Archabology Loboratory
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THE LESLIE CAVE

The Leslie cave is a true cave, not merely a rock shelter. It is situated in the rock wall of the bluff on the west side of the St. Croix River, six miles upstream from Marine on St. Croix, in the NE of the S1/4 of Section 6, T.32, R.19. The property belonged to Mr. Ira Leslie of Marine on St. Croix, but was locally know as the Judge Stone Place. Access to the site by land is very difficult, and during the period during which the cave was studied, July 25 to August 7, 1951, it was reached by a boat from the Leslie house, a little more than one-fourth mile upstream. Downstream from the cave at a distance of one-half mile is the bridge of the Soo Line Railroad, a well known landmark on the river.

The top of the bluff at the site of the cave is about 200 feet above the river. Here a gully, drained surface water from the fields, cuts through the edge of the bluff and continues as a deep and steep ravine to the south side of the cave. Formerly it continued virtually straight down from this point to the river, building up a considerable delta in the river. Sometime recently the waters of the gully shifted direction at the cave level to pass in front of the cave and tear out all vestiges on any talus that might have been there. The cave is about 70 feet above the river level. Views of it are shown on Plate I.

The cave consists of two main areas. At the mouth of the cave was a fairly rectangular area, with its long axis east-west, and its floor rising sharply. Behind this was a shallower rectangular room, with its long axis north-south, and its north wall continuous with the north wall of the first room. The floor of the back room was fairly level, and the rock ceiling, though uneven, was at a fairly uniform level in both rooms.

Believing that the most likely are for discovery of archaeological materials would be the lighter front part of the cave, an area 40 feet east-west and 20 feet north-south was staked in the front room. Elevations of the floor of this area and the ceiling above it were measured at five foot intervals and the contours are plotted as shown in Figure I. The mouth of the cave is seen to be about 30 feet wide and 14 feet high, though at the point where the back room widens out to the south, the cave is only 23 feet wide and 9 feet tall.

At the southeast corner of the staked area a rectangular area 10 feet north-south and 15 feet east-west was selected for excavation by levels. As the west end of the area was three feet higher than the east end, a plan of setting the case of the levels parallel with the surface was considered, with the alternative of setting horizontal levels as the basis for each of the cuts. In the mistaken belief that rock bottom would be found at the base of the cave, and that it would be a level horizontal floor, the second alternative was chosen. The floor of the first cut was therefore set at one foot above datum, and the subsequent levels were six inch cuts. At the base of level VI, which was 1.5 feet below datum, nothing but sterile and undisturbed red and yellow sand, the product of disintegrated sandstone, was found in the western 5 feet of the excavation. The middle five foot strip was dug to the level of 4.5 feet into undisturbed sand. As the total depth of the excavation was about 5 feet in each of the strips, it is concluded that the first human inhabitants of the cave did not find a level floor of bedrock, but that they were only slightly above the red and yellow sands, which had about the same slope as the surface had in 1951.

Much of the fill in the excavated area consisted of small slabs of rocks presumably fallen from the ceiling. There were also large angular rocks more numerous at the front of the excavation than at the rear, from which it was concluded that they had slid forward down the slope. As cultural debris was found under some of the rocks it is evident that they had fallen down from the ceiling after human occupation had begun, and further indicates a sloping floor at the time of occupancy. Large and small rocks in the fill are illustrated in plate II.

Cultural debris consisted of accumulations of ashes and fire hearths and a great many clam shells, largely thick shelled river variety, many animal bones, turtle carcasses, some charred nuts and acorns, flint and quartzite spalls, and some pottery and artifacts. The animal bones included many fish and bird bones. Mammalian bones were small and broken into rather small pieces. The debris was much richer at the front of the excavation than at the rear, which is likely due to a preference of the occupants for better light at the entrance.

The material from the first level was not sifted. Most of it consisted of small slab rocks which were picked out by hand. Material from all subsequent levels was sifted, resulting in the recovery of a number of very small and split shards. No pottery was found below the floor of level III (the datum level) at the west end of the excavation, and none was found at the east end below the floor of level VII (2 feet below datum), though other cultural debris was found at lower levels. It is possible the first inhabitants lacked pottery.

Pottery

The pottery sample was disappointedly poor in both number and quality of shards. Only 177 shards were found and of this number 59 were small split shards with the outer surfaces missing, and 57 (including 3 rim and 2 near-rim shards) were crumbs, smaller in size than a quarter dollar. Table I presents a summary by levels to show provenience, but not as the basis of a stratigraphic study. A stratigraphic study would lack significance because of the small number of shards, for not more than ten vessels are represented in the rim and near-rim shards. Further there had been much disturbance, for shards from the highest and lowest levels belonged to a single vessel. The disturbance probably accounts for the large number of split and crumb shards.

Table I
Summary of Leslie cave Shards by Levels

Level		Split	Crumbs	Large	Rim	Near-Rim	Total
I	> +1				1		1
II-III	0 to +1	7	14	21	2	1	45
IV-I	-1 to 0	51	35	29	8	1	124
VI-VII	-2 to -1	1	3	1		2	7
	Total	59	52	51	11	4	177

Body Shards.

Table II summarizes the surface treatment of undecorated body shards. Although crumbs are not usually considered in calculating percentages of the classes of surface treatments because their small size may lead to errors of identification. They are included in table II because the number of larger shards is so small. It is seen that their inclusion does not greatly change the percentages derived from the large shards alone.

Of interest is the high frequency of class V shards, a type rare in Minnesota. In this series these shards have slightly parallel ridges with very shallow groves between them. Three rim shards with this surface treatment show that the ridges are nearly horizontal rather than vertical.

The class IV shards are of interest because, though very frequent in the Blackduck pots of the Late Woodland period, they are very rare in other cultures. The six shards presumably belong to a single large pot which is represented in the rim shards. This is a large, wide mouthed vessel, with only a slight constriction toward the mouth. The vertical combed line begin at the lip and extend to the broken edge a distance of 12.8 cm. They form the background for a decoration consisting of a band of four parallel horizontal lines of cord-wrapped stick impressions, across which are elongate punctate impressions in diagonal lines. The band is 2 cm. wide and begins at a distance of 6.6 cm. below the lip. The Class IV shards are obviously from the decorated area at the rim and might be classified as near-rim shards. The combed lines on Blackduck vessels are also vertical and form the background for lines of cord-wrapped stick decoration, but the vessels have constricted mouths and definite necks, and the combed lines are confined to the necks which seldom exceed 5 cm. in height.

Table II
Surface treatment of Body Shards

	Class	Crumbs	%	Large	%	Total	%
I	Plain	14	27%	8	16%	22	21%
II	Cord Wrapped Paddle	12	23%	15	29%	27	26%
III	Net or Other Fabric	1	2%	3	6%	4	4%
IV	Brushed or Combed	3	6%	3	6%	6	6%
V	Grooved, Ridged, Tooled	22	42%	22	43%	44	43%
	Total	52		51		103	

Rim and near-rim shards.

Class 1. Plain.
There are four rim shards, all very small, with no apparent decoration on the external surface. The largest is differentiated from the others by a rounded lip. Another is distinctive in having cord-wrapped stick impressions across the lip which is flat. The crumbs have flat lips but are of different thicknesses and may represent two vessels.

Class II. Cord-wrapped paddle.
Two rim shards belonging to one vessel have thin squared lips, and have vertical cord-wrapped paddle impressions from the lip downward. A wide-mouthed vessel, with some constriction of the orifice is indicated.

Class V. Ridged surfaces.
Three small shards, two belonging to one vessel, have the ridged and grooved surfaces described for body shards of this class. two vessels, one with squared lips and one with rounded lips are indicated.

Class VI. Cord-wrapped stick.
One large rim shard and three near-rim shards have cord-wrapped stick decoration on a background of vertical combed lines. All belong to one vessel which is described in the section on class IV body shards. The vessel has squared lips with cord-wrapped stick impressions across the lip. The near-rim crumb, which is not part of the preceding vessel, shows two parallel lines of cord-wrapped stick crossing the shard, with the ends of two similar lines at right angles to the first pair. A third vessel is represented by a rim shard with the design of a triangle pendant from the rim, point down, in which are horizontal lines as a cross-hatching. All lines are of cord wrapped stick. the lip is square and slightly thickened at the outer edge.

Summary.
The relationships of the pottery complex are doubtful because of the small scale. The ratio of plain body shards to body shards with cord-wrapped paddle decorations is one criteria commonly used in classification, but is of little value as a diagnostic trait in this series because the high frequency of Class V shards distorts the ratio. The Class V shards are unique and their relationships unknown. The best clue to any relationship is probably to be found in the vessel shapes. the wide-mouthed jars with little rim constriction are characteristic of the Middle Woodland period. Though the surface treatment and the decorative traits of the Leslie Cave pottery cannot be shown to resemble closely the pottery of any of the names cultures of the Middle Woodland period, it is believed to show stronger ties with those cultures than with any cultures of the Late Woodland period.

The Artifacts

Projectile Points.

Seven Objects of chipped stone are classed as possible projectile points, the uncertainty arising from the fact that all but one are broken. there are two small triangular arrowheads, one of chalcedony and one of oolitic flint, which indicate that the cave was being used to some extent in the Late Woodland period. A small, stemmed arrowhead of oolitic flint has rounded shoulders and a thick stem that expands slightly toward the base.

There are two notched points represented by bases only. One is an arrowhead of quartzite , with convex base, and is rather crude. The second is a very large point of oolitic flint and has a concave base. the tip is broken off, and it would appear that a considerable portion is missing. The sides converge slowly for the width across the shoulders is 28.5 mm. and at the broken edge, 59.5 mm away, has contracted to 22 mm. The width of the base cannot be measured, but the base is wider than the blade. The length of the fragment is 76.5 mm. this large point is either an atl-atl point or a knife notched for hunting.

A small specimen of chert, with a straight base from which the sides of the fragment diverge, appears to be the base of a small non-stemmed point, though it could be part of a small knife. the seventh object is of chert and is the tip of either a projectile point or a knife. It is only 16 mm. long and is 20 mm. wide at the broken edge.

Knives.

Of the eight objects classified as knives, only one is complete. This is a rather small leaf-shaped blade of quartzite, with rounded base and pointed tip, and is 48 mm. in length. There are two specimens of chert, neither of which has secondary flaking of the ventral face nor retouch at the cutting edges. The larger is thin and flat, with a slightly convex base. Only one side is present, and this is slightly convex and meets the base at a right angle. The base and side are both cutting edges. The base is 40 mm. wide and the length of the fragment is 42 mm. The second specimen is blade shaped with one straight cutting edge. The opposite edge is irregular, with a concave section near the tip which is retouched for cutting. A small blade of agate, only 23.5 mm. long, also lacks secondary flaking of the ventral face except for marginal retouch, which is confined to one edge.

Two specimens with secondary flaking on both faces are the rounded ends of knives. One is of chert, the other of quartz. Both represent small portions of the complete knives, as the former is only 21 mm. long, the later 19 mm. A leaf-shaped knife of quartzite has a pointed tip and is broken off 26 mm. below the tip, at which point it is 24 mm. wide.

A Large, nearly rectangular knife of oolitic flint is represented by the basal portion only. It is well flaked on both faces, and the base and both sides are cutting edges. the base is straight and is 29 mm. wide. The width at the broken end is 37 mm., and the fragment is 43 mm. long.

Scrapers.

A broken scraper from a thick flake of red quartzite has vertical retouch on one of its long sides. It is possible that the retouched edge is part of the original implement, in which case it would have been the rounded edge of an end scrapper.

A triangular end scrapper of yellow jasper is flat and thin. It has excellent retouch at the rounded cutting edge and at one side. This opposite side is irregular and may have been reworked. Where this side meets the cutting edge there is a definite, laterally projecting point, as a graver.

Analysis of Bone.

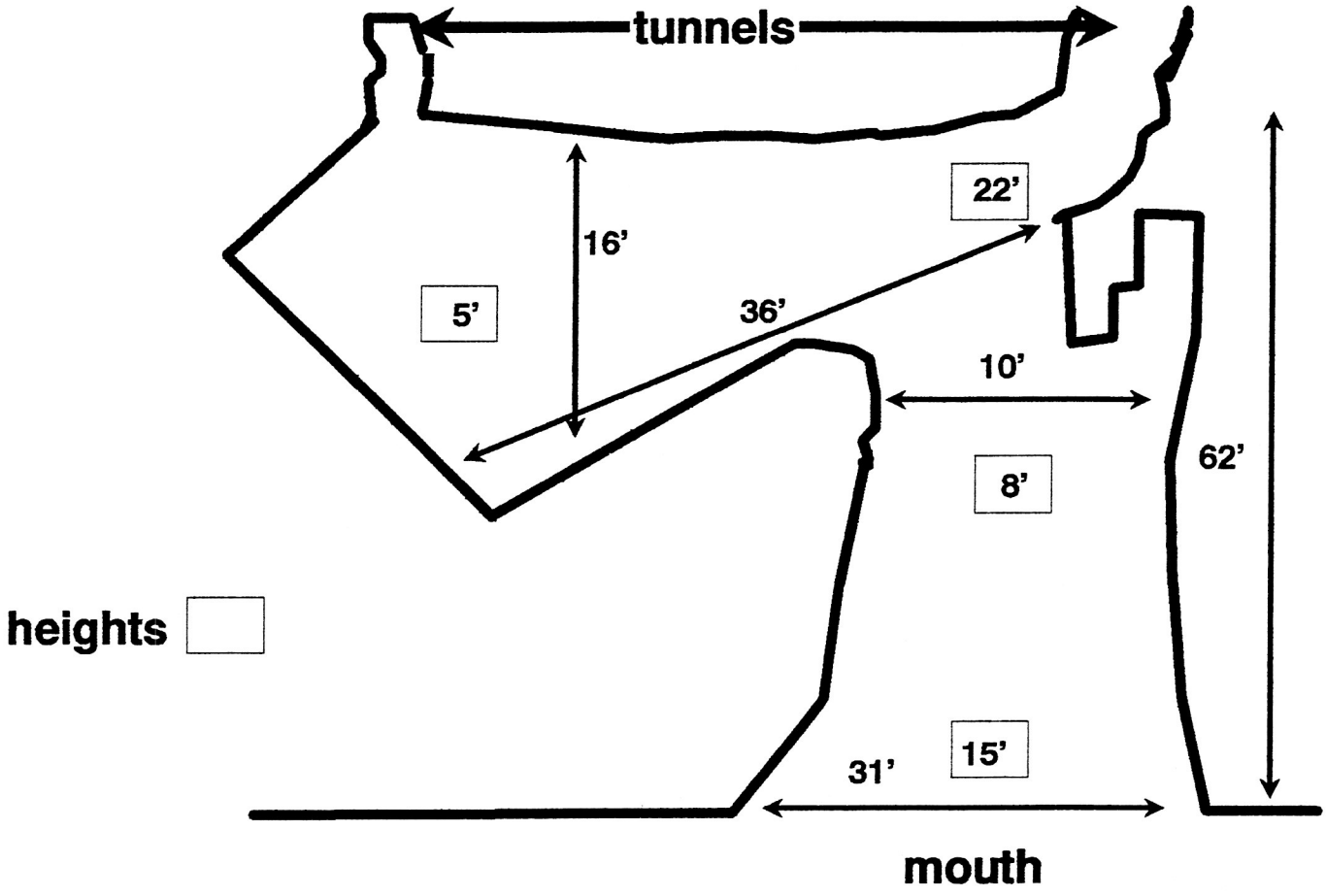
A bone awl, made from a mammalian long bone is pointed, but not sharply pointed. It is nearly complete, though a very small portion is missing at one end. It is 10.7 cm. long and is 13 mm. in width at the middle. A small, flat rectangular section of the bone is well polished. Both ends are broken off, and at one broken end the break is through a perforation. the fragment is 34.m mm. long and has a maximum width of 8.5 mm.

A section of bird bone, broken off at both ends, is 44.5 mm. long, and the diameter at the middle is 7 mm. One end retains a small part of surface that was then end of the head before breaking. The head is of interest because it is decorated by incised lines. Near the middle is a band made by two encircling lines between which are diagonal line in cross-hatch. At one side of the bad is a pair of diagonal lines, the space between which is filled with horizontal hatch lines, extends to the broken edge. the ladder-line figure occurs only once. At the opposite end of the head is a small area of cross-hatched lines without border lines and no definite geometric form.

Conclusion

The cave was used by various Indian groups as a temporary campsite, rather than a habitation site, over a long period of time. It is possible that the earliest occupants had no pottery, in which case they could be ascribed to the Archaic period. The bulk of the material may be ascribed to the Middle Woodland period, but some occupancy in the Late Woodland period is indicated by two triangular arrowheads. Some of the more unique features are the incised bone head, pottery with the ridged type of surface treatment, and the combination of combed line background for cord-wrapped stick impressions in association with wide-mouthed vessels without distinct necks. the shells, carapace fragments, and broken animal bones represent purely local food sources.

The Leslie Cave



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