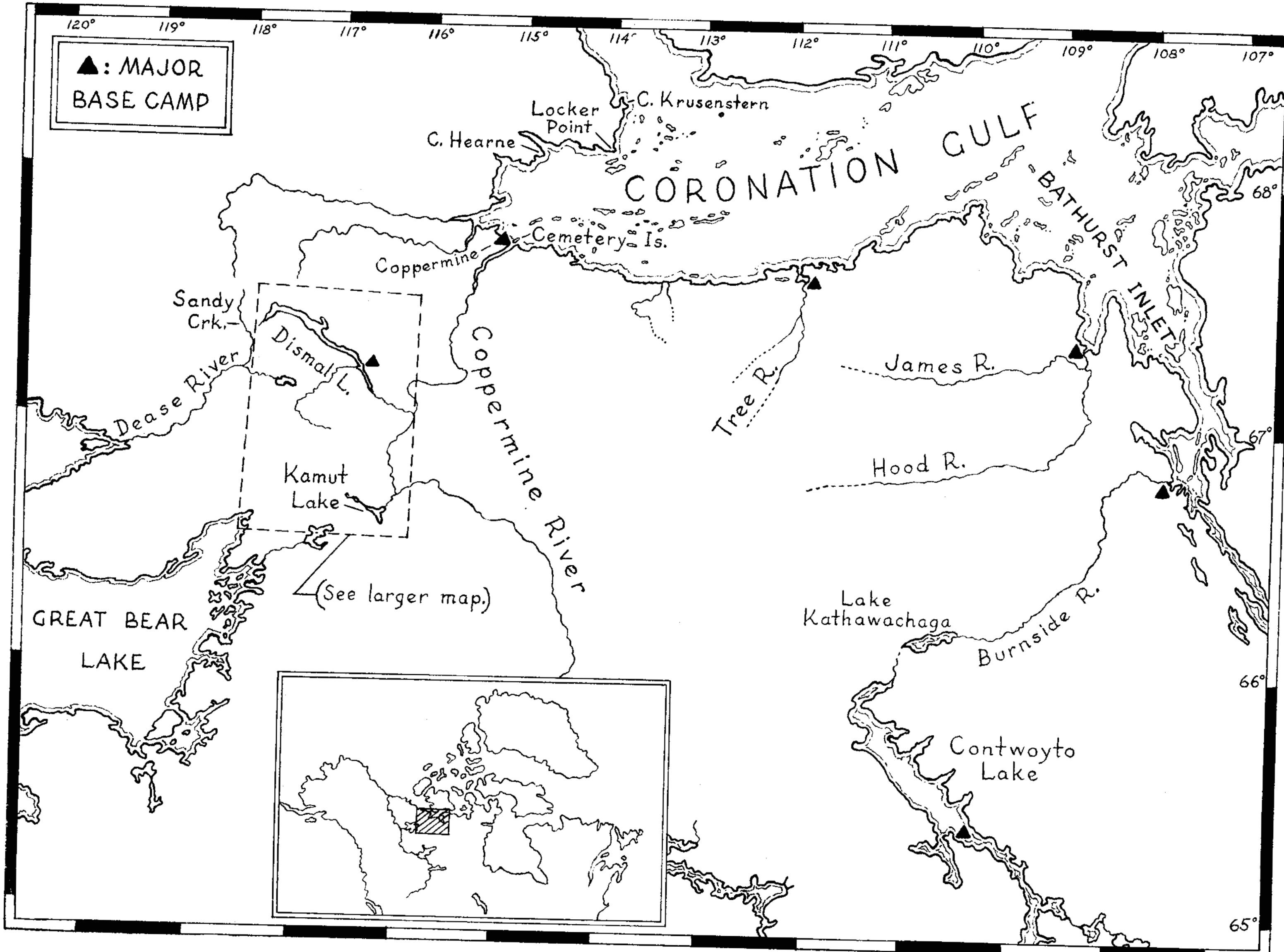

Fig. 1. Area of investigations.

PREHISTORY IN THE DISMAL LAKE AREA, N. W. T., CANADA

Elmer Harp, Jr.*

The general survey

THIS paper deals with an archaeological reconnaissance undertaken during the summer of 1955 in certain areas adjacent to Coronation Gulf, N.W.T. The specific aim of the project was to help clarify the cultural development of the Cape Dorset Eskimo and other early peoples of the Eastern Arctic and to link such groups more firmly with ancestral manifestations in Alaska.

The journey was made in company with Ralph E. Miller, M.D., Mary Hitchcock Hospital, Hanover, N.H., in his light plane, a Piper Tripacer. The general scope of the investigation and the exact itinerary have been given in detail (Harp 1955, 1957), but certain broad facts may be restated here.

Much of our time was spent along the arctic coast, mainly around the western end of Coronation Gulf between Cape Krusenstern and the Coppermine River, the estuary and lower valley of the Tree River, the mouth of the Hood River in Arctic Sound, and the mouth of the Burnside River in Bathurst Inlet (Fig. 1). All my collections from these areas are attributable to modern or relatively recent Eskimo.

In the high granite country that borders Tree River on the east we carried out a diligent search for the steatite outcrops that are reputed to have been a major source of material for lamps and pots in the Central Arctic (Jenness 1922, pp. 53-4). It was my hope that evidence of prehistoric quarrying might contribute importantly to our quest, but we failed at first to locate any steatite. Later we flew an Eskimo lad from Coppermine to Tree River and he guided us directly to a quarry where his father had once cut stone. The surrounding area, however, produced only a few modern fragments and uncompleted blanks and there was no evidence of antiquity at the site.

A special trip was made to Locker Point, a few miles south of Cape Krusenstern, in order to examine a peculiar conical stone house on the bluff there (Jenness 1922, pp. 57-8), but no artifacts were found. I plan to make this structure and other similar ones the subject of a future article. Excavation in the coastal zone was undertaken only in the pit of an old sod house on a raised beach along the west shore of Cemetery Island, at the mouth of the Coppermine River. Two occupation floors were detected,

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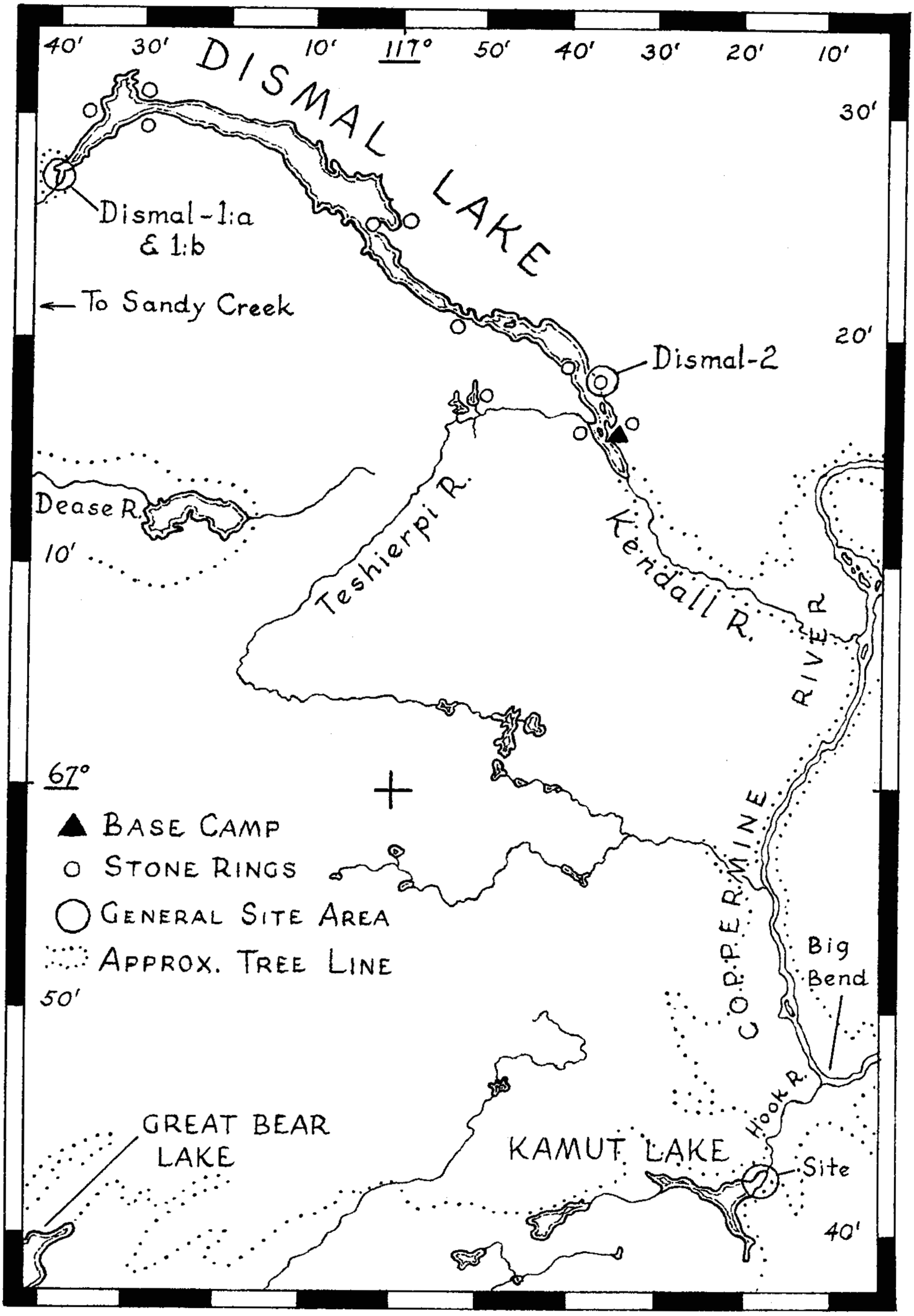

Fig. 2. Area of major sites.

but they yielded only a few fragments of worked bone, none diagnostic, several chips of quartzite, and an interesting juxtaposition of some steatite sherds with earthenware pottery. The pottery fragments are badly eroded, but probably represent a late type.

At Contwoyto Lake, 100 miles southwest of Bathurst Inlet, results were much the same. A week of scouting various esker complexes and the four major embayments of the northeastern shore brought only the discovery of recent hunting camps and caribou drives. Excavation of a stone house foundation on an unnamed island in Burnside River, some 5 miles east of Lake Kathawachaga, also produced only recent artifacts of bone. It was not until we had established our last major base camp at Dismal Lake that several sites of more significant character were encountered (Fig. 2).

In collecting field data in these sites the techniques used were purely of a reconnaissance nature. Once a site had been located it was thoroughly surface-hunted, photographed, and sketchmapped. Except in the two house pits noted, excavation was confined to minor test digs with a trowel to trace surface finds to a given turf horizon.

The sites and their inventories

Dismal — 1:a

This site is situated very close to the western or upper end of Dismal Lake at approximately 67°26′10″N., 117°40′40″W. Three brooks enter the lake there, one at the southernmost extremity and two from the west. Between the two western brooks a large esker curves down to the very edge of the lake where it is eroded in a steep bluff, 30 to 40 feet high, and the site is on top of the esker just above the lake (Fig. 3).

The lake end of the esker is banked with dunes that have been stabilized only once by a thin cover of vegetation; stone chips and artifacts were found both in this thin soil layer and on the surface of the numerous blow-outs that are now modifying the dunes. Signs of occupation begin at the edge of the bluff and go back on the upper surface of the esker. At a height of about 50 feet above the lake the dune sand thins out and disappears and the gravel surface of the esker continues rising westward to a height of 70 to 80 feet. Sporadic finds of chips and stone artifacts were made along the barren ridge for a distance of almost 200 yards from the lake, but the heaviest concentration was close to the lake and appears to have centred on the dunes across the front. Several artifacts were also found near the water's edge where they had fallen during the erosion of the bluff.

Along the upper ridge of the esker were also signs of recent encampments. These included a dozen stone tent rings, several concentrations of broken, calcined bones in probable hearth areas, a severely weathered musk ox skull, innumerable fragments of bone in all stages of decomposition, and wood chips. I could detect no association between these materials and the chipped-stone occupation of the dunes; indeed, no bony material at all was

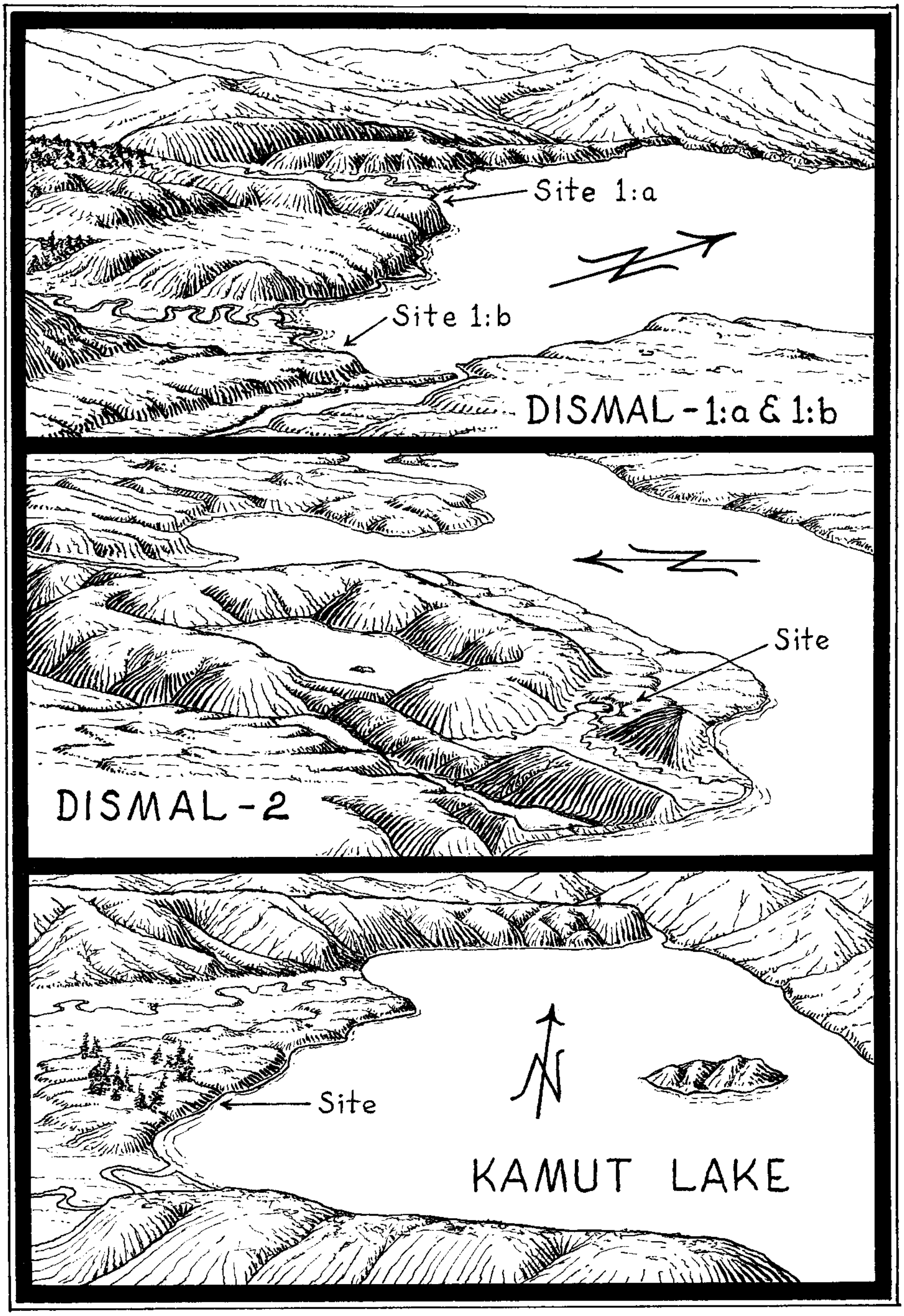

Fig. 3. Sketches of major sites.

found in the dune sand. On the south slope of the esker lay several other tent rings and a badly battered toboggan of Indian origin. These camps were littered with greying wood chips. The material for the wood working came probably from the stand of spruce that clothes the south-facing lee slope of the esker. Some of these trees are 25 feet high with a butt diameter of 12 inches.

The collection from Dismal — 1:a consists of 40 artifacts, 39 of stone and 1 of copper. They are broadly classifiable as: 7 projectile points, 9 knives, 18 scrapers, 1 adz, 1 hammerstone, 3 unidentifiable chipped fragments, and 1 copper implement. Most of them are illustrated in Fig. 4.

Points: Among the 7 specimens found at least 3 types may be distinguished. The majority are lanceolate and Fig. 4, Nos. 2 and 3 are of a type that has its maximum width in the central portion of the blade. Fig. 4, No. 1 suggests a second type in that it is broadest close to the base. Otherwise the 3 specimens are alike in having been made from thick flakes or blades of andesite and andesite-porphyry and all still show the original curvature of the blade along the longitudinal axis. They are biconvex in cross-section, but in all the core face is somewhat flatter. All three are thickest near the point, the original bulbar end of the blade, with No. 3 attaining a maximum of 12.3 mm. The flaking is rough and bifacially staggered so that the lateral edges are markedly sinuous, although No. 2 is more smoothly worked and bears a suggestion of diagonal flaking. The bases are abruptly thinned.

The fragmentary points shown in Fig. 4, Nos. 4, 5, and 6, are similar in shape to the first lanceolate type. No. 4, however, has been made from a relatively much thinner flake, for its maximum cross-section at the break is only 7.4 mm. This may be the basal fragment of a knife, as is suggested by the asymmetry of its lateral edges. No. 6 is the basal portion of a thin flake that has been retouched only at the edges. A third distinct type is represented by Fig. 4, No. 7, a broad corner-notched point of green jasper.

Knives: Fig. 4, Nos. 8, 9, 10, and 11, are all examples of large blades of andesite, basaltic flow rock, or schist, that have been fashioned into knives by retouching portions of or all their edges on one or both faces. No. 9 has apparently been purposefully shaped and almost totally worked on both faces by primary and secondary chipping, whereas the other specimens are characterized mainly by retouched edges. Fig. 4, No. 12 is a discoidal type that seems to have been completely worked on both faces, although much of the underside has spalled away.

Scrapers: The most common type is a large flake or blade that has been steeply retouched along one or more sides, as in Fig. 4, Nos. 13, 14, 16, and 17. The chief materials are andesite, andesite-porphyry, basaltic flow rock, and sedimentary rock. These, as well as the knives mentioned above, are reminiscent of Levalloisean artifacts. No. 14 has a continuous edge preparation that makes it both a side and an end scraper. Fig. 4, Nos. 18, 19, and 20, are the common type of snub-nose or steep end scraper. A third type is represented by Fig. 4, Nos. 15 and 22; both are thick, heavy side scrapers.

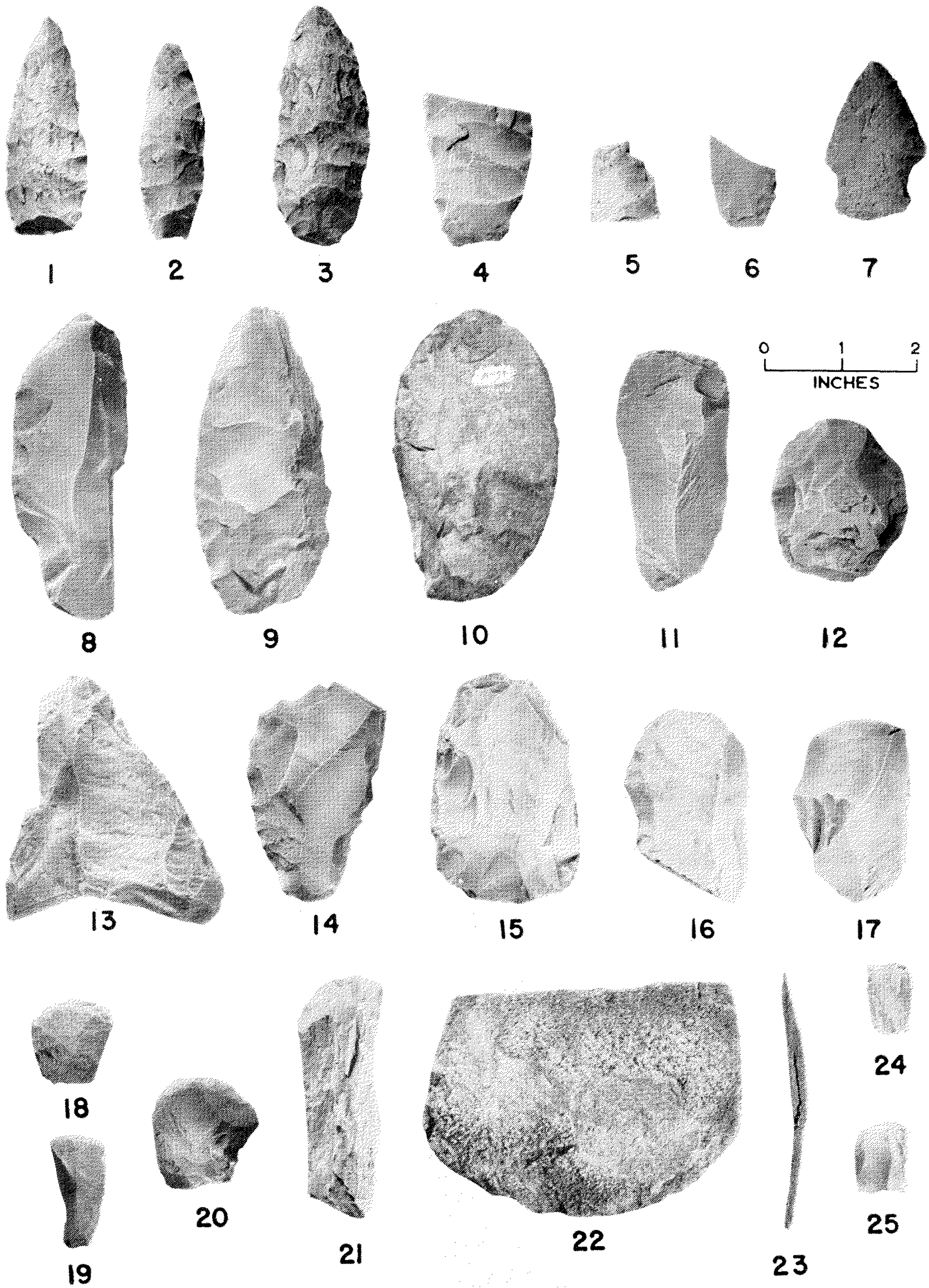

Fig. 4. Artifacts from Dismal — 1:a.

No. 15 has been roughly flaked from a core of metamorphosed sedimentary rock and No. 22 is a spall from a granite boulder with a maximum thickness of 1.7 cm. The convex bottom edge has been chipped on both faces and the exterior face still bears portions of the cortex of the original boulder.

The artifacts shown in Fig. 4, Nos. 24 and 25 may be classed as small flake knives or as scrapers, but they do not partake of the general character of this assemblage. They are made of flint and more closely resemble artifacts of the microlithic industry of Dismal — 2.

Adz: I have called Fig. 4, No. 21 an adz because its nose is steeply flaked and the edge scarred. Undoubtedly, however, it saw much use as a scraper or flesher, for its flat undersurface is polished quite smooth. Beneath the polish signs of earlier primary flake scars are still visible.

Hammerstone: This specimen, not illustrated, is a granite pebble, oval in shape and cross-section that has been flattened at both ends through pecking and pounding. The longest axis, between the worn ends, is 11.6 cm. and the weight 2 lbs. 4 oz.

Copper: The artifact in Fig. 4, No. 23 is a perforator or thin blade that has been cold-hammered from native copper. It cannot with any certainty be linked with the chipped-stone industry of the esker dunes and quite probably is recent.

Dismal — 1:b

It is probable that the occupation of the esker dunes extended to this site and I tentatively consider the two localities as related components. Dismal — 1:b is situated at the mouth of the brook that flows into the southern extremity of the lake; it is about 200 yards from the esker of Dismal — 1:a. The site lies on a flat-topped sandy knoll that is bounded by gravel slopes on the lake and brook sides. The surface stands 15 to 20 feet above the present lake-level, and a considerable concentration of stone chips and a few artifacts lay scattered over it, covered here and there with patches of thin vegetation and lichens. There were also many fragments of weathered bone, but since a number of them lay on top of the vegetation they surely had no connection with the chipped-stone remains.

Only 6 artifacts were collected from the surface of Dismal — 1:b. They include a projectile point, 2 knives, 2 scrapers, and an unworked microblade.

Points: The lone specimen is a corner-notched type shown in Fig. 5, No. 1. The material is not identifiable because of heavy patination.

Knives: Fig. 5, No. 2 is the basal fragment of a thin broad blade or spear point, which is very similar to Fig. 4, No. 4. Both specimens consist of basaltic flow rock and are completely worked bifacially. Fig. 5, No. 3 is a scraper fragment that shows much less careful workmanship on metamorphosed sedimentary rock. The lateral edges have been chipped on both

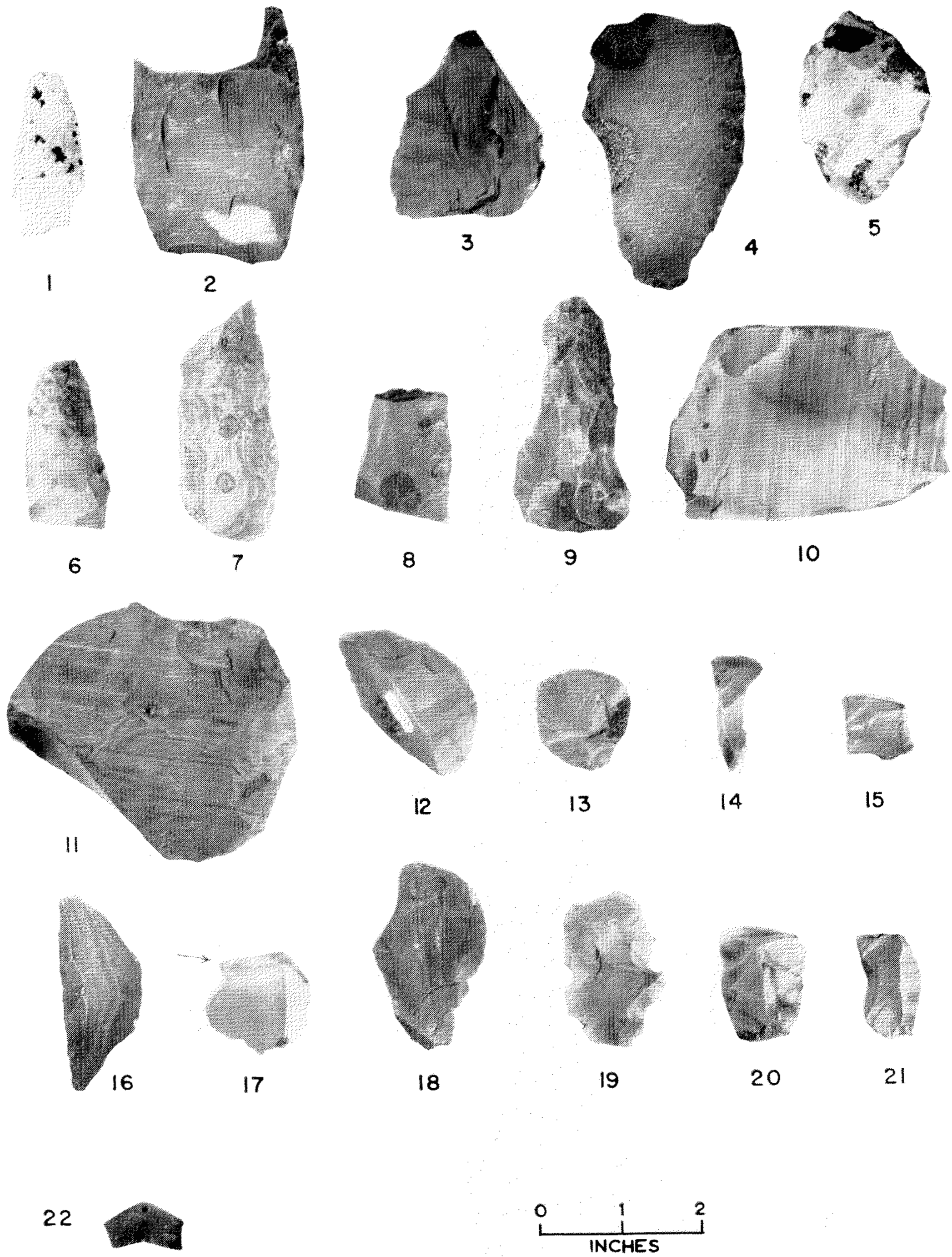

Fig. 5. Artifacts from Dismal — 1:b (Nos. 1 to 5) and Dismal — 2.

faces, but its most interesting attribute is the portion of a ground or polished facet at its uppermost tip. Presumably a ground edge once extended across that end of the implement, but only 7.5 mm. of it now remain. The depth of the bevel is 9.9 mm. and the angle 47°.

Scrapers: Fig. 5, Nos. 4 and 5 are both side scrapers made on flakes of andesite-porphyry. No. 4 is another Levallois-type flake, much like the specimens from Dismal — 1:a and No. 5 is a strongly concavo-convex flake struck from the exterior of a pebble and still bears the patinated cortex on its outer surface.

The microblade is not illustrated and will be mentioned in connection with Dismal — 2.

Dismal — 2

This site is located about 30 miles east of Dismal — 1 on the north shore of the lake at approximately 67°18′30″N., 116°38′45″W. The shoreline here projects slightly around the base of an esker complex that encloses four ponds (Fig. 3). The site lies just south of the smallest and southernmost of the ponds on a low ridge between higher portions of the esker and appears to be a beach formation. The surface of the ridge is 25 to 30 feet above present lake-level, and the pond lies behind it in a depression some 5 feet lower.

The ridge is composed of bedrock and gravel, it has been partly drifted over by dune sand and has been weakly stabilized by heath vegetation. Evidently it has long been a favourite camp site, for it carries traces of perhaps three different occupations. Two of these are characterized by chipped-stone remains and the third by recent Eskimo remains. The last occupants left six stone tent rings along the ridge for over 200 feet and were no doubt responsible for breaking the shallow plant cover. As a result, the surface is pockmarked by blow-outs that were littered with stone chips and artifacts. Evidence for a sequence of occupations must be based on typology, for there was no indication of stratification. The chipped-stone remains were scattered over an irregular area of about 30 by 100 feet.

One of the two main components of the site, excluding recent Eskimo, is based on a large flake industry that is quite like that from Dismal — 1:a and 1:b. Twenty specimens may be attributed to it: 17 are chipped, 1 is polished, and possibly 2 are of native copper. They include 4 points, 1 knife, 6 scrapers, 2 choppers or large steep end scrapers, 1 core, a fragment of a steatite pendant, and the copper specimens.

Points: Fig. 5, Nos. 6 and 7, although not complete, somewhat resemble the lanceolate type Fig. 4, No. 1. But No. 7, with a maximum thickness of 7.5 mm., is relatively thinner. No. 8 is a fragment of the same type and No. 9 another badly eroded sample. They are all of sedimentary rock.

Knives: Fig. 5, No. 15 is the only probable specimen of a knife from this site. It is of flint and bifacially worked along both edges and may be part of a longer blade.

Scrapers: The largest type is represented by Fig. 5, Nos. 11 and 12. They are plano-convex in cross-section and made from very large flakes or cores of sedimentary rock. The convex working edges have been fashioned by a combination of pressure flaking and unresolved step flaking, as if they had been used as choppers. The more usual type of small, snub-nosed end scraper is represented by Fig. 5, Nos. 13 and 14. Side scrapers fashioned on random flakes are Fig. 5, Nos. 16, 17, and 18. Of these, No. 17 appears to have been a tool of many uses. It is a flake of green jasper that has a short straight scraping edge (uppermost), a minutely flaked concave scraping edge with a radius of 3.2 mm. (left), and a beaked engraving tip that was formed by the removal of a burin spall (upper left). I have not classed this as a burin for the reason that it curiously seems to have been used in reverse. The arrow in the photograph indicates how the burin blow was delivered and the negative bulb of percussion lies adjacent to the upper corner of the concave scraping edge. The general shape of the tool at this corner, however, seems to spoil the usefulness of the concave chisel edge. At the opposite (right) end a small beak was formed where the burin spall broke away from the flake and the use of this as an engraving tip is suggested by several minute step-flake scars just below its extreme tip.

Various: Fig. 5, No. 10 is a core of sedimentary rock and 19, 20, and 21, are unidentifiable worked fragments. No. 22 appears to be the mid-section of a steatite pendant. This specimen is 2.5 mm. thick and the hole has been drilled from both sides. The ornamental incised groove also appears on both faces. It is not possible to associate the pendant and two fragments of native copper (not illustrated), one of them definitely cold-hammered, with the large flake industry described. These artifacts may well belong to the late Eskimo occupations of Dismal — 2.

The microlithic industry

Until the discovery of this site the single microblade and the two small flints found at Dismal — 1:a and 1:b had constituted puzzling aberrants. In the blow-outs of Dismal — 2 the proportions were drastically reversed and the microlithic specimens considerably outnumbered the large artifacts. The latter were more or less evenly distributed through the blow-outs in this site, but the microliths were not as widely scattered. In all, 73 microlithic specimens and 48 unworked microblades were collected. They include 12 projectile points, 4 side blades, 8 knives, 8 burins, 3 unworked burin spalls, 5 burin spall gravers, 2 specialized micro-gravers, 12 used microblades, 2 specialized quartz tools, 8 scrapers, and 8 worked fragments that are not identifiable.

Points: Fig. 6, No. 1 represents a small, but thick, leaf-shaped type. The cross-section is biconvex and the flaking bifacial. The left-hand specimen, however, differs in being triangular in cross-section; the face shown has a steep median ridge and its surface is entirely worked, whereas less than half of the flat core face beneath is worked. The tip fragments in Fig. 6, No. 2 constitute a second and thinner leaf-shaped (?) type. They are noteworthy for the skillful retouching along their finely serrated edges. No. 4 consists of possible base fragments of similar points. No. 3 is shown as if it were a tapered point, but it may be as well a basal fragment with a tapering stem. No. 5 appears to be an unfinished blank.

Side blades: One whole specimen and three fragments are pictured in Fig. 6, No. 6. The former has been delicately pressure flaked all over both faces with perhaps the faintest hint of a diagonal direction. The three others have portions of unmodified blade surfaces on one or both faces.

Knives: Fig. 6, No. 7 is a crescent-shaped type that is marked by very slight shoulders near the middle of each edge. The basal fragments shown as No. 9 also seem to be portions of knives, although they do not have any signs of shoulders. Another type with a sub-rectangular shape, possibly a side blade, is represented in No. 8. These implements are made of thin blades and have a flat, unworked core surface and a convex dorsal face that is more or less completely flaked. The two flint specimens found at Dismal — 1:a (Fig. 4, Nos. 24 and 25) undoubtedly are of the same type and as such do not appear to be in context with the large flake industry in which they occurred.

Burins: The 8 burins are all of the angle type, as shown in Fig. 6, Nos. 10, 11, and 12. No. 10 has been formed on a basally thinned blade that is carefully worked on both faces. On the edge opposite the burin spall scar is a narrow shoulder that makes this tool reminiscent of the curved knife shown in No. 7. The two specimens illustrated as No. 11 are both angle burins on side scrapers. They, as well as No. 10, are obviously large enough to give spalls of sufficient size for modification into micro-tools. On the other hand, the 5 examples shown as No. 12 are too small as sources for workable burin spalls. They have all been fashioned on thin-bladed knives akin to the type in No. 8.

In addition to the burins, 8 burin spalls were collected at Dismal — 2. Five, illustrated as Fig. 6, Nos. 14, 15, 16, and 17, are clearly the same as the burin spall artifact that Giddings (1956b) discovered and described. They are minutely retouched across the end opposite to the bulb of percussion. According to Giddings's analysis the retouched end of No. 14 is slanted to the left and this presumably indicates left-handed use. This artifact is a primary spall. No. 17 slants to the right and Nos. 15 and 16 have worked edges at right angles to the longitudinal axis. The spalls in No. 16 are grouped separately because each is purposefully notched at the right corner of the prepared edge. Giddings does not mention this as an attribute of any of his burin spall artifacts, but one of those that he illustrates appears comparable (1956b, Pl. 1, No. 2). Three other spalls, shown in Fig. 6, No. 13, have no sign of retouch, but they show the considerable size range in these tiny artifacts. For contrast see the very large burin spall graver from Kamut Lake, Fig. 7, No. 8.

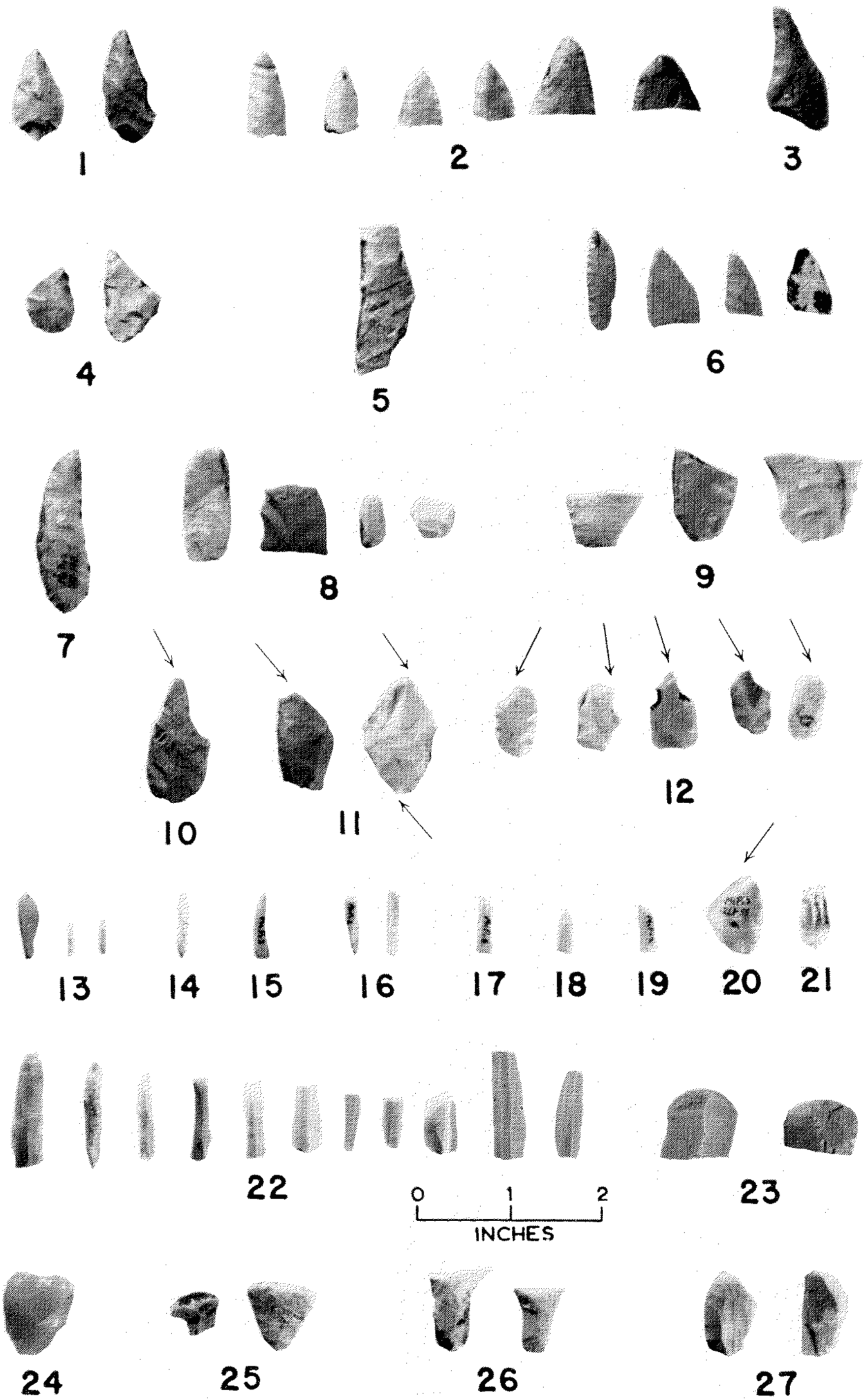

Fig. 6. Microlithic artifacts from Dismal — 2.

Specialized micro-gravers: Fig. 6, Nos. 18 and 19 are unique tools in the collection. Both have been fashioned on faceted microblades by a process of minute retouching at one end. No. 18 has a thin, sharp, symmetrical point unifacially retouched on both edges, whereas No. 19, although worked similarly, has a heavier, blunter point that is hooked to the left. Perhaps these artifacts are functionally related to those made from burin spalls, but they are based on a variety of microblade.

Used microblades: Fig. 6, No. 22 illustrates those microblades in the collection that show signs of modification through use. Most often these are in the form of a series of step-flake scars along one or both lateral edges, but in several an edge appears to have been purposefully retouched. Otherwise these lamellar microblades are similar in size and proportion to the 48 unused, unworked microblades found at Dismal — 2.

Specialized quartz tools: The two implements shown in Fig. 6, Nos. 20 and 21 are both made from quartz crystals. No. 20 is a flake that has been removed from the end of such a crystal and its upper surface is formed by four of the original crystal facets. Its lower end has been retouched into a flat end scraper; the upper end may be an angle burin, although I am not absolutely certain of this. No. 21 is a gouge or chisel made by removing several longitudinal flakes from opposite faces at one end of a small quartz crystal.

Scrapers: All specimens in this category are steep end scrapers. Fig. 6, No. 23 shows two examples of a type with parallel sides; the scraper with the ridged back is made of a flake of green jasper and should perhaps more properly be associated with the large flake industry, for it strongly resembles some of the Kamut Lake specimens of that classification (cf. Fig. 7, Nos. 15 and 16). No. 24, made of greyish obsidian, is of thick, triangular form. No. 25 consists of a thin, triangular type that could easily have been hafted, and No. 26 shows a stemmed type that has a straight working edge and sharp corner tangs. The final two specimens, No. 27, represent a still different shouldered type. They are not exactly alike, however, for the left-hand scraper has a concave working edge above its shoulder, whereas the other is convex there.

Kamut Lake

This site is located on the eastern arm of Kamut Lake at approximately 66°43′10″N., 116°17′20″W. (Fig. 3). Along the western shore of this arm is a broad embayment, the outer points of which are formed by an esker on the south and a long high ridge on the north. The land between these ridges is low and partially covered with spruce and willow. Along the middle of the bay a gravelly plateau parallels the shore and projects eastward to form a point. The site is in dune sand on top of this eminence at an average altitude of about 20 feet above the present lake-level. As in

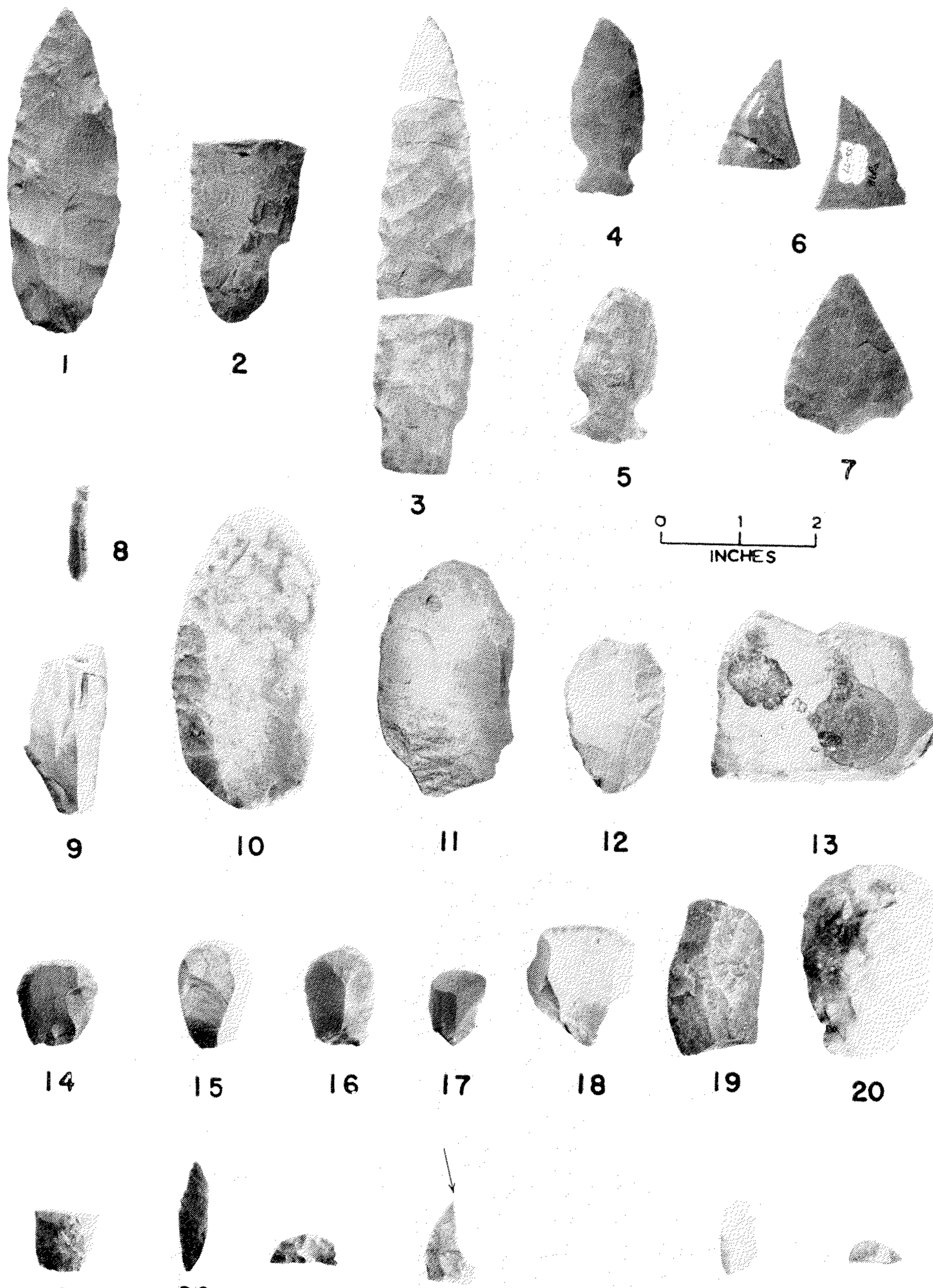

Fig. 7. Artifacts from Kamut Lake.

the Dismal Lake sites, the dunes have been stabilized by a very scanty vegetation and blow-outs have developed wherever this cover has been breached.

Over an area roughly 100 yards in diameter these blow-outs were found to be liberally sprinkled with stone chips and artifacts and many small fragments of weathered and burnt bone. This bone debris probably must be attributed to the same occupation as the chipped stone, for there were no signs of recent encampments in the immediate vicinity. The Kamut Lake site is further comparable to Dismal — 2 in that it contained possible evidence of two occupations: the large flake industry and the microblade industry.

Large flake industry

To this category may be assigned 31 artifacts; they include 5 projectile points, 2 knives, 19 scrapers, 1 burin, 1 burin spall graver, and 3 unidentifiable worked fragments.

Points: All specimens found are illustrated in Fig. 7 and represent at least 4 types. No. 1, a large lanceolate type chipped from a blade of sedimentary rock, resembles very closely the Dismal — 2 point shown in Fig. 5, No. 7; the flaking is broad and bold on both faces, the edges sinuous and the base thinned. No. 2 is the basal portion of a massive stemmed point of rhyolite porphyry. Its biconvex cross-section has a maximum thickness of 11.9 mm. at the break and this same median thickness continues virtually undiminished down through the stem to the point where the radius of the bottom curve begins. The primary flaking is shallow and smoothly done on both faces and there is a bifacial secondary retouch on the edges. The entire periphery of the stem is ground to a dull smoothness. No. 3 is a long, stemmed type of sedimentary rock. The primary flaking is broad and shallow, occurring mostly on one face and there is a secondary retouch of the edges on both faces. It is much thinner than No. 2, for its maximum thickness is only 7.6 mm. The straight-sided stem is expertly thinned bifacially, its lateral edges are ground smooth. The fourth type of projectile point is represented by two side-notched specimens, Nos. 4 and 5, that are bifacially flaked from sedimentary rock.

Knives: The 2 knives collected at Kamut Lake are also made of sedimentary rock. Fig. 7, No. 6 consists of two pieces that I believe to be parts of one artifact, although the broken edges do not match. Each is fashioned from a thin flake or blade that has been bifacially chipped only around the outer curved edge. No. 7 appears to be the basal portion of a large thick blade that shows both primary and secondary flaking.

Burins: Fig. 7, No. 9 is a corner burin on a blade of green jasper. Two spalls have been removed from the left edge, but the shape of the upper end is such that the chisel could not have been used to the best advantage.

A single burin spall artifact, No. 8, was also found in this site and although it too is green jasper it does not derive from the burin just described. Giddings, who had a brief opoprtunity to see these collections, observed that this particular specimen was the largest burin spall artifact he had ever seen. It measures 32.3 mm. long, 7.3 mm. in maximum width, and 4.2 mm. in maximum thickness and according to Giddings's classification is left handed.

Scrapers: The several types in this category, which was by far the most plentiful at Kamut Lake, are illustrated in Fig. 7, Nos. 10 to 20. Nos. 10 to 12 may be classed as side scrapers on blades; one or both lateral edges of these implements have been retouched and the workmanship of No. 10 is particularly fine. Side or end scrapers made on random flakes are shown in Nos. 13 and 18. Two types of steep end or snub-nose scraper are also clearly evident: No. 14 is a thin chip end scraper and Nos. 15 and 16 constitute a type with a faceted, ridged back. No. 17 also has a high ridged back, but it seems to have been made from a remnant of a green jasper core rather than a flake. No. 19 is a combined end and side scraper of black andesite and No. 20 is one of four quartzite turtleback scrapers in the collection.

Microlithic industry

Twenty-three specimens can be attributed to this industry as it appeared in the Kamut Lake site. They include 2 projectile points, 1 fragment of a knife, 2 angle burins, 3 scrapers, and 15 fragments of unworked microblades, the latter all of quartzite. With the exception of the microblades, which occurred together in one small patch of blow-out in association with two snub-nosed end scrapers, the artifacts were found scattered over the area in haphazard mixture with specimens of the large flake industry. Inasmuch as there was no stratification in the site, this fact suggests that a single occupation was responsible for both types of remains.

Points: The fragment shown in Fig. 7, No. 21 is probably the base of a small lanceolate point, but it could possibly be the stem of a larger point, as is suggested by the slight hint of a shoulder at one corner of the break. It is bifacially flaked and retouched at the edges; several minute longitudinal flakes have been removed from one face at the base. No. 22 has been made from a blade-shaped spall of some indeterminate rock. Its appearance suggests a side blade, but the thickness of the lower end may indicate end-hafting.

Knives: The only example is Fig. 7, No. 23, a fragment of banded chert, which could be the base of a biface knife or possibly a projectile point.

Burins: Two specimens of angle burin were found here. The one shown in Fig. 7, No. 24 resembles most the Dismal — 2 burin in Fig. 6, No. 10, even as far as the suggestion of a shoulder on the right edge and it has had

5 spalls removed. The other, not illustrated, is akin to the Dismal — 2 burins shown in Fig. 6, No. 12; it has had two minute spall struck off one edge.

Scrapers: Fig. 7, No. 25 is a side scraper made on a thin blade of flint, but it might also be a fragment of side blade. No. 26 is a fragment of snub-nosed end scraper.

Microblades: As noted above, these 15 fragments do not show any sign of modification.

Relationships within the Northwest Territories

The relationships among the Dismal-Kamut sites are not easy to define because the evidence is rather scant. However, I believe that one combination is slightly more likely than other possibilities: this includes one complex that covers Dismal — 1:a and 1:b, a separate complex for Dismal — 2, and a third one for Kamut Lake.

The Dismal — 1 sites are adjacent to each other and even though very few specimens are available from Dismal — 1:b, they are similar both in types and materials. More specifically they share the thin-bladed lanceolate point or knife (Fig. 4, No. 4 and Fig. 5, No. 2), corner notches on other points (Fig. 4, No. 7 and Fig. 5, No. 1), the thick form of side scraper (Fig. 4, No. 15 and Fig. 5, No. 3), the Levallois-like side scrapers (Fig. 4, Nos. 13, 14 and Fig. 5, No. 4), and each site produced one implement that combines the techniques of chipping and polishing (Fig. 4, No. 21 and Fig. 5, No. 3), although this last comparison is weakened by the different functions of the two. As for materials, approximately one half of the artifacts from each Dismal — 1 site are made either of andesite-porphyry or basaltic flow rock and the artifact types are alike in each of these materials. The presence of a single unused, unretouched microblade in Dismal — 1:b is completely inexplicable in this context. Until it may be accounted for by some future excavation at this site, I must attribute it to a careless hunter who was passing down the lake to Dismal — 2.

The sites at Dismal — 2 and Kamut Lake seem to be distinctly different from the Dismal — 1 complex for the following reasons: each of the former contains a strong component of microlithic artifacts, the prevalent raw materials differ, the diagnostic types of projectile points and end scrapers are different, and they do not have a high incidence of Levallois-like flakes.

As for similarity between Dismal — 2 and Kamut Lake, a tenuous linkage is possible. In their large flake industry components they share one type of lanceolate point (Fig. 5, No. 7 and Fig. 7, No. 1), crude burins (Fig. 5, No. 17 and Fig. 7, No. 9), and possibly turtleback scrapers (Fig. 5, No. 12 and Fig. 7, No. 20). In addition there was evidently a predilection at these two sites for the use of sedimentary rock and green jasper for the manufacture of the same or comparable types of tools. In what I distinguished as microlithic components they definitely share only two types of burins. To these might be added two types of snub-nosed end scrapers, but that is all.

On the other hand, the differences between Dismal — 2 and Kamut Lake appear to be clearer and more weighty. In the large flake industry Kamut Lake stands apart by virtue of its two types of stemmed points and side-notched points, its large flake side scrapers, and its keeled end scrapers. In the microliths Dismal — 2 shows a far greater diversity of types than Kamut Lake and finally the two sites differ widely in the numerical proportions of their basic component technologies. At Dismal — 2 the ratio of microlithic to large flake artifacts is 4:1, at Kamut Lake 1:4.

There is, of course, one final possibility: the microlithic components at each of these sites may represent a separate, discrete occupation. There is no stratigraphic evidence to support such a view, however, and certainly one cannot depend entirely on the faint suggestion of spatial segregation that was observed at Dismal — 2; even this was not borne out at Kamut Lake. On the basis of internal evidence, then, I believe the analysis of the complexes must be essentially as I have indicated and we must turn to comparisons with peripheral areas for further clues.

The sites examined by MacNeish at southwestern Great Bear Lake are geographically closest, some 300 miles overland around the lake, and thus might well be part of the ancestral line to Dismal and Kamut. The earliest of three occupations at Great Bear Lake, the Franklin Tanks complex (MacNeish 1956a), shows a few weak resemblances in the scraper category, where wide-ranging distributions reduce the significance of such criteria, and none at all in the primary diagnostic traits, such as small concave-based points and another type that MacNeish equates with Plainview.

The middle stratum, called the Great Bear River complex, is more productive of resemblances. One of its essential criteria, the lanceolate point identified by MacNeish as Angostura (1956a, p. 64), seems to be duplicated by the long points from Dismal — 1:a, and the correlation spreads further among triangular keeled scrapers (Fig. 7, No. 15), flat keeled end scrapers (Fig. 6, No. 23, left), thin flake side scrapers (Fig. 4, No. 11; 5, No. 18; 7, Nos. 11 and 12), used flakes, ovoid blades (Fig. 4, No. 12), and choppers (Fig. 4, No. 22). Less certain resemblances occur for truncated triangular end scrapers, large flake single convex-edged side scrapers, and semi-lunar blades. Types that do not appear at all in the Dismal-Kamut inventories include narrow round-based points, small pentagonal points, triangular drills, long crude drills, and Yukon flake knives.

The latest Great Bear stratum, the N.T. Docks complex, shows the closest linkage of all three levels to the Dismal-Kamut materials. Again using MacNeish's more elaborate typology, the following correspondences are evident: side-notched points (Fig. 7, Nos. 4, 5), lamellar blades (Kamut Lake, not illustrated), crude burins or burin-like tools (Fig. 5, No. 17 and 7, No. 9), triangular keeled end scrapers, fan-shaped snub-nosed end scrapers (Fig. 4, No. 18; 2, No. 13; 7, No. 14), convex end-of-the-blade scrapers (Fig.

4, No. 19), flat-topped square-ended scrapers (Fig. 7, No. 18), thin flake side scrapers, large flake side scrapers, keeled side scrapers (Fig. 4, No. 16 and 7, No. 9), square-based blades (possibly Fig. 5, No. 2), and battered flint nodules, which, if they were hammers, may be duplicated by the specimen described from Dismal — 1:a.

These trait linkages, although they cut to some extent across at least two of the Dismal-Kamut complexes, seem to weigh in favour of a relationship between the Great Bear River and Dismal — 1 complexes on the one hand and between the N.T. Docks and Kamut Lake complexes on the other. In the first instance the decisive factor might be listed as the diagnostic long points from Dismal — 1 and in the second it is the occurrence of side-notched points, lamellar blades, and crude burins in the Kamut Lake inventory. There is no sign of a well-developed microlithic industry at the Great Bear sites and therefore no apparent relationship that extends to the Dismal — 2 complex.

In the Simpson-Liard region, in the southwest corner of the Northwest Territories and northern British Columbia, several other complexes exhibit sporadic similarities to the Dismal-Kamut materials. The Pointed Mountain site, which is the best known of these (MacNeish 1954), contained both microlithic and large tool industries as in Dismal — 2 and Kamut Lake, but stratigraphy proved that both stemmed from a single level and thus, possibly, from a single occupation. The large tool industry at Pointed Mountain seems to share with Dismal — 1 contracting stemmed points (not unlike Fig. 4, No. 7), long side-notched points (not unlike Fig. 5, No. 1), ovoid blades, and possibly square-based blades (Fig. 4, No. 4 and 5, No. 2). Several scraper types are also similar, but wide distributions lessen their significance.

As for lamellar blades and the microlithic industry, I do not see much likeness between Pointed Mountain and the Dismal-Kamut materials. Pointed Mountain, for instance, is characterized by a proliferation of lamellar blades, consisting of many types both used and retouched and covering a wide variation in size. These attributes do not appear at all in the Dismal — 2 microlithic where there is no comparable emphasis on the using of microblades, but rather a much greater variety of specialized implement types, including points, knives, side blades, scrapers, burins, and gravers. There are angle burins like those in Pointed Mountain, but the two corner burins linked with the large flake components of Dismal — 2 and Kamut Lake show even closer resemblances (cf. Fig. 5, No. 17 and 7, No. 9).

Three other complexes in the Simpson-Liard region exhibit equally fractional ties with Dismal-Kamut. Sandy Lake, which antedates Pointed Mountain, according to MacNeish's tentative ordering (1954, p. 249), shares only a single type with Dismal — 1, the lanceolate point. Fisherman's Lake, which post-dates Pointed Mountain, shares nothing of diagnostic importance with the Dismal-Kamut inventories, only several generalized forms of scrapers. Spence River, the latest complex in the Simpson-Liard sequence, possesses several types that resemble Dismal — 1: corner-notched points, plano-convex end scrapers, rectangular end scrapers, and large hoe-like sandstone scrapers (cf. Fig. 4, No. 22).

Summing up, the Simpson-Liard sequence seems to have had little effect on the Dismal-Kamut area. The few resemblances indicate that any relationship between the two areas was probably not direct but rather the result of a partial sharing of some broader and more ancient cultural base.

Beyond Great Slave Lake are three other complexes (MacNeish 1951) that appear to be related more closely with the Dismal-Kamut one, some 500 miles to the north-northwest of them. The earliest of these, Taltheilei, although identified on the basis of a very limited collection, agrees with Kamut Lake in one important type, the stemmed lanceolate point shown in Fig. 7 No. 3. The specimens are quite perfectly matched even in the use of the same material, a sedimentary rock, incidentally the chief ingredient in both complexes. Artillery Lake, which is believed to follow Taltheilei (MacNeish 1951, p. 38), matches very nearly with my Dismal — 1 grouping. All known Artillery Lake types are duplicated, including the lanceolate points with narrow, straight or convex bases, small plano-convex scrapers, large flake scrapers, choppers and ovoid blades. Still later in MacNeish's tentative scale, but possibly also overlapping in time with the above two complexes (MacNeish 1951, pp. 33, 38, 41) is the Lockhart River complex, which shares impressive traits with both Dismal — 1 and Kamut Lake. From Dismal — 1 may be noted the corner-notched points and possibly round-based points, large flake scrapers and knives, ovoid blades and choppers, whereas from Kamut Lake there are primarily side-notched points and possibly pear-shaped end scrapers. Of further interest is the fact that none of these three complexes east of Great Slave Lake, as far as they are known, contain any evidence of microblades or a microlithic technology.

Relationships with the Western Arctic

The Engigstciak site on the Firth River, near the Yukon arctic coast (MacNeish 1956b), is potentially one of the most important keys to an interpretation of the prehistory of the Central and Eastern Arctic, not to mention areas further south. Its stratified sequence of nine occupations must represent many of, if not all the land-oriented cultures that diffused eastward along the coastal fringe of Alaska and a considerable number of traits from the Dismal-Kamut complexes can be traced through its pre-pottery levels.

The first and earliest of these, the British Mountain complex, is still only scantily known from a handful of artifacts, so attempts to relate other complexes to it would be utterly unsafe. However, the next stratum above it, the Flint Creek complex, has certain counterparts in the Dismal-Kamut area. General types, such as thick scrapers, thin side scrapers, crude choppers, large ovoid blades, small chipped disk choppers, and turtle-shaped end scrapers seem to equate in both areas, but more important likenesses are to be noted in lanceolate points, which MacNeish calls Angostura

(1956b, p. 96), and crude burins, as exemplified by Fig. 5, No. 17 and 7, No. 9.

Flint Creek is succeeded by the New Mountain complex and the microlithic industry of this level checks at many points with Dismal — 2. They have in common microblades, both large and small crescent side blades, lenticular side blades (cf. Fig. 6, No. 6), rectangular corner or angle burins (Fig. 6, No. 12), and burin spall artifacts. The types of points are difficult to compare because the Dismal — 2 specimens are fragmentary and do not show stems or other distinct forms of base. Some of the latter, however, may be double-pointed or round-based and thus equivalent to certain New Mountain types. Nevertheless, there is one major difference in the point types of these two complexes: those from Dismal — 2 have very finely serrated edges, whereas there is no mention of this attribute in the New Mountain points. Further correspondence between the two complexes seems to occur in triangular end scrapers (Fig. 6, No. 25) and turtle-back scrapers (cf. Fig. 6, No. 27).

From this locality the evidence of microliths leads unquestionably westward along the Alaskan coastal zone to the Anaktuvuk Pass sites and thence to Iyatayet and the Cape Denbigh complex. Imaigenik, in Anaktuvuk Pass, stands in immediate, close relationship with the Denbigh complex, as Irving has shown (1953, pp. 60-65), so we may proceed directly to the latter and its probable ancestral role in the development of the Dismal-Kamut cultures. Specifically, I am impressed by the following resemblances between Dismal — 2 and the Denbigh Flint complex. One of the basic traits in each, of course, is the microblade, and although no cores were found at Dismal Lake, the size range and general conformity of the lamellar blades from Dismal — 2 are virtually the same as in Denbigh. Not all the burin types in the Denbigh complex appear in Dismal — 2, but the angle burins do, particularly the types shown in Fig. 6, No. 10 and No. 12, and one must also note the concurrence of a single type in the Kamut Lake inventory, Fig. 7, No. 24. Burin spall artifacts, which Giddings has more recently discovered in the Denbigh complex (1956b), also have their counterparts in Dismal — 2. Diagonally flaked side blades are an important trait at Denbigh, but they appear to be somewhat less so at Dismal — 2. Nevertheless, at least two specimens, the one at the extreme left in Fig. 6, No. 6, and probably the second from the right, are close to some of the Denbigh forms.

In addition to such diagnostic traits, other most interesting concurrences can be seen. The specimens illustrated in Fig. 6, No. 2 are all tip fragments of end blades, although some of them could as well be basal portions of double-ended points. However, in terms of their dimensions, well-executed parallel flaking, and finely serrated edges, I judge them to be exactly the same as some of the end blades that Giddings shows (1951, Fig. 61-a: 5,6). The Denbigh complex also contains a micro-burin with a retouched, pointed end (1951, Fig. 61-b: 2) which is partially duplicated by a micrograver, without the burin, in Dismal — 2 (Fig. 6, No. 18; cf. also Fig. 6, No. 19). In the category of thin blades or scrapers, the Denbigh specimen, Fig. 62:15, is remarkably like the fragment of a blade in Fig. 6, No. 9 (middle). Other end scrapers are of more generalized forms which have wide distributions, but the several varieties of triangular type in Dismal — 2 are quite comparable with Denbigh.

Of course, it cannot be claimed that anything approaching agreement characterizes the relationship between Dismal — 2 and Denbigh, but I think the list of similarities in diagnostic traits is important. Moreover, there is more than mere similarity of trait incidence: at least in one significant aspect there is like emphasis or proportion. In a recent analysis of North American flint sites Giddings stressed the fact that burins and spalls comprised about one-fourth of all the flints in the Cape Denbigh complex and that approximately one-sixth of the Sarqaq collections from west Greenland was also made up of burins and spalls (1956a, p. 265). Therefore, it is of more than passing interest to note that in this respect Dismal — 2 lies roughly midway between these two complexes. Its inventory is perhaps dangerously small for such analysis, but burins and burin spalls comprise one-fifth of the microlithic collection found there, or one-sixth of the total collection, including the large flake artifacts.

Up to this point, I have tried to trace some of the fundamental orientations of the Dismal-Kamut materials without attempting a minute examination of their every possible relationship. In fact, it would be unreasonable to do so, for arctic archaeology still has great gaps, and most of the cultural linkages that we can postulate must remain loose and tentative.

However, it appears that we now have considerable evidence for an eastward diffusion of microlithic technology from the Bering Sea region to the northern slopes of the Brooks Range and thence along the coastal zone into the Central Arctic. This spread is highlighted by a probable parent strain in the Denbigh complex and derivative manifestations at Anaktuvuk Pass, the New Mountain stratum at Firth River, and at Dismal — 2, although I do not suggest that these sites necessarily fit into a neat unilinear progression. As for the appearance of microblade cultures elsewhere in Alaska and Canada, a second lobe of diffusion may have spread inland up the Yukon drainage, leaving recognition points at the Campus site (Rainey 1939), Birch Lake (Skarland and Giddings 1948), Dixthada (Rainey 1939), and Kluane Lake (Johnson 1946). It is possible also that Pointed Mountain in the Liard drainage was affected by this spread. I have constantly stressed the Denbigh finds here, so it is wise to recall that Irving, in discussing variations in cores (1953), has cautioned that the Denbigh Flint complex may not have been the only medium through which such traits came to the New World.

One of the most difficult questions that continues to plague investigators concerns the relationship between the microblade, or microlithic, and large tool complexes. Irving has commented on the lack of "macrolithic" implements in his Anaktuvuk sites (1953, p. 73); elsewhere in many of the sites mentioned above are all sorts of mixtures of micro- and macrolithic features. Even the Denbigh complex, if I may continue to think of it in the nature of a New World parent, has a curious blend of microblades, cores, and burins with fluted and other types of points that are strongly reminiscent of more ancient complexes farther south. MacNeish's work at Firth River (1956b) has clarified the temporal priority of the larger tools, at least on the arctic slopes, but the general conditions surrounding the merger of these different traditions are still obscure. They may stem together from some Mesolithic compound, as yet unrecognized, in Siberia, or as has been recently suggested (Krieger 1953), the merger may in part be explained by a northward backwash of ancient American culture that diffused with major game animals after the retreating glaciers.

The Dismal-Kamut cultures, I believe, derived in large measure from the west. The Dismal — 1 complex may be considered the earliest in the area, on the basis of its relationships with the Great Bear River complex, which has a C-14 date of *circa* 4600 B.P. (MacNeish 1956a, p. 59), and the second stratum at Engigstciak, the Flint Creek complex. Still farther west this strain may link with finds that have been recently made at a new site in Anaktuvuk Pass, and hence possibly with the interior of Alaska (John Campbell, personal communication).

Toward the east, the Dismal — 1 complex may have been an important component in the ancestry of Artillery Lake and Lockhart River. These complexes are less accurately dated, but it is known that they could not have occupied the country east of Great Slave Lake until after the retreat of the glacier.

I have already shown by cross-cultural references what I believe to have been the derivation of the Dismal — 2 microlithic complex and, as suggested by general comparisons with the strata at Firth River, it may be the latest of the three complexes delineated here. On the other hand, the various affiliations of the Kamut Lake complex are much more difficult to integrate and leave the preceding supposition in doubt. In the west Kamut Lake relates to the N.T. Docks complex, which has a C-14 date of *circa* 3500 B.P. (MacNeish 1956a, p. 69), and its small constituent of microliths is also stratigraphically late in the north. Yet at the same time it has certain affinities with complexes that are earlier than the above, i.e., Flint Creek in the west, and Pointed Mountain, Taltheilei, and Lockhart River, to the south and southeast. The feature of greatest interest about it is that Kamut Lake may have resulted from the contact of a plains or boreal tradition with a microlithic technology that was apparently adapted mainly to the tundra. In the final analysis, however, it remains a strange blend that cannot be deciphered totally from the internal evidence.

The problem of a southern origin for certain arctic traits has been increasingly emphasized in recent years. Hibben (1943), Thompson (1948), Skarland and Giddings (1948), Giddings (1951), Larsen (1951), Collins (1951), and MacNeish (1951, 1953), have all compared selected arctic finds with Folsom, Yuma, Plainview, and Angostura prototypes, and I could add a further link to this chain by citing the Scottsbluff point from Kamut Lake (Fig. 7, No. 3). At present the hypothesis of a northward diffusion of such types from plains complexes into the Northwest Territories and Alaska is not implausible because the arctic finds, insofar as some of them are reliably dated, are several thousands of years younger than the manifestations farther south. But still one cannot rule out the possibility of an ultimate northern priority for these traits. The troublesome factors continue to be the relative paucity of archaeological data from the north and the tremendous areas in central and western Canada that have yet to be bridged. In the meantime, I believe the Arctic should not be propped too heavily on typologies that were developed primarily for the analysis of ancient complexes far to the south. Meager though our evidence often is, at least it continues to grow, and soon a major attempt at area typology ought to be profitable. On such a base it may then be possible to establish broad and accurate regional correlations.

Relationships with the Eastern Arctic

As might be expected, the major bonds between the Dismal-Kamut area and early cultures of the eastern arctic stem from the Dismal — 2 microlithic complex, for, as Collins has noted (1956), it is this variety of material that lends a strong unity to prehistoric arctic cultures in the New World and also serves to relate them with the Mesolithic cultures of Eurasia. In this respect, Dismal — 2 provides a substantial link across the great central arctic *terra incognita,* and it strongly supports certain concepts of east-west relationships which heretofore have been eminently logical but largely conjectural.

First of all, it is evident that Dismal — 2 represents something of the ancestry of the Knife River site in northern Manitoba (Giddings 1956a). The inventories of these two sites are alike in the presence of angle burins and burin spall artifacts, and the numerical proportions of these types are significantly close. Giddings does not state the Knife River proportion exactly, but by indirection he equates it with both the Denbigh Flint complex and the Sarqaq collections (1956a, p. 265). I have already indicated that with respect to these figures the Dismal — 2 complex falls approximately midway between the latter two. Knife River and Dismal — 2 also have in common the use of side blades, and their end blades appear to be much the same. If my Fig. 6, No. 3 is actually a tapered stem, the resemblance of the points in these two sites becomes even closer. Some end scrapers are also comparable, particularly the triangular and flaring-edge types (cf. Fig. 6, Nos. 25 and 26). Despite these important compatibilities, there is one key difference: the microblade and core are not represented in the Knife River collection, a negative factor which Giddings stresses in generically linking Knife River with Sarqaq (ibid.).

Possibly the oldest stage of eastern Eskimo culture is exemplified by the Independence complex which Knuth has identified in Pearyland (1954, 1956). The first of two palaeo-Eskimo phases, which Knuth distinguishes there, has a C-14 date of *circa* 3800 B.P. and is called Independence I. In common with Dismal — 2 it has angle burins, burin spalls, microblades, and convex-edged end scrapers. Possible further analogies are to be noted in the end scrapers that have flaring or bulging tips, and also in a type of asymetric knife blade that has one straight edge or back and an opposite convex edge. Such likenesses, however, are quite generalized, and it seems rather that Independence I derived primarily from some cultural impulse that was not yet truly microlithic. Knuth himself comments on the relatively greater size, roughness, and more primitive execution of these artifacts in contrast to those of Sarqaq, Dorset Eskimo, Denbigh, etc. (1954, pp. 376-377). Independence II is dated *circa* 2830 B.P. and, as represented by the finds from Danmark Fjord, it resembles somewhat more closely the later expressions of Sarqaq, Dorset, and to some extent Dismal — 2. In common with the latter it has angle burins, burin spalls, tapered-stem points, double ended points, and side blades. On the whole, however, I doubt that Dismal — 2 can in any way be considered ancestral to either phase of the Independence culture, although they both seem to share some elements from a remote past.

Sarqaq, the palaeo-Eskimo culture from west Greenland (Meldgaard 1952), apparently stands in much closer relationship with Dismal — 2. The dominant point type at Sarqaq is a slender pointed-oval biface with serrated edges and this, I hazard, may equate with some of the fragments in my Fig. 6, No. 2. Also, if Fig. 6, No. 3 is a tapered stem it compares closely with another Sarqaq type of point. Other related types are small, slender side blades, chipped on one or both faces; angle burins, although the Dismal — 2 specimens do not exhibit traces of grinding as do those from Sarqaq; burin spall artifacts (Giddings 1956b, p. 236); and a triangular variety of snub-nosed end scraper. Of course, in addition to such likenesses there are discrepancies, and chief among these may be the lack of microblades at Sarqaq.

In the realm of Cape Dorset Eskimo culture there is considerably more evidence available for comparative purposes, but the T 1 site recently excavated by Collins on Southampton Island (1956, 1957) should be most apt. Because of the many typological differences which distinguish it from Dorset manifestations, Collins has identified T 1 as formative or proto-Dorset, and a C-14 date of 2632 ± 128 B.P. has been obtained from one part of the site (Collins, personal communication). Clearly, T 1 must lie close to ancestral, pre-Dorset culture, whatever that may have been, and any correlations that it may have with Dismal — 2 should be of considerable interest.

T 1 lithic material is predominantly gray chert with an important minor component of rock crystal and, on a much reduced scale, the same may be said for Dismal — 2. Other minor occurrences of rubbed slate, nephrite, and steatite vessels also characterize T 1 but do not appear at all in Dismal — 2, with the single exception of the fragmentary steatite pendant. There does not seem to be even a general resemblance between the various types of end blades, for the T 1 bases are predominantly straight or slightly concave and none of this kind were found at Dismal — 2. However, the specimens in my Fig. 6, No. 1 are similar to some of the small T 1 points in that they have a bulbar surface which is only slightly modified at the edges and a triangular cross-section with a median dorsal ridge. Both T 1 and Dismal — 2 show wide use of microblades, both have angle burins, although the T 1 specimens seem relatively crude, and both produced burin spall artifacts. T 1 does not have small, thin side blades, but its common larger type is matched by a single specimen from Dismal — 2, a thin rectangular blade with an unmodified bulbar surface (Fig. 6, No. 8, left). These appear to be the only occurrences yet known of this type in the American Arctic (Collins 1956, p. 69). Finally, the small chisel or gouge fashioned on the end of a quartz crystal (Fig. 6, No. 21) is also reported from T 1 (Collins, personal communication).

That sums up the resemblances between the proto-Dorset of T 1 and the Central Arctic complex of Dismal — 2, but it is curious to see how some traits of the latter crop up elsewhere in Dorset culture. For instance, the small quartz chisel just mentioned is perfectly duplicated by a Dorset specimen from Abverdjar Island (Rowley 1940, p. 495) and by another from the west coast of Newfoundland (Harp 1952). Thin side blades, although they do not occur universally in Dorset sites, are also an associated trait of this culture. The same may be said for end scrapers with flaring edges (cf. Fig. 6, No. 26), burins, microblades, and polyhedral cores.

On the whole, it seems to me that the kinship between Dismal — 2 and proto-Dorset T 1 is not any closer than it is between Dismal — 2 and other Dorset components. Furthermore, it is odd that Dismal — 2 in some aspects more closely resembles the later Dorset stages, particularly that which is believed to be the latest, in Newfoundland. Admittedly, however, the degree of relationship rests less on a series of specific artifact types than it does on matters of technique, general fineness of workmanship, and the conspicuous delicacy and small size of the artifacts.

There is so much variety manifest in the widespread Dorset, proto-Dorset, and pre-Dorset cultures, and their forebears, that we cannot yet equate them in terms of current evidence. Giddings's recent formulation of a scheme for classifying microblade, burin, and side blade sites, etc. (1956, p. 266), may be a useful framework in the future, but, as he is the first to state, it proves little now. Nevertheless, I believe these eastern sites are drawn closer together by virtue of the fact that they all possess some affinities with a central arctic microlithic complex, insofar as that may be represented by Dismal — 2. However, the linkages reviewed here have never been all-embracing, so one can by no means postulate a unitary drift of one or more complexes toward the east. In part, such lack of conformity can be accounted for by incomplete inventories, but, far more significantly, it must be explainable by those selective processes of diffusion and population spread that serve to advance some traits and hold back others.

Another important aspect of this problem of east-west affiliation concerns ecology. Lantis (1954) has stressed the role that ecological studies should have in arctic archaeology, although some of her precepts are still beyond our powers of deduction. Unquestionably, one very good reason why it is difficult to relate these various enclaves of culture, aside from those mentioned above, is that they represent adaptations to differing environments. In the Eastern Arctic, for example, all known Dorset, proto-Dorset, and pre-Dorset sites are coastal in location, a fact which connotes a sea-oriented economy, yet almost every one also contains some evidence of land-based economy. This has no doubt been responsible for the general assumption that Dorset culture was more or less equally dependent upon both land and sea for its subsistence, mainly on such game as the seal, walrus, and caribou (cf. Birket-Smith 1951, p. 147).

To carry this thought further, Mathiassen noted that Button Point, on the southeast corner of Bylot Island, is still an important settlement in spring and early summer when there is good seal and whale hunting (1927, Pt. 1, p. 206), and the implication is that Dorset people once camped there at the same season and for the same reason. Whale hunting, however, was not a feature of Dorset culture (Wintemberg 1940, p. 320). Dorset sites that I have investigated in northwestern Newfoundland fit this same pattern of spring hunting (Harp 1950). Lethbridge suggested that the Cape Hardy Dorset site on the north shore of Devon Island was mainly a fall camping place where both caribou and seals were hunted (1939, p. 222). Another variation comes from Knuth who believes that Dorset camps in Pearyland were based primarily on land-hunting, " . . . in accordance with palaeo-Eskimo habits . . .", with musk ox as the chief game and caribou as a subsidiary item (1952, p. 29). The latest and most careful analysis of food economy is the picture that Collins gives for the proto-Dorset T 1 (1956, p. 65): almost 89 per cent of the food bone debris of this occupation derived from sea-mammals, and caribou accounted for less than 1 per cent.

Collins has also suggested that the T 1 people did not hunt caribou because, lacking dogs, they had no effective winter transportation (ibid.), but in the general evidence sketched above there is at least a hint of a dualistic economy, if not of seasonal nomadism. What sort of an ecological adaptation are we to look for, then, on the part of the ancestral diffusions into Dorset country?

The Knife River site yielded no evidence of such matters, yet it is situated inland at a place which is traditionally favoured by Chipewyans for fall and winter caribou hunting (Giddings 1956a, p. 258). The case of Dismal — 2 is similar. The site lacked evidence from which economic patterns might be inferred, but Dismal Lake both now and in the recent past has been a preferred area for the fishing and hunting activities of the Copper Eskimo during summer and fall (cf. Jenness 1922, p. 21, and Banfield 1951, Figs. 4, 5, and 6). Judging from the finds I made in the Dismal — 1 vicinity, perhaps it may also be assumed that musk ox was formerly an important game animal in this area.

Still farther west along the line of known microlithic complexes, the New Mountain level at Firth River shows a definite inland orientation. Caribou was the primary game, but bones of bison, elk, musk ox, and an extinct variety of mountain goat were found in profusion in this stratum (MacNeish 1956b, p. 99). Imaigenik in the Anaktuvuk Pass area, although much farther inland, is also situated in a tundra zone where big land game, especially caribou, abounds. As for the Cape Denbigh site, its subsistence orientation may still be debatable, but I favour Collins's interpretation that it was a coastal location when first occupied and that the people of the Denbigh Flint complex hunted both land and sea-mammals (Collins 1954a, pp. 102-3).

Essentially, then, Birket-Smith's statement concerning a dual subsistence economy for Dorset society in the Eastern Arctic has possibilities of application among some of the probable antecedent cultures of the Western Arctic. The difference is that, whereas Dorset, proto-Dorset, and pre-Dorset sites in the east are primarily sea-oriented, at least in terms of their locations, several of the key sites in the Central and Western Arctic were clearly land-oriented. However, I do not think it unreasonable to conjecture that the latter were but an inland aspect of a generalized cultural adaptation that also was basically fitted for exploitation of littoral resources (cf. Kroeber 1939, pp. 22-26). For example, if one may draw analogies between prehistoric and recent times, the Anaktuvuk Pass occupations in this group were farthest from the sea, being approximately 150 miles inland from the present coastline, but this distance appears not to have daunted recent Eskimo in their quest for a richer food supply (Collins 1954b, p. 302). Furthermore, Dismal — 2 is about 60 miles inland from Coronation Gulf, but the Copper Eskimo, until the recent burgeoning of trade with white men, regularly visited the surrounding country in their annual nomadic rounds. The Engigstciak site on the Firth River is a mere 16 miles from the present coast, and in its New Mountain stratum the existence of a triangular blade that is comparable with possible harpoon points in the Denbigh complex may be a slight but positive indication of the littoral aspect of a dual economy.

If the general microlithic tradition which characterizes these particular occupations was indeed adaptable, with certain modifications, to subsistence pursuits both on sea coasts and inland, then we might expect to find emphasized in any given locality that aspect of it that most closely concerned the nearby food supply, whether interior or coastal. As a hypothetical extension of this view, perhaps somewhere north of Dismal — 2 may be microlithic sites on ancient strand lines still to be discovered, yet I do not believe they would be an absolute prerequisite to the diffusion of that tradition across the Arctic. In the region of the Barren Grounds, for instance, there might have been prolonged stress on land hunting and a corresponding diminution of coastal life, depending on the crucial factor of which afforded in any given period the easier life. Again, in the region of northern Hudson Bay with its wealth of sea-mammals there may have come a recrudescence of sea-hunting techniques from the old cultural base. These matters must be intimately related to post-glacial climatic shifts, but aside from the possibility of making futilely broad generalizations about the Altithermal and ensuing Medithermal periods and their effects on early Eskimo ecology, I see no positive help from this quarter at present.

At any rate, the continuum from which the late eastern Dorset manifestations developed was a long and exceedingly complicated one. I have perhaps tended to over-estimate the ancestral role of microlithic technology in this continuum, but it seems to have been one of the major adaptations characteristic of the American Arctic. Moreover, it is traceable from Denbigh toward the east and at present we are able to perceive more clearly through this medium than any other definite relationships between east and west. However, a moment's thought indicates that a deeper explanation is required. Many of the Central and Western Arctic complexes mentioned here are mixtures constituted of arctic, boreal, and perhaps even plains traits, and the inclusion of some "macro" elements in early cultures of the Eastern Arctic suggests their diffusion in advance of later microlithic complexes. This was so in the west, as Engigstciak proves, and such cultures as Independence I, and to some extent the west Greenland palaeo-Eskimo Sarqaq and proto-Dorset T 1 testify to a like sequence in the east. I suspect that the essential ordering of Engigstciak's lower levels may have been perpetuated eastward across the Arctic, allowing, of course, for later specialized outgrowths in response to particular environmental conditions.

In closing, I should like to touch very briefly on one associated problem. In the northeastern sector of the continent, from Labrador southward as far as Maryland, the appearance of certain "Eskimo" traits in archaic Indian cultures has for long been an unresolved mystery. It was once thought that such anomalies were the result of early contact between the Beothuk Indian and Cape Dorset Eskimo in Labrador and Newfoundland, but I have explained elsewhere (1953) why I believe such diffusion could not have occurred there. In the light of the evidence reviewed in this paper I believe we must look to the geographical funnel of Alaska and the Northwest Territories for an explanation of such cultural parallels. The compounds of culture which occur there strongly attest to this area's having been a melting pot where fundamental Palaeolithic and Mesolithic impulses from the Old World met, diffused, and gave rise to special New World complexes.

There the circumpolar continuum takes on urgent meaning, but we simply do not as yet have sufficient evidence fully to understand the ebb and flow of diffusion either within that region, or passing outward from it. The need for more work in the "empty quarter" of the Arctic remains almost as great as ever.

Acknowledgements

I am grateful to many for help in this venture: in the first place to Henry B. Collins for his aid in the preliminary stages, and to the American Philosophical Society for its major support with a grant from the Penrose Fund. An additional helpful award was received from the Research Committee of the Faculty of Dartmouth College. My friend Ralph Miller first taught me the pleasures of light-plane flying, and this I shall never forget. Elsewhere I have already thanked the David Wilsons, formerly of Coppermine, and Asgar Pederson of the Hudson's Bay Company. Everyone we met in the north was most cordial, but I should particularly like to thank Mr. J. C. McNiven, Mine Manager at Port Radium, and Mr. Gordon Devitt of Fort Smith, for their warm hospitality. Several members of the Canada Department of Northern Affairs and National Resources were enthusiastically helpful in paving our way into the north, especially Messrs. B. G. Sivertz, now Director of the Northern Administration and Lands Branch, the late C. H. Herbert, Chief of the Economic Division, and Graham Rowley of the Deputy Minister's Office. Professor Robert G. Chaffee, Curator of Geology in the Dartmouth College Museum, kindly helped with the identification of rock types among the artifacts.

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