

# STONE ARTIFACTS FROM THE McQUEEN-McCONNELL SITE, A PROTOHISTORIC PETUN VILLAGE

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*The stone artifacts from test excavations of the McQueen-McConnell site, a protohistoric Petun village, are described and discussed. Reference is made to the functional classification of artifacts exhibiting evidence of bipolar battering. Broader questions relating to lithic reduction strategies, trade in exotic cherts and temporal dynamics associated with European influence are addressed.*

## INTRODUCTION

Archaeologists have long been interested in the impact Europeans had on the various native groups they came in contact with as they moved into the North American continent (e.g., Fitzhugh 1985). By carefully analyzing archaeological sites and their artifact assemblages at different stages of the protohistoric and historic periods, researchers have drawn inferences about how technologies, adaptive strategies and social and cultural patterns changed during the course of this contact. Most of these discussions, however, have focussed on the trade goods introduced during the fur trade and comparatively little attention has been paid to traditional material culture, although it is noted that many artifact classes degenerated or disappeared. In Ontario and New York State there have been a few notable exceptions. Susan Jamieson's Ph.D dissertation (1984) on late prehistoric and historic Neutral lithics focussed on one traditional native artifact class. Two other studies, Jim Bradley's examination of cultural change among the Onondaga (1987) and William Fitzgerald's dissertation (1990) on European trade goods, contained sections dealing with some native-made artifacts.

Over the last 20 years, Charles Garrad has conducted an intensive research program directed toward understanding the Petun (Tobacco Nation), or Khionontateronon (People

of the Place where the Hills Are), a group of Iroquoians residing to the west of, and believed to have been closely related to, the Huron (Garrad and Heidenreich 1978). This research has resulted in the location and testing of most of the known and suspected village sites attributable to the historically documented Petun (Warrick 1990:127-128). Through analysis of recovered artifacts, examination of geographic locations and the consideration of all available ethnohistoric documents, Garrad has delineated the appearance and successive relocations of two village sequences or clusters through the late sixteenth and seventeenth centuries. Because of the thoroughness of his investigations, the repatriation of numerous private collections and cooperation of the local land owners, the Petun have become one of the best archaeologically-documented cultural groups in the northeast.

In 1993 and 1995, test excavations were conducted on the McQueen-McConnell site (BcHb-31), one of the earlier villages in the more northern of the two delineated site sequences. These excavations were conducted to confirm the suspected temporal placement of the site, to provide a larger and more representative sample of the material culture, and to test for the presence and nature of settlement patterns. The seriation of rimsherd type frequencies and the low yield of European trade goods, together with the location of the McQueen-McConnell site in relation to other sites in the Petun sequence, confirmed that it was contemporaneous with the Sidey-Mackay site (BbHa-6), and was probably occupied late in the sixteenth century (Charles Garrad, personal communication 1998). This dates after the first European trade items had been introduced into southern Ontario but before European contact had significantly altered native life ways. This is often called the protohistoric, although Fitzgerald refers to it as

the Early Fur Trade (1990). Three rolled copper or brass beads and five strips, possibly intended for use as beads, were found at the site and represent the entirety of European trade material recovered to date (Charles Garrad, personal communication 1998).

Stone tools and the by-products of their production and maintenance represent the most abundant artifact category recovered during these investigations. This wealth of material likely resulted from two factors: the proximity of the site to outcrops of high-quality chert and the fact that the site dates to a period prior to the replacement of stone artifacts by European metal tools.

The object of this report will be to describe the lithic artifact assemblage from the McQueen-McConnell site and provide some comparisons with later sites. Such a study will allow insights into the processes accompanying early contact between European newcomers and native peoples in North America.

## CHIPPED LITHICS

Two general classes of lithic artifacts were employed in this study: lithics which were almost exclusively chipped prior to use, and lithics which were not altered, were minimally altered, and/or were normally ground prior to use. The former class consists primarily of chert artifacts while the latter was manufactured from a wider variety of igneous, sedimentary and metamorphic rock.

Chipped lithics were subdivided according to their probable stage of lithic reduction, or their inferred function based on macroscopic morphological characteristics. The frequency of chipped lithic artifacts in the various categories is presented in Table 1. Each of these categories will be discussed in greater detail below.

### *Raw Materials*

The identification of lithic raw materials is one of the most widely used methods for identifying prehistoric redistributive patterns. Identification of exotic raw materials in an assemblage suggests either that the occupants of a site travelled to distant locations in order to acquire a desired material or that they acquired it through encounters with distant peoples who had access to this material.

Rarely were such interactions conducted within a strictly economic context. Rather, ethnographic observations of trading and exchange generally indicate that such transactions create or maintain various types of socio-political or kinship alliances (Sahlins 1972). Identification of exotic raw materials on the McQueen-McConnell site, then, may lead to insights into the behaviours of this branch of the Petun during the early stages of the fur trade.

Nine raw materials were identified in the chipped lithic artifacts (Table 1). Not surprisingly, Collingwood chert (COL) dominates the assemblage. This raw material can be found in primary outcrops a few kilometres to the west of the site (Eley and von Bitter 1989) and would have been readily available to the McQueen-McConnell site occupants. It seems that primary outcrops were exploited since numerous large and angular fragments of chert, representing the decortication and trimming of tabular cores, are present. The majority of chert artifacts with cortex, however, appear to have been derived from weathered, secondary sources.

Approximately one third of the Collingwood chert flakes has evidence of burning. In most cases, however, this evidence consists of blackening, a metallic sheen and/or pot-lidging, suggesting that this burning was not the result of controlled heat-treating. Rather, the presence of numerous flakes with scorching on one surface (and not necessarily the dorsal surface), suggests the possibility that exposure to fire was accidental, perhaps resulting from "burning off" middens in order to reduce odour or vermin infestation.

Debitage from other locally available cherts, namely Fossil Hill (FOS), Huronian (HUR), Quartz (QUA) and Quartzite (QTZ), were also present in small amounts. These could have been collected from the local till exposed in cultivated corn fields. One large primary flake of Gordon Lake chert (GOR), a greenish granular material which outcrops in northern Ontario, could also have been recovered from glacially transported cobbles or boulders along the shores of Georgian Bay (Bill Fox, personal communication 1994).

Exotic cherts are well represented within the various artifact classes. Kettle Point chert (KET), found along the southeast shore of Lake Huron (Eley and von Bitter 1989), is the second

Table 1. Chipped Lithic Categories and Raw Material.

		RAW MATERIALS								TOTALS	
		BAY	COL	FOS	GOR	HUR	KET	ONO	QTZ	QUA	
Flakes		1	1466	2	1	6	58	35	1	3	1573
Cores			9				1				10
Bipolar Pieces			66				4	1			71
Unifaces	Utilized Flakes		97				3	4			104
	Unifaces		7					2			9
Bifaces	Misc. Bifaces		2				1	1			4
	Preforms		2								2
	Projectile Points		7								7
TOTAL		1	1656	2	1	6	67	43	1	3	1780

**Note:** BAY = Bayport chert; COL = Collingwood chert; FOS = Fossil Hill chert; GOR = Gordon Lake chert; HUR = Huronia chert; KET = Kettle Point chert; ONO = Onondaga chert; QTZ = Quartzite; and QUA = Quartz

most common raw material after Collingwood chert. In the late sixteenth and early seventeenth centuries the general area of Kettle Point was situated between the Neutral confederacy and their enemies, the Fire Nation or Assistaeronon. The Petun were allied with the Neutral and Odawa (Garrad 1995; Garrad and Heidenreich 1978). The latter two are known to have exploited Kettle Point chert (Fox 1990a: 463, 1990b; Jamieson 1984; Lennox and Fitzgerald 1990:420-421). Thus, the Kettle Point chert recovered could have been derived from either direct procurement or through exchange with either the Neutral or Odawa. The presence of a small number of decortication flakes and a core, however, increases the likelihood of direct procurement.

The third most common raw material found on the McQueen-McConnell site is Onondaga chert (ONO), which outcrops near the north shore of Lake Erie (Eley and von Bitter 1989). It is present in a number of artifact classes, although there are no cores. Since Onondaga chert outcrops within Neutral territory, and Collingwood chert has been reported from Neutral sites (Jamieson 1984), it seems likely that this material was derived through trade between the two allies. Given the abundance of local cherts within the territories of both these groups, it is reasonable to infer that trade in raw material was not required to meet daily requirements but was conducted in order

to cement kinship or political ties.

Finally, one large primary flake of Bayport chert (BAY) from the Saginaw Bay area of Michigan was recovered during the excavations. It is most likely that this artifact was traded from the Odawa who procured the raw material (Fox 1990b).

Debitage

A total of 1573 unmodified flakes were recovered during the McQueen-McConnell excavations. Collingwood chert dominates the assemblage, followed by Kettle Point and Onondaga. It was initially decided to utilize a pre-existing flake typology, such as the one described by C. J. Ellis (Deller and Ellis 1992), to facilitate analytical consistency and broadly based comparisons. It was soon realized, however, that such a scheme was problematic because it was not inductively derived from, nor could it be inferred to reflect, Iroquoian lithic reduction trajectories. Ellis' flake types are based on observed correlations of attributes of flakes recovered from Palaeo-Indian sites. These correlations were supported by observations of the lithic reduction sequence as inferred from other artifact categories such as cores, unifaces, bifaces and projectile points. Since there is no indication that Iroquoian lithic reduction sequences are identical to Palaeo-Indian reduction sequences, it should not be

assumed that the by-products of Iroquoian lithic reduction (flakes) mimic the by-products of Palaeo-Indian lithic reduction.

The author has observed that, on Iroquoian sites, even late stage bifaces may retain a tabular, right-angle striking platform during thinning. When struck, this platform would produce flakes with platforms similar to those of primary flakes. A focus for future analysis of Iroquoian lithics should be the independent generation and testing of flake types based on the correlation of specific and independent attribute states in a manner similar to that employed by Ellis (Deller and Ellis 1992). Once this task has been completed, flakes from Iroquoian sites can then be classified according to these "types" and their relative frequencies from different assemblages compared.

Although flake types were not employed in this study, the examination of the debitage resulted in a number of general impressions. Given the proximity of primary sources of Collingwood chert, it should not be surprising that the by-products from the reduction of raw cores dominate the assemblage. This is consistent with the observation that core reduction produces a disproportionate number of waste flakes. Exotic cherts, however, also appear to have relatively high frequencies of flakes deriving from the early stages of tool production. This might indicate that cores, large primary flakes or blanks were imported to the site rather than finished or largely finished tools. In other words, the site inhabitants may have preferred to do their own flint knapping, rather than rely on the handiwork of others.

A large proportion of the flakes exhibit signs of heating ranging from subtle variations in colour, to potlidding and/or complete shattering. While a small number of Collingwood chert flakes could have been subjected to purposeful heat treating in order to improve flaking qualities, most of the burning appears to be the result of post-depositional processes.

### Cores

Ten objects are considered to be cores or core fragments. These do not include the bipolar artifacts, which are discussed under the next heading. All but one of the cores were manufactured from Collingwood chert, the exception being made from Kettle Point chert (Figure 1b). One core appears to be of the

rotated variety (Figure 1d), with flakes driven off one platform while it was rotated to produce other usable platforms. All other cores have flake scars placed randomly on any available face (Figure 1a, c, e-j).

Two of the artifacts warrant more detailed discussion. One core fragment (Figure 1f) exhibits repeated battering around one edge as evidenced by numerous step fractures. This artifact may have been a strike-a-light.

A second artifact (Figure 1j) may simply be a piece of naturally occurring chert, as the edges appear to have been unusually battered and smoothed. Alternatively, it is possible that this artifact was used in the manufacture of ground stone tools. A similar artifact in the author's reference collection was employed by a modern ground stone tool replicator for the production of bird-stones, bannerstones, and similar objects. In this application, sharp corners were used for pecking which resulted in battering of the edges. The battered edges were subsequently used for abrading the crushed rock giving it a more polished appearance. If this tool were left in ploughzone for a hundred years or more, it may not have been distinguished from till chert.

### *Bipolar Pieces*

Seventy-one chert artifacts exhibit evidence of bipolar battering. Sixty-six were manufactured from Collingwood chert, four from Kettle Point chert and one from Onondaga chert. Two Collingwood chert artifacts exhibit battering from two directions while the majority of others are battered along parallel ridges. One Collingwood chert artifact was subsequently utilized as a denticulate and two others as end scrapers. Three Collingwood and one Kettle Point chert bipolar pieces were used as side scrapers. A sample of these artifacts is illustrated in Figure 2. Figure 3 shows the distribution of these artifacts according to their lengths and widths. It is apparent that the size distribution of these artifacts is relatively tightly clustered with only a few outliers. The clustering appears to be more pronounced along the dimension of length. This clustering might reflect either a standardization in desired artifact size leading to selection for bipolar battering or a clustering towards minimum size leading to discard.

There has been considerable debate in the

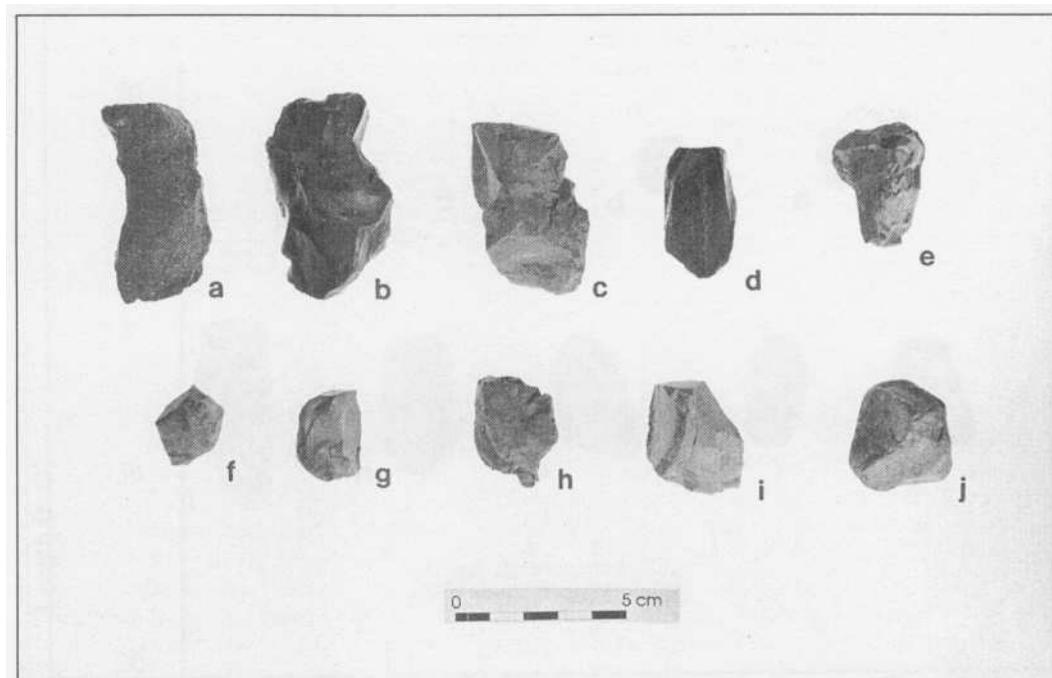


Figure 1. Cores from the McQueen-McConnell Site

archaeological literature as to the function of artifacts exhibiting bipolar battering. Basically, the participants in this debate have been divided between those who view this artifact category as representing the terminal stage in a reduction strategy directed towards maximizing a scarce resource (Binford and Quimby 1972; Goodyear 1993; Shott 1989), and those who view them as tools such as wedges or slotting implements (LeBlanc 1992; Lothrop and Gramly 1982; MacDonald 1968).

In this case, there are a number of problems with identifying these artifacts as cores. First, the McQueen-McConnell site is situated within a reasonable walking distance from Collingwood chert outcrops which yield abundant and high quality raw material. It is inconceivable, therefore, that this material could be considered a "scarce" resource and this is confirmed by the quantity of large, unmodified waste flakes. Even the argument of seasonal scarcity is weakened by the fact that the site occupants could easily obtain numerous flakes from midden deposits or even from refuse on house floors. Further, considering the proximity of large outcrops to this semi-permanent village, it seems unlikely that the site occupants would fail to cache substantial quantities of chert as

a cautionary measure. Finally, many of the bipolar pieces are much too small to have produced utilizable flakes, and most utilized (and many of the unutilized) flakes are in fact larger than the majority of bipolar pieces.

The argument that bipolar reduction might have been directed towards more highly transported or higher grade raw materials also does not hold for the McQueen-McConnell assemblage. The frequency of bipolar pieces and utilized flakes made from Kettle Point or Onondaga chert is not out of proportion to that of Collingwood chert (Table 1).

Finally, the bipolar pieces from the McQueen-McConnell are battered on the ends indicating multiple and repeated blows to these platforms. This suggests that early blows did not result in splitting or usable flake production but, rather, produced small splinters and/or spalls. Modern experiments with bipolar reduction (Jack Holland, personal communication 1996) demonstrate that successful splitting or flake production can occur with a minimum of strikes. Should the core fail to split or produce usable flakes, it is more usual to alter the placement of the object piece, than to risk repeated blows which can shatter the core. If the intent is to produce usable flakes or

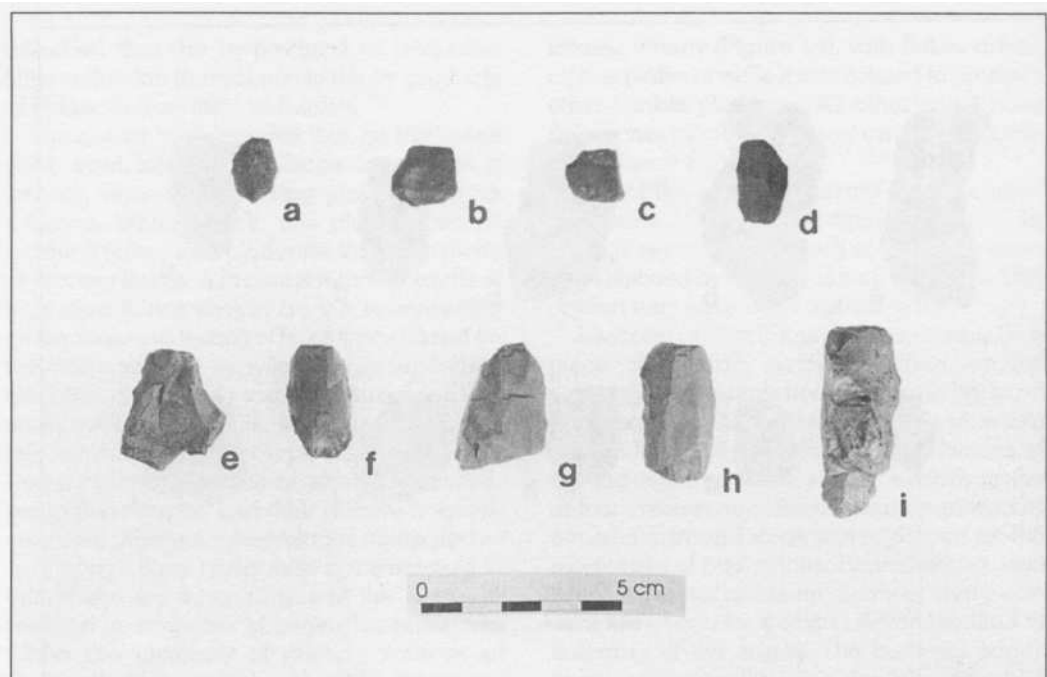


Figure 2. Bipolar Pieces

spalls, the core exhibits evidence of a minimum number of blows rather than repeated strikes at an unproductive angle.

It seems more likely, therefore, that the bipolar pieces from this site were employed as wedges, used for splitting wood or bone.

#### *Utilized Flakes*

One hundred and four flakes have evidence suggesting use as expedient tools (Figure 4). These artifacts are characterized by visible (macroscopic) evidence of wear along one or more edges, presumably from cutting or scraping. This use-wear consists of fine flaking that is often discontinuous and less than two milli-metres in length, rather than the slightly longer and more evenly placed flaking associated with purposeful retouch.

Ninety-seven expedient flake tools were made from Collingwood chert flakes, four were made from Onondaga and three were made from Kettle Point chert. Ninety-five of these flakes have single working edges, eleven have two, one has three and one has four. Treating each worked edge as a separate tool, one finds that there are 46 end scrapers, 60 side scrapers, three combination end and side

scrapers, seven scrapers of indeterminate orientation, two notches or spokeshaves, one graver and one spur. Biface thinning flakes are most commonly end scrapers with the working edge often oriented obliquely to the long axis of the flake. Primary flakes were more commonly used as side scrapers. A chi-square test, however, did not reveal any statistically significant association between tool types and flake types.

#### *Unifaces*

The McQueen-McConnell site excavations produced nine artifacts which can be considered formal unifacial tools. Eight are end scrapers and one is a graver. The first end scraper (Figure 5a) is ovate in shape and is continuously retouched around both sides and end. It is 29 mm long, 22 mm wide and 7 mm thick.

The second end scraper was produced from a Collingwood chert decortication flake (Figure 5b). This flake is somewhat asymmetrical in cross section, being thickest in the left distal corner and thinnest in the proximal right corner. The end scraper has parallel sides, a rounded left margin and an approximately

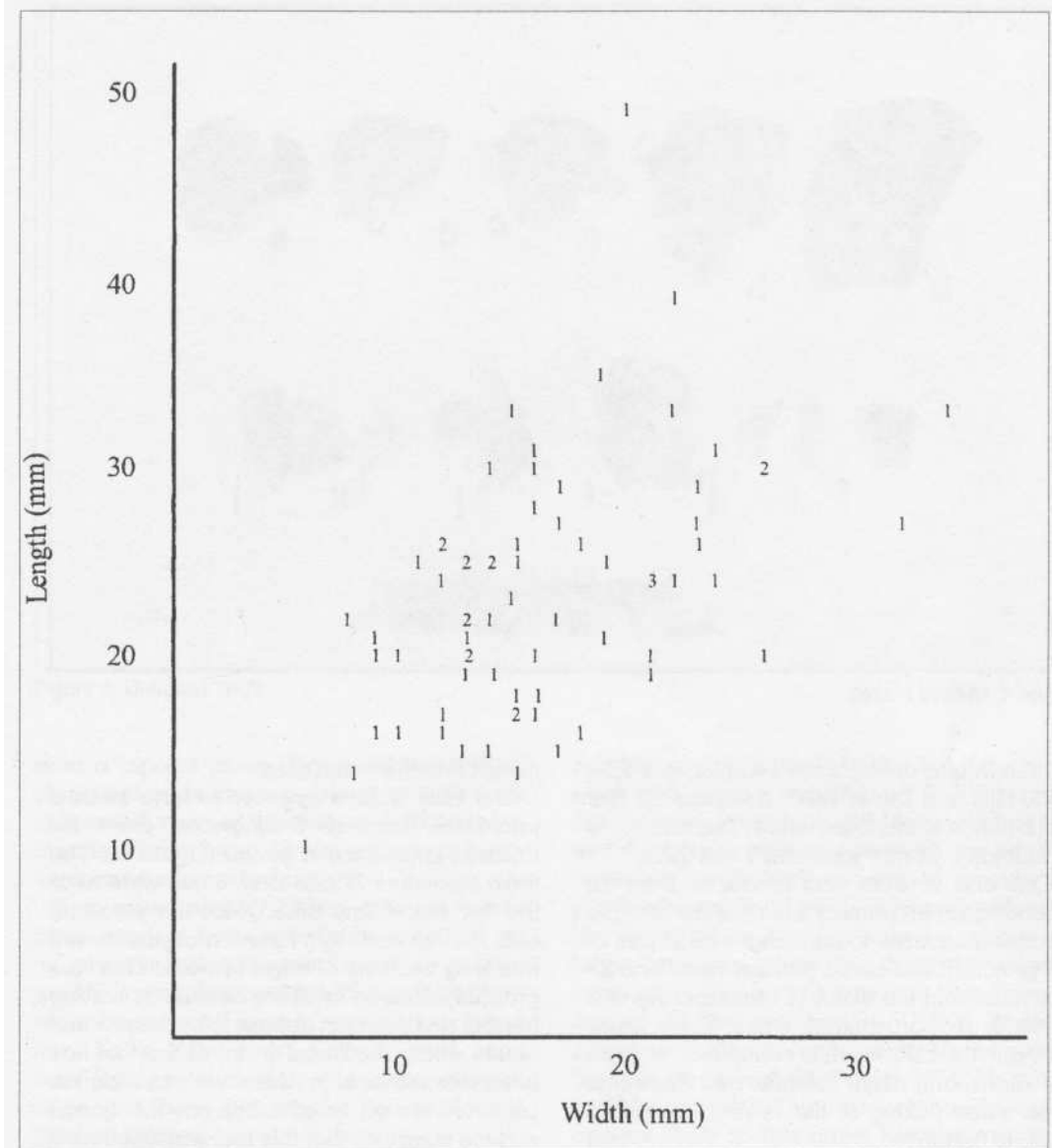


Figure 3. Size Distribution of Bipolar Cores

right angle corner on the right distal edge. The proximal end of the scraper has been broken off. Retouch is longest on the left and distal margins (up to 15 mm) but is less than 2 mm long on the right edge. There is some flaking on the ventral surface, probably in order to flatten the face. The scraper measures 24 mm long, 23 mm wide and 11 mm thick.

The third end scraper (Figure 5c) was also produced from a Collingwood chert decortication flake. Only the distal end and some of the

right side were modified for use. This scraper measures 28 mm long, 19 mm wide and 12 mm thick.

The fourth end scraper, also manufactured from Collingwood chert, has been unifacially flaked on all sides except for the proximal end (Figure 5d). A bifacially flaked spur appears to have been present on the left side 10 mm from the distal end but is now worn or broken down to a 3 mm length. Since spurs on scrapers are often considered to be characteristic of

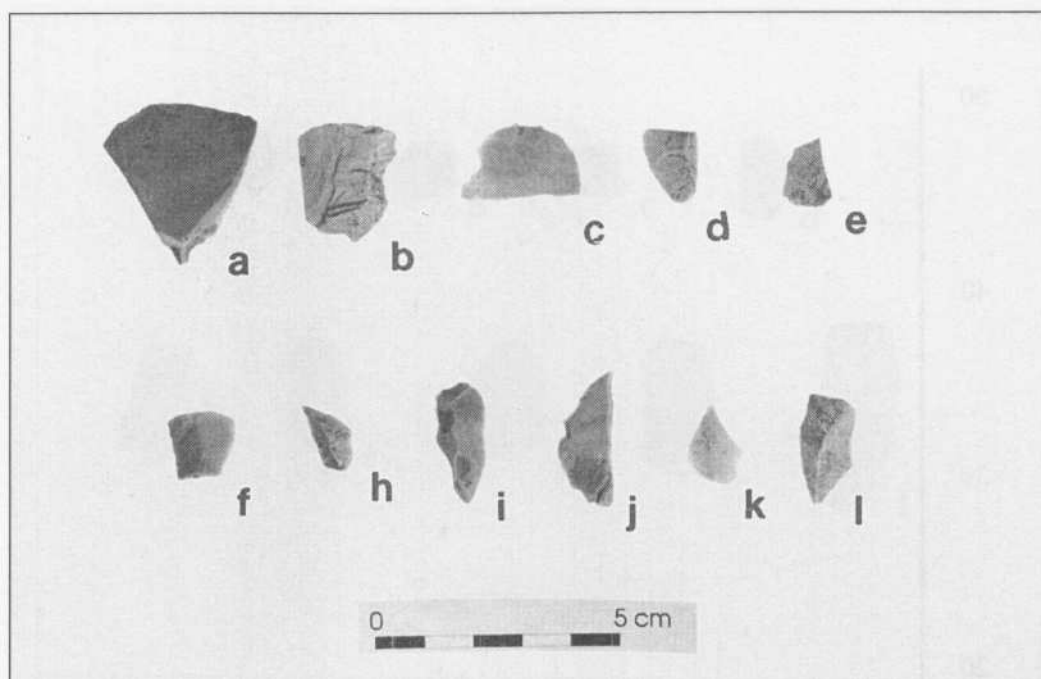


Figure 4. Utilized Flakes

Palaeo-Indian assemblages (Deller and Ellis 1992; Ellis and Deller 1990), it is possible this tool belongs to this time period. This scraper is 41 mm long, 24 mm wide and 9 mm thick.

One end scraper was produced from an Onondaga chert primary flake (Figure 5e). This scraper measures 40 mm long, with 21 mm of the proximal end being parallel sided and 27 mm wide, and the distal 19 mm tapering to a bit-width of approximately 9 mm. The scraper is 10 mm thick. Retouch is continuous on both the lateral and distal margins and there has been some flaking of the ventral surface in order to flatten it.

Two end scrapers are represented only by distal fragments (Figure 5f and g). Both have semi-circular unifacial working areas. The Collingwood chert specimen is 8 mm thick while the Onondaga chert specimen is 3 mm thick.

One end scraper might be an unfinished preform (Figure 5h). This artifact, manufactured from Onondaga chert, is relatively thick and crude but has been roughly flaked, unifacially, into an end scraper shape. The artifact is 29 mm long, 24 mm thick and 13 mm thick. This specimen suggests that unfinished artifacts were included with the chert transported or

traded into the Petun area.

The final uniface appears to have been a prism-like flake of Collingwood chert re-touched to produce a graver (Figure 5i). The flake measures 21 mm long, 6 mm wide near the "bit" and 4 mm thick. Near the proximal end, the left and right lateral margins have 8 mm long sections of edge retouch. This was probably done to facilitate holding or hafting the tool and does not appear to be the product of use wear. The distal 4 mm of the tool has been retouched to produce a 2 mm wide bit. Lack of retouch or abrasion on the dorsal surface suggests that this tool was used as a fine graver, probably in a drawing fashion, rather than by pushing or twisting (drilling).

#### Bifaces

One bifacially flaked, Collingwood chert artifact appears to be a drill with the distal end missing (Figure 6k). The total artifact length is 38 mm, with only the distal 9 mm being the remains of the drill shaft. The proximal section is 21 mm wide and 10 mm thick. The remainder of the drill shaft measures 11 mm wide and 6 mm thick.

A second biface could have been produced



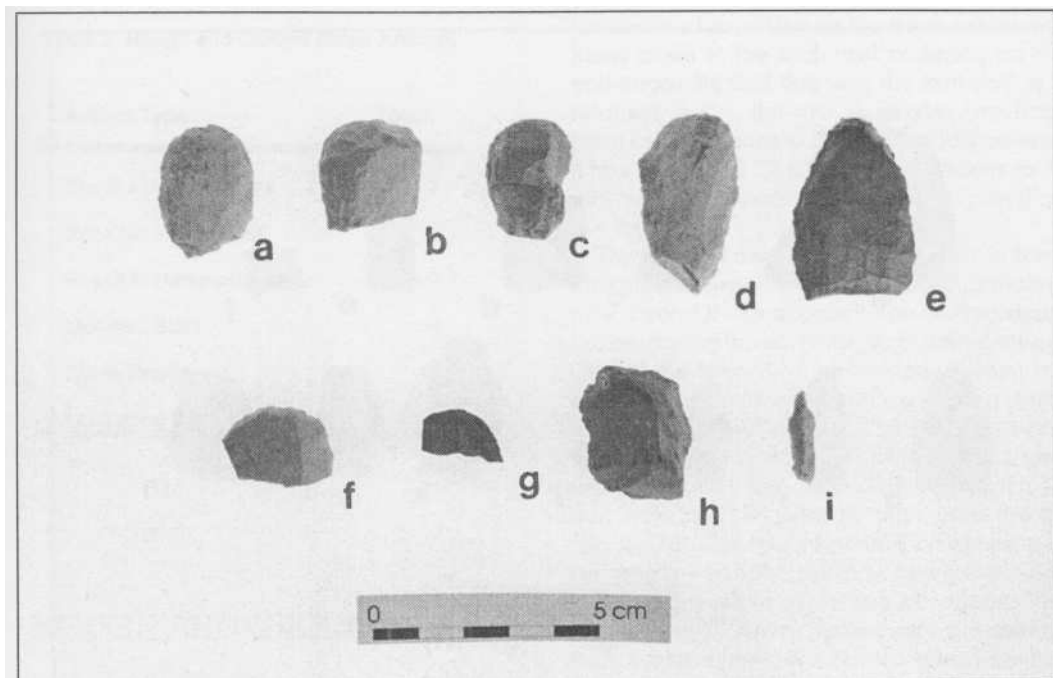


Figure 5. Unifacial Tools

from a bipolar piece (Figure 61) but flaking along two ends and one lateral margin have obliterated most of the evidence. This specimen is 30 mm long, 18 mm wide and 7 mm thick on one unworked margin.

Two other roughly flaked artifacts could have resulted from juvenile or unskilled attempts to produce bifaces. One of these (Figure 6h) is manufactured from Onondaga chert while the second (Figure 6i) was manufactured from Kettle Point chert. Both artifacts have been lightly retouched on one or more lateral edge and base but cannot be considered finished bifaces.

#### Projectile Point Preforms

Two artifacts are believed to be projectile point preforms. The first artifact (Figure 6m) was manufactured from Collingwood chert. It has been bifacially flaked on both lateral edges and on the tip, although the base was flaked on only one face. Step fractures on both lateral edges and the base suggest that failure to thin was the reason for discard. This artifact is 31 mm long, 28 mm wide and 7 mm thick.

The second artifact (Figure 6g), also manufactured from Collingwood chert, has a fairly

regular planar shape, moderately sinuous edge and slightly rounded tip. The unusual thickness could have resulted from a failure to thin the biface, probably because the edges could not be "raised" enough to provide a platform suitable to drive flakes completely across the biface. Further, there is a paucity of hinge fractures originating from the edges suggesting the humps are not true "hinge stacks". In the mid-western United States, similar artifacts are occasionally identified as "humpback knives" (McDaniel 1974; Munson and Munson 1972). This interpretation does not appear likely in this case, however, as the edges exhibit no evidence of having been used. The length is 33 mm, the width is 21 mm and the thickness is 12 mm.

#### Projectile Points

Projectile points are represented by three complete points and four bases. All projectile points were manufactured from Collingwood chert. The largest complete projectile point (Figure 6a) is relatively finely flaked and has a convex base and convex sides. The length is 41 mm, the width is 17 mm and the thickness is 5 mm. A smaller projectile point (Figure 6b), is

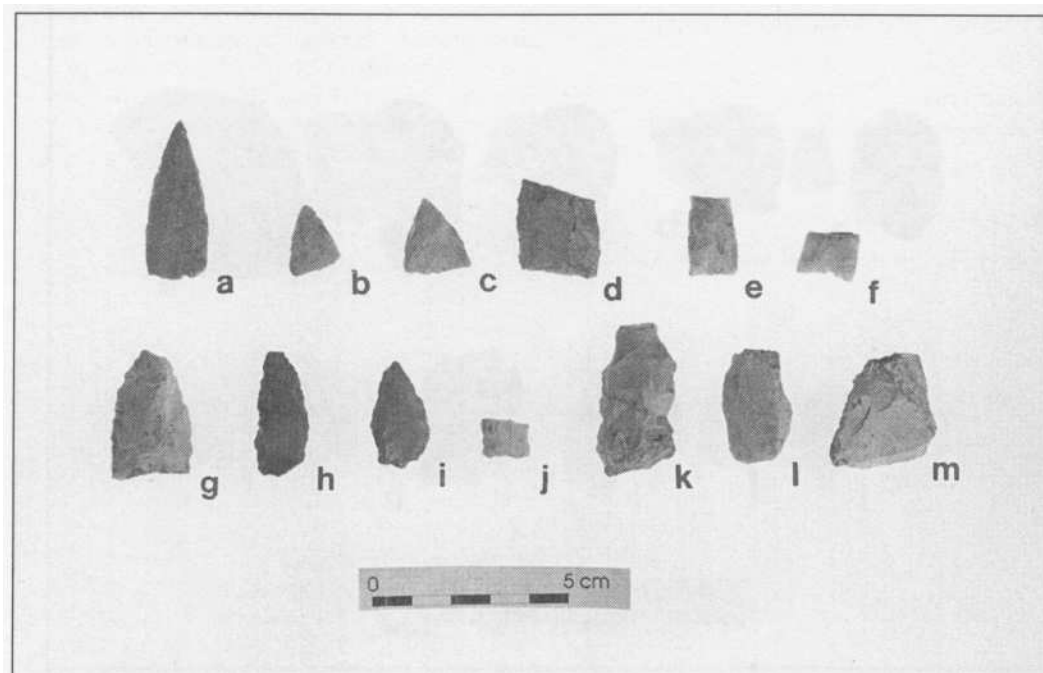


Figure 6. Bifaces and Projectile Points

somewhat asymmetrical and measures 17 mm in length, 14 mm in width and 3 mm in thickness. One other complete point (Figure 6c) is shaped roughly like an isosceles triangle. While the base has been bifacially thinned, the sides were shaped by steep unifacial retouch. This point may have been produced from a fragment of a larger point. The length is 20 mm, the width is 17 mm and the thickness is 4 mm.

Four other triangular points are represented by bases with the tips missing. The larger of these (Figure 6d) appears to have an asymmetrical base with a width of 21 mm and a thickness of 6 mm. The second point base (Figure 6e) has been finely flaked on one face only and retains a tabular cortex surface on the other face. The base is 13 mm wide and has a thickness of 5 mm. The third triangular point base (Figure 6f) is finely flaked to a 3 mm thickness. The slightly concave base is 15 mm wide.

The final point base (Figure 6j) is 12 mm wide and 5 mm thick. The small size of this artifact and its rectangular shape appear at variance with the rest of the assemblage. It is possible that this artifact is a fragment of a drill or, considering there is no evidence of direct use, it could be a basal fragment of a narrow-

based, Archaic small stemmed point.

#### Discussion

As is the case elsewhere, the McQueen-McConnell collection represents a diverse assemblage of tools, representing a developmental continuum and multiple functional categories, unified only by the category of raw material. Generally, the functional categories represented include food procurement and possibly warfare (projectile points), as well as processing of hides, bone, wood, and other materials (scrapers, the drill, retouched flakes, etc.). Much more analysis must be undertaken before inferences can be made about whether these tools were manufactured by the same individuals, whether they were manufactured as part of a unified lithic exploitive pattern, or whether several different reduction strategies were employed. Accordingly, caution must be exercised in generating inferences concerning many aspects of the lithic assemblage, especially for non-functionally specific categories such as the debitage.

Table 2. Rough and Ground Stone Artifacts.

Artifact Type	Totals
Stone Axe Fragments	7
Possible Whetstones	2
Possible Hammerstone	1
Modified Slate	1
Stone Beads	13
Limestone Pipe Fragment	2
Total	26

## ROUGH AND GROUND STONE

Although not as plentiful as the chipped lithics, the ground stone tools recovered at the McQueen-McConnell site include a wide array of raw materials and functional categories. These artifacts also run the gamut from being laboriously and painstakingly worked (stone pipes and axes) to being only minimally modified as a by-product of use (smoothing stones). Table 2 presents a list of the ground stone artifacts according to inferred functional categories.

### *Stone Axe Fragments*

Seven artifacts appear to have been stone axes. All were manufactured from a hard, metamorphic, schist-like rock, dark grey to dark green-grey in colour and identical to that commonly found in other Iroquoian stone axe assemblages. Four have flattened and ground surfaces suggesting they are fragments of broken and shattered finished axes, while the remainder appear to have broken and were discarded during manufacture. Only two are complete enough to ascertain original dimensions.

The larger of the two finished axe fragments is a tabular fragment measuring 22 mm thick; it has a maximum width of 59 mm that tapers to 44 mm (estimated) over the 62 mm of remaining length. The narrower end exhibits more

pronounced rounding on the three remaining faces close to the end, and battering on the end suggests that this was the butt-end of a relatively large, flat axe. A smaller axe fragment also appears to be a flattened butt-end; it has a width of 23 mm and this widens to 33 mm over the remaining length of 42 mm (Figure 7c).

Three of the axe fragments appear to have broken and were discarded during manufacture. Two of these appear to be bit fragments broken during the early stages of manufacture. One of the latter has a rounded and flat bit, measuring 34 mm wide and expanding down the length of the tool. Small and almost indistinct flake scars originate from the margins and the bit end. The second bit fragment is 47 mm wide and appears to taper from the bit (Figure 7a). The thick, battered bit appears to be asymmetrically curved, and resembles artifacts normally classified as adzes. The battering and heavy flake scars originating from the bit suggest that flakes driven from this "platform" may have been the primary method used to thin the celt.

Finally, one axe fragment appears to have broken shortly before the final polish was applied (Figure 7b). The fragment that was recovered is 122 mm long and the width at the butt-end is 19 mm. The maximum width (43 mm) and thickness (19 mm) occur near the bit. One face is highly convex in lateral cross-section and slightly convex in longitudinal cross-section. This face exhibits remnants of flake scars overlain by pecking which are in turn partially obliterated by grinding. The opposite face is flat to slightly concave in longitudinal cross-section and is covered with relatively pronounced flake scars. Some pecking also occurs towards the bit end. Only the butt-end, which is convex and bevelled towards the more convex face, appears to have been finished. It appears that some attempt was made to re-cycle this fragment by flaking and pecking the broken face. This failed, however, after attempts to thin resulted in steep hinge fractures 20 mm from the bit.

### Whetstones

Two slabs of reddish-brown sandstone have slight evidence of smoothing on one face. These wear facets, although faint, may indicate the use of these rocks as smoothing or

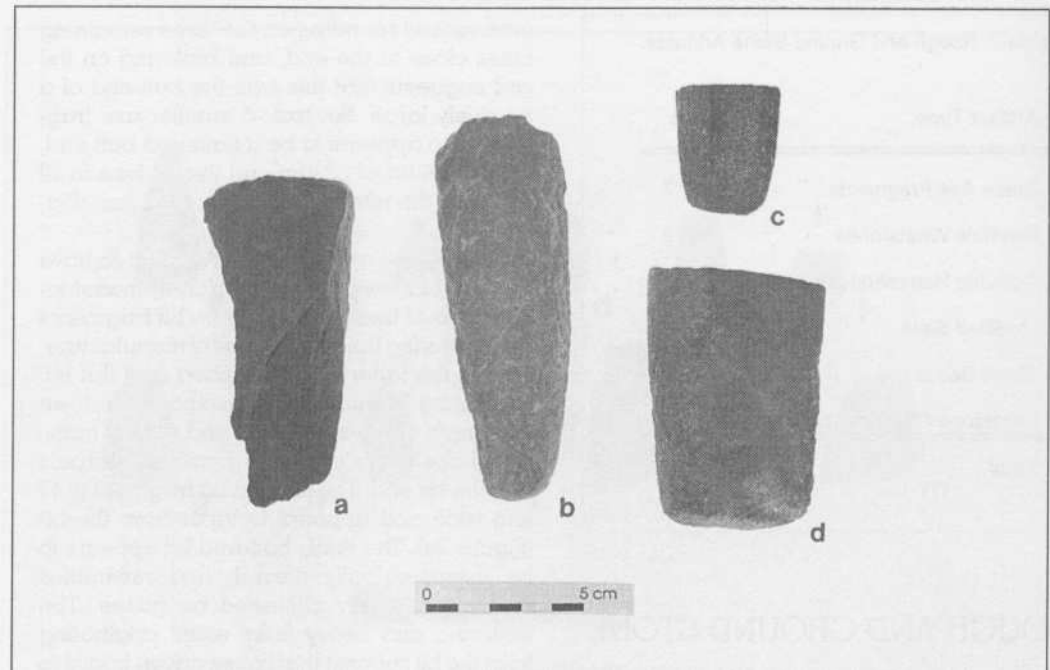


Figure 7. Celts and Hammerstone

polishing tools. One of these also appears to have been scorched on one face. Similar objects are referred to as "whetstones" in the literature (Wintemberg 1928:25-26).

#### *Hammerstone*

One stone, roughly tabular in shape but with slightly rounded sides, measures 80 mm in length, 54 mm in maximum width near the broken end, and 31 mm in thickness (Figure 7d). Both faces and one edge near the fresh break appear to have natural glacial polish. The remaining edges (excluding the relatively fresh break at one end) and the remaining end are roughly battered. It is inferred that this artifact may have been a baton-like heavy billet or hammer which broke, probably during use. It resembles other artifacts often described as "hammerstones" in the literature (Wintemberg 1928:24).

#### *Modified Slate*

One tabular piece of grey-black slate, roughly pentangular in shape, appears to have been flaked along all lateral edges. Lack of

evidence of usage, such as wear abrasion, suggests that this artifact may have been intended as a pendant or similar object. It is 69 mm in length, 60 mm in width, and 8 mm in thickness.

#### *Stone Beads*

Included in the ground stone assemblage are thirteen stone beads in various stages of manufacture. The first stage is illustrated by a disk that has been flaked into a roughly circular shape from a fragment of mudstone but has not been ground (Figure 8a). Two holes have been started in one face. Two other beads (Figure 8b and d) have been flaked into roughly rectangular shapes. Grinding was applied to five beads (Figure 8c, e-g, k), although evidence of flaking remains. Three beads have been ground almost completely round (Figure 8i-n) while two others (Figure 8j, o) have been completely ground and polished. All the beads were manufactured from sedimentary rocks such as mudstone, sandstone and limestone. Two of the beads were manufactured from a reddish sandstone while the remainder are various shades of tan or grey. Diameters range

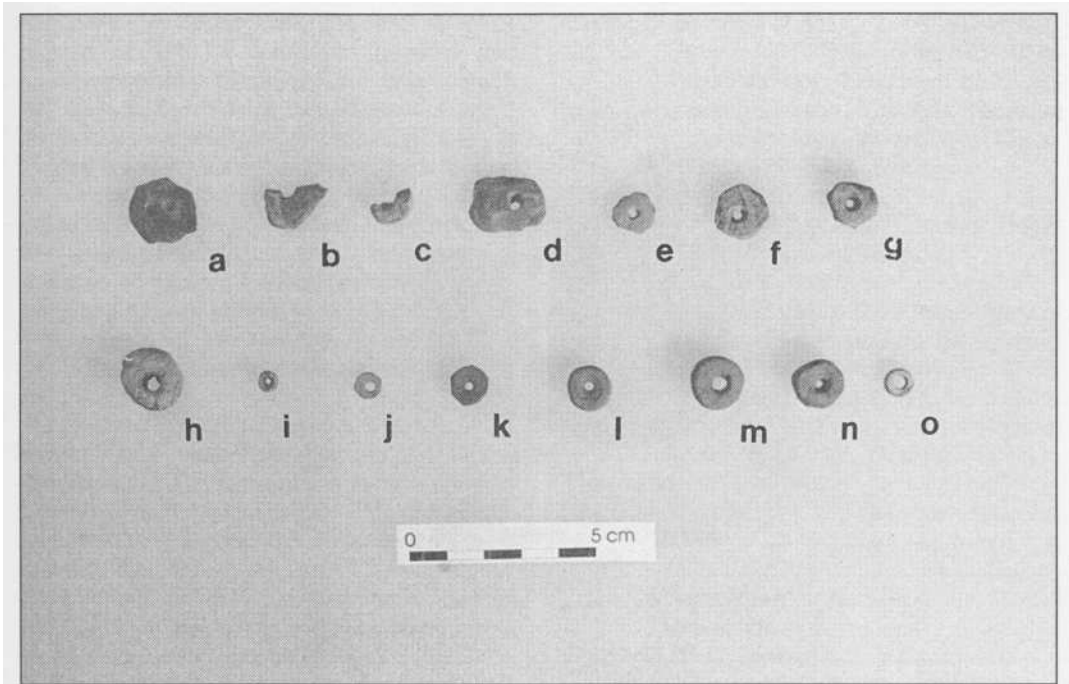


Figure 8. Beads

from 7 mm for the more polished specimens to 22 mm for the larger, unground disk. Thicknesses range from 2 mm to 6 mm with no correlation between diameter or stage of manufacture. Holes, drilled from both faces, range from 1 to 3 mm in diameter. It should be added that one bead (Figure 8i) was manufactured from a crinoid stem segment and one (Figure 8h) was made from a piece of clay coiled into a circle and fired. The presence of a relatively large number of beads manufactured from native materials fore-shadows an increase in the occurrence of this artifact class in later sites, particularly among the Petun (Fox 1980a).

#### Stone Pipe Fragment

Two fragments of flaked and ground, light grey, fine grained limestone, mend to form a portion of an unfinished stone pipe (Figure 9). This fragment was originally the elbow and bowl of a stemmed pipe that had split vertically up the middle. A small number of limestone flakes recovered during the excavation could be related to the manufacture of limestone pipes.

## DISCUSSION

The lithic assemblage from the McQueen-McConnell site offers an insight into the protohistoric Petun use of lithic tools to perform a variety of tasks. There is a broad range of functions served by this medium, ranging, for example, from simple utilitarian, expedient flake tools, to the decorative stone beads.

The functionally diverse assemblages characterizing such sixteenth century sites are expected to decrease with increased quantities of European trade goods introduced during the seventeenth century. The few pieces of European trade material recovered from the McQueen-McConnell site excavations, consisting of three roughly rolled beads and five flattened strips of brass and/or copper, indicate that trade materials were beginning to appear on Petun sites. It does not appear, however, that traditional, utilitarian tool classes were beginning to be replaced. The relative abundance of both finished and unfinished stone axe fragments, for example, indicate that iron axes had not yet had an impact on this aspect of traditional prehistoric technology. Interestingly, fragments of stone axes, adzes and other heavy wood-working implements are

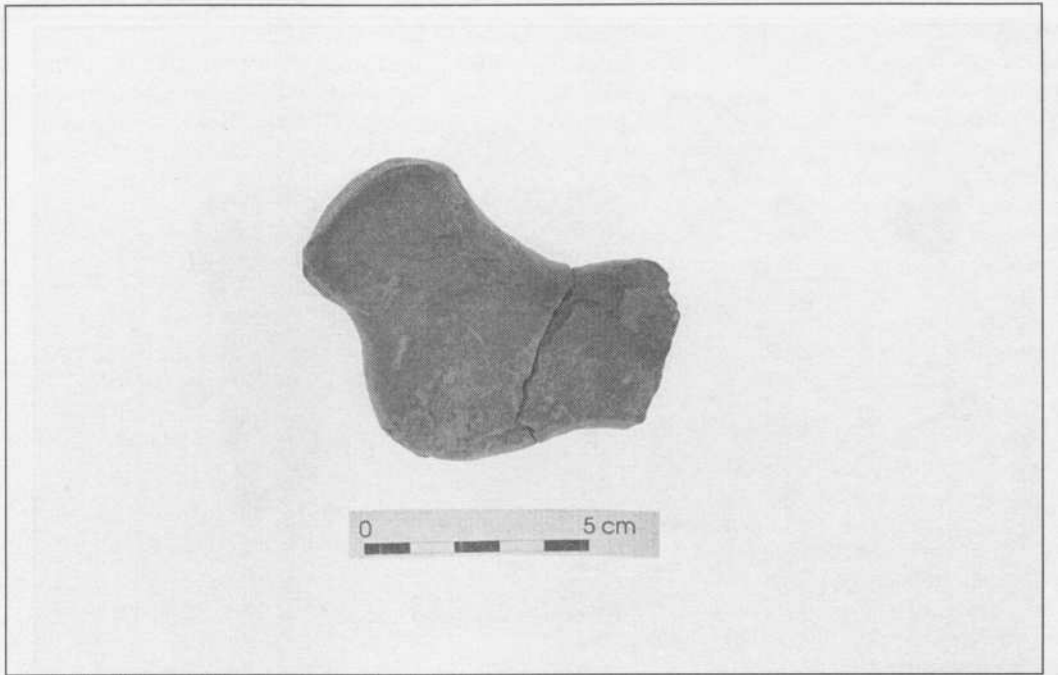


Figure 9. Limestone Pipe Fragment

also reported from the later (historic) Haney-Cook (Fox 1979b:5) and McEwen (Fox 1980b:12) sites. Given the higher production and maintenance costs associated with stone axes relative to iron trade axes, this may seem surprising. It is likely that the use of stone axes continued because iron axes could not be obtained in sufficient quantities.

The origin of chipped lithic raw materials is also of interest. Fox (1990b: 3) has noted that Petun sites dating after A.D. 1630 have Detour and Norwood chert in their assemblages while those dating prior to this period do not. The McQueen-McConnell assemblage conforms to this pattern in that it includes Bayport, Kettle Point, Gordon Lake and Onondaga cherts but lacks evidence of exotic cherts derived from trade or interaction with groups occupying the upper Great Lakes.

The McQueen-McConnell assemblage presents researchers with the possibility of studying late prehistoric lithic reduction technology. Ellis (Deller and Ellis 1992) found Collingwood chert to be particularly useful for studying Paleo-Indian reduction sequences because the presence of banding in Collingwood chert allowed the orientation of tools to be compared to the original orientation of the

quarry blocks from which they were derived. On Paleo-Indian sites, the production of various tool forms appears to have been "built-in" to a specific reduction strategy in that they were usually a direct by-product of the production of large bifaces. This inference was possible because large bifaces were oriented vertically to the horizontal banding of quarry blocks in bedrock while the banding on many smaller tools indicated their long axis was along the bands. This, in turn, suggest that many of these smaller tools were manufactured from larger flakes produced during the early stages of biface production. Similar kinds of studies could be undertaken with the debitage found on Petun sites in order to reconstruct the lithic reduction strategies of another people who extensively exploited this particular chert type.

The abundance of artifacts generally classed as bipolar cores, wedges or pieces esquilleés offers other opportunities. These artifacts are relatively common in Petun assemblages in general (Fox 1979a, 1979b, 1980b). Despite their unremarkable appearance and lack of temporal or spatial significance, they have generated considerable debate in the archaeological literature. At the

McQueen-McConnell site, the relative abundance of "bipolar cores" in general and Collingwood chert "bipolar cores" in particular, as well as the overall abundance of chert, including relatively large unutilized pieces, makes it unlikely that the conservation of chert as a scarce resource was a factor. It seems more likely that, in this context, these artifacts represent tools such as wedges, rather than an attempt to produce utilizable flakes. More attention must be given to distinguishing the by-products of two such radically different processes resulting in similar appearing artifact classes.

Finally, it should be noted that much of the assemblage was collected by screening plough-zone. Removal of the plough-zone by mechanical stripping might have provided a better view of the subsoil structural patterns but would have resulted in the loss of a significant portion of the material culture. Clearly, any study of the prehistoric past necessarily requires a representative sample of the activities represented on a site, as well as a context for determining the site's placement in time. There is no basis for the assumption that the material culture found in the bottom of pits and posts is fully representative of the entire site.

*Acknowledgements.* First and foremost, the author would like to thank Charles Garrad, the "Dean" of Petun studies. Charles made the McQueen-McConnell site assemblage available for study and provided all the information, advice and encouragement necessary. Bill Fox assisted with the identification of lithic materials. The photographs were taken by Andrew Murry. Finally, the editor, Dr. Alex von Gernet, and one reviewer provided the necessary revisions to make the paper readable.

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