

**Ka-131, THE BOWLING ALLEY SITE:  
A Late Prehistoric Site in Kay County, Oklahoma**

by  
Byron Sudbury

**ACKNOWLEDGEMENTS**

Many individuals have contributed toward the completion of the excavation and the paper on this site.

The owner at the time of the original excavation, Lee Tapp, very graciously gave his permission to recover the materials from the features which had been exposed on the site. Later, when the property came into the hands of James B. Dail and Melvin Hatley of Oklahoma City, and A. B. Greene of Purcell, consent to finish the work on Ka-131 was readily given. Thanks are extended for these generous acts on their part.

A number of the local amateurs gave of their time and energy to aid in the excavation on this site. The second excavation was conducted by Bill Harwood with the aid of Dean Burkett, George and Nina Hanggi, Anna and Carol Harwood, Maxine Havens, George Hill, Della and Cecil McKnight, and Walt Rosborough. In the final excavation on Ka-131, the author was greatly assisted by the many devoted hours Carol Harwood spent screening. Also assisting in this dig for much shorter periods of time were Mike Guthrie, Gerry, George, and Nina Hanggi, Anna Harwood, and Bill Harwood (who, along with John Sudbury, kept a photographic record of all of the excavation), and Kirk Shrewsbury.

Dr. Hugh Cutler and Dr. Leonard Blake of the Missouri Botanical Garden, and Dr. D. A. Sander of Oklahoma State University all freely gave of their time and effort in order to identify the flora remains which were recovered. The properties of some of these seeds were defined by two Ponca Citizens: Dr. Edwin Fair, and Dr. Gene Arrendell. Don Wyckoff rendered his services in the identification of the lithic materials as well as his many constructive comments on my thoughts and work. Dr. J. K. Greer of O. U. Stovall Museum, Fred Schneider of the University of Missouri, and Tyler Bastian of Kansas University devoted their efforts to the identification of the faunal remains. Dr. Jim Osborne of Continental Oil Co. and Von Long, the Kay County Agricultural agent, were extremely helpful in aiding me with the geographical background of this area. For all of these professional services, I extend both my deepest gratitude and a hearty well done.

I also extend my thanks to Denny Gerhart for his assistance in labeling the specimens on the illustrations.

Also, I feel that my thanks are greatly deserved by Gregory Perino and Tyler Bastian for having given me jobs working in the field with them. These past 2 summers of field work have enabled me to learn a great deal. For these opportunities, I am deeply indebted.

To the many members of the Oklahoma Anthropological Society with whom I have had the opportunity to associate and learn from during the various statewide society functions, I extend my thanks.

However, my greatest thanks go to the local amateurs, many of whom are in the Kay County Archaeological Society, with and from whom I have learned so much.

**GEOGRAPHICAL BACKGROUND**

The general location of this site is in south-central Kay county, Oklahoma, on the west bank of the Arkansas River (Fig. 1). The Arkansas River is the main stream in this section of the state, and is located 1 mile south of the site. The width of the river valley at this point is about 1 mile. The Rocky Mountains of Colorado provide the source for the Arkansas River. Seven and one-half miles east of this site, the Arkansas River begins a westward meander. Ka-131 is in the general area where the river returns to its southeasterly direction of flow.

Ka-131 overlooks the Arkansas River Valley from the second terrace on the bluff on the west side. This bluff is the post-Permian, Arkansas River meander boundary. The floodplain, immediately above which the site is located, is comprised of Carr fine sandy loam. This general area is

referred to as Loamy Bottom Land. Native trees supported by this type of soil are elm, cottonwood, oak, and pecan. The bluff itself, which is quite visible, is a limestone outcropping known as the Wellington formation. Erosion and uplifting exposed a portion of this formation, which is approximately 670 ft. thick. This bluff, in the area of the site, has been covered with post-Pleistocene alluvial deposits. This alluvium is composed of sediments (most notably feldspar) carried from the river's source as well as sediments from post-Permian deposits enroute. Also, erosion near the site has added its share of sediment to the deposit.

Turkey Creek (on which Lake Ponca was constructed) has its source about 2 miles northeast of the site. Its general course was south; however, upon becoming slightly north of due east of Ka-131, it began a westerly meander, and upon almost reaching the site, it began to flow southward again. This spring fed creek was only about 100 yards east of the site. From the beginning of its westerly meander to where it passes the site going south, this creek runs along the base of the bluff overlooking the river valley.

Just off the extreme southeast portion of the site a very small stream joins Turkey Creek in its flow southward. This creek runs along the southern edge of the site and flows in an easterly direction. A half mile west of the site several small tributaries converge to form this small stream which, for the purpose of this report, is called Infield Creek. One of these tributaries flows from a due north direction; its source is a small perennial pond assumed to be fed by a small spring. It is this stream which feeds Rose Lake on Fourteenth Street in Ponca City. This creek flows south several hundred yards west of the site until it merges with the other tributary. After these 2 streams merge, the course continues south for a short distance and then makes a hairpin curve to the east which causes it to flow along the southern edge of the site to Turkey Creek.

The region to the north in which these creeks originate has been called the Bluestem Hills. These hills are eroded limestone, sandstones, and shales and have a rolling terrain broken by butte-like ridges (Clark and Cooper 1930:70-73; Morris 1957:10). About one-half of the untilled arable land in Kay county is in this area; this land is Kay county's principal grazing area.

The soil on which Ka-131 is located is considered as being a Loamy Prairie composed of Vanoss Silt Loam. Alluvium deposits of this soil type are sometimes 50 ft. deep. This area has a vegetative cover considered as tall grass savannah (Gray and Galloway 1959:Fig. 4). Some of the native tall grasses still found in this area are big bluestem, little bluestem, indiana grass, and switchgrass.

The site area is also quite near a portion of the Cross Timbers region (Gray and Galloway 1959:Fig. 6). The Cross Timbers consist of abundant growths of blackjack and post oak trees and is located in the area to the south of the site. During the drought of the 1930's, the western boundary of this region receded some 10 to 20 miles. Presently, it is slowly reclaiming its pre-1930 distribution.

Perhaps it should be noted that part of the reason that Ponca City was established in its location was due to the presence of the "Big Spring" at the intersection of South Avenue and Fourteenth Street. This spring is at the base of the bluff which parallels the river and is about a mile southwest of Ka-131. There are numerous smaller springs along this bluff and these lie in both directions from the Bowling Alley site. However, the author does not know of any present day springs in the immediate vicinity of the site.

Badgers, beavers, bobcats, coyotes, deer, opossum, rabbits, red fox, skunks, and a great variety of rodents represent a portion of the mammals which comprise the native fauna of the present day Ponca City locale. Wild game birds present in this area include mourning dove, prairie chicken, quail, and turkey. Also, a wide variety of land birds as well as birds of prey are present. A number of reptiles and various amphibious species are also to be found. Several of the native fish still in the streams are carp, gar, and catfish.

A growing season of about 190 days, generally between April and September, is the portion of the year which receives about two-thirds of the average annual rainfall (Gray and Galloway 1959:13-14). The winters are considered as mild, and winter precipitation is light, generally in the form of snow or sleet. The average daily maximum for January is 47.8°F, and the average minimum is 26.4°F (Culver 1967:83). The spring season is generally the period of most severe storms and weather changes. Summers are long with many short dry spells. The average maximum temperature for July is 96.0°F, and the average minimum is 71.0°F (Culver 1967:83). Fall is generally sunny with infrequent but heavy thunderstorms. The average annual rainfall is about 35 in., and the average evapotranspiration rate is 33 in. (Gray and Galloway 1959:Fig. 4).

More detailed data on Kay county geography is available in the Soil Survey Kay County, Oklahoma by James Culver and published by the United States Department of Agriculture in 1967 and in An Overall Resource Development Program for Kay County as prepared by the County Program Planning and Resource Development Council in 1965.

#### ARCHEOLOGICAL BACKGROUND

There has been a very limited amount of archeological field work in the Kay County area. The earliest work done was conducted by Joseph B. Thoburn in 1926 for the Oklahoma Historical Society. Thoburn conducted excavations on a historic contact site north northeast of Ponca City on the Arkansas River. Parts of his manuscripts from this excavation of the Bryson Site, Ka-5, have been published (see McRill 1963).

Later work in this general area was conducted by Waldo R. Wedel in 1940 for the United States National Museum. He tested 3 late prehistoric sites near Arkansas City, Kansas, which is only 3 miles north of Kay county (Wedel 1959:344-379).

From December, 1963, to November, 1964, the members of the Kay County Chapter of the Oklahoma Anthropological Society were busily engaged surveying the area of the future Kaw Reservoir. One hundred and one sites are now reported as being in the reservoir area. Ninety-three of these sites are in Kay county. This is almost two-thirds the total number of sites reported in Kay county. As is apparent, a great number of sites will be lost in the near future. The bulletin prepared by Wyckoff (1964) was the report on the survey itself as well as proposed excavations in the area. It is hoped that the increased amount of work in Kay County will be profitable in defining the relatively unknown prehistory of this area.

The work of Tyler Bastian for the Oklahoma River Basin Survey in the summer of 1967 was the beginning of the salvage excavations in the reservoir area. He excavated the Freeman Site, Os-59, and the Hudsonpillar Site, Ka 73. These were both late prehistoric sites.

The only other work in this area was conducted by the Harwoods of Ponca City, Oklahoma, with aid coming from the local O.A.S. chapter. The excavation was conducted on Os-52, a bluff shelter in Osage County. This site is some 40 miles northeast of the site on which this paper is based.

As was previously stated, we are very hopeful that the increased archeological efforts in this area due to the future reservoir will be instrumental in filling the many blank pages of archeological prehistory present today in this portion of the state. Likewise, it is hoped that this report will contribute to the understanding of the prehistory of Kay county.

#### SITE DESCRIPTION

The legal description of the location of the Bowling Alley Site is the NW  $\frac{1}{4}$  of NE  $\frac{1}{4}$  of Section 26; Township 26N Range 2E. The site is located on the second terrace on the west side of the Arkansas River (Fig. 1). Due to a westward meander of the river, the site overlooks the valley to the south.

The bluff upon which the site is located is covered with alluvium deposits of Vanoss Silt Loam which supports native tall grasses. The surface of the site gradually slopes toward the river, which is 1 mile south of the site. Turkey Creek runs on the east side of the site, to be joined by a smaller creek (Infield Creek: made of several small tributaries, one of which comes from the north) which runs along the southern edge of the site from the west. After combining near the southeast corner of the site, Turkey Creek continued its course south until it flows into the Arkansas River. In this general area, the Arkansas River reverts to its general southeasterly course.

As can be seen, the south, east, and west sides of the general site area are bordered by running water. In times of flooding, the waters from the Arkansas River completely cover the bottom land immediately around the area of these creeks and all the way south to the river. The site area itself drains water quite rapidly. The features recovered on the site were all about 33 feet above the present flood level of the Arkansas River.

The site area where the excavation took place is only about one-half acre in size. In the early spring of 1965, the lot upon which the site is located was leveled for construction purposes.

As much as 7 feet of soil were removed from the north end of the site. Moving several hundred feet south, the depth of soil removed gradually decreased to approximately 1 foot (this is over the area of the site under discussion as the excavated portion). At about 330 ft. south on the lot, the soil removed from the northern portion of the site was deposited as fill. This fill area extends south some 130 ft. farther, and a maximum depth of 15 to 20 ft. of fill was deposited on the extreme southern end of this area. As a result, the northern portion of the site was totally destroyed, and the southern portion was covered with fill. This left a narrow strip of occupational features exposed in the central portion of the site along the original 946 ft. contour line (see Fig. 2).

It was this central area that was noted upon discovery of this site. Three excavations were conducted in this area of the site from September, 1965, to the late spring of 1968. A portion of the artifactual materials found on this site were incorporated into a display for a project by the author. This project is presently on display in the Ponca City Cultural Center.

### THE EXCAVATION

Three separate excavations have been conducted on the Bowling Alley site, Ka-131, since the site area was leveled in the spring of 1965. None of these excavations can be considered as major operations although the materials that were recovered give a relatively complete record of the site's inhabitants.

The first excavation was begun by the author the day after the site's discovery. Grading of the site had exposed, and partially destroyed, a refuse pit. This feature was noticed while making a surface collection from the site. The pit was subsequently excavated during after-school hours over a number of days. Dental picks, a trowel, and a hand shovel were the principal tools of this excavation. Recovered materials were cleaned on the night of recovery and then catalogued. When the excavation of this feature, later designated as Feature 1, was completed, the hole was refilled. At a later time, fill dirt from this pit was again excavated and washed through a window screen resulting in the recovery of important material. Approximately a gallon of debris was recovered in this manner, and this debris was separated and identified, thus shedding more light on this prehistoric occupation.

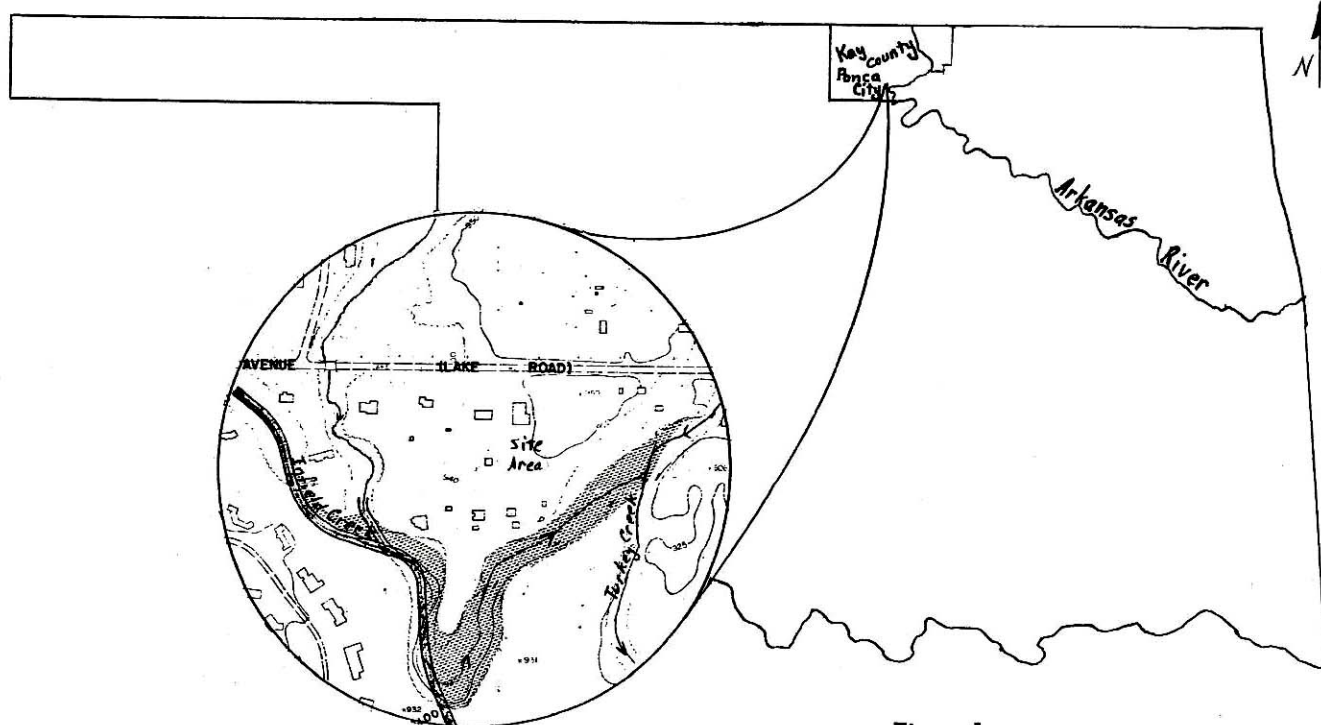
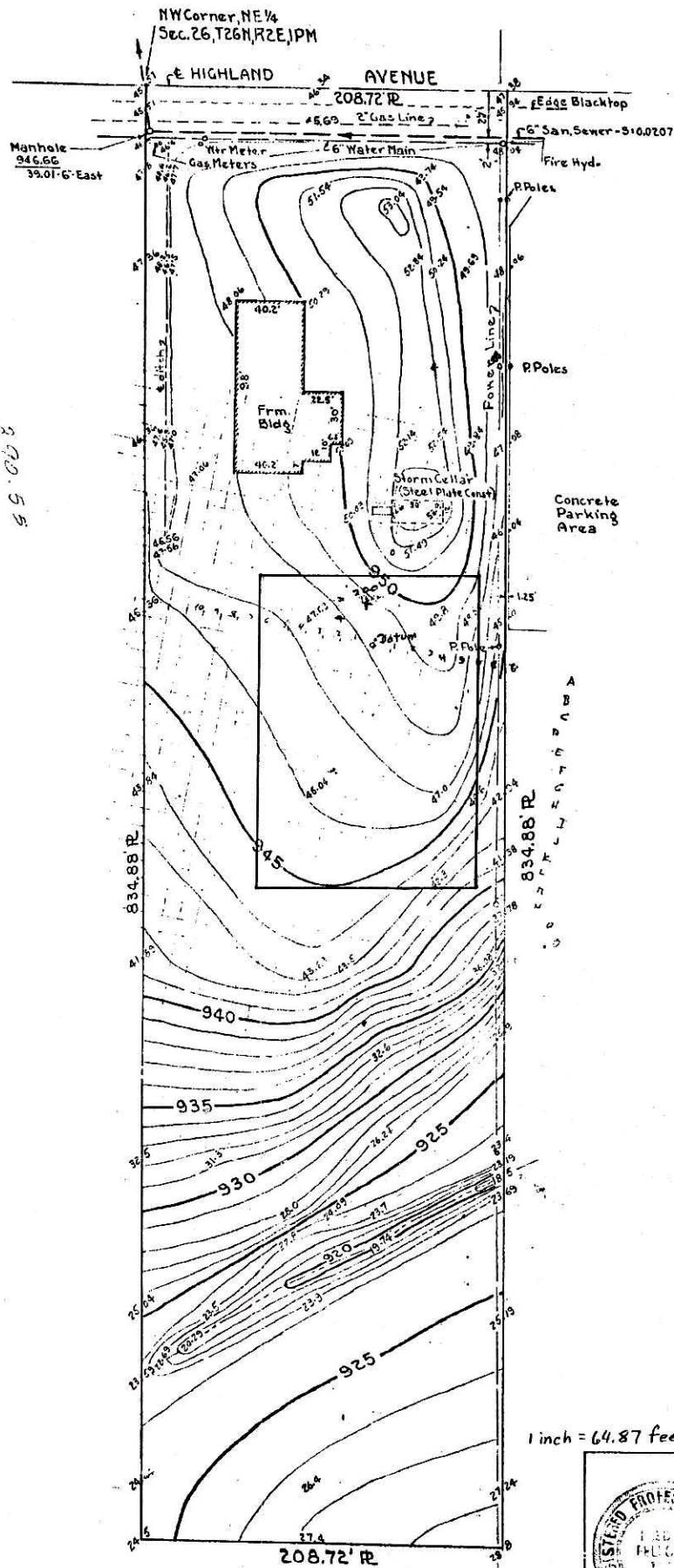


Figure 1.

This map shows the general location of the Bowling Alley Site, Ka-131



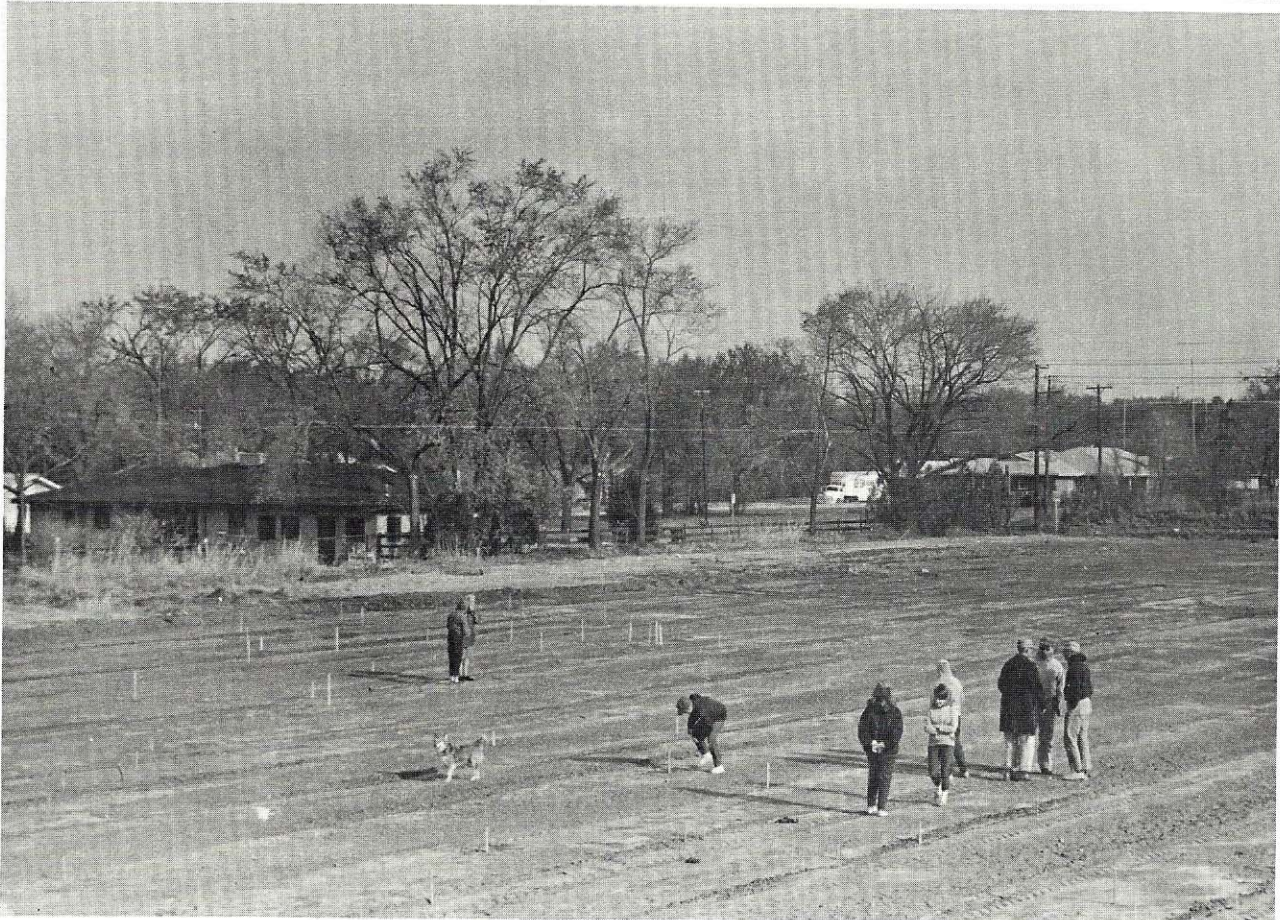
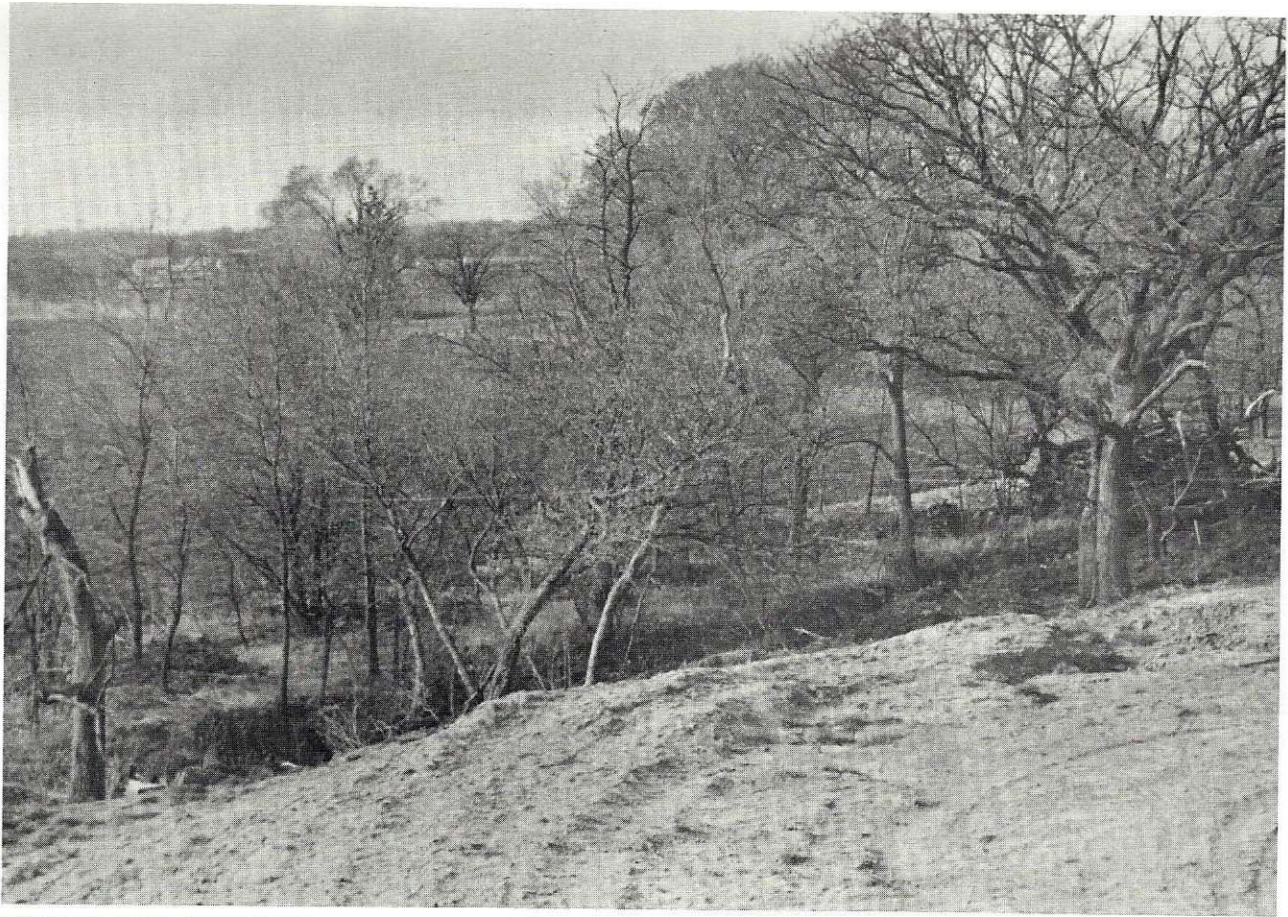
200.55

**Figure 2.**

The rectangular area pictured on the above contour map is the area which was excavated. This area is shown in greater detail in Figure 3.

1 inch = 64.87 feet





**PLATE I**

**Pictures of Ka-131, the Bowling Alley Site. A, The bottomland south of the site. View: southeast. Note the stream bed at the base of the fill; B, The site area in April, 1966. View: northwest.**

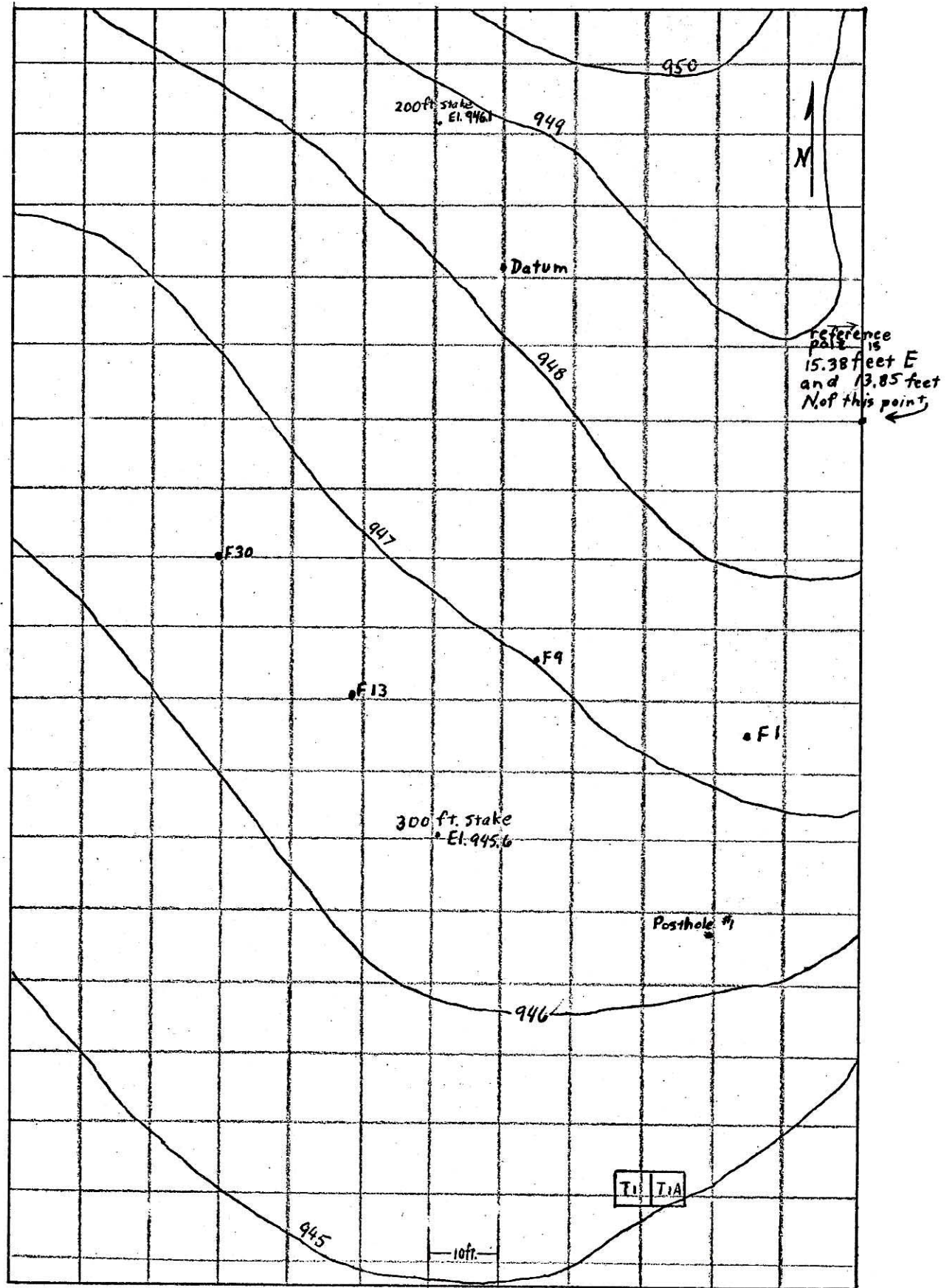
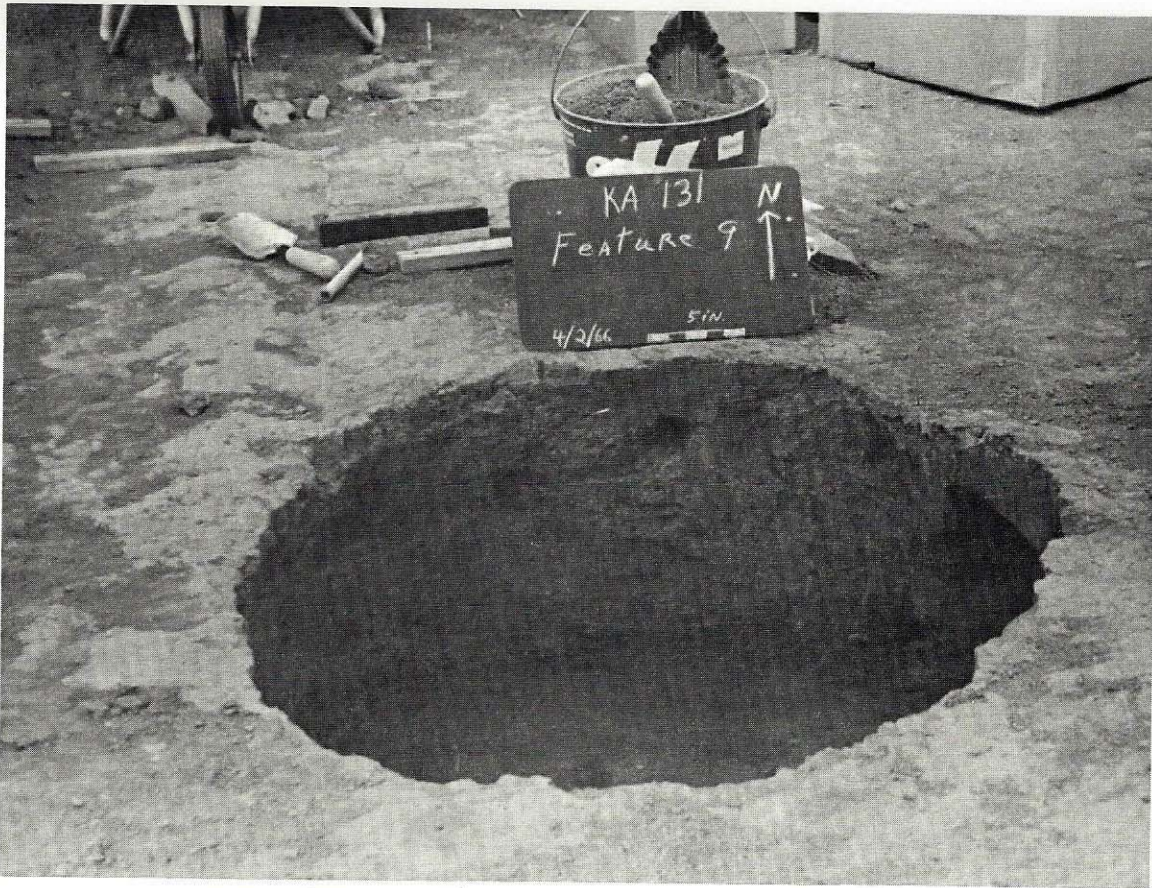


Figure 3.

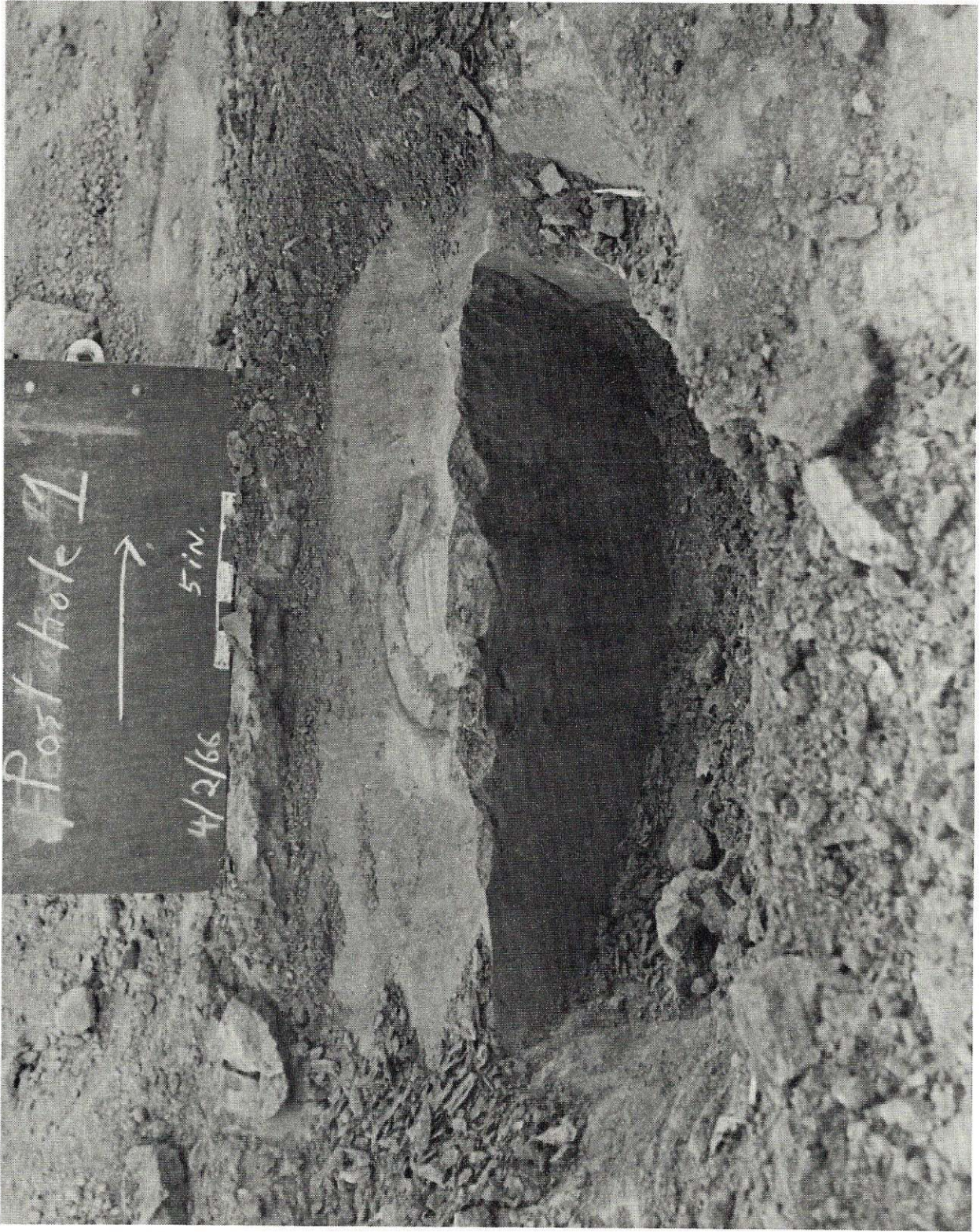
This is a section of the map in Figure 2. This map of Ka-131 shows the location of the features excavated, and the location of the trench which was taken out. Also, the datum point has been plotted on this map.



**PLATE II**

**Features found at Ka-131. A, Feature 9, an expanding refuse pit; B, Feature 13, a basin-shaped fire pit.**



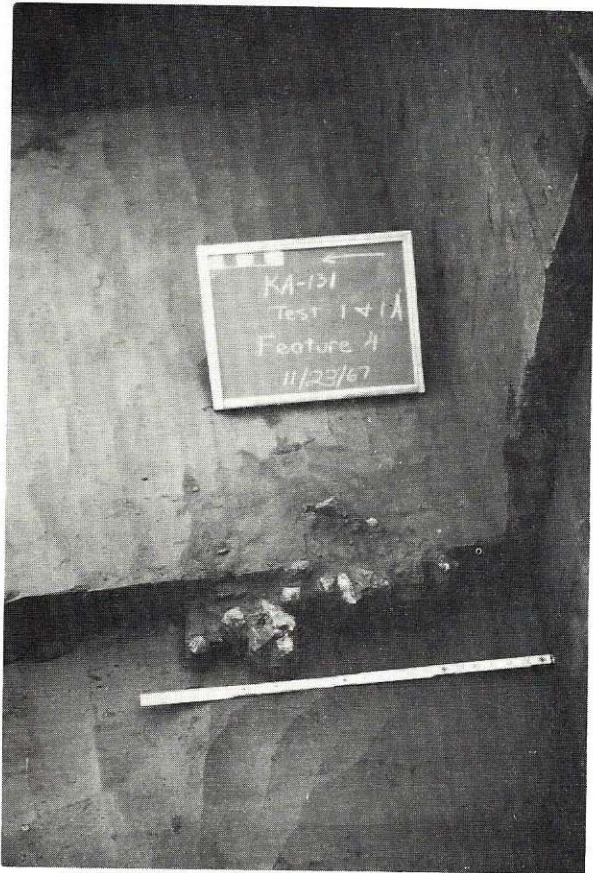


**PLATE III**

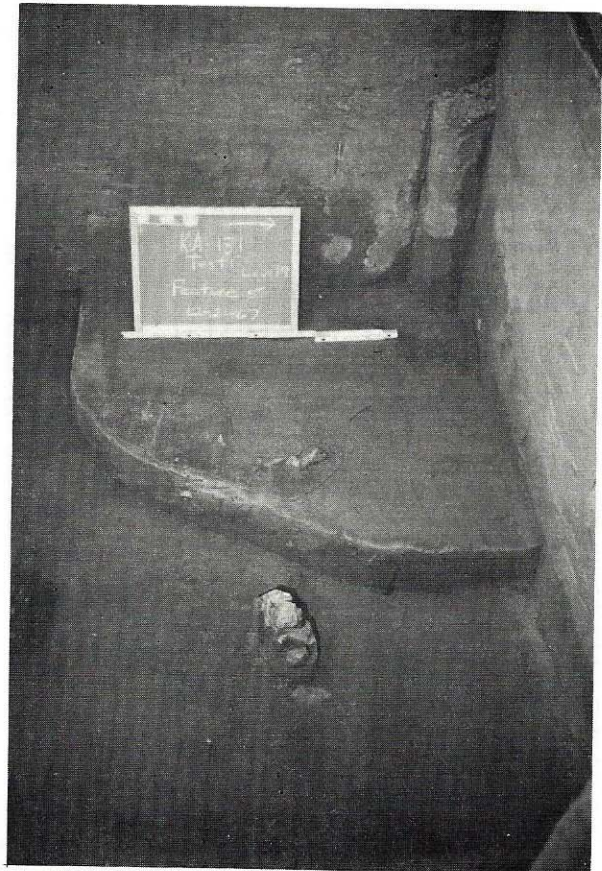
Excavations at Ka-131. Postmold found during second excavation period.



a



b



c

#### PLATE IV

Excavations at Ka-131. A, Tests 1 and 1A of the third excavation period. B, Feature 4, a scattered hearth found in level 8 of Test 1. C, Feature 5, a small natural depression used as a refuse pit (the 2 rock concentrations in the foreground are resultant from rodent activity).

The second excavation was conducted by members of the Kay County Chapter of the Oklahoma Anthropological Society. This work occurred on April 1 and 2, 1966. At this time a road grader was employed to reclean the surface of the site. This regraded area was then examined for possible features which could be discerned by color changes in the soil. Such features were staked out and located on a contour map of the site with the aid of a transit and a 100 ft. tape (see Plate I and Fig. 3). The contour map was made using 2 reference points (a telephone pole and a manhole cover) which were 200 ft. and 300 ft. south of Lake Road. A datum point was established 240 ft. south of Lake Road.

Once the grading was completed, some 30 features and 45 postholes were tentatively sketched in on the map. However, after profiling and excavating all of these features, only 3 features, a rodent burrow near first excavated feature, and a single posthole were determined to be valid cultural features or disturbances of significance. For the purpose of this report, only the productive features and the posthole will be discussed; these have been shown in the final form of the site map (see Fig. 3). The areas resulting from rodent activity have been deleted from the site map. For the record, it can be stated that these disturbed areas were concentrated in the area 40 ft. east and 70 ft. west of a perpendicular from Lake Road through the datum point and were found between the 946 contour and 65 ft. north of this contour.

All cultural features were dug with trowels, hand shovels, and dental and bamboo picks. Fill dirt was screened through  $\frac{1}{4}$  in. mesh screen. Recovered materials were placed in a sack with the site number (Ka-131), feature number, and date.

The bottom portion of a postmold was found. After concentrated efforts to skim off the immediate surrounding area failed to uncover other post locations, it was decided that the rest of the house pattern had been destroyed.

The third and final excavation was undertaken in September of 1967. It was hoped that by removing a square in an undisturbed portion of the site that the original stratigraphy of the site as well as the depth of occupation could be determined. This square was designated as Test 1 (see Fig. 3 and Plate IV). In the eighth level of Test 1 was found a feature which extended into the wall. In order to recover the entire feature the adjacent square, referred to as Test 1A, was removed. This square was dug by levels of stratigraphy. The first 2 levels were composed of fill dirt, and the third level was the topsoil which contained a large quantity of broken glass and metal. The depth of the fill dirt in this part of the site was  $6\frac{1}{2}$  in. while the average depth for the top soil was 7 in. After the subsoil was reached stratigraphic differences could not be discerned so 6 in. levels were removed. Level 8 was reached, and because of short, after school hours and winter weather, the work became quite spasmodic. Two more levels were excavated from each square, and a depth of 54 in. was reached. Then, one afternoon, upon arrival to resume work, it was discovered that vandals had caved in the walls and removed the stakes. The floor of the original square was cleaned, and a small hole was dug several feet deeper than the existing floor. No cultural debris was recovered in this effort, so the trench was refilled and the work was terminated.

The excavation of the 2 squares utilized a  $\frac{1}{4}$  in. mesh screen. The recovered cultural material was kept in sacks labeled with the site number, the square, level, date, and excavator's name.

At this time, it should be pointed out that the following report is on the materials recovered from all 3 excavations conducted at this site.

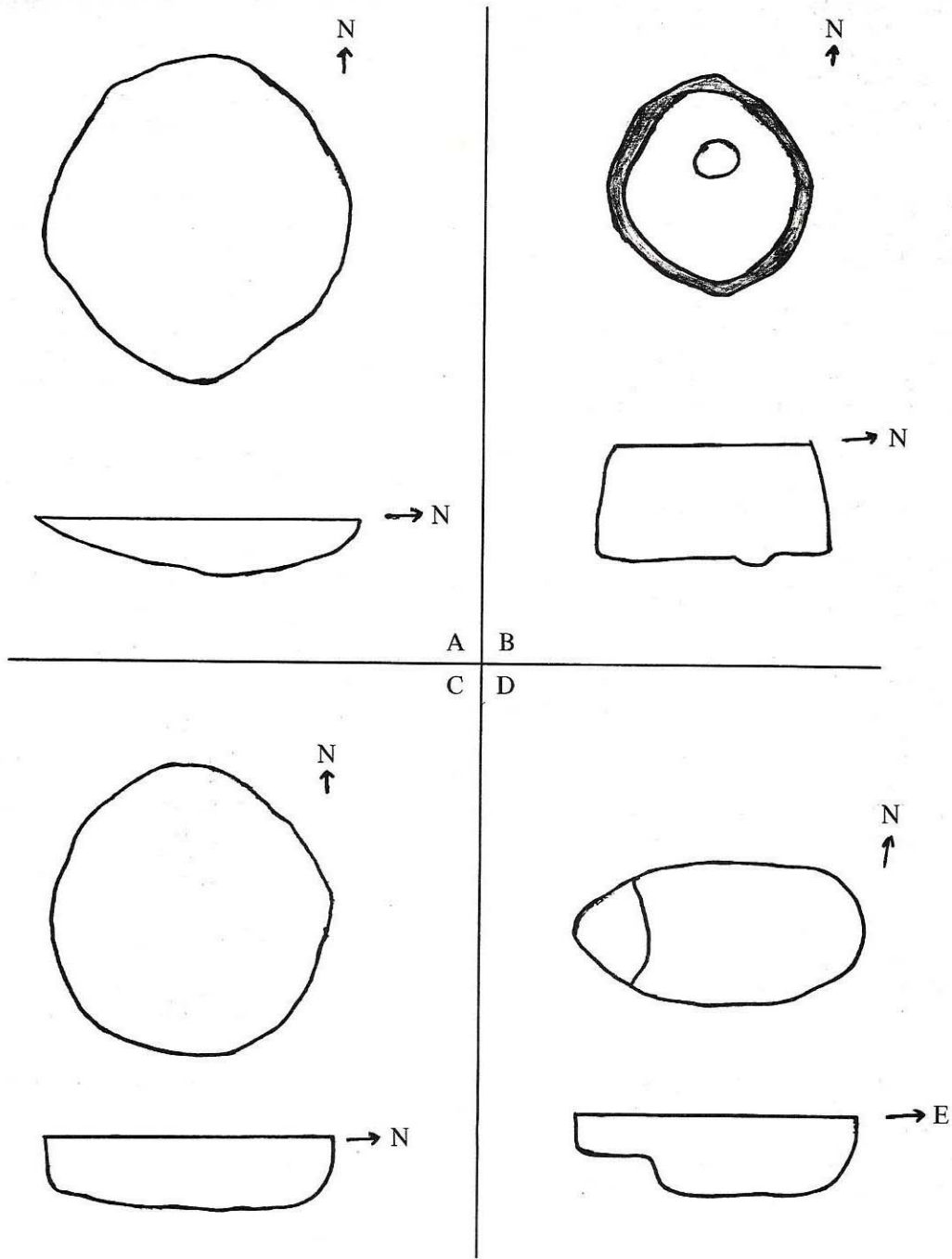
### THE FEATURES

Four features and one postmold which yielded cultural material were found on the graded surface of the site. Seven areas of interest found in the trench were labeled as features. However, further excavation of these "features" revealed that, in all actuality, there were only 3 valid features in the trench, the other 4 being attributed to rodent activity. The features from the surface of the site are discussed first with the description of the other features following. In the description of the contents of these features, the types of faunal debris are given on Table IV and the types of lithic debris are given on Tables I and II.

### FEATURES IN GRADED AREA

#### Feature 1 (Fig. 4)

Approximately 1.6 ft. of earth had been removed from the ground at the time of the discovery



1 centimeter equals 1 foot.

Figure 4.

**FEATURES EXCAVATED AT Ka-131.**

- A, Feature 1: basin shaped refuse pit;
- B, Feature 9: cylindrical, slightly expanding refuse pit;
- C, Feature 13: basin shaped fire pit;
- D, Feature 30: "modified" basin shaped (one small elevated area) refuse pit.

of this basin-shaped refuse pit. Its north-south measurement was 55 in. while its east-west measurement was 50 in. and the maximum depth was 9 in. This pit was circular in outline, and the fill dirt was a very rich soil, being comprised of a dark brown sandy loam which was surrounded by subsoil.

The artifactual contents of this pit were 1 Washita arrowhead, 3 point fragments, 2 flake drills, 1 knife tip, 1 graver, 2 concave scrapers, 2 cores, 3 side scraper sections, 7 implement fragments, 6 utilized flakes, an awl blank and a splinter awl, 1 disk bead, 2 discarded joint sections (from making beads), a digging implement, 14 fragments of incised bone, 6 modified bone fragments, 36 sherds of Pottery Type I (Vessel 1), 4 sherds of Pottery Type I (vessel 2), 45 sherds of Pottery Type II (Vessel 1). 12 sherds of Pottery Type II (vessel 2), 11 sherds of Pottery Type III, and 2 sherds of Pottery Type IV. Also charcoal as well as burnt bone, shell, clay, limestone, and wattle were found in small quantities.

#### Feature 1A

This was a burrow found adjacent to, and immediately north of, Feature 1. The dimensions of this burrow are unknown, but the fill dirt, as well as the materials apparently came from Feature 1. This animal disturbance was about the size of a badger burrow, and it extended under ground for several feet.

The cultural debris recovered from this area included a section of a Fresno point and a basal section of a Washita point, 2 implement fragments, 1 utilized flake, the rim sherd of Pottery Type II (Vessel 2), and 2 rim sherds of Pottery Type III.

#### Feature 9 (Plate 2; A; Fig. 4)

This circular refuse pit had, at the orifice, a north-south diameter of 34 in. and an east-west diameter of 30 in. At the base of this pit (average depth of 19½ in.), the dimensions are slightly larger, due to the gradual expansion of the walls of the pit (N-S 39 in., E-W 35 in.). The leveling of the site had removed about 1.3 ft. of soil from above this feature at the time of excavation. Several inches north of center, in the flat bottom of the pit, there was a small circular depression 2 in. deep and 6 in. in diameter. It has no apparent purpose, and it has been suggested that it is a rodent disturbance. The majority of the fill of the pit is a dark brown sandy loam. It is in this soil that the majority of the village debris is located. However, the bottom several inches of the fill of the pit were mottled with a sandy yellow clay. The charcoal extended into this area, but the other debris was generally confined to the upper levels of the pit. This pit fill had a much greater moisture content than the surrounding subsoil which made following the walls of the pit much easier during excavation.

The materials recovered from this pit include 3 Fresno points (1 complete and 2 broken), 1 Huffaker point, 1 Scallorn point, 2 Washita type (1 complete and 1 broken), 1 arrowhead fragment, 1 knife and 2 knife tips, 3 flake knives, 1 graver, 5 concave scrapers, 1 side scraper section, 3 serrated scrapers (1 complete and 2 broken), 16 implement fragments, 26 utilized flakes, 1 abrader section, 1 mano fragment, 1 piece of ground granite, 18 cylindrical beads (15 complete and 3 broken), 1 discarded joint section (from the manufacture of beads), a sickle made from the right mandible of a mule deer, 14 fragments of polished bone, 1 sherd of Pottery Type III, and 9 potsherds of Type V. Several hinges from Unionid mussels were recovered in the fill of this pit as well as other fragments of burnt shell, bone, limestone, and clay.

#### Feature 13 (Plate II and Fig. 4)

The walls of this pit were almost straight, incurving slightly. The bottom was slightly convex, with the maximum depth being 11 in. Approximately 0.9 ft. of soil had been removed from above this circular pit at the time of excavation. The fill of this pit was a dark brown, sandy loam. The north-south measurement of the orifice was 50 in., and the east-west was 48 in. Twenty-five pounds of limestone were piled in the southern end of this pit. The individual pieces ranged from 1 in. to - in. in length with the average falling between 2 and 3 in.

The utilitarian tools found in this feature were 1 knife tip, 1 flake knife, 4 concave scrapers, 1 implement fragment, and 4 utilized flakes. Also, 1 fragment of burnt bone and some charcoal was recovered.

#### Feature 30 (Fig. 4)

The maximum depth of this feature was 13 in., and 0.8 ft. of soil had been removed from the

surface when the outline of this oval-shaped pit was discernible. The sides were slightly incurving, and the bottom of this refuse pit was slightly convex. The depth of the western foot of this pit was only 7 in. The bottom abruptly changed direction to curve upward and then level off again to form an elevated planar region at this end of the pit. The north-south measurement for the orifice of this pit was 25 in., and the east-west measurement of this feature was 48 in. The soil in this feature was a dark brown, sandy loam.

The artifacts recovered from this feature are 1 flake knife, 1 graver, 2 concave scrapers, 1 implement fragment, 4 utilized flakes, and 2 sherds of Pottery Type VI. Also, charcoal, limestone, and sandstone were found in small quantities.

#### Posthole #1 (Plate III)

This bottom portion of a posthole, located 0.8 ft. below the original ground surface, had several distinct color changes. The measurements below are made from the profiled postmold. An inner core of light grey soil (3-5/8 in. in diameter) comprises the postmold. This central area darkens as it gets deeper, and it also gently tapers to a point. Around this postmold, there is a slightly darker ring of earth. It, too, gets darker (and becomes mottled) with depth; however, it cuts inward more sharply than the central area causing the exterior limits to intersect with those of the postmold, forming one point.

One possible cause for these color variations is that the post, or the structure of which the post was a part, burnt down. In this process, the immediately surrounding soil space would have been subject to color change due to the heat radiated by the burning wood.

The over-all diameter of this post hole was 7-7/8 in. The maximum measurable depth was 8 in.

### FEATURES IN TEST SQUARES

#### Feature 2

This feature was found in Level 5 (at a depth of 26 in.) of Test 1A. This is apparently a small, natural depression which was used as a fire place or a hearth. Its greatest depth was 4½ in. Its north-south measurement was 33 in., and its east-west measurement was 44 in. Although being generally rectangular, the outline of this feature is quite irregular. This shallow depression yielded several bone fragments, one of which has been burnt, small chunks of sandstone and limestone, and some charcoal.

#### Feature 4 (Plate IV)

This feature was first discovered in Test 1, and it extended into the adjacent square, Test 1A. The very upper portion of several of the rocks was exposed in Level 7; however, the bulk of the feature was in Level 8, at a depth of 40 in. No pit outline, or fill, was noticeable in this feature. It was mainly a concentration of burnt stone. The north-south measurement was 20 in. while the east-west measurement was 7 in. and the maximum depth was 3 in. It is quite probable that this rock concentration represents a small hearth.

A rectangular knife base was recovered at the exact level of this feature but 2½ ft. north. Several artifacts were found associated with the feature itself. One core, 2 utilized flakes, and 1 metate fragment were found. The burnt rock was comprised of 2 small sandstone fragments, and 15 small (largest is 3 in.) pieces of limestone with a few small charcoal fragments intermingled throughout.

#### Feature 5 (Plate IV)

This small, shallow feature was found in Level 9 of Test 1. It was 27 in. long (north-east to south-west), 9 in. wide, and had a maximum depth of 3½ in. It was generally oval in shape with a small extension on the north-east end. The fill of this pit was comprised of a dark brown, sandy loam. It was apparently a natural depression which had collected village refuse. A few small fragments of bone and limestone were recovered as well as a small quantity of charcoal.

### FLINT TYPES RECOVERED FROM Ka-131

Thirteen groupings have been set up to include all of the various flint types which were recovered from the site. The flakes from which these types have been established were found on both the surface and in the excavation.

Table 1

SOURCE (L stands for Level)

FLINT TYPE NO.	Surface	L1-3	L 4	L 5	L 6	L 7	L 8	L 9	L 10	Total
1	913	142	45	39	15	12	7	7	1	1181
2	5	2	--	--	--	--	-	-	-	7
3	5	---	--	--	--	---	-	-	-	5
4	2	---	--	--	--	---	-	-	-	2
5	3	---	--	--	--	---	-	-	-	3
6	1	---	--	--	--	---	-	-	-	1
7	3	---	--	--	--	---	-	-	-	3
8	2	1	--	--	--	---	-	-	-	3
9	9	1	--	--	--	---	-	-	-	10
10	2	---	--	--	--	---	-	-	-	2
11	269	51	7	14	3	1	1	-	-	346
12	36	17	6	2	--	3	2	2	-	68
13	---	---	--	--	1	---	-	-	-	1
TOTAL PER UNIT	1250	214	58	55	19	16	10	9	1	1632

Table 2

SOURCE (F stands for Feature)

FLINT TYPE NO.	F 1	F 2	F 4	F 5	F 9	F 13	F 30	Total	Above Total	Sum	% of Flakes
1	455	7	1	-	1618	55	35	2171	1181	3352	86.20%
2	1	--	1	-	---	---	---	2	7	9	0.23%
3	---	--	-	-	---	---	---	0	5	5	0.12%
4	1	--	-	-	---	---	---	1	2	3	0.08%
5	6	--	-	-	3	---	---	9	3	12	0.31%
6	---	--	-	-	---	---	---	0	1	1	0.03%
7	---	1	-	-	---	---	---	1	3	4	0.10%
8	---	--	-	-	---	---	---	0	3	3	0.08%
9	---	--	-	-	2	---	---	2	10	12	0.31%
10	2	--	-	-	1	---	---	3	2	5	0.12%
11	10	--	1	-	33	3	12	59	346	405	10.41%
12	1	2	-	-	5	---	1	9	68	77	1.98%
13	---	--	-	-	---	---	---	0	1	1	0.03%
TOTAL PER F	476	10	3	0	1662	58	48	2267	1632	3889	100.00%

FLINT DISTRIBUTION AT Ka-131.

- Flint Type No. 1. Kay County Flint. The quarries for this flint type are located in Kay county, Oklahoma, and Cowley county, Kansas. These quarries are commonly known as the Hardy Flint Quarries. Some of the outcroppings for this flint type are located about 20 miles to the northeast of the site. This flint is generally fine grained and has a color range from tan, through yellow, pink, grey, purple, and even to some bluish hues. Kay county flint is easily recognizable by its concentric banding and randomly placed fusulinids.
- Flint Type No. 2. Shidler Flint. The origin of this type of flint is in the vicinity of Shidler in Osage county, Oklahoma. This is 25 miles to the east-northeast of the site. The flint itself is grey and has a large number of fossils in it. In most cases, flakes of this material have faults in the form of air pockets which have remained from the time that the flint was formed.
- Flint Type No. 3. Boone Chert. This type is found in northeastern Oklahoma in the Ozark Highlands. The flint itself is fine grained, and the examples recovered are mottled grey on white. This material was brought about 90 miles from the south and east of the site.
- Flint Type No. 4. Ogallala Chert. This material is coarse with an uneven surface fracture. It is grey to grey-brown in color. It is thought that the source for this material is in western Oklahoma.
- Flint Type No. 5. Frisco Flint. This type is from south-central Oklahoma in the Arbuckle Mountains area. This source is about 180 miles south of this site. The examples recovered range from medium to fine in coarseness with coloration varying from white to grey (with a bluish tint).
- Flint Type No. 6. This type is possibly Medicine Creek flint from north-central Kansas or south-central Nebraska. This fragment was broken from a thin, tabular core, and is tan to brown. It is of medium coarseness.
- Flint Type No. 7. Quartzite. Several varieties of quartzite were found. Here they have been grouped under their general typology. All specimens are relatively coarse and light brown in color.
- Flint Type No. 8. This material is extremely fine grained and is a transparent brown with white patination (with a blue tint). The source of this material is 550 miles to the south and west of the site. It is located on the Edwards Plateau in south-central Texas.
- Flint Type No. 9. This material is light grey and extremely fine-textured. Its identity is unknown.
- Flint Type No. 10. This type is a fine grained, dark grey variety of Kay county flint. Even though this is Kay county flint, it is a very distinctive subtype.
- Flint Type No. 11. Under this type are grouped all of the materials, flints and cherts alike, which were gathered from the gravel beds in the Arkansas River which is 1 mile south of the site.
- Flint Type No. 12. Unidentified Flint Types. This type grouping consists of the unidentifiable flint types which were recovered. At this date, none of these flakes have a known source. One piece of particular interest is included under this type number. It is light pink and fine-textured. It is possible that this piece was brought from Missouri.
- Flint Type Number 13. Amarillo Chert (Alibates Flint). This material was quarried 325 miles to the west-southwest of the site, near Amarillo, Texas. This is a very beautiful, fine grained material. It has a light grey background color, and the other colors are beautiful lines and swirls of red, reddish-brown, and sometimes even a purple hue.

With the exception of Kay county flint, and its variation (Flint Type No. 10), all of the flint types came from 25 to 550 miles away. Flint types were brought in from every direction. Kay county flint, with the closest source (except for the river gravels), was by far the most commonly used material. The next most common flint type in use in all phases of occupation was the material collected from the gravels of the Arkansas River. The flint types other than these 2 were found very sparingly on the site. The majority of the tools were made from Kay county flint, although Flint Type 11 was also used extensively.



Two hundred and eighty flint artifacts were recovered from the site. Of these pieces, 69.3% are made from Kay county flint, 26.1% were manufactured from Flint Type No. 11, and the remaining 4.6% are out of the other previously defined flint types. The percentage of these other flint types found as flakes on the site is 3.39% as compared to the aforementioned 4.6%. The percentage of flakes found of Flint Type No. 11, 10.41%, is also less than the percentage of flint of this type used in making the artifacts (26.1%). However, 86.20% of the lithic debris recovered was of Flint Type No. 1, whereas only 69.3% of the artifacts were made of this type. It appears that the more common material, Kay county flint, was not utilized nearly as well as the less common flint types.

The majority of these flint types were found on both the surface and in the excavation. The flint typology of the individual artifacts is given as the artifacts are described.

### THE ARTIFACTS: PART I

#### SURFACE ARTIFACTS

The author collected the sample of surface artifacts which is discussed below. This cultural debris was collected from September 11, 1965, to June 4, 1966. The materials discussed were recovered from the dirt removed from the surface of the site as well as the freshly graded surface.

#### Arrowpoints

Fresno Type (Plate V; D, G)

Number of Specimens: 2: 1 broken, 1 reworked.

Original Type Definition: Bell 1960:44-45.

Description: A small triangular arrowpoint with a straight base. The blade edges of the reworked specimen appear to have been slightly convex whereas those of the other specimen are straight.

Dimensions: Basal width, 1.5 cm.; maximum thickness, 0.4 cm.; maximum blade width, 1.6 cm.; estimated original length, 2.7 cm.

Lithic Material: Flint Type No. 1.

Comments: The reworked specimen has a new length of 2.0 cm. The blade has its original width until it extends 1.5 cm. from the base where it is modified in such a manner that it cuts sharply inward to form a blunt point. This new tip is off-center. Both specimens exhibit a portion of the original flake scar on one surface.

Temporal-Cultural Relationships: Bell (1960:44-45) comments that this point type has been "found in Fulton Aspect sites, the Washita River, Custer, and Optima foci, and several other assemblages." Its two extreme dates are given as 800 A.D. and 1750 A.D.

Scallorn Type (Plate V; K-L)

Number of Specimens: 3: 3 broken.

Original Type definition: Bell 1960:84-85.

Description: An arrowpoint having a triangular blade with straight to concave edges. The shoulders are well barbed. The base is corner-notched with a rapidly expanding stem (which is wedge-shaped). The base is narrower than the shoulders; in one case the base is concave, and the other base represented is convex.

Dimensions: Basal width, 0.8-1.1 cm.; stem width, 0.5-0.6 cm.; shoulder width, 1.1-(estimated) 1.8 cm.; maximum thickness, 0.3-0.4 cm.; estimated length, 2.5-4.0 cm.

Lithic Material: Flint Type Number 1.

Comments: The smallest specimen recovered is the minimum length defined for this point type. Also, one face of this specimen has a partially unmodified surface.

Temporal-Cultural Relationships: Bell (1960:84-85) says that this point type, in Oklahoma, "occurs in both the Gibson and Fulton aspect sites as well as the Washita River focus." An estimated time range for this point is 700 A.D. to 1500 A.D., and is associated in late sites with pottery and agriculture.

#### Side-Notched Points

Two side-notched point fragments were found; however, due to their fragmentary condition, they cannot be positively identified. One of the specimens, a basal section has a concave base and appears to have straight sides. There is enough of one edge of the specimen to show that it was a side-notched point. The notch appears to be an unusually narrow one. The base is 1.1 cm. wide and the notch is 0.9 cm. from the base. The maximum thickness is 0.2 cm. The other specimen is represented by a tip with 2 long, shallow notches (one of which is slightly higher than the other), each notch being worked from an alternate face and from that face only. The width of the point below the notches is 0.9 cm. and the maximum thickness is 0.3 cm. Both specimens are out of Flint Type Number 1, and each specimen exhibits one partially unmodified surface.

#### Other Arrowpoint Fragments

Nine other arrowpoint fragments were found, 7 of which were tips while the other 2 specimens were medial fragments. One midsection is out of Flint Type Number 1 and appears to have been flaked alternately (every other flake from the same side) on both sides. The other midsection is a fragment of a well-made specimen. Its material is Flint Type Number 12. One tip has many characteristics of the Young arrowpoint (Bell:1960:100-101) although this cannot be determined for certain. It is of Flint Type Number 1 (FT#1). Another tip, also of FT#1, has one serrated edge, as well as several spots which show the unmodified face of the original flake. Another tip, of FT#1, is unifacially flaked. The sixth specimen, of FT #9, exhibits an extremely smooth surface which is quite probably due to the material used in its manufacture. Of the other 3 tips (all of FT#1) 2 show 2 partially unmodified faces while the other is rather crudely chipped. One of the specimens with 2 partially unmodified faces is quite irregular in outline.

#### DART POINTS

##### Gray Type (Plate V;M)

Number of Specimens: 1 complete.

Original Type Definition: Bell 1958:28-29.

Description: A small, well-made point with a contracting stem, the taper ending as a rounded base. Prominent shoulders are present. When the point is examined from the tip end, a twist of the beveling on both edges is apparent--the "twists" running opposite directions.

Dimensions: Over-all length, 4.6 cm.; width at shoulders, 2.1 cm. blade length, 3.1 cm. According to these measurements, the stem is 1/3 of the over-all length. The maximum thickness is 0.7 cm.

Lithic Material: Flint Type Number 3.

Comments: Since this point is a relatively small specimen for this type, it could quite possibly be a rather late point. Part of the surface of one side of the point has a portion of the original unmodified face of the flake present.

Temporal-Cultural Relationships: This point type is assigned by Bell (1958:28-29) as frequently being found on pre-Gibson Aspect sites. The type begins in an Archaic period but is associated with some late pottery making cultures. The extreme estimated dates for this point type are 2000 B.C. to 1600 A.D.

##### Provisional Type Number 1 (Plate V; N)

Number of Specimens: 1 complete.

Original Type Definition: There has been no previously published type definition for this dart point. It is defined here as a provisional type for this site.

Description: A medium sized dart point with a leaf-shaped blade having convex sides. The thickest portion of the point is quite close to the tip. Poorly defined shoulders are evident, with one being set higher than the other. The area immediately below the higher shoulder is unifacially worked and is not at the widest section of the point as is the other shoulder, suggesting possible modification of the point from its original form. The stem is expanding and comprises 1/3 of the length of the point. The base is convex, with both the stem and base showing evidence of grinding.

Dimensions: Basal width, 2.0 cm. (base is nicked on one side); over-all length, 4.8 cm.; length of blade, 3.2 cm.; width of stem, 1.7 cm.; maximum width of blade, 2.3 cm.; maximum thickness, 0.9 cm.

Lithic Material: A poor grade of Flint Type Number 1.

Comments: Due to the asymmetrical shape of this point, it appears to have been modified from its original form. Also, it was made from a poor grade of flint. Step fractures are apparent on one edge. Some portions of the point are beautifully worked whereas other areas are quite crudely done. It should be noted here that some characteristics, such as shape, resemble the Travis Type (Bell 1958:94-95), but other characteristics are quite different.

Temporal-Cultural Relationships: These remain to be defined at a later date when points of this type are found in context with cultural debris on other sites.

#### Dart Point Sections

Number of Specimens: 3: 2 midsections, 1 blade.

One of the midsections is that of a broad, thin, exceptionally well-made dart point or spear point. It was made from FT#10. Its maximum measurable length is 3.0 cm.; its maximum measurable width is 3.1 cm.; and its maximum measurable thickness is 0.6 cm. The sides give all appearances of being straight.

The other medial fragment is much smaller and is of FT#1. It has a maximum measurable width of 1.7 cm., and a maximum measurable length of 1.6 cm. One of the faces has part of the surface of the original flake still present, and the other surface is mainly cortex. The sides appear to have been slightly convex.

The blade section is composed of 3 fragments which were found on 3 different dates. The specimen is out of FT#1. The maximum width is 2.1 cm.; the maximum thickness is 0.6 cm.; and the maximum measurable length is 3.7 cm. The sides are convex. Some use flakes appear to have been removed from the tip and one small area of the blade, suggesting some utilization as a scraper.

#### Other Chipped Stone Items

##### Drills (Plate V; R and T)

Number of Specimens: 2: 1 complete, 1 broken.

The complete specimen is out of FT#11. It is 2.7 cm. long, 1.8 cm. wide, and 0.6 cm. thick. The drill bit consists of 2 concave edges which have use flakes removed from them. Both edges are unifacially worked with the chips along each edge being taken from opposite faces. These two edges come to a blunt point which is 0.5 cm. wide. This "blunt point" is convex. This slightly convex end has had use flakes bifacially removed from it. The occurrence of use flakes associated with each other in this manner could easily be caused by the turning of a thin flake while applying a downward pressure.

The drill section is 1.6 cm. long, 0.7 cm. wide, and 0.4 cm. thick. This tip tapers to a point and is diamond-shaped in cross section. It is out of FT#1 and has been flaked on all faces.

##### Knife (Plate V; P)

The one knife specimen was out of FT#1. It has a length of 6.5 cm., a width of 3.0 cm., and a maximum thickness of 1.6 cm. Both the base and the area around the tip are relatively thin. It was manufactured by percussion flaking and exhibits secondary pressure flaking. The original

shape of the specimen was that of convex sides, a rounded base, and a slightly rounded point. The specimen, as it was found, exhibits two-thirds of one edge as being straight. This edge exhibits step fractures as if from pounding or attempting to rework the specimen.

One small specimen, of FT#1, appears to be the base of an arrowhead in a stage of manufacture. However, in its present state, it could have easily been used as a knife or as a graver. It has 3 bifacially worked projections on it. It is 1.9 cm. wide, has a maximum measurable length of 2.2 cm. and a maximum thickness of 0.3 cm.

#### Gravers

Number of Specimens: 18: 9 complete, 9 broken.

Ten of the specimens are of FT#1, and the other 8 are of FT#11. As many as 3 cutting projections are to be found on 3 specimens with 6 specimens having 2 projections, and 9 pieces had only 1 cutting projection. The specimens with only 1 projection constituted the larger pieces recovered. The largest piece was 4.2 cm. long, 4.0 cm. wide, and 2.2 cm. thick. The smallest was 1.6 cm. long, 1.4 cm. wide, and 0.4 cm. thick. Of the specimens with 2 projections, the largest was 3.6 cm. long, 2.0 cm. wide, and 0.7 cm. thick. The only complete specimen with 3 projections was 2.6 cm. long, 2.1 cm. wide, and 0.6 cm. thick. Only 1 specimen exhibited exceptionally heavy use.

#### Concave Scrapers (Spokeshaves) (Plate VI; C)

Number of Specimens: 4: 3 complete, 1 broken.

One of the specimens was of FT#1. It had 1 edge which was used as an end scraper and another edge which was used as a concave scraper. This specimen is 4.6 cm. long, 2.5 cm. wide, and 1.4 cm. thick. The concave scraping surface is 1.1 cm. in diameter.

The other 3 specimens are out of FT#11. One has 2 concave scraping surfaces (1.7 cm. and 0.7 cm. in diameter) which, at one end, are connected by a steep scraping surface 0.6 cm. wide; the other end being unmodified. The measurements for this piece are 2.7 cm. long, 2.5 cm. wide, and 1.0 cm. thick. The broken specimen has a maximum length of 2.2 cm., a width of 2.0 cm., and a thickness of 0.7 cm. The scraping surface appears to be use flakes, and this surface itself is 0.8 cm. in diameter. The last specimen is the largest, being 8.2 cm. long, 8.8 cm. wide, and 1.9 cm. thick. The scraping surface is 2.5 cm. in diameter, and the only other modified area on the specimen is a large flake scar.

#### Cores (Plate VII; C-E,G)

Number of Specimens: 5 complete.

Flint Type #11 had 3 specimens represented compared to one each of FT#1 and FT #9. The largest specimen is 4.9 cm. long, 4.7 cm. wide, and 3.2 cm. thick. The smallest specimen is 4.8 cm. long, 2.0 cm. wide, and 2.3 cm. thick.

#### Side Scrapers (Plate VI; E, G-H)

Number of Specimens: 9: 8 complete, 1 broken.

Two of the specimens are of FT#1 whereas 7 of the complete specimens are of FT#11. The only broken specimen has a series of 3 small concave scraping surfaces on it (1 at 0.8 cm., and the other 2 at 0.5 cm. in diameter). Another specimen was a modified pebble (6.7 cm. long, 4.6 cm. wide, and 1.3 cm. thick) with a scraping surface of only 2.9 cm. All of the scraping surfaces were produced by percussion and/or pressure flaking. The largest specimen has 2 scraping surfaces, and is 7.0 cm. long, 4.6 cm. wide, and 3.1 cm. thick. The smallest is 3.2 cm. long, 1.9 cm. wide, and 1.2 cm. thick.

#### Plano-convex (Thumbnail) Scrapers (Plate V; U)

Number of Specimens: 1 complete.

The specimen found was of FT#1. It is 2.6 cm. long, 2.0 cm. wide, and 0.7 cm. thick. It is well-polished through usage, and has a small number of use flakes removed from its otherwise

unmodified ventral surface. This specimen is roughly triangular in outline with slightly convex sides and a convex end, scraping area. The base of the scraper is sharply rounded off to a point.

#### Scrapers (Plate VII; A)

Number of Specimens: 5: 3 complete, 2 broken.

One of the broken specimens is of FT#6, and the other is of FT#11. One complete specimen is of FT#11, and the other 2 are of FT#1. The largest complete specimen measures 5.8 cm. long, 5.0 cm. wide, and 2.5 cm. thick. The smallest complete specimen measures 3.1 cm. long, 2.6 cm. wide, and 0.6 cm. thick. One of the broken specimens appears to have been larger than any of the complete specimens.

#### Implement Fragments

Number of Specimens: 16.

Eleven specimens are of FT#1, 4 are of FT#11, and the remaining specimen is of FT#10. The largest measurements of the specimens are 4.9 cm. long, 3.4 cm. wide, and 2.0 cm. thick. One of the specimens appears to have originally been part of a tool which was used for pounding purposes.

#### Utilized Flakes

Number of Specimens: 22: 10 complete, 12 broken.

Fifteen pieces are of FT#1, 6 of FT#11, and 1 piece is of FT#8. All of the utilized flakes were formed by a scraping process. The largest specimen is 4.4 cm. long, 2.6 cm. wide, and 0.3 cm. thick. The smallest is 2.0 cm. long, 1.2 cm. wide, and 0.3 cm. thick.

### CERAMIC ITEMS

#### Pottery

Number of Specimens: 11, 2 rim, 8 body, 1 basal sherds.

- A. A rimsherd of Vessel Type 1 - Vessel I was found 3 ft. north of Feature 1. This piece is described with the aforementioned vessel.
- B. Eight sherds (exterior, brownish-orange; interior, brownish-orange to black; cords, black) were found 10 ft. south of Feature 1. The sherds are fairly compact, and have shell and bone temper. The thickness ranges from 0.7 cm. to 1.1 cm. The hardness, by Moh's scale, is 2.5-3.0. Construction was by paddle and anvil over coiling.
- C. One basal sherd was found, and that was in a rodent hole away from all features. It ranges from 0.9-1.1 cm. thick. It is bone tempered with a tan exterior, a tan to black interior, and a black core. Its hardness is 2.5 (Moh's scale), and it is compact. This specimen was manufactured by paddle and anvil over coiling.

## THE ARTIFACTS: PART II

### EXCAVATED ARTIFACTS

#### Arrowpoints

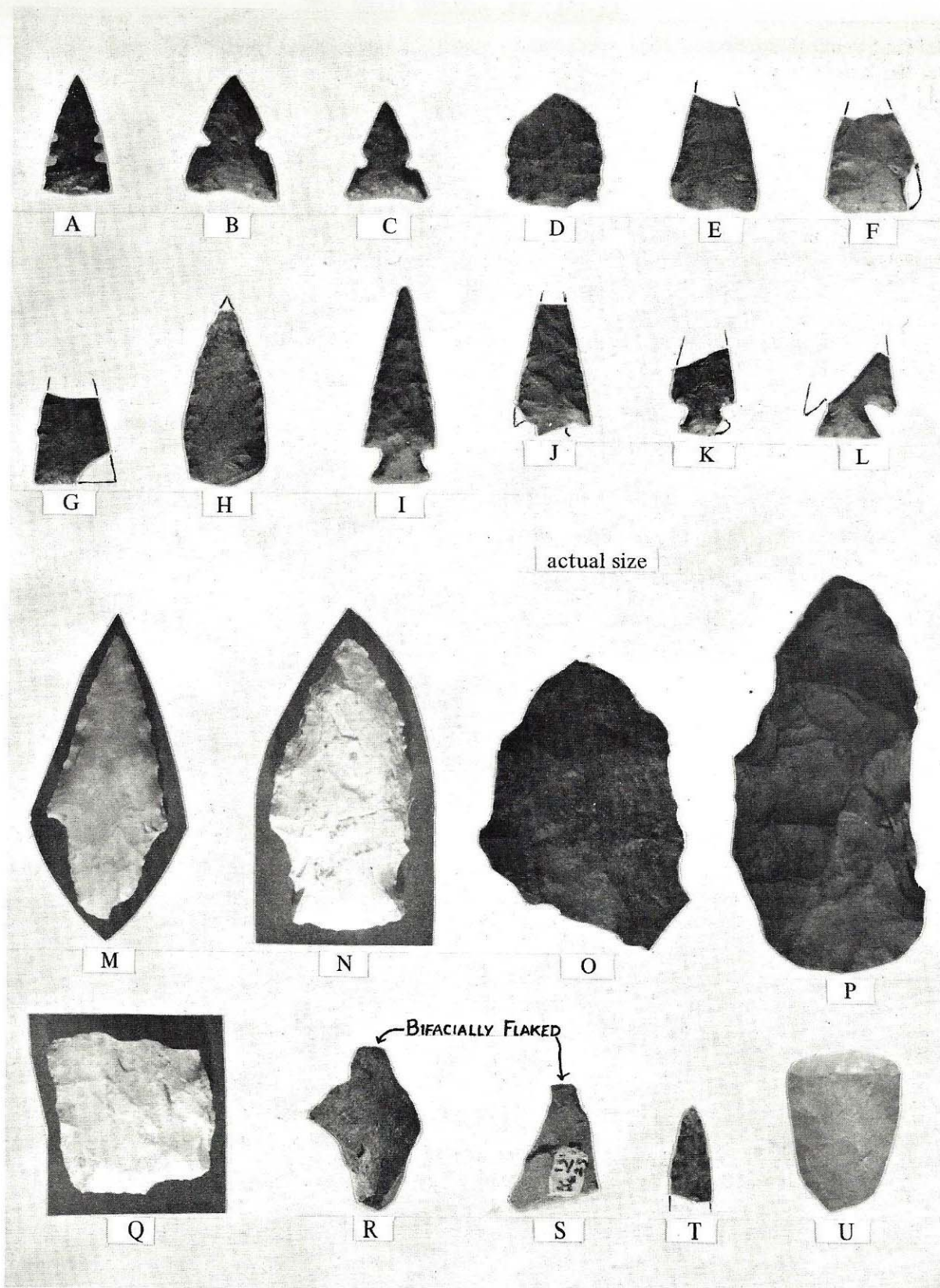
Fresno Type (Plate V; E-F, H)

Number of Specimens: 4: 1 complete, 3 broken.

Original Type Definition: Bell 1960:44-45.

Description: Two of the specimens have a rounded base while the other 2 have straight bases. The blade edges of these triangular points vary from straight to convex.

Dimensions: The complete specimen has a basal width of 1.3 cm., a length of 3.0 cm., a maximum blade width of 1.4 cm., and a maximum thickness of 0.4 cm. The average basal width of the other 3 specimens is 1.5 cm., and the average thickness is 0.3 cm.



**PLATE V**

**Stone artifacts from Ka-131.** A, Huffaker point; B-C, Washita points; D, reworked Fresno point; E-H, Fresno sections; I-L, Scalloran points; M, Gary point; N, Provisional Type I point; O, Core Knife; P, Ovate Knife; Q, Rectangular Knife Base; R-S, Flake Drills; T, Drill Tip; U, Thumbnail Scraper.

Lithic Material: FT#1.

Comments: Three of the 4 points show the original flake scar on one side of the projectile. A profile view of the complete specimen shows the curvature of the flake from which the point was made. This point is crudely made, and one face is almost completely covered with cortex.

Temporal-Cultural relationships: These are given for the Fresno Type under surface artifacts.

Provenience: One broken specimen from Feature 1A, and the remaining 3 pieces from Feature 9.

Huffaker Type (Plate V; A)

Number of Specimens: 1 complete.

Original Type Definition: Bell 1960: 58-59.

Description: A small, well-made triangular arrowpoint with a set of side notches 0.9 cm. from the base. Between this set of notches and the base there is another set of notches which are deeper and wider than the first set. The point has a convex base, and the original unmodified triangle had slightly convex sides.

Dimensions: Basal width, 1.1 cm.; length, 2.1 cm.; maximum thickness, 0.2 cm.

Lithic Material: FT#1.

Comments: None

Temporal-Cultural Relationships: Bell (1960:58-59) says that this point "appears associated with the Washita River and Custer foci in Oklahoma." He also states that in other areas "it appears to be rather late prehistoric and is associated with Harrell, Washita, or Washita, or Fresno types." Its suggested time range is from 1000 A.D. to 1500 A.D.

Provenience: Feature 9.

Scallorn Type (Plate V; I-J)

Number of Specimens: 2: 1 complete, 1 broken.

Original Type Definition: Bell 1960:84-85.

Description: An arrowpoint having a triangular blade with straight edges. The corner notching of these points left prominent barbs. The one base represented is slightly convex.

Dimensions: Basal width, 1.0 cm.; shoulder width, 1.2-1.3 cm.; length, 3.3 cm.; maximum thickness 0.4-0.4 cm.

Lithic Material: FT#1 and FT#9.

Comments: The complete specimen has a portion of the original flake surface still present. This piece is also serrated on each side for half of its length.

Temporal-Cultural Relationships: These are given for the Scallorn type under surface artifacts.

Provenience: The complete specimen was found in Feature 9, and the other specimen was found in level 4 of Test 1.

Washita Type (Plate V; B-C)

Number of Specimens: 4: 2 complete, 2 broken.

Original Type definition: Bell 1958:98-99.

Description: All of the bases of these small, triangular, side-notched points were slightly convex. The blade edges vary from straight to slightly convex. The notches are located up 1/3 of the point's length from the base.

Dimensions: Basal width, 1.4-1.5-1.3-1.2 cm.; length, 1.8-2.1 cm.; maximum thickness, 0.25-0.3-0.3-0.25 cm.

Lithic Material: FT#1.

Comments: Three of the 4 pieces show a portion of the original fracture surface on one face. The notches on the 2 complete specimens are relatively deep.

Temporal-Cultural Relationships: Bell (1958:98-99) states that the Washita is "a characteristic projectile point in the Washita River, Custer and Optima foci of Oklahoma." He gives an estimated time range of 1100 A.D. to 1600 A.D.

Provenience: One complete specimen was found in Feature 1, one basal section in Feature 1A, and the other 2 specimens were recovered from Feature 9.

#### Arrow Fragments

Five other arrowpoint fragments were found; 4 were made from FT#1 and the other fragment was made from FT#2. The latter fragment was found in Level 3 of Test 1A. It is a serrated tip. Three of the other specimens were found in Feature 1 where they were recovered in the fine-screening process. These pieces are comprised of 2 tips and 1 edge fragment. The last piece is a tip which was found in Feature 9.

#### Other Chipped Stone Items

##### Drills (Plate V; S)

Number of Specimens: 2 complete.

These 2 specimens are the same type of flake drill as was described with the surface artifacts. They are both out of FT#1. The larger specimen had not been used very long as the use flakes are very minute and only a small portion of the blade exhibits them. This piece is 3.3 cm. wide, 3.1 cm. long, and 1.5 cm. thick. Cortex covers the basal end of the specimen. The other specimen has been well used and is 1.5 cm. wide, 2.2 cm. long, and 0.2 cm. thick. Both specimens were recovered from Feature 1.

##### Knives (Plate V; O,Q)

Four of the specimens were made from FT #11. One of them, from Level 3 of Test 1A, was made from a pebble. It is a small piece, measuring only 2.0 cm. wide, 2.8 cm. long, and 0.9 cm. thick. It is worked on 2 edges and portions of the remaining 2 are worked. It has a thin, sharp edge. A very crudely made knife tip was found in Level 4 of Test 1A. In level 7 of Test 1, a knife was found which appears to have been made from a core. It is 3.3 cm. wide, 4.9 cm. long, and 1.1 cm. thick. The remaining specimen of FT#11 is the tip of a knife which was found in Feature 13.

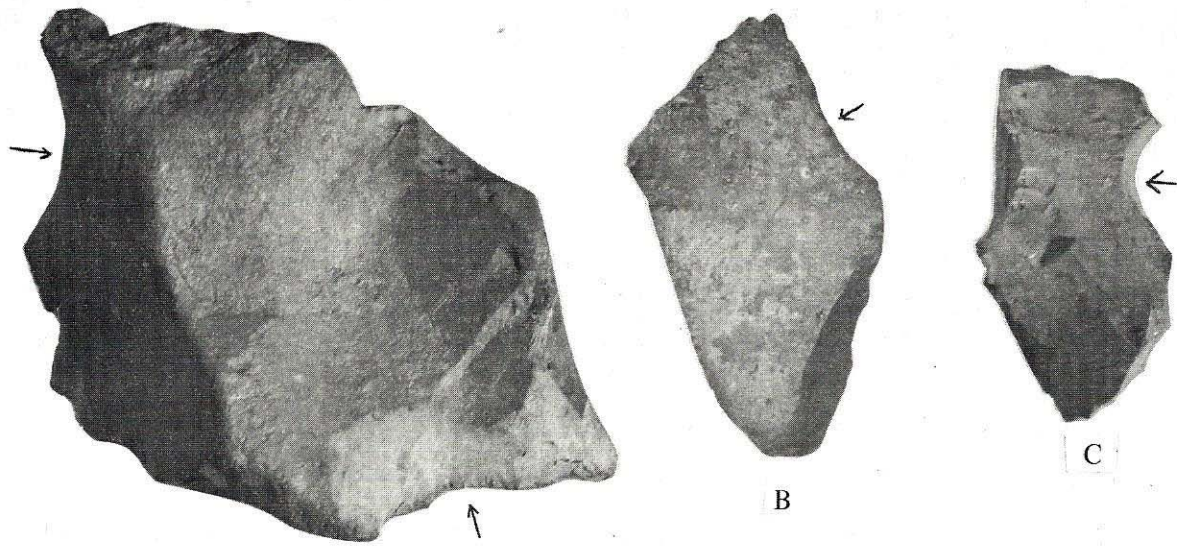
The other 5 knife specimens are out of FT#1. One is a rectangular knife base which was found in level 8 of Test 1. It is 2.6 cm. wide and has a maximum measurable length of 2.5 cm. and a maximum thickness of 0.7 cm. The sides of the portion recovered are parallel, and the base is uniaxially flaked which makes a sharp bevel. This gives the piece an adz-like appearance; however, there is no evidence of grinding, and the specimen is rather small to be an adz. One crudely chipped knife tip was found in Feature 1. Two knife tips were recovered from Feature 9. The last specimen was also found in Feature 9. It is 2.9 cm. wide, 4.8 cm. long, and 0.7 cm. thick. It is roughly diamond shaped, the tip having been broken and reworked to a blunt end. Likewise, the base is also nearly straight. The base is slightly convex, the tip is slightly concave, and 3 of the 4 edges are straight. The fourth edge is concave and was used as a spoke-shave. However, this piece was mainly a cutting tool.

All of these knives and knife fragments were percussion flaked and then retouched by pressure flaking.

##### Flake Knives

Number of Specimens: 5: 4 complete, 1 broken.



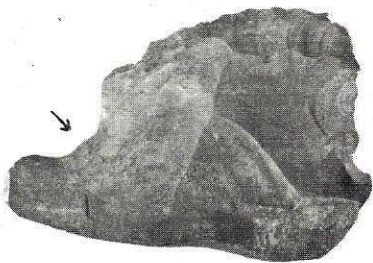


A

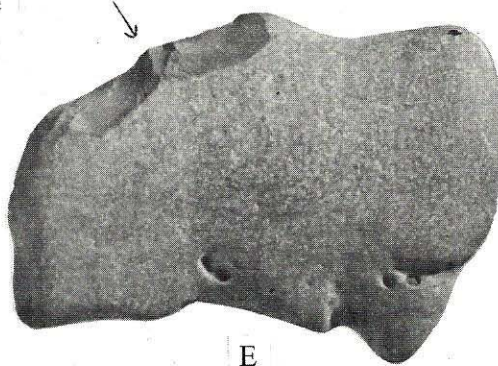
B

C

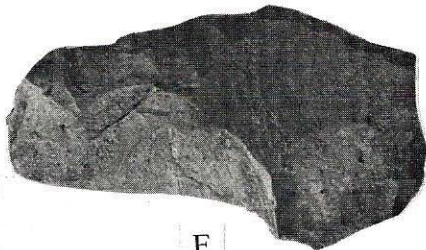
actual size



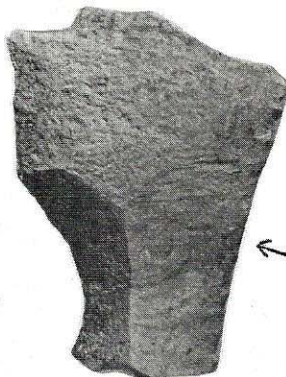
D



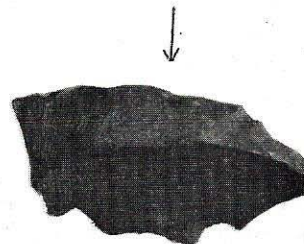
E



F



G



H

### PLATE VI

Stone Artifacts from Ka-131. A-D, Concave Scrapers; E-H, Side Scrapers. Arrows indicate the scraping surfaces.

Four of the specimens are out of FT#1, and the only fragmentary piece is out of FT#11. There are 2 distinct types of flake knives present. Four of the specimens are thin flakes which taper to a point from which small use flakes have been removed. One of these was found in Feature 13, another in Feature 30, and the other 3 came from Feature 9. The other specimen is roughly triangular and has use flakes on 2 edges. On one edge, near the base, the blade edge curves outward forming a prominent cutting edge. This piece is 2.1 cm. wide, 3.5 cm. long, and 0.35 cm. thick. The largest specimen of the other type of flake knife is 2.6 cm. wide, 3.7 cm. long, and 0.4 cm. thick.

#### Gravers

Number of Specimens: 5 complete.

All of the specimens recovered have only one cutting projection. FT#11 was the material used in making these pieces. The largest graver was recovered from Feature 1. It is 5.6 cm. wide, 4.2 cm. long, and has a maximum thickness of 1.1 cm. Another specimen was recovered from Feature 30, and 2 other graters were found in levels 3 and 4 of Test 1A. The smallest graver recovered came from Feature 9; it is 2.0 cm. wide, 2.0 cm. long, and has a maximum thickness of 0.8 cm.

#### Concave Scrapers (Spokeshaves) (Plate VI; A-B, D)

Number of Specimens: 21: 13 complete, 8 broken.

Ten of the complete specimens recovered are out of FT#11 with the other spokeshaves being out of FT#1. Three of the pieces out of FT#11 were made from flakes of this material whereas the remaining 7 pieces were made from larger chunks of flint. Six specimens out of this lithic type have only one scraping edge. Four were found in Feature 13, 1 in Feature 30, and 1 in level 3 of Test 1A. The smallest specimen of this type is 2.0 cm. long, 1.7 cm. wide, and .6 cm. thick. The largest piece is 4.6 cm. long, 3.1 cm. wide, and 1.7 cm. thick. This piece also has the largest concave scraping surface (for pieces with singular scraping areas): 1.3 cm. long and .4 cm. deep. Four specimens out of FT #11 have 2 scraping surfaces. The largest specimen (from level 3 of Test 1A) is 5.2 cm. wide, 8.3 cm. long, and 3.8 cm. thick. It has scraping areas of 2.2 by .4 cm. and 2.0 by .5 cm. The smallest piece with 2 such areas is from Feature 30 and is 2.2 cm. wide, 2.3 cm. long, and 1.0 cm. thick. This specimen has a concave scraping area which measures 1.3 cm. by .3 cm. The remaining specimens with 2 scraping surfaces were found in Feature 1.

The specimens made from Flint Type #1 were all made from flakes. Five came from Feature 9 while 1 is from Feature 30, 4 from level 3 of Test 1, and 1 from level 3 of Test 1A. Nine specimens have a single scraping surface, and the other specimen has 2 such surfaces. The largest item is broken but is 1.8 cm. wide, 2.9 cm. long, and .8 cm. thick. The smallest specimen with a single scraping edge is also broken but measures 1.2 cm. wide, 1.3 cm. long, and .2 cm. thick. The largest complete scraping surface represented in the series is 1.3 cm. wide and .2 cm. deep. The single specimen with 2 scraping surfaces is also broken but measures 1.1 cm. wide, 1.5 cm. long, and .3 thick.

#### Cores (Plate VII; B, F)

Number of Specimens: 5; 3 complete, 2 broken.

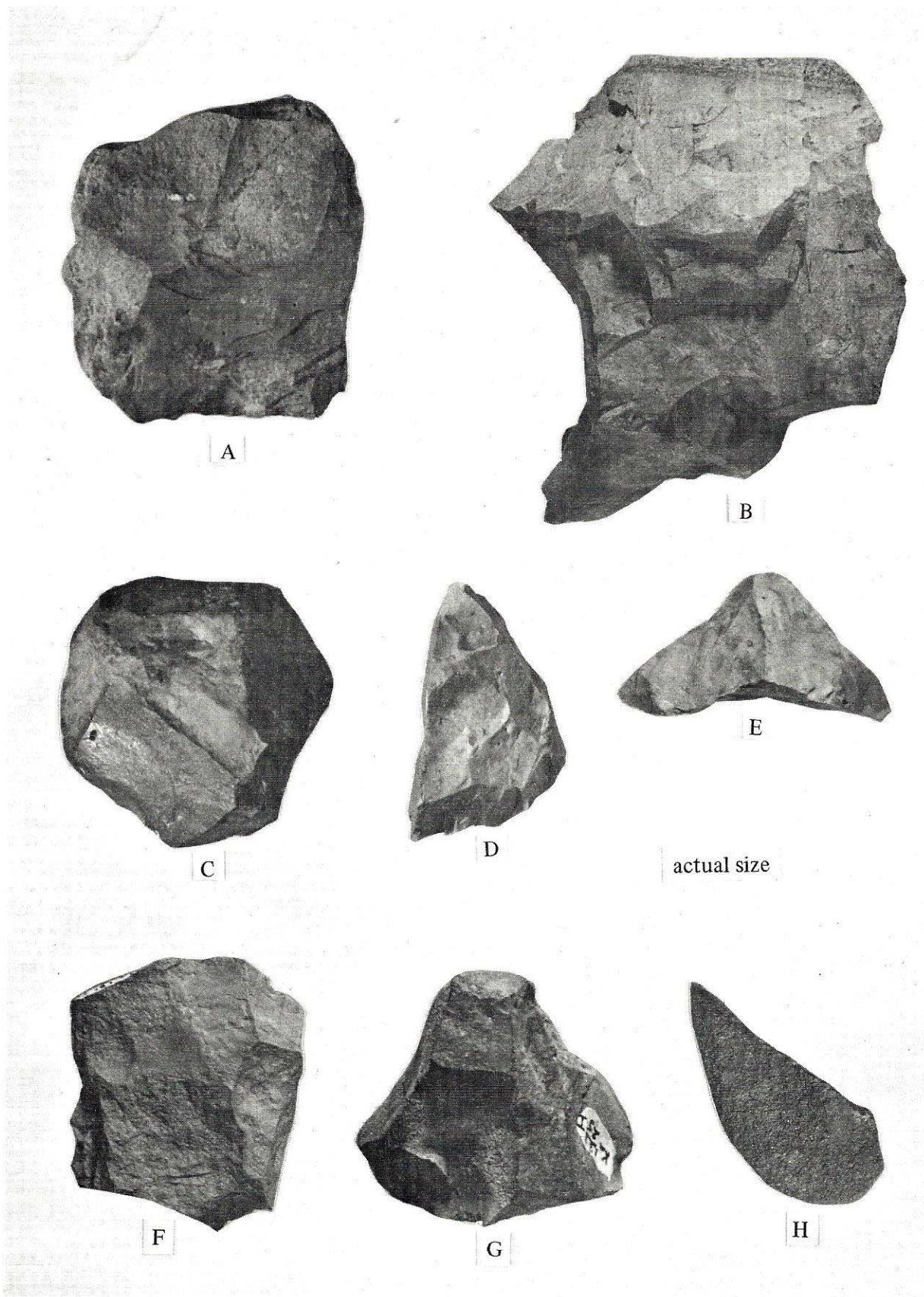
The largest specimen recovered was made from FT#1 material. It was found in Feature 1 and measured 7.2 cm. wide, 8.3 cm. long, and 3.8 cm. thick. Several small areas of this core retain the original cortex. Another core recovered from Feature 1 is thin and tabular in appearance. This fragmentary core is made from FT#11.

The remaining broken core is out of FT#12 and was found in Level 5 of Test 1A. The other 2 specimens were made from FT#11. The larger piece was found in Test 1: level 8 in the rock concentration designated as Feature 4. It is 3.7 cm. wide, 6.8 cm. long, and 3.1 cm. thick. The smallest specimen recovered was found in Level 5 of Test 1. It is 2.5 cm. wide, 3.5 cm. long and 2.2 cm. thick.

#### Side Scrapers (Plate VI;F)

Number of Specimens: 4 broken.

All of the specimens recovered were made of FT #1. The most complete specimen recovered



**PLATE VII**  
Stone Artifacts from Ka-131. A, Scraper; B-G, Cores; H, Abrader section.

was found in Feature 1. It has a convex scraping edge. Two other pieces were found in Feature 1. One is a medial section with a straight edge, and the other is roughly rectangular with 2 parallel sides having scraping edges on opposite faces. The faces of all 3 of these pieces are sharply beveled on the scraping edge.

The remaining specimen was found in Feature 9. It appears to have had 1 straight and 1 convex scraping edge.

#### Serrated Scrapers

Number of Specimens: 5: 3 complete, 2 broken.

The 2 broken specimens were recovered from Feature 9. They are both out of FT#1, but they are too fragmentary for measurement. Both of them appear to have been made from thin flakes, and both were flaked unifacially. One specimen was recovered from Level 6 of Test 1A. Made of FT#11, it is 1.4 cm. wide, 2.1 cm. long, and 0.4 cm. thick. Another specimen (FT#11) was found in Feature 9. Well over half of its surface is cortex, and it has a large graver spur on the end of its serrated edge. It was made by percussion flaking, and is unifacially flaked.

The remaining piece is a very interesting one. It was made out of FT#1 and has been very heavily burned. It could have easily served many uses. It is unifacially worked except for one small concave scraping area. The base of the piece (a hinge fracture) is almost completely unmodified. The basal half of the piece is generally rectangular with 1 edge extending straight and the other edge curving over to meet it. The tip, which is formed when these two edges meet, would have made a very efficient pointed scraper. One-fourth of the length of the scraper back from the tip (along the straight edge) begin serrations which extend all of the way to the base of the point. Along the other edge, which is convex, the serrations begin closer to the tip, are much coarser, and extend only three-quarters of the distance to the base. These serrations end at the concave scraping edge which is unifacially flaked from the other side. The specimen itself is 2.3 cm. wide, 4.0 cm. long, and 0.5 cm. thick.

#### Implement Fragments

Number of Specimens: 41.

Thirty-five of the implement fragments which were recovered were from FT#1. Twenty of these pieces are bifacially flaked. These could be flakes from cores which show a battered striking platform. Another possibility is that they are flakes which were removed from the edge of a blade when it was being resharpened or manufactured. However they were produced, they exhibit both percussion and pressure flaking. The size varies from pieces that would pass through a  $\frac{1}{2}$  in. mesh screen to 3.0 cm. wide, 4.6 cm. long, and 1.7 cm. thick. Seven of these pieces were found in Feature 1, 1 in Feature 1A, 10 in Feature 9, and 1 each in levels 4 and 6 of Test 1A.

The other 14 implement fragments of FT#1 apparently used to be scrapers. All of them have a portion of a scraping edge. One was found in Feature 1A, 6 from Feature 9, 1 from Feature 13, 1 from level 3 of Test 1, 1 from level 5 of Test 1, 2 from level 3 of Test 1A, and 1 from level 6 of Test 1A.

Five of the remaining implement fragments are out of FT#11. One is unifacially worked, and the other 4 are bifacially worked. The unifacially worked piece was found in Feature 9 as was one of the bifacially worked pieces. The other 3 pieces were found in level 3 of Test 1, level 5 of Test 1A, and Feature 30.

The remaining piece is a bifacially worked fragment out of FT#9. This piece was recovered from level 8 of Test 1A.

#### Utilized Flakes

Number of specimens: 62: 27 complete, 35 broken.

Fifty-two of the utilized flakes recovered were out of FT#1. Twenty of these are complete, and 32 of them are broken. Two of the unbroken pieces could have been used for flake knives. One is rectangular, and the other is triangular. The other pieces were all modified by scraping. The size ranges from 4.0 cm. wide, 6.9 cm. long, and 1.8 cm. thick down to 1.3 cm. wide, 2.0 long, and 0.5 cm. thick. Six of these pieces were from Feature 1, 1 from Feature 1A, 24 from

Feature 9, 4 from Feature 13, 4 from Feature 30, 2 from level 3 of Test 1, 3 from level 5 of Test 1, 3 from level 7 of Test 1, 1 from Feature 4 (Test 1&1A level 8), 2 from level 3 of Test 1A, 3 from level 4 of Test 1A, 1 from level 5 of Test 1A, and 3 from level 7 of Test 1A.

Flint Type 11 was the material that was used to make 7 of the complete and 2 from the broken utilized flakes. All of these specimens were made by some scraping process. One specimen came from Feature 1, 2 of the pieces were found in Feature 9, 2 were found in level 3 of Test 1, level 5 of Test 1 yielded 1 specimen, level 3 of Test 1A yielded 2 pieces, and 1 utilized flake was found in level 5 of Test 1A.

The remaining specimen was made from FT#2. The flaked surface of this fragmentary piece was formed by scraping. This utilized flake was recovered from Feature 4, Test 1 & 1A level 8.

#### GROUND STONE ITEMS

##### Abrader (Plate VII; H)

Number of Specimens: 1 broken.

This specimen, made out of fine-grained sandstone, was found in Feature 9. The sandstone from which this specimen was manufactured is light tan in color with rusty brown colored blotches throughout. All of the edges of this piece are rounded, and the sandstone is tabular in appearance. The maximum measurable dimensions of this piece are 2.6 cm. wide, 4.8 cm. long, and 0.8 cm. thick. There is one abrading groove on the piece, and it runs the entire length of the specimen. This wide U-shaped groove is 1.2 cm. wide, and 0.2 cm. deep.

##### Manos

Number of Specimens: 3 broken.

Two of these very fragmented specimens are made of sandstone, and the other is of a very coarse, fossiliferous limestone. The piece made from limestone is light grey in color and was found in Feature 9. The other 2 specimens were both found in Test 1. One of them, from level 3, is light tan to grey in color, and the other (from level 4) is dark reddish-brown. These 2 different types of sandstone are similar in the fact that they were deposited as sediment in layers, and they have a cleavage like that of mica.

All 3 of these specimens have an edge which has been pecked to shape, and one section of one face which has been ground smooth.

##### Metate

Number of Specimens: 1 broken.

This small grinding basin fragment is made of light brown, fine-grained sandstone. It was recovered from Feature 4, Test 1 & 1A level 8. This fragment, which appears to be from the central portion of the basin, exhibits one slightly concave face which has been well polished by grinding. The thinnest portion of this basin which was recovered is 0.6 cm. It is quite probable that this metate was worn completely through before it was discarded. The greatest thickness measured on the piece is 2.0 cm. The 2 above measurements were taken 4.5 cm. apart; therefore, the extreme use of this basin is quite obvious.

##### Ground Granite

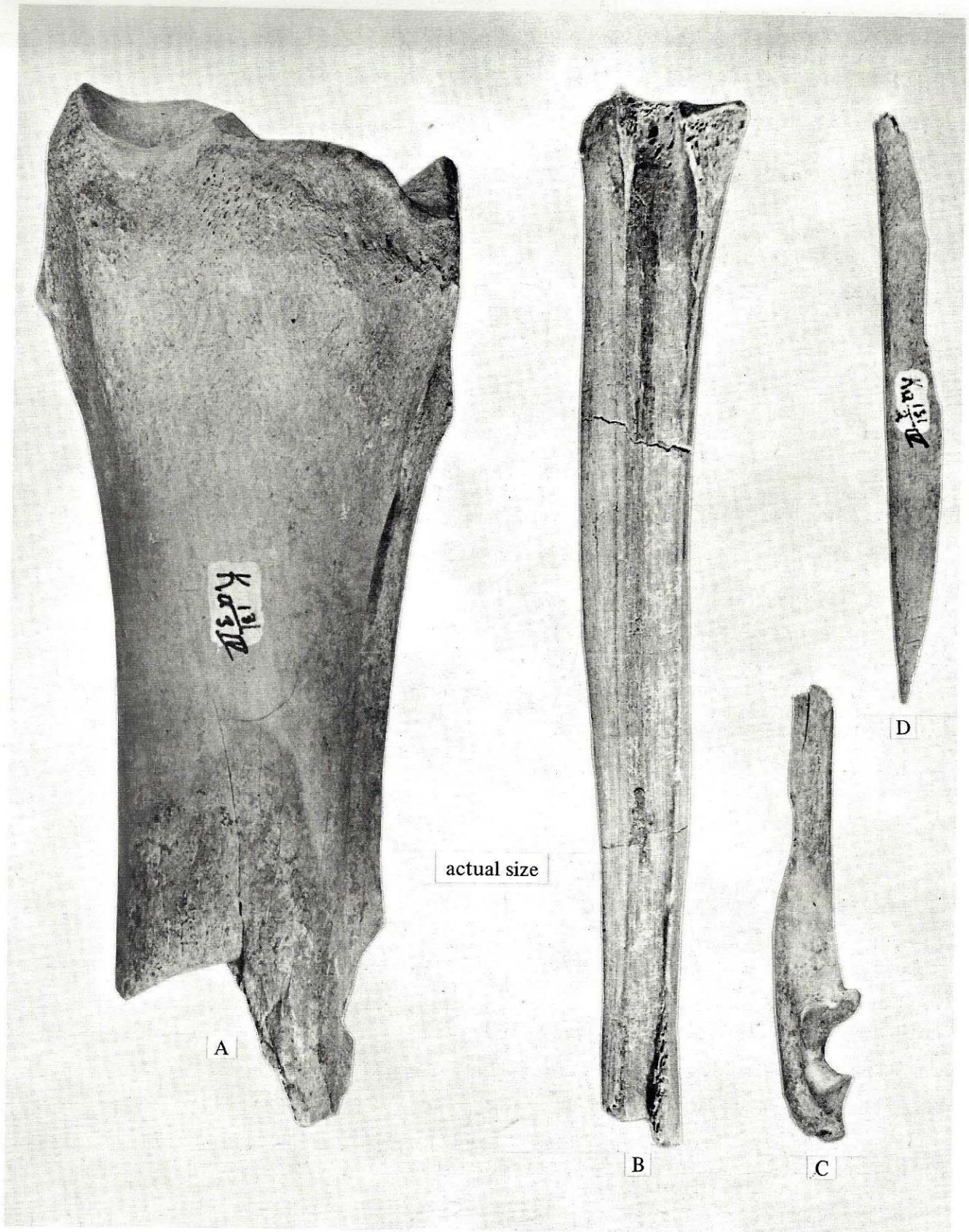
Number of Specimens: 1 complete.

This piece of light brown granite was found in Feature 9. It is unusual in the fact that it is symmetrical and roughly ground. A cross sectional view shows the piece to be oval, and a top view shows it to be circular. It is 2.1 cm. wide, and 1.3 cm. high. At present, no use is known for this specimen.

#### MODIFIED BONE

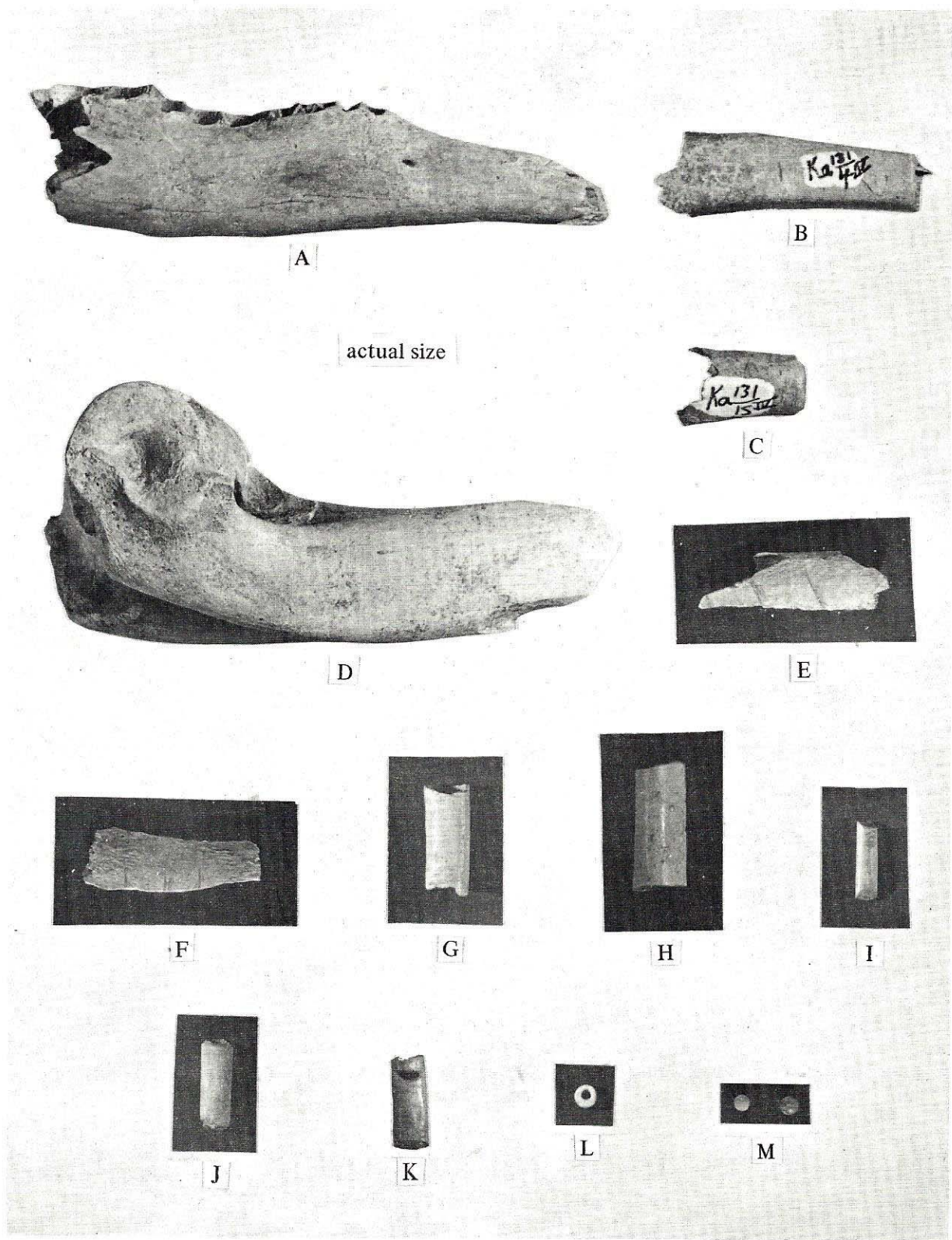
##### Awls (Plate VIII; B,D)

Number of Specimens: 2: 1 complete, 1 unfinished.



**PLATE VIII**

**Modified Bone from Ka-131.** A, Bison Radius Digging Implement; B, Awl Blank (Split Deer Metacarpal); C, Polished Ulna; D, Splinter Awl.



**PLATE IX**

**Modified Bone from Ka-131.** A, Sickle section (made from Deer Mandible); B-C, Joints left from manufacture of Cylindrical Beads; D, polished Deer Humerus; E-F, Incised Bison Ribs fragments; G-J, Cylindrical Beads; K, Notched Cylindrical Bead; L, Disk Bead; M, two unmodified fresh water pearls.

A splinter awl made from a bison rib was found in Feature 1. The exterior surface, the tip, and portions of the interior show extensive use polish. This specimen is 10.8 cm. long, 1.0 cm. wide, and 1.7 cm. thick. The widest point is at the middle. On the exterior, within 1.7 cm. of the tip, there are 2 sets of parallel lines; one set with 2 incisions and the other with 3. These incisions extend part way across the face of the specimen, the longest being 0.3 cm. These incisions were apparently made before the specimen was used to any great extent.

The other specimen (Feature 1) is a split and polished deer metacarpal. It appears to be a blank from which 2 awls were to be made. This piece is 18.9 cm. long, 2.9 cm. wide, and 1.7 cm. thick. A number of long, shallow striations are present on this blank. The joint end of this specimen is the only area which does not show extensive polish.

#### Beads (Plate IX; B-C, G-L)

Two types of beads were recovered in the excavation. The first is a small disk bead which was found in Feature 1. This bone bead is 0.385 cm. in diameter, and 0.175 cm. thick. The perforation is 0.155 cm. in diameter, and was drilled off center.

The other bead type is represented by 15 complete and 3 broken specimens. These beads, made from bird bones, are long and cylindrical in form. The size range for this type of beads runs from 2.2 cm. long and .9 cm. in diameter to .8 cm. long and .2 cm. in diameter. All of these beads were found in Feature 9. All were manufactured by cutting a groove around the long space bone of a bird. After making the groove, the bone was snapped at the incision. The result was a bead with a uniform end. Except for 3 specimens, the ends of these beads had been ground smooth. The entire surface of all specimens was well polished. When cutting the bone for beads, the joint end was unusable, and one such end was found in Feature 9 while 2 came from Feature 1.

Another noteworthy modification was present on 12 of the bird bone beads. Incisions going about one-fourth of the circumferences are evident. Two specimens are incised near the middle while the remaining 10 are altered only near the end. It is possible that these marks were made when being initially grooved, or they could represent tally marks. Three of the 12 specimens have an incision which pierces the shaft of the bone. The best example of this type is 1.5 cm. long and 0.6 cm. in diameter. The incision is .250 cm. from the end of the bead and is .45 cm. wide and .135 cm. long. The cuts in the other 2 specimens are not as prominent but nevertheless quite obvious.

#### Digging Implement (Plate VIII; A)

This tool was manufactured from the left radius of a bison, and it was found in Feature 1. The specimen is 19.5 cm. long and shows use polish on the shaft of the bone where it was originally broken. However, this polish is limited to one side of the bone, that side along the edge of the break. Modification, in this sequence, could have easily been caused by digging activities.

#### Sickle (Plate IX; A)

A broken right mandible of a small mule deer was recovered from Feature 9. This mandible is less than half represented with the anterior portion of the diastema and the symphysis having been completely worn away. The specimen is broken longitudinally in the area of the second molar. All of the teeth have fallen out except for 2 which broke out and left their roots in place. The entire specimen shows extensive polish, and striations are present on the inner face of the mandible. It appears that the anterior portion was broken at one time but the object continued to be used intensively. The specimen measures 10.1 cm. long, 2.5 cm. wide, and 1.4 cm. thick.

#### Incised Bone (Plate IX; E-F)

A number of bone fragments were found in Feature 1 which had been modified by incising. One burnt piece of bone has a cut and polished end and exhibits a very restricted area of striations. Near one end of the piece these striations nearly penetrate the bone. This piece is broken, and its function is unknown.

Other modified bones have short, shallow incisions in them. These cuts are either isolated or in groups. One fragment of a bison longbone has 16 such incisions, the longest being .8 cm. Three small scapula fragments also have similar cuts. One piece is quite broken but has 2 fine lines across its face. Another specimen, of similar size, has a single line across the length and 2 which extend one-half the length (the longest is 1.8 cm.). The other scapula fragment has 4 cuts, the longest of which is 2.9 cm.



Nine fragments of bison rib exhibit cut marks. Eight have relatively short incisions which are perpendicular to the edge of the rib. The other piece has an incision which is parallel to the edge of the rib. This mark is longer than 1.5 cm., and it is only 0.3 cm. from the edge of the rib. Such marks could relate to butchering or to functional and/or decorative features of tools.

#### Other Modified Bone (Plate VIII; C and Plate IX, D)

Thirty-four bone fragments were found which exhibit surface modification. All have areas of intensive polish. Eleven are fragments of bison longbones which exhibit both polishing and whittled surfaces which have subsequently been polished. The edge of one of these pieces is chipped as if it had been hammered. The other piece has 7 parallel incisions on the only remaining portion of its original surface.

A fragment of a mule deer's left humerus and 2 other fragments of deer bone were recovered from Feature 1. A portion of a mule deer's metatarsal and 2 other samples of deer bone were found in Feature 9. One of these fragments exhibits high polish as well as heavy striations. Feature 1 also yielded a partial left ulna of an unidentified small mammal.

The remainder of the modified bone fragments are quite small, and the animals from which they came are unidentifiable. Two pieces were found in Feature 1, 11 in Feature 9, 1 in Test 1 (level 8), and 2 in level 4 of Test 1A.

### CERAMIC ITEMS

#### Pottery

Type I - Vessel 1 (Plate X; A, AA)

Number of Specimens: 36 sherds (13 rim sherds, 23 body sherds). Original Type Definition: This pottery type, having been previously undefined, is defined in this report as Type I - Vessel 1.

#### Description:

Method of manufacture: paddle and anvil technique over coiling.

#### Paste:

Temper: The tempering agents for this particular vessel are crushed bone, sand, and crushed shell. The shell is found much more profusely than the bone or sand. The maximum size of the shell particles is 1.0 cm., whereas the bone particles (as well as the sand) are generally 0.2 cm. in diameter. It should be noted here that a flint flake was noted in the paste of this vessel. However, its presence is probably due to accidental incorporation in the past during the kneading process.

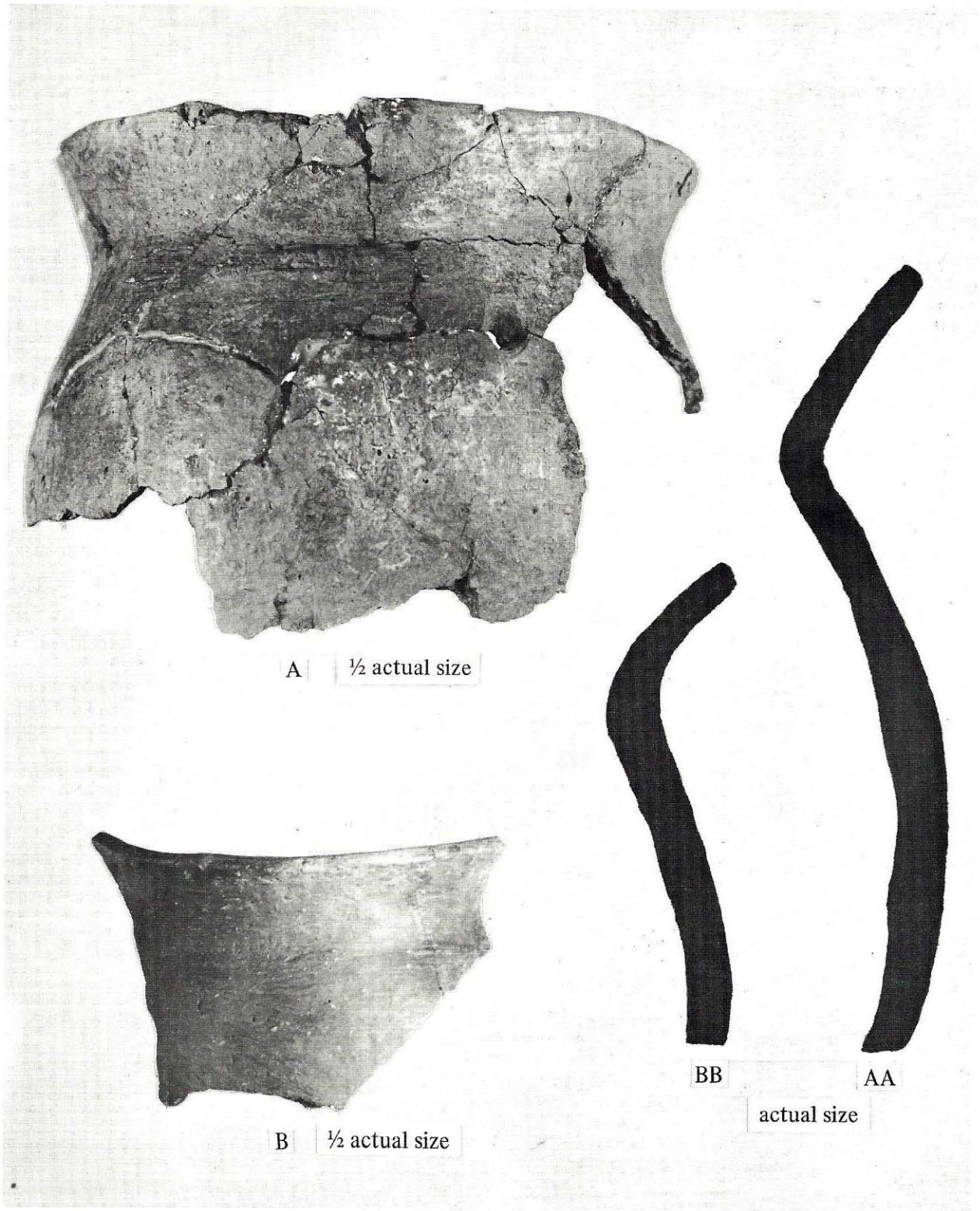
Texture: The sherds of this vessel have an even texture which is compact. The hardness, on Moh's scale, is between 3 and 4.

Color: The exterior coloration is a light brownish-orange to a dark grey. The interior color ranges from a brownish-orange to light grey. The core is black. A few areas on both the interior and the exterior exhibit fire blackening. Two body sherds and a rim sherd exhibit white discoloration. These sherds, when excavated, were found in contact with limestone.

Surface Finish: The interior surface is relatively smooth. It shows some signs of being smoothed. Some of the tempering materials on the exterior, as well as the interior, have been leached out. The exterior has also been brushed, and in some places has been worn quite smooth. The lip is well smoothed in most places.

#### Form:

Wall Thickness: The wall thickness ranges from 0.6-0.8 cm., with the thinnest area being that directly below the shoulder. From there on down, the body walls progressively thicken. The maximum thickness of the vessel is not definitely known because no sherds from the lower portion of the pot were recovered.



**PLATE X**

**Pottery Types Recovered from Ka-131.** A, Sherds of Pottery Type I - Vessel 1; B, Sherds of Pottery Type I - Vessel 2; AA, Profile of Pottery Type I - Vessel 1; BB, Profile of Pottery Type I - Vessel 2.

**Lip:** The lip of the vessel is rather bluntly rounded. The curve of the lip originating on the interior of the vessel, stands at the highest point of the vessel; therefore, all of the curve of the lip is in a down and out direction. In most instances, the lip is flush with the rim surface; however, in the area of the lugs it gets thicker, and then is turned outward.

**Rim:** Upon reaching the neck of the vessel, the rim flares out sharply (at a 30° angle from a perpendicular to the base). After the sharp curvature of the neck, the rim itself straightens out, still expanding.

**Base:** No basal sherds of this vessel were recovered, so the original shape of the vase is unknown.

**Vessel Shape and Size:** This vessel is a globular vessel which was brushed smooth when it was made. The rim flares outward from the neck, straightening out as it expands toward the rim, ending in a round lip. The diameter at the point of vertical tangency is 17 cm., and the diameter of the orifice is 20.5 cm. Two sherds exhibit a perforation drilled 6.0 cm. below the lip. It is drilled from the outside of the vessel with an outside diameter of 1.3 x 1.8 cm., and an inside diameter of 0.4 x 0.6 cm. The largest dimensions of this hole extend vertically on the vessel. One sherd has what appears to be the beginning of another perforation. These perforations were probably for use in patching the vessel after it was broken. No complete lugs were found, but one of the sherds exhibits the location of attachment of a lug. Here, the dimensions of the lug are 3.7 x 0.7 cm. It was a strap handle which was attached to the vessel by riveting.

**Decoration:** This is a plain ware, and the only surface modification is brushing.

**Provenience:** All sherds of this vessel were recovered from Feature 1.

**Type I - Vessel 2 (Plate X; B, BB)**

**Number of Specimens:** 4 sherds (2 rim sherds, 2 body sherds).

**Original Type Definition:** This is a description of a second vessel of the vessel type just described as Type I for this site. This vessel is referred to as Type I - Vessel 2.

**Description:**

**Method of Manufacture:** paddle and anvil technique over coiling.

**Paste:**

**Temper:** The three tempering agents in this vessel are bone, shell, and sand. However, the primary tempering agent is finely crushed shell (maximum size of 0.3 cm). Also, the bone and sand tempering components are quite small (0.1-0.2 cm.).

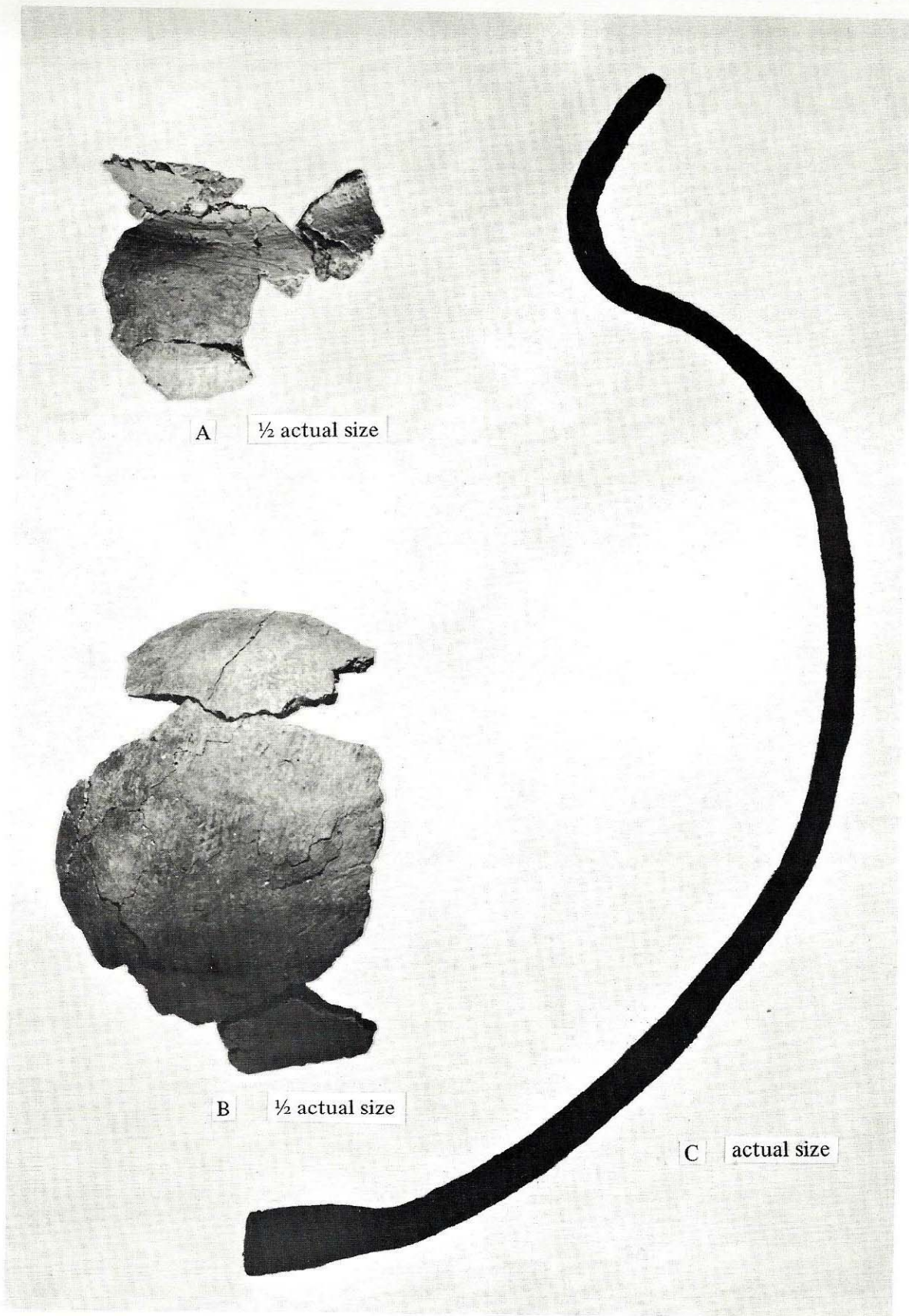
**Texture:** The sherds of this vessel have an even texture which is quite compact. The hardness of this vessel is between 3 and 4 on Moh's scale.

**Color:** The exterior is a brownish-orange to a light brownish-grey. The interior varies from a light brownish-orange to a dark grey. The interior of the rim sherds are partially covered with a deposit of lime. Cores are grey. On the exterior, almost half of the surface area exhibits fire blackening.

**Surface Finish:** The exterior surface is brushed. Both the interior and the exterior surfaces are well smoothed. Although the shell temper is occasionally exposed to the exterior surface, no leaching has occurred.

**Form:**

**Wall Thickness:** The wall thickness for this vessel ranges between 0.6 and 0.8 cm. However, the thinnest measurement was taken on the body of the vessel. The average thickness is 0.75 cm. The rim, neck, and the body portion immediately adjacent to the neck are thicker than the rest of the recovered body sherds.



A ½ actual size

B ½ actual size

C actual size

**PLATE XI**

**Pottery Types recovered from Ka-131.** A-B, Rim and Basal Sherds of Pottery Type II - Vessel 1; C, Profile of Pottery Type II - Vessel 1. This is a compilation of profiles made from several sherds of this vessel.

**Lip:** The lip is bluntly rounded as it is in the first vessel of this type. Also, the high point of this vessel is the point at which the interior surface begins to round off to form the lip. The lip isn't quite flush with the rim, but it is turned gently downward.

**Rim:** Upon reaching the neck of the vessel, the rim begins to gently curve outward, and then it begins to straighten out as it approaches the lip.

**Base:** No basal sherds or sherds from the lower portion of the vessel were recovered. However, the base was probably round.

**Vessel Shape and Size:** This vessel, like the first vessel of this type, appears to be globular in shape. The vessel was brushed smooth. The rim curves outward from the neck, straightens out, and ends in a rounded lip. The diameter at the point of vertical tangency is 13 cm., and the diameter at the orifice is 19 cm. This vessel has a very smooth finish to it. No lugs were apparent, but due to the many traits similar to Vessel 1 of this type, it may be safely assumed that lugs were present on the original, unbroken vessel.

**Decoration:** The only modification on the surface of this plain vessel is brushing.

**Comments:** This vessel bore many similarities to Vessel 1 of this type. There are 2 main differences noticeable about these vessels. The first is the difference of the curvature of the neck and rim, and the other is that much better workmanship was evident in Vessel 2.

**Provenience:** All of these sherds were found in Feature 1.

Type II - Vessel 1 (Plate XI; A-C)

**Number of Specimens:** 45 sherds (1 rim sherd, 41 body sherds, 3 basal sherds)

**Original Type definition:** This pottery type, having not previously been defined, is defined in this report as Type II. This vessel is referred to as Type II - Vessel 1.

**Description:**

**Method of Manufacture:** paddle and anvil technique over coiling.

**Paste:**

**Temper:** The tempering component of this vessel is crushed bone and shell. The bone is the more predominant of the two. The maximum bone size is 0.4 cm., and the maximum shell size is 0.3 cm.

**Texture:** In the thin body sherds of this vessel (0.5-0.9 cm.), the texture is even. However, some of the thicker basal sherds (up to 1.3 cm. thick) are much more friable than the thinner body sherds. The hardness of this vessel, by Moh's scale, is 3.

**Color:** The exterior color of this vessel ranges from bright orange to brownish-orange. The interior coloration varies from orange to brown, and the core is grey to black. One sherd is orange all of the way through due to oxidation. A few sherds show fire clouding on the exterior and/or interior.

**Surface Finish:** The interior and exterior surfaces of this vessel are quite well smoothed. The temper of this vessel is leached out on the inside. When made, this vessel was cordmarked. However, when the clay was still aplastic, the interior, as well as the exterior, was brushed smooth. Only a few traces of cordmarking are left. The rest have been completely obliterated.

**Form:**

**Wall Thickness:** The thickest portion of this vessel was a basal sherd. It measured 1.3 cm. The thinnest sherd on this vessel is 0.5 cm., and the average thickness is 0.7 cm.

**Lip:** The lip of this vessel is so bluntly rounded that it is almost square. The lip is

systematically indented. It looks as if it has been cut; from the exterior to the interior, diagonally to the left. This modification is discussed under surface treatment.

**Rim:** The rim of this vessel flares outward sharply from the neck. Immediately above the neck, the rim straightens out although it is still expanding. On the exterior, about one-third of the way up from the neck to the lip, there is a small ridge (a thickness change from 0.6 cm. to 0.8 cm. to 0.6 cm.). This area of the rim as well as the rest of the rim exhibits erased cordmarking.

**Base:** The exterior curvature extends unaltered from the neck all the way to the base, and continues as the base. However, the interior curve is different. When the vessel begins to thicken for the basal portion, the inside curve changes. The interior of the base becomes parallel to the ground surface; therefore the base is thicker.

**Vessel Shape and Size:** The general vessel shape is globular, and shows smoothed cordmarking on its surface. The rim flares outward from the neck to end in a bluntly rounded, almost square, lip. This lip has narrow deep indentations in it. No lugs were indicated on this vessel which is an estimated 23 cm. high.

**Decoration:**

**Surface Treatment:** All of the cordmarks were almost completely obliterated. They are present on the rim and continue all of the way down to the base of the vessel. The cordmarks are all perpendicular to the rim, with one exception. One sherd, near the base, has another set of cordmarks crossing the first to form a crisscross pattern.

The lip of this vessel has been indented to an average depth of 0.35 cm. These indentations are merely slits, or incisions in the lip of the vessel. These 'slits' are spaced from 0.5 to 0.6 cm. apart. They are 0.5 to 0.7 cm. long and are generally slanted at a 45° angle towards the left from a tangent to the exterior of the rim. On the exterior, the area immediately to the left of the slit is flush to the rim while the area to the right of a given slit is set back slightly from the rim. When these slits were made, the clay was still aplastic. The clay displaced by the incision was drawn (or pushed) towards the interior of the vessel. Then the excess clay (on the interior) was smoothed out onto the interior surface. This clay partially covers the incision on the interior portion of the vessel. No tabs or lugs were indicated on the sherds recovered.

**Provenience:** All of these sherds were found in Feature 1.

Type II - Vessel 2 (Plate XII; A, D, AA)

**Number of Specimens:** 13 sherds (1 rim sherd, 8 body sherds, 4 basal sherds).

**Original Type Definition:** This description is of the second vessel of Type II which was recovered at Ka 131. The original definition for this type has just been given.

**Description:**

**Method of Manufacture:** paddle and anvil technique over coiling

**Paste:**

**Temper:** Bone is the predominant tempering agent in this vessel. The maximum size of the particles of crushed bone is 0.4 cm. Shell particles were also noted in the paste. The maximum size of the shell fragments is 0.6 cm.

**Texture:** The sherds recovered of this vessel indicate a range of 0.45 to 0.6 for the maximum and minimum extremes of thickness. Moh's scale indicates a hardness of 3 for this vessel.

**Color:** The range of color on this vessel is the same for the interior and exterior: brownish-orange to black. The core is also black.

**Surface Finish:** The tempering element is exposed on both surfaces; however, no leaching

is evident. Both the interior and exterior are well smoothed--by brushing. It appears that this vessel was, like Vessel 1 of this type, at one time covered with cordmarks which are now all but completely obliterated.

Form:

Wall thickness: The sherds of this vessel are much more consistent in thickness than those of Vessel 1. The minimum thickness is 0.45 cm., the maximum is 0.9 cm., and the average is 0.6 cm. The base is the thickest portion, with the thinnest sherds being located two-thirds of the way up the body of the vessel. The rim then becomes slightly thicker.

Lip: The lip of this vessel was decorated in a similar manner to the other vessel of this type. The lip of this vessel is so bluntly rounded that it is almost square.

Rim: The neck on this vessel curves much more sharply than does the one on Vessel 1. Also, the rim is not nearly so tall. The exterior has been quite heavily brushed, and the interior, immediately below the neck, is heavily striated with the striations running parallel to the lip.

Base: The base of this vessel is relatively uniform in thickness. The change in thickness is a gradual process as opposed to the change in the basal area of the other vessel of this type.

Vessel Shape and Size: This globular vessel is smaller than the other vessel of this type. Also, the neck and rim are a great deal smaller. This vessel's original size is unknown.

Decoration:

Surface Treatment: The entire surface of this vessel is covered with almost completely erased cordmarks. The lip is also decorated in a manner similar to the first vessel of this type. However, the slits are not nearly as uniform or as well made. This is due to the fact that some of the slits have been engraved, not incised. There are 11 indentions on this rim and 3 of them appear to be incised whereas the others are definitely engraved. The depth of the cut is much shallower in this specimen, the maximum being 0.15 cm. The average distance between these engraved slits is 0.4 cm. These slits are from 0.5 to 0.7 cm. long. There were no indications of lugs on this vessel.

Provenience: The rim sherd of this vessel was found in Feature 1A, and the other sherds came from Feature 1.

Type III (Plate XII; B, BB)

Number of Specimens: 14 sherds (4 rim sherds, 10 body sherds).

Original Type Definition: This pottery type has not previously been defined. In this report, it is described as Type III.

Description:

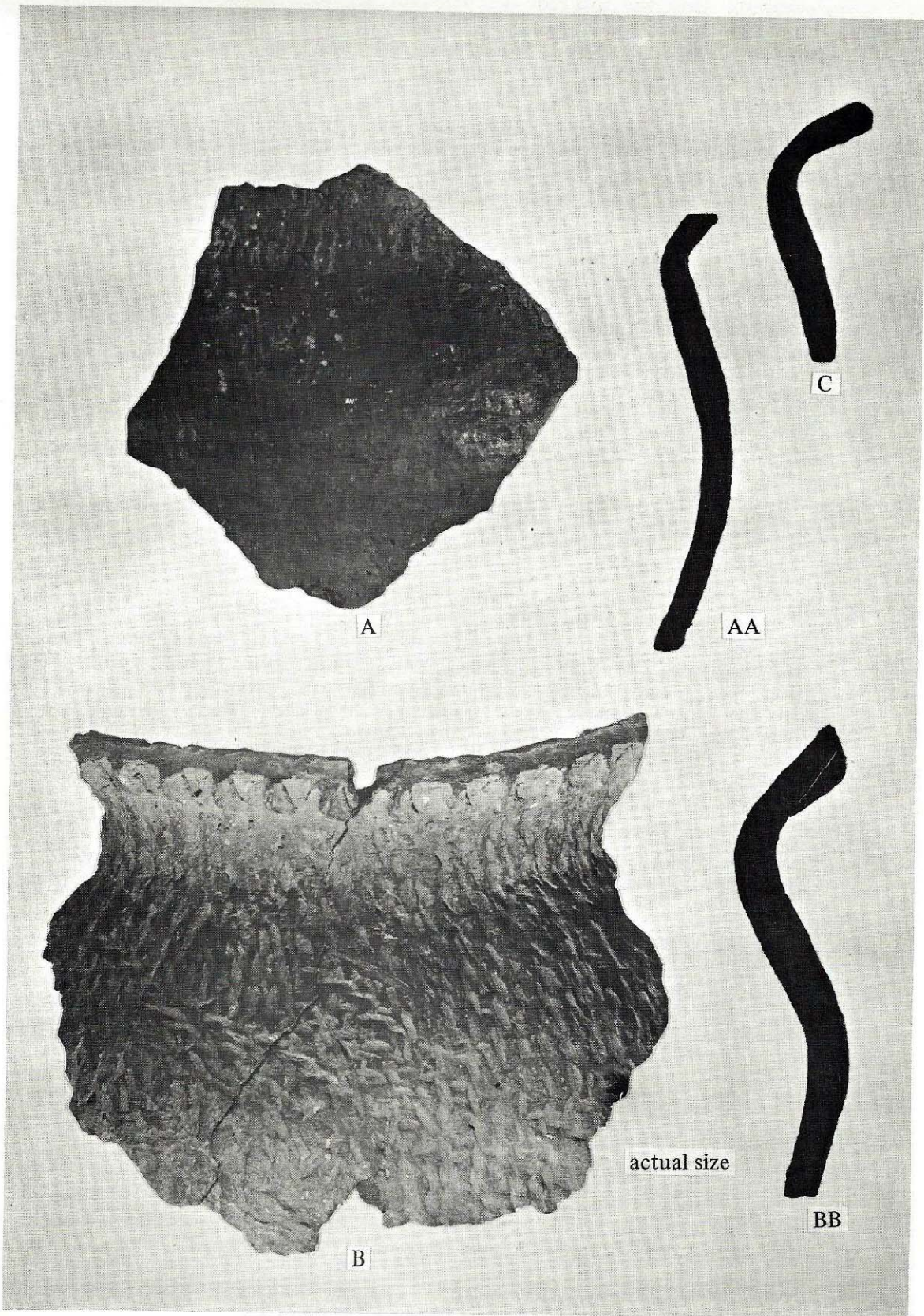
Method of Manufacture: paddle and anvil over coiling.

Paste:

Temper: The tempering agent in this vessel is bone. The size range of these particles is 0.1 to 0.3 cm. Also, some sand appears in the paste.

Texture: The texture is even and compact. A hardness of 3, by Moh's scale, was noted for this vessel.

Color: The interior is a light brown to black. Both interior and exterior exhibit signs of fire blackening. The core of this vessel is black.



**PLATE XII**

**Pottery Types Recovered from Ka-131.** A, Shoulder Sherd of Pottery Type II - Vessel 2; B, Rim of Pottery Type III; C, Profile of rim of Pottery Type II - Vessel 2. A photograph of this specimen was not available; AA, Profile of above sherd (A) of Pottery Type II - Vessel 2; BB, Profile of Pottery Type III.



Surface Finish: In the interior, the rim area has been brushed. The exterior has been covered with cordmarks perpendicular to the rim (with a rare singular cordmark crossing the perpendicular marks). The maximum width of the cordmarks is 0.3 cm., and the minimum width is 0.11 cm. The average width is 0.2 cm.

Form:

Wall thickness: The minimum thickness is 0.5 cm., and the maximum is 0.9 cm. The average thickness is 0.75 cm. The thickest portion recovered (in conjunction to the rim) was at the neck and the area immediately below. A thicker section, from the lower regions of the vessel, was also recovered.

Lip: The lip is pointed. On the interior, the lip is flush. Down from the high point of the lip (0.4 cm. down), a pinched decoration begins. This decoration extends all of the way around the rim. The adjacent portion of the lip, which is above this decoration, is beveled quite sharply inward. This area is quite well smoothed.

Rim: The rim curves outward from the neck. At 0.4 cm. down from the top of the vessel is a series of pinched protrusions which completely encircle the vessel. These "protrusions" are between 0.18 and 0.275 cm. high with an average height of 0.23 cm. The measurement of these protrusions is from 0.7 to 0.84 cm. long (this is a measurement of longitudinal distance). These protrusions are generally 0.5 cm. thick at the base. These bases are between 0.25 and 0.6 cm. apart with an average distance of 0.4 cm. The peaks of these protrusions are between 0.7 and 1.0 cm. apart with an average distance of 8.5 cm. The elements of this crimped pattern are parallel to each other as they encircle the rim (to which they run perpendicularly). This pinched decoration was added after the cordmarking was applied to the vessel, and it covers at least a portion of the original cordmarking, if not a completely cordmarked rim.

Base: No basal sherds of this type were recovered. However, it is probable that the base was round.

Vessel Shape and Size: This vessel's general shape is globular. The surface of the vessel is covered with cordmarks, which have an average width of 0.2 cm. (a maximum of 0.3 cm.; minimum of 0.11 cm.). The cordmarks are generally perpendicular to the rim, with an occasional stray cordmark cutting across the perpendicular ones. The diameter of the vessel at the point of vertical tangency is 13 cm., and the diameter at the orifice is 16 cm. The area from the rim down to 2.5 cm. below the neck shows some slight smoothing from use. No lugs or tabs were present or indicated.

Decoration: The entire surface of the vessel is cordmarked. The average width of the cordmarks is 0.2 cm., and they are generally perpendicular to the rim. At the bottom portion of the lip, there is a row of pinched protrusions which circle the entire rim. The lip is well-smoothed, and the interior of the rim has been brushed.

Provenience: One body sherd was found in Feature 9, two rim sherds were found in Feature 1A, and the other sherds were found in Feature 1.

Type IV (Plate XIII; A)

Number of Specimens: 2 sherds (1 rim sherd, 1 body sherd).

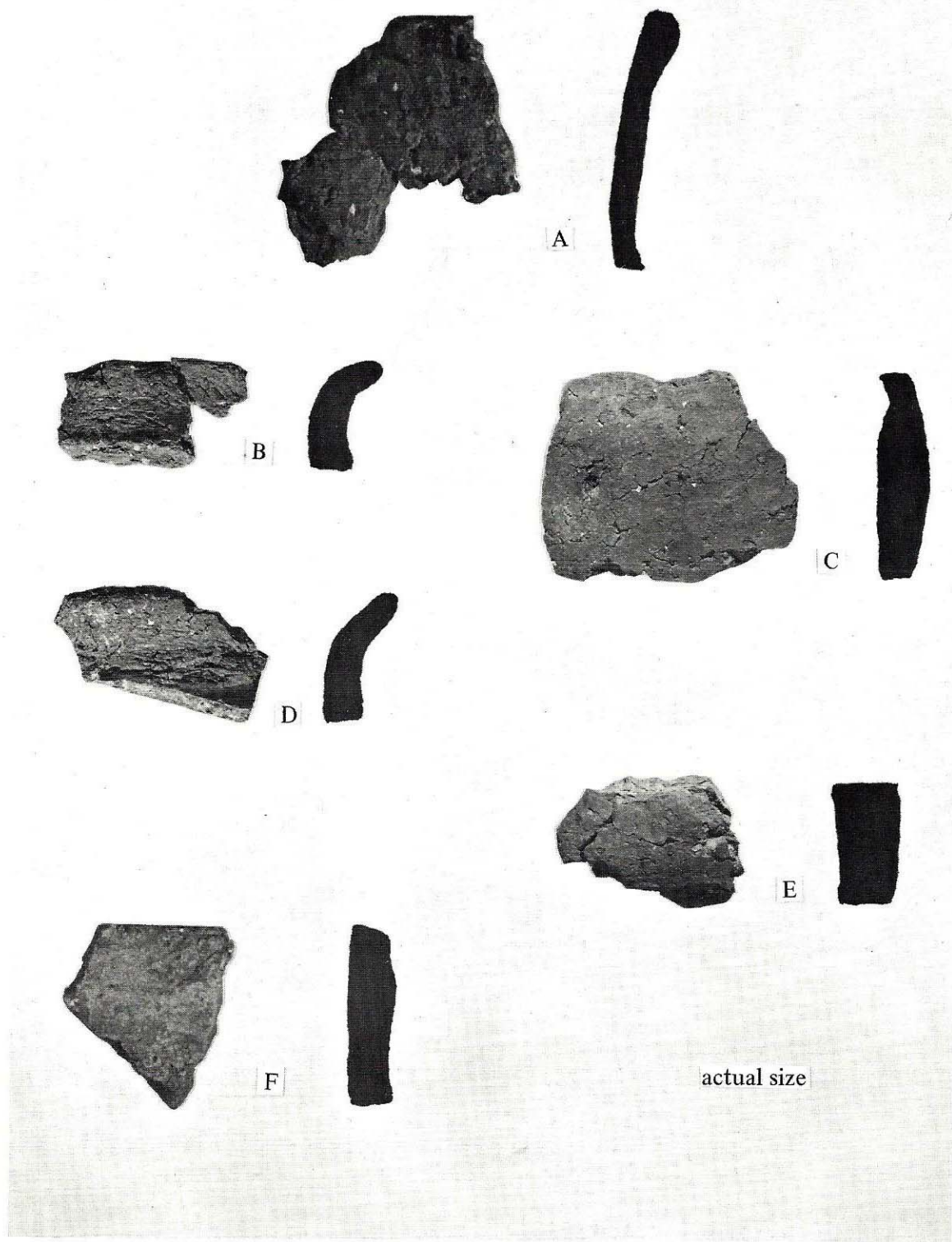
Original Type Definition: This pottery type, which I shall refer to in this report as Type IV, has not been previously defined.

Description:

Method of Manufacture: The 2 sherds recovered were too fragmentary and weathered to determine the method of manufacture.

Paste:

Temper: The tempering agent in this vessel is crushed bone. The maximum size of the bone particles is 0.2 cm.



**PLATE XIII**

**Pottery Types Recovered from Ka-131.** A, Rim Sherd and Profile of Pottery Type IV; B,D, Rims and Profiles of Pottery Type V; C,E, Basal Sherds and Profiles of Pottery Type V; F, Rim and Profile of Pottery Type VI.

Texture: The texture is rather uneven and not too compact. The hardness of this vessel, by Moh's scale, is 2.5.

Color: Brownish-orange to brown is the color of the exterior, while the interior is brown. The cores are dark grey.

Surface Finish: The tempering agent exposed on the interior surface has leached out. The exterior has been brushed at the neck of the vessel.

Form:

Wall thickness: The range of the wall thickness is from 0.3 cm. to 0.6 cm. The average thickness is 0.4 cm. The thinnest part of the vessel is at the neck.

Lip: The lip is rounded on the interior and on the exterior. At some portions of the rim, this lip is flush with a series of pinched protrusions.

Rim: The rim curves out slightly from the neck and extends to the lip, adjacent to which there is a row of crimp-like protrusions. These pinched decorations are 0.8 cm. long (longitudinally), and are raised 0.2 cm. above the surface of the vessel. The bases of these protrusions are 0.5 cm. apart.

Base: No basal sherds of this vessel were recovered.

Vessel Shape and Size: Not enough sherds of this vessel were recovered for an accurate estimate of the size or general shape of this vessel.

Decoration: The rim of this vessel has a series of scalloped protrusions on it which were formed by pinching the clay while it was still aplastic. The exterior surface of the sherds, at the neck, was brushed.

Provenience: These 2 sherds were found in Feature 1.

Type V (Plate XIII; B-E)

Number of Specimens: 9 sherds (3 rim sherds, 4 body sherds, 2 basal sherds).

Original Type Definition: Pottery Type V from Ka-131 has not been previously defined.

Description:

Method of Manufacture: paddle and anvil over coiling.

Paste:

Temper: Sand, bone, and shell, all in a crushed state, were the tempering agents in this vessel. Also, there appears to have been a small amount of limestone used as tempering matter. This limestone is badly leached as are the other agents in some of the sherds. The bone particles had a maximum size of 0.4 cm.; maximum size for shell is 0.5 cm.; and the maximum size of the sand grains is 0.2 cm. These 3 agents were used in the same proportions in the paste.

Texture: Although relatively compact, this vessel was poorly fired or made of a poor grade of clay. The surface is all fractured, and the vessel just looks crude. This vessel has a hardness of 2.5 as measured by Moh's scale.

Color: The color range for both the interior and the exterior is from dark grey to bright orange. The cores are dark grey except where they are oxidized to an orange color.

Surface Finish: The exterior surface of this vessel was brushed. On some of the sherds, all of the tempering material has been leached out. However, on the majority of these sherds, only a portion of the sherds are leached.

## Form:

Wall thickness: The maximum and minimum wall thicknesses for this vessel are 0.415 cm. and 1.450 cm. This vessel's average thickness is 0.78 cm. The base is by far the thickest spot, with the thinnest being part way up the wall.

Lip: The walls of the rim taper slightly and then end in a rounded lip. The thickness of the lip varies from 0.3 cm. to 0.6 cm. The junction of the rim and the lip on the interior is the high spot on the vessel. From this point, the curvature of the lip is downward.

Rim: This rather short rim curves outward at the neck, and then expands for a short distance until it tapers slightly to end in a rounded lip. It is the fact that this curvature causes the rim to expand that allows the lip to be below the high point of the vessel.

Base: The sherds recovered are so fragmentary that they are not diagnostic of the basal shape of this vessel. However, the thickest sherd recovered, 1.450 cm., is a basal sherd.

Vessel Shape and Size: This vessel was globular in shape although its size cannot be determined. The tempering agents of this vessel are leached out, and the surface of the vessel is in a very poor state of preservation. This vessel, being poorly fired, has a surface full of small fissures. The exterior of this vessel has been brushed. No lugs were evident on this vessel.

Decoration: The only modification of the surface of this vessel is that the exterior surface is brushed.

Provenience: All of the sherds recovered of this type were found in Feature 9.

Type VI (Plate XIII; F)

Number of Specimens: 2 sherds (1 rim sherd, 1 body sherd).

Original Type Definition: The recovered sherds did not yield enough information to tell whether or not these sherds are from a vessel of a known type. These sherds are described as Type VI in this report.

## Description:

Method of Manufacture: paddle and anvil over coiling.

## Paste:

Temper: Sand and bone are the tempering agents for this vessel. A portion of the crushed bone in this vessel has been charred to a dark grey color. The maximum size for the bone particles in the paste is 0.25 cm. The maximum size of the sand grains is 0.1 cm. Bone is by far the more common of these 2 elements.

Texture: These 2 sherds have an even texture which is compact. The hardness of these sherds, by Moh's scale, is 3.

Color: The exterior surface color ranges from a light brown to a dark shade of grey. The interior is all a light brown color. The cores are grey.

Surface Finish: The exterior of this vessel has been brushed. The tempering elements of this vessel are exposed to both the interior and the exterior although none has leached out.

## Form:

Wall Thickness: The minimum wall thickness of the recovered sherds is 0.55 cm. The maximum thickness is 0.735 cm. The average thickness of the 2 sherds is 0.66 cm. The thinnest sherd was the body sherd, and the measurement of maximum thickness came from the rim sherd, adjacent to the lip.

Table 3

## Faunal Remains from Test 1 and Test 1A

	deer	box turtle	unidenti- fied fish	bone fragment	burnt bone fragment
Levels 1-3	--	--	--	--	1
Level 4	--	--	--	1	--
Level 5	--	--	--	1	1
Level 6	--	--	--	--	--
Level 7	--	--	--	1	--
Level 8	--	1	--	2	--
Level 9	--	--	1	2	--
Level 10	1	--	--	--	--

Table 4

## Faunal Remains from the Features at Ka 131

Faunal Type	Feature						
	F 1	F 2	F 4	F 5	F 9	F 13	F 30
beaver	---	---	---	---	1	---	---
bison	246-3*	---	---	---	13	---	---
bobcat	4	---	---	---	---	---	---
box turtle	1	---	---	---	8	---	---
deer	10-2	---	---	---	10	---	---
eastern cottontail	---	---	---	---	16	---	---
hispid cotton rat	9-2	---	---	---	---	---	---
plains pocket gopher	---	---	---	---	3	---	---
raccoon	2	---	---	---	---	---	---
turkey	1	---	---	---	5	---	---
unidentified bird	5	---	---	---	3	---	---
bone fragment	815	1	---	1	467	---	---
burnt bone fragment	273	1	---	---	179	1	---

\* When a second number is given, it stands for the number of individuals represented, whereas the first number is the number of fragments.

**Lip:** The lip of this vessel is square with the interior side set slightly higher. The edges of the lip have been rounded slightly. The lip is 0.680 cm. thick.

**Rim:** The thinnest portion of the rim is immediately above the neck. The rim curved outward at the neck but the sherd is too small to indicate the extent of expansion.

**Base:** No basal sherds of this vessel were recovered.

**Vessel Shape and Size:** The sherds do not represent the vessel well enough to determine its over-all shape or size. The exterior of this vessel has been brushed. The rim begins to expand at the neck, and it ends in a square lip.

**Decoration:** This is a plain ware, and was modified only by brushing.

**Provenience:** These 2 sherds were recovered from Feature 30.

### FAUNAL REMAINS

The faunal remains found at the Bowling Alley Site represent 10 different animals. Eight of these were mammals: beaver (Castor canadensis), bison (Bison bison), bobcat (Lynx rufus), deer (Odocoileus hemionus, and possible Odocoileus virginianus), cottontail rabbit (Sylvilagus sp.), hispid cotton rat (Sigmodon hispidus), plains pocket gopher (Geomys bursarius), and raccoon (Procyon lotor). One of the other 2 faunal types represented is the box turtle (Terrepenne ornata), with the other being wild turkey (Meleagris gallopavo).

One phalanx was found in Feature 9 which has not been positively identified. However, it is thought to be from a very large dog or a bear. This site is in the range of the black bear (Euarctos americanus). Therefore, it appears that either choice has definite possibilities.

Eight bird bones were recovered from Features 1 and 9 which are too fragmentary for positive identification. These 8 bones comprise 2.4% of the identifiable (?) bones which were recovered. It is thought that these are turkey bones. However, the identification on these specimens is not positive.

A fragmentary left upper jaw (0.3% of the identifiable bone) was the only bone which represented the beaver.

Bison, 75.9% of the identifiable bone, was by far the predominant meat source for this prehistoric culture. Three full grown individuals were represented in Feature 1. It is probable that many of the unidentifiable fragments recovered were from buffalo bones. The skull and the tail were the only parts of the body not represented in the faunal debris from this animal.

The bobcat which was noted is represented by 4 teeth, one of which is still embedded in a mandible fragment. These 4 pieces are 1.2% of the identifiable bone fragments recovered.

It is known that at least 2 of the deer bones (1 fragmentary metacarpal and 1 mandible fragment) represent mule deer (Odocoileus hemionus). It is also known that 2 individuals of a type of deer are represented, one being considerably older than the other. However, whether these 2 specimens are mule deer or white-tailed deer (Odocoileus virginianus) remains unknown. Teeth, phalanges, carpals, vertebra, and a humerus are representative of this faunal type. These bones account for 6.2% of the identifiable remains found on Ka 131.

Sixteen bones (4.7%), including a tooth, a femur, ulnas, humeri, and a fragmentary pelvis are the bones which indicate the presence of eastern cottontail in Feature 9.

The 2 individuals of hispid cotton rat are represented by mandibles, humeri, and femurs (2.7%). Whether or not this animal was a food source is uncertain.

The plains pocket gopher (0.9%) was identified as being present by a tooth, a broken femur, and a fragmentary mandible.

A raccoon canine and a fragmentary left ulna (0.6%) were the only pieces representing this specimen.

The faunal remains of the turkey represented include wingbones and legbones as well as several fragmentary pieces (1.8%).

The majority of the turtle bones found were shell fragments, with one fragmentary leg bone also being found (3.0%).

One very fragmentary fish vertebra was found in Level 9 of Test 1A (0.3%). Identification of this piece is not possible.

A number of small rodent bones were recovered from Feature 1 by the fine screening process. However, due to the lack of time, these bones were not identified.

### SHELL DEBRIS RECOVERED FROM THE SITE

Feature 9 yielded the only identifiable mussel shells which were recovered. Three hinges from this feature have been identified as coming from Unionid Mussels. Seventy-one unidentifiable mussel shell fragments were also recovered from this feature as well as one fragmentary snail shell.

Feature 1 yielded two fresh water pearls (Plate IX; M). The largest is 0.320 cm. in diameter, and the smaller one is 0.270 cm. in diameter. These pearls are unmodified.

The only other mussel shell recovered from the site was found in Level 4 of Test 1A. It, as well as all of the aforementioned pieces, was charred. These mussels were used for food, and instead of utilizing their shells, they were discarded.

### SEED TYPES RECOVERED FROM Ka-131.

#### The Bowling Alley Site

Over 50 seed types were recovered from Feature 1 by the fine screening process. Of these 50 seed types, 11 were represented by charred specimens. The 7 types which could be positively identified are discussed below. The uncarbonized seed types could have been recently introduced into the pit as was *Sorghum halepense* which is more commonly known as johnson grass. Due to the possibility of recent intrusion into the trash pit, the seed types with uncarbonized specimens have been deleted from this discussion.

It is quite evident that the seed types with charred specimens were present when the site was occupied. The fact that some of the seeds are charred can show one of several things: (1) that the seeds could have accidentally introduced into the pit at the time of occupation, (2) that the seeds could have been gathered wild for use as a foodstuff or a drug, (3) that the seeds were cultivated by the inhabitants of the village and used as a staple portion of their diet.

There are 2 categories of carbonized seeds which were recovered. The first is that mentioned above--the seeds that were gathered or cultivated for use as foodstuffs by the prehistoric occupants of this village. The second grouping is made of the carbonized seeds which have properties of narcotics.

The first 2 seed types to be discussed are of this latter group. The first seed type is a member of the *Ipomoea* species, commonly known as morning glory. Of the 27 seed fragments of this type recovered only 2 of them are not carbonized. These seeds are one type of a group of drugs known as the mind expanding or psychedelic drugs. Of this type of drugs, LSD is the strongest, and morning glory seeds are the weakest. Three to 4 dozen of these seeds were needed to produce the desired effect. As of yet, no research has been done on the chemical properties of this drug.

The other seed type of this grouping was represented by 37 seeds. It is *Solanum rostratum*, buffalo burr. In all actuality, only a portion of each seed was recovered. The portion not recovered is the burry covering of the seed. These seed coats, from which the portion recovered was extracted, were undoubtedly removed rather painfully. With such effort to remove the seed coat, it is rather likely that the seeds had some important use to prehistoric man. This seed type has some alkaloid properties. Alkaloid properties are of necessity an organic alkaline substance containing nitrogen. As of yet, the properties for this drug have not been definitely defined. Buffalo burr has some similarities in chemical structure to some of the components of such drugs as caffeine, morphine, cocaine, quinine, and strychnine.

The fact of the usage of morning glory seeds and buffalo burr seeds by early man presents some new and interesting facts about his use of hallucinatory plants. It has long been known that some plants, such as peyote, have played an important role in the Indian's religious life. What role these 2 newly reported plants played in early man's every day life remain to be seen. It is hopeful that future research in this field will shed light on this most interesting question.

Now we shall move on to the other category under discussion. Two seed types were found which were definitely cultivated by prehistoric man. They are both of the grass family, Gramineae. The first is a kernel of corn off a twelve-rowed ear of corn, Zea mays. The other specimen is variety evarta of Zea mays, popcorn. It may be positively stated that these 2 seeds were under cultivation by the members of the prehistoric culture that lived at this site.

At least 3 other seeds recovered from the pit were identified as being edible. These are goosefoot, Chenopodium; wild sunflower, Helianthus; and marshelder, Iva annua. The first 2 listed were being cultivated by the Indians in Mexico and Central America when Columbus discovered America. However, whether or not they were cultivated on this site is unknown although it is a likely possibility. The third is found commonly on archeological sites in Arkansas and surrounding areas; however, it is still unknown whether it was a cultivated crop or if it was gathered wild.

It is quite apparent that this prehistoric community practiced agriculture as well as gathering seeds for food and use as drugs.

#### BOWLING ALLEY SITE: DISCUSSION AND INTERPRETATION

Although the artifact assemblage from the Bowling Alley site was a rather small one, enough materials were found so that certain similarities with other cultural complexes can be seen.

One complex apparently similar to Ka-131 is the Optima focus of the Panhandle aspect (see Watson 1950; Bell and Baerreis 1951:83-88). It is unfortunate that no complete architectural features were found at Ka-131 as these would be quite useful in comparing these 2 late prehistoric cultures. However, Optima focus trash pits are located in and between houses and are either bell shaped or cylindrical. Similarities are also seen in the cord-marked and plain pottery, the various stone tools, and the bone tools found at the Bowling Alley site. However, many tools common to the Optima focus sites are not present at Ka-131: diamond beveled knives, bone needles, worked mussel shells, some point forms, and other bone and shell implements and ornaments. Also, Optima pottery is occasionally distinguished by such features as incising, rim and body punctates, and handles, traits not found in the Ka-131 pottery sample. In view of the many dissimilarities it is not thought that Ka-131 is culturally affiliated with the Optima focus although similarities suggest the respective cultures may have been contemporaneous.

Another cultural unit with which the Bowling Alley site shares traits is the Smoky Hill aspect of the Central Plains phase (see Wedel 1959:562-571). Found in central and north-central Kansas, the Smoky Hill aspect shares with Ka-131 such traits as:

1. A subsistence economy divided about equally between maize horticulture and hunting.
2. Villages located sometimes along the larger streams, and as often on the lesser creeks, adjacent to water, wood, and arable land.
3. Houses built on the ground surface.
4. Bell shaped and cylindrical cache pits.
5. Grit tempered pottery, surfaces cord-roughened or smoothed; simple vertical to flared or collared rims, latter with incised or cord-impressed decoration.
6. Chipped projectile points, small, unnotched and side-notched.
7. Ellipsoidal knives.
8. Longitudinally grooved sandstone shaft smoothers.
9. Bone awls of split deer cannon bone.
10. Grinding implements of stone.
11. Scanty and simple work in shell. (see Wedel 1959:566)

Of course, there are innumerable characteristics of the Smoky Hill aspect which are not represented at the Bowling Alley site. In this regard specific mention could be made of burials (single interments and communal ossuaries), square to rectangular houses with 4 roof supports, a central fire place, and extended entranceway, pipes of pottery and stone, scapula hoes, arrow-shaft wrenches of bone and antler, bone fishhooks, and smooth bladed fleshing tools of mammal leg bone. Artifacts found at Ka-131 but not typical to the Smoky Hill aspect include Huffaker



and Scallorn points, mandible sickles, bison radius digging sticks, tubular beads, and smoothed pottery. While Ka-131 cannot, by any means, be considered as a cultural component of the Smoky Hill aspect, the shared traits suggest some degree of relationship and contemporaneity.

A suggested chronology for the Bowling Alley site occupation might be around A.D. 1200 to 1300. This estimated time period is derived mainly by comparison with radiocarbon dates available for the Optima focus components as well as Smoky Hill aspect sites (see Wedel 1959:618-626; Baerreis and Bryson 1966).

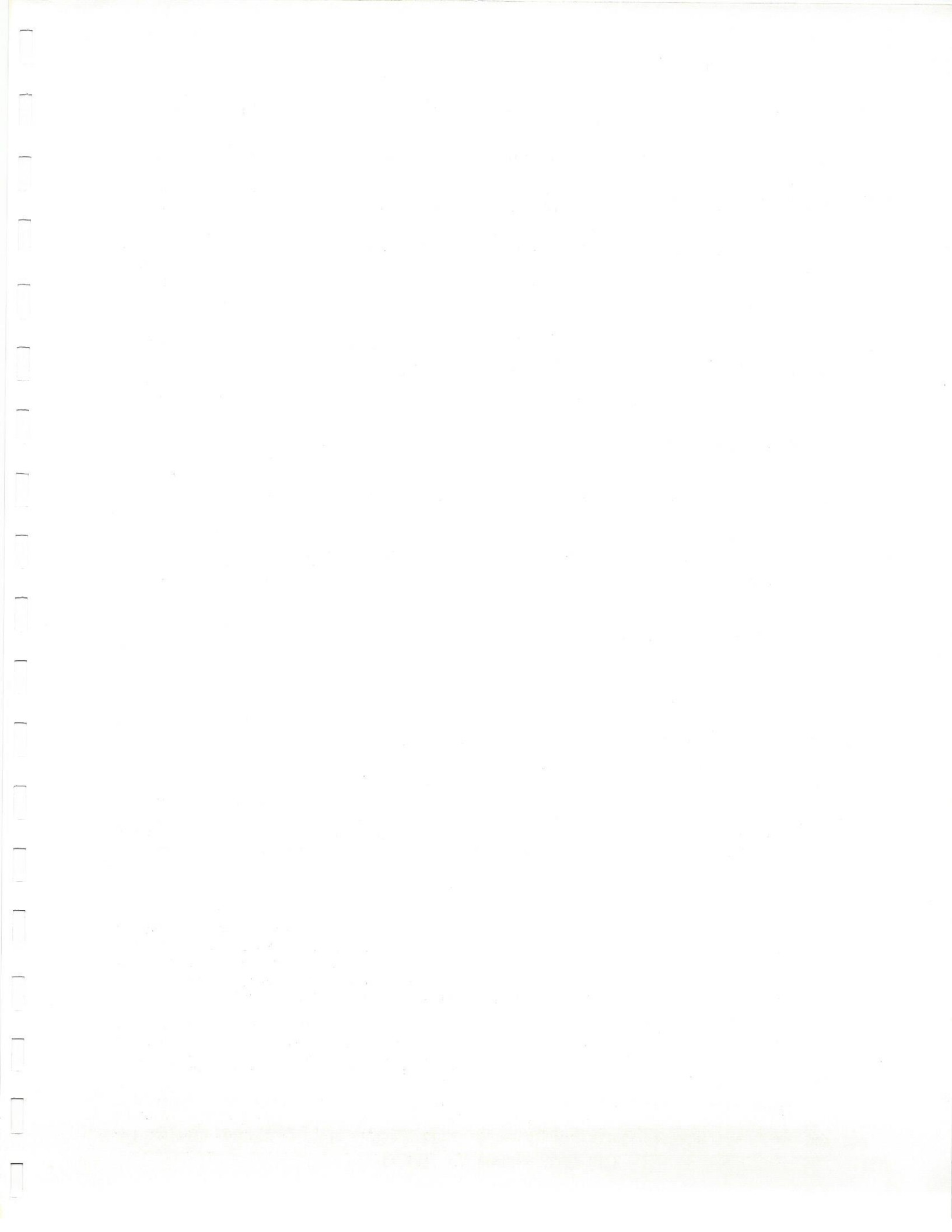
Tyler Bastian's recent work at 2 sites in the future Kaw Reservoir some 7 miles east of Ka-131, was at sites with pottery, both plain and cordmarked and with the same general paste as sherds found at Ka-131. Perhaps future work in this reservoir area and at other sites in the Ponca City locale will provide more information on the nature, extent, and chronology of the culture manifest at the Bowling Alley site.

### CONCLUSIONS

Ka-131, the Bowling Alley site, had a very sparse cultural deposit to a depth of 4½ ft. The presence of some large dart points could indicate that the site was occasionally occupied by Archaic, nomadic hunters who left little evidence of their presence. The major occupation apparently took place around A.D. 1250 ± 50 by a late prehistoric culture similar to the Smoky Hill aspect in Kansas and the Optima focus in the Oklahoma panhandle. This occupation was apparently sustained and had a horticultural economy supplemented by hunting and gathering. That the occupancy was of some duration is suggested by the presence of trash pits. Unfortunately, other details of structures could not be discerned. The representation of a rather wide variety of lithic materials suggests contacts, trade or movement, with widely dispersed areas on or bordering the Southern Plains.

### References Cited

- Baerreis, D. A. and R. A. Bryson  
1966 "Dating the Panhandle Aspect Cultures." Bulletin of the Oklahoma Anthropological Society, Vol. 14, pp.105-116. Oklahoma City.
- Bell, R. E.  
1958 Guide to the Identification of Certain American Indian Projectile Points. Oklahoma Anthropological Society, Special Bulletin, No. 1. Oklahoma City.  
1960 Guide to the Identification of Certain American Indian Projectile Points. Oklahoma Anthropological Society, Special Bulletin, No. 2. Oklahoma City.
- Bell, R. E. and D. A. Baerreis  
1951 "A Survey of Oklahoma Archaeology." Bulletin of the Texas Archaeological and Paleontological Society, Vol. 22, pp. 7-100. Lubbock.
- Clark, G. C. and C. L. Cooper  
1930 "Kay, Grant, Garfield, and Noble Counties." Oil and Gas in Oklahoma. Bulletin of the Oklahoma Geological Survey, No. 40, Vol. 2, pp. 67-104. Norman.
- Culver, J. R.  
1967 Soil Survey: Kay County, Oklahoma. Washington: U. S. Government Printing Office.
- Gray, F. and H. M. Galloway  
1959 Soils of Oklahoma. Oklahoma State University Experiment Station, Miscellaneous Publication, No. 59. Stillwater.
- Kay County Planning and Resource Development Council  
1965 An Overall Resource Development Program for Kay County. Ponca City.
- McRill, L. A.  
1963 "Ferdinandina: First White Settlement in Oklahoma." The Chronicles of Oklahoma, Vol. 41, No. 2, pp. 126-159. Oklahoma City.
- Morris, J. W.  
1957 "Natural Setting." Oklahoma, A Guide to the Sooner State, edited by Kent Ruth, pp. 9-17. Norman: University of Oklahoma Press.
- Watson, V.  
1950 "The Optima Focus of the Panhandle Aspect: Description and Analysis." Bulletin of the Texas Archaeological and Paleontological Society, Vol. 21, pp. 7-68. Lubbock.
- Wedel, W. R.  
1959 An Introduction to Kansas Archaeology. Bureau of American Ethnology Bulletin, No. 174. Washington: U. S. Government Printing Office.
- Wyckoff, D. G.  
1964 "The Archaeological Survey of the Kaw Reservoir, Kay and Osage Counties, Oklahoma." Oklahoma River Basin Survey Project, General Survey Report, No. 6, pp. v-117. Norman: University of Oklahoma Research Institute.



**BULLETIN**  
**of the**  
**OKLAHOMA ANTHROPOLOGICAL SOCIETY**

**Volume XVII, for 1968**

**Editor, Don G. Wyckoff**

**Published**  
**by the**  
**Society**  
**November, 1968**

PUBLISHED BY THE  
OKLAHOMA ANTHROPOLOGICAL SOCIETY

Printed by  
Leslie H. Butts, Oklahoma City, Oklahoma