Lithic and Bone Tools of the Draper Site (Structure 2) and the White Site

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Artifactual lithic material from Structure II and the associated middens of the Draper site totalled 507 pieces and fire-cracked rock totalled 517 pieces. Chert was the predominant raw material and formed 76.2% (n=388) of the artifact assemblage; schist 17.3% (n=88); limestone 1.3% (n=7); granite 2.1% (n=12); quartz 1.5% (n=8) and slate .8% (n=4).

Nodules of chert in a limestone matrix are very common in the glacial deposits of the area (Chapman and Putnam 1966:121). What has been described in this report as chert often contains considerable limestone. The occasional piece of chalcedony is also included in this category. The chert is dark grey with the exception of several buff pieces, one red-and-buff piece and a banded dark grey and buff chert. None of these pieces are worked. Quartz is also present in the local deposits but is less common than the chert. One piece of quartzite is included in this category. A greenish black schist was utilized for the ground adzes/celts. Other groundstone artifacts were made from limestone and a granitic material which are common in the area. A very shaly slate which was utilized to make a bead also has a local origin (Chapman and Putnam 1966:121).

Of the lithic material that is worked (n=196), chert forms 69.8% (n=137); schist 20.9% (n=41); granitic 3.5% (n=7), limestone 3.5% (n=7); quartz 1.5% (n=3), and slate .5% (n=1). The differences between these percentages and those for the entire lithic assemblage reflect the smaller amounts of schist, granite and limestone debitage in comparison to worked pieces. None of the groundstone technologies are as waste-producing in their nature as chert flaking, but this difference might also reflect a practice of bringing schist preforms to the village rather than large schist slabs.

Technology

Two chipped stone flaking techniques appear to be present at the site as represented by two core types — the block core and the bipolar core. These are quantified in Tables I and II for attributes of

a) type — block
bipolar variety 1. ridge-area 2. point-area 3. ridge-point 4. opposing ridge 5. right-angled ridge 6. opposing point
b) maximum length (mm)
c) maximum width (mm)
d) maximum thickness (mm)
e) maximum length of flake scars (mm)
f) type of flaking 1. unifacial 2. bifacial

Both the block and bipolar cores are small and irregular in shape and both were solely of chert.

The block core is a block or cobble from which flakes of a size suitable for later use as blanks for artifacts have been detached. The technique associated with this core form is free-flaking as described by Witthoft (1957).

The bipolar core technique as defined by Binford and Quimby (1963) results in a small core characterized by a ridge of percussion and an opposing zone of percussion which also displays flaking/battering caused by the core's

Table I Block Cores: N=28

Group	#	Max. Length		Max. Width		Max. Thickness		Max. # Fl. Scar		Uni/Bif		Raw Material	
		m	r	m	r	m	r	m	r	type	%	type	%
Unretouched	20	25.7	10-46	20.4	9-40	13.5	2-20	13.5	7-20	1.	80	chert	100
										2.	20		
Retouched	7	26	15-40	22	14-36	8.8	6-14	12.7	5-24	1.	100	chert	100
Utilized	1		30		10		10		26	1.		chert	

m = mean
r = range

Table II Bipolar Cores: N=30

Type	#	Group	Max. Length		Max. Width		Max. Thick.		Max. No. Flak. Score		Flaking		Type	%
			m	r	m	r	m	r	m	r	Type	%	Type	%
1	5	Unret.	25.2	23-32	20	14-31	7.5	6-11	14.5	10-26	unif	40		
											bif	60	Chert	100
3	3	Unret.	21	20-23	11.3	9-15	5	4-7	10.3	10-11	unif	33		
											bif	66	Chert	100
4	8	Unret.	20.1	15-28	20	12-15	7	4-10	11.5	3-13	bif	37		
											unif	63	Chert	100
5	1	Unret.		30		20		8		10	bif	100	Chert	100
Total	17	Unret.	22.5	15-32	17.7	9-31	7	4-11	12.1	3-26	unif	35.3	Chert	100
											bif	64.7		
1	1	Utilized		40		42		22		30	bif	100	Chert	100
3	3	Utilized	20	16-22	14.6	11-21	6.6	4-11	10	9-12	unif	66		
											bif	33	Chert	100
Total	4	Utilized	27.5	16-40	21.5	11-42	10.2	4-22	15	9-30	unif	50		
											bif	50	Chert	100
1	3	Retouched	20	15-23	19	10-23	6	8-7	13	10-16	unif	33		
											bif	66	Chert	100
3	2	Retouched	22	14-30	11	8-14	5	3-7	19	13-25	unif	100	Chert	100
4	4	Retouched	26.2	24-35	20	12-26	7	4-10	17.5	11-24	unif	50	Chert	100
											bif	50		
Total	9	Retouched	24	15-35	16.6	8-26	6.1	4-10	16.3	10-25	unif	55		
											bif	45	Chert	100

m = mean
r = range

placement on an anvil. The bipolar technique is usually considered to be an adaptation to the form in which the raw material occurs naturally. The waterworn chert pebbles found in the glacial deposits of the Great Lakes area are too small to be held in the hand and free-flaked. Admittedly the bipolar technique is not observed in the other raw materials but the block cores, which should therefore be much larger, do not differ greatly in length and width as can be seen in the means and ranges listed in Tables I and II. The small variation in thickness between these two core

types is due to the greater frequency of bifacial working on the bipolar cores as well as the inclusion within the sample of ten split bipolar cores.

Six bipolar core varieties are defined by Binford and Quimby (1963) on the basis of type of percussion zones at either end of the core and could quite possibly represent different stages of flake production or even manufacturing accidents. Of the six varieties, the sample does not seem to contain the point-area or the opposing point varieties. In the Maurice site sample (Fox 1971:138) the point-area and the ridge-area varieties are not represented. MacPherron (1967) only recognizes two bipolar core varieties in the Juntunen material – cylindrical and flat. He considers opposed point cores to be possible exhausted cylindrical cores and opposed ridge cores to be worn flat cores. In the Draper sample the opposed ridge variety accounts for 40% of the cores. The other varieties are represented as follows: ridge-area 30%, ridge-point 27%, and right-angled ridge 3%.

In terms of size variability within and between these core varieties, examination of the means and ranges listed in Table II reveals that the ridge-area and opposing ridge variety exhibit both the greatest similarity in means and the most variability in range. The ridge-point variety displays a consistently smaller mean and with one exception, smaller ranges. This variety could thus reflect either a technology of dealing with the smallest cores *or* a later stage in the flaking process.

Another problem in the identification of the bipolar technique is the dilemma as to whether the cores do represent cores from the manufacture of artifact blanks or whether they are pieces de esquillées i.e. core tools. This is particularly emphasized in our sample where the bipolar cores and even the block cores are very small and the total core-debitage ratio is 1:3.4. This in addition to the fact that 30% of the bipolar cores are retouched and 7% utilized, while 25% of the block cores are retouched and 3.5% utilized, strongly indicates that raw material was scarce and that cores were regularly used as tools (Table III). Of the flakes (n=63) that were identified as definitely being produced by the bipolar technique, 33% (n=21) were retouched and 24% (n=14) were utilized, thus indicating that the flaking of the bipolar core could not have been designed solely to produce a core tool. It is interesting to note the presence of some retouched flakes in the sample, the size of which would suggest detachment from larger cores than those found at the site. These may have been detached from block cores in the initial stages of exploitation, or imported.

MacPherron (1967:142) has furthermore suggested that his opposed ridge bipolar cores were created as a gouged-end artifact. This interpretation is based upon the observation that "at one or both ends a kind of chopping-in fine, abrupt multiple hinge-fractures has produced a hollowed out or dished area in the flat face of the piece, so that the ridge forming the end of the piece presents a formal similarity to the cutting edge of a wood gouge". Only 13% (n=14) of the Draper bipolar cores exhibited such a dished area although most of course exhibited the nibbling on the

Table III Bipolar Cores – Marginally Retouched

Type	#	Reworking		Face of Ret.		Ext. of Ret.		Distribution of Ret.		Angle wrkg edge		Length wrkg edge		Width wrkg edge		Thick. wrkg edge		Utilization	
		f	%	Type	%	Type	%	Type	%	Type	%	m	r	m	r	m	r	f	%
1	3			1	100	1	33	non-cnvrg	100	1	33	12	5-20	2	1-3	2	1-3	2	67
						2	67			3	67								
3	2			1	100	1	50	"	100	1	50	10	7-13	1	1	1	1		
						2	50			2	50								
4	4			1	100	1	25	"	100	1	25	17	14-24	2	1-2	2	1-2	2	50
						2	75			2	75								
Block Cores – Marginally Retouched																			
	7			1	100	1	28	cnvrg	14	1	42	17.7	5-34	1.5	1-4	1.5	1-4		
						2	72	non-cnvrg	86	2	29								
										3	29								

m = mean
r = range
f = frequency

polar areas which could easily have been produced by either the bipolar process or by utilization.

One last comment that should be made about the bipolar cores is the presence of ten core fragments which form 33% of the bipolar core sample. MacPherron (1967: 138) notes that these overlap formally with bipolar flakes. The distinguishing feature which the Draper split cores possess are the presence of a genuine cone of percussion and/or the marked concentric ripples on the ventral face.

In summary, the high ratio of cores of both types to debitage, the high percentage of retouched/utilized cores of both types and the relatively small size of the cores indicating exhaustion would suggest that both were regarded as valuable, potential tools. The number of retouched/-utilized flakes derived from these indicates that this was not the sole usage of the core, but a secondary one after its flaking potential had been exhausted.

Debitage

The debitage consisted of chert (n=197); schist (n=45); granitic rock (n=5) quartz (n=4), and slate (n=3). These were measured for maximum length, width and thickness as quantified in Table IV. Five flake groups are defined 1. decortication 2. blocky 3. flat 4. secondary shatter and 5. bipolar flakes.

Table IV Debitage

Raw Material	Flake Type	#	Max. Length		Max. Width		Max.Thickness	
			m	r	m	r	m	r
Chert	1	22	15.9	13-37	13.7	10-23	6.1	2-17
	2	50	20.1	10-30	11.7	5-30	5.8	4-18
	3	4	12	7-20	10	7-17	1.5	1-2
		5	19	13-32	15	10-21	2.6	2-4
		6	14	12-17	14	13-16	3	2-4
	4	81	15.6	7-42	9.3	1-20	2.9	1-10
	5	29	17.4	7-30	12.2	6-25	3.9	1-12
Schist	2	16	33.3	17-57	16.2	10-24	5.8	3-10
	3	29	25.8	12-43	13.6	7-25	3	2-5
Quartz	2	4	27.3	20-40	17	7-23	7.4	3-17
Slate	2	3	25	15-35	15	10-30	7	6-10
Granitic	1	5	23.6	16-35	14	18-25	9	6-17

m = mean
r = range

The fifth group is comprised of those flakes (n=29) which can be definitely identified as resulting from the bipolar process. This flake exhibits a crushed ridge of percussion rather than a definite striking platform and also displays the scars of bipolar working on the outer faces. This is not to say that none of the other four flake groups could not also have resulted from the bipolar technique but merely that those groups could be common to both techniques.

The first group, decortication flakes were those flakes removed from the exterior of the nodule and therefore consist partially of cortex. All the granitic debitage is classified thus. Since the chert is at times so mixed with its matrix, limestone, identification of decortication flakes (n=22) on the basis of degree of limestone present is to a great extent arbitrary. Also those chert flakes which exhibit weathered/eroded exterior surface were considered to be decortication flakes.

The second group consists of blocky flakes, which are thick, heavy and irregularly shaped with no striking platform or bulb of percussion. This constitutes the second largest of the chert flake groups (n=50). According to Binford and Quimby (1963:286) such flakes are primary shatter resulting from the initial shaping of the core. Of the other raw materials, all of the slate and quartz debitage are classified thus as well as 16 flakes of the schist debitage. Because of the flaking properties of schist the technological implication made by Binford and Quimby could not be applied, but these flakes do correspond to the description of blocky flakes given by Binford and Quimby and repeated here in the first sentence of this paragraph.

The third group contains flat flakes which display both striking platforms and bulbs of percussion. Only 15 such flakes are present in the chert sample. Four appear to be billet (soft hammer) produced thinning flakes from bifaces with small, but in comparison to the bipolar flakes, well-defined striking platforms, expanding edges and an acute angle between the striking platform and the exterior surface of the flake. There is only one biface specimen in the sample from Draper which is described later. The other 11 flakes have been tentatively defined as softhammer (n=6) and hardhammer flakes (n=5). A distinction is often drawn between the two types based solely on the presence of a lip in the former case and the absence of a lip in the latter. Such a statement is probably best interpreted as probabilistic and a sample of 11 flakes is not large enough to state whether the presence or absence of a lip corresponds to other features associated with soft or hard hammer techniques. Our distinction is thus based on the presence or absence of a lip and there is a tendency for the latter trait to be associated with a prominent bulb of percussion or crushing at the point of percussion, considered typical of the hard hammer technique, but this association does not always occur. Of the schist debitage in this category, flakes exhibiting only striking platforms occur. The flaking properties do not seem to be such as to give a bulb of percussion. Of these 29 flakes, 4 display a certain degree of grinding on

the lateral edge.

The fourth group (n=81) consists of chert flake fragments exhibiting neither striking platform nor bulb of percussion. It has been noted that the bipolar technique results in a large amount of such secondary shatter.

Marginally Retouched Material

Marginally retouched material totals 92 pieces, of which 71 are unifacially retouched flakes classified as scrapers; 9 are unifacially retouched block cores; 9 are unifacially retouched bipolar cores; 1 is a bifacially worked flake interpreted as a knife and 2 are bifacially retouched flakes which are morphologically projectile points but since the retouch is only marginal, they may be interpreted as knives.

The following attributes were measured (in mms) or noted for each group in Tables III, V, and VI.

a) type — scrapers 1. end 2. side 3. end and side
— cores — block
— bipolar variety 1. ridge-area 2. point-area 3. ridge-point 4. opposing ridge 5. right-angled ridge 6. opposing point
— knives 1. flake 2. projectile point variety
b) number
c) maximum length
d) maximum width
f) reworking — presence/absence
g) use wear 1. striations 2. gloss 3. grind

e) maximum thickness
f) reworking — presence/absence
g) use wear 1. striations 2. gloss 3. grinding 4. edge-battering 5. flaking 6. combined 1 and 4
h) face retouch 1. unifacial 2. bifacial
i) extent of retouch 1. partial 2. continuous unilateral 3. continuous bilateral
j) distribution of retouch on tool edges 1. convergent 2. non-convergent 3. semiconvergent
k) angle of working edge 1. $<40^{o}$ 2. 40^{o}–65^{o} 3. $>66^{o}$.
l) length of working edge
m) width of working edge
n) thickness of working edge
o) flake type 1. decortication 2. block 3. flat 4. secondary shatter 5. bipolar
p) utilization — i.e. present or absent
q) raw material 1. chert 2. quartz

The division of the angles of the working edge into three groups is an attempt to relate working edge angle and function as suggested by Wilmsen (1968). He suggests that the low angles of Group 1 are indicative of a function of whittling or cutting; the medium angles of Group 2 related to skinning, hidescraping, shredding and heavy cutting; and the high angles of Group 3 indicating use in boneworking, heavy shredding and skin softening. On an inter-group level the retouched artifacts seem to be distributed evenly in terms of the working edge angle. This is particularly interesting in view of the question of function of bipolar cores. Those that are retouched are not significantly associated with the high angle of working edge which is hypothetically related to boneworking, etc.

Within the scraper group (Table V) it can be observed that a high percentage of the endscrapers display low angles of the working edge. The association between end-and-side scrapers and block flakes accounts for the consistently larger means of length, width and thickness of both the working edge and the scraper itself.

The knives, defined as such on the basis of bifacial marginal retouch will be the only artifacts examined in detail from this category (Fig. 1). The first knife, a decortication flake, exhibits retouch along one edge, extending 1 cm inward on the face. Evident on one of the faces is a flake scar possibly derived from striking off an irregularity. Similar attention to regularity is observed in the removal of the bulb of percussion on some of the larger scrapers. The second, a projectile point variety knife, is a flake worked to a triangular shape. The dorsal side exhibits both flaking and a ridge. A flake scar on this dorsal side represents an abortive attempt to either remove the ridge or to work the face down from the ridge as is evident on the face near the tip of the object. This specimen also exhibits continuous retouch on its ventral side on both lateral edges. The third knife, also of the projectile point variety, is similarly worked to a triangular shape and displays continuous percussion flaking on one side and what would appear to be both percussion and pressure flaking on the other side. None of these projectile point variety knives is modified basally or notched. Attributes are given in Table VI.

Utilized Flakes

These are quantified in Table VII for length, width and thickness. Utilization is defined on the basis of one or more shallow irregular hinge fractures restricted to the flake edge and one face adjacent to the edge. Flaking was the only wear pattern observed and as one might expect, blocky flakes which would not have thin, sharp or fragile edges are in a minority.

Table V Scrapers

Type	#	Max. Length		Max. Width		Max. Thick.		Re-working		Use Wear		Face of Ret.		Ext. of Ret.		Dis. of Retouch	
		m	r	m	r	m	r	f	%	Type	%	Type	%	Type	%	Type	%
1 (end)	7	24.1	10 37	21	12-27	6	1-10	—	—	5	28.5	unif	100	1	28.5	non	
														2	71.5	cnvrg	100
2 (side)	55	25.5	16-76	16.5	7-35	4.5	1-16	—	—	2	4.1	unif	100	1	33.3	"	100
										4	6.2			2	54.1		
										5	37.9			3	13.6		
3 (end) & (side)	9	28.3	20-45	25.3	12-42	6.7	4-12	1	11	1	11	unif	100	3	100	"	100
										5	33						

m = mean
r = range
f = frequency

Angle working edge		Length working edge		Width working edge		Thickness working edge		Flake Type		Tuilization		Raw Material	
Type	%	m	r	m	r	m	r	Type	%	f	%	Type	%
1	85.7	19	6-30	1.8	1-4	1.7	1-3	2	42.8	2	28.5	chert	85.7
2	0							4	28.5			quartz	14.3
3	14.3							5	28.5				
1	34	18.1	6-50	1.5	1-4	1.5	1-4	1	9	1	1.8	chert	98.2
2	41							2	29			quartz	1.8
3	25							3	18				
								4	16				
								5	27				
1	22.2	35	17-57	2 5	1-7	2.5	1-7	1	11			chert	100
2	55.6							2	55				
3	22.2							3	22				
								4	11				

m = mean
r = range
f = frequency

Bifacially Flaked Material

Ovate Biface

This artifact (Fig. 1) is formed from a large flake with expanding sides. The raw material is half grey chert and half limestone. No striking platform remains. The artifact is complete and measures 55 mm long, 45 mm wide at the point of maximum width which is near the distal edge and 11 mm thick at the same point which is also the point of maximum width.

Projectile Points

As well as the 2 knives of the projectile point variety discussed previously, there are 6 other projectile points

Table VI Knives

Type	#	Max. Length		Max Width		Max. Thick.		Reworking		Use Wear		Face of Ret.		Ext. of Ret.		Distribu. of Ret.	
		m	r	m	r	m	r	f	T	Type	%	Type	%	Type	%	Type	%
1	1		25		24		5			5	100	2	100	2		non-cnvrg.	
2	2	29	23-35	13	13	4.5	4-5	—	—		—	2	100	1	50	"	100
														3	50		

Angle Working Edge		Length Working Edge		Width Working Edge		Thickness Working Edge		Flake Type		Utilization		Raw Material	
Type	%	m	r	m	r	m	r	Type	%	f	%	Type	%
2	100		19		4		4	1	100	—	—	Chert	100
2	100	36	32-40	30	20-40	2.5	2-3	—	—	—	—	Chert	100

m = mean
r = range
f = frequency

from the 1973 excavation providing a fair degree of heterogeneity in the sample (Fig. 2). Since only one projectile point was found in the 1972 excavation of Structure I (Fig. 14) no style comparison is possible with such an inadequate sample. The 1973 points are discussed by catalogue number below.

N34E44-2-3 is triangular in outline and biconvex in cross-section. It is made from a dark grey chert with inclusions of white chert and limestone. It measures 25 mm from the tip to the base, 17 mm wide at the base and 3 mm thick at the point of maximum thickness which is halfway between the base and the tip. Both faces exhibit bifacial and a fine marginal retouch. The base is thinned slightly and is concave. The tip appears to be blunted.

N46E42-6-4 is a long point lanceolate in outline and biconvex on cross-section. The raw material is a dark grey chert with white chert inclusions. From base to a broken-off tip, it measures 46 mm long. A projection of the lateral edges would give a length of 54 mm. The base is 14 mm wide and the area of a maximum thickness is 5 mm at the central axis. Bifacial flaking extends from the edge to the central axis and there is a fine marginal retouch. The base is straight and slightly thinned.

N40E48-11-6 is a basal fragment of a shouldered Archaic point made of a pinkish siliceous material unique on this site. The point has been broken off above one shoulder and another oblique fracture has snapped off the other shoulder, however the fragment appears similar to one from the Indian Knoll focus (Griffin 1952•29-g). The base is concave with a width of 15 mm. Ramsden (1968:18) notes two other Archaic points found on this site but neither description indicates a stylistic similarity to this point.

The three remaining points are sidenotched. Specimen N26E76 from Post Mold 7, within Structure II, is long and lanceolate in outline with a plano-convex cross-section. It is made from a dark grey chert and the base appears to be almost totally limestone. The point measures 40 mm in length, 14 mm in width at the base, and 4 mm thick at the point of maximum thickness which happens to be at the ridge between the two notches. On the convex face bifacial retouch is evident from a central ridge to the margins which are also modified by fine retouch. On the plane face there appears to be only marginal retouch. The base is straight

Table VII Utilized Flakes

Flake Type	#	Max. Length		Max. Width		Max. Thickness		Material	
		m	r	m	r	m	r	type	%
2	11	26.5	21-40	20	16-32	7.7	3-12	chert	100
3	19	21.9	11-35	16.3	10-30	4.5	2-10	chert quartz	95
4	10	16.8	10-21	11.8	7-16	3.5	2-6	chert	100
5	14	24	14-38	16.3	7-22	5	2-10	chert	100

m = mean
r = range

Fig. 1 Biface and knives: Draper 1973. Top left, flake knife; middle and right, projectile point variety knives; bottom, biface.

and appears to be slightly retouched on the convex face. The notch extends from 10–14 mm from the base and is 2 mm wide.

On the two other sidenotched points, the notches are situated more than halfway towards the tip. The tip itself is fairly thick. These two are interpreted as possible drills. Wear pattern consisted mostly of battering along the edges. Both exhibit bifacial and marginal retouch although the latter is not continuous.

N24E72-4-3 is triangular in outline and biconvex in cross-section. It is made of medium grey chert with inclusions of white chert. It measures 31 mm long, 13 mm wide at the base and 3 mm at the point of maximum thickness which is 2 mm from the tip. The notches are roughly formed and extend from 13–19 mm from the base and are 2 mm wide. An irregularity has been left untrimmed from one of the faces. The base is straight and is thinned.

N24E76-13-8 is a longer point of dark grey chert more lanceolate in outline and biconvex in cross-section. It measures 30 mm in length, 15 mm wide at the base and 4 mm thick at the point between the two notches. Again the tip is fairly thick measuring 2.5 mm. The notches are flaked on alternate faces, one extending from 17–23 mm from the base and the other from 20–25 mm from the base.

Ground Material

Adzes/Celts

Initially an attempt was made to distinguish between adzes and celts on the basis of size but an examination of the complete measurements soon established that there is in fact a continuum. Neither does cross-section prove useful for in all cases it is biconvex. Table VIII summarizes the attributes of width, length thickness, presence/absence of use wear and cross-section. The sample also contains four preforms (Figs. 3, 4), the measurements of which are quantified in Table IX. The smallest one listed, although a fragment, is roughly shaped in a manner so as to suggest a preform. Of the other three complete preforms, one is already partially shaped at the working end. This specimen does not exhibit any grinding. The other two preforms which are not shaped at all at the working end are ground on their lateral edge.

The remaining ground schist fragments have been quantified in Table X. These are presumably adze/celt fragments.

Manos/Grinding Stones

The manos are quantified in Table XI for length, width, thickness and presence/absence of wear patterns. One grinding surface was examined for vegetal remains but none were

Fig. 2 Projectile Points: Draper 1973. Top, sidenotched specimens; bottom left, triangular; middle, lanceolate; right, shoulder fragment of Archaic point.

Table VIII Adzes/Celts

Length	Width	Thickness	Use Wear	Cross Section
120 c	47 c	30 c	edge battering	bi-convex
107	22	11		
30	36	6		
104	32 c	20	striation	
63	27 c	14 c		
61	50 c	13		
31	30 c	3		
20	46	5		
67	30	10		
66	40	10	striation	
37	33	10		
57	24	40	edge battering & striation	bi-convex
110	27	20		
70	44	13		
105	60 c	12		
86 c	25 c	15 c		bi-convex
92 c	38 c	20 c	edge battering	bi-convex
50	21 c	7		
22	24 c	20 c		bi-convex
30	23 c	5		
60	25 c	13		

c = measurement of complete specimen

Table IX Adze/Celt Preforms

Length	Width	Thickness	Grinding
50	32	15	—
140	48	35	—
155	55	40	present
125	56	40	present

Fig. 3 Celt-adzes Draper 1973. Top, adze/celt complete; bottom, adze/celt preform.

Fig. 4 Draper 1973. Adze/celt preform.

observed. Three ground stone pieces are large enough to have been part of a metate but no depression was noted to suggest that function. These are included in Table X with the rest of the ground stone fragments. Measurements of complete specimens are followed by a "C".

Beads

Three ground beads are present in the sample (Fig. 5). The first, a highly polished bead of greenish chalcedony, measured 14 mm in diameter and the perforation measured 4 mm. A second one of some granitic material possessed no performation and measured 13 mm in diameter. A third bead was made from a polished ground slate. It measured 25 mm in diameter. The performation measured 4 mm in diameter and around it was visible a wear groove of a width to indicate something with a blunt edge such as a thong.

Table X Ground Material — Unidentifiable Fragments

Type	#	Max. Length		Max. Width		Max. Thickness		Use Wear	
		m	r	m	r	m	r	Type	%
Ground Schist	18	36	13-58	15.9	3-25	7.2	4-11	1	11
Ground Metam/-Sed. Rock	10	84.5	44-180	62.6	22-110	30.2	23-54	1	50

Table XI Manos

Length	Width	Thickness	Use Wear
90c	48 c	32 c	striations
40	35	41 c	
61	106 c	37 c	
74 c	70 c	60 c	striations
140	87	51	
102	84	34	
85	85	33	
105 c	105 c	35 c	

Table XII Hammerstones

Length	Width	Thickness	Pitting
90	75	40	one end
60	35	35	one end
50	55	40	one end

Hammerstones

The three hammerstones, one of schist and 2 of a granitic material, displayed battering at one end only. These are quantified in Table XII.

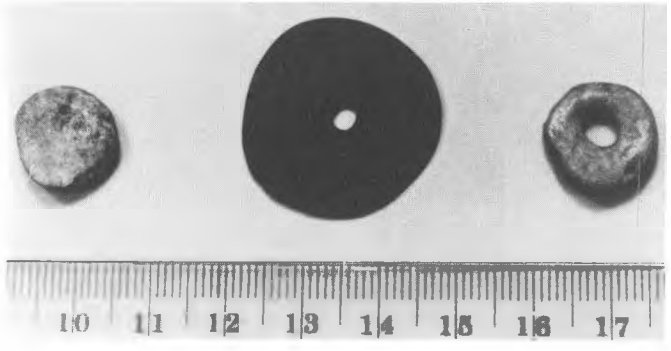

Fig. 5 Beads: Draper 1973.

DRAPER: WORKED BONE

There are 242 pieces of bone which appear to be modified by human activity represented at Structure II and the associated middens of Draper. Of these, 35.1% (n=85) are identified as white-tailed deer *(Odoicoileus virginiana);* 35.1% (n=85) simply as mammal, 11.1% (n=27) as avian; 6.2% (n=15) as *Canis sp.* of which 13 are definitely domestic dog *(Canis familiaris);* 4.9% (n=12) as beaver *(Castor canadensis);* 1.6% (n=4) as turtle .82% (n=2) each for rabbit *(Leporidae)* and human; .41% (n=1) each for raccoon *(Procyon lota)* and bear *(Ursus americanus)* and fish, and 2.9% (n=7) are unidentifiable.

Of the 242 pieces of modified bone, 88 specimens are classified into tool categories. The remainder of the material is classified as polished/ground, drilled/cut, scored or randomly worked. From these were drawn various groups whose function is more tentative, such as worked deer phalanges, beaver incisor tools and other miscellaneous objects.

Beads

The beads constitute the largest number of categorized bone tools (n=57). Source materials are avian long bone 40.3% (n=23); mammal long bone 38.5% (n=22); dog long bone 10.5% (n=6); *Leporidae* long bone 3.4% (n=2); *Canis sp.* long bone 1.7% (n=1); and unidentified long bone 5.2% (n=3).

Most of these beads are fragmentary. Of the 15 complete specimens, (Fig. 6), 9 exhibit high polish and well finished ends, while 6 are unpolished, with the ends still exhibit edges ragged from the scoring and breaking process. One of the polished and finished beads, an exceptionally long one, was scored heavily near the middle of the bead at the point of maximum curvature of the bone in preparation for breaking off a new bead. A series of parallel scoring marks is visible further along the bead as if several points were tested for easy breakage before deciding on the heavily scored area. The measurements of complete bone beads are given .n Table XIII in millimetres.

Awls

Seventeen long pointed bone objects from the 1973 excavation are classified as awls (Fig. 7). There are roughly 5 other pieces of bone classified as polished/ground material which might very well have been part of awls but insufficient amounts were preserved for such an identification. Of the 17 objects, 11 are identified as sections of mammal long

Table XIII Bead Measurements (Complete specimens)

1. roughly finished			2. well finished		
	Length	Diameter		Length	Diameter
	50	16		14	12
	25	9		34	8
	20	10		57	11
	21	10		20	10
	27	9		35	7
	16	10		13	10
				31	9
				20	6
				31	7

Length r = 16 - 57
m = 27.6
Diameter r = 6 - 16
m = 9.6

bone, 5 as deer metapodials and 1 from an unidentifiable portion of a mammal. Ten of the awls are represented only by tips. Three of the deer metapodial awls are complete and another 4 of the long bone awls are possibly complete. These 7 are quantified in Table XIV. In this case the mode is included since the two exceptional lengths tend to obscure what would appear to be the 'normal' range.

Wear patterns in the awls are varied. Considerable polish on the tip is present on 6 of the specimens. On 3, striations appear to run parallel to the axis of the awl; and on 4 the striations run perpendicular to the axis. This latter wear pattern would seem more in keeping with the function of an awl. It should be observed however that in any discussion of wear pattern, it is difficult to discern the difference between wear pattern and manufacturing marks.

Punch/Flakers

Three pieces of antler tips are classified as either punches or flakers (Fig. 8). Only one exhibits the marks of scoring and breakage at the proximal end and is therefore considered a complete specimen. The others have gashed ends which might indicate use in an indirect percussion technique of some sort. The distal tips are blunted in various ways. One has a depression in the centre of the end; another appears to have been worn or possibly ground into a wedge-shape; and the third displays a raised boss on the blunt end. These specimens exhibit small gouges near the working end. These punch/flakers are quantified in Table XV.

Conical Points

There are 4 specimens of socketed conical points (Fig. 9). Only one is complete and measures 93 mm in length and 10 mm in diameter. This point is made of antler and is sharply pointed and highly polished. The socket is V-shaped and round in cross-section. Striations on the surface near the point perhaps indicate use of a scraper in its

Fig. 6 Bead Specimens: Draper 1973. Note that left 3 show traces of scoring.

Fig. 7 Awls: Draper 1973. (Selected complete awls.)

Table XIV Awl Measurements (Complete specimens)

Length	Diameter			
134	10	Length	mean	117.4
120	12		range	75 - 134
120	20		mode	120
121	12			
125	12	Diameter	mean	13
126	15		range	10 - 20
75	10		mode	12

Table XV Punch/Flaker Measurements

	Length	Diameter	Wear Pattern	Tip
complete	66	14	gouges	depression
fragmentary	37	12	gouges	wedge
fragmentary	36	13	- - -	boss

manufacture. The other three specimens are just fragments of seemingly the same type of point made from mammal long bone. One is a piece only of the V socket. The remaining two are very fragmentary and represent the initial cut for and smoothing of the socket.

Needles

Five needle specimens are present in the 1973 Draper material (Fig. 8). The one complete needle measures 83 mm in length, 6 mm in width and 2 mm in thickness. It is made from a splinter of dog radius. The oblong perforation is biconical and measures 3 mm in diameter. The needle is slightly curved both in plane-view and cross-section.

Two fragments each represent half a needle broken at the perforation. One is well polished whereas the other appears to be merely smoothed. Both are made from part of a mammal long bone. Two other fragments display part of a perforation each and are polished. Both of these are also from a mammal long bone.

Among the modified material are two pieces of dog radius which fit together to show that a very long splinter of bone has been hacked away. That these pieces represent the waste material from the needle-making process is a strong possibility. The length of the splinter removed suggests that either more than one needle was made from it or enough bone was cut away to ensure that the best piece was available, perhaps that with the right curvature.

Pendants

There are two canine pendants in this sample (Fig. 10), both from *Canis sp.*, probably dog. Both specimens measure 27 mm in length. The teeth are highly polished and the root

Fig. 8 Artifacts: Draper 1973. Left, needle fragments; right, punches.

Fig. 9 Conical Socketed Points: Draper 1973.

Fig. 10 Modified teeth: Draper 1973. Left, ground beaver incisor; middle, perforated dog canine; right, drilled mammal tooth.

is perforated.

Also present in this sample is what appears to be a shell pendant, measuring 37 mm long, 30 mm wide and 3 mm thick. Part of the perforation and one end has broken away.

Worked Deer Phalanges

Worked deer phalanges at Huron sites are traditionally divided into two groups, the ground faceted 'toggle' variety of unknown function and a polished perforated variety, generally considered to be used in cup-and-pin game (Fig. 11).

Two of the modified deer phalanges exhibit the drilling of the distal epiphysis which is associated with the cup-and-pin artifact. One specimen represents a complete phalange and although there is a distal perforation, the specimen is not polished and appears to be unfinished. The second specimen is very highly polished and the proximal portion of the phalange is broken off. A V-shaped breakage line on one side could represent part of a lateral opening.

The 42 examples of the ground faceted variety form a continuum of workmanship from those which appear to be only slightly ground on one side to those which are heavily ground and polished and display openings on both sides. Fourteen of these 42 specimens are so fragmentary that nothing can be discerned of the objects' original shape. Eight phalanges appear to have been only slightly ground. As only two of these are whole, it is possible that some of the fragmentary ones may have had lateral openings as well but none of the breakage lines exhibit either the shape or the smoothed edge of the lateral openings on other specimens. One of these 8 phalanges displays a scorch mark on the side. Two specimens exhibit some grinding and one lateral opening while 12 specimens are quite heavily ground and have two lateral openings on opposite sides. One open-

Fig. 11 Modified Deer Phalanges: Draper 1973. From left: 2 cup-and-pin artifacts the rest are ground phalanges.

ing is usually much larger than the other and the edges of the perforation are generally quite smooth. One specimen exhibits extensive grinding, openings on both sides and one small round perforation near the proximal epiphysis. Finally there are 5 fragmentary specimens which are extensively ground, highly polished and have only one lateral opening and on the opposite side a round perforation near the epiphysis.

The ratio of the cup-and-pin variety to the ground toggle variety has been suggested as a stylistic marker for sites in the Southern Division of the Late Ontario Iroquois. Wright (1966) notes that the former appear to be dominant early in the Huron sequence and the latter became numerous only in the later period. Draper is considered to be fairly early in the sequence and therefore should have predominantly the cup-and-pin variety. Structure II and its associated midden possess, on the contrary, an abundance of the ground toggle variety (n=42) and very few of the cup-and-pin type (n=2).

Beaver Incisor Tool

Of the 10 beaver incisors which appear to have been modified by abrasion, 4 are sufficiently preserved to attempt classification. Of these, 2 specimens are split and 2 are whole (Fig. 10). All 4 exhibit abrasion or grinding of the bit end, perhaps to enhance a scraping function. Wear, in the form of flaking on the bit end, is visible on three of the specimens and one of these, a longitudinally split incisor, also exhibits a high degree of polish on the interior facet of the wedge-like bit. This artifact also possesses striations which run perpendicular to the axis of the incisor.

Miscellaneous

There are 3 other objects in the Draper sample whose function is speculative but which are worthy of mention.

The first is a large mammal tooth which is highly polished at the root. A hole has been drilled straight down into the root to a depth of about 10 mm (Fig. 10).

The second object is part of a mammal long bone, one end of which is broken and the edge of which is smoothed. This has been tentatively identified as a flesher.

The last specimen is a small piece of human skull which has not only been highly polished but is perforated as well. This suggests that it could be part of a skull gorget.

DRAPER STRUCTURE 2
DISTRIBUTIONAL ANALYSIS

The lithic and bone material appear to be similarly distributed vertically throughout the excavation. Artifacts were found from Levels II to XI, and deeper in features, but were concentrated from Levels IV to VIII with the mode of distribution definitely in Level V. In the area around one hearth at least one living floor was identified in the field within this level.

Horizontal analysis proved more fruitful as the excavation of a longhouse presented an excellent opportunity to attempt to delineate activity areas. The tables included in this section give artifact distributions relevant to the specific areas discussed and Figure 12 outlines these activity areas. Activity areas are, of course, determined on the basis of a significant association of certain artifact types. Significant associations were identified with the following procedures. In describing the extent of any activity area, the square designations were used which were roughly coterminous with the concentration. In some tables, the artifact representation in the squares involved was compared to the representation in the total area of the structure

Fig. 12 Activity Areas of Structure 2.

Area I:	chipped stone manufacture: (cores, debitage, scrapers)
Area II:	bone manufacture (scored material, beads, ground material, ground phalanges, awls, knife variety of projectile points)
Area III:	pecking and preforming (with hammerstone) adzes (adze blanks, hammerstones, adzes)
Area IV:	grinding and finishing adzes: (adzes, grinding stone)
Area V:	woodworking: (adzes, biface, utilized flakes)
Area VI:	floral processing: (manos, scrapers, & absence of other materials)
Area VII.	general bone working: (ground material, ground phalanges, beads, scored material, scrapers, ground stone, debitage)
Area VIII:	bead manufacture: (scrapers, scored bone, beads – predominantly unfinished projectile point variety knife)
Area IX:	recreational area (ground and faceted phalanges, "cup-and-pin" phalange)
Area X:	hide working and recreation: (awls, scrapers, "projectile points", ground phalanges)
Area XI:	bipolar technology workshop: (cores, anvil stones, debitage, scrapers on bipolar flakes, punch/flaker, lack of schist or ground stone debitage, ground stone)

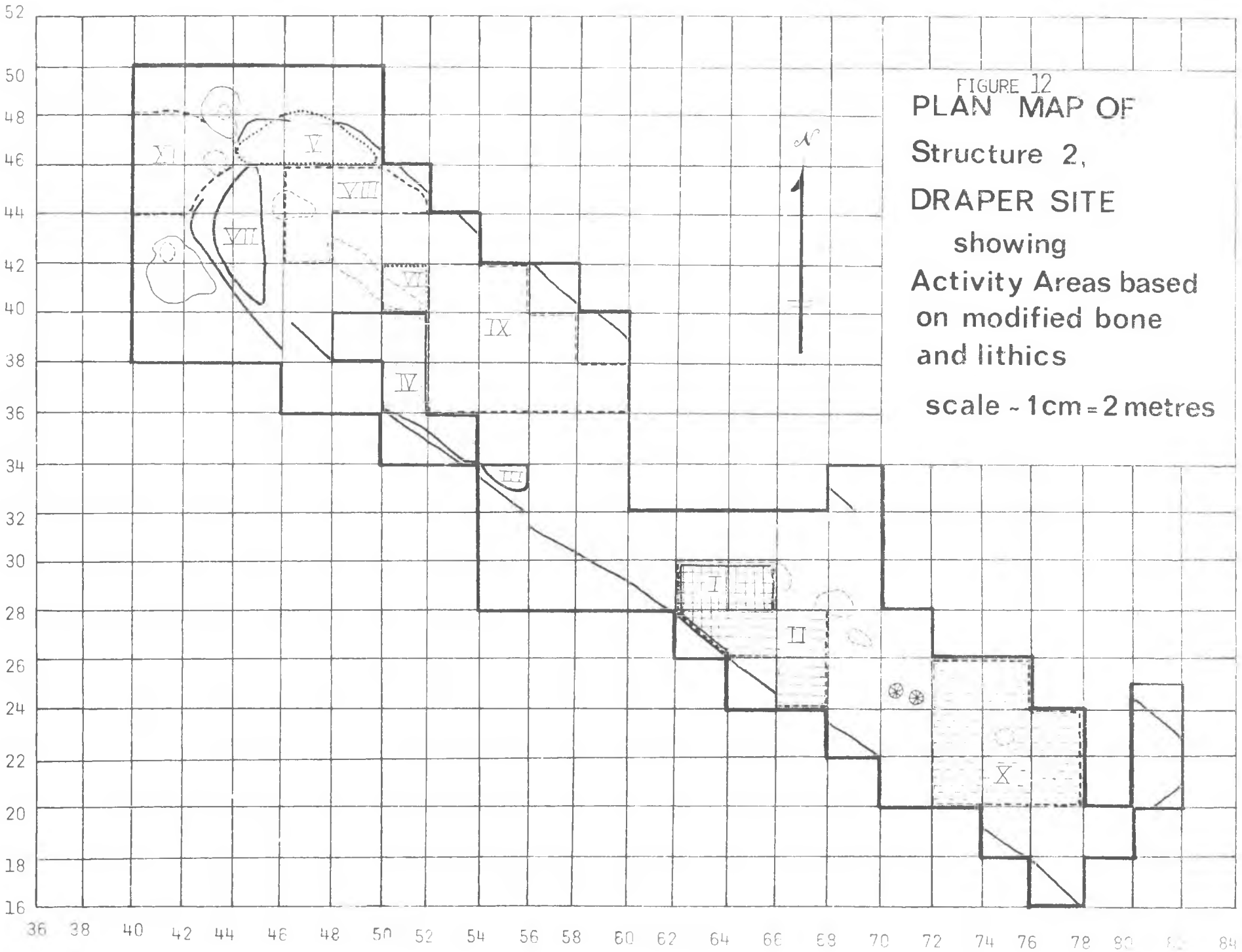
FIGURE 12
PLAN MAP OF
Structure 2,
DRAPER SITE
showing
Activity Areas based
on modified bone
and lithics
scale - 1cm = 2 metres
N
I
II
III
IV
V
VI
VII
VIII
IX
X
XI
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84

which was roughly 73 grid squares. Therefore, if 4 squares or 5.6% of the total structure area contained 40% of all of a certain type of artifact found in the structure, then this was felt to be significant. If distribution were random, one would expect only 5.6% of that artifact type to be found in that area. Naturally with small samples of tool types, proportional distribution can be easily skewed. For instance if there were 2 hammerstones within the structure as was the case, and 50% of the hammerstones (n=1) were found in one square this was not considered to be significant by itself. A significant occurrence of one artifact was only considered archaeologically significant if it occurred in a context with other tools which were significantly represented, and with which it could form a toolkit. In this distributional study as in all, absence was as important as presence in determining what was significant. In instances where artifact density was low and where activity areas were defined primarily in terms of what artifact types were simply present, rather than in terms of which types had the highest percentage, the tables do not make a comparison with the structure sample but simply illustrate what does occur in the area as opposed to what is not present. The working definition of the term 'association' in this analysis is that 2 artifacts are associated if they occur in the same or an adjacent subsquare in significant proportions.

Before outlining the various tool configurations felt to be significant, it should be stated that of the lithic and bone materials from the structure interior, a majority (65.5% lithic; 71.5% worked bone) was located in the northern half which for the purposes of this analysis is regarded to be north of the N32 line (see Fig. 12; Table XVI). The exterior pits and area will be discussed after the structure interior is reviewed.

Table XVI Draper Distribtuion – General Distribution – Structure II.

	Interior		Exterior
	north half	South half	Between & Including 2 Features
drilled/cut bone	3	0	4
randomly worked bone	4	1	1
polished/ground bone	15	7	5
ground deer phalange	20	8	1
cup-and-pin beads (bone)	22	9	10
needles (bone)	2	0	2
points (bone)	0	0	1
pendants (bone)	1	0	0
incisor tools	0	0	2
awls	2	3	2
punches	0	0	1
scored material	8	3	11
adze/celt	12	1	4
adze blank	3	0	1
ground schist	6	2	3
hammerstone	1	1	1
scrapers	22	17	14
debitage	67	42	47
mano/grinding stone	6	0	0
ground stone fragment	5	2	0
projectile point	1	3	4
projectile point variety knife	2	0	0
biface	1	0	0
bead (stone)	2	0	0
pendant (stone)	1	0	0
unretouched cores	11	8	8
retouched cores	2	3	3
unmodified lithics	23	7	1
utilized flakes	10	6	9
utilized cores	3	0	1
Total	246	131	136

Structure Interior – Lithic Manufacture

Area I–II

The artifact:debitage ratio of 1:2 for the Draper 1973 lithic sample was not very promising as an initial indicator of whether any areas of lithic manufacture would be discerned. The lithic analysis of the site shows that both a chipped stone and a ground stone technology were employed and thus two different tool manufacturing kits could potentially be present.

To delineate an area of chipped stone manufacturing a comparison was first made of the distributions of unretouched cores and chert debitage, and then of possible flakers, unmodified chert pieces which might have served as potential cores, and finished retouched materials.

Only one area consisting of 3 squares N30E64, N30E66 and N28E64 appeared to be a possible location for chipped stone manufacture. These squares contained 26% of the cores found in the entire structure interior, 15% of the chert debitage and also 7.6% of the scrapers. Both the core and debitage representation are significantly greater than what one might expect to find in 3 squares out of a possible 73 excavated within the structure. However there is no correlation with flakers or unmodified chert pieces to support the inference of an area for chipped stone manufacture. Moreover the presence of a high amount of bone materials in the same squares and in the squares immediately to the south might indicate a bone working area, the possibility of which will be discussed later. It could be suggested that within a bone working area, a small lithic workshop was maintained to produce bone working tools. Table XVII lists the representation of both lithic and bone materials. Area I refers to the lithic concentration and Area II refers to the overlapping bone concentration.

Area III–IV

The ground stone technology centred on the production of 1) adze/celts and 2) grinding stones/manos/metates. The smooth surfaces and depressions which characterize the latter are usually a product of use, not of technology.

Table XVII Draper Distribution: Combined Lithic and Bone Work Shop

	Area I 3 squares (4.1% structure area)	Area II Area I & 3 squares (8.2% structure area)	Structure 73 squares (100%)
Retouched cores	0	1	5
Unretouched cores	5	7	19
Debitage	14	17	109
Utilized flakes	2	2	16
Scrapers	3	4	39
Ground schist	0	1	8
Unmodified lithic	1	1	30
Hammerstone	0	1	2
Scored material	0	5	11
Beads	5	6	31
Ground material	4	5	22
Ground phalanges	3	3	28
Awl	1	1	5
Randomly worked	1	0	5

Table XVIII Adze Work Shop

	Area III 1/2 square (.6% structure area)	Area IV 7 squares (9.6% structure area)	Structure 73 squares (100%)
Adze blank	2	0	3
Hammerstone	1	0	2
Schist debitage	1	6	23
Adze	1	5	13
Ground Schist	0	1	7
Ground stone fragments	0	1	7

Although hammerstones may be used to trim irregularities from the surfaces of such items before usage, no hammerstones were found in association with grinding stones/manos/metates in the interior of Structure II.

In an area of adze/celt manufacture, one might expect to find hammerstones, adze/celt preforms, schist debitage, grinding stones and possibly finished adze/celts. One area in particular in the structure interior seems to be just such a location. The northern half of the square N34E56 contains 2 of the 3 adze/celt blanks found in the structure interior, 1 of the 2 hammerstones, 1 of the 12 adzes and 1 of the 23 pieces of schist debitage. This half-square represents the southernmost extent of an expanse along the western wall of the structure which contains 38.4% of the finished adze/celts, two of which are associated with grinding stones. There is no association with hammerstones although there is a random distribution of schist debitage throughout the area. Therefore, one location is suggested for each of the final two steps in adze/celt production. The half-square first mentioned served as a concentrated location for pecking the rough preform into a more suitable shape with a hammerstone. The latter area was a more diffuse expanse over which the adze/celts were ground into their finished form. Table XVIII lists the representation of artifacts in these areas. These are shown in Figure I as Areas III and IV respectively. It should be noted that very little of the ground adze/celt toolkit is represented in the southern half of the structure.

Structure Interior – Use of Lithics

In terms of interior activity areas involving lithics it has been shown that there is only evidence of manufacturing for manufacturing's sake in the ground stone tradition. For chipped stone, therefore, it would seem more profitable to consider tools in the context of their use rather than as end products of a manufacturing process.

Area V

An area of woodworking (Area V) was tentatively defined along the north wall of the structure in the squares of N48E46, N48E48 and N48E50. A concentration of 5 adze/celts which constitutes 33% of the sample from the structure interior and 2 ground schist fragments, presumably pieces of broken adze/celts, was observed and first thought to represent an area of adze/celt manufacture. This inference was not supported, considering the absence of adze/celt blanks and the poor representation of schist debitage. However, in association with the adze/celts in these squares were the one biface from the structure and a concentration of utilized flakes (n=5; 30%) which would serve to corroborate an inference of woodworking activity (Table XIX).

Area VI

Square N42E52 probably represents a location for floral processing (Area VI; Table XX). Both manos (n=2) and scrapers (n=3) are associated with this square and correlated with this is a striking absence of other lithic materials. This square has a high concentration of features, two of which contain high amounts of vegetal material (see King and Crawford, this volume). Best represented is the Zea maize although cultivated Phaseolus and wild Chenopodium species are also present. A large amount of

Table XIX Woodworking Area

	Area V 3 squares (4.1% structure area)	Structure 73 squares (100%)
utilized flakes	5	16
biface	1	1
unretouched core	1	19
debitage	6	109
adze	5	
ground stone fragments	2	8
retouched cores	0	5
unmodified lithics	2	30
mano/grinding stone	2	6
scrapers	0	39

Table XX Floral Preparation

	Area VI 1 square
mano/grinding stones	2
scrapers	3
debitage	2
other artifacts	0

Table XXI General Bone Working

	Area VII 4 squares 5.4%	Structure 73 squares 100%
Ground Material	9	22
Ground Phalanges	2	28
Beads	4	31
Scored Material	3	11
Pendant	1	1
Needle	1	2
Awl	1	5
Ground stone	2	13
Knife	1	2
Scrapers	3	39
Unretouched core	1	19
Debitage	11	109
Adzes	2	13

Zea maize was also recovered from two features in the adjacent square N42E50. Interestingly enough, none of this floral material in square N42E52 is found in the adjacent feature designated as a hearth (hearth "C" in Arthurs' analysis; this volume). The great amount of fire-cracked rock found in the square adjacent to this hearth (N42E56) suggests that the hearth was very thoroughly cleaned and this perhaps accounts for the lack of floral material as well. If so, perhaps the two small features in N42E50 in which the large amounts of carbonized floral materials were found represent refuse pits.

Area VII

Bone working would appear to be a major function of lithic tools in structure 2. In considering the identifiable worked bone objects in this structure, the most numerous category was that of the beads. The method of breaking the bone was frequently observed to be that of scoring which can be achieved through the use of scrapers, knives, pièces esquillées or even thick flakes. The ground and perforated phalanges which constituted a large proportion of the bone sample would require grinding stones and possibly drills. The awls and bone points could be manufactured using scrapers and grinding/polishing stones of some kind. These associations would therefore be expected in areas of bone working.

It can be observed that 30% of the worked bone material of interior provenience comes from the area between the NW wall and the E44 line. Table XXI outlines the representation of materials. Lithic materials are not overwhelmingly represented but all of them with the exception of the adzes could have served to manufacture the bone tools in this area. There appears to be no emphasis on either a particular type of lithic tool or on a particular type of bone tool. The conclusion is that this locality (Area VII) is one of general bone working.

Area VIII

Two probable areas of bead manufacture are discernible. In the process of comparing lithic and bone tool distributions, a gap in both was observed in an area roughly coterminous with the squares N46E48, N45E50, N46E52 and N44E48. These squares, Area VIII, possess about half of what the adjacent squares possess, as Table XXII illustrates. However the artifacts which are present seem to indicate an area of bead manufacture. 5 scrapers, 1 projectile point variety knife; 3 scored pieces of bone and 3 beads, 2 of which are unfinished and still exhibit the marks of scoring.

The other area which could also have served as a centre of bone working is the location mentioned previously as possibly including a lithic workshop. This artifact repre-

Table XXII Bead Manufacture

	Area VIII 4 squares	Surrounding Area 4 squares
Ground Tools	2	7
Knife	1	0
Cores	1	3
Debitage/Unmodified lithic	2	8
Scrapers	5	0
Utilized Flakes	0	6
Polished/ground material	1	7
Ground Phalanges	1	8
Scored Bone	3	3
Beads	3	4
Other bone artifacts	0	4

N.B. A comparison was made with 4 surrounding squares rather than with the structure as a whole to illustrate both the general paucity of artifacts in Area VIII in a section of this structure which is otherwise quite rich in lithic and bone tools and to demonstrate from the types of tools that it is a bead manufacturing area rather than an extension of the general bone working area to which it is so close.

Table XXIII Recreational Area

	Area IX 9 squares
ground phalanges	7
cup-and-pin	1
beads	2
other bone tools	0
scrapers	5
adze blank	1
debitage	14
cores	5
unmodified lithics	7
utilized flakes	1
ground stone fragment	1

Table XXIV Hide Work Shop

	Area I 8 squares
scrapers	10
projectile points	3
debitage	13
utilized flakes	4
cores	1
other lithic	0
beads	2
phalanges	4
ground material	1
awls	1
other bone	0

sentation is outlined in Table XVII. It can be observed that scored pieces are greatly over represented and beads only slightly. Unretouched cores are greatly over represented and debitage slightly.

Structure Interior – Worked Bone Function

Area IX

One bone artifact type, the ground faceted deer phalange, was plotted with an aim of possibly deriving its function from the contexts in which it was found. Excluding the area in which it was probably manufactured (Area VII), the other 17 occurrences of ground faceted deer phalanges are principally in 2 areas: 1) the central squares of the northern half of the structure in between the two major hearth areas, and 2) to a lesser degree around the features in the very southern part of the structure (roughly N20–24 E74–78). Out of these 17 occurrences, 10 phalanges are found as pairs and the other 7 singly within either of the 2 general areas. That ground faceted phalanges tend to occur in pairs suggests that these were used in a game similar to the cup-and-pin variety. Furthermore the central area between the major hearth areas in the northern half is occupied by very few other artifacts and, as these squares do not seem to represent a working area for either bone or lithics, the temptation to say that this is a recreational area is great. Also, it is within this area (Area IX) that the one cup-and-pin artifact found within the structure is located (Table XXIII).

Area X

In the southern area, (Area X) ground phalanges are not only fewer in number but constitute a smaller percentage of the total artifact set. The lithic and bone tools which do occur here seem to suggest an area of hide working. Awls and scrapers are well represented, considering the general paucity of artifacts in this area. One interesting feature of this area is the presence of all three side-notched projectile points. Possibly these are actually part of a hide working tool kit, just as the projectile point variety knives seem to be associated with bone working. Table XXIV outlines the artifact representation of this area.

Table XXV Chipped Stone Manufacture

	Area XI 3½ squares
anvil stone	1
cores (bipolar)	3
debitage	20
punch/flaker	1
scrapers	3
utilized flakes	2
hammerstone	1
projectile point	1
scored material	8
beads	4
ground phalanges	0
other bone tools	4

Structure Exterior – Lithic and Bone Manufacture

Area XI

The area exterior to the northwest wall of the structure also contains a great deal of modified lithics (n=93) and 16.5% of the sample's modified bone (n=40). Table XVI outlines the artifact representation in this area.

The northernmost feature, 9A, overlaps 4 squares N48E44, N48E46, N50E44 and N50E46. The relation-

Table XXVI White: Bipolar Cores

Raw Material	Type	#	Group	Maximum Length		Maximum Width		Maximum Thickness		Length of Flake Scar		Face of Flaking
				m	r	m	r	m	r	m	r	
Chert	2	1	Unret.	45		32		22		45		bifacial
	3	2	Unret.	32.5	30-35	19	18-20	10	8-12	23.5	20.22	unifacial
	4	2	Unret.	22.5	20-25	20	15-25	6.5	6-7	20	20	1. Unifacial 2. bifacial
	4	3	Ret.	33	26-40	20	20-21	8	5-11	17	15-31	bifacial

m = mean
r = range

ship of this feature to the structure is not entirely clear. However, in the area to the south of it, the southwestern half of the square N48E44 is definitely outside of the structure and serves as a bipolar technology workshop (Area XI; Table XXV). In the area mentioned are 2 bipolar cores and an anvil stone. The adjacent sub-squares yield a large amount of chert debitage (n=22), of which only two can be definitely identified as bipolar flakes. However of the 5 scrapers found in the area including Feature 9A, two are from bipolar flakes. Moreover the presence of a punch/flaker further substantiates the interpretation of a chipped stone manufacturing area. Missing from this area is schist debitage or ground stone of any kind. Correlated with this is the absence of any ground stone in the area between the two features. Bone artifacts present are scored bone and beads, plus 3 of the needle specimens and one antler point.

The southernmost exterior feature, number 1 extends into 4 squares N44E42, N44E44, N42E42, and N43E44. This contains a variety of lithic and worked bone types but to a lesser degree than Feature 9A and with no amount of specialization.

WHITE: LITHICS

The lithics and worked bone from the 1973 excavations at the White site are analyzed in a similar manner to those from Draper.

Modified lithic material from the White site totals 204 pieces. Of this chert comprises 87.3% (n=178); quartz 3.9% (n=8); slate 2.8% (n=6); schist 4.4% (n=9) and granitic material 1.5% (n=3). Of the lithic material that was actually worked, the same drop in chert percentages is observed at White as at Draper i.e. by about 6%. Of 61 worked artifacts, chert forms 81.9% (n=50); schist 11.5% (n=7), slate 3.2% (n=2); and granitic material 3.2% (n=2).

Technology

Only one flaking technique appears to be represented at White. All 8 cores are bipolar, of which 3 are retouched. These are quantified in Table XXVI. The same code is used as for Draper.

There is one bipolar core variety, point-area which occurs at White but not in the Draper sample. This particular core is the largest of any found at either site and represents the only core at White which is not split. The coincidence of novel variety and larger size suggests again that these core varieties represent stages of core reduction in the bipolar process rather than differences in methodology. The other types of cores in the sample are opposing ridge (50%) and ridge point (37.5%). In the Draper sample a comparison of the measurements of the varieties led to the suggestion that the ridge-point variety could represent a last stage of bipolar working. In the White sample, unfortunately rather small, it is the opposed ridge variety core which appears to be smallest. While all of the retouched cores are of the opposed ridge type, it can be observed that there is selection for the larger of these cores.

Debitage

The debitage consists of chert (n=128), quartz (n=8), slate (n=4), schist (n=2) and granitic material (n=1). These are quantified in Table XXVII. There are 13 decortication flakes, 27 blocky flakes, 13 flat flakes, 81 secondary shatter and 9 bipolar flakes. One of the notable differences between the technology of White and Draper is in the core/debitage ratio. In the latter case, this is fairly high as has been previously mentioned, 1 core per 3.4 debitage. In the White sample, the ratio is 1:16. This suggests that the use of cores in flint knapping was more important at White than in structure II of Draper. This is congruent with the previous observation that the large core found at White possibly represented an earlier stage of manufacture and that more knapping was done at White than at Draper in the samples and from the areas examined here.

Comparison of the flake types represented at Draper and White reveals that secondary shatter is more abundant at White, perhaps as a result of using the bipolar technique solely. Conversely, however, bipolar flakes are noticeably under-represented in the White sample.

Marginally Retouched Material

Marginally retouched material at the White site consists of 24 chert scrapers and 3 retouched cores. These are quantified in Table XXVIII. Generally these are comparable to Draper materials in terms of the angle of working edge. There is a larger percentage of end scrapers found in the White sample (25%) than in the Draper sample (12.6%). These also tend to be slightly thicker flakes than those selected at Draper.

Two of these pieces from White which are classified as end scrapers might in fact be the working edge which has snapped or been driven off by a blow to the scraper. One

Table XXVII White Debitage

Raw Material	Flake Type	No.	Maximum Length		Maximum Width		Maximum Thickness	
			m	r	m	r	m	r
Chert	1	13	26.5	10-35	17.8	12-34	7.2	2-12
	2	25	29.7	15-53	18.1	10-37	17.5	5-10
	3	13	15	10-23	16	10-40	2.1	1-2
	4	70	18.1	10-35	11	4-31	3.5	1-8
	5	7	21	20-33	14	8-24	3.6	1-6
Quartz	1	1	30		17		5	
	2	1	20		20		7	
	4	5	18.4	10-22	11.4	8-15	5.2	3-8
	5	1	22		17		6	
Slate	4	4	22.5	16-30	14.7	10-24	2.7	2-4
Schist	2	1			14		5	
	5	1	40		20		5	
Granitic	4	1	8		7		4	

m = mean
r = range

Table XXVIII White: Marginally Retouched Material

Type	#	Max. Length		Max. Width		Max. Thickness		Resharpening		Use Wear		Face Retouch	
		m	r	m	r	m	r	f	%	Type	%	Type	%
side	18	27	15-52	15.5	10-31	4.5	1-10			5	5.3	Unif.	100
end	6	26.6	12-40	23.6	5-35	5.1	3-8			5	33.3	Unif.	100
end & side	1	24		15		4						Unif.	100
ret. cores	3	see table XXVI										Unif.	100

White: Marginally Retouched Material

Ext. of Ret.		Type Ret.		Angle wrkg. edge		Length wrkg. edge		Width wrkg. edge		Thick wrkg. edge		Flake Type		Utilization		Raw Material
code	#	code	#	grp.	%	m	r	m	r	m	r	type	f.	f	%	
1	7	2	18	1	50	20.9	10-56	1.1	1-3	1.3	1-4	1	1	3	16.6	chert
2	8			2	44.4							2	2			
3	3			3	5.6							3	4			
												4	5			
												5	5			
2	6	2	5	1	16.6	31.3	21-36	2.6	1-5	3	1-4	1	1	1	16.6	chert
		3	1	2	50							2	1			
				3	33.3							2	1			
												4	3			
1	1	2	1	1	100	38		1		1		3	1			chert
2	3	2	3	1	100	28	17-37	2.3	1-4	2.3	1-4					chert

m = mean
r = range
f = frequency

Fig. 13 Detached Working Edge: White 1973.

piece is larger than the other but both represent the same phenomenon of a long, very thin piece of chert featuring very steep retouch along one side (Fig. 13). Although the morphology precludes a definitive opinion, one wonders if they might not be burin spalls.

Utilized Flakes

There are 16 utilized flakes quantified in Table XXIX. As at Draper, the majority of these flakes are of the flat and bipolar varieties which both have thin and sharp edges. The utilized flakes from both categories are also similar in size. The observed utilization was in the form of a flaking type of wear pattern only.

Projectile Points

Two projectile points are found in this sample (Fig. 14). N40W2–SE–2 is a long lanceolate point made from a dark grey chert and measuring 39 mm in length, 10 mm in width and 2 mm in thickness. It is plano-convex in cross-section. The plano side exhibits discontinuous marginal retouch with most of the working near the tip. The convex side exhibits facial and marginal retouch. The base is straight and thinned slightly. The very end of the tip is broken.

N38W4–F1 is more triangular in outline and also plano-convex in cross-section. A complete specimen, it measures 38 mm in length, 18 mm in width, and 3 mm in thickness. It is made from a light grey chert possibly from a decortication flake since not all of the cortex has been trimmed off. Both sides exhibit thinning flakes along the margins. The base is thinned and straight.

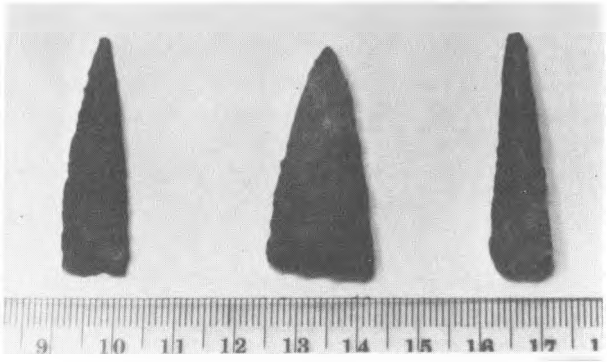

Fig. 14 Projectile Points: Left, White 1973; Middle, White 1973; Right, Draper 1972.

Adze/Celts

Only one complete adze is present in the White sample (Fig. 15). This measures 65 mm in length, 20 mm in width and 11 mm in thickness. The working edge is battered.

The remainder of the ground schist is quantified in Table XXX. These consist of four bit fragments and two pieces of ground schist.

Pendants

Two ground slate pendants are present in this sample (Fig. 16). S22W2–15–4 is a complete specimen measuring 21 mm in length, 15 mm in width and 3 mm thick. The perforation appears to be biconical. The sides of the pendant exhibit vertical incised lines.

The second pendant is incomplete but even so is considerably larger. The remaining portion is 45 mm long, 39 mm wide (a complete measurement) and 5 mm thick. Only the edges have been ground. The two faces of the pendant both bear fossil shell impressions.

Table XXIX White: Utilized Flakes

Material	Flake Type	No.	Max. Length		Max. Width		Max Thickness	
			m	r	m	r	m	r
Chert	1	1	33		22		3	
	2	2	23	21-26	25	20-30	7	6-8
	3	8	22.2	14-30	16	10-25	3.5	1-6
	4	1	24		26		5	
	5	4	22	14-27	15.2	12-20	3.5	1-2

m = mean
r = range

Table XXX White: Ground Schist

	Length	Width	Thickness
Adze/celt fragments	52	40(c)	20(c)
	31	20	6
	33	30	8
	75	27	10
Ground Schist fragments	45	8	11
	95	35	25

Fig. 15 Adze/celts: White 1973: top, complete specimen; bottom, bit fragment.

Mano/Grinding Stone

A granitic rock, circular in shape, exhibits one smoothed, flat side and could have been used as a mano or grinding stone. It measures 111 mm x 95 mm x 40 mm.

Fig. 16 Pendants: White 1973.

Miscellaneous

One rock made of a soft porous material displays striations on one side and could have been used as a polisher. This specimen measures 60 mm x 40 mm x 10 mm.

WHITE: WORKED BONE

The worked bone in the 1973 White site sample totalled 54 pieces. Deer represented 37% (n=20) of the sample; dog 12.9% (n=7); rabbit/hare 3.7% (n=2); beaver 7.4% (n=4); red fox 1.9% (n=1), *Canis* sp. 1.9% (n=1); mammal 18.5% (n=10); avian 12.9% (n=7) and 3.7% (n=2) were unidentifiable.

Beads

Again, as at Draper, this was the most common category forming 37.5% (n=18) of the worked bone sample. Avian long bones provided 38.9% of the raw material; dog long bone 22.2%; mammal long bone 16.6%; rabbit/hare 11.1% and 11.1% were unidentifiable. Exactly half the specimens were complete and their measurements are given in Table XXXI. Of these 9 complete specimens, only 2 exhibit unfinished edges. On one of the incomplete specimens the interior surface exhibits fine abrasion, probably the result of rubbing by a thong.

Awls

Five pointed bone objects are classified as awls. Source material consists of deer tibia (n=1), deer metapodial (n=1) and mammal long bone (n=3). Three of these awls are represented by the tip and one lacks the tip. All five are quantified in Table XXXII. Wear patterns are varied. Two exhibit striations parallel to the awl axis; one exhibits striations oblique to the axis and one displays a battered tip.

Punch/Flaker

This specimen is a portion of an antler measuring 67 mm in length and 12 mm in diameter. The blunt end is unusually pointed for a punch but not enough to be classified as an awl. The tip displays striations which run perpendicular to the axis.

Table XXXI Bead Measurements

Well finished			Roughly finished		
	Length	Diameter		Length	Diameter
	40	7		30	4
	25	10		30	4
	32	5		40	10
	44	14			
	44	11			
	67	11			

Table XXXII Awl Measurements

Length	Diameter	
143	10	complete
148	10	tip missing
60	10	incomplete
45	8	incomplete
60	4	incomplete

Projectile Points

The first specimen is made from a dog tibia, the distal portion of which has been ground and cut away to a blunt point. The object is merely smoothed and not at all polished. It probably represents an unfinished stage of manufacture. The measurements are 82 mm in length and 9 mm in diameter.

The second specimen is a highly polished mammal long bone which has been worked to a point. It much resembles an awl except that a side notch is worked into the bone. This notch exhibits striations running perpendicular to the axis which suggests that the specimen was hafted. This object measures 65 mm in length and 8 mm in diameter.

Cup and Pin

One fragmentary specimen is represented in the White sample. This is a lightly ground and distally perforated deer proximal phalange.

Ground Phalanges

Of the 10 specimens, 4 are complete and 6 are fragmentary. All are made from the proximal phalange of a deer. Of the 4 specimens, one is slightly ground, 2 display grinding, 2 lateral openings and extensive polish and the fourth is ground and has openings on 3 sides.

Incisor Tools

Four beaver incisors are found in this sample, of which 2 are laterally abraded and one is split. Evidence of their function is indistinguishable on any of these three. On the fourth, however, the bit surface is lightly abraded, perhaps to enhance a scraping function.

Scored Material

There are 8 pieces of scored material: 3 deer, 1 red fox, 1 *Canis* sp. and 3 mammal. The *Canis* sp. specimen is actually 2 pieces which fit together. From the location of the scoring marks, as the faunal analyst, Jim Burns, has noted, there seems to be selection for the part of the bone which displays a more uniform cross-section.

Polished/Ground Material

Two polished deer bone specimens are probably portions of awls. The third object is a dog tibia, the distal portion of which has been abraded to a scraper-like end.

Cut Material

Of the 2 specimens in this category, one is a piece of antler tine which has been severed by hacking rather than scoring and the second is a dog radius of which the lateral margin was removed. In the discussion of the Draper sample a similar object was proposed as the raw material for manufacturing needles.

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