The Renard Site, Fox Island,

Mississagi Delta, Algoma

M. BERTULLI, AND
L. KILPATRICK
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THE RENARD SITE, FOX ISLAND, MISSISSAGI DELTA

A Preliminary Report

on a Terminal

Woodland Site

M. BERTULLI AND L. KILPATRICK

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FRONTPIECE

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Students of archaeology at Laurentian are fortunate in being exposed to a unique learning situation. Not only are they able to participate in a formal excavation and thus learn the rudimentaries of various field methods and techniques but they are also given the opportunity to analyze and write descriptive papers concerning various aspects of the artifactual and contextual data which they themselves helped to recover from the enigmatic earth. Each student is, therefore, exposed to the wider spectrum of archaeological endeavour - excavation, analysis and reporting. Much of the information contained herein has been culled from the students' reports; gaps have been bridged and inaccuracies corrected where possible. This monograph, then, represents the efforts of many individuals who each contributed according to his/her abilities and interest. Hopefully, it illustrates that information can be salvaged and reporting accomplished with archaeologically inexperienced students under able direction and guidance which was most generously forthcoming from Professor H.E. Devereux.

INTRODUCTION

The Renard Site, CbHs-5, is located on the northeastern shore of Fox Island in the Mississagi River Delta, Cobden Township, Blind River District. The specific area of the site is designated as $46^{o}11'$ latitude and $83^{o}2'$ longitude. (Brizinski 1975, p.71). Excavation was undertaken in the autumn of 1975 by a crew of Laurentian University students with the direction of Professor Helen Devereux and Morris Brizinski and under the auspices of the Ontario Ministries of Culture and Recreation and Natural Resources.

Archaeological research of the Mississagi Delta area was pioneered by J.V. Wright in 1961, and continued by Helen Devereux with the excavation of the Chiblow I and II Sites in 1962 and 1963. Work on the Chiblow III and Falls Sites by J.V. Wright and W.C. Noble followed in 1964 and 1968. It was not until the Summer of 1975 that the area was again subjected to archaeological scrutiny by the survey team of M. Brizinski and R. Fecteau.

Fox Island is one of several sizeable islands which comprise the Mississagi Delta. Changes in the form of the delta have been recorded over the past 120 years (See Maps 4 and 5) and, at present, a detailed geomorphological study of the entire area is required to determine the structure of the delta and the delineation of the shore lines in aboriginal and particularly Late Woodland times. Such a study would further the discovery of habitation areas of the indigenous peoples.

The Renard Site lies on a heavily eroded bank on the eastern distributary of the Mississagi River where ice pressure, changing water levels and heavy spring run-offs mark it as a candidate for imminent destruction. Heavy erosion has already taken its toll; much of the site has eroded and fallen into the river due to the undermining action of the current on the soft sands and humic soils of which the island is composed. At the time the site was tested, it was found to extend from eighty to two hundred feet inland from the river bank and it was later determined that an area of approximately five to ten feet along the bank had suffered destruction through erosion. (Brizinski 1975, p.76). Salvage of the endangered river edge area was the prime target of the excavation crew.

A grid of five-foot squares extending for a distance of 130 feet north-south and ten feet from the edge of the bank which was 8 feet above water level was laid down. Three inch balks were left on all sides of each unit. Massive root systems and trees prevented the excavation of seven squares and in the short time available (two days) twenty squares were excavated although in many case, subsoil was not reached. As is common on most Northern Ontario sites, cultural deposits were thinly scattered, consisting of ceramic sherds, lithic artifacts and detritus, several copper specimens and some sixty minute bone fragments recovered through flotation. Other than one hearth no recognizable features were uncovered although the site yielded copious amounts of fire cracked rock. A possible hearth in S35 was not recorded as such despite quantities of fire cracked rock, calcined bone, and small pottery sherds also found in the unit. Similarly three post moulds in S45E4 were not accurately recorded.

GEOMORPHOLOGY

> The Mississagi River rushes south from the height of land in Northern Ontario, tumbling over waterfalls and cutting deep gorges into the hard rock of the Pre-Cambrian Shield along its route to the Great Lakes. As it nears the Great Lakes Plain, it slows down, meanders slightly, and just before it spills into the North Channel of Lake Huron about two miles west of Blind River it forms a crow's foot[1] delta approximately seven miles square in area.
>
> (Samulski 1972, p. 1)

This vivid prose aptly describes the course of the Mississagi River. From a geomorphological standpoint, the delta itself is interesting as such formations are extremely rare in Northern Ontario. It is formed by the continuous deposition of alluvial soils at the

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1. "In deltas where active deposition is occurring at the mouths of several distributaries, lobes are formed at each of the distributary mouths; the lobes of the main delta mass look on a map of aerial photograph like a bird's foot and are called 'bird's foot deltas'" (Ency. Brit. 1971, v. 7, p. 209) or 'digitate' deltas. (Cotton 1960, p. 207).

river's entrance into Lake Huron. The decrease in the velocity of the river as it enters the quiet waters of Lake Huron allows sediments to precipitate and the extreme flatness of the topography permits three main discharge channels of distributaries to develop. The gentle relief of the river's lower course allows sifting of sediments and only the finest reach the delta. Initial archaeological testing of Fox Island revealed the soil to be composed of beach sands superimposed by humus layers; no cobbles or pebbles occurred naturally and all lithic materials found on the Renard Site are present as a result of cultural activity.

The fineness of the alluvium deposited on any delta is a function of the speed of the river as it wends its way to discharge into a body of water. A slower-moving river carries only the finer materials downstream and deposits them at its mouth. In seeking its approach to Lake Huron, the Mississagi River meanders slightly due to the peneplanation of the Canadian Shield. The velocity of the river is greatly reduced and for this reason carries only the finest sediments to the delta.

GEOLOGY

The area along the North Channel of Lake Huron belongs to the Huronian deposits of which there are two formations, the Mississagi and the Gowganda. (See Map 3). The former, more ancient beds run along the North Shore of the North Channel. Quartzite, argillite, siltstone, and greywacke are the predominant rock types. According to Sir Alexander

Murray (1859), outcrops of quartzite and slates occur frequently along the Mississagi River's lower course and limestone is present along the Little White River, a major tributary of the Mississagi. Quartzite of excellent flaking quality is found on nearby Manitoulin Island and at Elliot Lake. "Because of their (quartzite outcrops) great hardness and insolubility in water, they resist weathering and become prominent features of a landscape, appearing in castellated or cathedral-like spires, bold cliffs, or ledges". (Jensen 1958, p. 310).

Conglomerates of the Gowganda Formation include quartz, chert, and jasper pebbles. (Robertson 1964).

FLORA AND FAUNA

The vegetation of the Mississagi Delta at present is transitional between Great Lakes Deciduous and Boreal and includes maple, birch, poplar, oak, beech, elm, aspen, sumach, black and white spruce, larch, red and white pine, cedar, jackpine along with various species of grasses, mosses and berries. (Atlas of Canada 1957). On Fox Island, white pine and white birch about while oak, maple, balsam, juniper, spruce, poplar and cedar also flourish.

Soil samples were collected from the lowest cultural levels of CbHs-5 and subjected to palynological analysis. The resultant pollen spectrum (See Figure 1) represents the floral coverage for a radius of ten metres around the sample localities, at the time of aboriginal occupation. Note that in the pollen diagram, no corrections for differential rates of pollen productivity were made. The results indicate that a transitional temperate-boreal environment had existed at the time of occupation as witnessed by the high incidence of pine and birch, and the presence of spruce, fir, larch, birch, and willow, which are associated with a boreal forest in a temperate climate.

The proximity of Lake Huron causes climatic moderation in that winters are warmer and summers cooler in the delta area than is usual in this region of the Canadian Shield. The milder climate permits the growth of a higher percentage of deciduous trees.

The Mississagi Delta microenvironment is also rich in faunal resources: white-tailed deer, moose, bear, fox, wolf, mink, marten, muskrat, beaver and grouse abound. (Atlas of Canada 1957). Marshy areas formed by the silting of the channels in the area support many species of water fowl. Of prime importance to the inhabitants of the delta today and quite likely their aboriginal counterparts are the aquatic resources. Fish indigenous to the area include lake sturgeon, longnose gar, bowfin, lake herring, round whitefish, lake whitefish, lake trout, brook trout, northern pike and maskinonge. (MacKay 1963; Scott 1975).

FIGURE ONE

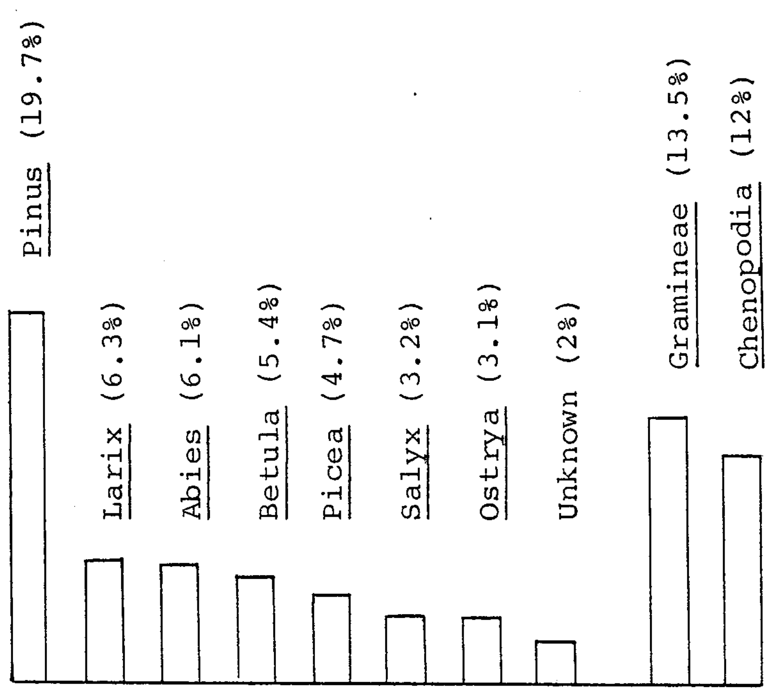
POLLEN SPECTRUM FROM CbHs-5

Note: No corrections for differential rates of pollen production by different plants have been made.

31 genera - 100%
9 genera depicted - 74%

Scale: 2mm. - 1%

Pinus - pine
Larix - larch
Abies - fir
Betula - birch
Picea - spruce
Salix - willow
Ostrya - beech



The habits and spawning patterns of the above species indicate that if fishing was one of the main occupations of the Renard people, spring and autumn are the seasons during which the rewards of this activity are maximal. Lake sturgeon are spring spawners which frequent the shoal waters of the large rivers and lakes while the cold-adapted lake trout prefer rocky reefs and shoals and spawn in late fall. As the waters of the North Channel begin their annual warming trend in spring and early summer, lake whitefish quit the shoals and return to spawn in the mid to late autumn as the waters become colder. The months of August and September witness the return of the lake herring to shallow waters. Northern pike and maskinonge spawn at the same time in early spring as the ice melts but while pike prefer weedy bays, estuaries, and shoals, muskie habitually seek the sides of river channels and repair to shallow waters in the fall. (Information in the above paragraph has been taken from MacKay 1963).

With few exceptions, notably a specimen of sturgeon plate, many faunal remains recovered from the Renard Site were so minute as to be unidentifiable.

From the hearth located in Squares N10E5 and N15E5, Level 3, twenty-two specimens of calcined bone were generically identified by James Burns. In only one case was a specific identification possible although the bones of mammals (perhaps deer, beaver and dog), fish and turtle were represented. The report reads as follows:

N10E5, Level 3, Hearth

Mammal: 8 fragments of small-medium mammal bone and several "sub-fragments".

Fish : 1 portion of a vertebra; no identification possible. 1 fin spine or rib fragment.

Turtle: 1 portion of bone possibly derives from a turtle, probably part of the plastron.

N15E5, Level 3, Hearth

Mammal: 1 portion large mammal (deer-size) 7 portions of medium mammal (beaver, dog, etc).

Fish : 2 small fragments of dermal bone plates (skull?) of sturgeon (Acipenser fulvescens) 1 other portion may be fish.

From the above data, emerges a picture of the delta as an area of considerable floral and faunal resources providing abundantly for the subsistence of the aboriginal inhabitants during all seasons of the year and especially during the spring and summer months.

SOILS

Six distinct soil levels were distinguished on the island by testing outside the habitation zone. The first was a dark grey-black humus layer followed by a slightly darker podzolic lens of the same composition. The third level of yellowish-brown and light brown loamy sand was superimposed upon mottled yellow - brown sand followed again by a loamy sand layer. The yellowish - brown subsoil was of a coarse sand composition.

Cultural debris was limited to the second and third layers described above, ending at approximately six inches below the surface.

Soil pH tests yielded values between 3.7 and 4.0, with an average of 3.8. Samples were taken from the following units: S45E4, Level 3; N15E5, Level 4; N10E5, Level 5; S0, Level 2; and S5E5, Level 3.

Since natural stratification was not discernible the site was excavated in arbitrary 1/10 foot levels.

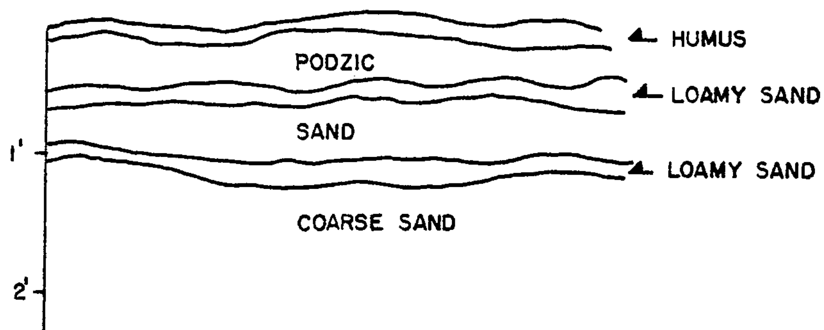
FEATURES

One recognizable hearth with an average diameter of 20.38 cm was unearthed at the north edge of the excavation in units N10E5 and N15E5 at a depth of 15.5 cm. An abudance of chert, quartz and quartzite specimens including 19 bipolar cores and many flakes as well as ceramics and fire cracked rock were discovered around the hearth which was probably used as a workshop area. The brown sandy soil of the upper levels gave way to a grey, ashy-coloured soil in the hearth area.

In Square S45E4 three post moulds were uncovered. The diameters averaged between 5 to 10 cm and depth 8 - 12 cm. One post mould was positioned at a 45^{o} angle to the surface of the ground.

In the southwest corner of Square S45E4 a small pit measuring 45.5 cm in width and 25.5 cm in depth produced a copper awl. An area in Square 35 yielded amounts of calcined bone, although precise information was unfortunately not recorded. Lack of specific data precludes further interpretation concerning these features.

FIGURE TWO



SOIL PROFILE FROM THE RENARD SITE.

SEEDS

Several charred seeds were recovered by dry screening as flotation did not yield adequate results. Preliminary analysis of the seeds was undertaken by R. Fecteau of the Royal Ontario Museum, Geobotany Division. He identified the presence of *Prunus* and *Polygonum* (charred) and *Rubus* (uncharred), at the Renard Site.

The only species of the genus *Prunus* native to the north shore of Lake Huron include *Prunus pensylvanica* and *Prunus virginiana*, pincherry and chokecherry respectively. Both plants produce fruit which matures in late August or early September and which Hosie (1975, p. 244) describes as "sour but edible".

The Polygonaceae or buckwheat family includes forty genera and eight hundred species of dicotyledonous plants, mainly herbs, but also trees, shrubs and vines. Encountered in the screened soil samples of Renard were charred seeds of the genus *Polygonum*, two hundred species of which are native to North America. The season of availability of *Polygonum* is July-August. (K. Winterhalder, Biology Dept., Laurentian University). Uncharred *Rubus* (blackberry or raspberry) were also recovered.

On the basis of these ecofactual data an summer-early fall occupation is posited for the Renard Site.

CERAMIC ANALYSIS

Introduction

The foregoing analysis of Renard ceramics is basically descriptive but certain inferences relating to the inhabitants themselves and the dating of the site can be drawn.

The breakdown of the ceramic material is given in Table 1. An initial grouping of the analysable sherds into representative vessels was carried out in order to render the frequencies for certain ceramic attributes more accurate. Sherds which appeared beyond reasonable doubt to be fragments of the same vessel were grouped together. As expected, this procedure produced limited results owing to the size of the sherds and the amount of variability possible on individual vessels.

Rim, neck/shoulder and body sherds were then separated and examined in order to discover the ceramic technology and preferred decorative techniques used by the Renard inhabitants.

TABLE 1 BREAKDOWN OF CERAMIC MATERIAL

	N	%	VESSEL f
Rim	39	3.3	39
Neck/Shoulder	31	2.7	28
Body	198	17.0	107
Unanalysable	900	77.0	
Total	1168	100	174

TEMPERING

Grit of mixed grain size was the preferred temper at Renard. Using Wentworth's scale of size classification (Shepard 1968, p. 118) the temper particles fall into the granule to medium grain size range. The percentages are as follows:

TABLE 2 DISTRIBUTION OF GRAIN SIZE

Type	SIZE (mm.)	N	f
Granule	4-2	34	32
Very Coarse	2-1	56	52
Coarse	1-½	12	11
Medium	½-¼	5	5
Fine	¼-1/8	0	
Total		107	100

PASTE

In most cases, the fired paste is homogeneous but laminar breaks are commonly seen in the unanalysable category. The breakage pattern may be caused either by the paste-temper combination or as a result of the vessel construction technique.

COLOUR

Fifty sherds were compared with Munsell Colour Charts to establish the range of colour variation. Sherds fell within the 7.5 YR, 10 YR and 2.5 YR colour tables. The colours consisted primarily of values of brown and grey, and combinations of yellow, brown and grey. Sixteen percent of the sherds were mottled in colour - black in combination with values of brown and grey suggesting that post-firing exposure to direct heat may have affected these vessels; alternately the black colour may be due to carbon deposition and the grey to subsequent leaching. (Buchanan: personal communication).

The range of colour from the greys to the yellows suggests both reducing and oxidizing atmospheres for firing. Oxidation is generally correlated with open hearth firing, and reduction with kiln firing.

ENCRUSTATIONS

Encrustations were observed on the internal surfaces of 21 of the 107 body sherds; in addition, six of the 39 rim sherds and 4 of the 28 neck/shoulder sherds exhibited residues. Indentification of the residues through spectrochemical analysis was not carried out as there was a high probability that the samples had been contaminated by handling and washing.

To date, preliminary analysis of such encrustations from the Michipicoten area, specifically ClIf-1 a Late Woodland manifestation, reveals that the residue was derived from plant material of a mono-cotyledon type. (M. Brizinski, personal communication). Others have suggested that such encrustations may have been formed by the repeated boiling of fish. (McPherron 1967). The Renard ceramic encrustations were identified as plant remains and it was postulated that a 'gruel' was produced in the pots which bore evidence of encrustation. (B. Trevor-Deutsch: personal communication).

On-Site Distribution

Map 1 shows the areas of concentration of ceramic material.

Certain ceramic attributes such as surface treatment and decorative techniques were compared spatially but no correlations between a specific attribute and on site distribution were seen to exist. This suggests that the ceramic design distribution is homogeneous.

Vessel Morphology

The most common vessel profiles found at the Renard Site are the straight, sinuous and rounded varieties. This is illustrated by the larger rim, neck and shoulder fragments.

Two incipient collars and one true collar extending 23 mm down from the lip are the only examples of collared vessels.

The lack of basal sherds is negative evidence for the use of conoidal as opposed to rounded vessels.

RIMS

Appendix I lists provenience unit, technique and motif of surface decoration, lip and interior decoration and lip thickness for each of the thirty-nine rims. The last two columns indicate whether the total decorative pattern is visible and the number of the associated illustrations found in the appendix respectively.

DECORATIVE TECHNIQUES

For the purpose of this paper, vessel treatments such as fabric and cord-wrapped paddle extending to the lip are not considered to be rim decoration.

Decorative techniques found on the exterior are shown in Table 3.

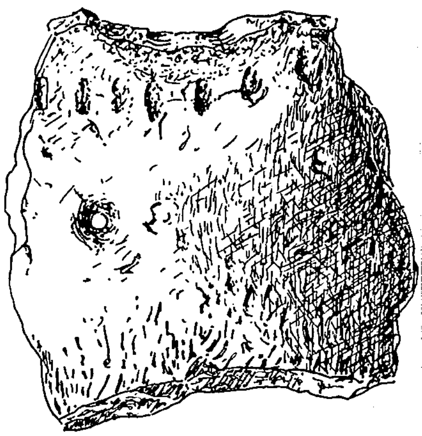
TABLE 3 DISTRIBUTION OF DECORATIVE TECHNIQUES

Decorative Technique	F	%
Tool Impressing	15	38.4
Plain	8	20.5
Push-Pull	6	15.3
Twisted Cord Impressing	4	10.3
Trailing	2	5.1
Dentate Stamping	2	5.1
Unidentified	2	5.1
Total	39	99.8

From the above table it is evident that the majority, 79% of the rims are decorated.

Tool impressed rims include those rims which displayed the repeated impressing of an object into the plastic clay forming horizontal or, in a few cases, oblique rows of impressions of a variety of shapes. Size and shape of the impressions are generally consistent; however, two of the rims demonstrated the combination of the two shapes. Spacing of individual impressions ranges from .7 to 8.0mm. in width. In the case of rim No. 14 (See Appendix I) the impressions collide with one another forming a continuous line that can be mistaken for twisted cord impressing. There appears to be a preference for oblique to vertical shapes although crescent, circular (conical in profile), wedge and fingernail impressing are also present.

TOOL IMPRESSED RIMS



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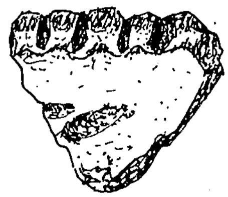

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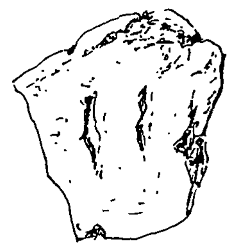

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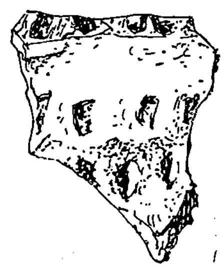

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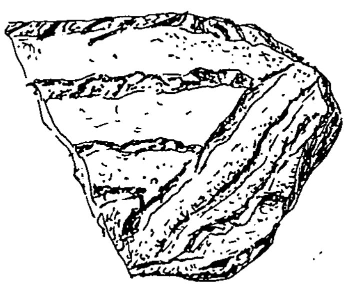
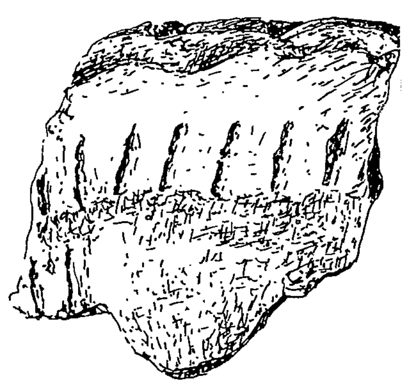


No. 14



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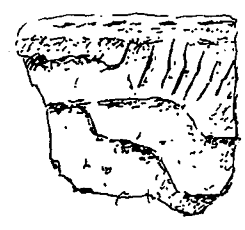
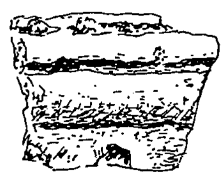


No. 24

Punctations, here defined as circular impressions of reasonable depth causing some bossing were only present on two of the 39 rims. (Rim Nos. 21 and 39). Punctation was located below other descriptive patterns in both instances.

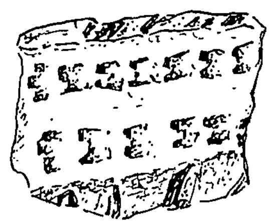
PUNCTATED RIM



No. 21

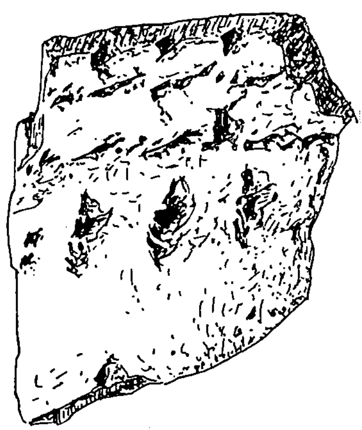
Four of the six push-pull rims and both of the trailed rimsherds displayed tool impressions. The combining of decorative techniques other than punctation on rim exteriors is confined to these six rims.

PUSH-PULL RIMS

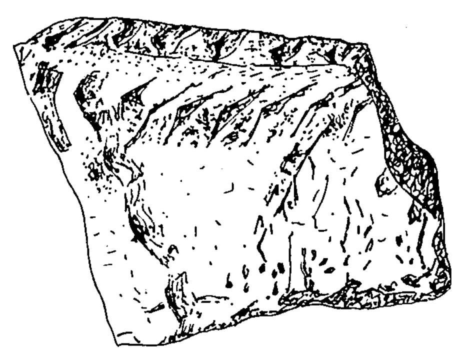


No. 1

No. 26



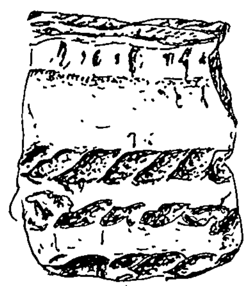
No. 4



No. 32

Twisted cord impressing occurs on four rims; cords of varying widths, though consistent in size on individual rims, had been impressed into the rim parallel to the lip.

CORD IMPRESSED

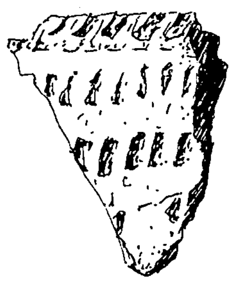


No. 6

Sherds impressed with dentate stamp exhibit evenly spaced and uniform oblique rectangles encircling the rim below the lip.

The decorative technique on two of the rims could not be identified. In both cases, the patterns are quite intricate suggesting perhaps that more than one tool was used to impress the clay, or that superimposition of impressions had occurred. On one of these rims, No. 37, the same decorative technique appears on both the exterior and the interior.

DENTATE STAMPED RIMS



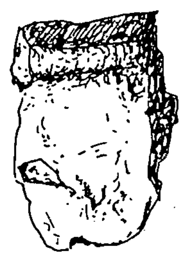
No. 7

No. 9

Of the eight plain rims, two have cord-wrapped paddle impressions extending to the lip and one has been brushed. The remaining rims are rather crude specimens demonstrating uneven surfaces and variability in lip thickness; no finishing appears to have been applied.

PLAIN RIMS

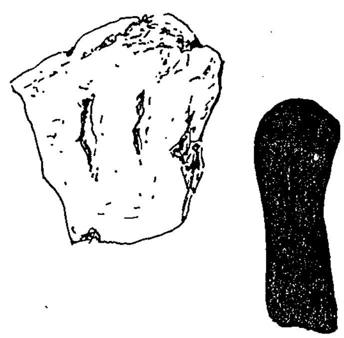
No. 20



No. 11

Castellations of the simple rounded variety were found on two of the rims. This is worthy of note as castellations are a unique feature of the Iroquois Tradition in the Northeast. (Wright 1966)

CASTELLATED RIM



No. 5

LIP DECORATION

Lip decoration occurs on 33 rims; decorative techniques are given in Table 4.

TABLE 4 DISTRIBUTION OF DECORATIVE TECHNIQUES OF RIM SHERDS

Decorative Technique of Rim Sherds	N	f
Single Rows of Impressions		
i) Oblique	11	28.2
ii) Vertical	4	10.3
iii) Tool end	5	12.8
iv) Circular	3	7.7
Cord-wrapped stick	5	12.8
Cord Impressed	3	7.7
Push-pull	1	2.6
Notched	1	2.6
Plain	6	15.4
Total	39	100.1

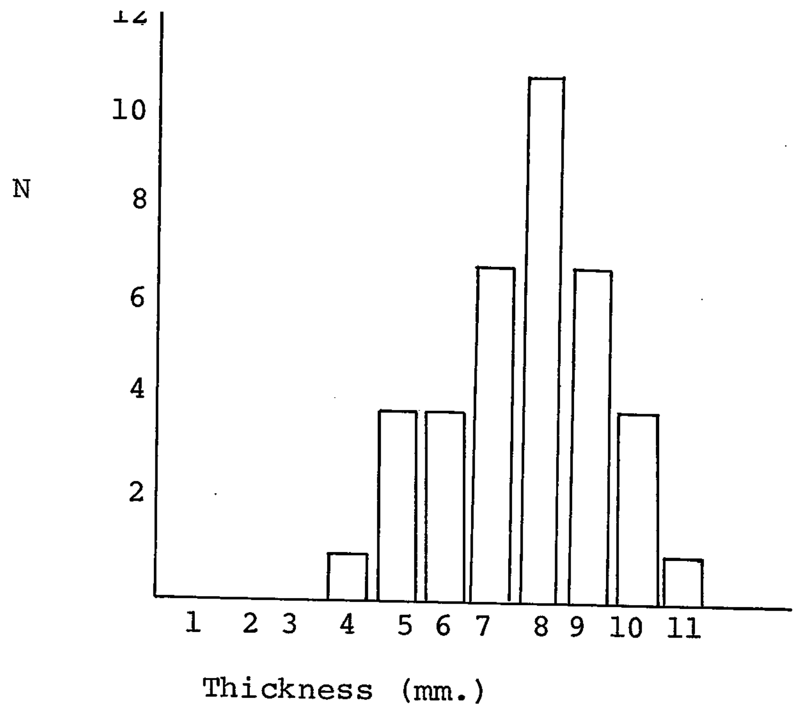
Five of the six plain lips also lack exterior surface decoration. For the most part, lip surfaces are flattened, but rounded, bevelled, grooved, rolled and everted lips also appear. In a few cases, application of decoration to the lip has caused scalloping of the lip edge.

LIP THICKNESS

Thickness and mean thickness of the lips are given in the graph below.

Graph 1 Lip Thickness

Mm.	N	f
4	1	3
5	4	10
6	4	10
7	7	18
8	11	28
9	7	18
10	4	10
11	1	3
	39	100%



$\bar{x}$ - 7.6

Interior Decoration

Interior decoration occurs on nine of the 39 rims (23%). Techniques are given in Table 5.

TABLE 5 DISTRIBUTION OF INTERIOR DECORATION TECHNIQUES

Technique	N	%
Push-Pull	4	44.4
Cord-Wrapped Stick	2	22.2
Impressions i) Vertical	1	11.1
ii) Oblique	1	11.1
Unidentified	1	11.1
Total	9	99.9

POT DIAMETERS

Two rims were sufficiently large to allow measurement of the orifice diameter. One vessel represented by 25% of the total circumference had a diameter of 12.4mm.; the other measured 18.1mm. in diameter and was represented by a sherd comprising 15% of the total circumference.

MENDING HOLE

Rim No. 2 exhibits a conically drilled hole, 6mm. in diameter and 19mm. below the tip.

NECK AND SHOULDERS

This group is a catch-all category including neck, shoulder, and neck/shoulder, incomplete rim/neck and incomplete rim sherds.

TABLE 6 DISTRIBUTION OF NECK AND SHOULDER SHERDS

Type	N	%
Necks	12	42.9
Shoulders	4	14.3
Neck/Shoulders	5	17.9
Neck/Incomplete rims*	4	14.3
Incomplete rims	3	10.7
Total	28	100.1

*An incomplete rim is a rim fragment with no lip and no curvature.

As mentioned previously, the rims are generally collarless; consequently the vessel neck either constitutes the rim element or necks are absent. It is not surprising to find that the majority of necks are decorated. Of the 21 necks in the sample, 15 are decorated, as are three of the nine shoulders and all of the incomplete rims.

Decorative techniques include all of these exhibited on rims with the addition of incising. The incised sherds, one a neck shoulder with incising in a cross-hatched fashion on both neck and shoulder and one a neck with a collar suggestive of Lalonde High Collar wares are photographed in Plates 5 and 6. One fragment comprised of 6 sherds has shoulder, neck and rim elements intact. It has a collar bearing two lines of push-pull, one row of tool impressions in a zig-zag fashion, extending to the shoulder. This vessel is similar to a rim from Bois Blanc Island on Lake Michigan (McPherron 1967, Plate XVIII).

Body Sherds

A total of 107 analysable body sherds were separated according to surface treatment. Sherd interiors were also examined for evidence related to construction and finishing techniques. Body sherd thicknesses were recorded.

The breakdown for surface treated and plain sherds is given in the following table.

TABLE 7 DISTRIBUTION OF BODY SHERD DECORATION

Surface Treatment	f	%
Smoothed-over cord	56	52.0
Cord-wrapped paddle	21	20.0
Plain	15	14
Fabric Impressed	6	5.6
Brushed	6	5.6
Roughened	3	2.8
Total	107	100

Surface treated sherds dominate the sample. Only 15 or 14% of the bodies are plain. Of these 15, ten were very smooth, three exhibited very fine striations, and two had pitted surfaces. This difference in surface texture may be a result of paste composition, and/or a smoothing process.

Of the surface treated sherds, smoothed-over cord has the highest frequency; whether the smoothing was a deliberate process or a random occurrence in vessel construction is unknown. Variability in the degree of smoothing on individual sherds and between sherds was noticed.

Cord-wrapped paddle impressions are next in importance. On one of the larger sherds, the impressions made by the paddle are at different angles.

Fabric-impressed sherds were identified by the presence of warp and weft fibres.

Brushed sherds, six in number demonstrated shallow parallel impressions as if grasses had been used to aid in surface smoothing.

The last category, that of roughened sherds was characterized by sherds with grainy surfaces. In Fitting's analysis of the Riviere au Vase Site in Southern Michigan, roughened sherds constituted 12% of the ceramic sample.

> Greenman has suggested that this type of surface treatment is "apparently the result of washing before firing, with a consequent rough surface formed by extrusion of fine tempering fragments and by angular depressions left by tempering fragments that were detached in the process: (Greenman 1939b: 13 in Fitting 1965:36).

Interior Treatment

An examination of body sherd interiors revealed undulated, smoothed and striated surfaces.

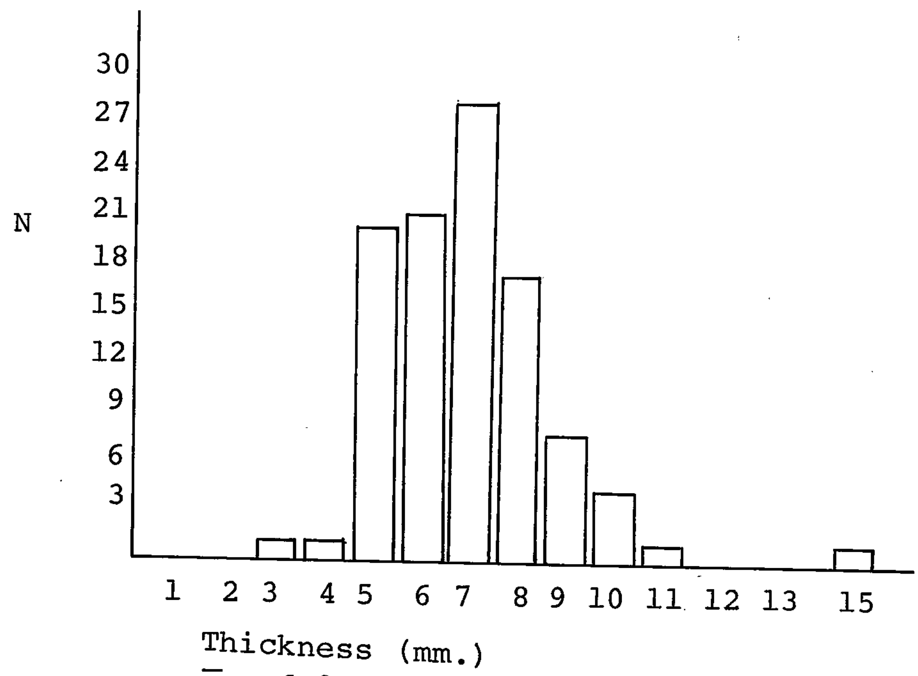
The undulated group (22%) exhibits uneven contours which might be formed by pressing a small rounded pebble into the clay or by using the fingers to shape the vessel. The smoothed (64%) and finely striated (14%) sherd interiors are indicative of finishing processes.

Body Thickness

Thicknesses of body sherds and mean thickness are given in the following bar graph.

Graph 2 Thicknesses and Mean Thickness of Body Sherds

Mm.	N	f
3	1	1
4	1	1
5	21	20
6	22	21
7	29	27
8	18	17
9	8	7
10	5	4
11	1	1
15	1	1
	107	100%



$\bar{x}$ - 6.9

Historical Relationships

Clearly present, as manifested by the castellations and an incised collar/neck, are sherds of the Middle Ontario Iroquois Tradition. (Wright 1966). These rims are most closely comparable to the late Pickering branch of circa 1200-1250 AD. (Wright and Anderson 1969; W.C. Noble, personal communication).

In addition, most of the rims appear to be similar to wares from Michigan (Juntunen ware, Bois Blanc ware) and one other affiliated with Late Blackduck. (W.C. Noble, personal communication).

These observations all suggest that the Renard ceramic assemblage probably dates ca. 1200-1250 AD.

This interesting mix of ceramic traditions at Renard is not unusual in the Upper Great Lakes Region. (Wright 1969). Such questions as, who utilized Renard and for what purposes, cannot be answered solely on the basis of the ceramic analysis but it can provide insights concerning the total site interpretation.

Summary

The ceramic sample from Renard is very small and therefore open to skewing bias.

The attribute analysis shows that:

1) Vessels are primarily grit tempered and constructed by the paddle and anvil technique.

2) The majority of body sherds are surface treated; cord-wrapped paddle, smoothed and unsmoothed techniques are represented by the highest percentages and brushed, fabric-impressed and roughened sherds are also present.

3) Body sherd interiors are either very smooth, undulated or exhibit fine striations.

4) Mean body thickness is 6.9 mm with a range from 3 to 15 mm.

5) Of the 39 rims, 31 have surface decoration. Decorative techniques include, in order of importance, tool impressing, push-pull, cord-impressing, dentate stamping, trailing and punctation.

6) Lips are decorated in all but six cases, and mean thickness for the lips is 7.6 mm with a range from 4 to 11 mm.

7) Interior decoration occurs on nine of the rims in the form of push-pull, cord-wrapped stick and tool impressions.

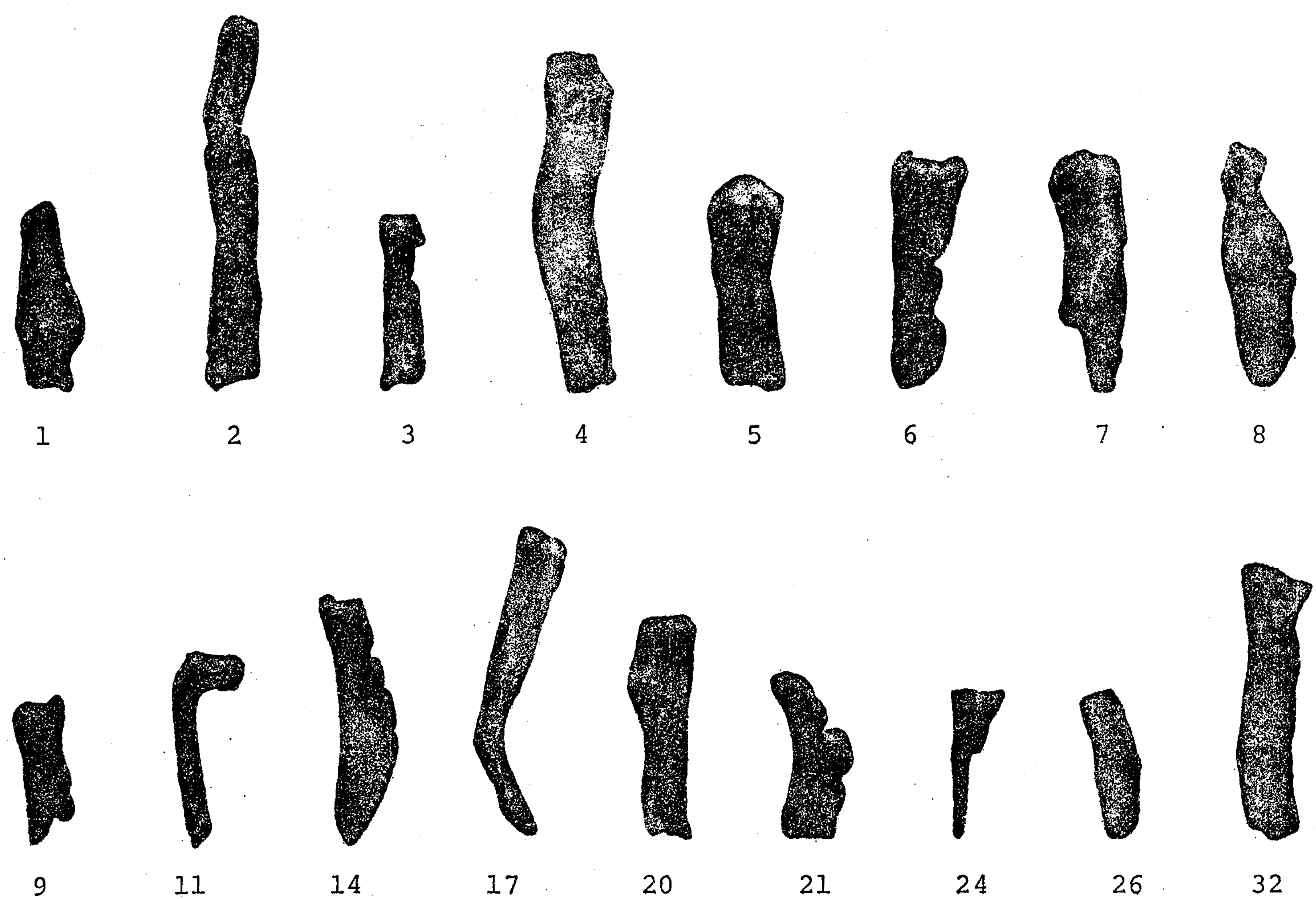
8) Rims are generally collarless with straight profiles and flattened lips.

9) Distributional studies revealed no correlation between certain decorative techniques and provenience. There are three areas of ceramic concentration: one on the south end of the excavated area (Squares S85, S90, S95); one on the north end (N15E5, N10E5); and the richest area between Squares S30 and S50. The decorative techniques are homogeneous and horizontal stratigraphy is not evident in ceramic decoration.

The ceramics at Renard indicate yet another example of mixed, but contemporaneous ceramic traditions; namely, the Ontario Iroquois, Michigan wares and perhaps Blackduck, on Northern Ontario Site.

From the Ontario Iroquois ceramics in particular a date of ca. AD 1200-1500 seems to be plausible for the Renard Site.

PROFILES OF 17 RIM SHERDS FROM CbHs-5



LITHICS

Locally available lithic resources suitable for fashioning tools have been outlined above. A sample of 108 chert specimens from CbHs-5 was submitted to Wm. Fox of the Ministry of Culture and Recreation for analysis in order to determine the locations, if possible, of the chert sources. Of the 108 specimens, the sources were ascertained for 36 while an additional 21 were broadly identified as Southern Palaeozoic, exact source unknown. Not surprisingly, the Renard people were using mainly Southern Paleozoic cherts from nearby Michigan and Manitoulin as compared to Northern Palaeozoic Hudson Bay Lowland chert.

The absence of significant quantities of Manitoulin chert is puzzling "considering its quality and the proximity of the source". (Fox personal communication). Of the Michigan sources, Scott Quarry and Norwood Locality are much in evidence among the lithic remains of the Renard inhabitants.

In order to facilitate the description of lithics and the tabulation of the results, a numbered system of lithic materials for the area has been codified. (Brizinski and Buchanan 1977, in progress).

Locale of Raw Material

1a) Chert

In proximity to the Mississagi Delta, the Gordon Lake Formation outcrops on Flack and Cobra Lakes about 30 miles from the site. Cherts of the Gowganda Formation are unavailable due to the nature of the formation itself. Gordon Lake chert seems to have been utilized only marginally.

1b) Quartz and Quartzite

These two materials are abundant within the immediate area of the Mississagi River mouth. (Kor, p.c.)

> Most quartzites result from the partial to complete recrystalization of sandstones. An important characteristic is the tendency for fracture surfaces to break through the individual grains rather than around them... Quartzite consists essentially of quartz, but a variety of other minerals may be present including carbonates, feldspars, mica, chlorite, amphibole, pyroxene, iron oxides, and garnets.
>
> (Wahlstrom 1960, p. 383)

Outcrops of quartzite occur frequently along the lower course of the river and good quality Lorraine quartzite is encountered at Elliot Lake and on Manitoulin Island. Surprisingly, very little quartzite from the latter source appeared at Renard. A significant amount of quartz and quartzite occurs among the lithic remains of the Renard people in the form of cores, flakes, chips and core and shatter fragments.

TABLE 8 DISTRIBUTION OF QUARTZ AND QUARTZITE

Category	NO.	%	Wt.(gm)	%	AVERAGE Wt.
Shatter Fragments	40	19.7	26.35	8.3	0.7
Core Fragments	9	4.4	24.71	7.8	2.7
Utilized Flakes	6	3.0	6.15	1.9	1.0
Chips	90	44.3	47.32	14.9	0.5
Utilized Cores	1	0.5	3.6	1.1	3.6
Bipolar Cores	17	8.4	45.15	14.2	2.7
Exhausted Cores	6	3.0	9.92	3.1	1.7
Tabular Cores	6	3.0	32.37	10.2	5.4
Irregular Cores	14	6.9	80.56	25.4	5.8
Flakes	14	6.9	41.41	13.0	3.0
Total	203	100.1	317.54	99.9	

1c) Slate

Similarly, slates outcrop frequently along the lower course of the Mississagi River. "Slates are exceedingly fine-grained rocks which have a remarkable cleavage which permits them to be split into thin and broad sheets". (Ford 1951, p.338). Because of the unique cleavage plane of slate, cultural modification is difficult to determine.

There are two problematic specimens which could be tools; opinion varies. The first is a roughly rectangular block of slate, lenticular in cross section, which may have been flaked along three edges; and the second is roughly ovoid, plano-convex in cross section and possibly worked along one margin.

TABLE 9 METRIC DATA OF PROBLEMATIC SLATE OBJECTS

	LENGTH (mm)	WIDTH	THICKNESS	Wt. (gm)
1	87	73	30	230
2	88	54	17	93

1d) Cobblestones

Since all lithic materials are present at the site as a result of cultural activity, all those recovered from the cultural deposits of the site were collected and transported to the laboratory. None of the specimens, however, exhibited evidence of human alteration. Table 10 summarizes the metric data.

TABLE 10 DISTRIBUTION OF COBBLESTONES

Type	No.	Wt.(gm)	Average Wt.
Waterworn Pebbles	12	116	9.6
Waterworn Gabbros	2	392	196
Granite	25	816	32.6
Unworked Sandstone	16	233.5	14.6
Granite Diorite	14	111	7.9
Limestone Cobbles	3	67.4	22.5
Unworked Slate	76	679	8.8

1e) Siltstone

Rocks classified in this category contain particles which range in size from 0.0039 mm to 0.0625 mm (Wahlstrom 1960, p.347).

> Among the common constituents of siltstone ... are quartz, chalcedony, opal, feldspar, mica, hydromica (illite), chlorite, iron oxides, kaolinite, montmorillonite, carbonates, carbonaceous materials, glauconite, and amorphous mixtures of complex composition.
>
> (Wahlstrom 1960, p.348)

Siltsone occurs in the Mississagi Formation beds and two artifacts, a tiny, beautifully-shaped projectile point and a wedge of this material were recovered. The metrical data are as follows.

TABLE 11 METRIC DATA OF SILTSONE PROJECTILE PT. AND WEDGE

	WEDGE	POINT
Max. Length	24 mm	24 mm
Max. Width	21	14
Max. Thickness	5	4
Wt. (gm)	2.76 gm	0.95 gm

Further metric data on projectile follows in Table 14.

The projectile point is side notched and exhibits delicate marginal pressure flaking. The body is slightly ovate with semi-circular notches while the base is slightly concave and has been thinned on the dorsal surface.

Rectangular in outline, the wedge is worked along three sides; the platform is flat and there is evidence of some bifacial thinning.

> The name of this class can be stripped of functional connotation if one thinks of 'wedge' as a geometric form ... This category is a rubric which includes all flakes with limited facial as well as

> marginal retouch on opposite margins of both faces.
> (Morlan 1973, p.25)

1f) Sandstone

Sandstone is similar to siltstone, the only difference being the size of the particles which range from 0.0625 mm to 2.0 mm (Wahlstrom 1960, p.346).

> Sandstones are mechanical in their origin, being formed by the consolidation into rock masses of beds of sand and gravel ... The cement which serves to bind the sand grains together may be deposited silica, a carbonate, usually calcite, an iron oxide, hematite or limonite, or fine-grained argillaceous or clay-like material. The colour of the rock will depend in large measure upon the character of the cement ... those that contain an iron oxide are red to reddish-brown. It is to be noted that when a sandstone breaks it is usually the cement that is fractured, while the individual grains remain unbroken, so that the fresh surfaces of the rock have a granular appearance and feeling. The chief mineral of sandstone is quartz ...
> (Ford 1915 p.335-6)

Two culturally altered specimens of sandstone were recovered. The first is reddish-brown, elliptical in cross section, parallel-sided and appears to be the midsection of an abrading stone. The central axis of this artifact is much lighter in colour than the margins which are mottled black.

The second is slightly darker and brown in colour. It is plano-convex in cross section, with parallel sides and possibly was also used as an abrader. There is a slight ridge on the dorsal surface along which several longitudinal striations and scratch marks are visible.

Because of their composition, sandstones would make excellent abraders and pieces generally shaped as those described above can probably occur naturally.

The metric data are tabulated as follows:

TABLE 12 METRIC DATA OF SANDSTONE ABRADERS

Specimen	Length (mm)	Width	Thickness	Wt. (gm)
1	36	34	15	31.7
2	71	22	9	23.5

Imported

Cherts imported to the site include those from Northern and Southern Palaeozoic Formations.

2) Hudson Bay Lowland Chert

Derived from three formations in the Hudson Bay Lowlands, (Sanford, Norris and Bostrock 1968) the chert at Renard attributed to this source ranges in colour from black to grey to dark and light brown. Mottling is usually associated with the browns and greys and all examples have a glossy lustre.

Southern Palaeozoic

3 a) Manitoulin Island Chert

This type is derived from the Fossil Hill Formation on the island (Fox, p.c.) and the Renard Site sample included colour variations from grey to light brown, tan and almost white. The mottled characteristic of this chert is more predominant than is the case with the first type described.

3 b) Michigan Chert

Three chert sources from Michigan are represented in the lithic assemblage of Renard: Norwood Locality, Scott Quarry and Campbell Quarry.

Norwood Locality chert is derived from the Petosky Formation, Traverse Group (Fox, p.c.) in northwestern Michigan. All of the Renard specimens were mottled white, grey and brown, with the two former colours predominating.

Scott Quarry is located in northern Michigan in the Cordell Formation, Traverse Group (Fox p.c.) and yields chert of dark browns and greys.

Campbell Quarry, Dundee Formation again situated in northern Michigan is represented at Renard by five small grey and brown mottled specimens.

The following table summarizes the distribution by number and weight of the chert types recovered from the site. The collection of specimens identified by Wm. Fox was used as a basis for allocating the remainder of the chert to the proper category, and all Renard chert is included in this table.

TABLE 13 DISTRIBUTION OF CHERT TYPES FOR CbHs-5

Type	No	%	Wt.	%
2a	87	29.4	105.54	23.8
3a	35	11.8	58.85	13.2
3b	49	16.6	84.23	19.0
3*	49	16.6	81.4	18.4
5	1	0.3	1.69	0.4
Unknown	32	10.8	46.6	10.5
Thermally Altered	43	14.5	64.92	14.6
Totals	296	100.0	443.23	99.9

*'3' represents those cherts which are derived from Southern Palaeozoic sources of unknown location.

A strong preference for Southern Palaeozoic cherts rather than Northern is evident in the ratio of 45:29%. Chert artifacts are described separately.

4 a) Lake Superior Agate

Two examples of Lake Superior Agate likely derived from the Recambrian Osler Group Formation (Fox, p.c.) appeared at Renard in the form of a flake (0.3 gm) and a core fragment (1.38 gm), both light brown with reddish striations.

Southern Ontario Chert

This last lithic category includes

5 a) One utilized flake of unknown origin from Southern Ontario. Some cortical material adheres to the flake which is of a mottled brown and white colour and roughly rectangular in shape. Retouching extends for 1 cm along the edge opposite the cortex.

DESCRIPTION OF CHERT ARTIFACTS

Projectile Points

One chert projectile was manufactured from an exotic, possibly Delaware chert, and the other from the Hudson Bay Lowland variety. No. 31, the exotic specimen, is side-notched, plano-convex in cross section and assymetrically biconvex in longitudinal section. Lamellar flakes have been removed bifacially in the primary chipping process and secondary conchoidal flake scars are present on the lateral edges. The subconvex base has been thinned by the removal of longitudinal lamellar flakes. The left corner (dorsal face up) has been broken from notch to corner, and the remaining notch is rectangular in outline. The damage resulted from a post-recovery accident in the laboratory and is not due to use. Wear patterns exhibited primarily on the right dorsal and left ventral edges are in the form of two rows of minute step fractures. There is little if any evidence of wear on the right ventral and left dorsal edges indicative of the possibility that this artifact functioned as a knife. The notches, particularly the right one, are roughened and fractured around the margins, probably due to hafting. The tip is slightly rounded and diplays only minimal signs of wear.

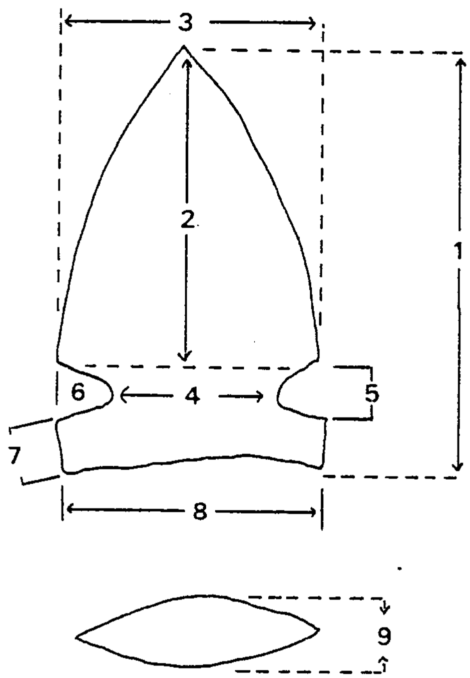
No. 40, of Hudson Bay Lowland chert, is a small, triangular, specimen, plano-convex in cross section and biplano in longitudinal section. The base is slightly sub-convex and has been bifacially thinned. Stepped retouch occurs from corner to tip on the left side of the dorsal surface and fine marginal retouch extends along the right edge. The hafting element consists of shallow corner notches similar to those described and illustrated by McPherron (1967, Plate XXXII, i). Wear patterns are confined mainly to the left edge, the notches are relatively unworn while the base bears minute step fractures.

TABLE 14 METRIC DATA OF CHERT AND SILTSTONE PROJECTILES

Number	31	40	No#
Type of material	2a	2a	1e
Overall Length	44.2 mm	24.8 mm	24.0 mm
Length of Blade	30.2	15.9	14.8
Maximum Width of Blade	25.5	14.1	14.0
Width at Neck	15.7	11.0	8.1
Width of Notch	4.7 (rt)		2.9 (rt); 3.5 (lt)
Depth of Notch	4.0 (rt)		2.2 (rt); 2.3 (lt)
Distance Notch to Corner	2.7 (rt)		4.0 (rt); 3.7 (lt)
Basal Width	20.9*	11.9	13.0
Maximum Thickness	7.3	4.1	4.0
Weight	7.1 gm	1.4 gm	0.95 gm

*Estimated
rt - right; lt - left

Projective point measurements taken are illustrated in the following diagram.



(1) Overall length
(2) Length of blade
(3) Maximum width of blade
(4) Width at neck
(5) Width of notch, left, right
(6) Depth of notch, left, right
(7) Distance (notch to corner), left, right
(8) Basal width
(9) Maximum thickness

Scrapers

Nine scrapers, four of Hudson Bay Lowland chert, one of Campbell Quarry chert, another from an unknown Southern Palaeozoic source and three whose geological provenience is unknown were recovered. Seven are end scrapers, one is an end-side scraper and the remaining one is a multi-purpose tool, No. 63. It is roughly triangular in outline with one arm of the triangle being slightly curved, plano-triangular in cross section and displays a dorsal ridge. Two sides of the artifact exhibit fine stepped retouch unifacially while the curved arm has been bifacially worked. The edge angles of each arm vary with the longest being bifacially retouched and medium in size, the right arm is acute and the base steep. (After Movius 1968)

No. 590 is composed almost entirely of cortex with only a small amount of chert adhering to the ventral surface. It is amorphous in cross section and a vertical scraping face has been prepared by the removal of lamellar flakes along the distal edge. A scraper of this cortical material is likely not as efficient as a chert tool and wear was not detected along the worked edge.

Plano-triangular in cross section, No. 86, an arc end scraper appears to have been made from an exhausted core. It is semi-elliptical in outline and the base has been snapped.

The last unnumbered scraper of Hudson Bay Lowland chert is semi-circular in outline, trapezoidal in cross section and appears to have been snapped. A vertical scraping face was prepared by the removal of lamellar flakes and the edge was retouched with fine flaking.

One small scraper, No. 28, of Campbell Quarry chert was rectangular in outline. A prepared scraping face exhibiting fine marginal retouch was continuous along two edges.

A snapped end scraper, trapezoidal in cross section, without evidence of wear was derived from an unknown Southern Palaeozoic source.

Three specimens manufactured from unknown chert sources were recovered. No. 13 is a larger arifact possibly made from a bipolar core as there is evidence of extensive crushing at one end and two unobliterated surfaces for flake removal. Rectangular in outline and assymetrically bitriangular (amorphous) in cross section, this specimen has a scraping face prepared by the removal of lamellar flakes perpendicular to the longitudinal axis with finely stepped retouch along the edge.

No. 530 is plano-triangular in cross section and semi-elliptical in outline. The ventral surface is flat and there is a sharp ridge along the dorsal face. Scraping faces have been prepared along two edges and finished with stepped retouch. There is evidence of fine pressure flaking for six millimeters along the lower right edge of the dorsal surface.

The last unnumbered specimen of unknown source is a small arc-end scraper, trapezoidal in cross section and parabolic in outline.

Scraper edge angles vary from 40° to 87° with the greatest concentration falling between 85° and 87°. Movius (1968, p. 14) classifies edge angles in the following manner:

Very acute	25°
acute	26° - 50°
medium	51° - 75°
steep	76° - 85°
Perpendicular	86°

Interestingly enough the small multi-purpose tool exhibited three different edge angles for each of its worked edges - acute, medium, and steep. Table 16 lists the angle measurements for each of the scrapers.

The edge angle of a scraper is important in the determination of what tasks the tool performed. Wilmsen (1974, p. 91, 92) states that:

> Edges of 35° to 45° are highly efficient for cutting soft materials and for butchering operations. Angles between 50° and 75° have relatively large edge mass concentrations. They are able to absorb heavy sheer stresses. Implements with edges of this size are effective for working hard materials. The smaller angles in this range are suitable for cutting bone and wood, the steeper ones for scraping and shaping these materials.

All eight of the Renard scrapers (excluding the multi-purpose tool which has edge angles of 40^{o}, 70^{o} and 87^{o}) bear steep edge angles which fall either at the extreme of Wilmsen's classification or beyond it. However, McPherron (1967, p.158) opines that the minute step flaking found on many Juntunen specimens and similarly, on several Renard counterparts indicates that these scrapers were seldom used on hard materials such as bone or had been resharpened. Only a small quantity of bone was recovered from Renard, no fragments of which exhibited signs of working. Evidence of resharpening or trimming of end scrapers is apparent in the thickness of the scraping face. Five of the eight scrapers have scraping face thicknesses ranging from 5.0 to 7.0 mm. Six of the scrapers exhibited rounded edges hypothetically conveying their use on "abrasive but soft materials". (McPherron 1967, p. 158) Semenov (1964, p.87) believes that end scrapers were used "for treating skin, for scraping and softening skins after they had been taken off the animal ... The blade of the scraping tool needs to be sharp, but not so sharp that it cuts the pelt". Scraper attributes important in determining use on soft materials include the length and convexity of the scraping face and the presence of a hafting element.

All of the Renard scrapers are relatively small in size and yet with the possible exceptions of the two snapped specimens and a limited amount of basal thinning there is no evidence of hafting, although the small scrapers would have been troublesome to hold unhafted. McPherron (1967, p.158-9) notes a similar situation with the scraper complement of the Juntunen Site and states that "Only one (scraper, out of a total of 245) showed any signs of alteration for hafting, and the generally small size is hard to understand unless most scrapers recovered were items discarded as being too small after repeated sharpening".

Following Movius (1968), the length of the scraping face of each scraper was determined although convexity was established for only five scrapers (three arc end scrapers and two assymetrical end scrapers) and for one arm of the multi-purpose tool. This data appears in the following table.

TABLE 15 LENGTH AND CONVEXITY OF SCRAPING FACES OF RENARD SCRAPERS

Number	Type of chert	Convexity Radius of Circle	Degrees of Arc	Length of Scraping Face
590	2a	15 mm	120°	21 mm
86	2a	15 mm	140°	22 mm
No #	2a	15 mm	100°	19 mm
28	3a	17.5 mm	100°	19 mm
No #	U	10 mm	180°	36 mm
63(mpt)	2a	22.5 mm	100°	27 mm

U - Unknown
mpt - multi-purpose tool

Scraping faces tend in many cases to be more convex if the tool is used on soft materials and wear on longer faces is usually focused. The size of the Renard sample precludes making any generalizations in these

TABLE 16: CHERT SCRAPER DATA

No.	Max. Length	Max. Width	Max. Thickness	Weight (Gm.)	Length of scraping face	Cross section	Edge contour	Edge angle	Type of retouch	Type of Wear	Type of raw material
590	29.2	26.0	11.5	7.14	21	Amorphous	Arc	Steep 85^o	end, non convergent	no wear	2a
86	18.5	15.3	6.4	1.60	22	Triangular	Arc	Steep 85^o	end	continuous base snapped	2a
No#	14.8	11.3	2.7	0.56	19	Trapezoidal	Assymetrical	Steep 77^o	end non convergent	continuous	2a
28	18.1	17.3	5.9	1.75	19	Rectangular	Assymetrical	Steep 87^o	end non convergent	continuous	3b
No#	22.8	16.6	4.5	2.17	14	Trapezoidal	Flattened	Steep 85^o	end, stepped	no wear snapped	3
13	24.8	17.7	7.4	3.6	19	Amorphous	Flattened	Steep 85^o	end semi-convergent	continuous	unknown
530	20.7	13.4	6.7	2.15	33	Triangular	Assymetrical	Steep 87^o	end-side stepped	continuous	unknown
No#	15.8	13.4	8.3	2.39	36	Trapezoidal	Arc	Steep 85^o	end stepped non-convergent	focussed	unknown
63	24.6	12.8	4.5	1.27	left side 27	Triangular	Arc	Acute 40^o	stepped bifacial	continuous	2a
					ride side 18		Flattened	Medium 70^o	stepped non convergent	continuous	
					Base 13		Flattened	Steep 87^o	stepped non convergent	continuous	

Very acute angle = $<25^o$; acute $26^o - 50^o$, medium $51^o - 75^o$; steep = $76^o - 85^o$; perpendicular $> 86^o$ (Movius 1968., p.14)

"MEASUREMENTS IN mm."

respects, although it can be noted that the mean degree of convexity is 123°. This attribute may prove significant in determining use. Semenov (1964, p.88) indicates that "roundness and convexity was necessary in working on the under (flesh) side of a skin, which would yield under the pressure of a comparatively narrow implement like a scraper".

Wedges

Two wedges, one of siltstone previously described, were recovered. The other is of Scott Quarry chert with a small amount of cortical material adhering to one end. The ventral surface is flat while the opposite face is marked by a ridge. Wear in the form of chatter marks is exhibited along both right and left margins. Metrical data are as follows:

TABLE 17 METRIC DATA OF CHERT WEDGE

Length	29 mm
Width	13 mm
Thickness	6 mm
Weight	1.87 gm

Wedges

> differ from most concepts of a tool since there is no stage at which they can be considered finished. They are initially short spalls or blocky fragments which rapidly disintegrate through use until they reach a size that is difficult to hold, at which time they are discarded. Consequently there are no intermediate steps of tool manufacture, and attempts

> to break them down into types lead to criteria which reflect only stages of exhaustion.
>
> (MacDonald 1968, p. 86)

Such tools can perform a variety of functions such as gouging, chiselling, graving and cutting (Wright 1969, p. 18) for working bone and probably wood. (MacDonald 1968, p. 89)

BIPOLAR CORES

The bipolar chipping industry is very much in evidence at the Renard Site: 35 bipolar cores (17 quartzite, 18 chert) were recovered along with eight utilized cores and one scraper manufactured from bipolar cores.

> The bipolar technique is an interesting one, since it allows the utilization of materials too small to be worked by the other techniques... It is not a technique designed to yield flake preforms for subsequent tool manufacture since the flakes so produced are very irregular in form.
>
> (MacDonald 1968, p. 69)

Binford and Quimby (1963, p. 277) also indicate that the technique is "a crude and poorly controlled method of working stone" and delineate the distribution of this technique in the Upper Great Lakes area as being from the Door Peninsula of Wisconsin to Michigan and north to Pic River.

The eighteen chert bipolar cores are relatively small in size ranging from 0.33 grams to 10.82 grams in weight. Generally, those cores from Northern Palaeozoic sources tend to be smaller than those from Southern Palaeozoic ones with the exception of an extremely minute core of Campbell Quarry chert weighing only 0.33 grams. The mean weight is 3.1 grams. Using Binford and Quimby's (1963) typology the Renard bipolar cores were sub-divided as follows:

TABLE 18 DISTRIBUTION OF BIPOLAR CORE TYPES

Type of Core	N	f
Ridge and Basal Area	3	17.6
Point and Basal Area	4	23.5
Opposing Ridges	8	47.0
Opposing Points	2	11.8
	17*	99.9

* One specimen could not be identified as it was missing.

Only four of Binford and Quimby's six types are represented at Renard. Descriptions of each type follow:

Ridge and basal area: "the basal zone of percussion is an area of unmodified cortex from the original tabular pebble. The impact zone is a ridge or series of overlapping cones of percussion. Scars originating at the ridge of percussion are dominant on the cleavage faces, whereas scars originating at the basal area tend to be diminutive, irregular and weak".

Point and basal area: "Another ... variety is characterized by a third cleavage face which is essentially the end of the core from which flakes originating at the ridge detach what amounts to a cross section of the core. When removal of the latter type of flake has progressed along the length of the ridge, the core is reduced to a point of percussion at the zone of impact while the base still remains an area".

Opposing ridges: Another type of core is "one with opposed ridges of percussion. With this core form it is impossible to determine which ridge served as the base and which served as the impact zone. Judging from the type of bruising and the frequency with which scars originating at the opposed ridges dominate cleavage faces, it would appear that both ridges variously served as base and zone of impact. This type of core is the result of the reduction of a small area of percussion to a true ridge, therefore obviating the possibility of further flake removal without changing the striking angle".

Opposing points: "The area which had previously served as the base was then struck in such a way as to produce a ridge of percussion. Success resulted in a core form with a point of percussion as the base, opposed by a ridge of percussion. Failure in this attempt could result in the production of the fourth variety of core, one with opposing points of percussion".

(Binford and Quimby, 1963, pp. 292-293)

UTILIZED CORES

Among the high percentage of cores and core fragments (42% by weight of the Renard lithic assemblage) eight specimens exhibited evidence of retouching after having been exhausted. The minute size of most of these utilized cores mitigates against inferring possible use, other than as undifferentiated scraper-like tools.

TABLE 19 DATA OF UTILIZED CORES

NO.	L	W	T	WT	TYPE	TYPE OF CORE	LENGTH OF RETOUCH	TYPE OF RETOUCH	ANGLE
-	25	18	7	3.6	1b	Bipolar	17mm.	stepped	steep
30	18	6	4	.5	2a	Bipolar	16mm.	stepped	steep
-	20	10	5	.8	2a	Possible Bipolar	13mm.	stepped	medium
-	18	10	7	1.2	2a	Bipolar	7mm.		steep
6	9	11	4	1.5	2a	Bipolar	12mm.	bifacial stepped	
68	24	13	5	1.7	3	Bipolar	20mm.	stepped	steep
47	18	9	3	.4	3	Bipolar	20mm.	stepped	steep
60	26	19	8	2.7	U	- - - -	28mm.	marginal	medium

U - Unknown
Measurements are in grams and millimeters.

EXHAUSTED CORES AND CORE FRAGMENTS

Following Morlan (1973, p. 12) exhausted cores are defined as those specimens which

> have been flaked so extensively on one face as to eliminate completely the flat surface originally developed as a platform. A relatively sharp margin gradually develops in place of the platform, so that platform length approaches zero and can no longer be used for orientation of the core. Flaking on several faces may reduce a core to little more than a globular lump of stone which may not be subject to consistent orientation.

TABLE 20 METRIC DATA OF CHERT EXHAUSTED CORES

TYPE	NO.	TOTAL WEIGHT (gm.)	MEAN WEIGHT (gm.)
2a	3	8.4	2.8
3a	1	4.1	
3b	4	13.8	3.45
3	2	4.89	2.45
Unknown	1	2.3	
Thermally altered	3	8.43	2.81
Total	14	41.92	

S.D.--1.1.

The classification of core fragments "includes not only fragments of cores but also any complete core which lacks a discrete, identifiable platform". (Morlan 1973, p. 6,9)

TABLE 21 METRIC DATA OF CHERT AND AGATE CORE FRAGMENTS

TYPE	NO.	TOTAL WEIGHT (gm.)	MEAN WEIGHT (gm.)
2a	14	22.68	1.62
3a	10	17.53	1.75
3b	6	13.06	2.18
3	11	16.41	1.5
4	1	1.38	
Unknown	5	25.14	5.0
Thermally altered	11	18.64	1.69
Total	58	114.84	

UTILIZED FLAKES

A total of eleven utilized chert flakes was recovered from CbHs-5. Retouching along one or more edges was the criterion by which flakes were admitted to this class. Generally, the utilized flakes were very thin and flat and of a size which presumably would be comfortable to hold between the fingertips, although at least three specimens appear to have been snapped. Retouch extends along the edges in most cases for only one centimeter or so. One large specimen with limited retouch was composed mainly of cortex and a small amount of Scott Quarry chert. Metric data of utilized chert flakes are as follows:

TABLE 22 METRIC DATA OF UTILIZED CHERT FLAKES

TYPE	NO.	TOTAL WEIGHT (gm.)	MEAN WEIGHT (gm.)	MEAN LENGTH OF RETOUCH (cm.)
2a	6	11.09	1.8	1.2
3b	2	10.97	5.48	1.85
3	1	.95	-	.04
5	1	.62	-	1.1
Unknown	1	1.71	-	0.8
Total	11	25.34		

FLAKES AND SHATTER

The number and type of chert flakes and shatter according to chert source is summarized in the following table.

TABLE 23 NUMBER AND TYPE OF CHERT FLAKES AND SHATTER FRAGMENTS ACCORDING TO CHERT SOURCE

TYPE OF FLAKE	2a	3a	3b	3	4	U	T.A.	TOTAL
DECORTICATION							2	2
PRIMARY		2	15	6			4	27
INITIAL	19	11	2			3		35
SECONDARY	13	6	4		1	7	7	38
THINNING			5	6				11
PRESSURE	4							4
TOTAL	36	19	26	12	1	10	13	117
SHATTER	9	3	5	11		10	13	51
TOTAL	45	22	31	23	1	20	26	168

U - unknown T.A. - thermally altered

Only two decortication flakes appeared in the lithic detritus. Both had been thermally altered and are irregularly scarred.

Primary flakes are defined as those removed during the "roughing out" or preform manufacture stage and many exhibit cortical material near the area of the striking platform. In general, the smallest flakes approximate the size of a dime while the largest are two to three times this size. The axis of percussion and the longitudinal axis are usually parallel. Cross-section variations include plano-triangular, concavo-convex and plano-convex while overall configurations are quite diverse. Negative bulbs of percussion are usually present on the infernal faces.

Initial flakes detached in the incipient shaping stages of tool production display amorphous overall shapes with the dorsal or external face manifesting two or more flake scars forming a medial ridge. Internal faces bear little or no evidence of negative bulbs of percussion. One flake of Hudson Bay Lowland chert possesses what might be a graver spur; whether this is a result of intentional flaking or a consequence of the breakage pattern is indeterminable, although minute fractures along the edge may indicate wear. The majority of these flakes are plano-triangular or plano-convex in cross section although a few are concavo-convex.

Secondary flakes are, of course, much smaller in size than those of either of the two categories described above. Edge configurations are not as diverse, being primarily rectanguloid or trianguloid while cross sections show the same kinds of variations with the addition of those of a flattened character.

The few pressure and thinning flakes are presumed to be derived from a final shaping or finishing process and are quite small in size.

Shatter fragments were defined as those pieces lacking "any identifiable morphological characteristics" such as a bulb of percussion, "in the form of small slivers..., broken or snapped sections of flakes, or broken off distal ends of flakes". (Binford and Quimby 1963, pp. 298-299)

The distribution of the chert flakes and shatter fragments by number and weight appears in the following table.

TABLE 24 DISTRIBUTION BY NUMBER AND WEIGHT OF CHERT FLAKES AND SHATTER FRAGMENTS

TYPE OF FLAKE	N	%	WT.	%
DECORTICATION	2	1.7	7.41 gm.	10.6
PRIMARY	27	23.1	25.93	37.1
INITIAL	35	29.9	26.45	38.0
SECONDARY	38	32.5	6.56	9.4
THINNING	11	9.4	3.21	4.6
PRESSURE	4	3.4	.39	.6
TOTAL	117	100.0	69.95	100.3
SHATTER	51		23.2	

SUMMARY

Finished lithic artifacts include two wedges, three projectile points and nine scrapers, representing 2.6% of the lithic assemblage by number or 2.9% by weight. Cores and core fragments totalled 30.4% of the collection by number and 42% by weight while unutilized flakes and chips were computed to exist in the proportions of 43.2% by number and 13.3% by weight. The technology manifested in the lithic collection is directed toward the fabrication of small, sharp-edged tools.

Interesting to note is the distribution of the quarries from which the Renard inhabitants derived their raw materials. (Illustrated by Map 6). The Southern Palaeozoic quarries are located on Manitoulin Island and Northern Michigan and all fall within a distance of 100 miles. The Northern Palaeozoic or Hudson Bay Lowland chert outcrops are not precisely known.

The ratio of cherts from Southern Palaeozoic sources as opposed to those from Northern Palaeozoic sources is 132:88 (by number) and 217:113 (by weight). These statistics may indicate that there is a preference for cherts from the Southern Palaeozoic quarries of Norwood Locality, Campbell and Scott Quarries and the Fossil Hill Formation of Manitoulin Island. Several pieces of Renard chert are derived from the Norwood Locality of northwestern Michigan, just a few miles from the Eastport Quarry, the chert of which represents one third of the lithic industry of the Juntunen Site of the Bois Blanc Island. (McPherron 1967, p. 124)

Of the eighteen chert bipolar cores from Renard, seven are of Hudson Bay Lowland chert and nine are of Southern Palaeozoic cherts; four utilized bipolar cores are of Northern Palaeozoic Hudson Bay Lowland chert while two are from Southern Palaeozoic Formations. Since the bipolar technique of core reduction is used primarily on pebble core cherts (such as those of the Hudson Bay Lowland) the high incidence of evidence of bipolar utilization among the Southern Palaeozoic cherts is interesting. It may be inferred that the Renard inhabitants were able to obtain only small cores of chert through trade rather than through actual quarrying or that pebble core tools were a necessity. The latter suggestion seems likelier in light of the probability that pebble core tools used in a cutting capacity are appropriate for a summer-fall occupation such as is posited for Renard.

Local materials available to the aboriginal inhabitants (ie. siltstone, sandstone, agate, slate) received marginal utilization while quartz and quartzite was the most numerically important category next to chert. These materials accounted for 27.7% by weight of the lithic assemblage; although no finished tools had been fabricated from these materials a large percentage (61.8% by weight) of the recovered quartz and quartzite was in the form of cores (bipolar, exhausted, tabular, irregular and fragments). The following table illustrates the percentages by number and weight of the culturally altered lithics of CbHs-5.

TABLE 25 PERCENTAGE BY NUMBER AND WEIGHT OF CULTURALLY ALTERED LITHICS OF CbHs-5

TYPE	NO.	%	WT. (gm.)	%
1b	203	40.0	317.54	27.7
1c	2	0.4	323	28.2
1e	2	0.4	3.71	0.3
1f	2	0.4	55.2	4.8
2a	88	17.4	112.64	9.8
3a	35	6.9	58.85	5.1
3b	49	9.7	84.23	7.4
3	48	9.5	74.3	6.5
4a	2	0.4	1.68	0.1
5	1	0.2	1.69	0.1
Unknown	32	6.3	46.6	4.1
Thermally altered	43	8.5	64.92	5.7
TOTALS	507	100.1		

HISTORICAL RELATIONSHIPS AND DATING

Although the number of finished tools precludes the advancing of positive inter-site connections, certain similarities have been noted between the projectile points of the Renard Site and those illustrated in McPherron (1967), Plate XXXII, i, w; Plate XXXIII, n. McPherron (1967, p. 148) types the former two specimens as Juntunen Notched Points and describes them as "characteristically triangular" in outline and "commonly small in size".

McPherron (1967, p. 270) assigns the Juntunen Phase to Late Woodland times (approximately Ad. 1225 to 1400) before the Uren Substage of the Middle Ontario Iroquois; a date of AD, 1280±100 has been attributed to the late pre-Uren site of Bennett thus establishing a base date for the earliest Juntunen Phase manifestations. (McPherron 1967, p. 278).

A specimen from the Pic River Site (Wright 1966, Plate IV, Stratum III, 9) resembles the side notched siltstone projectile recovered from Renard. Radiocarbon assay determined that Stratum III of the Pic River Site falls into the time span AD. 962±80 (Wright 1966, p. 56) which, on the basis of ceramic evidence, appears to be slightly early for Renard.

COPPER

Seven native copper artifacts were obtained during the excavation of the Renard Site and two from survey test pits. In all instances, the specimens were found in association with the cultural material of the habitation area.

Two of the artifacts, an awl and a tubular bead, are readily identifiable. The awl is rectangular in cross-section, tapering to a point at one end. The opposite end is blunt but may originally have been pointed and broken through use.

A third item of sheet copper, possibly a cutting or scraping tool, exhibits relatively sharp lateral edges and what may have been a hafting element formed by folding over the lateral edges on one of the ends. The opposite end is rounded.

The remaining six specimens consist of flattened, bent and rolled copper fragments of amorphous shape and are probably wastage.

The following chart displays the metric data:

TABLE 26 METRIC DATA OF COPPER SPECIMENS

ARTIFACT	MAX. LENGTH (mm.)	MAX. WIDTH (mm.)	MAX. THICKNESS (mm.)	WT. (gm.)
Awl	103	3.3	2.1	4.0
Bead Fragment	17	5.4	--	0.8
Blade (?)	44	12.8	1.3	3.9
WASTAGE				
Sheet Fragment	28.6	8.3	7.0	0.5
Sheet Fragment	18.4	7.4	1.5	0.6
Rolled Fragment	31	8.6	--	5.3
Amorphous	--	--	--	1.8
Amorphous	--	--	--	5.9
Amorphous	--	--	--	5.3
			TOTAL	28.1

Chemical tests were performed on the copper specimens from CbHs-5. When dissolved in dilute nitric acid the copper reacted to produce a cloudy and precipitous solution indicating the presence of silver. This established the native as opposed to European origin of the copper since only native copper has silver as a major trace element and it is lacking in smelted European copper.

Foliations visible on all of the copper artifacts give an indication of the technology involved in the manufacture of copper tools and ornaments. Very thin sheets of native copper which may have originated either in a vein of natural formation or from the pounding of lumps of copper were hammered and folded to the desired thickness and then shaped into the required object. Whether the material was heated or cold-forged is unknown.

The origin of the native copper was not determined. It is not naturally available on Fox Island, but copper bearing formations have been noted on the Mississagi River about twenty miles from the delta, and to the west near Bruce Mines. (Murray 1859, p. 104). Of necessity, copper was, therefore, imported to the Renard site; the presence of wastage copper suggests that the Renard inhabitants were producing their own copper tools.

SUMMARY AND CONCLUSIONS

The artifactual, ecofactual and contextual data indicate that the Renard Site, CbHs-5, was occupied during the summer-fall months some time between A.D. 1200 to 1500. Judging from the total area of the site, aboriginal inhabitants must have returned habitually to this location over the years, as the delta provides an abundant subsistence base. The ceramic evidence implies that grit-tempered, vessels were constructed by the paddle and anvil technique and decorated with tool-impressing, push-pull, cord-impressing, dentate stamp, trailing and punctuation applied to the rim. Body surface treatments include cord-wrapped paddle, smoothing, brushing, fabric-impressing and roughening.

In the lithic assemblage, the bipolar technique of core reduction was most prominent and the entire stone technology seems to be directed toward the production of small, sharp-edged tools. A variety of raw materials were utilized: quartz and quartzite, slate, siltstone, sandstone, agate and cherts from the Hudson Bay Lowlands, Southern Ontario and quarries in Northern Michigan. The use of native copper was evident at Renard although the source of this material was not determined. Perhaps a trace element analysis would be helpful.

Interesting to note is the apparent relationship between the sources of chert in Northern Michigan and decorative design elements on some of the pottery sherds reminiscent of Michigan wares. Wright's

(1968) hypothesis of female mobility and male stability may in part explain this phenomenon. In other words influences derived from Northern Michigan are evident in pottery design and raw lithic materials and it may be possible that the native hunters of the Renard Site very pragmatically obtained lithic resources and mates from the same area.

The Renard Site appears to be an interesting prehistoric habitation which would profit greatly from further excavation and analysis. It may be possible to detect horizontal stratigraphy and to develop a chronology for the occupation of the site. The notion that river mouths were important areas of aboriginal habitation can be tested, perhaps quite profitably, in the Mississagi Delta, as there is yet much information to be gained from systematic excavation.

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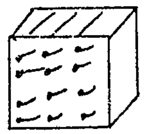
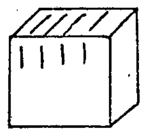
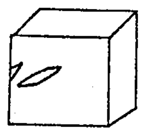
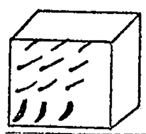
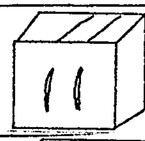
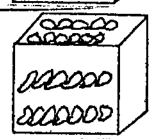
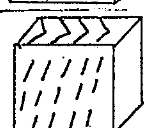
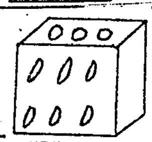
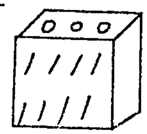
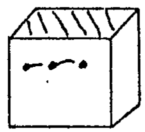
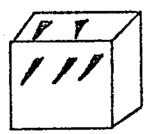
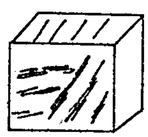
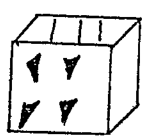
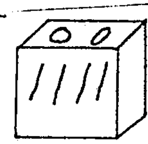
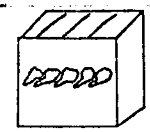
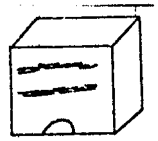
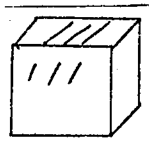
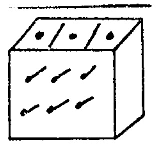
APPENDIX I: CERAMICS

No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com- plete	Diagram No.	Provenie
1	Push pull, tool impressed			oblique impressions	5 mm.	X	1	S5E5
2	Tool impressed			cord-wrapped stick impre-ssions	8 mm.	X	2	S50
3	Tool impressed			cord-wrapped stick impre-ssions	7 mm.	X	3	S25
4	Push pull, tool impressed		cord-wrapped stick impre-ssions	notched	10 mm.	X	4	S45
5	Tool impressed			oblique impressions	9 mm.	X	5	S85
6	Cord impressed			cord impression	11 mm.		6	S45
7	Dentate stamped			oblique impressions	9 mm.	X	7	S90
8	Tool impressed			circular impressions	5 mm.		8	N15E5

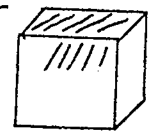
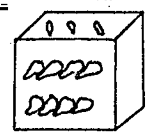
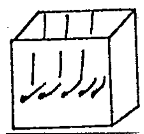
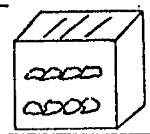
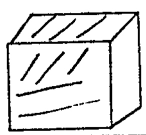
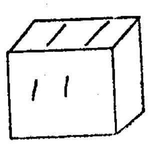
APPENDIX I CONT'D.

No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com-plete	Diagram No.	Prov.
9	Dentate stamped			circular impressions	6 mm.		9	S50E5
10	Push pull		Push pull	oblique impressions	7 mm.			S45
11	Plain				10 mm.	X	11	S0E0
12	Plain			tool end impressions	8 mm.	X		S45
13	Tool impressed			tool end impressions	9 mm.	X		S30
14	Tool impressed			cord-wrapped stick impre-ssions	7 mm.		14	S45
15	Plain				8 mm.			S0E0
16	Tool impressed		Push pull	cord-wrapped stick impre-ssions	8 mm.			S50

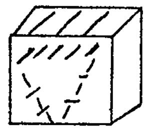
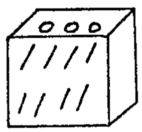
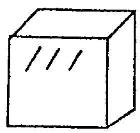
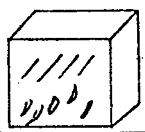
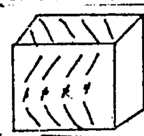
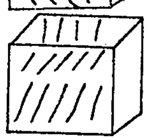
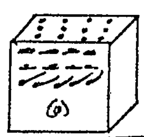
APPENDIX I CONT'D.

No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com-plete	Diagram No.	Prov.
17	Tool impressed			tool end impressions	9 mm.		17	S95
18	Cord impressed			oblique impressions	6 mm.			S95
19	Plain				9 mm.	X		S65
20	Plain			push pull	8 mm.	X	20	S45
21	Tool impressed, trailed punctated				4 mm.		21	S90
22	Tool impressed		cord-wrapped stick impre-ssions	oblique impressions	10 mm.			S85
23	Push pull		push pull	alternating vertical and circular impressions	8 mm.			S75

APPENDIX I CONT'D.

No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com-plete	Diagram No.	Prov.
24	Tool impressed		vertical impressions	oblique impressions	7 mm.		24	N15E5
25	Cord impressed			cord impression	8 mm.			S45
26	Tool impressed, push pull			tool end impressions	6 mm.		26	S45
27	Plain				7 mm.			S95
28	Cord impressed			cord impressions	8 mm.			S90
29	Tool impressed, trailed		oblique impressions	tool end impressions	9 mm.			S95
30	Plain				5 mm.			S50
31	Tool impressed			cord-wrapped stick impre-ssions	8 mm.			S85

APPENDIX I CONT'D.

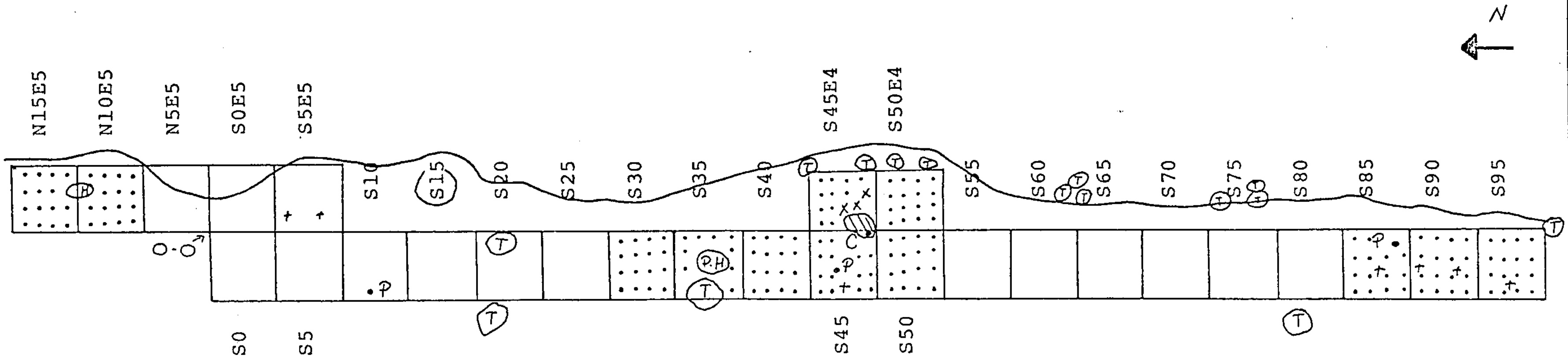
No.	Technique of Surface Decoration	Motif	Interior Decoration	Lip Decoration	Lip Thickness	Com-plete	Diagram No.	Prov.
32	Tool impressed, push pull		Push pull	vertical impressions	6 mm.		32	N15E5
33	Plain			oblique impressions	7 mm.			S50E5
34	Tool impressed			circular impressions	5 mm.			S85
35	Tool impressed			oblique impressions	10 mm.	X		S85
36	Unidenti-fied			oblique impressions	7 mm.			S5E5
37	Unidenti-fied		Same as exterior	oblique impressions	8 mm.		37	Test pit
38	Tool impressed			vertical impressions	8 mm.	X	38	Test pit
39	Tool impressed, punctated, bossed			vertical impressions	9 mm.	X	39	Test pit

LITHIC ARTIFACT TOTALS BY NUMBER

	1b	1c	1e	1f	2a	3a	3b	3	4a	U	T.A.	5	TOTALS
Shatter fragments	40				9	3	5	11		9	13		90
Core fragments	9				14	10	6	11	1	5	11		67
Flakes	14				36	19	26	12	1	10	11		129
Utilized flakes	6				6		2	1				1	16
Chips	90												90
Utilized cores	1				4			2		1			8
Bipolar Cores	17				7	1	3	5		2			35
Exhausted Cores	6				3	1	4	2		1	3		20
Tabular Cores	6												6
Irregular Cores	14				3	1		3		1	3		25
Problematics		2											2
Wedges			1				1						2
Projectile Points			1		1			1					3
Probable abraders				2									2
Scrapers					4		1	1		3			9
Bidirectional block Core							1						1
Decortification flakes											2		2
TOTALS	203	2	2	2	87	35	49	49	2	32	43	1	507

MAP ONE

THE RENARD SITE, CbHs-5



The Renard Site
CbHs-5
Grid Map
Note: Units S45E4 and S50E4 have been shortened due to tree encroachment. Units S55, S60, N5E5, and S0E5 were not excavated.

Key:
Datum Point O·O

River bank ~~~

Trees (T)

Hearth (H)

Copper Awl . C

Projectile Points . P

Pottery Concentrations :::

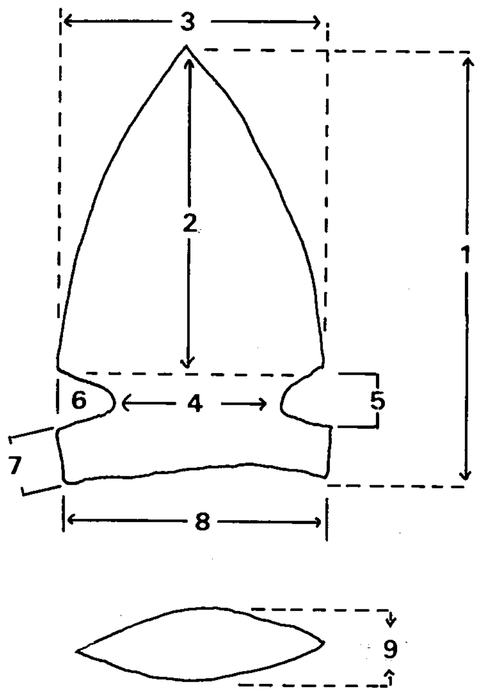
Copper Specimens +

Pit

Post Moulds x

Possible Hearth (P.H.)

Projective point measurements taken are illustrated in the following diagram.



(1) Overall length
(2) Length of blade
(3) Maximum width of blade
(4) Width at neck
(5) Width of notch, left, right
(6) Depth of notch, left, right
(7) Distance (notch to corner), left, right
(8) Basal width
(9) Maximum thickness

Scrapers

Nine scrapers, four of Hudson Bay Lowland chert, one of Campbell Quarry chert, another from an unknown Southern Palaeozoic source and three whose geological provenience is unknown were recovered. Seven

FIGURE ONE

POLLEN SPECTRUM FROM CbHs-5

Note: No corrections for differential rates of pollen production by different plants have been made.

31 genera - 100%
9 genera depicted - 74%

Scale: 2mm. - 1%

Pinus - pine
Larix - larch
Abies - fir
Betula - birch
Picea - spruce
Salix - willow
Ostrya - beech

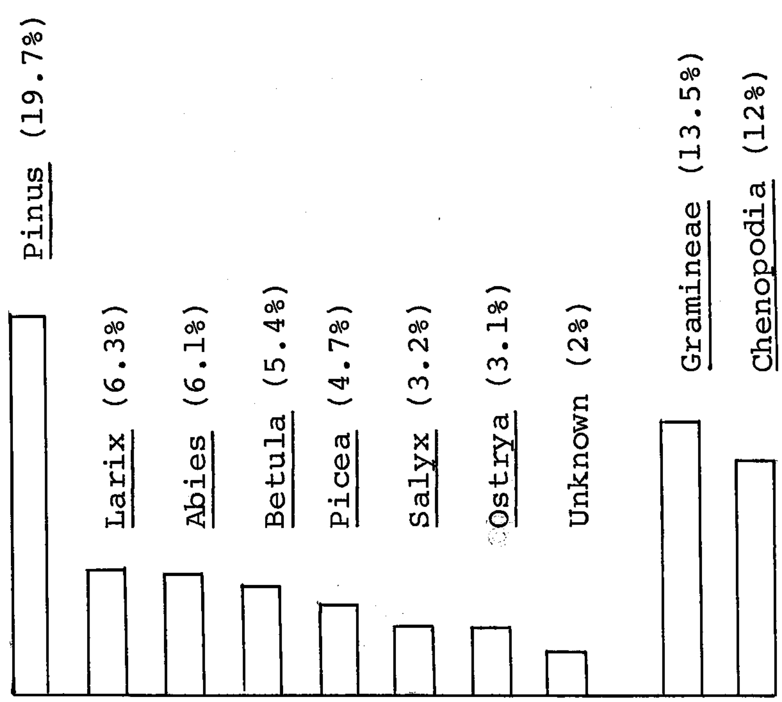
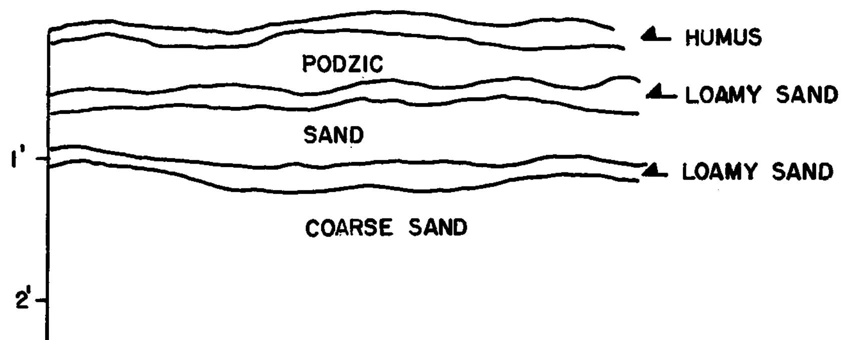
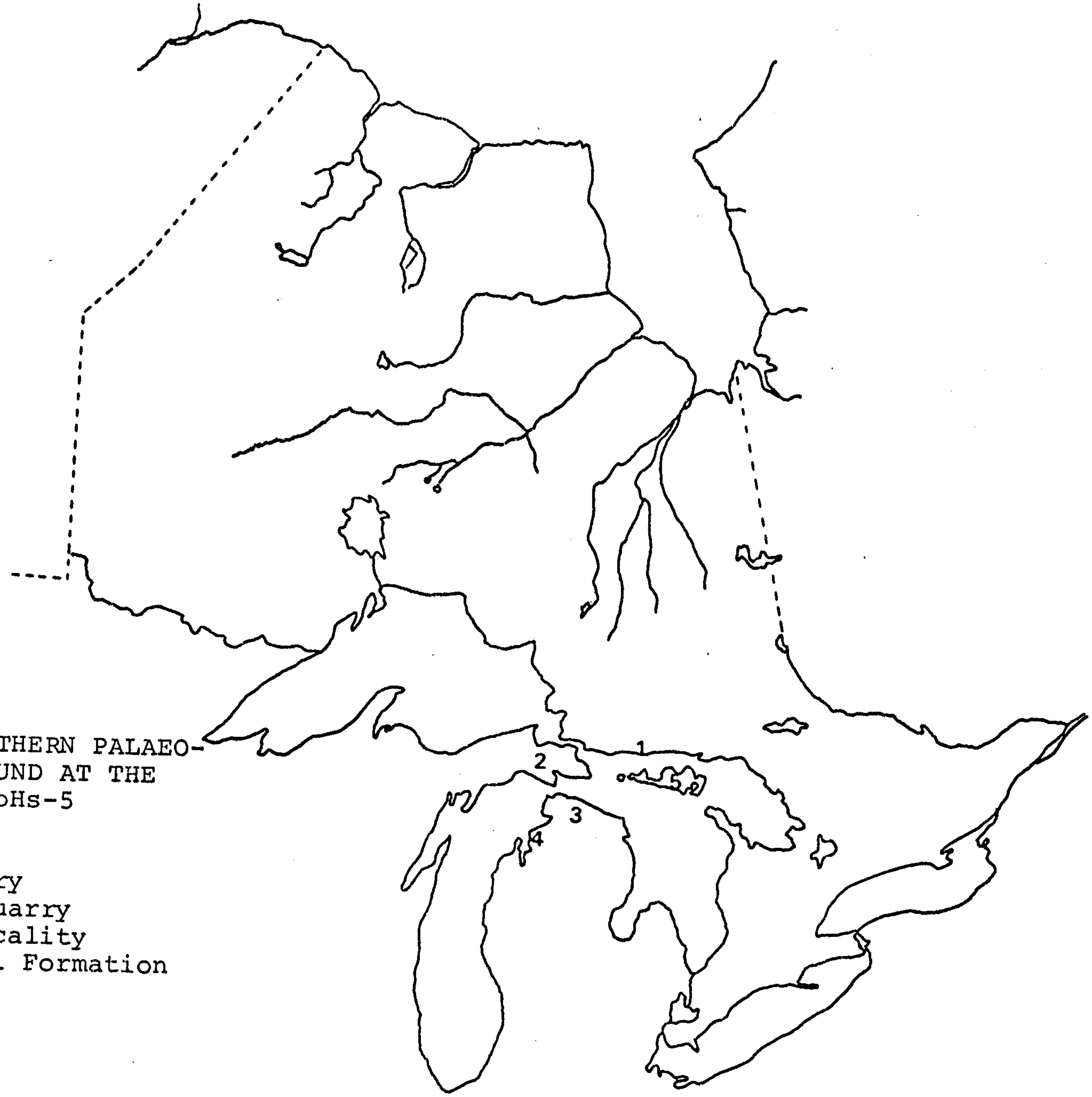


FIGURE TWO



SOIL PROFILE FROM THE RENARD SITE.

MAP SIX



SOURCES OF SOUTHERN PALAEO-
ZOIC CHERTS FOUND AT THE
RENARD SITE, CbHs-5

(1) Renard
(2) Scott Quarry
(3) Campbell Quarry
(4) Norwood Locality
(5) Fossil Hill Formation

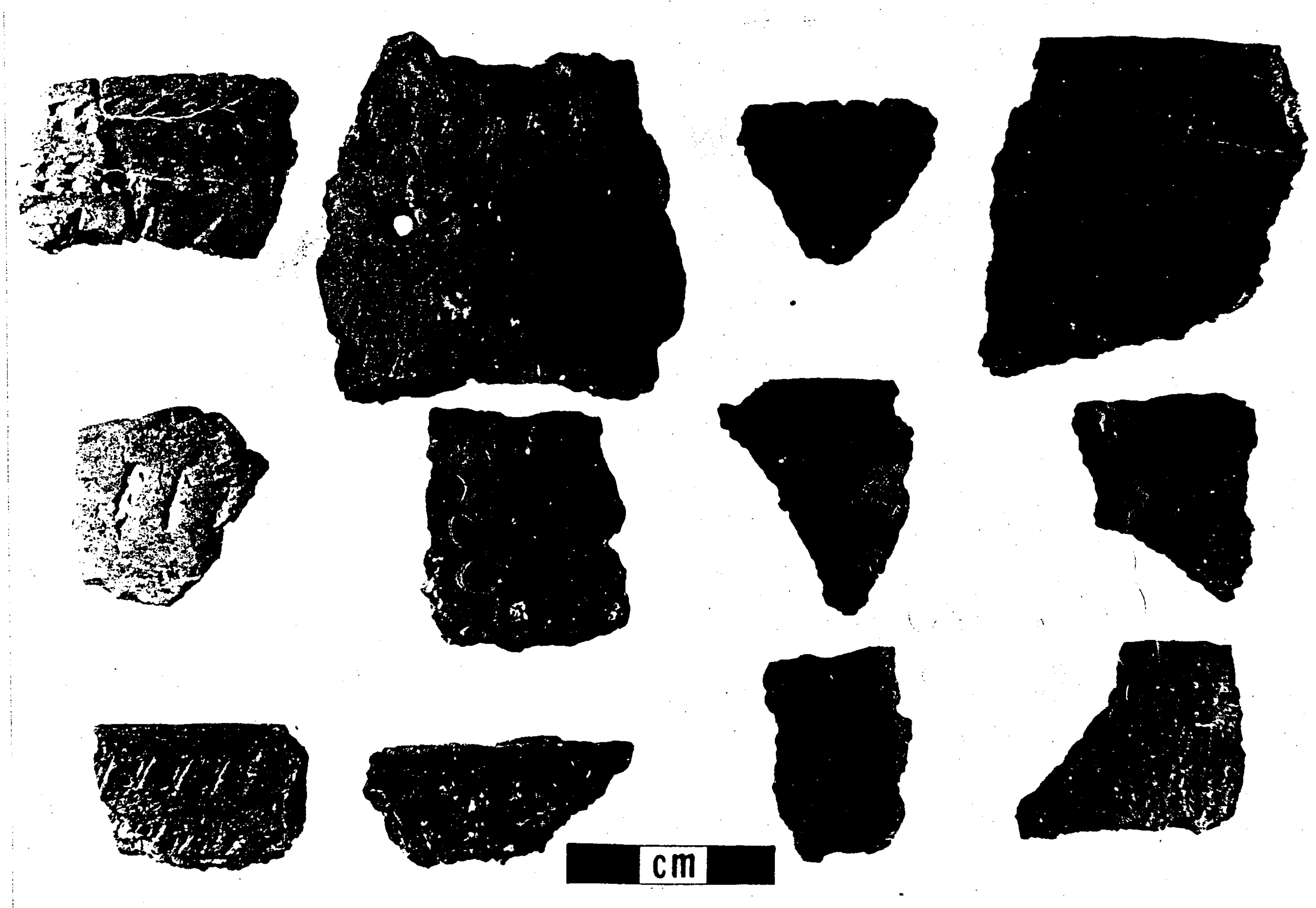


PLATE 1

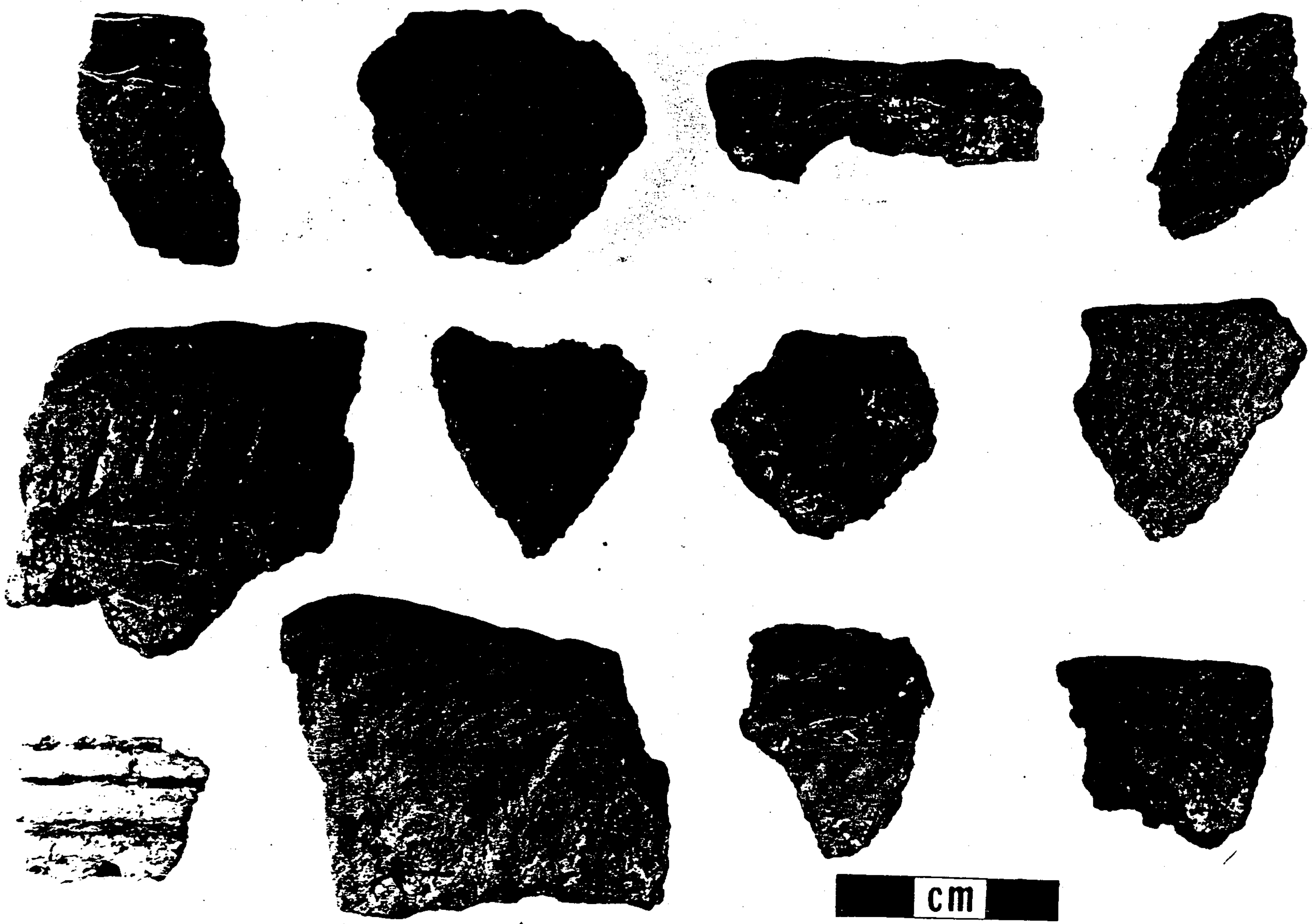


PLATE 2

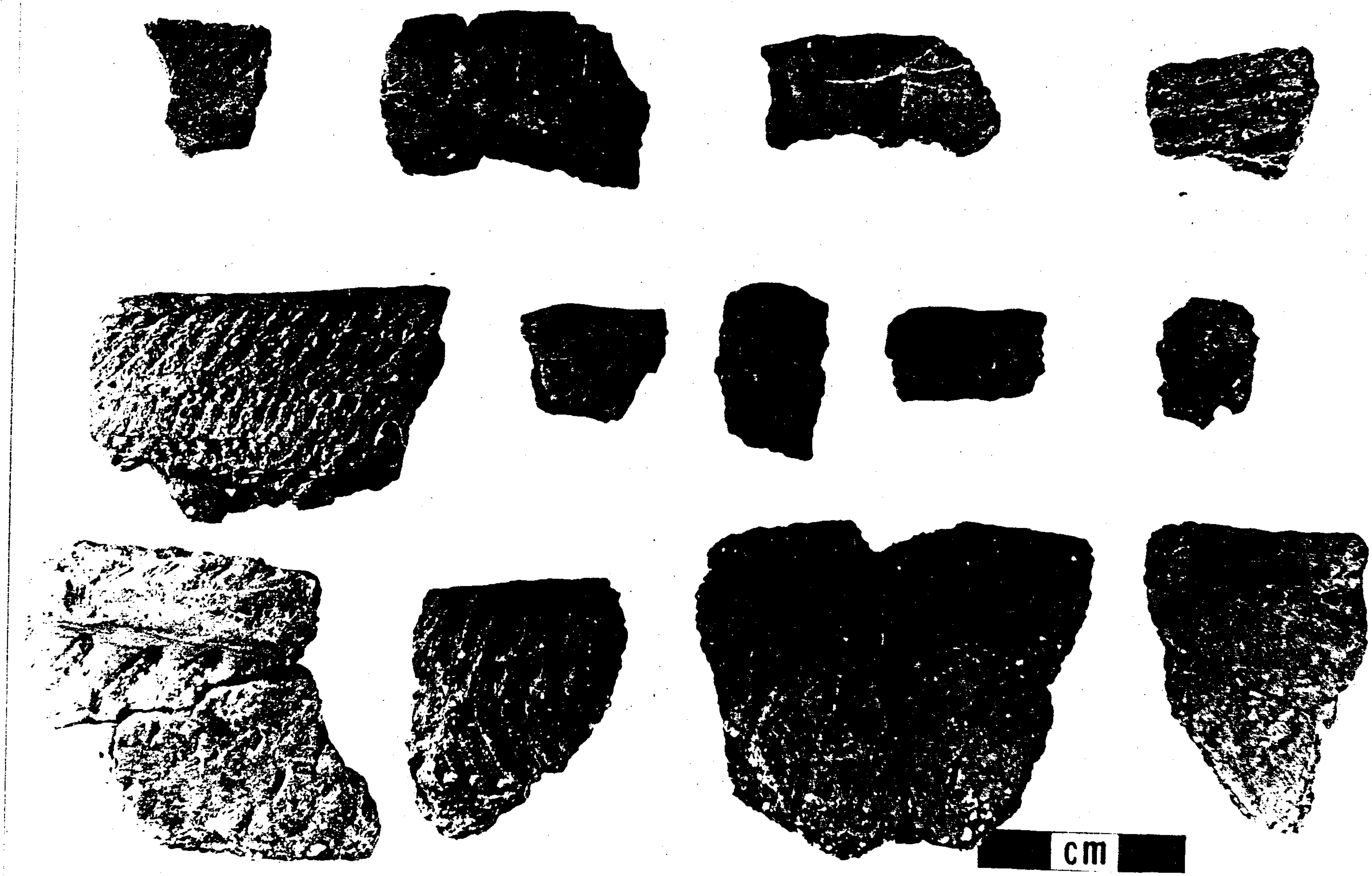


PLATE 3

PLATE 4

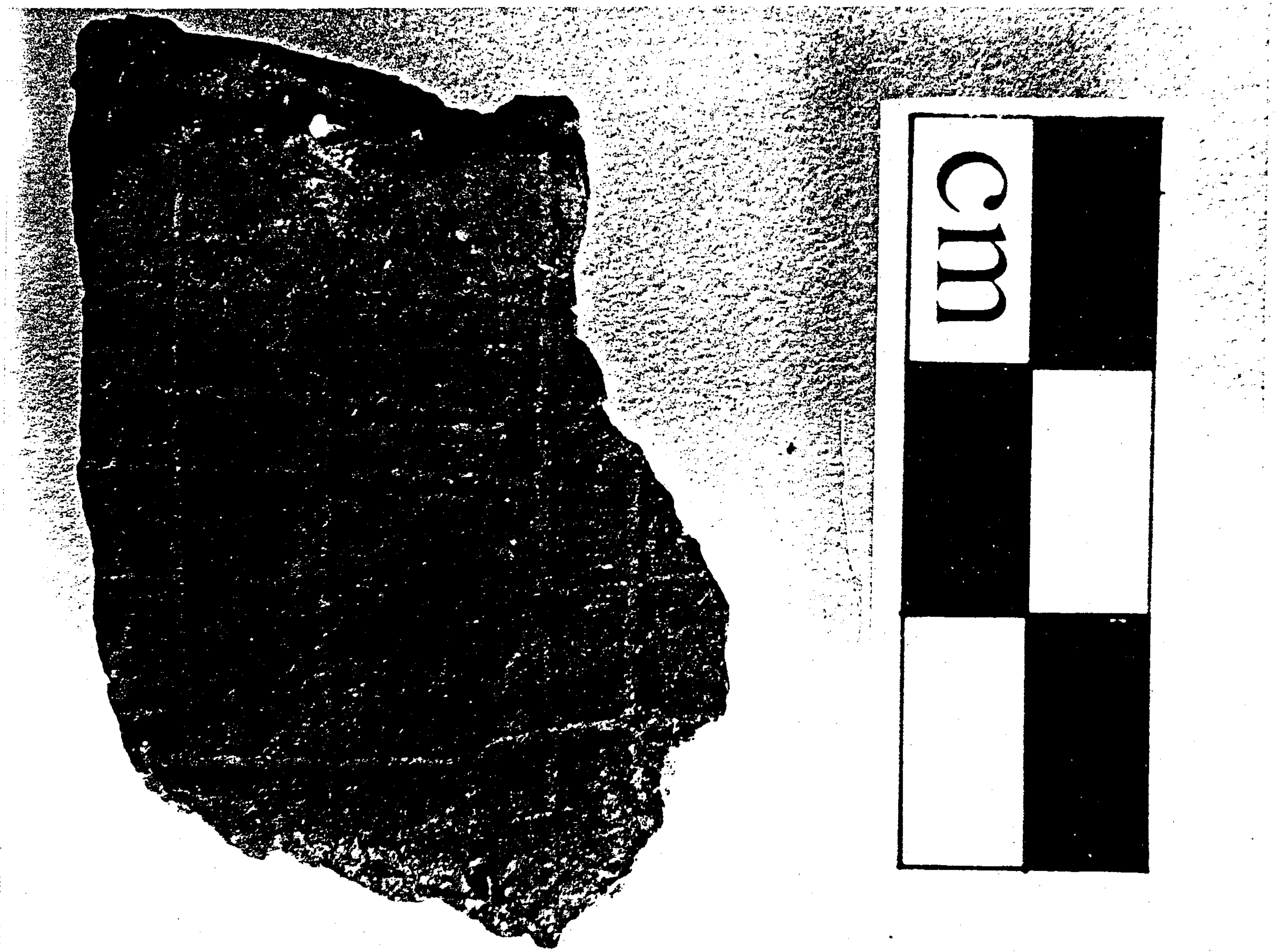


PLATE 5

PLATE 6

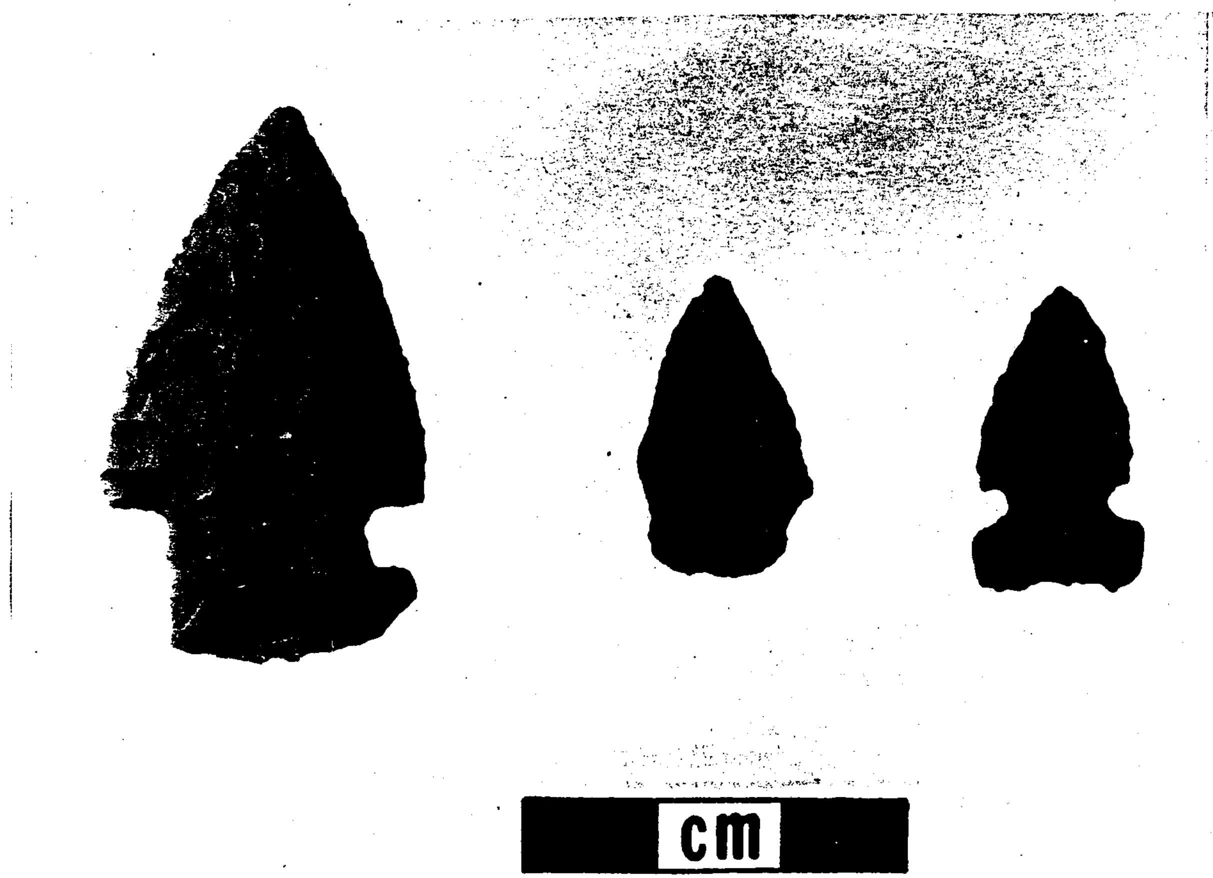
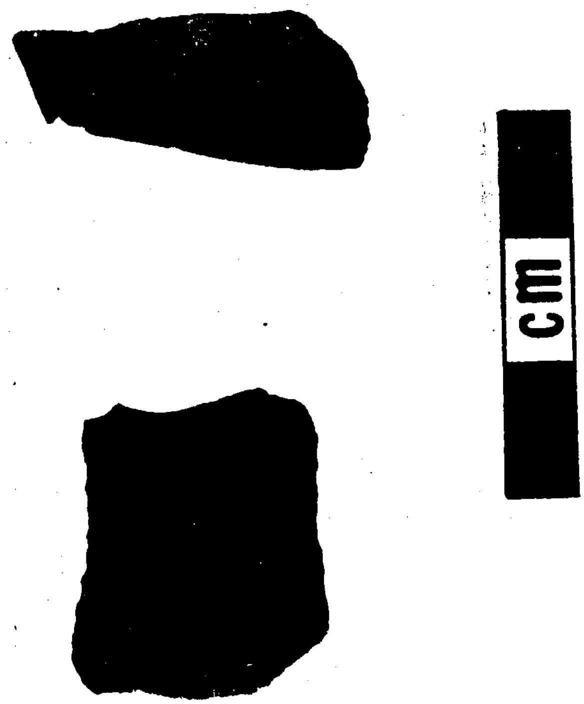
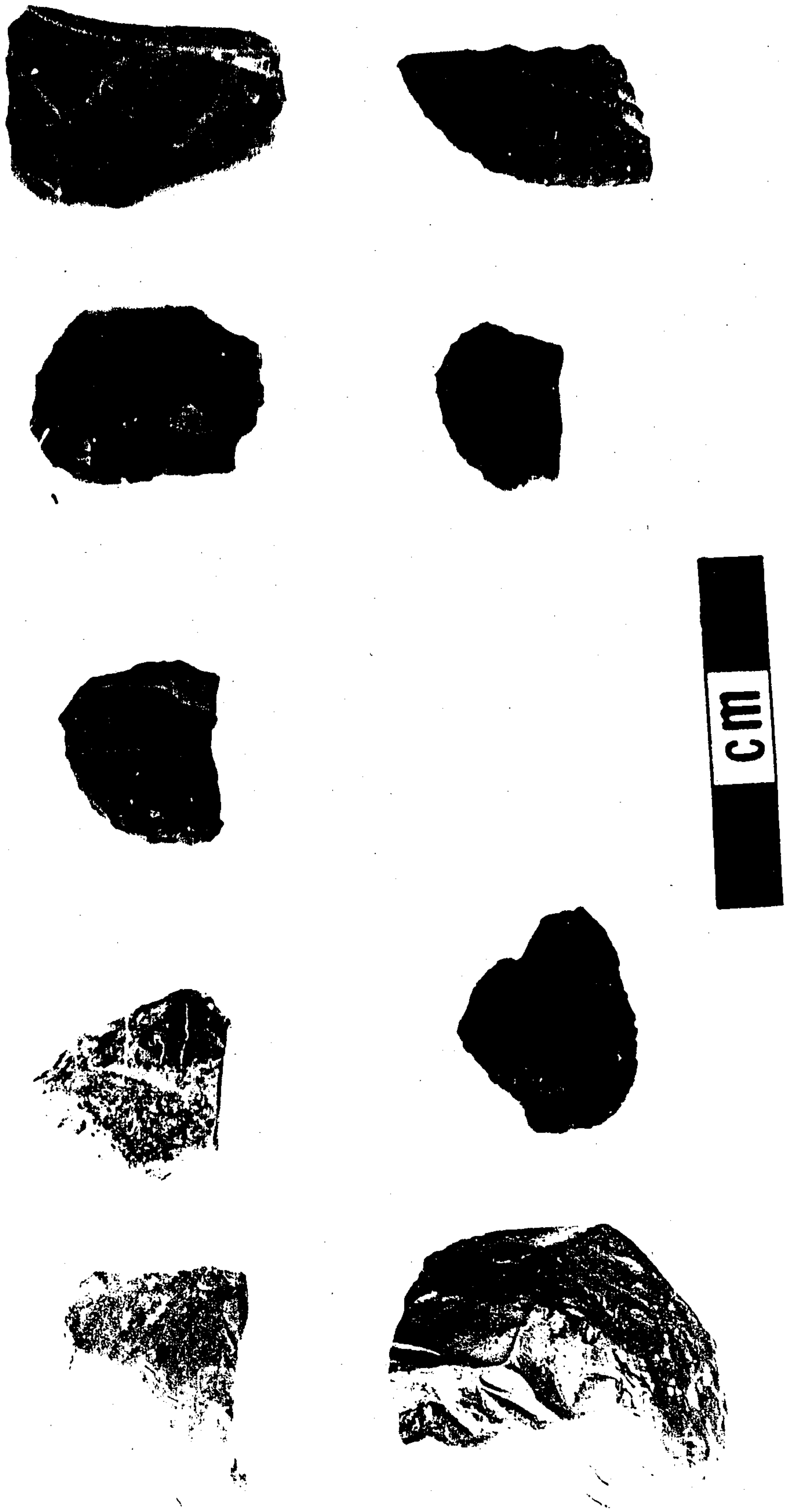
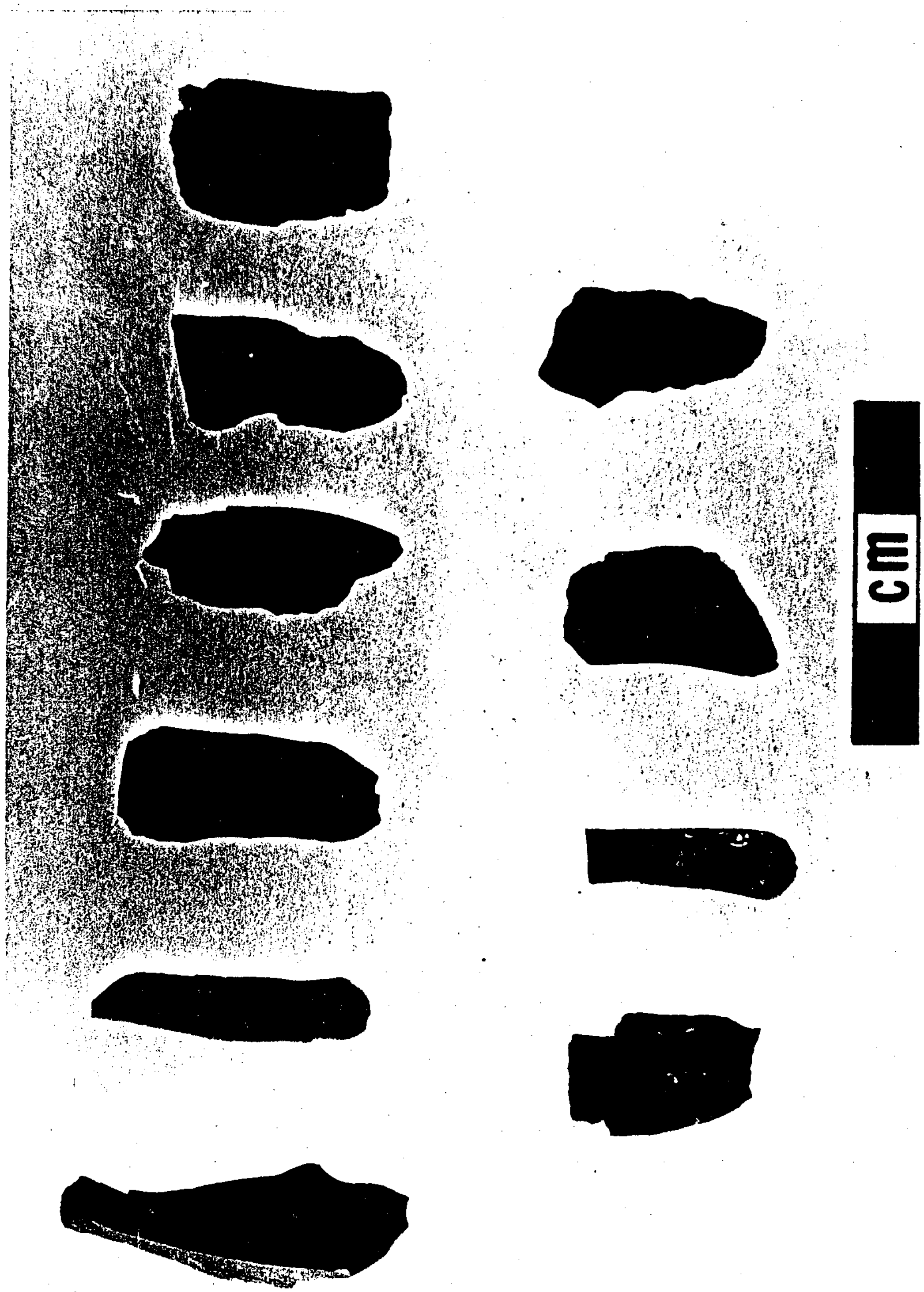
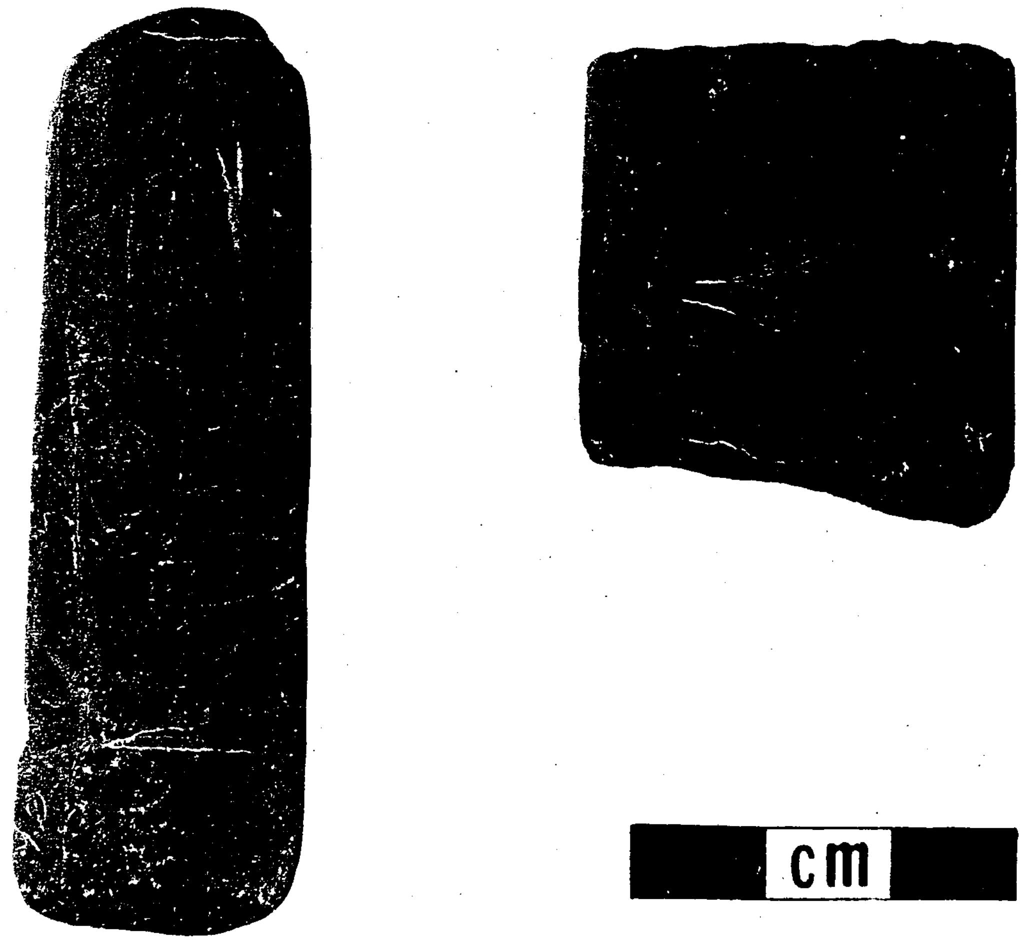


PLATE 7


cm


cm


cm


cm


1
cm
2


cm