Southwestern Lore

OFFICIAL PUBLICATION
THE COLORADO ARCHAEOLOGICAL SOCIETY

Vol. 32 December 1966 No. 3

THE LOUDEN SITE (CO-1), LAS ANIMAS COUNTY, COLORADO

by

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INTRODUCTION

For some time, the author has been engaged in a study of midden circles, or ring middens, and mescal pits (See *Southwestern Lore,* December 1965). In November, 1964, Mr. Galen R. Baker, archaeologist for the Trinidad State Junior College, wrote me that he had seen some middens east of Trinidad, Colorado, which looked very similar to the midden circles which I had described to him. I was able to check these sites in early August, 1965. Through the help of Mr. Baker, I was able to locate the landowner, Mr. Richard Louden, then president of the Colorado Archaeological Society, who gladly showed me some of the major middens on his ranch. Of the five burned rock middens visited, one (CO-1) was an excellent example of a midden circle, and two others might have been similarily classed but were too eroded for positive identification without excavation. At that time arrangements were made with both Mr. Louden and Mr. Baker for my return and excavation of the major midden.

I returned to Trinidad in the latter part of August, 1965, and spent four days excavating the midden with the help of Carol Huff of Santa Fe and Celestino Santistevan and Martin Mestas of Trinidad. During this time, the constant help of Mr. Baker and Mr. and Mrs. Louden was greatly appreciated.

LOCATION

The Louden Site is located in Las Animas County in southeastern Colorado, approximately 45 miles east of Trinidad. The site is on the northeast side of a low hill, which lies at the edge of the rolling plains near Cow Canyon, part of the Purgatoire River drainage. Cow Canyon, a deep, steep-sided canyon cut into medium-grained sandstone, is just northeast of the site and, at this point, bends to the south. Many rock shelters, some with petroglyphs on the walls, and others sites abound in this canyon and its drainages.

The area is generally one of rolling plains (Fig. 1) with abundant grass supporting antelope and other plains wildlife. The deep canyons forming the drainage of the Purgatoire River are bordered with stands of Piñon and white juniper. Other common vegetation includes cholla, narrow-leaf yucca (*Y. glauca?*), sun flower, and abundant scrub oak. On Mesa de Maya, a very high and dark escarpment to the northeast (Fig. 1), the minor changes in

FIGURE 1. General view of site after excavation of the midden, looking west. Workers are in the stone ring. Note northwestern end of Mesa de Maya in the background on the right and the open prairie land to the left.

the flora include more red juniper and less cholla. Many animals, including deer, are especially common in the canyon drainages. Water is abundant in the canyon bottoms.

DESCRIPTION

The site is an accumulation of burned rock and ashy soil located on a very slight hill which slopes to the east toward Cow Canyon. The midden has all of the ideal surface characteristics of a midden circle, and excavations demonstrated a fairly typical internal midden circle structure (Figs. 2 and 3). The outer diameters of the midden were 28 feet north-south and 31 feet east-west. The maximum height of 1.1 feet was on the east side of the midden, thus making the dip, or slope, of the midden 20° S. of W., or approximately opposite that of the slope of the hillside. The outer portions of the midden were concentrations of rock and ash, while in the center part of the midden, which has depressed about 0.2 ft., the deposit was almost pure ash with some very fine gravel and very little burned rock. The surface diameter of the central depression was 12 feet.

Thirty-five feet west-northwest of the midden circle was a medium-sized "tipi ring" or rough circle about 13 to 14 feet across of 28 sandstone boulders, which were about eight inches in diameter (Fig. 2). All of the stones were lying on the surface, and there was no evidence of cultural debris remaining in the immediate area of the stone ring. Probably either the stones were placed on the original surface, or any covering deposit has since been eroded away.

EXCAVATION

The ring of stones was excavated by stripping the grass and sod zone from the ring and then putting a 2.5-foot-wide trench about six inches deep to bedrock from south to north through the stone ring to search for occupational features. No evidence of occupation was found.

With the exception of this light test of the stone ring, all excavation was concentrated in the midden circle. Although work lasted over a four-day period, afternoon rains limited the excavation to only 52 man-hours.

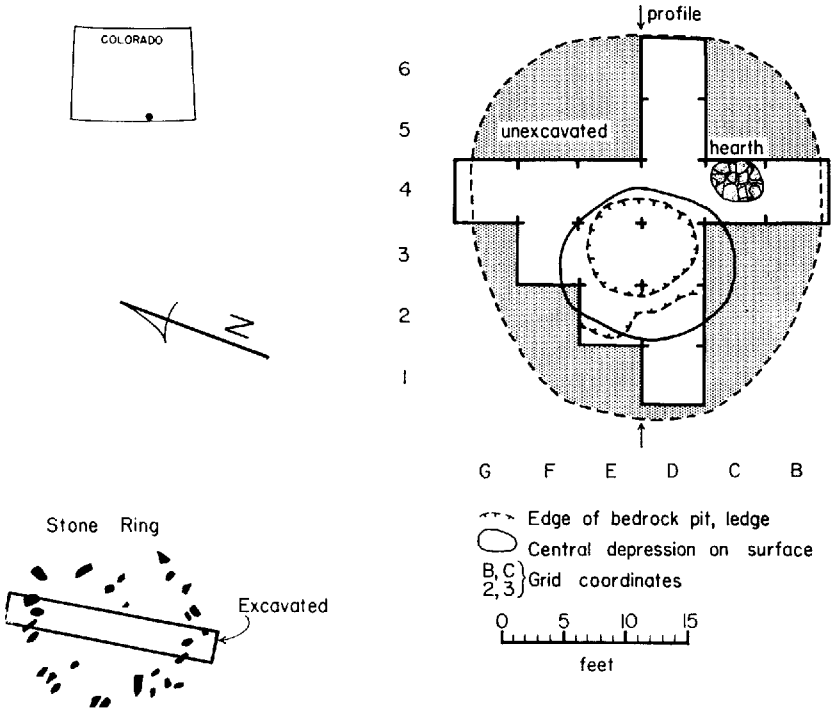

FIGURE 2. General plan of site. Inset shows location within the state.

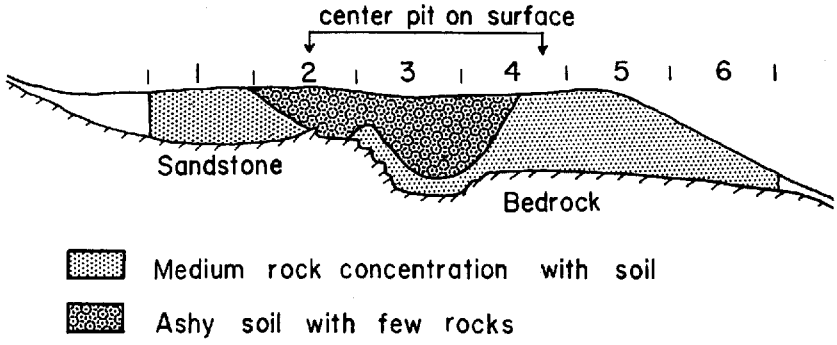

FIGURE 3. Profile through center of midden circle, looking north.

Fourteen five-foot squares were excavated, constituting approximately 50 percent of the surface area of the central part of the midden.

Initially, the entire midden was divided into a grid system of five-foot squares. East-west trenches were designated by letters and north-south trenches by numerals. This system adequately located trenches and profiles, and individual squares were named by the letter-number system (e. g. Sq. 3D). The grid was laid out so that one line would lie along the dip of the midden and directly through the center. The east-west Trench D was excavated along

the south side of this line, forming a complete longitudinal profile and exposing a central depression into bedrock. Next, the rest of the central depression (pit) was excavated and the north-south Trench 4 was excavated, providing another nearly complete profile of the midden at right angles to the Trench D profile. Thus the total excavation included two trenches across the diameters of the midden and the nearly complete excavation of the ashy deposit in the center of the midden.

All major clearing was done with the use of picks and shovels. Fine work was done with trowels and whisk brooms. All excavated deposits were screened through ¼-inch mesh hardware cloth, and recovered materials, which included ochre, a few flakes, and two artifacts, were placed in labeled sacks. No bone or shell was found during excavations. All charcoal was collected and placed in aluminum foil bags, one sample of which has been dated by the Radiocarbon Dating Laboratory of the University of Texas. Pollen and soil samples were also taken throughout the excavation, but these samples have not as yet been analyzed.

INTERNAL STRUCTURE AND FEATURES

The structure of the midden, as mentioned earlier, conformed to the norm for midden circles (Fig. 3). The outer ring was a concentration of burned and fire-fractured sandstone slabs (the only available material in the area) and some blackish-gray sandy ash. In the center of the midden, the deposit was almost entirely pure ash with very fine sandstone gravel, presumably from heavily fired sandstone. A few fractured hearthstone fragments were also in the central pit, but were scarce. Between the central ash pit and the rock accumulation, there was an area of mixed rock and ash with intermediate concentrations between the central and outer extremes.

In Square 4C, in the southeast quarter of the midden, there was a small cobble hearth resting directly on bedrock (Fig. 4). This hearth was about four feet in diameter, the stones averaging between 1.0 and 1.5 feet in diameter and 0.2 to 0.4 feet thick. No artifacts were found associated with this hearth. It could not be ascertained whether this hearth had been built in a pit or had been placed on bedrock before or during the formation of the midden. However, it is my belief that the hearth was built during the period when the midden was being formed and the central portion of the midden was being used, as all of the hearth fill and surrounding fill was identical to that of the rest of the midden. The hearth had not eroded or been disturbed or covered before the deposition of the main part of the midden material.

Of primary interest was the discovery of a depression into the bedrock at the base and in the center of the midden (Figs. 5 and 6). This basin-shaped depression was about nine feet in diameter and 0.3 to 0.6 feet deep in the center. The west side of the bedrock was slightly higher than the east. This pit into the sandstone was in the center of the ash depression which was visible on the surface of the midden. A few concentrations of pure ash still remained on the bottom of this depression.

Along portions of the south and east sides and just outside of the bedrock pit were sandstone slabs which had not been badly broken by fire. These slabs were set at an angle with the bases of the slabs approximately at the edges of the pit. The addition of stone slabs around the border of the pit would have made the cooking pit much deeper and would have served as a partial stone liner for the portion of the pit above the bedrock.

FIGURE 4. Small cobble hearth in southeast quarter of the midden, resting on bedrock. Note central pit in bedrock in the background. Looking west-northwest.

In the light of the evidence present, it seems likely that the site was originally chosen for cooking purposes. The sod, apparently then about 0.1 feet thick, was scraped off, and the fire placed directly upon the bedrock. If this platform was used as a surface earth oven, no doubt the rocks were heated, the food added, and then the entire mass was covered over. This technique was used by the Chiricahua Apaches in southeastern Arizona (Opler 1941: 357) and has been suggested for the Carlsbad region of New Mexico by Williams (1956: 27). The principle is the same as for the pit ovens so common throughout the Southwest (Castedder, *et al.* 1938; Greer 1965). When the food was

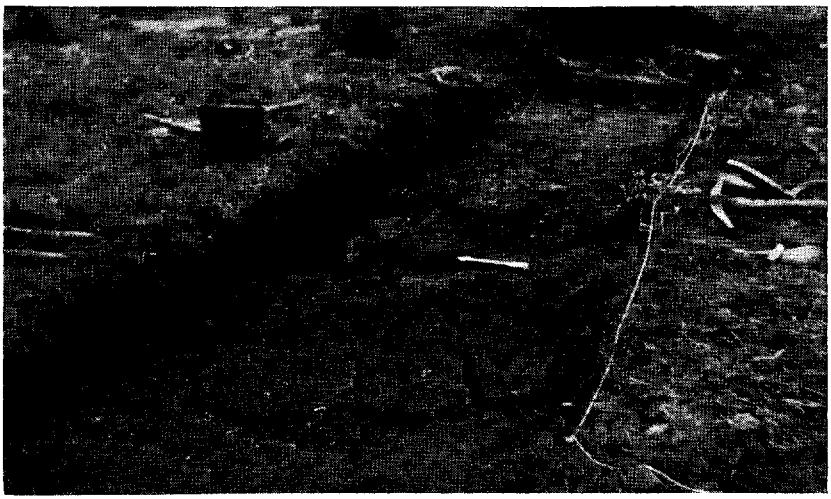

FIGURE 5. Cleaned pit in bedrock, as seen in profile of Trench D, looking east-northeast. North arrow is 1.0 feet long.

cooked, the stones were thrown back in a circle away from the cooking area and the central area again reused. However, as the firing process continued, two events would probably occur to change the cooking habits very slightly. First, after repeated firings, the sandstone directly beneath the fire would decay in the same way as the imported slabs and a depression would begin to form and deepen. If a slight depression were chosen to begin with, it would not take many firings to form a fairly deep pit. Second, after many firings the ash and rock accumulation around the central pit would build up so that it would be possible or necessary to dig down slightly to reach clean bedrock on which to build the fires. Bedrock was probably desired, as this solid rock would hold the heat much better than the stone slabs or ash.

As the deposit was formed and a pit was dug, it may have become desirable to line the edges of the pit with local slabs. This would make the pit deeper and would keep the food much cleaner. Thus, we have now changed gradually from a surface earth oven to a sub-surface cooking pit lined with stone slabs, although the actual cooking technique has not changed at all. The rocks were thrown away from the center, forming a circular stone accumulation with the ash in the middle of the ring (*cf.* Mera's explanation of midden circles, 1933).

One additional note seems pertinent. Many more rocks were thrown on the downhill side of the pit, making the upper part of the midden (or rim, as it is usually called) almost level. At first it seems very natural simply to throw the used rocks downhill. However, why form a level rim? I have noted that in the Carlsbad region it was common for hillside middens to have level rims. Most middens on flats, tops of ridges, or on very minor slopes have one side higher than the other and thus have what I call a "dip." At least through southeastern New Mexico and western Texas, there is a suggestion of a correlation between the dip of the midden and the wind direction at the season of the year that the midden was probably formed.

The presumption here is that used hearthstones and ashes would accumulate on the downwind side of the cooking pit, rather than being thrown upwind. Thus, the highest side of the midden woud be in the direction the wind was blowing. Some supporting evidence to this hypothesis (also suggested by Spangle, *et al.* 1959: 9) may be found in the Carlsbad region, where the midden circles are thought to represent earth ovens used during times of intensive gathering and roasting of *Agave* (mescal, Century Plant) and *Dasylirion* (sotol). These plants were usually gathered during or just before the flowering stage in late spring and summer, the time of the year when the wind is southerly. The dip of the middens in the region is quite generally in a southerly direction. During intensive survey work in western Texas and southern New Mexico in the spring and summer of 1965, I took compass directions of the dip of the middens and the direction from which the wind was blowing at each locality. Correlation was nearly 100 percent to the nearest 10 or even five degrees. Rarely, a midden was located with dip just opposite the wind direction for late spring, but the same as for the winter months, suggesting that perhaps the midden was built at another season from the rest. It is presumed that mescal and sotol can be gathered in the winter in the Carlsbad region, as they can in parts of western Texas where sotol is used as a winter feed for sheep and horses. In comparing wind direction, one should remember that different localities vary from each other very slightly because of geographic features (such as mountains, hills, or canyons), which will alter the local wind direction slightly.

FIGURE 6. Cleaned pit in bedrock in the center of the midden, after excavation, looking west-southwest.

Possibly the hillside locations for the middens were chosen with the wind direction in mind. If there is a correlation between the wind direction and the dip of the midden, then when this midden was formed the prevailing wind was from the west-southwest. Utilizing this line of reasoning, perhaps one could hypothesize what type of food was being cooked. In much of the Southwest the Indians gathered mescal and sotol and cooked it in this type of pit. The Pima, and probably others, roast cholla buds in much the same manner, and there is no reason why other plants or even meat could not be cooked by similar procedures. Although mescal and sotol are not found in this area east of Trinidad, cholla is quite common and is present in areas surrounding the site. As the cholla buds in the late spring or early summer, there is again a positive correlation between the dip of the midden and what would have been the prevailing wind at the time the cholla buds were prepared—westerly or southwesterly. Of course, the wind direction is the same during much more of the year. Analyses of the pollen and soil samples from the midden may provide further indications as to what was cooked at the site.

ARTIFACTS

When Mr. Louden and I visited the site, he found a very small end scraper, which was worked on the dorsal face at the end opposite the bulb of percussion. Approximate dimensions are 23 x 14 x 7 mm. The specimen was made from a very fine-grained, white flint. It is commonly observed that this type of scraper is almost entirely restricted to the Neo-Indian period, although little more is known at present.

At this time we also found three quartzite flakes, one agate flake, one piece of milky quartz, and a medial fragment of a small quartzite dart point or knife in the general area of the site. No diagnostic artifacts were found at this time. Mr. Louden's brother reports that he once found a mano on the surface of the midden, but this speciment could not be located.

During excavation, only four very small flint and agate flakes, eight pieces of yellow and yellowish-orange ochre (which may have resulted from burned sandstone), and two artifacts were recovered. They were all found in the central and northern portions of the midden.

One of the two artifacts found during excavation was a small, crude biface of very fine-grained orthoquartzite from Square 4F. It is essentially oval and shows considerable use along the edges apparently from a cutting motion. Workmanship is all initial hammerstone flaking with no intentional secondary retouch. Dimensions are 43 x 36 x 10 mm. This specimen was found in a thin deposit of pure ash between bedrock and a large, horizontal sandstone slab.

The second artifact found during excavation was a small medial fragment of a milling slab of fine-grained sandstone. It was apparently used with a circular motion and had a few peck marks on the lightly polished surface. The fragment was 32 mm. thick. The diameter of the complete specimen could not be estimated with any certainty.

CARBON DATE

During excavation all charcoal from the midden was collected. Because of the limited amount, all samples were combined into two composite samples. One of these was dated by the Radiocarbon Dating Laboratory of the University of Texas and yielded a date of 515 ± 65 B. P. or A. D. 1435 (sample No. Tx-290).

As no diagnostic artifactual remains, such as pottery, were recovered, it is not certain what cultural context this date represents. Mr. Baker suggests (personal communication) that the site represents an early Apache occupation, and possibly the date indicates the abandoning of the area by the existing Pueblo groups. The site is certainly relatively late and represents a plains type economy, probably roving bands of hunters and gatherers.

FINAL STATEMENT

Primary findings of the excavations were the clear indications of the structure of a midden circle or mescal pit, which seems to have been associated with an adjacent stone ring or tipi circle. The structure of the midden suggests that it functioned as an earth oven, possibly at first on top of the ground and later with the cooking process taking place in a pit beneath the surface, after the midden accumulation had become great enough for such a pit to be dug. The depression in the sandstone bedrock may have been formed by constant contact with heat through continued firings and could well have served as a cooking pit.

These data suggest some problems associated with a tentative typology which I recently suggested (Greer 1965). The midden at the Louden Site would easily fall within the *Type IB* midden circles, in which the midden was built entirely on bedrock or above the natural ground level. It could also fall within the *Type I* mescal pits, which may have the same surface characteristics as the midden circle (*Type IB*) but had the cooking pit dug below the natural ground surface. It may well be, then, that the *Type I* mescal pits and the *Type IB* midden circles are actually variants of the same type.

In some areas there are slight complications. In southeastern New Mexico and western Texas, there are midden circles built on top of alluvium and gravels, and these middens have no pit dug below the ground surface. Many sites in the area, however, are built on a very hard, almost cherty, limestone

bedrock into which it would be impossible to dig, and repeated firings would probably have no eroding effect. On this bedrock, one would predict the midden circle type of site, rather than a cooking pit. Perhaps the lack of subsurface pits in the middens on the alluvium or the gravel was a carry-over from the alternate system used in the stony hills. It might also be suggested that it was much easier to use a surface oven until enough soft ash had accumulated to facilitate the digging of a pit. One exception to this suggestion is a midden in Val Verde County, Texas, where a pit was dug into the decaying limestone and caliche underlying the ring midden (Greer and Peterson 1964). Undoubtedly, there are many other exceptions. Until such time, however, as more work is done, I prefer to leave the proposed typology as it stands, although the assignment of *Type IB* midden circles and *Type I* mescal pits is beginning to appear somewhat confounded.

Although two other sites visited on the Louden Ranch may have been midden circles, the Louden Site is the best example of a midden circle in the area and is the only one reported for southern Colorado or northern New Mexico. Possibly surveys in the eastern drainages of the Purgatoire River will yield more such sites in this canyon-prairie country. If so, the new sites may help in the general interpretation of the midden circle problem and show some relationship of the Colorado middens with those in other parts of the Southwest.

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