poor quality pottery or none in the 19th century. Hall (1970, p. 4) noted that Noatak people he contacted said their pottery had come from the

Buckland River, and he cautioned that “there is little agreement about Nunamiut pottery-making.” In any event, there is little evidence for the manufacture of fired pottery in the river drainages of the Arctic Slope in historic times. The abandonment of most of the North Slope by Iñupiat in the late 19th century meant that when literate outsiders came to northwest Alaska they encountered few inland Iñupiat and even fewer who were familiar with pottery.

The best evidence for 19th century pottery use in the river drainages of the Arctic Slope comes from an extensive Iñupiaq village site at Kinyiksukvik, 200 km west of Anaktuvuk Pass, excavated by Irving in 1954. At this multicomponent site he noted that the recent Eskimos left behind a nearly intact flat-bottomed pot about 18 inches (46.0 cm) high with slightly flaring convex sides and a surface decoration resembling a large dentate stamp. The pot, which cannot now be located, had been mended with iron wire, which, according to Irving, probably fixes the time of its abandonment between 1850 and 1910. It was found upended, standing on roof material of a small oval house. Caribou bones cut with a saw were found in the stratum correlated with the pot and later than the house under it (Irving, 1962, p. 79).

The discovery of this presumed dentate-stamp-marked vessel supports the statements of Hall’s and Lucier’s Noatak informants concerning the importation of pottery into the region, and it can be presumed that this mended vessel came part or all of the way overland from Kotzebue Sound. The vessel’s point of origin, given its apparent age and dentate-stamp markings, is most likely the Buckland River. Although its shape is incompletely described, its size matches Sannu’s size estimate for mid-19th century Kangigmiut pots, and it is taller, for example, than the vessels with scalloped rims and horizontal line markings described by Nelson (1983, p. 202) at Sisualik in northern Kotzebue Sound in 1881.

Also relevant to our understanding of 19th century pottery traditions on northern Seward Peninsula are two contemporary accounts of manufacturing procedures by north Bering Sea Iñupiat (or possibly Yuit), one at St. Michael on Norton Sound and the other at Cape Nome. Cultural ties and trade between peoples of these areas and those inland on Seward Peninsula and around Kotzebue Sound are important considerations for any study of pottery manufacture. Local, regional, and intersocietal communication and trade were vital to



all Alaskan Eskimo societies, a condition that has long existed. Certainly in historic times Iñupiat were inveterate traders and travelers.

Nelson (1983) described the making of pottery vessels at St. Michael in the late 1870s:

The process of making vessels from clay, as witnessed at St. Michael, is as follows: A quantity of tough, blue clay is moistened and kneaded thoroughly with the hands until it assumes plasticity; then short, tough blades of a species of marsh grass and a small quantity of fine, black, volcanic sand from the beach are mixed with it. A round, flat layer of the prepared clay is worked out to form the bottom of the vessel, and about the edge of this a wall is built up with a thin band of clay, carried around a number of times until the desired height is reached. The top is then smoothed, and is either left plain or slightly scalloped with the fingers. The sides of the vessel are usually left plain, but sometimes they are ornamented with a series of simple, incised lines made with a stick. Several vessels obtained at St. Michael have the sides curving slightly until near the top, where they are somewhat constricted and the rim is made slightly flaring.

After the shaping and the ornamentation of the vessel are completed, it is placed near the fire until it becomes dry; then a fire is built both on the inside and the outside, and it is baked for an hour or two with as great a heat as can be obtained (Nelson, 1983, p. 201).

Pottery manufacture at St. Michael in the late 19th century differed in some respects from the procedures at Buckland, although the finished products looked much the same. Although additives to the clay body included grass rather than feathers, the barrel or situla form with flat bottom, constricted neck, and flaring rim was common north of Norton Sound in the 19th century. The practice at St. Michael of building up the vessel continuously from bottom to top differed from the Buckland and lower Noatak procedure, which involved initial build-up of walls and later attachment of the bottom. Nelson described a spiral-coiling build-up process rather than the patchwork buildup used by Sannu's relatives on the Buckland River.

In 1905, G. B. Gordon visited some of the same Eskimo coastal settlements visited by Nelson 25 years earlier. At Cape Nome he obtained a description of pottery making from an unidentified informant's remembrances:

A quantity of clay, procured from certain localities on the tundra, was reduced to a smooth paste by mixing with walrus blood and kneading it with the hands. A quantity of sand from the beach was added, together with fine feathers from the breast of the ptarmigan. From this material the vessel was built up by means of the hands with the aid of a flat piece of wood shaped like a

paddle. Sometimes the exterior was finished smooth and either left plain or decorated with lines and dots by means of a pointed stick. Instead of a smooth finish, a pitted surface was sometimes produced by means of a roughly carved paddle or by wrapping the unbaked vessel in a piece of grass matting which left its impression. The finished product was then baked in a wood fire. Women, not men, were engaged in this industry (Gordon, 1906, pp. 83–84).

Gordon's pottery-making account resembles Sannu's and E. W. Nelson's descriptions from the Buckland River and St. Michael but differs somewhat in details. Gordon's account makes no reference to pottery firing procedures. Use of walrus blood as a clay additive at Cape Nome reflects the presence of walrus (*Odobenus rosmarus*) in this area and probably indicates a more maritime orientation in comparison to inner Norton and Kotzebue sounds. Line-dot marking of pot exteriors was widely distributed from Seward Peninsula south to Bristol Bay and inland along rivers flowing into the Bering Sea during the late prehistoric and historic periods (Oswalt, 1955, p. 37). Gordon's reference to a "pitted surface" produced with a "roughly carved paddle" may reflect use of a toothed baton like the one Bucklanders used to mark pots in the 1860s. It would be worthwhile to know whether the "roughly carved paddle" was so described by Gordon's Cape Nome informant or whether Gordon assumed the paddle to have been crudely made.

Gordon (1906, pl. XXIV, fig. 2) illustrated a "Pottery jar from the vicinity of Bering Strait" that, despite the vague provenience, was probably collected at Cape Nome, where he described 19th century use of a toothed pottery-marking tool. This vessel appears to have horizontally applied tooth-row marks (Oswalt, 1953, p. 13; 1955, p. 35). Despite uncertainties, therefore, tooth-row-marked pottery production in the 19th century seems to have occurred as far south as the northern shore of Norton Sound.

The most logical explanation for similarities in clay vessel technology, forms, and markings over a wide area is, of course, simple diffusion. Evidence may well point in one direction or another, but because Kotzebue Sound has seen pottery production for several thousand years, and the Bering Sea coast for as long, technical and stylistic relationships between these regions more often than not reflect a complexity that defies complete understanding. Nevertheless, contemporary accounts of pottery manufacture in areas adjacent to the Kotzebue Sound region, both north and

south, help clarify manufacturing procedures that are central to the focus of this paper.

To summarize the information on pottery markings derived from contemporary accounts of vessel manufacture in Kotzebue Sound and contiguous areas north and south, we have noted that pots marked with short, horizontal lines in vertical series (Seward Striated; Oswalt, 1955, p. 30) have been described most frequently. Also occurring are vessels with dentate-row (Deering Pyramid Paddled; Oswalt, 1955, p. 35) and line-dot (Yukon Line-Dot; Oswalt, 1955, p. 37) markings as well as basket impressions. In addition to being described in an ethnographic context, all four types are associated archaeologically with the late prehistoric and historic periods. Seward Striated and Yukon Line-Dot markings are widely distributed throughout coastal and interior northwest, southwest, and west central Alaska. The use of Deering Pyramid Paddled markings, on the other hand, appears to be confined to the Seward Peninsula and Kotzebue Sound areas. The known archaeological distribution of this type, however, is probably a consequence of the small number of excavated historic sites in the Bering Sea area. Basketry-impressed sherds from four historic sites on northern Seward Peninsula and one on Baldwin Peninsula will be described in the next section of this paper.

### Late Prehistoric and Historic Kotzebue Sound Pottery in an Archaeological Context

There are sites around Kotzebue Sound and inland on Seward Peninsula that contain late pottery with reportedly dentate-row or check-stamp markings. In this section, sherds from these sites are examined for the purpose of determining whether, in fact, they are marked in this manner.

Until recent years, the sherds from Larsen's (1951) excavation of a Deering house abandoned in 1902 provided the only identified examples of historic dentate-row-imprinted Iñupiaq pottery on or near Kotzebue Sound (Oswalt, 1952, p. 28; 1953, p. 13; 1955, pp. 35, 40). As previously noted, Oswalt named this form of marking Deering Pyramid Paddled. He considered it to be a modification of "the ordinary check-stamped pattern" and associated it with the pottery baton made by Qunaaluk at Elephant Point in 1951.

Examination of two sherds (UA 1.1950.1988

and 1990) from the Deering house, now in the University of Alaska Museum, indicates the presence of single dentate-row markings that were applied carefully in close horizontal series (figs. 5, 6). Modeling clay impressions taken from these sherds, shown in the illustrations, indicate that the deeper impressions are rectangular with the longer sides perpendicular to the row axis. Shallower penetrations of the teeth into the coarse matrix, however, tend to leave rectangular impressions, the longer sides of which are parallel to the row axis. These marks indicate that the teeth imprinting the Deering pot were cut, like those on the previously described Buckland pottery baton, from a V-shaped ridge. The impression facets perpendicular to the row axis usually are better defined than those parallel to the axis. This result is a function of tool/clay interaction and still suggests the use of a tool with a V-shaped ridge. The Deering house sherds have a noticeably "chunky" composition that has inevitably affected the marking process. In figure 5, bottom right, the clay impression is juxtaposed with a seven-tooth row on the sherd. The tooth row represented by the best impression (on UA 1.1950.1988) has 10 teeth. The somewhat deteriorated sherd surfaces make it impossible to determine whether the dentate-row marks were made by only one or more than one carved tooth row.

One of the more interesting archaeological examples of a dentate-row-marked pot from the Kotzebue Sound region is a vessel recovered by Douglas Anderson in 1960 that was partially exposed on the surface at Cape Krusenstern but not in a beach ridge context. This vessel has a rather narrow, flat bottom and widely flaring sides (fig. 7). More than half of one side is missing, and one mended section is exfoliated. The markings are uneven and restricted to the upper two-thirds of the vessel. A wall impression (fig. 8) and one taken so as to include the rim (fig. 9) clearly show the vessel to have been marked with a single dentate row. Although obviously historic, this vessel unfortunately is without a specific archaeological context.

Following the excavations by Larsen at Deering in 1950, very little systematic archaeological work was undertaken in southern Kotzebue Sound until 1985–1986, when the National Park Service conducted a cultural resources inventory in the recently (1980) created Bering Land Bridge National Preserve (Schaaf, 1988). The Preserve encompasses roughly 2.5 million acres on contiguous central and northwestern parts of Seward Peninsula. Its coastal areas include the southwestern

shores of Kotzebue Sound. The inventory was undertaken at the "... reconnaissance level with emphasis on gaining complete cartographic and photographic documentation of as many sites as possible" (Schaaf, 1988, vol. 1, p. 48). Although sites were not excavated, exposed soil profiles were examined and surface specimens were collected. Historic pottery relevant to the focus of this paper was recovered from several sites from Cape Espenberg westward on outermost Kotzebue Sound and inland on Seward Peninsula.

A site designated KTZ-111 is a sizable village on the west side of the Espenberg River near its mouth. It appears to have been occupied from the Western Thule through the historic period (Schaaf, 1988, vol. 1, pp. 144-148; vol. 2, pp. 317-321). A single body sherd (BELA-4-467) from this site is described by Schaaf (1988, vol. 1, fig. 51; vol. 2, p. 317) as being marked with a "waffle" or check stamp. A close examination of this sherd and its silvered clay impression (fig. 10) suggests that the markings are transitional between a check and a dentate row. The clay impression shows recurring grouped rows of deep rectangular checks or dentate marks with the long axis along the row. These are check forms in one sense: their sides are vertical. They are dentate in the sense that they have ridged tops rather than flat tops as checks have; and the three-member horizontal rows are more widely separated vertically than are classic check-stamp rows. The three-tooth or -check rows are consistently staggered to the viewer's right on the sherd (to the left on the silvered impression), which may indicate that the three-tooth rows or three-check rows were each applied separately, rather than being parts of a multirow array.

The well-preserved imprints on BELA-4-467 provided a good impression. The clay body seems to have been rather fine grained, allowing relatively undistorted registration of the marking tool face. The rows are very uniform, and several are clustered in rather evenly spaced vertical arrays. The row ends often coincide, giving an overall uniform horizontal alignment.

Our preferred explanation is that the imprints were expertly made with a single three-member tooth row or, expressed another way, with a transitional dentate-check row. This would explain the wide though not identical spacing of the rows one above the other. We assume that the row marks lie parallel to the pot's rim, which would have been just above the suspension hole visible on the sherd and its clay impression.

The two elements that separate this stamp from

either a common check stamp or a common dentate stamp are the verticality of the pit walls and the troughlike pit bottoms. These were produced by teeth with vertical sides and ridged tops or by checks with ridged tops. This particular marking serves to show the close similarity of the checked and dentate marking tool designs and also shows that skill in marking (or the lack thereof) largely determines the clarity of the marking and the ease or difficulty of properly identifying the imprinted designs.

Dentate rows, like other carved tool face markings, may or may not leave clear and consistent tooth impressions, depending on several variables such as grittiness of the clay, its wetness or dryness when being marked, and perhaps the various characteristics of clay from different sources. In some instances, therefore, dentate impressions will not be conclusively distinguishable from check stamps, that is, from flat-topped, single- and multirow arrayed, square, or rectangular impressions.

One wall and one rim sherd (BELA-4-433, 1 and 2) were recovered from Feature 20, the remnants of a plank-lined house in the historic portion of KTZ-149, an early 20th century winter village (Ullugaun) occupied by reindeer herders on the Chukchi Sea shore of Seward Peninsula west of Cape Espenberg (Schaaf, 1988, vol. 2, pp. 419-428). Both sherds are gravel tempered, and the markings are described as having "interrupted horizontal rows of large dentate impressions, irregular in shape," believed to have been applied "with a toothed object or comb rather than a stamp since the spacing is irregular and interrupted" (Schaaf, 1988, vol. 2, p. 420). Enlarged photographs of these sherds (figs. 11, 12) indicate conclusively that the exterior markings were applied with a six-tooth single-row dentate marking tool having a V-ridge with unserrated ends. One sherd (BELA-4-433, 2), illustrated with a single-row clay impression, shows particularly well the existence of a broken tooth in the tooth row (fig. 12). Because this identical broken tooth signature appears on all the row impressions that are clearly readable, we conclude that only one tooth row was used to mark these rim and wall sections.

The problem of proper identification of dentate-row-marked pottery is not confined to confusion between dentate-row and check-marked wares, where the difference is often a matter of clarity of the original imprint or the degree of sherd surface deterioration. Fiber marking, either from willful or incidental contacts between unfired clay vessels and constructions such as mats and baskets, can

produce impressions on sherds and intact pots that superficially resemble dentate-row and check-stamp marking. This is indicated by sherds from three sites surveyed in the 1980s by the National Park Service.

A small site, KTZ-017, near the east edge of Goodhope Bay at the reported location of the 19th century village of Uyauks (Ray, 1964, p. 83) yielded a single grass- and gravel-tempered basal sherd (BELA-4-420) that was collected for analysis (Schaaf, 1988, vol. 2, pp. 140–141). Schaaf (1988, vol. 2, p. 140) described the exterior markings on this sherd as consisting of “rows of deep check stamps, with pyramid-shaped depressions” similar to the Deering Pyramid Paddled ware described by Oswalt (1955, p. 35, fig. 16, no. 8). A magnified silver-enhanced clay impression (fig. 13) made from this sherd indicates, however, that the imprinting object was a worn grass mat that presumably underlay the pot as it was being constructed or while it was drying before being fired. The initially described “pyramid-shaped” depressions are instead the impressions of welts within the twined grass structure.

A large rim sherd (BELA-4-479) from KTZ-138, a small, multiage site with an historic Inupiaq component on Cape Espenberg west of the Espenberg River, is described by Schaaf (1988, vol. 2, p. 391) as having a “waffle-stamped” exterior with “rectangular impressions” (fig. 14). A silvered clay impression (fig. 15) of this sherd revealed fiber construction rather than dentate tool marking. The vessel appears to have been marked with a twined mat that had thinner and thicker areas, irregularly sized twists, and openings. The twining, despite the irregularity of the fiber construction, is clearly shown.

Another historic site on the shores of northwest Seward Peninsula west of Cape Espenberg is KTZ-145, near the mouth of the Kitluk River (Schaaf, 1988, vol. 2, pp. 403–410). A clay impression (fig. 16) from a single wall sherd (BELA-4-389) recovered approximately 85 cm below surface at this site indicates that the exterior was imprinted with a twined basket, bag, or mat of medium texture, probably made of willow inner bark or fine grass. Because the sherd is curved, the markings suggest that the pot was constructed inside a fiber container, then fired without alteration of the imprinted outer surface. Schaaf (1988, vol. 2, p. 404) described a basal sherd from the same site as having been “molded inside a woven basket,” although, as was the case with the previously described sherd,

the basket may have been formed by twining rather than by randing (plain weave).

There are other sites in the Kotzebue Sound region where sherds reported to be dentate-row marked have turned out instead to be basket impressed. Thirteen sherds (fig. 17) from a single vessel were recovered at or near the surface of the historic Aklaq site (F-22301) on the east shore of Baldwin Peninsula during a survey in 1987 by the Bureau of Indian Affairs. Initial study of these sherds indicated that they are marked with stamped rows of dentations, individually applied, that run horizontally around the vessel. Some rows appear to be overlapping, but most are separated by up to 9.0 mm of unmarked surface. Striations occur on both the interior and exterior surfaces, indicating that the clay was smoothed with a fine-haired object before firing (Hoffman, 1988). Clay impressions taken from two sherds (fig. 18) show that rather than having been dentate-row marked, the vessel was constructed inside a basket, which deeply impressed its surface onto the pot's exterior.

In a 1974 survey intended to document historic and cultural resources in the Bering Land Bridge Preserve, Powers and associates (1982) trenched a shallow midden and three houses at the Cloud Lake village site about 15 km north of Imuruk Lake on Seward Peninsula. Among the potsherds recovered from a near-surface level was a well-preserved rim sherd described as “decorated by a single line of horizontal indentations about 22 mm below the bottom of the lip” (Powers et al., 1982, p. 162) that Powers identified as Deering Pyramid Paddled. Partly on the basis of this sherd, near-surface deposits at the Cloud Lake village site were dated to the 18th or 19th century (Powers et al., 1982, p. 166). Although we accept the stratigraphic evidence, here again it is possible to question the identification of a sherd believed to be marked with a single dentate-row stamp. Figure 19 shows the sherd referred to above together with an opposed, partially silvered clay impression. It is apparent that the so-called dentate row is, in reality, the edge of a loosely twined fiber bag or basket within which the vessel was constructed and which constricted and marked the vessel neck just below the rim. In light of the presence of the previously described basket- and mat-impressed sherds in historic sites on Kotzebue Sound and Curtis's (1930, p. 197) account of vessel shaping “inside a willow frame” on the lower Noatak River, this revised identification of the marking on the Cloud

Lake sherd does not necessitate a revision of the end dates for the Cloud Lake site.

## Reassessing Kotzebue Sound Pottery Markings

Future excavations may reveal that fiber-impressed pottery was common around Kotzebue Sound during the historic period even though there is no evidence for its production in the Buckland or Selawik areas. It is clear that various fiber markings can be mistaken for dentate markings and vice versa. From a broader perspective, the confusion resulting from the resemblance of dentate-stamped, fiber-impressed, and check-stamped markings casts doubt on the identification of pottery markings in many archaeological reports and points up the necessity for extra care in examining and identifying marked vessels and sherds.

The differentiation of dentate-row, check-row, and other imprints might be fairly easy were it possible to closely examine many well-preserved pots or sherds of known provenience. This, of course, is the ideal and not the reality of museum collections and site reports. A probable first step in surmounting this problem would be to consider the differences among dentate-stamping, check-stamping, and striating—that is, linear-marking (multiridge)—tool surfaces and their imprints. Check-stamping tools have a print face that is essentially flat and scored longitudinally with parallel grooves more or less evenly spaced; grooves are then cut at right angles to the first set (fig. 20, top). The simpler, striated, linear-stamping tool is made with a field of cut parallel ridges only. The striated and checked tool surfaces, and other marking tool surfaces as well, are almost always rectangular overall because Eskimo pottery markers are derived from naturally elongate pieces of wood, bone, antler, or ivory, and the tool must be grasped across its long axis in order to strike a blow sideways; or similar materials can be used to make a simple finger-held or back-handled stamp. Either way, the result is a struck or rocked, negative, multitroughed, or checkered (i.e., waffle) impression on the wet clay walls of the vessel. A check-marking tool produces flat-faced imprints or partial flat-faced impacts where the tool face only partially contacts the soft clay pot surfaces.

Obviously, unless the check-marked tool surface is curved to fit the individual pot walls, it does not impact fully nor make a complete impression of equal depth overall.

A dentate-stamp impression, on the other hand, generally leaves noticeably aligned, toothlike puncture marks in the soft clay. To be identifiable and separable from check stamps on vessels and sherds, these punctures must retain their negative pyramidal or hip-roofed shape as the clay dries and after it is fired. A dentate-row design is achieved by cutting a V- or other shaped ridge into separate teeth. These teeth need not be four-sided pyramids, but this form is the simplest. In making a check stamp, the flat-topped ridges need only be cross grooved at regular intervals to form a working face. On a pyramidal-tooth tool face the cross grooves are sloped rather than vertically cut as they would be in a checkered design. In order to make a dentate face, after the carver has made cross grooves, the individual small squares, rectangles, or irregularly shaped plateaus that stand like small buttes are whittled into isolated peaks (fig. 20, bottom). Common sense dictates, however, that pottery tool makers might innovate or be sloppy in their workmanship, thereby producing triangular, round, or lopsided teeth.

It will be recalled that Sannu, the tool making instructor, specifically requested the maintenance of a regular number of four-sided pyramidal teeth in individual ridges of predetermined length. Because the dentate markings on sherds we examined differed, one may expect to find a number of proprietary familial or individual tool makers' variants; therefore, any classification of dentate or other carved pottery-impressing tool designs needs to allow for such variability. That stamped markings may be transitional between a check and a dentate row is demonstrated by the previously described sherd from KTZ-111 (fig. 10).

Dentate vessel markings may predate the 19th century in Kotzebue Sound because Anderson (Giddings and Anderson, 1986, pp. 44, 47) described check-stamped and dentate-marked sherds recovered from roof, tunnel, and floor deposits in House 31 at Cape Krusenstern. However, these sherds are not illustrated, and because the house cluster to which House 31 belongs is dated "A.D. 1400 to early nineteenth century," we are left without a clear idea of the appearance of these sherds and only a rough idea of when House 31 was occupied.

## Summary and Conclusions

Pottery is an important index of culture change for students of Eskimo prehistory. It is relatively indestructible and thus occurs in abundance in many archaeological sites. In addition, the exterior markings on pottery vessels have been demonstrated to change over time. In the Arctic, where organic preservation at archaeological sites is generally good, pottery may have been less important as an indicator of change than in some other areas of North America. Nevertheless, chronologies in several areas of Alaska have been developed on the basis of changes in the methods of manufacturing and marking clay pots.

Because the use of pottery ended in northwest Alaska in the late 19th or very early 20th century, ethnographic descriptions of historic pottery making are rare, and firsthand descriptions by informants are even rarer. Until recently there has been little interest in the archaeology of the historic period in northwest Alaska, and relatively few contributions have been made toward an understanding of the terminal phases of pottery manufacture, use, and trade. This situation is changing. Archaeologists have recently provided specimens for study and much useful information for this paper, which we have utilized to examine the technical aspects of pottery making and use in the Kotzebue Sound region during the historic period.

Lucier's field work on the Buckland River in 1950–1951 involved extensive interviews with Sannu, one of the few Iñupiat alive at that time who had witnessed pottery making, had seen pottery in use, and could give a coherent account of its manufacture. Using Sannu's description of Kangigmiut pottery making, and Lucier's description of the manufacture of a dentate-row pottery baton under Sannu's supervision, as a point of departure, we have examined published accounts of pottery making by Kotzebue Sound Iñupiat for comparison with the Buckland data. Although methods of manufacture apparently varied throughout the Sound area, the situla shape was widespread, with other shapes also reported. Historic upriver Kobuk and Noatak peoples imported most of their pottery from the Buckland and Selawik rivers.

Particular attention has been paid in this paper to protohistoric and historic pottery markings, especially tooth-row-marked vessels. In addition to its use at Buckland, this style of marking has been reported ethnographically as far south as Cape Nome on the northern shore of Norton Sound.

Stick-marked pottery was also widespread throughout the Kotzebue Sound area in the late prehistoric and historic periods, but we have not attempted to document its presence in protohistoric archaeological sites, nor have we found accounts of potters who stick marked their clay vessels.

Turning to archaeological data, we have noted that dentate-imprinted pottery was recovered in 1950 from an historic site at Deering. Recent surveys and excavations at other sites on outer Kotzebue Sound reveal the presence of this form of vessel marking at Cape Krusenstern and at sites on the far southwestern Sound. Although the original limited objective of this study was to locate dentate-imprinted sherds and vessels derived from a pottery baton similar to the one made under Sannu's direction, we discovered that at some sites sherds reportedly marked with one or more dentate rows turned out, on closer inspection, to be basket or mat impressed. The use of silver-enhanced, artificial modeling clay impressions taken from sherd surfaces was of significant value in making these revised identifications.

The evidence of confusion resulting from the visual similarity of dentate-stamped and check-stamped markings, and dissimilar yet visually misleading fiber-impressed markings, cast doubt on the identifications of pottery markings in published archaeological reports. It was not the purpose of this paper to study all the markings on Kotzebue Sound pots. By concentrating on the dentate row and some of the problems associated with its identification, we feel that a beginning has been made toward a comprehensive study of vessel markings. A careful and detailed review of a wide spectrum of historic sherds is needed to determine with certainty the subtle differences among the various types of markings.

It is clear that the marking of pots was a very persistent trait on Kotzebue Sound, having spanned nearly three millenia (excepting only the 800 or so years of the Ipiutak hiatus) from the striated-stamped ware of Choris, dated at ca. 700 B.C. (Giddings, 1957, pp. 123–124, fig. 3), to the Buckland dentate-row-marked ware of the A.D. 1860s.

An understanding of the social aspects of 19th century Kotzebue Sound pottery making must, of necessity, be based in part on conjecture. Although vessels seem to have been rather similar in form, marking probably varied from one society to another and, perhaps, among individuals or extended families within societies. In historic Eskimo societies, and probably in prehistoric times as well,

intellectual property such as pottery markings was the exclusive property of the originators and their heirs; these were mature and older women. Although, as Sannu's 1860s account shows, males could be present when pots were made and men made tools for women potters, the invention or reinvention and changes in pottery manufacture were largely or exclusively a result of the efforts of women. Relatives—members of extended families—used the various marking designs with the originator's, or her heirs', approval. For all intents and purposes, it might be said that a pottery-marking design was legitimately used only along female lines of common descent and by adoptive female relatives.

Sannu made no reference to Buckland clay pot markings in the early 1860s other than the dentate-row imprint. Did all the Buckland potters use the tooth-row design? We simply do not know. Neither can it be said whether the inventor of the single pyramidal tooth-row design was the man who carved it or the woman potter who would use it. The woman may even have carved it herself.

The movement of adult women from one Iñupiaq society to another resulted in the enrichment of local pottery marking in historic and earlier times. Also, despite their strong feelings about exclusivity of intellectual property ownership, historic Iñupiat lacked effective sanctions against unauthorized appropriation of innovations, and, in fact, both sexes were ceaselessly and assiduously on the lookout for new functional and stylish concepts. The appeal of historic eastern Kotzebue Sound pottery to buyers from other societies, such as those at Cape Prince of Wales, on the Arctic Slope, and the upper Kobuk and upper Noatak rivers, was based on quality and appearance as well as on kinship and the demands of reciprocity between trading partners.

The historic and older centers of higher ceramic quality about Kotzebue Sound probably were located where there were suitable clays and abundant spruce wood fuel such as occur in locales on the Buckland, Selawik, and Kobuk rivers. Women of Kotzebue Sound who made higher quality cooking pots were probably always few, and they were doubtless known to all who traded for these superior wares.

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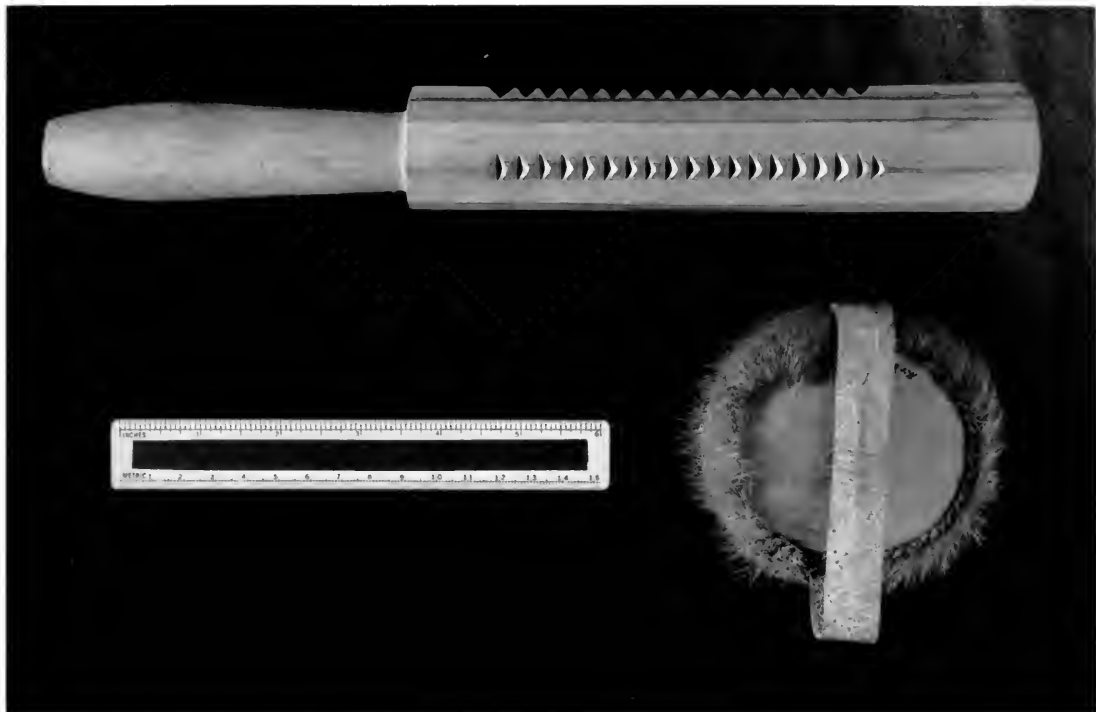


FIG. 3. Pottery-marking baton (top) and pottery smoother (bottom) made at Elephant Point, Alaska, in 1951. (Courtesy of the University of Alaska Museum, Fairbanks.)

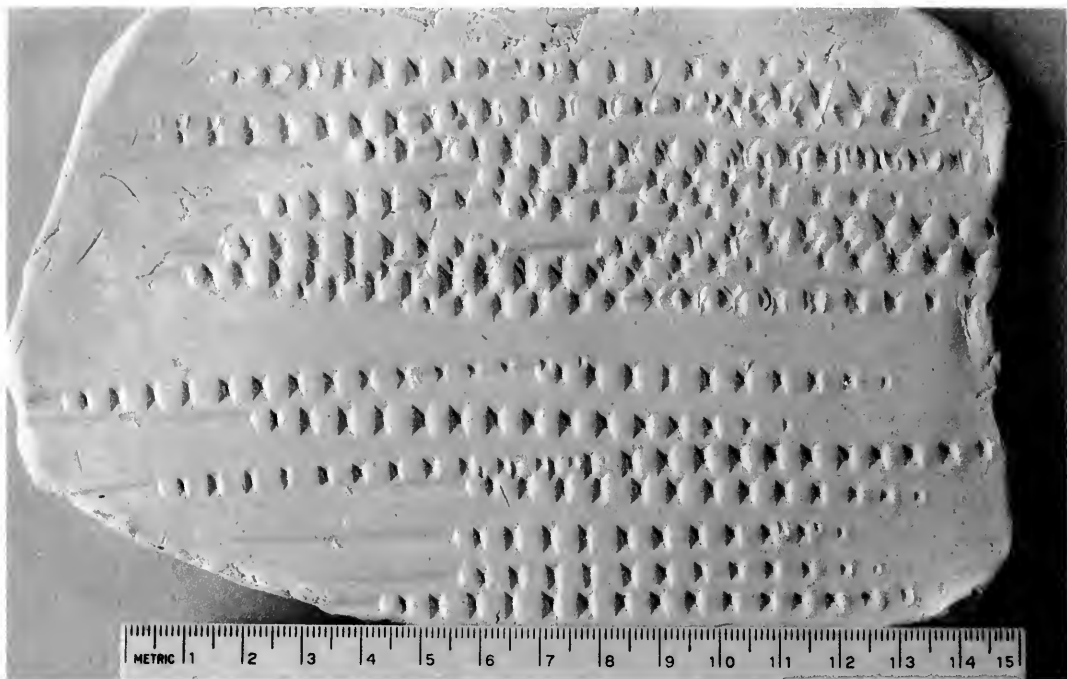


FIG. 4. Struck (upper rows) and rocked (bottom rows) clay impressions from the Elephant Point pottery-marking baton.



FIG. 5. Potsherd (UA 1.1950.1988) from a Deering house and its clay impression.



FIG. 6. Potsherd (UA 1.1950.1990) from a Deering house and its clay impression.



FIG. 7. Pottery vessel from Cape Krusenstern. (Courtesy of the Laboratory of Circumpolar Studies collection, Haffenreffer Museum of Anthropology, Brown University, cat. #66-9123.)



↑ FIG. 8. Clay impression from wall of Cape Krusenstern pottery vessel.



↑ FIG. 9. Clay impression showing rim from wall of Cape Krusenstern pottery vessel.



↑ FIG. 10. Potsherd (BELA-4-467) from KTZ-111 and clay impression.



→ FIG. 11. Potsherd (BELA-4-443, 1) from KTZ-149.

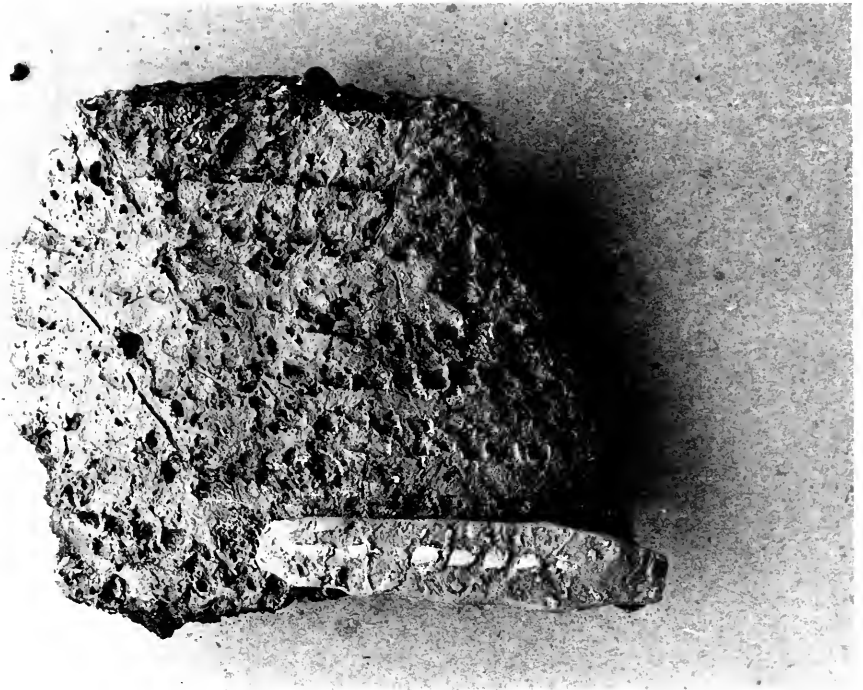


FIG. 12. Potsherd (BELA-4-433, 2) from KTZ-149 with a single-row clay impression.

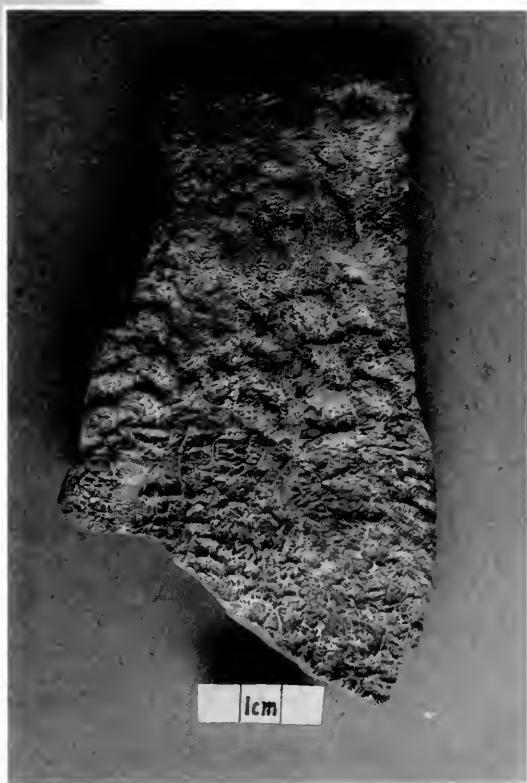


FIG. 13. Magnified silver-enhanced clay impression of basal potsherd (BELA-4-420) from KTZ-017.



←  
FIG. 14. Potsherd (BELA-4-479)  
from KTZ-138.

→  
FIG. 15. Silver-enhanced clay im-  
pression of potsherd (BELA-4-479)  
from KTZ-138.



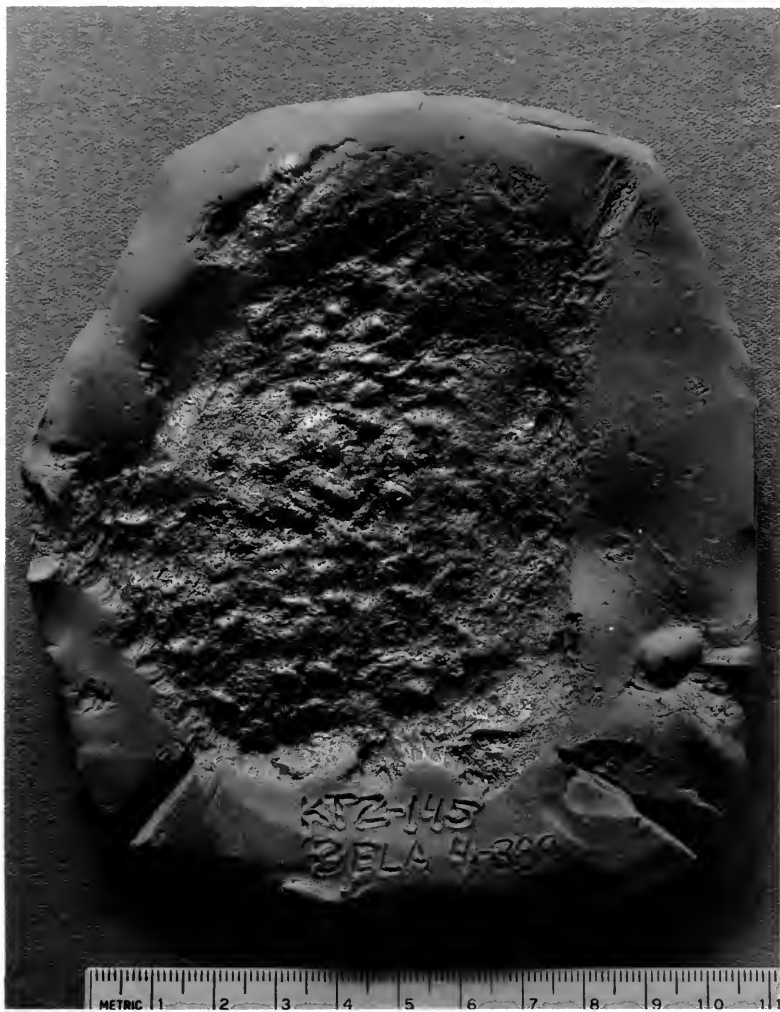


FIG. 16. Clay impression of potsherd (BELA-4-389) from KTZ-145.



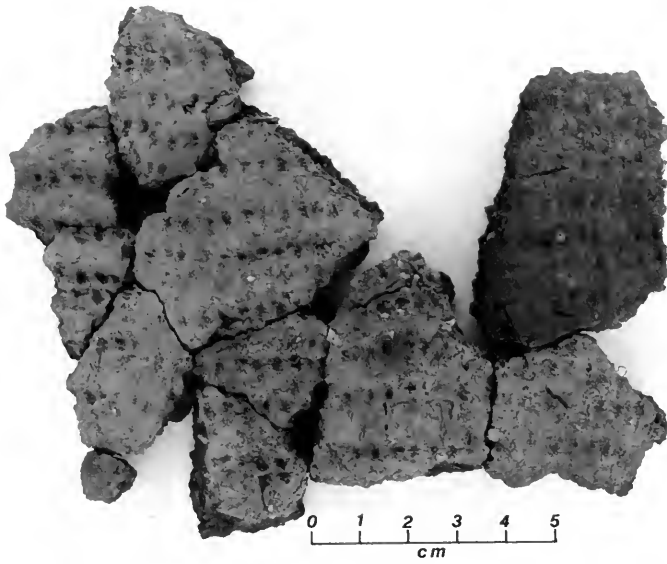


FIG. 17. Potsherds from a single vessel recovered at the Aklaq site (F-22301). (Courtesy of Brian Hoffman.)



FIG. 18. Silver-enhanced clay impression of potsherd from the Aklaq site (F-22301).



FIG. 19. Potsherd from the Cloud Lake village site, with an opposed silver-enhanced clay impression.

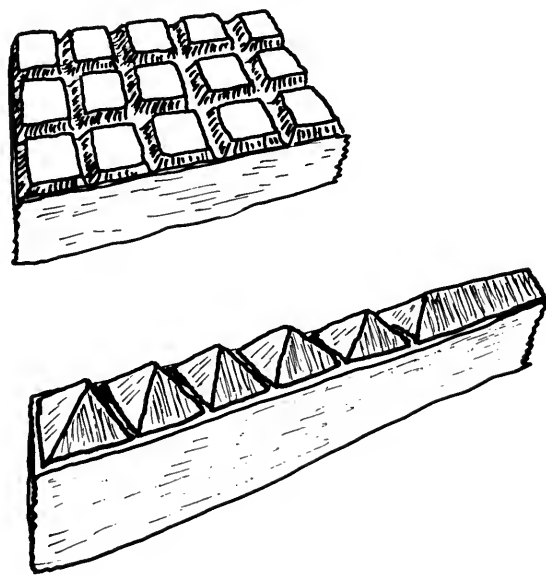


FIG. 20. Print faces of check-stamping (top) and dentate-row-stamping (bottom) pottery-marking tools.





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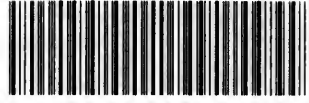
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