

## *Short Papers and Notes*

### IMPLICATIONS OF A PRE-DORSET LANCE HEAD FROM THE EASTERN CANADIAN ARCTIC

The few excavated pre-Dorset sites in the eastern Canadian Arctic and Greenland have only rarely contained preserved artifacts of bone, antler, wood, or ivory. Consequently, harpoon and lance heads, usually the most diagnostic of Eskimo tools, remain poorly known in pre-Dorset culture. So far as I know, the only Canadian arctic finds of pre-Dorset lance and harpoon heads are those of Meldgaard (1960, 1962) in 1957 near Igloolik in north-western Foxe Basin. Itivnera in West Greenland produced organic remains of pre-Dorset culture, but only very preliminary notes are available. As pre-Dorset originated in the western Arctic, its harpoon and lance heads would interest the Alaskan as well as the eastern Arctic prehistorian. For these two reasons, breadth of consequence and current scarcity of data, I have adopted a slightly old-fashioned procedure by preparing this note on a single archaeological item, a lance head with its end blade (Fig. 1). It came to the National Museum of Canada in 1962 as part of a mixed archaeological-ethnological collection gathered in the late 1920's by Mr. Hugh Margetts (Kemptonville, Ontario), who at that time served with the R.C.M.P. The specimen was given to Mr. Margetts by an Eskimo at Pond Inlet, Baffin Island. Most likely it had been found on northern Baffin Island or on Bylot Island, even perhaps on the Button Point site (Mathiassen 1927).

The ivory lance head, reasonably well-preserved and dark brown in colour, has lost part of its base and forward tip by decay and breakage. It is 1.8 cm. in maximum width, 1.1 cm. in maximum thickness, and was originally about 8.8 cm. long, excluding the

end blade; with the end blade in place the lance head would have had an overall length of about 10 cm. The body of the head has slightly convex margins and a thickly oval cross-section. The open foreshaft socket shows in cross-section a slightly concave floor and slightly concave walls forming a horse-shoe-like cross-section. The socket, about 2 cm. long, converges from a rear width of aperture of 8 mm. to a forward width of 3 mm.; its forward margin is not vertical but slightly undercut. The foreshaft had been held in this socket not only by the slightly enveloping margins but also by a lashing that lay in a shallow groove, 3.5 mm. wide, encompassing the specimen near the rear of the socket. From that line, the base is sharply chamfered, the oblique surface being slightly concave. The broken rear margin of the base was probably convex or cut straight across. The round line hole, formed by cutting or gouging but not with a bow drill, was set close to the rear edge of the base.

On the upper surface of the specimen a pronounced longitudinal groove extends forward for about 3.5 cm. from the forward edge of the socket. A similar but less pronounced incised groove appears on the underside. The slot for the end blade, originally about 3.4 cm. deep, is at right angles to the plan of the line hole. The lateral margins of this lance head, gently convex for the most part, become nearly straight and converge sharply in the forward part of the specimen; the broken tip probably ended in a near-pointed form. A pronounced medial ridge and plane surfaces characterize the forward part of the object, whereas the base and middle parts have generally rounded surfaces. An unusual attribute of this lance head consists of a pair of lateral ridges running along either side of the piece from the blade slot to a point 7 mm. ahead of the groove for socket

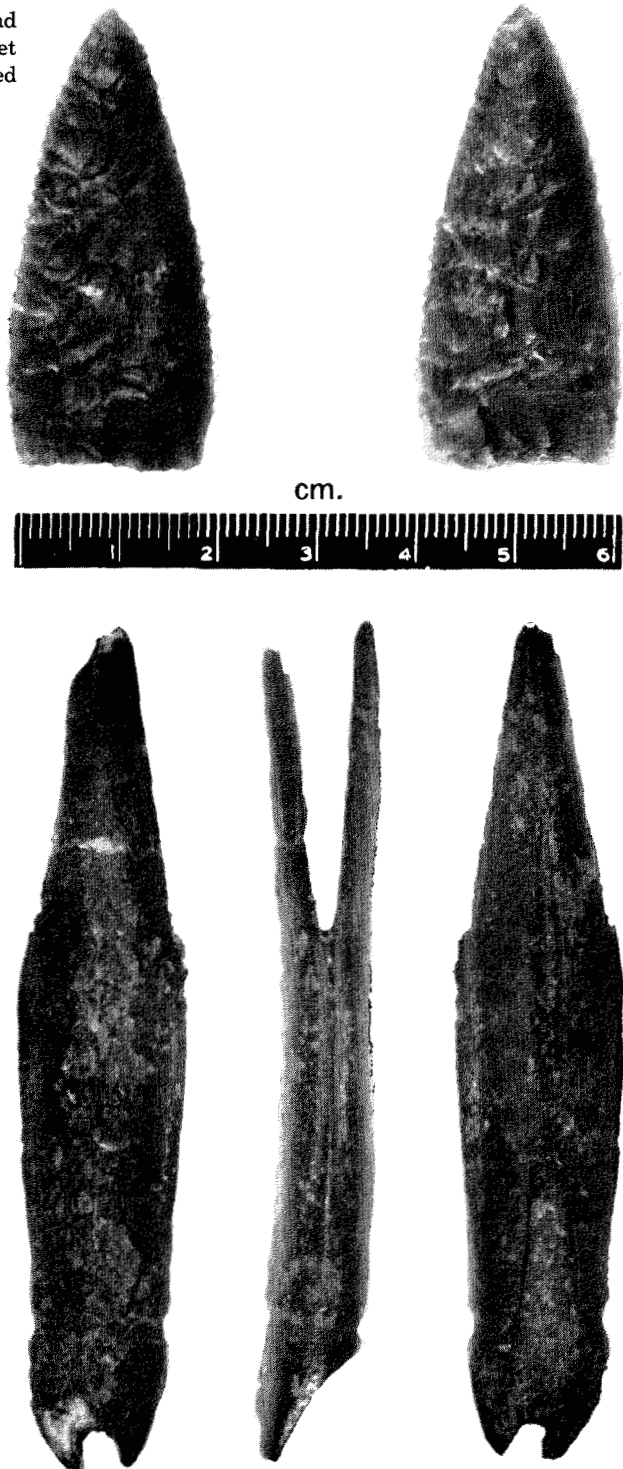
lashing. These sharp-edged ridges are no more than 2 mm. thick at the root, they project up to 2 mm. from the body and are 3 and 2.6 cm. long, respectively. Surely they served in place of inset stone side blades.

The end blade, of medium grey chert, must be treated with caution as its belonging in the blade slot of the lance head is only likely, not certain. It fits that blade slot well, has apparently the right proportions for such a service, and is certainly of suitable size; its maximum dimensions are 4.6 cm. long, 2.1 cm. wide, and 3 mm. thick. The Eskimo who gave the lance head with blade in place to Mr. Margetts claimed to have found it in that condition except that he had added a sinew lashing about the forward part to keep the end blade in place. Warping has sprung the tangs of the slot. That and the drying and shrinking of the lashing presumably caused the breaking of the underside of the slot, which is obviously quite recent. The inner surfaces of the slot presumably take their slightly concave form to fit the gentle convexity of the surfaces of the chert point. From an irregular, but nearly straight base the slightly convex margins of the end blade converge to a sharp point. On one of its surfaces 5, and on the other 3 flake scars indicate basal thinning. There are no signs of dulling the edges near the base to reduce chafing of a lashing; very likely the blade needed no lashing, being secured by the pressure of the slot. The edges show pronounced precise serrating from a point 4 mm. above the base to the tip. A 10-mm.-long part of one edge near the tip constitutes an exception, for along here there is no serrating, but instead a distinct dulling of the edge, perhaps resulting from use. The retouch on this biface is meticulous and well controlled by both pre-Dorset and Dorset standards, but rather mediocre compared with that of Denbigh Flint complex specimens. A slightly polished facet, 2 by 5 mm. and perhaps intentionally formed, occurs near the mid-point of the upper surface of the blade, relative to its position in the lance head.

The pre-Dorset origin of this specimen is postulated on Meldgaard's evidence from the Igloolik region. He illustrates (1960, p. 74, Fig. II) a lance head and 2 harpoon heads from pre-Dorset components on the 47- and 48-m. terraces of the Parry Hill or Kaleruserk site on Igloolik Island. These three heads show pronounced basal chamfering, an encircling groove for the socket lashing, and foreshaft socket closely similar to that on the Margetts lance head. The lance head shown by Meldgaard is very similar to that presented here except that it shows no evidence of side blades and has a bed, rather than a slot, for the end blade. In Copenhagen, a Nationalmuseet exhibit case contains a specimen from the 50-m. (?) terrace of the Parry Hill site. That specimen too shares several features with that discussed here, especially in the rear part of the object. It contrasts with the Margetts specimen in having a pair of side blade slots rather than lateral ridges, in lacking an end blade slot and in having the line hole not at the base, but set ahead of the socket as for a toggling harpoon head, which it is. Meldgaard has shown me a lance head, again from the 50-m. terrace of Parry Hill, that shows all the major attributes of that offered here, excepting that it has two large side blade slots rather than lateral ridges. The pre-Dorset provenance of the Margetts lance head seems, therefore, sufficiently documented. The comparison of it with materials from the higher terraces of Parry Hill does not demand the conclusion that the specimen belongs to the earlier part of the pre-Dorset period. It may, but lacking adequate comparative data on late pre-Dorset lance and harpoon heads, no precise age estimate should be attempted yet.

The specimen bears on the question of Dorset-pre-Dorset relations since it shares with early Dorset lance heads (Collins 1956, Pl. II; 1957, Pl. IV; Knuth 1952, Fig. 11; Meldgaard 1960, p. 74, Fig. I) such features as the open socket, end blade at right angles to the line hole, the basal position of the line hole,

**Fig. 1.** Reverse, profile, and obverse views of a pre-Dorset lance head and an associated end blade.



pronounced chamfering of the base, the groove for lashing, the idea of a pair of laterally set side blades, the medial groove, and the convex or straight base. The ridges instead of side blades cannot on present evidence be construed as a vestigial trait of later pre-Dorset lance heads since such side blades occur commonly on early Dorset as well as on early pre-Dorset lance heads. In very general terms, Dorset lance heads differ from that illustrated here in having a broader groove for the socket lashing, less pronounced chamfer at the base, a different manner of end blade hafting, a flatter cross-section, and greater overall length. Furthermore, the profiles of their bases are usually interrupted by what Knuth has neatly termed the cloven-hoof feature (Knuth, 1958). Nevertheless this specimen, like those illustrated by Meldgaard, represents the typological parent in pre-Dorset of the cloven-hoof lance head and therefore supports Meldgaard's (1962) point that the lance head has only slightly changed from pre-Dorset to Dorset. Meldgaard (1962, Fig. 3) documented this suggestion by illustrating two lance heads from the 23- and 22-m. terraces, whose components he identified as latest pre-Dorset, or Sarqaq, and early Dorset respectively, of the Kapuivik site on Jens Munk Island near Igloodik Island. In the illustration, the former of these two lance heads so closely approaches Dorset form as to be hardly distinguishable except by altitude and, presumably, association.

In its socket and socket-lashing conformation the Margetts lance head recalls a well-known but little understood Dorset harpoon head type, the open socket type with lashing groove, oblique base, and asymmetric line hole (Collins 1950, Pl. V, Figs. 1-3). Although there may be some typological relationship, that Dorset type likely developed from the asymmetric harpoon head type found by Meldgaard (1960, p. 74, Fig. II; 1962, Fig. 3).

The end blade illustrated here could be Dorset as well as pre-Dorset although its form might yet prove to be

more frequent in the latter. Regarding its edge serration, work in Ungava Dorset sites gave me the impression that edge serration of end blades occurred rarely in Dorset. Extrapolation of that impression beyond Ungava seems dangerous thanks to recent work of Rev. Father Guy-Marie Rousselière, O.M.I. On behalf of the National Museum of Canada he carried out salvage work at Mathiassen's Button Point site on Bylot Island, in small part because I had hoped that site would produce, not only Thule and Dorset, but also pre-Dorset materials; the hope was based on the Button Point specimens illustrated by Mathiassen, especially an unusual harpoon head (Mathiassen, 1927, Pt. 1, Pl. 61, Fig. 17). Rousselière's collection contains no obviously pre-Dorset pieces, but pertinent to this note, its typically Dorset triangular end blades show a very high incidence of precise edge serration. Whether this Ungava-Bylot contrast in serration reflects a difference in age or location of the objects I do not know; because of it, however, one cannot conclude that the end blade described here is either Dorset or pre-Dorset by virtue of its innate qualities. Its pre-Dorset identity hinges on its belonging to the lance head now associated with it.

Accepting a pre-Dorset and eastern Arctic provenience for the lance head, and agreeing with most northern archaeologists that pre-Dorset culture came to the eastern Arctic from Alaska no later than 2,000 B.C., then one may expect the specimen to show some affinity with the earliest known lance or harpoon heads in Alaska. Old Bering Sea harpoon heads, for example, sometimes have paired side blades, open sockets and chamfered bases (Collins 1937, Pl. 25) and their lashing slots may in a few cases be thought of as developments from lashing grooves (Collins 1937, Pl. 24, Figs. 4, 5). These various attributes occur also in later Alaskan stages such as Punuk, Birnirk and Thule. In Punuk, for example, Collins (1937, p. 217, Pl. 72, Figs. 8, 9) reports two walrus lance heads of a form unusual for that culture yet sharing

several features with the Margetts specimen. Perhaps these Old Bering Sea, Punuk, Birnirk, and Thule occurrences echo types prominent in earlier Alaskan cultures. Turning to such older stages, Campbell's original report on the Kayuk complex of Anaktuvuk Pass includes an illustration of a harpoon head (Campbell 1959, pp. 102-03, Fig. 3) with a broad lashing groove and an open socket; unfortunately the text and illustration allow no observation on base chamfering. MacNeish (1959) estimates the part of the Kayuk collection that includes this object to date to near 500 B.C. Looking at southern Alaska, levels I and III of the Yukon Island site in Cook Inlet produced harpoon heads with open sockets, lashing grooves and rounded chamfered bases (de Laguna 1934, Pl. 38, Nos. 9, 11, 12). These belong to the cultural periods Kachemak Bay I and III (de Laguna 1934, pp. 121-126). In his recent speculative paper MacNeish (1959), aided by carbon dates, placed these two periods late in the second millennium B.C. and early in the first millennium A.D., respectively. More recently, Giddings (1961 p. 166, Fig. 2) has suggested a date about 1,000 B.C. for Kachemak Bay period I. Specimens rather similar to those noted from Yukon Island were reported by Larsen and Rainey (1948, p. 165, Pl. 83, Figs. 3-5) from House 24, a Near Ipiutak component at Point Hope, western Alaska. These show open sockets, broad lashing grooves, and rounded chamfered bases. A fourth such head, but with a straight chamfered base, occurred in the Point Hope middens (Larsen and Rainey 1948, Pl. 84, Fig. 11). Chronological estimates of Near Ipiutak have placed it variously from the beginning to the close of the first millennium B.C. In discussing their Near Ipiutak specimens Larsen and Rainey (1948, p. 165) referred to harpoon heads collected by Hrdlicka from the lowermost, or pre-Koniag, levels of the Uyak Bay site on Kodiak Island (Hrdlicka 1944, Fig. 126); here again, one sees open sockets, broad lashing grooves, and rounded chamfered bases.

Thus, assembling evidence from the

second millennium B.C. in the eastern Arctic and from the first, and perhaps the second, millennium B.C. in northern, western, and southern Alaska, one finds a consistent occurrence of open sockets, broad or narrow lashing grooves, and rounded chamfered bases on lance and harpoon heads. Further, where line holes and end blade slots occur, they are in planes at right angles to each other; end blade slots are set in a plane parallel to that of the floor of the fore-shaft socket. I think, therefore, that such attributes will also be found eventually on the harpoon and lance heads of the Denbigh Flint Complex (Giddings 1951) and its immediately descendant cultures. Recalling known stone tools one might suspect that such specimens would possess inset side blade slots more frequently than do the Alaskan materials cited above.

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## A GLACIOLOGICAL RECONNAISSANCE OF THE COLUMBIA GLACIER, ALASKA

### Introduction

The Columbia Glacier is in the Chugach Mountains between Valdez and Anchorage, Alaska. The terminus of the glacier has a 4-mile front on Prince William Sound, and its giant ice cliffs are a famous tourist attraction. However, most of the glacier lies in one of the least explored areas in Alaska and no scientific study of the area except near the terminus had been made before 1955.

The Columbia Glacier has four large branches; the largest has a length of 41 miles. It has an area of approximately 440 square miles and it covers a range of altitudes from sea-level to 12,000 feet. The Columbia Glacier is very active and its terminus has remained in the same position for over half a century in spite of the great erosive action of the sea on the terminal ice cliffs.

The Chugach Mountains west of Valdez comprise an area of about 6000 square miles. The numerous expeditions that have visited the terminal areas of many of the glaciers of this area in-

clude the Harriman Expedition of 1898<sup>1</sup> and the American Geographical Society's expeditions of 1931<sup>2</sup> and 1935<sup>3</sup>. Two expeditions made attempts to penetrate to the interior of this region before 1955. The first of these was the unsuccessful expedition of Dora Keen<sup>4</sup> to the Harvard Glacier. The second was that of Bradford Washburn<sup>5</sup> to the Matanuska Glacier and Mt. Marcus Baker. Very bad weather curtailed the scientific work of this party. In 1955 the Arctic Institute of North America sponsored the Chugach Mountains Expedition, the first to explore the region of the upper Columbia Glacier. In 1957 a second expedition visited the region and made additional observations. Since no adequate map has been published of the Columbia Glacier, a sketch map is given here as Fig. 1. Most of the altitudes shown are based on corrected altimeter and level readings of the 1955 and 1957 expeditions.

The highest peaks of the Chugach Mountains surrounding the Columbia Glacier reach altitudes in excess of 12,000 feet. During the summer numerous exposures of rocks can be found on the lower peaks, but above 7000 feet exposures are generally accessible only on nearly vertical cliffs or on steep slopes swept clean by avalanches. Dark shales were found at 11,000 feet or higher on the south ridge of Mt. Elusive, on the west ridge of Mt. Witherspoon, and on the south ridge of Mt. Valhalla. Dark siltstones and argillites were found at 9000 feet on Mt. Sharkfin 3 miles northeast of Mt. Einstein. At 8500 feet on the east ridge of Mt. Powder Top (9.5 miles east of Mt. Witherspoon) black sandy shale and fine siltstone are exposed. At 5500 feet on Pandora Peak shales, fine siltstones, greywacke, phyllite, black argillite, and slates are exposed. Rocks found at still lower levels on a supra-glacial moraine on the east branch of the Columbia Glacier (2.5 miles southeast of Pandora Peak) were more highly metamorphosed than the folded sedimentary rocks at higher altitudes to the west. The only samples of igneous rock were porphyritic dacite found at 8500 feet on Mt. Powder Top