

## Preliminary Results from Archaeological Investigations on Avayalik Island, Extreme Northern Labrador

RICHARD H. JORDAN<sup>1</sup>

**ABSTRACT.** Archaeological investigations on Avayalik Island near the tip of the Labrador Peninsula by the Torngat Archaeological Project have produced data crucial to a new, but preliminary, understanding of Middle Dorset tool kits, subsistence pursuits, settlement patterns, house forms, and technological changes from Early to Middle Dorset. Three sites, tentatively dated to the early Middle Dorset period, demonstrate a gradual evolution from Early to Middle Dorset registered in the lithic remains. They also exhibit a variety of house forms and associated features suggesting seasonal and/or functional differences. The fourth site discussed, Avayalik-1, consists of a deep midden deposit whose lowest levels are nearly perfectly preserved. Wood artifacts are numerous and suggest that this raw material played an extremely important role in Dorset technology. Faunal evidence from this site, combined with evidence from other sites, indicates a summer to early winter focus on birds and seals, particularly the migratory harp seal, and a late-winter to summer focus on birds, walrus, and seals, particularly the ringed seal at ice-edge and outer island locales such as Avayalik. The importance of these new adaptive patterns, compared to earlier groups is discussed.

**RÉSUMÉ.** La recherche archéologique effectuée à l'île Avayalik par le "Torngat Archaeological Project" a fourni des données essentielles pour une nouvelle compréhension préliminaire des Dorsetiens moyens. L'île est située près de l'extrémité nord de la péninsule du Labrador. Ces données nous renseignent non-seulement sur l'outillage, les poursuites de la chasse, les modes d'établissement, et les formes des maisons des Dorsetiens moyens mais aussi sur les changements technologiques survenus entre le Dorsetien ancien et moyen. Les vestiges lithiques recueillis dans trois sites provisoirement datés de la première partie de la période dorsétienne moyenne montrent une évolution continue à partir de la période dorsétienne ancienne. En plus, les formes variées des maisons et les aménagements particuliers suggèrent des différences saisonnières et/ou fonctionnelles. Un quatrième site discuté, Avayalik - 1, consiste en un dépotoir épais. Les niveaux inférieurs de ce dépotoir sont presque parfaitement préservés. Les artefacts en bois sont abondants, suggérant que cette matière première était très importante dans la technologie dorsétienne. Les témoins fauniques provenant de ce site et de certains autres indiquent le cycle d'exploitation suivant: de l'été jusqu'au début de l'hiver, la chasse se concentrait sur les oiseaux et les phoques, surtout le phoque migratoire de Groenland; de la fin de l'hiver à l'été, sur les oiseaux, le morse, et les phoques, surtout le phoque annelé en bordure de la glace et aux îles éloignées, comme Avayalik. L'importance de ces schèmes d'adaptation, nouveaux en comparaison de ceux des groupes plus anciens, est discutée.

Traduit par Ian Badgley, Université du Québec à Montréal.

One of the primary goals of the surveys undertaken by the Torngat Archaeological Project in northern Labrador during the summers of 1977-8 has been to arrive at an understanding of prehistoric adaptive patterns. The central focus of this study closely adheres to the basic operational tenet of cultural ecology, which "pays primary attention to those features which empirical analysis shows most closely involved in the utilization of environment in culturally prescribed ways (Steward, 1955:37)." Hence we directed our field research toward retriev-

<sup>1</sup>Department of Anthropology, Bryn Mawr College, Bryn Mawr, Pennsylvania 19010

ing data related most directly to procurement technology, subsistence resources, demographic arrangements and the determination of site type and function. This approach is generally termed subsistence-settlement pattern analysis and has achieved significant results in central Labrador for both prehistoric Indian and Eskimo occupations (Fitzhugh, 1972, 1977; Cox, 1977; Jordan, 1978).

However, the archaeological data from Labrador often necessitated indirect analytical procedures to determine these prehistoric subsistence-settlement patterns. These include the analysis of lithic assemblages, and a heavy reliance on ethnographic analogy and comparisons to better preserved prehistoric assemblages from Newfoundland and southern Labrador or the central and high Arctic. The subsistence pursuits and seasonal occupation of particular sites have been inferred from site location and present-day environmental observations, rather than on the direct analysis of faunal material. In addition, the reconstruction of paleoenvironments rests on the modern distribution and abundance of resources which were presumably exploited prehistorically, and an attempt to integrate this data within a paleoecological framework determined by palynological techniques (Jordan, 1975; Lamb, 1978; Short, 1978). While ignoring the possible merits or pitfalls of this approach, it was caused by the abysmal preservation conditions on the Labrador coast which have destroyed a great deal of empirical information pertaining to organic artifacts, faunal remains, house structures and so forth.

In contrast, excavations on Avayalik Island by the Torngat Project in 1978 produced a number of sites that are crucial to understanding Middle Dorset subsistence-settlement patterns. Not only were a number of new types of sites and features discovered, but one site, Avayalik-1, had almost perfect organic preservation in the lower midden deposits. This paper will thus review the most significant results of the Avayalik excavations and place them in a broader regional perspective in order to establish a preliminary understanding of Middle Dorset subsistence-settlement patterns on the north Labrador coast. (Note that little reference will be made to the Avayalik art objects or to the magico-religious basis of the Labrador Dorset as a discussion of this topic has been treated by Jordan, 1979/80).

Avayalik is a small island located about 25 km south of the tip of the Labrador Peninsula (Fitzhugh, this volume: Fig. 1, 2). In this region the waters of Ungava Bay, Hudson Strait and Davis Strait mix to create an extremely rich marine environment which has been exploited by Paleo- and Neo-Eskimos for nearly 4000 years. Avayalik is a seaward island about 6.5 km from the mainland and forms part of an island complex between Cape Kakkiviak and McLelan Strait. It is nearly devoid of vegetation and consists of barren granite outcrops and gravel beaches. The major attraction of this rather bleak island for prehistoric hunters lies in its proximity to the rich maritime resources of the ice-edge in late winter and the continued exploitation of many of these resources throughout the open water summer months.

The island was first visited by archaeologists in 1967, by Patrick Plumet, and again in 1977 as part of the regional surveys undertaken by TAP. Further

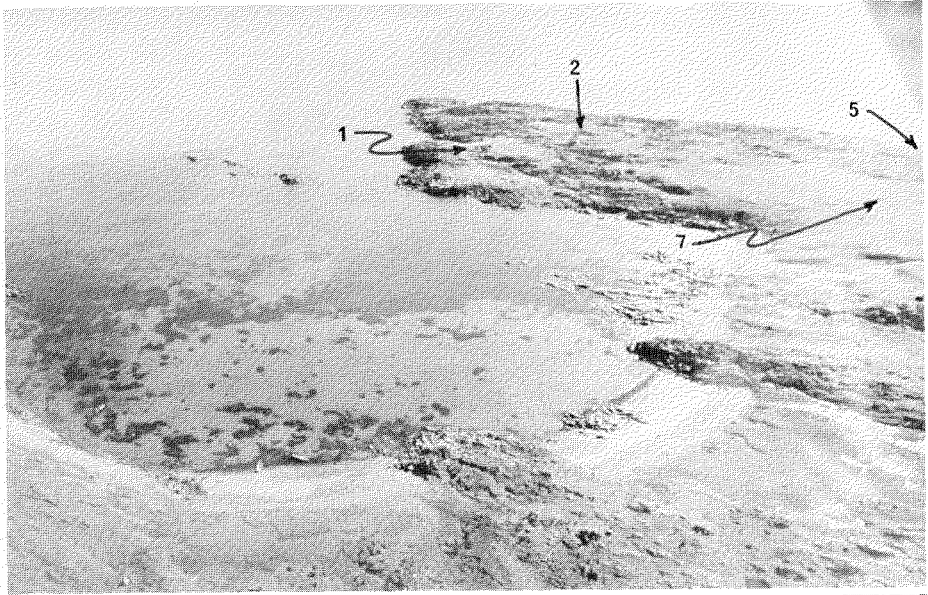


FIG. 1. Oblique aerial photo of the shallow southern cove and barren rocky point on Avayalik Island — view southwest. The locations of the sites discussed in the text are indicated by arrows.

investigation of this island in 1978 under the direction of Steven Cox and the author were delayed until the first week of August because heavy fog and pack ice prevented us from reaching this region in July. Excavations continued until August 26 when snow and freezing rains forced a hasty retreat south.

Almost all the Avayalik sites are located on a relatively narrow gravel and outcrop point which forms the western side of the shallow southern cove (Fig. 1). Although several Neo-Eskimo tent rings are present on this island, the archaeology is dominated by an intensive Middle Dorset occupation and a Late Dorset occupation of much shorter duration. Along the gravel terrace which forms the northern part of the point lie a number of sites at least partially obscured by deflated gravels. One site, Avayalik-7 (JaDb-18), consists of a circular to subrectangular boulder outline — the remains of a probable semi-subterranean winter house. This badly deflated structure measures 3-4 m on a side, has a 3-4 m long entrance tunnel and a possible mid-passage feature bisecting the house. Small test pits in the relatively shallow house midden produced artifacts which can be assigned to the Middle Dorset period. The assemblage consists of tip-fluted points, notched bifaces, triangular endscrapers, a relatively high percentage of Ramah chert and quartz crystal microblades, ground schist fragments and at least one ground stone ulu-like fragment and one unnotched nephrite burin-like tool (Fig. 2, top row). The moderately high percentage of microblades (33%) and the straight-based triangular points may indicate that this site falls quite early in the Middle Dorset sequence (200 B.C.-200 A.D.) even though a single wood charcoal sample produced a date of  $555 \pm 70$  A.D. (S.I.-3890). Given the broad scatter of artifacts along this entire terrace, evidence for a larger and more intensive winter occupation may still lie beneath the deflated gravels.

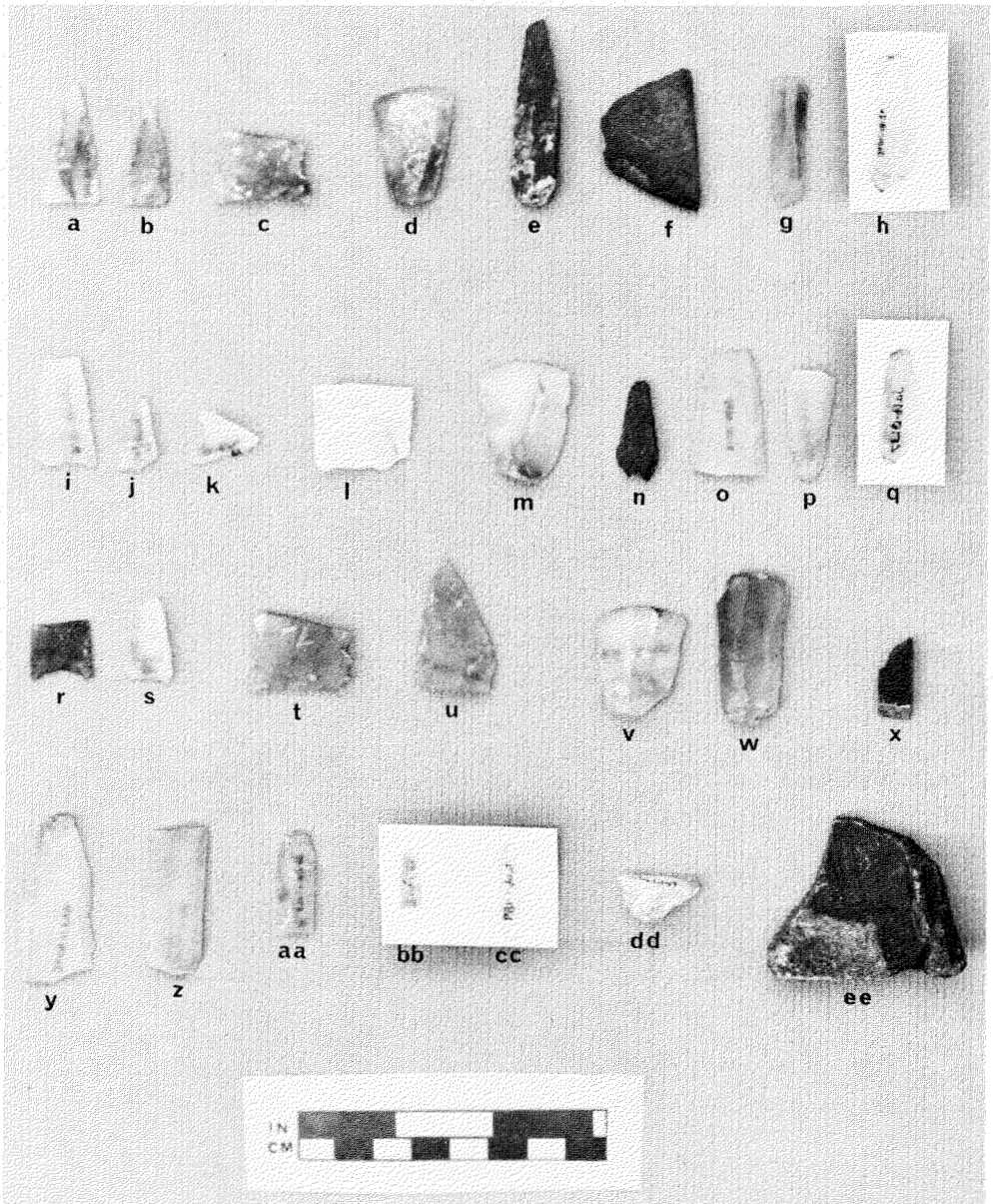


FIG. 2. Selected artifacts from Avayalik Island. *a-h*: Avayalik-7; triangular points, multiple-notched biface base, endscraper, nephrite burin-like tool, ground stone knife fragment, microblades. *i-q*: Avayalik-5; triangular points, multiple-notched biface corner, rectangular biface base, endscraper, nephrite burin-like tool fragment, microblades. *r-ee*: Avayalik-2; triangular points, multiple-notched biface base, assymetric expanded stem biface (base broken), endscrapers, nephrite burin-like tool fragment, microblades, microblade core, soapstone pot fragment.



FIG. 3. Parallel line of rocks extending along gravel beach terrace at Avayalik-5 — view southwest. Here Mark Schatz of Haverford College recreates the “Hopping-Stone” game.

Just on the opposite side of the terrace from Avayalik-7 lies another Middle Dorset site, Avayalik-5 (JaDb-13), which contains a large rock pavement area measuring 20 x 40 m and two lines of parallel boulders extending some 40 m north of these pavements (Fig. 3). It is still uncertain whether this large pavement area is the remains of a single large structure or of a number of smaller paved structures similar to others in northern Labrador (e.g. Beacon Island, Home Island). Nevertheless, the possibility exists that this paved area may have been constructed for specialized ceremonial or recreational activities as it is directly associated with the double line of boulders which are probably “hopping stones.” Although ethnographic accounts describe these features as a single line of flat rocks, Collins (1937: Pl. 1) illustrates a double line of “hopping stones” associated with prehistoric sites on Saint Lawrence Island, Alaska. Diagnostic artifacts (Fig. 2, row 2), indicate that Avayalik-5 falls within the Middle Dorset



FIG. 4. Bipod photo of Middle Dorset structure at Avayalik-2.

period. Even though some bias may be introduced because of the small sample size (51), the high percentage of microblades (50%) suggests this site dates to the earlier part of that period.

Avayalik-2 (JaDb-1) lies just south of the previous two sites near the crest of the beach ridge. Lichen-covered gravels cap a shallow cultural deposit averaging about 4-5 cm deep. The most obvious feature is a subrectangular boulder outline measuring approximately 6 x 3.25 m, bisected by an internal central rock feature (Fig. 4). This feature lacks any of the attributes commonly associated with "axial hearths" or "mid-passages," such as clearly defined slab rock pavements, box hearths, vertically emplaced boundary rocks, rocks covered with burnt grease or charcoal concentrations. Whether these tents were connected or not remains uncertain, however it is extremely doubtful whether this central rock feature functioned as either a hearth area or a passageway. Moreover, the similarity of artifact classes, their distribution and frequency within each of the boulder rings on either side of the central rock feature indicates that similar activities took place within each ring rather than providing evidence for specialized activity areas or men's and women's sides (*cf.* McGhee, 1979). The data provisionally suggests that this structure housed two small family units.

The number of recovered artifacts (475) is unusually high given the shallow nature of the deposit. Lithic artifacts (Fig. 2; rows 3, 4) are represented by tip-fluted and bifacial points, single-notched, expanded stem, and multiple-notched bifaces, unifacial endscrapers, concave side scrapers, nephrite burin-like tool fragments, Ramah chert and quartz crystal microblades and cores, flake knives and scrapers, as well as soapstone pots and ground schist fragments. Although the endscrapers in this assemblage are unifacial, suggesting Middle Dorset technology, the lack of unifacial points, the high percentage of microblades (45%), and the presence of expanded stem bifaces suggest an occupation very early in the sequence (200 B.C.-200 A.D.). Two radiocarbon dates on wood charcoal taken from small pits associated with the structure are somewhat contradictory. The first date of  $50 \pm 75$  B.C. (S.I.-3887) is satisfactory, but a second of  $605 \pm 70$  A.D. (S.I.-3888) is inexplicably late.

Provisional data thus indicate that Avayalik-2, 5 and 7 fall within the early part of the Middle Dorset occupational sequence and represent seasonal and/or functional differences. However, the dating of these sites remains tentative and will need corroboration from more radiocarbon determinations and increased artifact sample size.

The southern end of the point is formed of rock outcrops and natural piles of boulders. Cultural remains, interpreted as cached materials, were found wedged between boulders and in pits or depressions excavated next to outcrops (Fig. 5). Radiocarbon dates from two different caches fall within the Dorset time period. The first, on wood charcoal from a cache pit associated with Avayalik-2, may be a bit early —  $290 \pm 80$  B.C. (S.I.-3889). A second, on walrus bone from a rock cache not directly attributable to any particular occupation site, dates to  $60 \pm 70$  B.C. (S.I.-3892) and seems satisfactory. A rapid investigation revealed the presence of at least 25 caches on the slope between Avayalik-1 and 2. A more careful examination of five other caches located south and west of Avayalik-2



FIG. 5. James Savelle of the University of Alberta stands atop a natural boulder pile which functioned as a Dorset cache — view northeast. Worked bone and ivory pieces, walrus crania and mandibles, and a soapstone pot were discovered lodged among the boulders.

produced a disproportionately large number of walrus bones. Of the 60 bones recovered, 54 were walrus — mainly mandibles and large cranial fragments — two seal bones, a single narwhal tusk and a single whale vertebrae. The general lack of post-cranial bones probably indicates that elements with the most meat were removed. The lithics associated with these caches are dominated by harpoon endblades, microblades, and biface fragments, that is, tools reflecting hunting and butchering activities. In some caches, however, many of the bones were cut and/or flaked indicating that raw materials were being cached as well. In addition to the faunal material and associated lithics, a nearly complete soapstone pot was also recovered, perhaps suggesting that unnecessary heavy equipment was deliberately cached among boulders before the Dorset undertook seasonal movements to new hunting grounds. Ethnographic support for this suggestion may be found in Jenness (1923), who reports that the Copper Eskimo cached pots, lamps, sleds and other heavy equipment that would have been burdensome during the nomadic summer season. Unfortunately, it is impossible to determine the seasonality of these caches because no teeth were recovered for thin sectioning. Nor is it entirely certain in all cases which caches are associated with particular occupation sites. In any case, these caches seem to be multifunctional; they were used to store meat, raw materials and heavy equipment.

Avayalik-1 (JaDb-10) is located on a grass and sedge terrace just below Avayalik-2 and the cache areas. The site encompasses about 1200 square meters of rich Middle Dorset midden deposit and house depressions, which are prob-

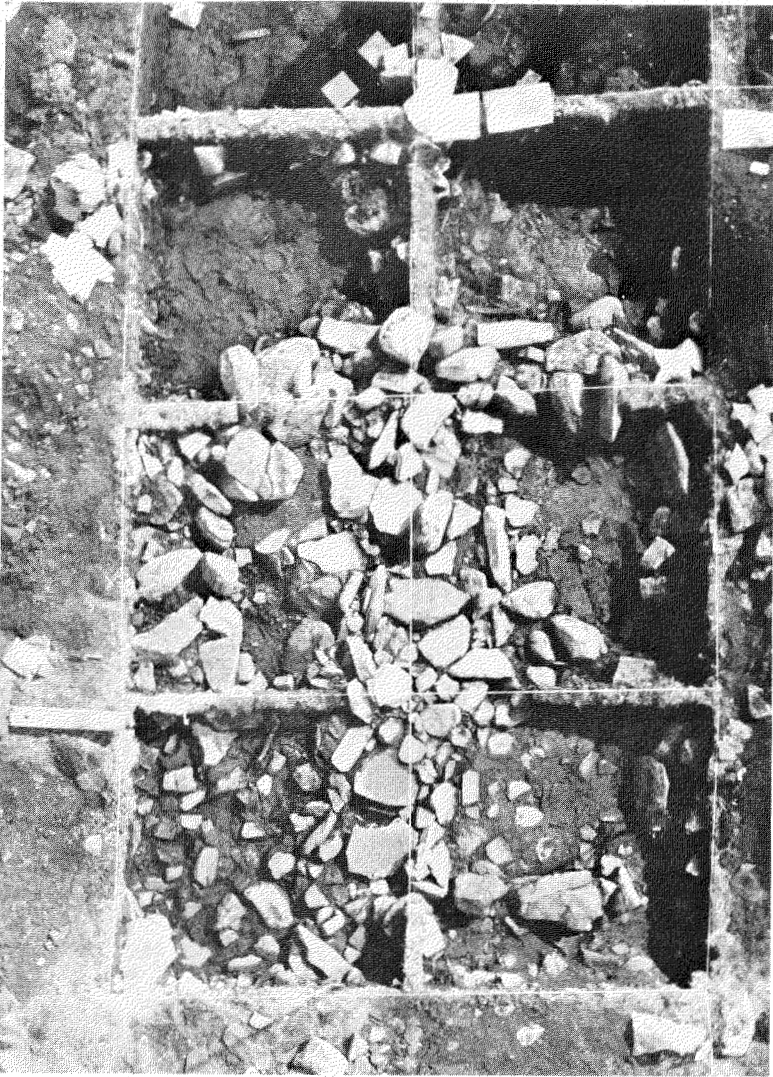


FIG. 6. Bipod photo of Late Dorset semi-subterranean house and surrounding middle Dorset midden at Avayalik-1. The individual excavation units are two-meter squares.

ably associated with both Middle and Late Dorset occupations. Although 40 square meters were excavated to various depths, only two square meters were completed. Excavations focused on the most visible house depression and the middens to the east (Fig. 6). Within the house, a jumbled mass of rock was encountered just below the fresh rootlet peat. These disorganized rocks probably resulted from caching activities subsequent to the house collapse. Upon removal of these boulders, the internal features of the house became clear; the house is a small (3 x 3.75 m) semi-subterranean rectangular structure with a rock slab mid-passage, gravel and rock-floored sleeping platforms on either side, and



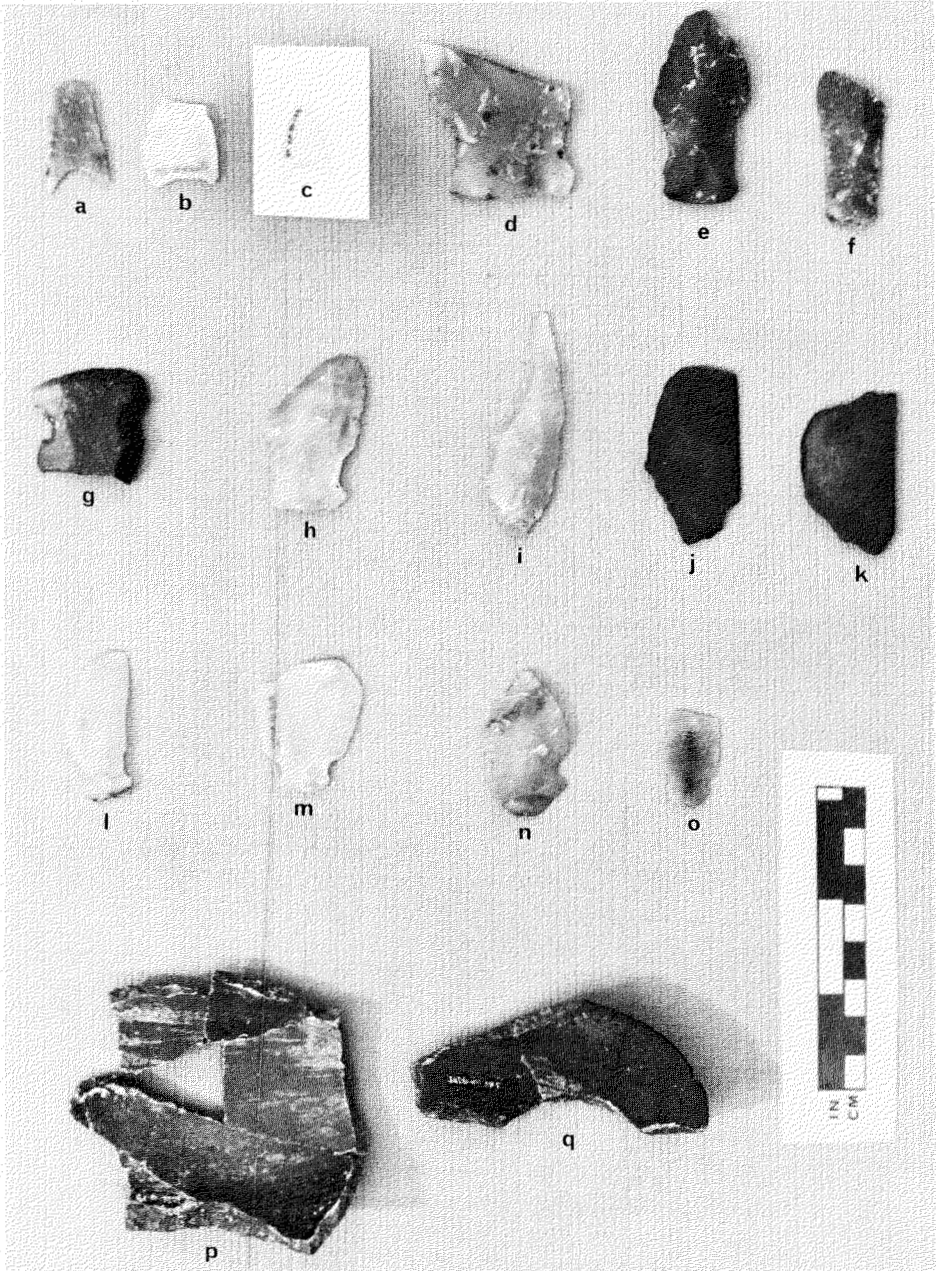


FIG. 7. Selected Late Dorset lithic artifacts from Avayalik-1. *a-c*: triangular points, *d*: broadly notched biface, *e-f*: stemmed bifaces, *g*: notched endscraper, *h*: diagonal scraper, *i*: concave side-scraper, *j-k*: nephrite burin-like tools, *l-o*: notched flakes, *p-q*: soapstone pot and lamp fragments with a red ochre wash.

no entrance tunnel. The house depression was constructed by excavating into the Middle Dorset midden and partially destroying an earlier mid-passage structure in the process. The walls were constructed of multi-tiered rocks and sod and the roof was framed with driftwood and probably covered with sod and/or hides. The mid-passage differs from other Labrador Late Dorset houses in that no box hearths were constructed nor were any large notched rocks located (Cox, 1978). In the northeast corner a cache was constructed for raw material storage. Within it were a notched biface, two preform fragments and about 50 flakes and chunks of Ramah chert.

The Late Dorset occupation was very brief compared to the Middle Dorset — possibly only a few seasons given the very thin occupation layer and the scanty number of tools recovered. Lithic artifacts include bifacially chipped triangular points, broadly notched and stemmed bifaces, a notched endscraper, diagonal scraper, concave sidescraper, large unnotched nephrite burin-like tools, notched flake knives, rectangular soapstone pots and oval lamps often with a red ochre wash (Fig. 7). A single radiocarbon sample taken from a roof timber produced a date of  $1280 \pm 60$  A.D. (S.I.-3864) which conforms well with other Late Dorset sites in northern Labrador dated to the 13th century. Even though this occupation was comparatively brief, the remains of seven or eight rock and sod houses, some of which certainly date to the Late Dorset occupation, are discernible from surface indications.

The Middle Dorset midden consists of black humified peat 60 cm deep lying on sterile beach sand and overlain by 10-15 cm of fresh fibrous peat. Two dates on preserved willow twigs of  $430 \pm 60$  A.D. (S.I.-3997) and  $440 \pm 60$  A.D. (S.I.-3009) and a wood charcoal sample of  $455 \pm 70$  A.D. (S.I.-3886) are thought to accurately date the Middle Dorset occupation. The midden can be subdivided on the basis of preservation; an upper 20-25 cm level with large mammal bone preservation; a 5-10 cm transitional zone with variable bone and wood preservation; and a lower 25-30 cm deep permafrost zone with nearly complete preservation of all organics including such very perishable materials as hide and fur. Although the soils are acidic, the excellent preservation in the lowest zone is a result of rapid midden accumulation and its permanently frozen condition.

Faunal analysis of nearly 1700 mammalian remains indicates an extremely heavy reliance on walrus. Although walrus bones (35.1%) number fewer than seals, walrus provided the majority of meat and fat consumed, if one takes into account the live weight of the animals. Small seals formed a secondary item in the diet even though the relative percentages are moderately high (52.3%). Ringed seal remains far outnumber harbor and harp seals. Other species include the bearded seal (3.1%), fox (4.3%), polar bear (2.5%), caribou (1.7%) and small whales, such as the narwhal (0.3%). Large whale remains are represented by only two bones and a number of large baleen strands and probably result from occasional scavenging of whale carcasses rather than active hunting. Two *Canis* bones are also present and probably derive from wolves, rather than dogs. Bird bones are very numerous and represent an extremely diverse avifauna, but have, as yet, received only a very preliminary examination. Bones of the following four families dominate the collection: large gulls (*Laridae*) such as great black

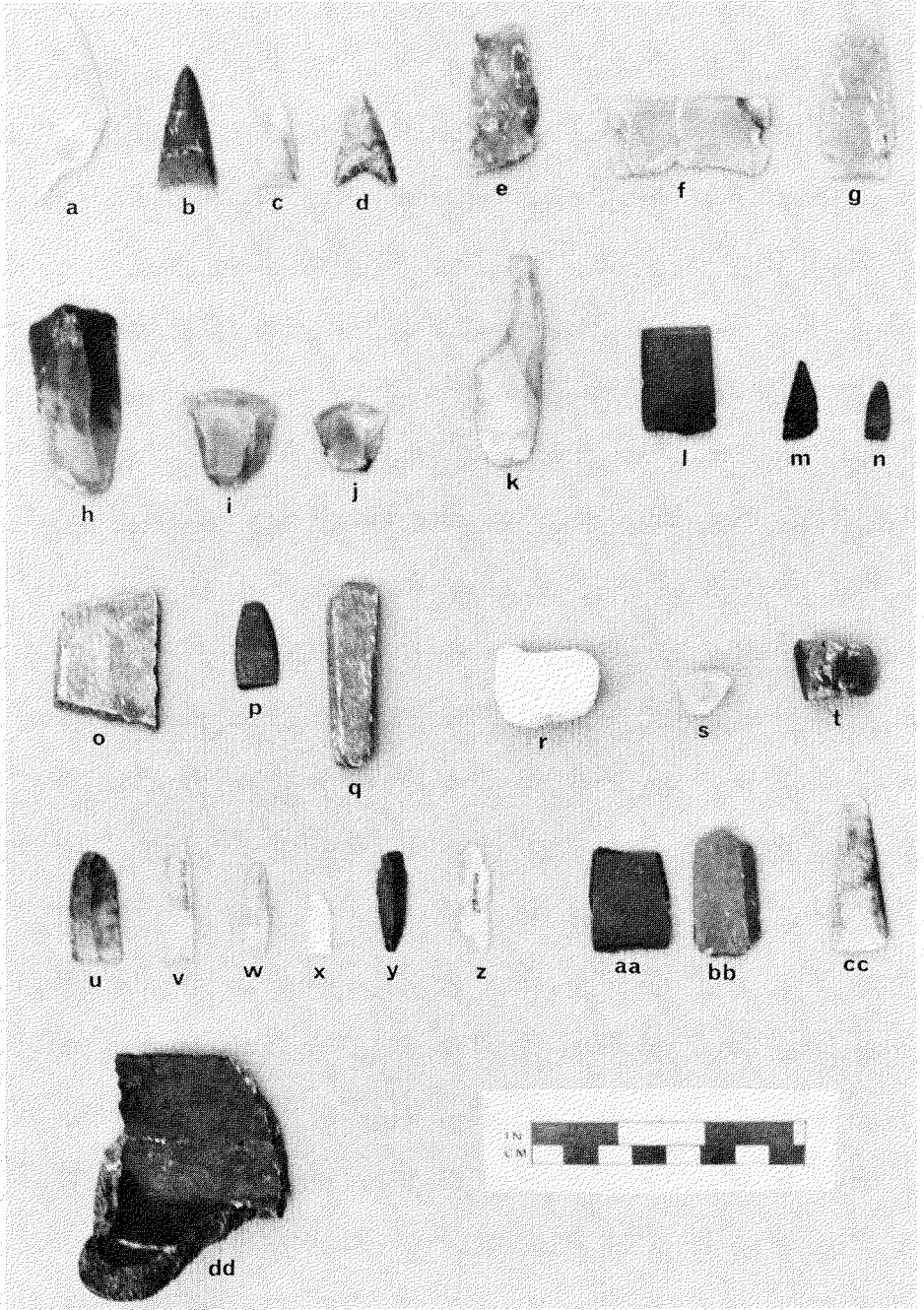


FIG. 8. Selected Middle Dorset lithic artifacts from Avayalik-1. *a-d*: triangular points, *e*: multiple-notched biface, *f-g*: single-notched bifaces, *h-j*: endscrapers, *k*: concave sidescraper, *l-n*: notched burin-like tools, *o-q*: ground schist objects, *r-t*: microblade cores, *u-z*: microblades, *aa-bb*: slate points, *cc*: slate end plane, *dd*: rectangular soapstone pot fragments.

backed and glaucous; diving ducks (*Anatidae*) such as eiders and scoters; pelagic birds (*Procellariidae*) such as shearwaters and fulmars; and alcids (*Alcidae*) such as black guillemots. A few remains of ravens, geese, small gulls, murre, ptarmigan, and most interestingly, the extinct great auk were also recovered.

Tooth sectioning data suggest a late winter/early spring occupation probably beginning in March and extending through the open-water summer months. The latter part of this occupation is also confirmed by the presence of such migratory birds as shearwaters and the presence of juvenile ducks. The demography of the seal kill indicates open-water hunting at the ice-edge or during ice-free months since more adolescent than adult seals were taken. Walrus may have been taken either at hauling-out places or from the ice-edge. Fox-trapping, bear hunting and birding could have been practiced throughout the seasonal occupation. Caribou may have been taken in late spring or summer as they moved out of wintering grounds in the interior. One likely area is William's Harbor, located a few kilometers south of Avayalik, where Dorset caribou fences and hunting blinds were discovered.

The lithic remains at Avayalik-1 are extremely abundant, numbering about 2500 artifacts. Despite the depth of the midden, the assemblage is uniform throughout, indicating rather rapid deposition over a relatively short time period. The tool assemblage (Fig. 8) is very similar to other Middle Dorset collections in Labrador and shows some affiliations with both central Arctic and Newfoundland Dorset. The inventory includes bifacial, unifacial and tip-fluted points of Ramah chert. A single exception is a tip-fluted form of Newfoundland blue chert (Fig. 8D). Symmetric and asymmetric notched bifacial knives were used in butchering, while multiple notched bifaces (often tip-fluted) may have tipped caribou and walrus lances. A variety of end-scrapers include those produced on wide, thick blades, flared and triangular forms. Concave sidescrapers are present, but in very low percentages. Microblades and cores are made of quartz, quartz crystal, and Ryan's quartz (all of which outcrop locally), a distinctive green, agate-like material related to Ryan's, and Ramah chert (Lazenby, this volume). Cores and blades of grey chert and brown chalcedony are represented by only three or four specimens. Unnotched unifacial flake knives are common and may have been used in a variety of cutting and butchering activities. Nephrite burin-like tools are made in a number of forms: single-notched rectangular forms for heavy bone grooving and gouging, a single-notched obliquely pointed, rounded form for more delicate and intricate carving and an uncommon double-notched, rounded form for polishing or softening organic materials. Schist pallets and end planes are common as are small rectangular soapstone pot fragments. Slate use is almost negligible and is represented by only two notched end blades, a spatulate object, a bevelled object and a notched flensing knife fragment.

Bone and ivory artifacts are comparatively few, comprising about 150 specimens with a number of common Dorset types notably lacking. Ice creepers, needles, barbed points, snow knives and caribou lances were not recovered. Of the six harpoons, all are closed socket forms of walrus ivory and, with a single exception, are slotted for the insertion of a triangular point. Three are Dorset

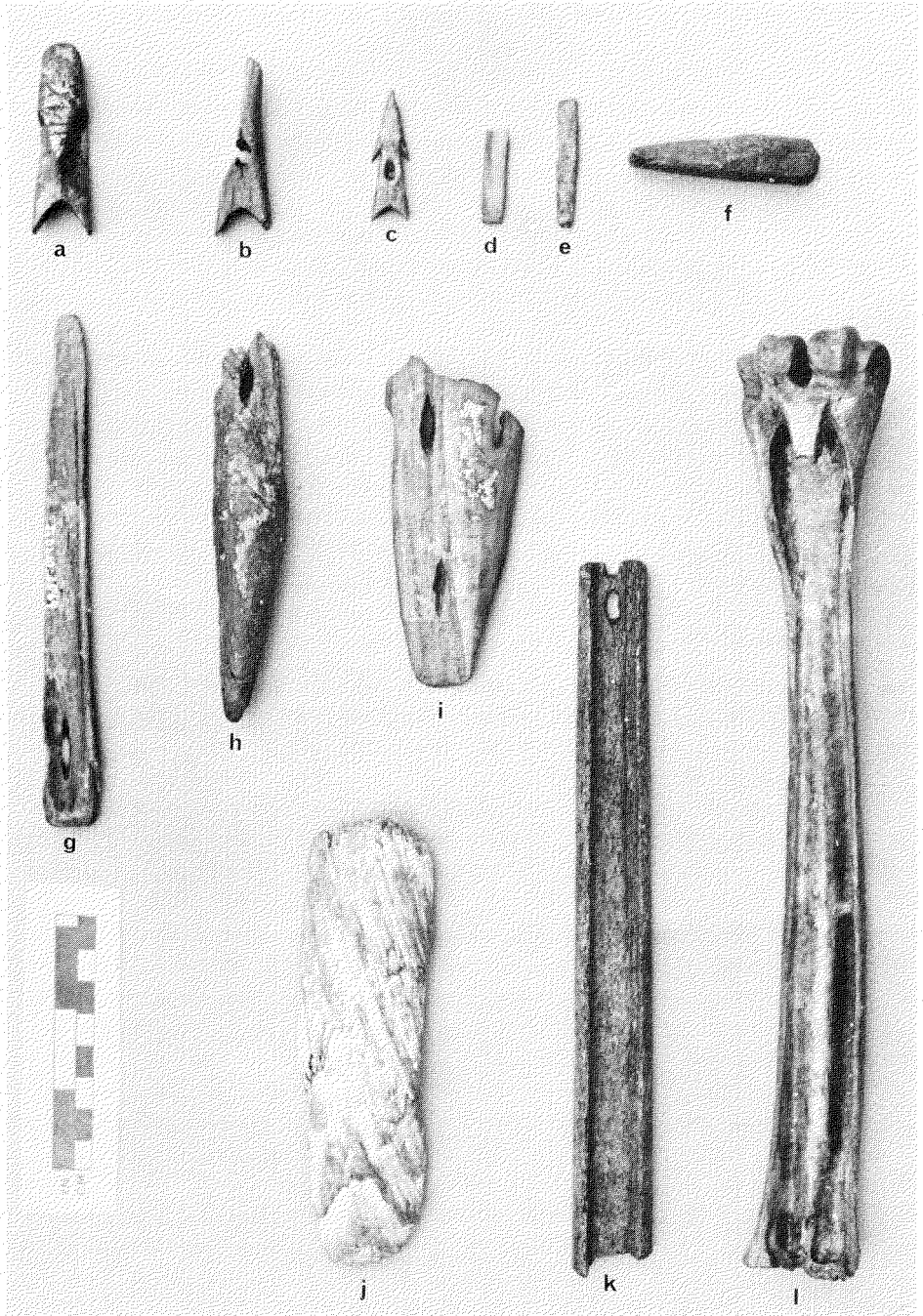


FIG. 9. Selected Middle Dorset bone and ivory artifacts from Avayalik-1. *a-c*: ivory harpoon heads, *d-e*: ivory support pieces, *f*: bone pressure flaker, *g*: caribou metapodial foreshaft, *h*: narwhal tusk icepick, *i*: ivory composite handle, *j*: narwhal tusk wedge, *k*: bone sled runner, *l*: caribou metapodial foreshaft debitage.

Parallel forms (Fig. 9A) identical to those from the central Arctic. I fully agree with Maxwell's (1976:63) suggestion that these heavier forms were specifically used in walrus hunting. Two Kingait Closed Socket forms (Fig. 9B) were also recovered and demonstrate affinities with central Arctic sites. These lighter harpoons were probably used to hunt the small seal species. Maxwell (1976:62) considers the Kingait Closed Socket harpoon the prototype of Newfoundland Dorset forms, since they predate Harp's (1964) Port au Choix-2 site. While this suggestion is distinctly possible, these forms also continue through the Newfoundland Dorset period, at least in northern Labrador. The final harpoon recovered (Fig. 9C) is identical to the Dorset Plain form at Tyara (Taylor, 1968: Plate 20M). Taylor notes that this is a very rare type, much smaller than other harpoons, and is probably a toy. Even though all these northern sites with similar harpoon forms are generally earlier than Avayalik-1, strong cultural affinities to the central Arctic are suggested. Other artifacts which relate directly to the harpoon complex include caribou metapodial foreshafts (Fig. 9G) and a probable narwhal tusk ice pick (9H). A functionally diverse collection of bone, ivory and antler artifacts completes the assemblage and includes laterally grooved burin-like tool support pieces of ivory (9D,E), pressure flakers (9F), composite ivory handles (9I), antler and narwhal tusk wedges (9J), longitudinally-grooved sled runners similar to Newfoundland Dorset forms (9K), and caribou metapodial debitage from the production of foreshafts (9L).

The wooden artifacts are much more plentiful than those of bone, antler and ivory and number almost 900 pieces. Although Dorset wooden artifacts are known from northern and southern Baffin, Bylot, and Devon Islands, none of these sites, with the possible exceptions of those on northern Baffin and Bylot, contain nearly the amount of wood as does Avayalik, where the ratio of wood to bone and ivory artifacts is 6:1. This is somewhat surprising since Avayalik is about 400 km north of the tree line and the island itself is nearly devoid of any vegetation. The nearest woody shrubs, mainly willows, are confined to the deep interior fiord zones. About 3200 wood fragments were submitted for identification. The coniferous species include spruce, fir and tamarack presumably obtained from driftwood. Hardwood species are mainly willow plus a fragment or two of birch and could have been collected as driftwood or sought out in the inner fiord regions.

The artifacts are dominated by shaft and handle fragments, including Figure 10A with a broken Ramah chert biface still embedded in the endblade slot. Many other similar pieces were also recovered and presumably functioned as knife handles as well (Fig. 10B). Other forms include a broad composite handle with three lashing holes (Fig. 10C) similar to the ivory piece illustrated in Figure 9I. The next handle (Fig. 10D) is rather peculiarly constructed insofar as the slot on one side extends much further down the edge than on the other. It may have once held a burin-like tool inset into the side with the shorter lateral slot and braced by a small rectangular ivory support piece (Fig. 9D,E) in the longer slot. The broad, deeply grooved handle in Figure 10E may have been a haft for a large notched biface (e.g. Fig. 8F). Figure 10F illustrates a unique form with two horizontal and one vertical lashing groove and a small ivory wedge embedded in the slot. The

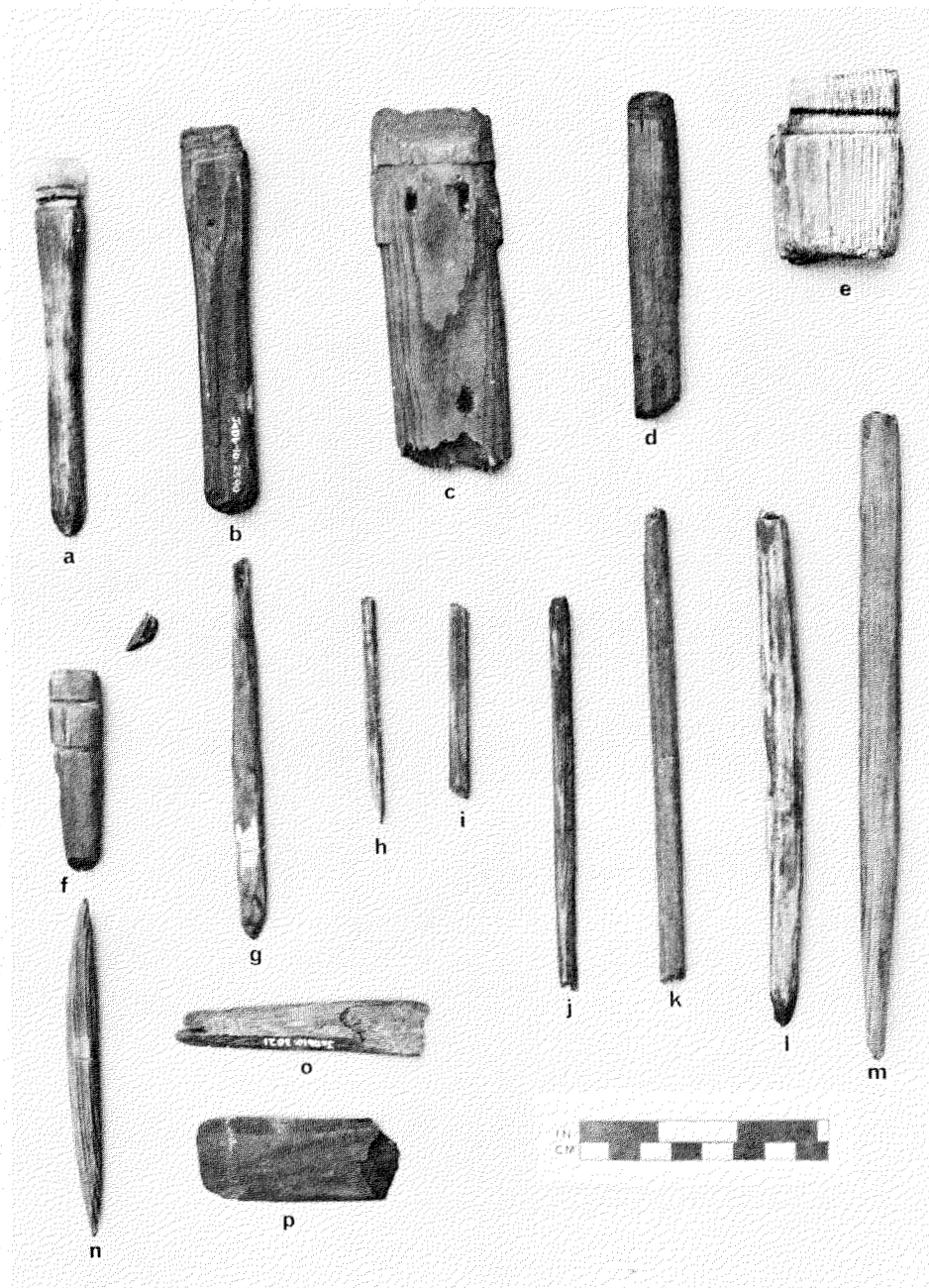


FIG. 10. Selected Middle Dorset wooden artifacts from Avayalik-1. *a*: handle with broken Ramah chert knife embedded in slot, *b*: knife handle, *c*: composite handle, *d*: burin-like tool handle, *e*: large biface handle, *f*: handle with multiple lashing grooves and small ivory wedge, *g*: microblade handle, *h-k*: thin shafts for microblades, *l-m*: shafts or handles, *n-p*: objects of uncertain function.

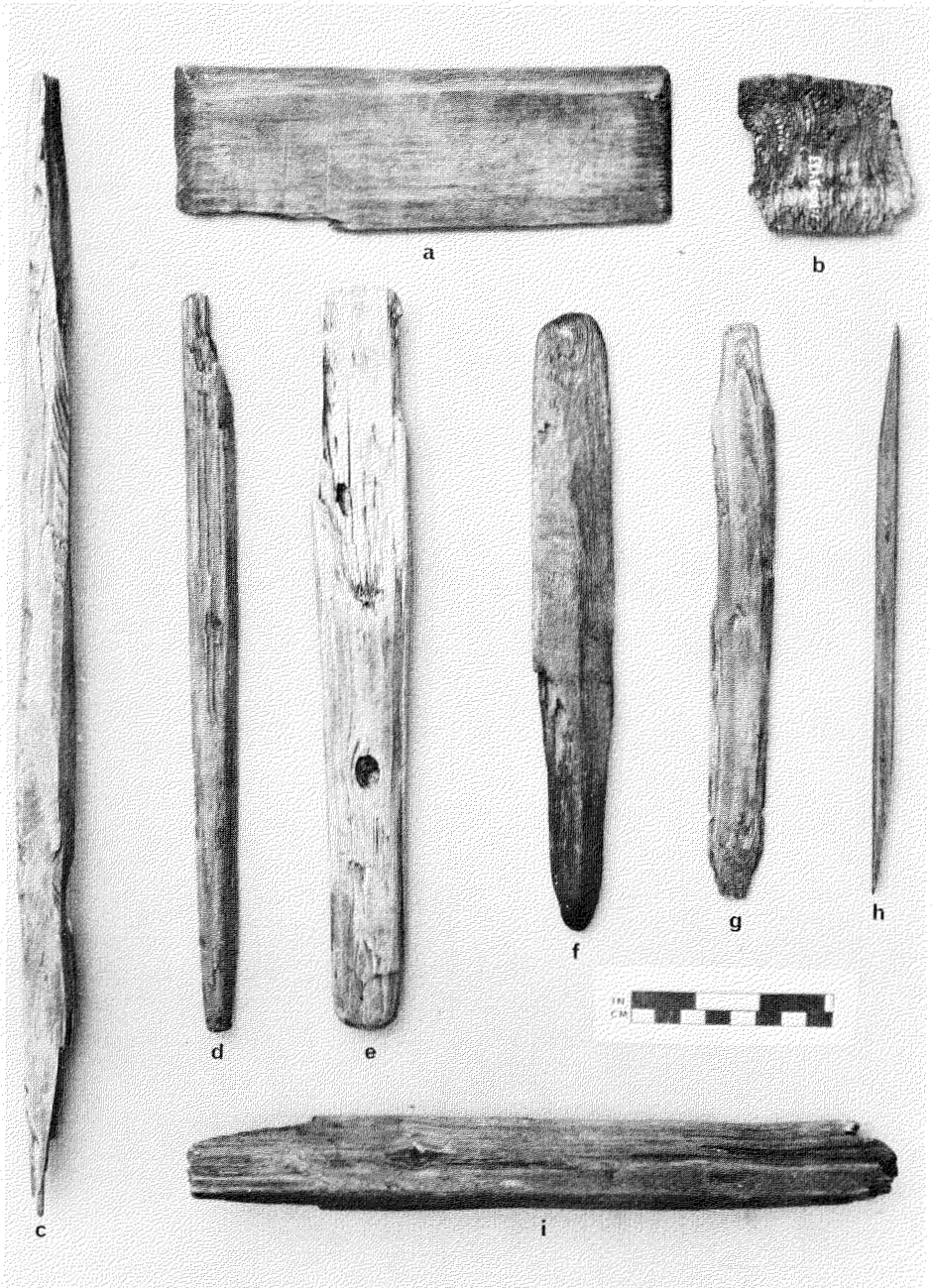


FIG. 11 Selected Middle Dorset wooden artifacts from Avalyalik 1. a-b: bowls or ladels, c-d: harpoon and lance shafts, e: large handle, f: bevelled object, g: ? composite bow segment, h: ? composite arrow segment, i: probable fragment of a boat or sled frame.



final handle (Fig. 10G) has a thin lateral slot near one end and a shallow concave bed at the other end, probably for microblades.

The thin shafts in figures 10H-K are generally octagonal in cross-section and are among the most numerous wooden artifacts. Quite likely they functioned as microblade handles as they are too fragile to have been foreshafts. The thicker octagonal pieces in Figure 10L,M have a flattened cross-section, blunt ends, and may have been either shafts or handles. The objects in Figure 10N-P have all been carefully carved but their use is uncertain.

Wooden containers (Figure 11A, B) are present in two forms: bowls or ladles with bevelled rims and lugs, and square or rectangular boxes made of individual sides held together by baleen or thong lashings. Harpoon and lance shafts (Fig. 11C, D) were also recovered; the first has a bevelled end and presumably formed a section of a composite shaft while the second has a blunt end. The pieces illustrated in Figure 11E, F and I are a large handle, a bevelled object of unknown function and a probable fragment of a boat or sled frame. The final two pieces (Fig. 11G,H) are unique, and if found in any other context, would be interpreted as a support piece for a composite bow and a section of a composite arrow shaft. This interpretation is, however, probably untenable as they are the only two pieces from a collection of about 1050 organic artifacts which suggest the bow was part of the Dorset tool kit.

Other organic artifacts include several examples of knotted baleen, bevelled baleen strips and about fifteen examples of braided cordage. This cordage was made by twisting together musk-ox wool and then braiding a number of these strands together depending upon the desired thickness. They could have functioned as lashing lines, harpoon lines, bird snares and the like. A small number of thin hide pieces were also recovered that exhibit a series of minute stitching holes.

#### DISCUSSION

##### *Technology*

Changes in lithic tool assemblages have been used with a great deal of success in Labrador to discriminate between Indian and Eskimo occupations and to differentiate time periods within the same cultural tradition. The underlying causes of these changes can only be inferred, however, because lithic tools do not function in isolation, i.e. they are intimately related to the organics rarely preserved in Labrador sites. For example, at Avayalik-1 triangular points functioned in conjunction with ivory harpoon heads, braided cordage or rawhide lines, caribou metapodial foreshafts, and wooden shafts hafted together with baleen, rawhide or cordage. Moreover, one suspects that changes in lithics are directly related to systematic changes in complete tool kits, including organics, which are in turn a response to new subsistence and maintenance activities, independent inventions, diffusion of new technologies or ideas, or stylistic shifts. Thus, the observations of culture change inferred from changes in lithic technology record only a fragmentary data set in the absence of organics.

In contrast to most prehistoric sites so far excavated in Labrador, those on Avayalik provide a temporal "snapshot" of a functionally interrelated lithic and

organic assemblage, the resources exploited and strong inferences about seasonal occupation and hunting techniques. A more complete understanding of these diachronic factors among prehistoric Indian and Eskimo traditions will progress only with more intensive excavation of such well-preserved sites as Avayalik-1, and the location and excavation of similarly well-preserved sites from different time periods.

On a more specific level, the data from Avayalik-1 both provide new insights into Labrador Dorset technology and exploitation patterns and confirm some earlier observations from the central and high Arctic. Among these are: (1) a heavy reliance on wood as a raw material rather than bone, ivory and antler. Even though this emphasis on forest products violates traditional assumptions about the Eskimo reliance on bone technology, the utilization of wood in regions where it is readily available should come as no surprise. Wood is, after all, a much softer and more easily worked medium and it can be substituted for, or used in conjunction with bone, ivory or antler for many purposes. (2) The evidence for boats among the Dorset is strengthened on the basis of numerous sites in extreme maritime locations, and the presence of probable boat frame pieces and boat models at Avayalik-1 (Jordan, 1979/80). (3) The absence of definite dog remains in Labrador Dorset sites reinforces a similar picture from central and high Arctic sites despite some minimal evidence to the contrary (Cleland, 1973; Arnold, 1979). This lack of dogs in Labrador Dorset has important implications for hunting strategies, since dogs can be important as draft animals for sleds and for locating ringed seal breathing holes beneath the accumulated snow covers of late winter. Note that the Middle Dorset moved to locations accessible to the ice-edge in late winter where they utilized open-water, rather than breathing hole, techniques. (4) Despite an emphasis on open-water hunting of such powerful and imposing sea mammals as the walrus and bearded seal, no evidence was recovered for float technology. Thus, Dorset hunting techniques must have been less efficient and more dangerous than among the Neo-Eskimo. On the other hand, the ability to exploit these large sea mammals must have been far superior to the earlier Pre-Dorset populations whose sites are almost never found in extreme maritime locations along the north coast. (5) Similarly there is no definite evidence that the Labrador Dorset ever possessed the bowdrill or the bow and arrow — two invaluable items of technology among the Neo-Eskimo. (6) There is not sufficient faunal or technological evidence to suggest that large whales such as the bowhead were actively hunted. (7) Although birds formed an important part of the Dorset faunal assemblage at Avayalik and Akulialuk (see below), no obvious technological items were recovered to suggest how they were taken. There are no analogues to the specialized equipment used by the Neo-Eskimo — nets, sidepronged darts, blunt-headed arrows or gull hooks. While some of the knotted strands of baleen could have been used for bird snares, this interpretation is by no means certain.

#### *Settlement Pattern*

The excavated sites on Avayalik Island provide essential information contributing to the reconstruction of Middle Dorset settlement patterns. The faunal

data from Avayalik-1 demonstrate that outer island locations were occupied during the late winter, spring and summer for ice-edge and open-water hunting. The rest of the seasonal round would remain largely speculative, were it not for the discovery and limited excavation of one other well preserved site in the region. This site, Akulialuk, is located on the northwestern side of Killinek Island and consists of a very large and deep Middle Dorset midden similar to Avayalik. Here the faunal assemblage consists almost entirely of small seal, with harp seals far outnumbering other species, and masses of bird bone dominated by fulmars and shearwaters (Cox and Spiess, this volume). The analysis of the faunal material indicates a summer, fall and early winter occupation.

Available data thus suggest a summer/fall/early winter occupation in locations ideal for the interception of the southern harp migration. During the latter part of this seasonal occupation sod houses presumably were constructed, although this has not been absolutely confirmed from Akulialuk. With the establishment of solid foot-ice and the accumulation of late winter snow, the Dorset moved near the ice-edge where they lived in sod houses (e.g. Avayalik-1 and perhaps Avayalik-7) or snow houses depending upon the local availability of off-shore islands. More transitory camps were also established and exist archaeologically in the form of pavement (e.g. Avayalik-5) and twin boulder ring structures (e.g. Avayalik-2). These two types of sites may have been temporary summer or early fall camps consisting of small family groups, although the possibility exists that Avayalik-5 represents a summer aggregation site for social and religious activities. The caching of raw materials, heavy equipment and meat was also an important aspect of this shifting seasonal round. In addition, journeys were undertaken to procure essential raw materials — possibly to inner fiords for willow, to local outcrops for various types of quartz and quartz crystal, to the south for Ramah chert and to unknown locales for ochre, soapstone, nephrite, schist and very occasionally slate. Given this variety of raw materials, regional and local exchange networks were undoubtedly established.

#### *Chronology and Adaptive Patterns*

Cox (1978) has advanced a cultural historical outline for the Paleo-Eskimo occupation of Labrador which suggests that Pre-Dorset peoples first colonized the north coast about 1800 B.C. and replaced Maritime Archaic Indians along the northern central coast. Although a few Pre-Dorset sites have been located in the central and northern Torngats, the largest populations apparently occupied the coast from Nain to Saglek. The extremely mountainous regions to the north seem to have been only sparsely and intermittently occupied. The inaccessibility of interior winter caribou herds, the general absence of protective offshore islands suitable for small seal hunting, the frequent occurrence of hurricane-force winds for groups lacking sod houses, and the inability to effectively exploit the ice-edge during the winter strongly discouraged occupation of the mountainous north coast.

New Dorset populations with strong affinities to the central Arctic core area spread into northern Labrador about 500 B.C. and displaced existing Paleo-Eskimo groups (i.e. Groswater Drosset) to more southerly regions where they

persisted for a few centuries. Early Dorset sites are distributed from the Nain-Okak region to the tip of the Labrador Peninsula. These new Paleo-Eskimo populations rapidly adopted new raw materials indigenous to Labrador (Ramah chert, nephrite and schist), gradually modified their tool kits, adjusted their subsistence-settlement patterns in response to the new demands of the mountainous coastline of north Labrador, and established local and regional exchange networks (Cox, 1978; Fitzhugh, this volume). Thus this evolution from Early to Middle Dorset in Labrador is essentially an *in situ* development, although the exact timing is still uncertain. Most of these changes were well underway by 0 A.D./B.C.; however, the initial processes underlying this transformation may have begun a century or two earlier.

In addition, a number of central arctic innovations contributed directly to the successful establishment of Dorset populations in northern Labrador. These include the technological ability to exploit large sea mammals (walrus, bearded seal, and occasionally narwhal) especially during the winter near the ice-edge. The capacity to withstand these harsh conditions for prolonged periods was based on the construction of new house forms, in particular the snow house and semi-subterranean sod house, and the intensified use of oil for heating and lighting. The effective exploitation of this highly productive environmental zone during the season of most severe environmental stress (i.e. late winter), provided an abundant and stable resource base throughout the yearly seasonal round and led to increased population size and geographic expansion. Moreover, the archaeological record suggests that these evolved Middle Dorset adaptive patterns directly contributed to a more permanent, larger, and more successful occupation of the harsh and demanding Torngat Mountain region than was previously possible for either the Pre-Dorset or Maritime Archaic.

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