Review and Assessment of the Dorset Problem

BY WILLIAM E. TAYLOR*

This paper contains a chronological summary of work bearing on the Dorset problem, one of the major problems of arctic prehistory. It is felt that such a summary will provide not only the interpretations of archaeologists, but also an historical perspective by which their colleagues may assess the archaeological progress recorded to date on this unresolved problem.

The Dorset culture occupied the Canadian Eastern Arctic and Greenland prior to the arrival from Alaska of the Thule culture Eskimo migrants abut 1,000 years ago, and after the Sarqaq culture occupation which also derived from Alaska and which terminated early in the first millenium B.C. The Dorset culture time span, as indicated by Carbon-14 dates, was more than 2,000 years. It seems to have begun very early in the first millenium B.C. and to have persisted, at least in some locales, until about 1,300 A.D. It has been suggested (Rowley, 1940) that the "Skraeling" referred to by the Viking colonists of West Greenland, were Dorset culture people. Dorset culture sites have been found as far west as King William Island, as far north and east as the northeast extremity of Greenland, and as far south as northern Newfoundland. Sites seem to be especially abundant in the general area of Boothia Peninsula — Foxe Basin — Hudson Strait. Except for those in Newfoundland, sites are restricted to what is at present a tundra zone. Comparative discussions on this prehistoric culture carry

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the investigators west to Alaska and Siberia, and south to the Great Lakes basin and the northeast Woodlands of the North America. Temporally, these discussions grope toward the Mesolithic and Neolithic periods of Siberia and the Archaic stage of the northeast Woodlands. There is, I think, no more accurate manner than this to convey the dimensions and depth of the frame of reference of the Dorset problem.

Archaeological concern with the problem began in 1924, when L.T. Burwash forwarded to the National Museum of Canada a large collection of prehistoric material dug up by Eskimoes, for the most part, around Cape Dorset, Baffin Island. Shortly after this, there appeared in Denmark a first statement on the results of Knud Rasmussen's Fifth Thule Expedition, 1921-24 (1924, Geografisk Tidskrift). Therkel Mathiassen, archaeologist on that famous expedition, presented in it a preliminary description of his newly-discovered Thule culture. Diamond Jenness, working with the Burwash collection, recognized that many of its artifacts were very distinctive from the Thule culture types, but quite homogeneous of themselves. He placed this material under the title "Cape Dorset culture"[1] and published his findings in 1925. He considered it an Eskimo entity, separate from and earlier than the Thule culture.

Disagreement soon came. In 1927 Mathiassen published a full report on the Thule culture, and in it (page 165) reduced the Dorset culture to a "...peculiar, very locally-stamped phase of Thule...". He agreed that it was Eskimo, but not that it preceded Thule culture in the Eastern Arctic. In 1928, Mathiassen repeated his position, although he retracted perceptibly by noting (page 216) that the "ages" of the Dorset artifact types were not clearly comparable with those of Thule culture types.

In 1928 and 1929, Jenness published short notes on Dorset specimens found during 1927 field work in northern Newfoundland. In this Jenness suggested a relationship between Dorset and the extinct Beothuk Indians of that island.

[1] Following current common practice, Jenness' term "Cape Dorset culture" has been abbreviated in this paper to "Dorset culture".

In 1930, W.D. Strong presented his data on the Old Stone complex of Labrador. Strong cautiously suggested that the Old Stone complex might represent a basic culture stratum from which both Indian and Eskimo cultures grew. The suggestion rather implied an Indian and inland origin for the Dorset culture.

In 1930, Mathiassen denied that there was any archaeological evidence for a pre-Thule culture in the Eastern Arctic (page 595) while Birket-Smith in replying to Mathiassen's general view of Eskimo origins, claimed that a pre-Thule culture must have existed in the central regions (1930), but did not so much as acknowledge the existence of the Dorset culture.

In 1933, Jenness reviewed the Dorset problem, repeated his initial evaluation of it, and suggested a Caribou Eskimo origin for Dorset culture. In the same article, Jenness noted W.S. Wintemberg's (1939) discovery of pure Dorset sites in Newfoundland. Shortly after, Collins (1935) accepted Dorset as an Eskimo culture and cautiously accepted Jenness, view of its pre-Thule position.

Soon after, Mathiassen revised his views (pages 130, 1936), agreeing that Dorset did not arise from the Thule culture, but he rejected Jenness' suggestion of a Caribou Eskimo origin for it. Mathiassen was inclined to see Dorset as a "very Indian" culture that had influenced the Thule culture along the shores of Hudson Bay. Collins (page 373, 1937) explored the Indian origin suggestion of Mathiassen, although he construed Dorset as being older than Thule. Later he rejected it in favour of an Alaskan and Eskimo origin (1940). However, Collins still considered it probable that Dorset had been influenced by prehistoric Indian cultures bordering its area to the south. De Laguna, in 1940, held that Dorset was Eskimo, pre-Thule, and a definite contributor to the inventory of the Laurentian aspect of the northeast.

In 1939, T.C. Lethbridge reported on his collections from the Jones Sound and Buchanan Bay areas, and noted a similarity between some of his Dorset pieces and artifacts in Mathiassen's Button Point collections.

In 1940, G.W. Rowley reported on an extensive collection made by him at Abverdjar in the northwest extremity of Foxe Basin. The excellent bone, antler and ivory carvings in this collection led Rowley to reject Collin's suggestion (1937) that Dorset art was similar to the Old Bering Sea I style of Alaska. Rowley concluded that Dorset was pre-Thule, Eskimo, and suggested a beginning date for Dorset of 700 A.D.

Also in 1940, G.I. Quimby described the Manitunik culture of Belcher Islands. It was interpreted as a late occupation, circa 16th century A.D., "...built upon a Dorset influenced Thule foundation." (page 165). Since this sample has only a minor Dorset inclusion and since it was collected at random by Eskimoes, Quimby's suggestion of Dorset influence is daring and doubtful. It might well be that the sample, not the culture, was mixed.

In 1940, Jenness, writing on Old World relationships, again claimed that the Dorset culture was an Eskimo product and suggested that it was descended from an ancestor common to it and the earliest known Alaskan cultures of that day. In the light of more recent knowledge it is interesting to recall Jenness' interpretation which saw the Dorset culture separating from the common ancestor prior to Old Bering Sea I or Okvik time and spreading to the Canadian Arctic no later than the "first millenium B.C." (page 9). In 1941, Jenness described an archaeological collection from the Belcher Islands that contained a few Dorset artifacts.

Eric Holtved published in 1944 an excellent and detailed account of his excavations in the Thule district of northwest Greenland. While his work was devoted mainly to the Thule culture, he was able to show that the Dorset culture had preceeded the Thule in his area of research.

Junius Bird (1945) reported on both Thule and Dorset traits that he had found in the Hopedale area of Labrador. His view that the Old Stone complex belonged more properly in the Dorset culture than in an Indian sphere as Strong had concluded, is a surprise, at least to this reader.

In 1935 and 1936, Douglas Leechman excavated sites on the Nuvuk Islands near Cape Wolstenholme and also near Port Burwell. In reporting this work, Leechman (1943) construed Dorset as an Eskimo culture. I should like here to correct a recent error (Taylor, 1958b), an error that several others have also made, by noting that Leechman's 1936 Nuvuk work gives the first description of Dorset culture houses.

In 1946, A.C. Spaulding commented cautiously on the Dorset affinities of the Laurentian aspect and noted (page 165) the possibility that such affinities might in fact not have stemmed from the Dorset culture, but perhaps "that the Eskimo influence so apparent in Laurentian culture was exerted in the west, rather than in Labrador and Newfoundland."

With all the commentary on a possible Dorset-Indian exchange, it remained to Frederica de Laguna to provide the comprehensive and vigorous statement of the matter. As early as 1940 as we have seen, de Laguna was a considerable supporter of Jenness' 1937 views on the Dorset problem. In 1946, de Laguna wrote of Dorset as an Eskimo product that had moved from the west to the eastern Arctic prior to Thule times, and that the two had co-existed for a time later in the first millenium A.D. More significantly in this paper, de Laguna, comparing harpoon heads, leisters, chipped stone tools, and especially ground slate tools, postulated a rich Dorset culture contribution to the Indian Laurentian aspect of the northeast Woodlands and its Red Paint culture variant in New England. She thought that the exchange occured circa 1,000 A.D. and concluded that the Dorset Eskimo had adopted very little of Indian culture in the exchange. Unlike Jenness, who suggested that a Dorset migration to the eastern Arctic had occurred by 1,000 B.C., de Laguna estimated that Dorset began about 500 A.D. In her wide-ranging "The Prehistory of Northern North America as Seen from the Yukon" (1947), de Laguna repeated her general position. In this same volume (page 9) she suggested that the Sadlermiut of Southampton Island had been a descendent of Dorset culture subject to Thule influence. Collins, as we shall see, followed this idea a few years later. De Laguna saw as the western relatives of Dorset, Old Bering Sea I and Kachemak I.

In a paper read to the Third International Congress of Anthropological and Ethnological Sciences, Brussels, 1948, Birket-Smith (1951) held the Dorset to be a Palaeo-Eskimo culture that began about 200 A.D. and lasted until 1,000 A.D. He saw Dorset as an eastern, but less-developed relative of the Ipiutak culture and predicted that a pre-Ipiutak, more Dorset-like culture might be found in Alaska (page 149). As had de Laguna (1934), Birket-Smith noted that there were connecting links also between Dorset and Kachemak I of southwest Alaska. At the time of his address, Kachemak I, Ipiutak and Dorset were the oldest known cultures in their respective areas, or — at least — so many Eskimologists believed. Finally, Birket-Smith supported de Laguna's conclusions on Dorset contributions to the Laurentian and Red Paint cultures of the northeast Archaic Pattern.

In 1947 (Martin, Quimby and Collier), and again in 1952 (Quimby) a Dorset relationship with another northeastern Indian Archaic Pattern culture was suggested. In this case it was the Old Copper culture which centres around Wisconsin but is known as far east as Ontario (Popham and Emerson, 1954). Wittry and Ritzenthaler (1956) reject the suggestion of a Dorset influence on the Old Copper culture since the two carbon dates available on it are about 3,600 B.C. and 5,500 B.C., long before the earliest suggested Dorset date. They do suggest (page 261), "...that if any diffusion of these traits took place, it was northward." To me, even this is a highly unlikely suggestion since it separates the two cultures by at least 1,500 years, without mention of the spatial and ecological gaps. If the Dorset-Old Copper parallels are meaningful, it may be more productive to suggest that both have been influenced by a third as yet unknown source located perhaps in northern Manitoba. There remains the possibility that the Dorset-Old Copper typological parallels are coincidental.

In retrospect, the years between 1925 and 1948 were the exploratory years for the Dorset problem. There were very few workers and they contended with an area that was achaeologically little known, vast, and difficult of access. The Dorset culture, once defined, had to be accepted as a distinct entity,

its pre-Thule position had to be demonstrated, its area determined, its artifact inventory had to be prepared and added to, its possible genetic relationships had to be postualted, explored, and debated. In time its definition, separateness, area, and pre-Thule time were accepted or determined. Its inventory was, and is being, added to. Two possible genetic connections were suggested and debated. That debate is continuing.

In the years immediately after 1948, Arctic archaeology underwent a drastic and rapid change. There was a great increase in transport facilities, especially in the Canadian Eastern Arctic and a marked increase in archaeological field work in Arctic America generally. New archaeological techniques, notably dendrochronology and Carbon-14 analysis, were applied to Arctic materials. The most prominent change, however, was affected by J.L. Giddings' reports (1949, 1951) on the very early Denbigh Flint Complex of western Alaska. This work brought new meaning to some material already in the literature and was soon followed by several reports on other early sites in Alaska (Solecki and Hackman, 1951; Solecki, 1951; Larsen, 1951, 1953[2]; Irving, 1951, 1953). For those pondering the Dorset problem it was evidence of a new depth of time to be explored, for the micro-blades, polyhedral cores, and burins of the Dorset culture had marked affinities in the Denbigh Flint Complex. It also brought a new focus on the "West Greenland Stone Age", defined as early as 1907 by O. Solberg (Collins, 1953a, page 200; 1953b, pages 34-36). Except for Collins (1935; page 335, 1937; 1940; 1953b; 1954c) this material had been either construed as a late localized variant of Thule, or ignored. Since 1948 the prehistoric picture of the Eastern Arctic has been as much in flux as the viscosity of archaeological paints permits. There have been remarkable increases in the amount of work done on Dorset sites and in the number of workers contributing to the problem.

In 1948, Larsen and Rainey presented their comprehensive theory of Eskimo origins in reporting on the Ipiutak site which

[2] Larsen's 1953 paper will provide the reader will an excellent summary of archaeological work in Alaska up to 1951.

they excavated from 1939 to 1941. As a part of their theory, Dorset is considered as a member of the Ipiutak or Palaeo-Eskimo Complex, and it is suggested that the Dorset culture was carried from Alaska to the Eastern Arctic by migration, that it had "undergone a separate development and, probably through contact with neighbouring Indians, adopted some foreign elements which have contributed towards giving it a special stamp and towards obscuring its similarity to the Alaskan basic culture." (page 184, 1948). Although Collins' perceptive criticism has raised considerable doubts about this Ipiutak theory (1954), it is significant to note that none saw fit to reject the Eskimo nature, Alaskan origin, or early time span that Larsen and Rainey suggested for the Dorset culture.

In 1948 Collins (1950) dug a stratified Dorset-Thule site at Frobisher Bay, Baffin Island, and published the first comprehensive classification of Dorset harpoon heads. This paper, so far as I know, contained the first statement of relative chronology within the Dorset culture. In 1951, Deric O'Bryan (1953) worked a mixed site on Mill Island at the western extremity of Hudson Strait. This site contained evidence that its Dorset culture occupation had marked Thule culture influence. This, then, was a Dorset assemblage definitely representative of a late stage of that culture.

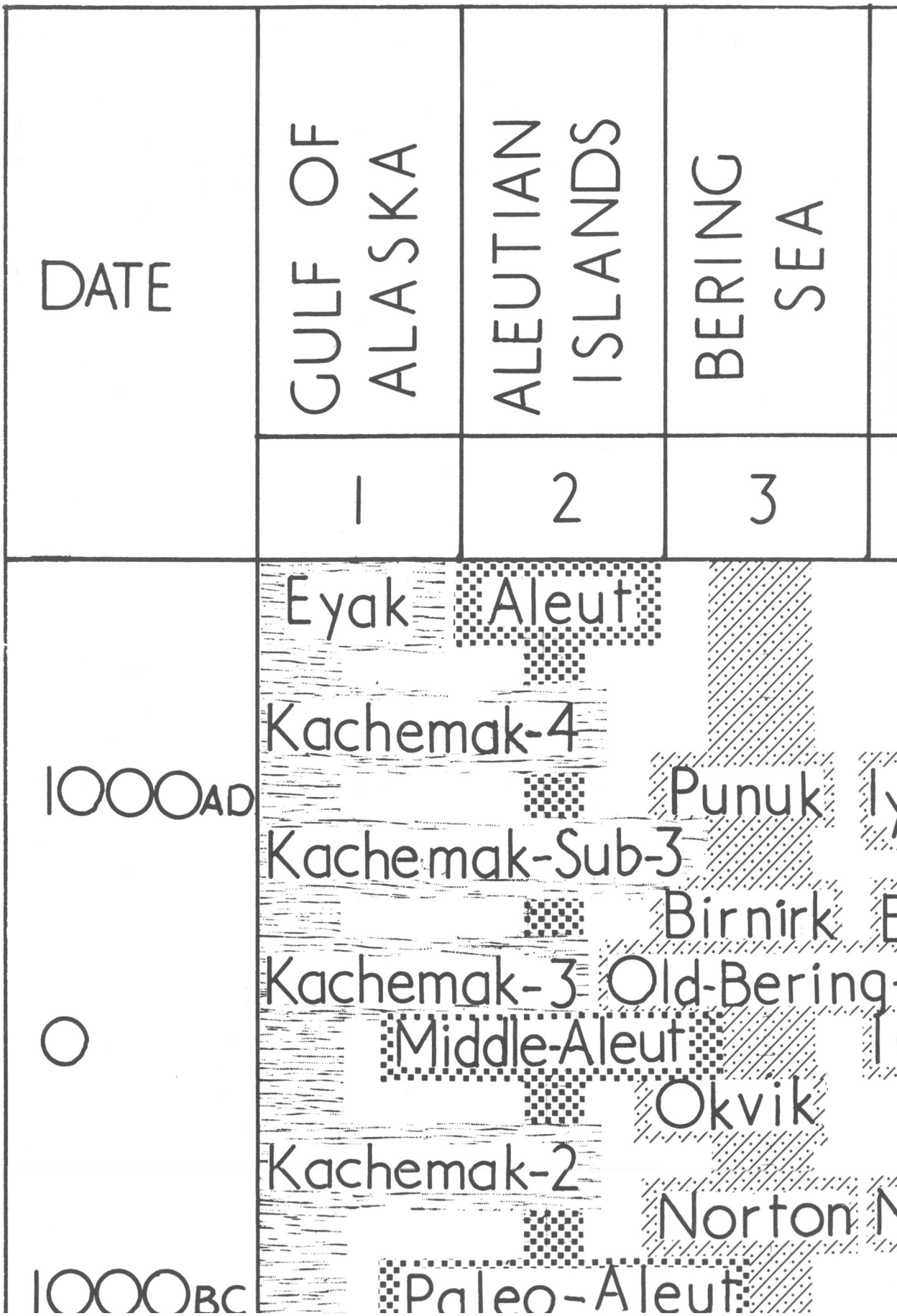
In a short but lucid paper published in 1951, Collins summarized his views on Dorset origins by suggesting (page 428) that "The most likely explanation, as suggested by Jenness (1941), is that the Dorset has stemmed from the same parent trunk as the ancient Alaskan cultures. The many and fundamental differences between them, however, would indicate that the Dorset moved eastward to Hudson Bay before the Ipiutak and Old Bering Sea cultures had reached their full development."

In 1951, 1952 and 1953 Elmer Harp published very full statements of the results of his study of the Dorset culture occupation in northern Newfoundland. In this wark, Harp argued, as had several others, for an early Alaskan origin for Dorset, and he suggested "...that Dorset's first movements towards the east occurred in the first millenium A.D., probably toward the middle of that period." (page 307, 1952). He rejected any and

all attempts to derive the Dorset culture from the northeast Woodlands and negated the recently published view of B.G. Hoffman (1952) that the Dorset culture was not basically Alaskan, but representative of "...an Arctic tundra and glacial lake culture of considerable antiquity in Eastern North America." (page 16).

In 1951, William A. Ritchie, basing his argument on Carbon-14 dates for the northeast Woodlands, ran roughshod over earlier attempts to show that the Dorset culture was related to the Laurentian aspect of the northeast Archaic pattern. He was able to show that, on a carbon-dating basis, which gave Laurentian a time span roughly from 3,000 to 1,000 B.C., the youngest Laurentian aspect dates were at least 1,000 years older than most estimates for the origin of the Dorset culture. Consequently he rejected the possibility of Laurentian having any part of its origin in the Dorset culture and was very dubious of the reverse, a Laurentian aspect contribution to the Dorset culture.

In 1925, Jenness (page 437) had concluded that a culture older than Dorset must have occupied the Eastern Arctic but was still to be found. In 1952, Jørgen Meldgaard added that altogether new dimension to the Dorset problem for he reported on an Eastern Arctic assemblage OLDER that Dorset. Although he called it "The Paleo-Eskimo culture of West Greenland", it is generally referred to as the Sarqaq culture. Along with several other assemblages since reported, it is lumped in this paper under the general category of "Pre-Dorset". Meldgaard delineated the strong affinities of his new material with the Denbigh Flint Complex, but to the surprise of some co-workers, rejected the possibility of a Sarqaq-Dorset relationship. Both Collins (1953b, 1954b, 1958) and Harp (1952) considered the Pre-Dorset and Dorset cultures to be related one to the other, although no detailed and comprehensive argument was put forth. In a general review paper that appeared in 1954, Collins (1954b) suggested that Dorset began about 100 B.C., that it derived from the Pre-Dorset cultures of the Eastern Arctic and that, through them, its heritage could be traced to the Denbigh Flint Complex.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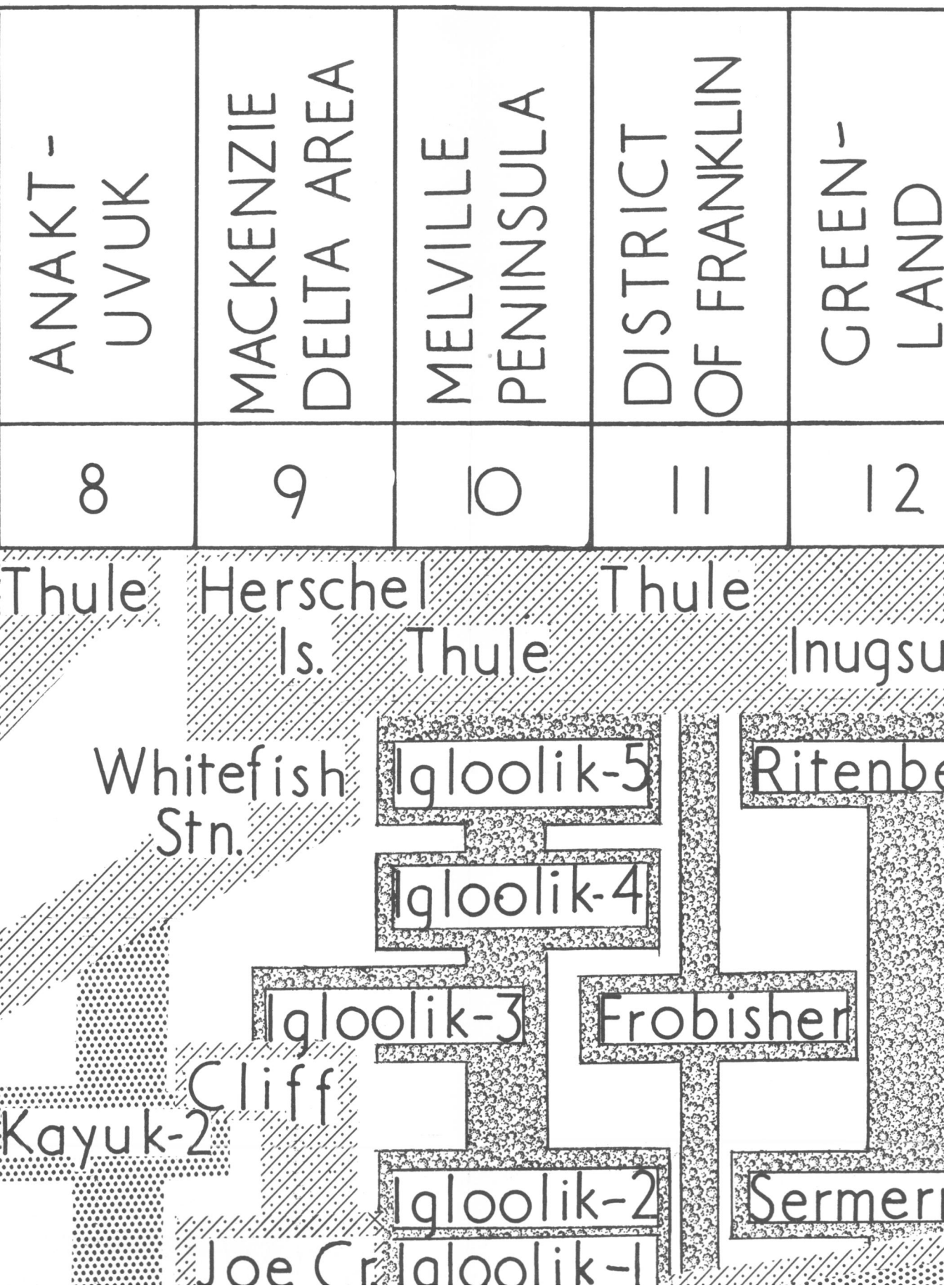
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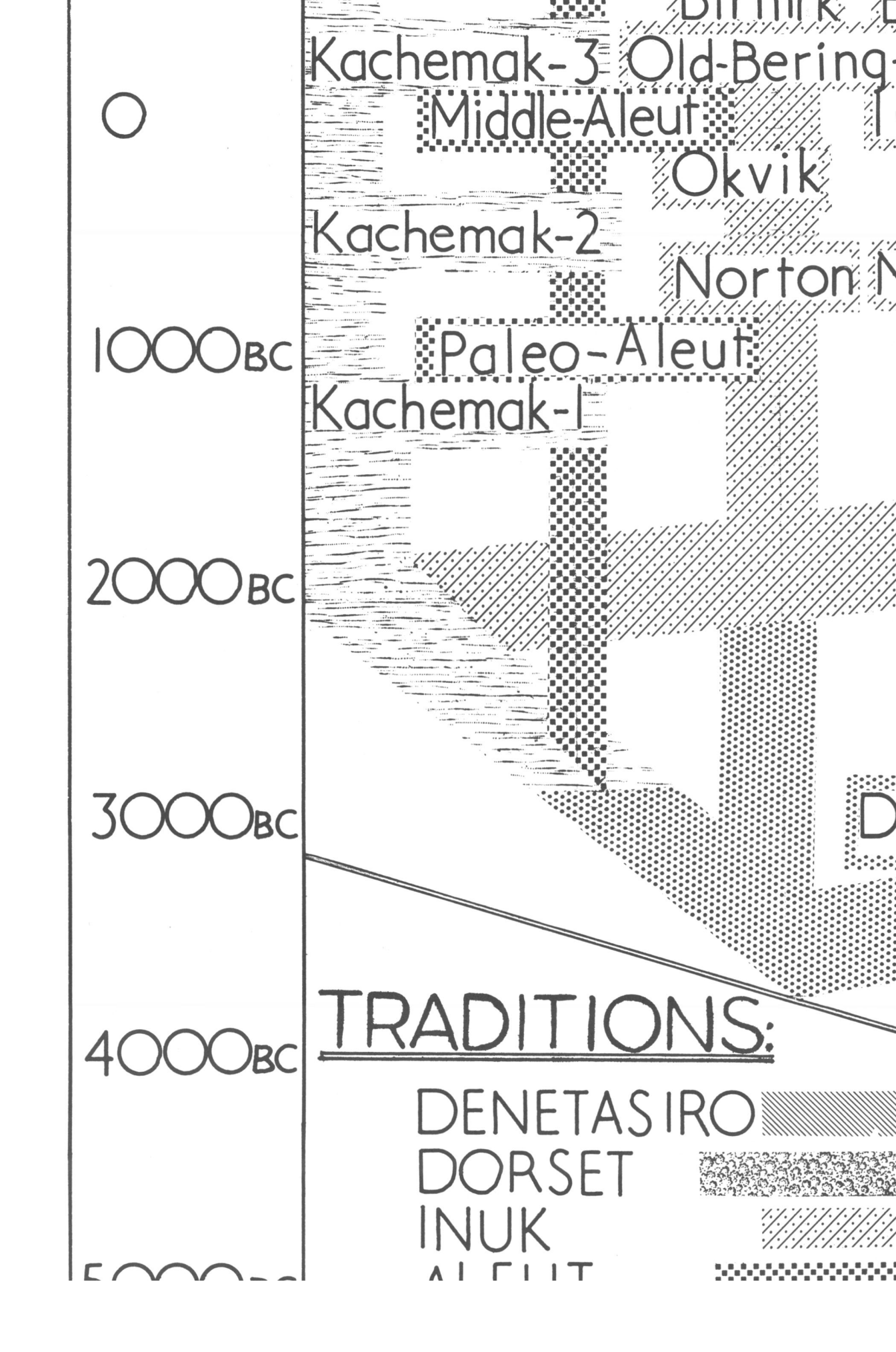
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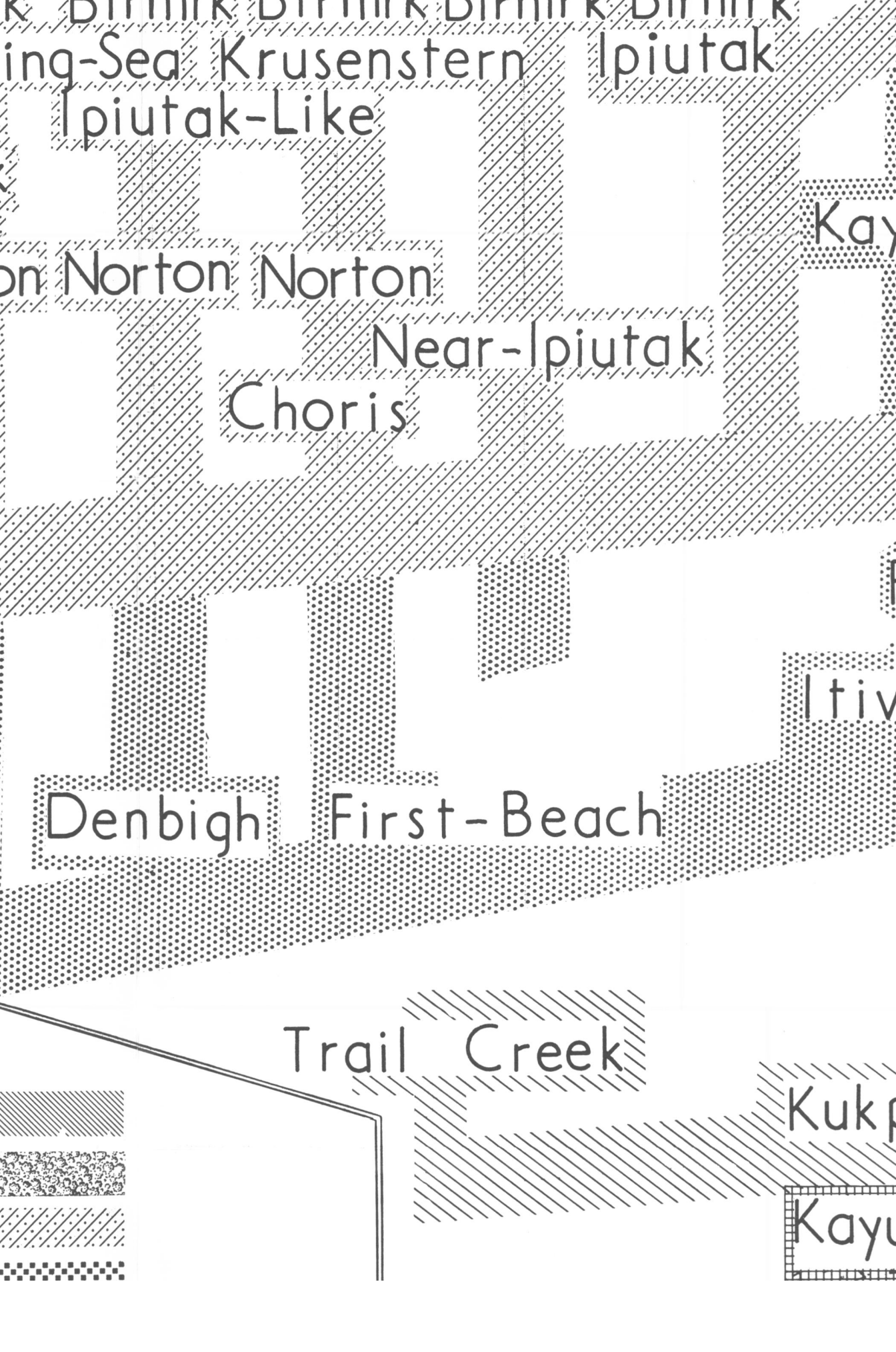
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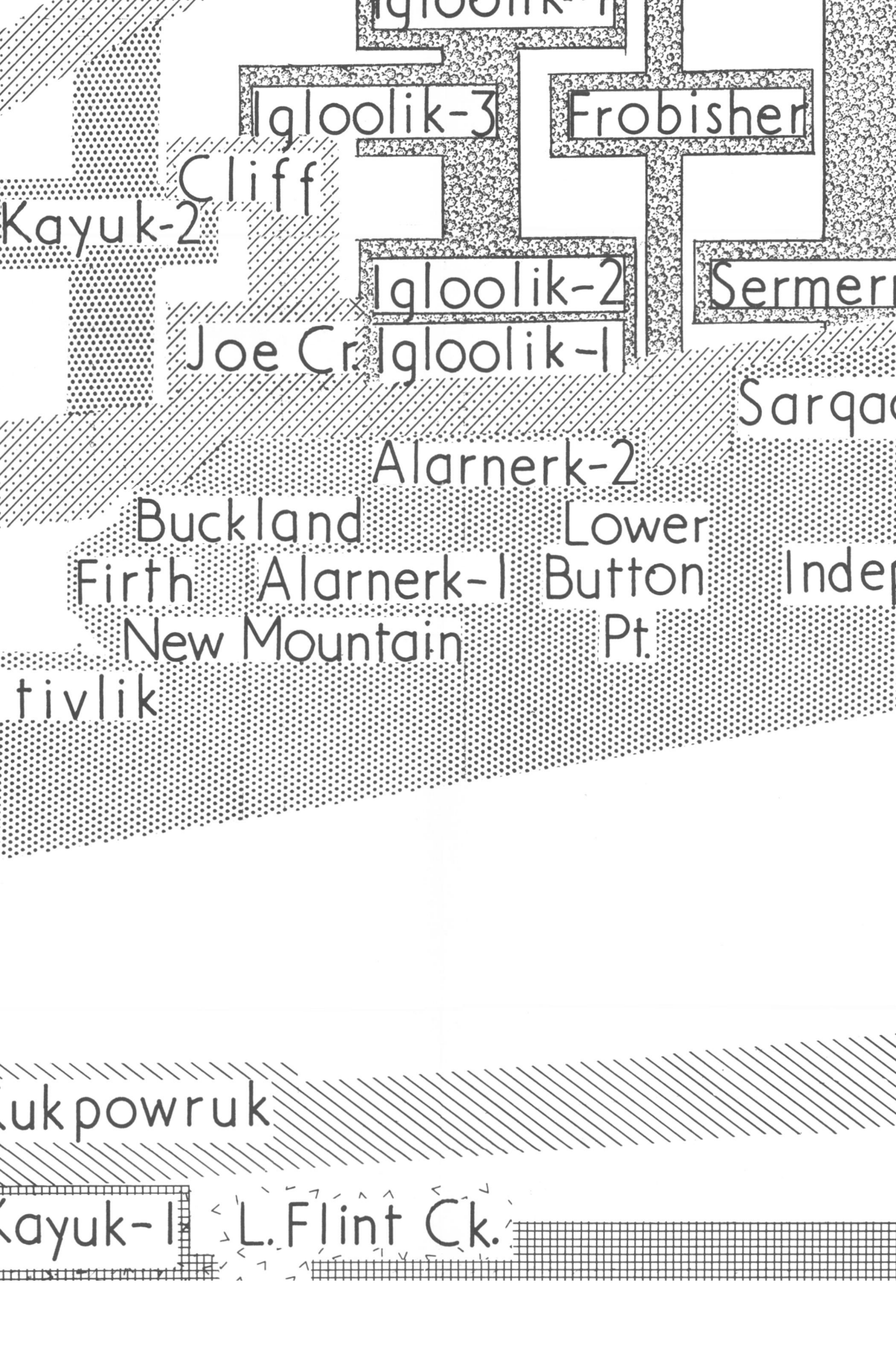
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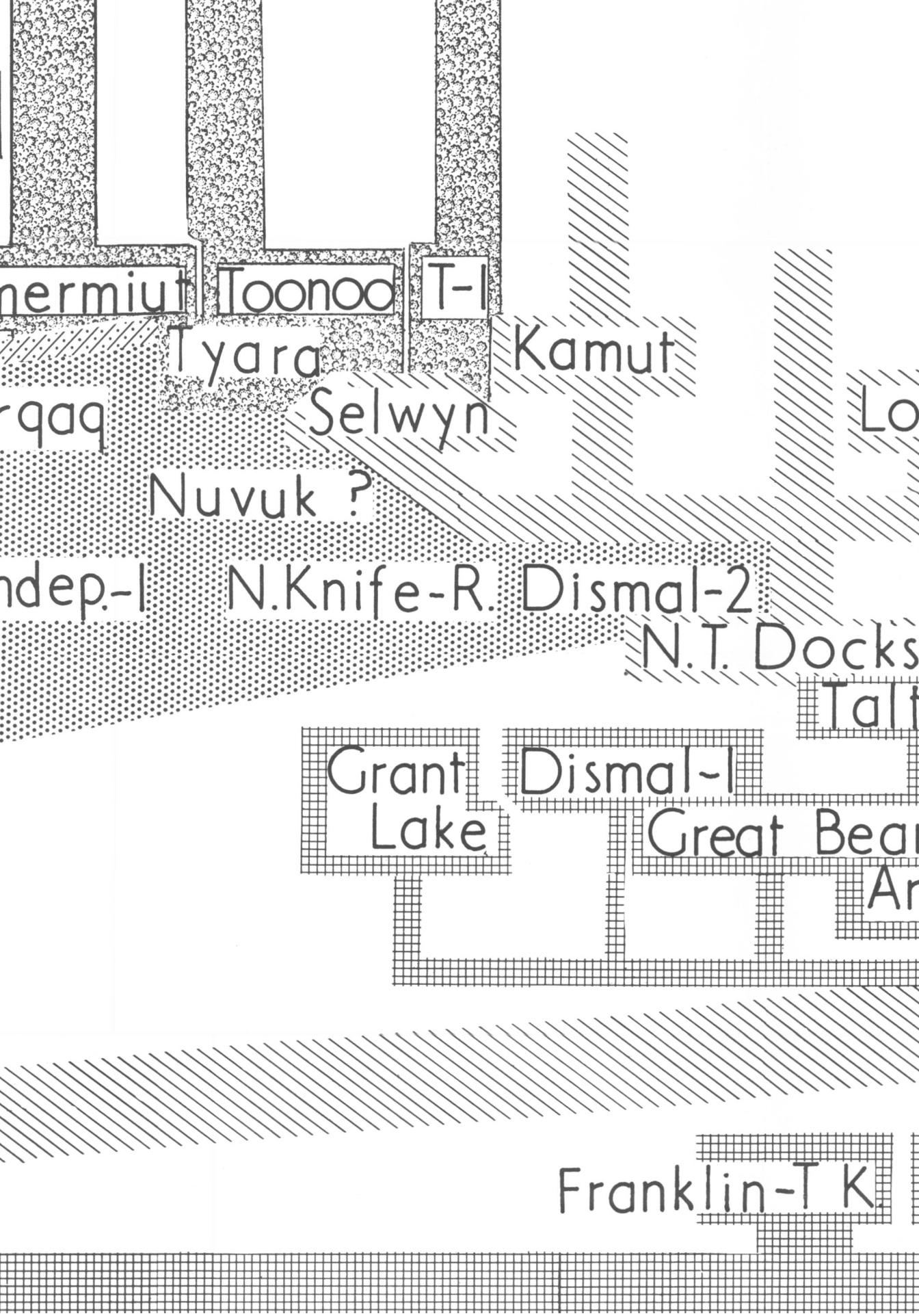
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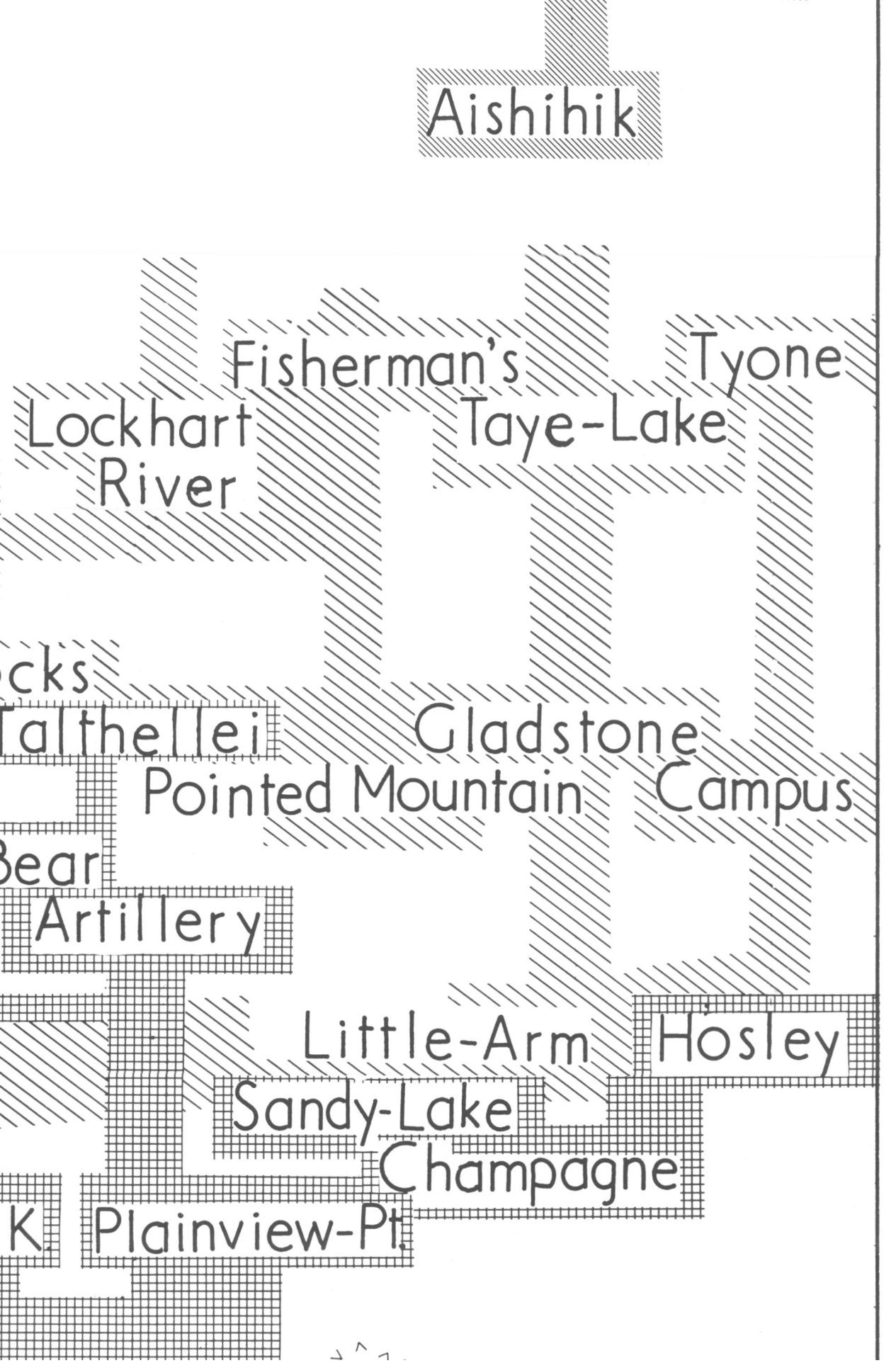
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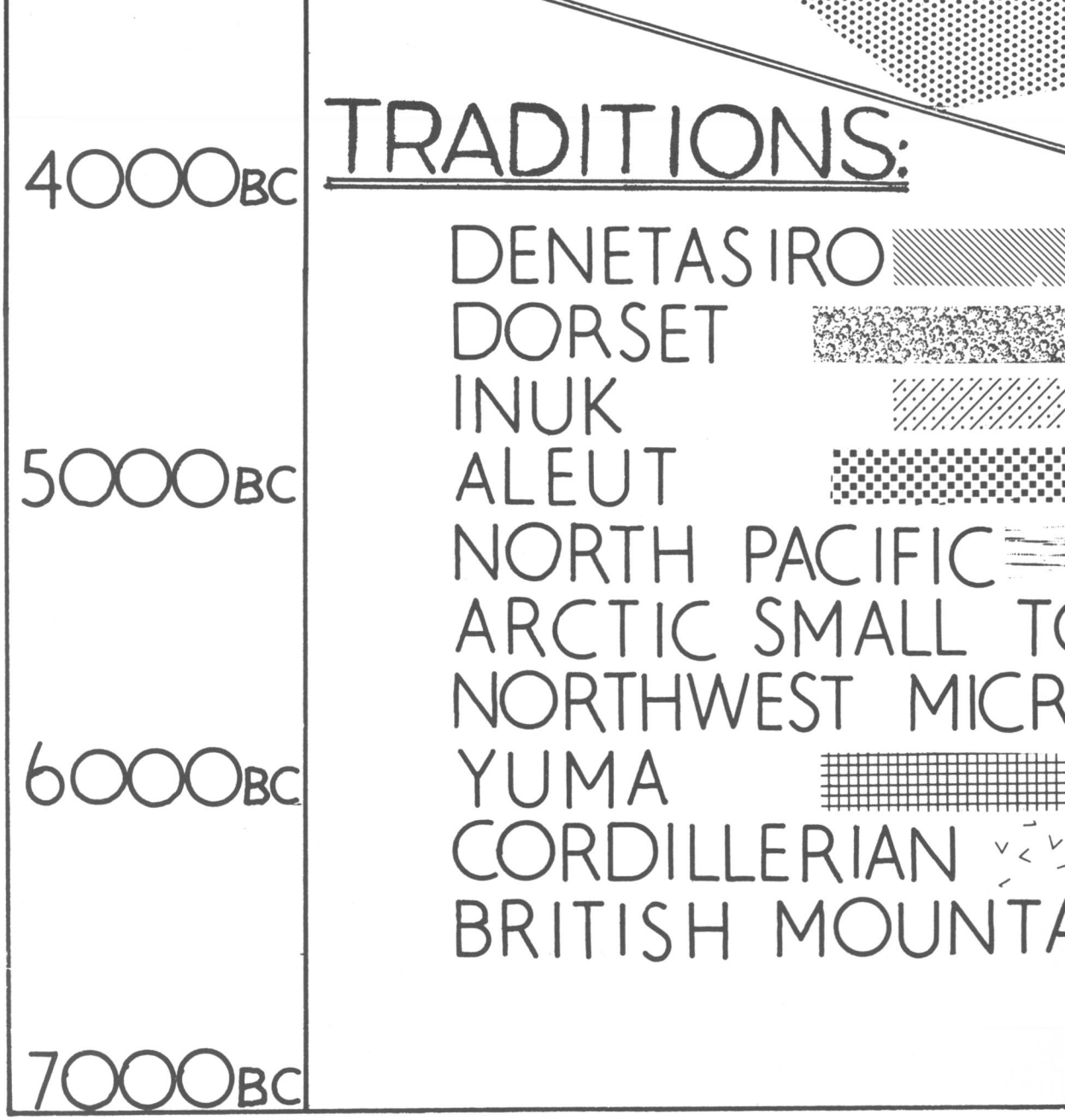
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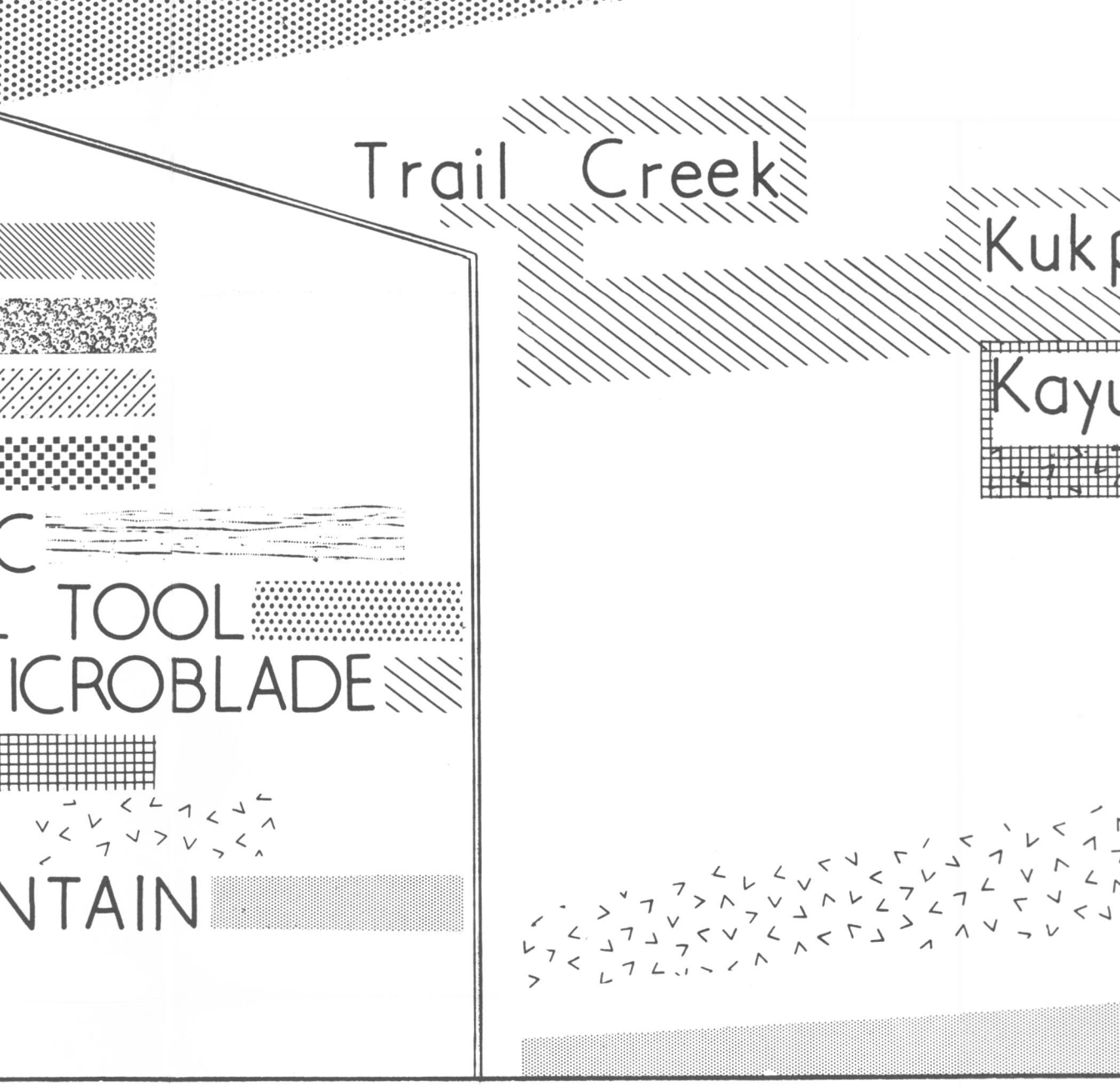

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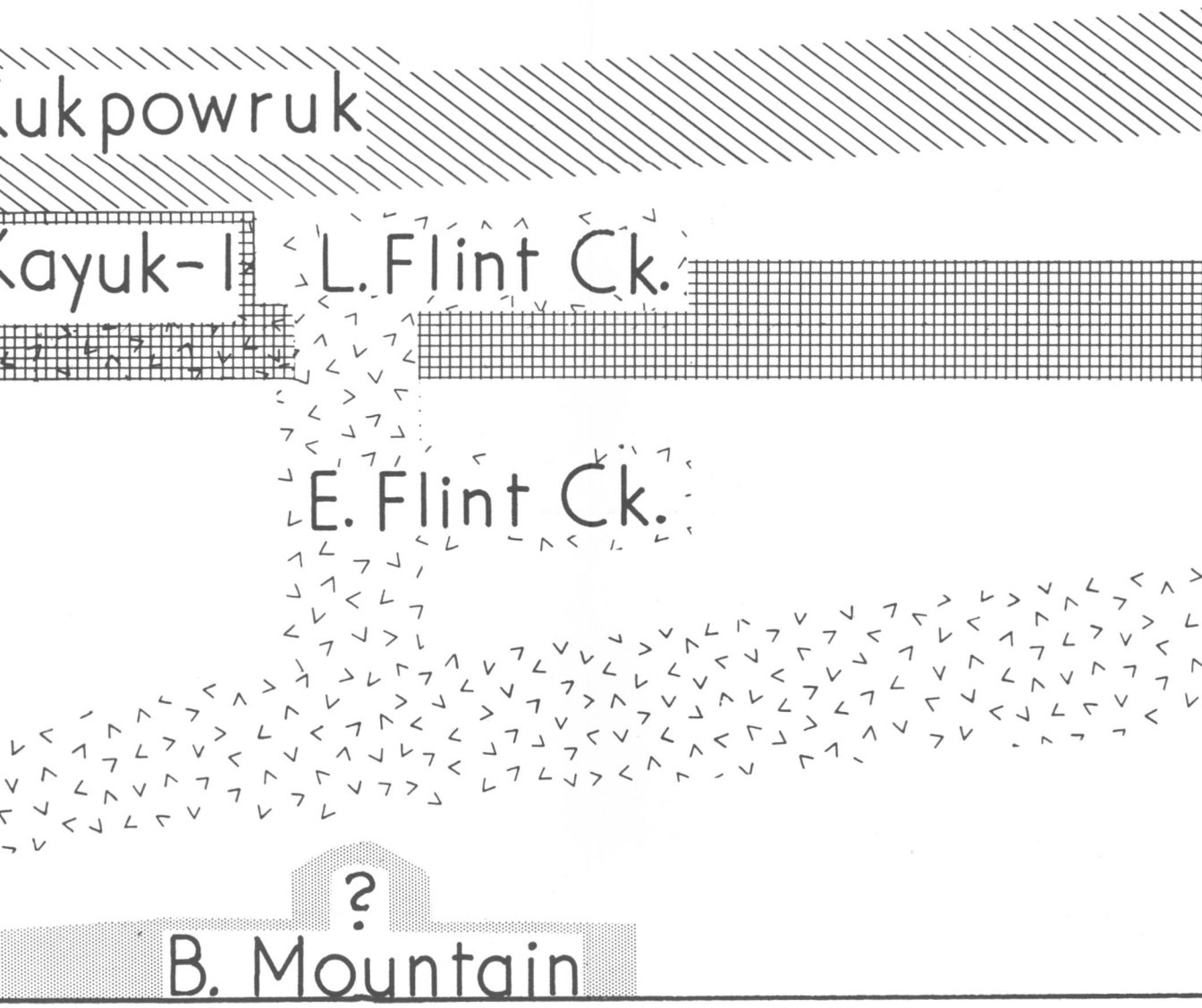

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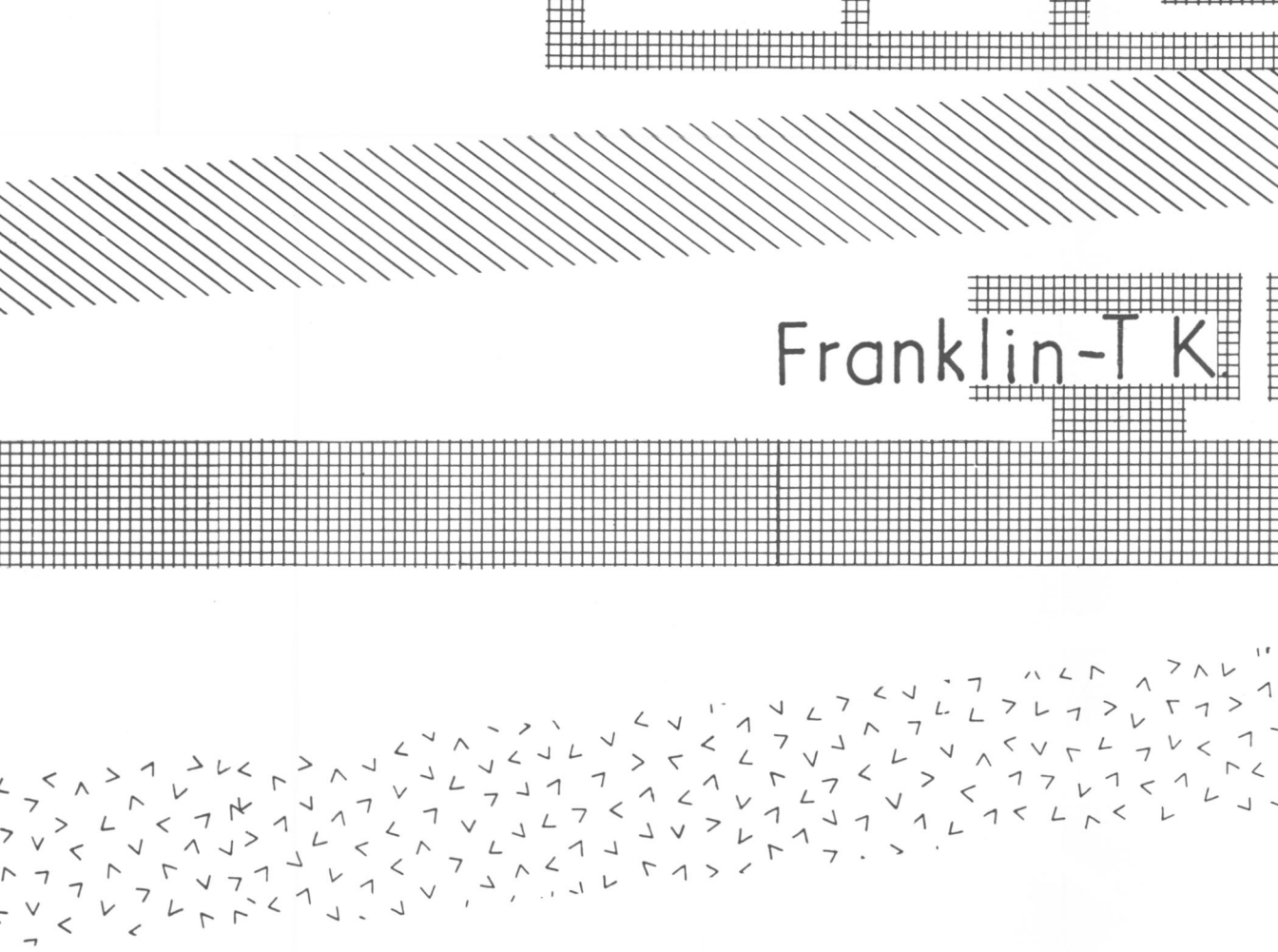

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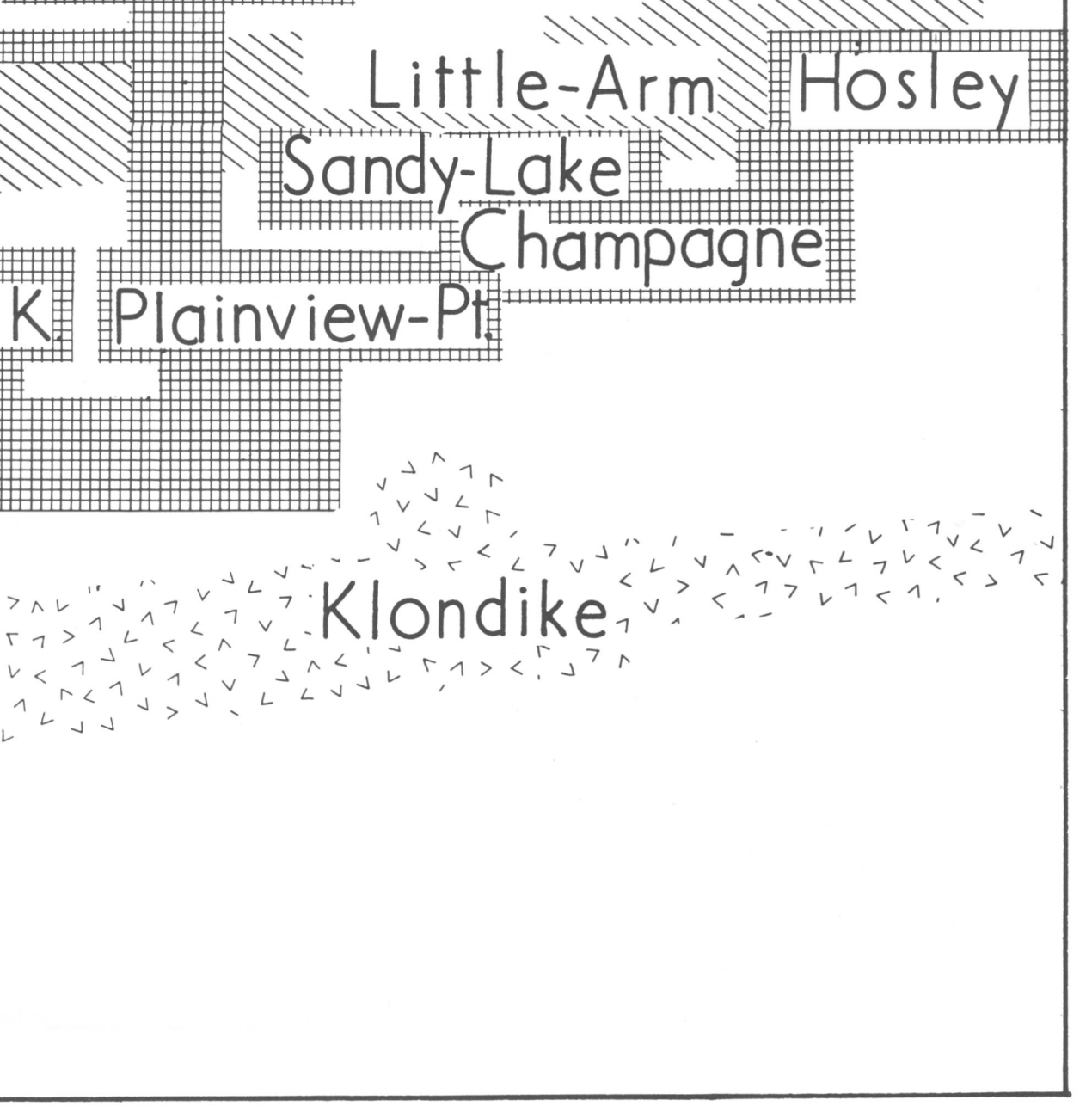
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REHISTORY

In 1954 and 1955, Collins (1956a, b, 1957a, b, 1958) excavated, on Southampton and Walrus Islands, in four Dorset sites. In one of these, the T-1 site, he uncovered several previously unknown artifact types and very distinctive variants of the Dorset specimens usually found. Carbon-14 dates (Rainey and Ralph, 1959) placed the T-1 occupation in the latter 600 years of the first millenium B.C. Collins described this material under the term "Proto-Dorset" culture, and so added another rung to the chronological ladder. He summarized his view of Dorset origins in referring to the Independence I culture (Knuth, 1958), Sarqaq, and North Knife River (Giddings, 1956) by saying these "might be called Pre-Dorset in the sense they represent earlier stages from which the recognizable Dorset pattern eventually emerged." (page 76, 1956a). Collins also stressed that the Pre-Dorset cultures of the Eastern Arctic have their origins in the still earlier cultures of Alaska and distant kinship to the Eurasian Mesolithic.

In these same papers, and following de Laguna's suggestion of 1947, Collins supported the idea that the Sadlermiut, the indigenous anomalous "tribe" of Southampton Island Eskimoes who were wiped out by disease in 1902-03, had been a Thule-influenced vestige of the Dorset culture. This view of the Sadlermiut conflicts with the interpretation of Mathiassen who construed them (1927, Pt. I) as a Thule culture group that had developed, because of long isolation, a distinctive variant of Thule culture.

One of the most interesting assemblages in the northeast, in terms of possible Eastern Arctic relationships, is that from the Mattawan stratum in the Frank Bay site near North Bay in Ontario (Ridley, 1954). Ridley suggested that this assemblage had some parallels with the Dorset culture, presumably because the sample included triangular and side-notched chipped endblades, a poorly-developed micro-blade industry, concave side-scrapers, and stemmed end-scrapers. Since he suggests that the material is considerably earlier than the Eastern Archaic pattern, Ridley has divided it from the Dorset culture's earliest occurrance by considerably more than 2,000 years. Keeping this rather unsupported age estimate in mind, the lanceolate and

contracting stem points of this assemblage might have been noted as suggestive parallels to the Sarqaq culture. However, a recent carbon date of 970 ± 300 B.C. for the Mattawan complex (Byers, 1959) allows a change of interpretation so that on ecological, chronological, as well as typological grounds, a promising case could be made to consider this Mattawan assemblage in part as an eastern echo of the Northwest Micro-Blade Tradition (MacNeish, 1954). This hypothesis for the Mattawan complex is, I think, quite similar to that suggested by Byers (1959, page 253).

In 1954 and 1957, Meldgaard worked on an extensive site complex at Alarnerk near Igloolik in northwest Foxe Basin. On a series of raised sea beaches he found Pre-Dorset occupations and a long sequence of Dorset occupations. The Alarnerk Pre-Dorset has a great deal in common with the Sarqaq culture of West Greenland. The Dorset sequence was divided into five periods, each with distinctive artifact types. Only a most preliminary statement of this material has been published to date (Meldgaard, 1955), but the Alarnerk site is undoubtedly of fundamental importance to Arctic prehistory. Especially distinctive was Meldgaard's earliest period Dorset for, unlike usual Dorset samples, it contained a high frequency of ground slate tools. His Dorset Period II seems to be quite comparable typologically to Collins' Proto-Dorset T-1 site (Meldgaard, personal communication). Meldgaard suggested that the Dorset culture originated in Arctic Canada partly from the Sarqaq culture and partly from prehistoric Indian cultures to the south (1955). Later, at the 1956 Philadelphia meeting of the International Congress of Anthropological and Ethnological Sciences, Meldgaard announced two very important, and I think valid, Carbon-14 dates for his material. One dated his earliest Pre-Dorset or Sarqaq stage at 1,750 ± 300 years B.C.; the other date places the most recent Dorset, Meldgaard's Period V at 1,350 A.D. ± 150 years. In the same address, Meldgaard concluded that the Dorset culture originated as a result of northward migration into the tundra by Indians of the Archaic pattern of the northeast Woodlands.

In 1956, Richard MacNeish published a summary of a culture sequence represented on the Engigstciak site near the Arctic

coast of the Yukon Territory. This site gave a fairly complete sequence from the Denbigh Flint Complex to recent Eskimo culture. However, none of the phases in this sequence could be demonstrated as a direct ancestor of Dorset culture. The sequence did, however, show a phase possibly ancestral to Pre-Dorset Eastern Arctic cultures. This, the New Mountain phase, is dated by MacNeish to around 2,500 B.C. The absence of a distinct Dorset parent in MacNeish's work, and in the work of others working in the same general area, is generally unmentioned by those who would derive the Dorset culture from Alaska.

In 1956, J.L. Giddings reported on a distinctive early lithic assemblage from northeastern Manitoba. This material, termed the North Knife River complex, is Pre-Dorset in time and Giddings related it to the Denbigh Flint Complex of Alaska and the Sarqaq of the Eastern Arctic.

For seven years, from 1947, Eigil Knuth collected from old sites in extreme northeastern Greenland (1952, 1954, 1956, and 1958). In 1954 Knuth had concluded his material represented the oldest culture in the Eastern Arctic, but had dated it to about 500 A.D. But with further data, Knuth was able to separate his material and describe two very old occupations called by him the Independence I and Indenpendence II cultures (1958). Independence I gave a Carbon-14 date of about 1,880 B.C., while Independence II dated about 870 B.C. The older, albeit distinctive, has affinities to Sarqaq and the Denbigh Flint Complex. More than one writer has accepted Independence I as the earliest known occupation in the Eastern Arctic or Greenland. The younger, Independence II, is in Knuth's mind, Pre-Dorset and distinctive from Dorset. On the basis of the illustrated specimens I would prefer to class it as an early Dorset sample and a close relative of Collins' early Dorset material at T-1 and Meldgaard's early Dorset material from the Igloolik area.

At the Imaha site at Payne Bay, on the west coast of Ungava Bay during the 1957 season, I had the good fortune to find a human skeleton in what was almost certainly a Dorset culture context. That it was typically Eskimo both metrically and morphologically (Laughlin and Taylor, N.D.) was no sur-

prise to those who had long argued against an Indian origin for Dorset culture. At Payne Lake in the Ungava interior, inland Dorset sites were found for the first time (Taylor, 1958a).

In 1958, two papers reported on field work in the Disko Bay region of West Greenland. Larsen and Meldgaard's joint paper gave the results of the 1953 excavations on the Sermermiut site where Dorset culture was stratified between Thule and Sarqaq culture layers, and where the layers were separated by sterile strata. They define the Pre-Dorset Sarqaq culture and relate it to an as yet unknown Alaskan stage that existed after the time of the Denbigh complex and prior to the time of the Ipiutak and its related Near Ipiutak culture. In Larsen and Rainey's reconstruction of Arctic prehistory (1948), Ipiutak represented the first Eskimo culture and the parent of all others. Larsen and Meldgaard see the North Knife River assemblage as Sarqaq's closest Eastern Arctic relative. The Dorset component at Sermermiut was compared with Collins' T-1 site of Southampton Island and approximately equated with Meldgaard's Dorset Period III in the Igloolik area. Summarizing the Greenland situation, Larsen and Meldgaard write "...that we must count on at least five independent immigrations beginning with Independence I, then Sarqaq, which is followed by Independence II and the West Greenland Dorset, 'classical' Dorset, and the Thule culture." (page 71). Without denying the distinctiveness and the sequence of the five cultures named, the word "must" demands a caveat for, on the basis of present data, these five postulated migrations are more likely probabilities than imperatives. For all except the first and last, there are the possibilities of diffusion to or from Greenland, and of migration from Greenland to be considered in explaining relationships. In passing, let it be noted that anthropologists writing on the Eastern Arctic and Greenland have so often explained similarities by migration, and so rarely mentioned diffusion that one might wonder if something, perhaps low temperatures, prohibited cultural flow by diffusion.

Later in 1958, Mathiassen reported on the 1955 excavations at Sermermiut. In this the Sarqaq occupation is dated from the seventh to ninth centuries B.C., and the Dorset stratum to the

first century A.D. The latter is only slightly younger than the minimum age estimated for the typologically similar T-1 site. Mathiassen sides with the view that the Dorset culture originated not in Alaska, but in Arctic Canada, recalling that in a paper that appeared in 1936 he "...demonstrated similarities between Dorset and some old eastern Indian cultures, and that theory has since been amplified by other workers." (page 50). With Larsen and Meldgaard, he sees Sarqaq as a derivative of early cultures in the western Arctic, and with Larsen, he rejects a cultural relationship between Dorset and Sarqaq.

In 1959, Harp published the results of his 1955 excavations in the Dismal Lake area some 60 miles southwest of Coronation Gulf. Here we are concerned with Harp's Dismal-2 microlithic complex for it is this assemblage that shows eastern affinities. Harp notes that it "...represents something of the ancestry..." (page 242) of Giddings' North Knife River material, and considerable relationship with Sarqaq. He considered its relationship with Independence I and Dorset assemblages, notably T-1, to be much weaker. As earlier, Harp again rejected any significant Eskimo contribution to the northeastern Archaic.

Later in 1959, Rainey and Ralph published a considerable part of the University of Pennsylvania radiocarbon laboratory's results. It is axiomatic that Carbon-14 dates are to be treated with caution and the authors further note "...that antler dates are erroneously young and that the discrepancy increases with age." (page 367). Their Table I (page 366) suggests this discrepancy to be on the order of ten to twenty per cent. In repeating their dates, I have identified those derived from antler samples. Collins' T-1 Dorset site, which very likely has two occupations gave five dates ranging from 675 B.C. to 103 B.C.; Meldgaard's Dorset, Stage I, gave two dates: 446 B.C. (antler) and 952 B.C. Meldgaard's Pre-Dorset culture at Alarnerk, near Igloolik, has two stages. The earlier stage produced dates of 2,000 B.C., 1948 B.C., 1602 B.C. (antler) and 940 B.C. (antler). The later Pre-Dorset stage gave a single date of 396 B.C. (antler). From the Yukon, MacNeish's New Mountain phase[3] has a presumably erroneous date of 1,250 B.C. (antler). Very likely it should date at least as early as the earliest Alarnerk

date. From the Iyatayet site at Cape Denbigh, Carbon dates suggest that the Denbigh Flint Complex precedes 2,000 B.C. None, I am sure, will argue with such a statement. The middle layer, referred to as the Norton culture (previously termed an assemblage of the Near Ipiutak phase) gave three dates, by the solid carbon method, that average 403 B.C. One date for Norton culture, by the more accurate CO_2 method was 255 B.C. Giddings' Choris site (1957) which is typologically close to the Norton culture gave dates of 677 B.C., 688 B.C., and 286 B.C. These latter dates are included in view of Larsen and Meldgaard's (1958) recent view that the Sarqaq culture stemmed from an as yet unknown Alaskan stage that existed after the time of the Denbigh Flint complex but prior to Near Ipiutak or Norton culture.

At the risk of doing yet greater violence to the interpretations of Arctic archaeologists, the results of work bearing on the Dorset problem should be summarized. The Dorset culture was an Eskimo culture that spread over most of the eastern Arctic and Greenland. It outran the tundra to reach Newfoundland. Its sites are found abundantly on ocean shore locations but rarely in the interior, although this last may well be a result of inadequate searching in the Eastern Arctic interior. Temporally it is post-Sarqaq and for the most part Pre-Thule. It may have persisted in a heavily Thule-influenced form until 1902 in the form of Sadlermiut culture. It likely began about 1,000 B.C. and lasted until about 1,350 A.D. as a distinct entity in some regions. It declined after the arrival of the Thule culture from north Alaska and was replaced by that culture. Most anthropologists hold, and recent, albeit scant, concrete evidence suggests that the Dorset culture people were physically Eskimo. Dogs, the dog-pulled sled, ceramics, and the bow drill were unknown. The Dorset people made a wide range of spears, lances, harpoons, knives, scrapers and adzes utilizing chipped or ground stone blades including side blades. The microlithic tradition is a prominent component of the culture. The burin tradition seems to have been poorly developed but rubbed chert burin-like tools are typical. Soapstone lamps and pots of a variety of forms have been found. They had hand sleds, tents, and stone-sod houses, both semi-subterranean and surface. These houses were generally

rectangular. The Dorset culture included a distinctive small-scale art. The people were semi-nomadic, using seasonal camps and practised a hunting economy. Available data suggest that sea-mammal hunting was the chief aspect of the food quest, although baleen whales do not seem to have been taken. Fish, land mammals, and birds were also exploited. The abundance of sewing needles in many Dorset samples leads to the suggestion of tailored fur clothing. Artifactual material from Dorset sites shows sequential change through time and these changes are currently being analyzed. The nature of the demise of the Dorset culture has not been determined and there are remarkably scant data bearing on this important problem. Nothing is known of the language spoken by the Dorset culture population and information on this point will be gained only slowly. However, L.L. Hammerich (1958), the Danish linguist, has been kind enough to hint with glottochronological support (notably Swadesh, 1952) — in a direction that appeals to me — that the Dorset culture people did indeed speak an Eskimoan language. There is another matter that, despite repeated rejection, bobs to the surface of discussions with suspicious persistence. That matter, of course, is the problem of cultural relationship between the Dorset culture and certain Archaic Pattern manifestations of the northern Woodlands. With Jenness' view (1940) that Dorset extends to 1,000 B.C. at last finding support in Carbon dates, Ritchie's negation (1951) of Dorset-Laurentian relationship has become debatable again.

There has long been, and still is, a fundamental dichotomy of views on the nature and origin of Dorset culture. This dichotomy hinges on the problem of Dorset-Archaic Pattern relationship. One hypothesis states that Dorset is basically an Indian entity that adapted to the tundra and Arctic coast, became "Eskimo-ized", after migration northward from the taiga. Proponents of this view generally see the Great Lakes Basin and St. Lawrence River Valley as the geographic source and the Laurentian Aspect of the Archaic Pattern as the cultural source. It has also been suggested that Dorset was one parent of the Laurentian Aspect. The second hypothesis sees Dorset as an Eskimo phenomenon with its home in the Alaskan, or at least, western Arctic cultures that existed prior to the time of Okvik,

that is, before about 500 B.C. Exponents of this second view usually grant some minor Indian influence on Dorset culture.

So long as the Dorset culture was the oldest-known occupation in the Eastern Arctic, it was inevitable that anthropologists searched for a place of origin elsewhere and pondered routes of migration. Recognizing the artifactual content of Dorset assemblages, and the limited data of Arctic archaeology, it is not surprising that these searchings led to Alaska and northeastern North America. Both areas had produced an archaeological literature and that literature contained at least some material comparable to Dorset artifacts. However, from 1952 on, evidence has accumulated to show that Pre-Dorset cultures like the Sarqaq, had occupied the Eastern Arctic and Greenland. Even from the small samples available it was immediately evident that Sarqaq was related to the Denbigh and Denbigh-like materials that have been reported from Alaska and the Yukon Territory. There was also, I think, considerable ground to suggest a Sarqaq-Dorset affinity. With the recent additions to the literature on the Pre-Dorset cultures this latter possibility has become a probability. Nevertheless, some archaeologists working with Pre-Dorset samples have chosen to stress the differences between their materials and Dorset materials. Consequently they have rejected the possibility of genetic relationship between the two. While the two cultures are quite distinctive, there is, I think, sufficient evidence to make a strong case for the Pre-Dorset as a parent of Dorset. So far as I know, this has only been suggested hitherto by Harp (1952), Meldgaard (1955), and Collins (1956a) who as quoted above, referring to Independence I, Sarqaq of Disko Bay, and North Knife River, wrote "...all of which might be called Pre-Dorset in the sense they represent earlier stages from which the recognizable Dorset pattern eventually emerged." (page 76).

When two archaeological interpretations of a body of data are long held, well-argued, and conflicting, it occasionally happens that both have merit. Such may be the case for the two traditional views on the Dorset problem. The third and most recent view, of Dorset development in situ, may resolve the problem and reveal the merits of the earlier interpretations.

If prediction is admissable at this point, I would like to predict that in the near future all but the most obdurate will come to agree that the Dorset culture is Eskimo, that the language was probably of the Eskaleut Stock (Swadesh, 1954), and that its people were physically Eskimo. For Dorset origins, I think there will soon be sufficient data to demonstrate that the Dorset culture developed from a Pre-Dorset base with continuing influence from the western Arctic and noticeable, albeit superficial, influence from the Archaic Pattern Indian populations to the south. There may well have been a contribution to the Dorset inventory from Indian cultures east of Great Slave Lake and Lake Athabasca. Most promising in this context is the Lockhart River Complex whose side-notched points, prismatic blades, and end-scrapers remind one of Dorset types. MacNeish has estimated that the Lockhart River Complex existed sometime between 1,000 and 4,000 years ago (p. 33, 1951). The Dorset culture is strongly related to what Irving has termed the Arctic Small Tool tradition (1957). Synthesizing the interpretations of several others and speculating freely, one may discern a west-to-east geographic and chronological continuance of that tradition arriving from Siberia as the Denbigh Lithic Complex (circa 3,500 to 2,500 B.C.) and known from Cape Denbigh and the Brooks Range sites; then to the New Mountain phase (circa 2,500 B.C.) of the northern Yukon Territory; from that to the Dismal-2 microlithic assemblage on the western edge of the Canadian Barrenlands; then over a large unknown gap to the several Pre-Dorset components, beginning about 2,000 B.C. such as Independence I, North Knife River, the Pre-Dorset occupations of the Alarnerk area and the Paleo-Eskimo of West Greenland. I would suggest that it was out of these Pre-Dorset occupations that the Dorset culture grew, beginning about 1,000 B.C. The Dorset culture's affinity to the Arctic Small Tool tradition is seen in its Arctic locale, its Arctic economy, its well-developed microlithic industry, and its use, however diminished, of burins. It is distinguished from the members of that tradition by its pronounced Eskimo stamp and by its duration into the second millenium A.D. The Eskimo stamp of the Dorset culture in this hypothesis is a result of the postulated continuing influence from another major tradition that was developing in

the western Arctic. It is called here Inuk Tradition[3] to avoid the theoretical implications of Larsen and Rainey's term "Neo-Eskimo" (1948). Its membership included the Okvik, Old Bering Sea, Punuk, Birnirk, and Thule cultures. The Inuk Tradition's contribution to the Dorset culture likely began as influence from such pre-Okvik Alaskan occupations as Choris, Norton, and Near Ipuitak. According to our hypothesis, these were incipient phases of the Inuk Tradition. Since the Dorset culture has extensive affinities with both the Arctic Small Tool Tradition and the subsequent Inuk Tradition, and since the Dorset way of life was distinctive, long-lasting in time, and widely spread geographically, it is concluded here that it should be considered as a distinct tradition, the "Dorset Tradition"[4], whose variant cultural forms we are only beginning to discern. The present evidence indicates a considerable division between Pre-Dorset and Dorset cultures but this likely is a fallacious impression resulting from inadequate site samples. As more sites are reported through the period 1,500 B.C. to 0 A.D., their samples might well demonstrate a more gradual change from Pre-Dorset to Dorset than that indicated by the present evidence. Canadian Arctic archaeology is plagued by a shortage of data that makes interpretation, even specultion, a risk. Such a shortage has always been the lot of archaeologists dealing with the vast Arctic area and it does much to explain the many divergent interpretations reviewed in this summary.

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[3] Rainey and Ralph (page 371-2) list it as "Early Mountain phase" of site N. VK-1. Its correct designation is as given above and the site number is NiVk-1, which is the Engigstciak site as they have identified it.

[4] R.S. MacNeish and I have found this to be an enlightening division in our current research on Arctic archaeology. For further discussion on it the reader is referred to MacNeish's paper in this volume.

BIBLIOGRAPHY

"Forelφbig Beretning om Femte Thule-Ekspedition fra Grφnland till Stillehavet." *Geografisk Tidskrift,* Vol. 27 (1924).

BIRD, Junius B., "Archaeology of the Hopedale Area, Labrador." *Anthrop. Papers, Am. Mus. Nat. Hist.,* Vol. 39, Pt. II (1945).

BIRKET-SMITH, K., "The Question of the Origin of Eskimo Culture: A Rejoinder." *Am. Anthrop. New Series,* Vol. 32 (1930).

- "Recent Achievements in Eskimo Research." *J. Royal Anth. Instit.,* Vol. LXXVII, Pt. 2 (1951).

BYERS, D., The Eastern Archaic: Some Problems and Hypotheses." *Am. Antiquity,* Vol. XXIV, No. 3 (1959).

COLLINS, H.B., "Archaeology of the Bering Sea Region." *Smithsonian Report for 1933* (Publication 3280; 1935).

— "Archaeology of St. Lawrence Island, Alaska." *Smith. Misc. Coll.,* Vol. 96, No. 1 (1937).

— "Outline of Eskimo Prehistory." *Smith. Misc. Coll.,* Vol. 100 (1940).

— "Excavations at Frobisher Bay, Baffin Island, N.W.T." *Ann. Rep. Nat. Mus. Can. for 1948-49,* Bull. 118 (1950).

— "The Origin and Antiquity of the Eskimo." *Smithsonian Report for 1950* (Publication 4041; 1951).

— "Radiocarbon Dating in the Arctic." *Am. Antiquity,* Vol. XVIII, No. 3 (1953).

— "Recent Devolpment in the Dorset Culture Area." Paper read before Section H, A.A.A.S., Philadelphia, Pa., *Am. Antiquity,* Vol. XVIII, No. 3, Pt. 2, Memoir No. 9 (1953).

— "The Position of Ipiutak in Eskimo Culture — Reply." *Am. Antiquity,* Vol. XX, No. 1 (1954).

— "Archaeological Research in the North American Arctic." *Arctic,* Vol. 7, Nos. 3 and 4 (1954).

— *Arctic Area. Program of the History of America.* (Vol. 1, No. 2, Mexico, Comision de Historia, 1954).

— "The T-1 Site at Native Point, Southampton Island, N.W.T." *Antropological Papers of the Univ. of Alaska,* Vol. 4, No. 2 (1956).

— "Archaeological Investigations on Southampton and Coats Islands, N.W.T." *Ann. Rep. Nat. Museum Can. for 1954-55,* Bull. 142 (1956).

— "Archaeological Investigations on Southampton and Walrus Islands N.W.T." *Ann. Rep. of Nat. Mus. Can. 1955-56,* Bull. 147 (1957).

— "Archaeological Work in Arctic Canada." *Smithsonian Report for 1956,* Publication 4288; 1957).

— "Present Status of the Dorset Problem." In *Proceedings of the Thirty-Second International Congress of Americanists,* Copenhagen, 1956, Munksgaard (1958).

DE LAGUNA, Frederica, *The Archaeology of Cook Inlet, Alaska.* University Museum, Philadelphia, Pa., (1934).

— Eskimo Lamps and Pots." *J. Royal Anth. Inst.,* Vol. 70, Pt. 1 (1940).
— "The Importance of the Eskimo in Northeastern Archaeology." In F. Johnson, Man in Northeastern North America. *Papers of the Peabody Foundation for Archaeology.* Vol. 3 (1946).
— "The Prehistory of Northern North America as seen from the Yukon." *Memoirs of the S.A.A., No. 3, Am. Antiquity,* Vol. XII, No. 3, Pt. 2 (1947).
GIDDINGS, J.L., Jr., "Early Flint Horizons on the North Bering Sea Coast." *Washington Acad. of Science,* Vol. 39 (1949).
— "The Denbigh Flint Complex." *Am. Antiquity,* Vol. XVI, No. 3 (1951).
— "A Flint Site in Northern Manitoba." *Am. Antiquity,* Vol. XXI, No. 3 (1956).
— "Round Houses in the Western Arctic." *Am. Antiquity,* Vol. XXIII, No. 2, Pt. 1 (1957).
HAMMERICH, L.L., "The Origin of the Eskimo." *In Proceedings of the Thirty-Second International Congress of Americanists, Copenhagen,* 1956, Munskgaard (1958).
HARP, E., "An Archaeological Reconnaissance in the Strait of Belle Is. Area." *Am. Antiquity,* Vol. XVI (1951).
— *The Cultural Affinities of the Newfoundland Dorset Eskimo.* M.S., Doctoral Dissertation Harvard University, Cambridge, Mass., 1952.
— "New World Affinities of the Cape Dorset Eskimo Culture." *Anthropological Papers of the Univ. of Alaska.* Vol. I, No. 2 (1953).
— "Prehistory in the Dismal Lake Area, N.W.T., Canada." *Arctic,* Vol. XI, No. 4 (1959).
HOFFMAN, B., "Implications of Radiocarbon Datings for the Origin of the Dorset Culture." *Am. Antiquity,* Vol. XVIII, No. 1 (1952).
HOLTVED, Erik, "Archaeological Investigations in the Thule District." *Med. om Grønland.* Vol. 141, Pts. 1 and 2 (1944).
IRVING, W., "Archaeology of the Brooks Range of Alaska." *Am. Antiquity,* Vol. XVII, No. 1, Pt. 1 (1951).
— "Evidence of Early Tundra Cultures in Northern Alaska." *Anthropological Papers of the Univ. of Alaska,* Vol. 1, No. 2 (1953).
— "An Archaeological Survey of the Susitna Valley." *Anthropological Papers of the Univ. of Alaska,* Vol. VI, No. 1 (1957).
JENNESS, D., "A New Eskimo Culture in Hudson Bay." *The Geographical Review,* Vol. XV, (1925).
— "The National Museum of Canada." In *Notes and News of American Anthropologist,* New Series, Vol. XXX, (1928).
— "Notes on the Beothuk Indians of Newfoundland." *Can. Dept. of Mines, Ann. Rep. for 1927,* Bull. 56 (1929).
— *The Problem of the Eskimo."* In American Aborigenes, Toronto (1933).
— "Prehistoric Culture Waves from Asia to America." *J. Wash. Acad. Sciences,* Vol. XXX, No. 1 (1940).
— "An Archaeological Collection from the Belcher Islands in Hudson Bay." *Annals of the Carnegie Museum,* Vol. XXVIII, Pittsburg (1944).

KNUTH, Eigil, "An Outline of the Archaeology of Peary Land." *Arctic,* Vol. V, No. 1 (1952).

— "The Paleo-Eskimo Culture of Northeast Greenland Elucidated by Three New Sites." *Am. Antiquity,* Vol. XIX, No. 4 (1954).

— *Danmark Fiord.* Fra Nationalmuseets Arbejdsmark (1956).

— "Archaeology of the Farthest North." In *Proceedings of the Thirty-Second International Congress of Americanists, Copenhagen,* 1956, (Munksgaard, 1958).

LARSEN, Helge, and RAINEY, F., "Ipiutak and the Arctic Whale Hunting Culture." *Anth. Papers of Am. Mus. Nat. Hist.,* Vol. 42 (1948).

LARSEN, Helge, "De dansk-amerikanske Alaska-ekspeditiones 1949-50." *Geografisk Tidskrift,* 51 Bind, Copenhagen (1951).

— "Archaeological Investigations in Alaska since 1939." *Polar Record,* Vol. VI, No. 45, Cambridge, England (1953).

LARSEN, Helge, and MELDGAARD, Jørgen, "Paleo-Eskimo Cultures in Disko Bugt, West Greenland." *Med. om Grønland.* 161 Bind, No. 2 (1958).

LAUGHLIN, W.S., and TAYLOR, W.E., *A Cape Dorset Culture Site on the West Coast of Ungava Bay* (N.D.).

LEECHMAN, D., "Two New Cape Dorset Culture Sites." *Am. Antiquity,* Vol. VIII, No. 4 (1943).

LETHBRIDGE, T.C., "Archaeological Data From the Canadian Arctic." *J. of the Royal Anth. Inst.,* Vol. 69 (1939).

MACNEISH, R.S., "An Archaeological Reconnaissance in the Northwest Territories." *Ann. Rep. Nat. Mus. of Canada for 1949-50,* Bull. 123 (1951).

— "The Pointed Mountain Site Near Fort Liard, N.W.T., Canada." *Am. Antiquity,* Vol. XIX, No. 3 (1954).

— "The Engigstciak Site on the Yukon Arctic Coast." *Anthropological Papers of the Univ. of Alaska,* Vol. IV, No. 2 (1956).

MARTIN, P.S., QUIMBY, G.I., and COLLIER, D., *Indians Before Columbus.* Univ. of Chicago Press (1947).

MATHIASSEN, T., "Archaeology of the Central Eskimo." Vol. 4, Pts. 1 and 2, *Report of the Fifth Thule Expedition, 1921-24* (1927).

— "Eskimo Relics From Washington Land and Hall Land." *Med. om Grønland,* 71 Bind, No. 3 (1928).

— "The Question of the Origin of Eskimo Culture." *Am. Anthropologist,* New Series, Vol. XXXII (1930).

— "The Eskimo Archaeology of the Julianhaab District." *Med. om Grønland,* 118 Bind, No. 1 (1936).

— "The Sermermiut Excavations, 1955." *Med. om Grønland,* 161 Bind, No. 3 (1958).

MELDGAAD, Jørgen, "A Paleo-Eskimo Culture in West Greenland." *Am. Antiquity,* Vol. XVII, No. 3 (1952).

— "Dorset Kulturen." *Kuml, Journal of the Jutland Archaeological Society* (1955).

O'BRYAN, Deric, "Excavation of a Cape Dorset Culture Eskimo Site, Mill Island, West Hudson Strait." *Ann. Rep. Nat. Mus. Can. for 1951-52,* Bull. 128 (1953).

POPHAM, R.E., and EMERSON, J.N., "Manifestations of the Old Copper Industry in Ontario." *Penn. Archaeologist.* Vol. 24, No. 1 (1954).

QUIMBY, G.I., Jr., "The Manitunik Culture of East Hudson's Bay." *Am. Antiquity,* Vol. VI (1940).

— "The Archaeology of the Upper Great Lakes Area." In *Archaeology of Eastern United States,* ed. J.B. Griffin (1952).

RAINEY, F., and RAPH, Elizabeth, "Radiocarbon Dating in the Arctic." *Am. Antiquity,* Vol. XXIV, No. 4 (1959).

RIDLEY, F., "The Frank Bay Site, Lake Nipissing, Ontario." *Am. Antiquity,* Vol. XX, No. 1 (1954).

RITCHIE, W.A., "Ground Slates: Eskimo or Indian." *Penn. Archaeologist,* Vol. XXI, Nos. 3-4 (1951).

RITZENTHALER, R.E., and WITTRY, W., "The Old Copper Complex: An Archaic Manifestation in Wisconsin." *Am. Antiquity,* Vol. XXI, No. 3 (1956).

ROWLEY, G., "The Dorset Culture of the Eastern Arctic." *Am. Anthropologist,* New Series, Vol. 42 (1940).

SOLBERG, O., *Beiträge zur Vorgeschichte der Ost-Eskimo.* Skrifter Vid.-Selsk Christiana 1907, Hist.-filos, Kl., No. 2 (1907).

SOLECKI, R.S., "Notes on Two Archaeological Discoveries in Northern Alaska, 1950." *Am. Antiquity,* Vol. XVII, No. 1, Pt. 1 (1951).

SOLECKI, R.S., and HACKMAM, R.J., "Additional Data on the Denbigh Flint Complex in Northern Alaska." *J. of Wash. Acad. of Science,* Vol. 41, No. 3 (1951).

SPAULDING, A.C., *Northeastern Archaeology and General Trends in the Northern Forest Zone.* In *Man in Northeastern North America,* ed. by F. Johnson (1946).

STRONG, W.D., "A Stone Culture from Northern Labrador and its Relation to the Eskimo-like Cultures of the Northeast." *Am. Anthropologist,* New Series, Vol. 32 (1930).

SWADESH, M., "Lexico-Statistic Dating of Prehistoric Ethnic Contacts." *Proceedings of the American Philosophical Society,* Vol. 96, No. 4 (1952).

— "Time Depths of American Linguistic Grouping." *Am. Anthropologist,* New Series, Vol. 56 (1954).

TAYLOR, W.E., "Archaelogical Work in Ungava, 1957." *Arctic Circular,* Vol. X, No. 2, Jan. (1958).

— "Archaelogy in the Canadian Arctic." *Canadian Geographical Journal,* Vol. LVII, No. 3, Sept. (1958).

WINTEMBERG, W.J., "Eskimo Sites of the Dorset Culture in Newfoundland." *Am. Antiquity,* Vol. V (1939).