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THE ARCHEOLOGY OF THE AGATE BLUFF AREA, COLORADO

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The Agate Bluff Area is situated five miles south of the Colorado-Wyoming boundary. It can be reached by following U.S. Highway 85 north from Denver for two miles past the town of Rockport, then turning right on a dirt road and travelling over it for another half mile.

The sites, comprising 4 rock shelters, are found in a large bluff composed of heterogeneous conglomerate, lithified with a loose cement of limestone or by compaction. This rock is quite friable, contributing to great talus cones along the bottom of the bluff. The main characteristic of the bluff is the honeycombed appearance of its faces, due to extensive differential erosion in the region. The area forms the headwaters of a small intermittent stream, but there are no permanent streams in the region. There is a well nearby which may have been a spring at one time.

Among the many kinds of animals found are deer, coyotes, rabbits, gophers, prairie dogs, rattlesnakes, and bullsnakes. Some buffalo and antelope, which are protected, are also present. There are many species of birds: eagles, hawks, owls, meadow larks, magpies, and cliff swallows. The area is uncultivated, and there is little vegetation outside of a sparse covering of buffalo and other native grasses, interspersed with a few yucca and cacti. A growth of short bushes is to be found in some of the gullies. The Bluff, lying on the border between the Piedmont and the High Plains regions of Colorado at an altitude of 5914 feet, has a rather cold, dry climate, which is summarized as follows:

Annual precipitation: 14.0 inches
Maximum monthly precipitation: 2.41 inches, in January
Minimum monthly precipitation: 0.39 inches in April
Highest average monthly temperature: 66°, in July
Lowest average monthly temperature: 14°, in January
Annual average temperature: 44.9.
Average date of last killing frost in spring: May 18.
Average date of first killing frost in autumn: September 22.

The sites in the Agate Bluff Area were discovered by the authors during a field survey in 1950. A preliminary test trench was dug in Site I at this time, and extensive excavation commenced a year later in Sites I-III. After the excavation of Sites I, II, and III was concluded, work on Site IV was begun in July 1952. Excavation could be undertaken only during weekends, and the operation was not completed until June 1953. The artifacts will be on display in the Denver Museum of Natural History when exhibition space becomes available. In the preparation of this report, we are deeply indebted to Dr. H. M. Wormington of the Denver Museum of Natural History for her generous assistance and advice. We are

also grateful to D. S. Byers of the R. S. Peabody Foundation for Archaeology for his liberal aid in the preparation of the illustrations and other valuable contributions. We also acknowledge the kind help given us in identification of specimens by: Dr. A. G. Beidleman, Colorado A. and M.; Dr. George Kanakoff, Los Angeles County Museum; Mr. Marvin L. Kivett, Nebraska State Historical Society; Professor Paul Mangelsdorf, Harvard University; and Dr. Joe Ben Wheat, Colorado University.

A map of each shelter was prepared before excavation and a grid of yard squares was established. Excavation was by natural levels. All material was screened through $1/8$ or $1/4$ in. screen. Photographic and written records were kept throughout the operations.

Site I

Site I is situated between Sites II and III. It is 56 ft. long, with a maximum overhang of 18 ft. The roof is arched to a height of 30 ft. The shelter faces southeast. There were three levels in Site I. The surface level ranged from 7 to 9 in. in thickness, and was composed of sterile sand and gravel. The second level was from 2 to 22 in. in thickness, composed of medium coarse dry sand and dust mixed with gravel and was stained light gray by bits of charcoal and ash. The third level, from 3 to 32 in. in thickness, was composed of moist, fine sand and dust, colored gray to black by charcoal and ash.

Features: (see fig. 1). Feature 1 was a concentration of ash and stones, 6 in. in depth and 21 in. in diameter, found 42 in. below the surface of Area A.

Feature 2 was a shallow basin 4 in. deep and 17 in. in diameter, dug into the slightly moist earth 29 in. below the surface of Area A. It contained charcoal, burned stones and two projectile points.

Feature 3, 2 ft. to the east of Feature 2, was a shallow pit excavated into the sand at a depth of 8 in. It was 16 in. in diameter, and was filled with charcoal, burned rocks, ashes and chips.

Feature 4 was an oval basin with its greatest measurements 1 by 3 ft. at its rim. It was situated in Area A next to a large roof-rock at a depth of 4 ft. The sides, 11 in. in height sloped slightly to the concave floor. This pit was overlain by a consolidated layer of ash and pebbles and was filled with a fine tan-colored sand. Two in. from its bottom lay a necklace of 110 complete and 8 fragmentary bone beads, and a bone pendant.

Feature 5 was a round pit, 6 in. in diameter and 4 in. deep. It occurred 4 in. to the north of Feature 4, and was overlain by the same consolidated material. Scattered through the fine sandy fill were 12 extremely small bone beads which may have been part

of an ornament such as a bracelet.

Feature 6 was a concentration of rocks, small stones, ash and charcoal, located in Area E. It was 14 in. below the surface, approximately 30 in. in diameter, and must have been a small hearth.

Site II

Site II (Porcupine Cave) is situated 40 yards to the northeast of Site I, facing almost due east. It is 38 ft. long with a maximum overhang of 24 ft. The ceiling is level and about 12 ft. high. A talus cone lies directly in front of the opening. The site contained two levels. The first, 8 in. thick, was composed of fine sand and gravel, and was sterile; the second from 1-10 in. in thickness was of dust, medium coarse sand, and gravel, colored brown to black by ash and charcoal.

Features: There was one feature in Site II. It was a concentration of ash and charcoal in an oblong area situated about 10 in. below the surface at the mouth of the shelter. It measured 15 x 30 in.

Site III

Site III (Fire Cave) is situated 10 yds. from Site I and would be considered a continuation of the latter if it were not that the fill differed slightly from that of Site I. Site III is 28 ft. long and has a maximum overhang of 18 ft. The arched roof is approximately 25 ft. high. There were three levels. The first, of sand and gravel, was sterile. The second, from 6-27 in. thick, was composed of medium coarse sand, dust, and gravel. It was colored brown to grey by ash and charcoal. The third, from 10-20 in. thick, brown to grey in color, was of ash, fine sand, and gravel.

Features: Feature 1 was probably a hearth. It occurred in Area B, and consisted of a round pit 3 ft. in diameter excavated into the clay and sand. It lay about 18 in. below the surface next to the back wall of Area B. In it were found ash, charcoal and the burned, decomposed remains of a log at least 6 in. in diameter. No artifacts were encountered, but there was a large number of agate flakes.

Artifacts: The artifacts of Sites I-III are sufficiently similar to be described together. The levels of artifacts whose distribution is significant will be noted.

Chipped Stone: Work in chipped stone was abundant at Sites I-III. The types of artifacts found were projectile points, scrapers, knives, drills, and utilized flakes. The predominant materials were agate and grainy quartzite but jasper, chert, calcedony and petrified wood were also found. Most of these can be secured within a radius of 100 miles. However, one piece of obsidian, a scraper from Site II, probably came from northern Wyoming.

There were 56 complete and 64 broken but classifiable projectile points. These were all bi-convex in cross-section and generally well made. They range in length from 15-29 mm., and in width from 12-17 mm.

The following results were found in a classification of points from the second level of Sites I-III. The material from the single cultural level in Site II seems to have closest relationship with that of the second level of the other two shelters so the artifacts from Site II were grouped with this level.

The projectile points of Level 2 occurred as follows:

<u>Description</u>	<u>Type</u> (Fig. 3)	<u>Number by Site</u>			<u>Total</u>	<u>Percent of Total</u>
		I	II	III		
Triangular, straight base, 2 side notches	(NBa1)	28	7	2	37	40
Triangular, straight base, no notches	(NBa)	15	4	1	20	22
Stemmed, expanding stem, straight base	(SCa2)	6	2	2	10	11
Triangular, concave base, 2 side notches	(NBb1)	4	4	0	8	9
Triangular, concave base, no notches	(NBb)	5	2	1	8	9
Triangular, straight base, 1 side notch (Possibly unfinished)	(NBa1)	3	0	0	3	3
Triangular, straight base	(NBa2)	2	0	0	2	2
<u>Totals</u>		63	19	6	88	96

Level 3 gave these results:

<u>Description</u>	<u>Type</u> (Fig. 3)	<u>Number by Site</u>		<u>Total</u>	<u>Percent of Total</u>
		I	III		
Triangular, straight base, 2 side notches	(NBa1)	6	2	8	38
Triangular, straight base, no notches	(NBa)	4	1	5	23
Triangular, concave base, no notches	(NBb)	3	0	3	14
Stemmed, expanding stem, straight base	(SCa2)	2	1	3	14
Triangular, concave base	(NBb1)	2	0	2	9
<u>Totals</u>		17	4	21	98

From the above it may be seen that 85% were some variant of the triangular, unstemmed type. This dominance is characteristic of the Upper Republican culture, as at Lost Creek though that site showed more unnotched points.

Scrapers were not as plentiful as might be expected from their importance at other Upper Republican sites (Wedel, 1934). Side-scrapers, ovoid or irregular in form, with one or more well retouched edges, are the dominant type, with 17 distributed through all occupied levels. These range in size from 19x25mm. to 38x57mm. Workmanship is usually of good quality, but the flaking is most often confined to one edge. The 5 end-scrapers were found in Sites I and II. These are very well made, with a semi-circular working end and plano-convex cross-section. They range from 25-55 mm. in length and from 17-36 mm. in width. 5 bi-convex discoidal specimens were also found. Workmanship on these ranges from fine to crude. The diameter varies from 12-32 mm. These proportions are not characteristic of Upper Republican sites where the end-scrapers are typical and the discoidal type rare or absent (Wedel, 1934, p. 234).

Nine knives were uncovered in the three sites. Of these 5 are ovoid (NAa), 3 diamond shaped (2NC, 1NCa) and one was triangular (NBa). This is the same order of occurrence which obtained at Lost Creek. All of these specimens are rather well-made.

Of the 4 drills recovered, 2 are of the expanding base variety, similar to those from Lenses C and D at Ash Hollow Cave (Champe, 1946, p. 49-50). The other 2 specimens resemble side-notched projectile points (NBa1) with elongated tips. These tips are quite smooth from wear. They are 18x10 mm. and 20x12 mm. in length and width.

The final class of chipped stone is that of utilized flakes. These are common in Site I (23 recovered), but rare elsewhere, with 3 from Site III and none from Site II. They consist of rough, irregular flakes retouched lightly on one or two edges or showing use scars. The largest measures 38x55., the smallest 10x14 mm.

Ground Stone: The several artifacts of ground stone from Sites I-III are, with one exception, made of a fine, friable, dark brown sandstone which is not found within a 50 mile radius. The one exception is of micaceous schist. It is a fire blackened handstone, found among the burned rocks of Feature 2 in Site I. It is 85 mm. in diameter and 28 mm. thick, used only on one side and unpecked. The 3 fragments of grinding slabs were recovered from Level 3 of Site I. These pieces indicate rather round slabs, used on both sides, but unpecked. They range in thickness from 5-11 mm.

One abrader, a rectangular piece of sandstone 41x23 mm., was recovered. A groove 2 mm. deep and 9 mm. wide runs the length of one side.

Ceramics: (see Figs. 3, 4, 5) Ceramics were not abundant in comparison with other artifacts, with a total of only 125 sherds from all three sites. Three classes of sherds can be recognized, two related to the pottery of the Upper Republican culture, the other to that of the Woodland culture.

The first Upper Republican variety we have designated Owl Creek Fine Cord-Marked. This is represented by 96 sherds (9 rim sherds). The ware varies from gray to black throughout, and has no added coloring or staining. Texture varies. Most of the sherds are crumbly, but a few are flaky. Temper is of fine to medium sand or grit. All but one are cord-marked. Cord-marking and smoothing or polishing make up the surface finish. Sometimes the heavy smoothing obliterates the cord-marks. These are fine, narrow, two-ply cords running criss-cross or more or less vertically. Decoration is confined to the rim. Of the 9 rim sherds, 3 were collared and decorated by 3, 4 or 5 parallel horizontal lines incised on the collar. There also were deep diagonal paired incisions on the lips of all of these.

Five of the others were uncollared with flaring rims. Of these, 3 had paired diagonal incisions on the lip, one was plain, and the last was too fragmentary to describe. The remaining sherd has a vertical rim with deep indentations on the lip. All of the lips are rounded, and all indicate a sharp angle between the rim and shoulder. The sherds are from 3-5 mm. thick and have a hardness of from 3 to 4. A partially restorable vessel in this group suggests a globular shape with round bottom. Estimated dimensions are: mouth diameter-10cm.; greatest body diameter-25cm.; height, uncertain. One sherd has a conical hole drilled through it. It was probably made in mending a crack. The general character of the ware is reminiscent of that of the Lost Creek Focus.

Owl Creek Rough Cord-Marked is the second Upper Republican ceramic type, represented by 31 sherds (including 5 rimsherds). The pottery ranges from black through grey to a buffish brown or red (the latter on 2 sherds, probably refired). About 20% are flaky, the rest crumbly. The tempering material is more abundant than in the first category and is of medium to very coarse sand. Cord impressions are present on all but 2 sherds which seem to be basal. These cord impressions are parallel and vertical and quite coarse. Polishing is present on 75% of the sherds, but nowhere reaches the degree found on other Upper Republican ceramics (Strong, 1935; Wedel, 1934). The pieces range from 5-9 mm. in thickness and have a hardness of about 3. Three of the rim sherds have small lug-like modelled undulations of the rim, and paired diagonal incisions on the lip. Of the remaining 2, one, that of a restorable vessel, is plain; the other vertical with deep indentations on the lip. The lips of all except the last are rounded. The exception has a flat lip. The restorable vessel is about 4 cm. high with a mouth diameter of 7 cm. and a maximum body diameter of 9 cm. It is thick, 7-9 mm., globular in shape with a flaring rim, and may have been a miniature vessel or a small bowl.

The third ceramic type is of Woodland affiliation. The authors have designated it Agate Cord-Marked, but it is very similar to Ash Hollow Cord Roughened, being different in only a few details such as thickness. At these sites this ware is represented by only 17 sherds (6 rim sherds). The color is black to buff. However, 7 sherds from

Site III present a reddish surface, extending into the sherds about a millimeter. These latter sherds have a crumbly, friable consistency, probably from overfiring. The other 6 are more durable, but are also crumbly. Hardness varies from 3 to 4. Fine to medium or medium/coarse sand and mica were used as tempering. Cord-markings, having a width of about 3 mm. with an "s" twist, are present on all sherds and are vertical, or slightly diagonal; none are polished. There is no decoration, but cord-markings usually continue diagonally across the flattened lip. The 6 rim sherds are all straight or very slightly flaring. However, 4 of these were from one vessel from Site III. Though no restorable pieces were recovered, the camber of the larger sherds is similar to that of tall, pointed-bottom pots. The sherds also indicate fairly large vessels with very little shoulder.

Provenience of the three types of sherds was as follows:

<u>Level 2</u>	<u>Site I</u>	<u>Site II</u>	<u>Site III</u>
Owl Creek Fine Cord-marked	35	15	9
Owl Creek Rough Cord-marked	7	12	4
Agate Cord-marked	2	0	2
<u>Level 3</u>			
Owl Creek Fine Cord-marked	30	--	7
Owl Creek Rough Cord-marked	6	--	2
Agate Cord-marked	5	--	4

Work in Bone: Tubular beads can be divided into 2 groups. The first is a short form, ranging in length from 5-7 mm. and in width from 10-14 mm. They are well smoothed and polished with rounded ends. Of these 118 pieces were recovered from Feature 4. The remaining 2 specimens, which had slightly thinner walls, were found in Area E.

The other category consists of 5 incised beads fashioned from bird limb-bones. These have incisions ringing them at intervals of about 5 mm. There are about 5 of these per bead. The beads range from 5-16 mm. in length. Almost identical specimens appear at Holdredge I and other sites of the Lost Creek Focus.

Twelve extremely small discoidal beads were uncovered in Feature 5. These were made from thin pieces of bone with a hole drilled in the center of each. They range in diameter from 4-5 mm. and are from 1 1/2-2 mm. thick.

Of the 3 awls found, 2 are of the splinter types. These are 68 and 70 mm. in length. Both are unworked except for the tip. One is extremely sharp, the other dull. The third, made from a deer metapodial, has overall polish and is well-worked. The tip is rather blunt and the artifact is 92 mm. long.

A flat rectangular piece of bone, broken at one end, appears to have been a scoop. Its sides are parallel and a shallow hollow has been gouged out of one face. The end is flat and it is 12 mm. in width with an estimated length of 55 mm.

A flat piece of bone in the shape of a projectile point (NAb2) may have served that purpose. It is well polished, probably made from a piece of rib-bone. It is broken at the base, but the length can be estimated at about 33 mm. A bone pendant, 54x12 mm. was found with the beads in the first cache. It is flat, polished, with a hole drilled three-fourths of the way from one end to the other. An object believed to have been a hide-tanning tool with the form of an elongated rectangle, 120x14x9 mm, was found in Site II. It is very well worked and polished, probably from use, but somewhat decomposed. The final bone object is a tabular specimen with a rounded end. Though its use is unknown it probably was part of a hide-working tool.

Shell: (Species - Fresh water clam (Lampsilis ventricosa bernes)) A piece of shell in the form of a rectangle, 12x32 mm. with rounded corners, and smoothed side was found in Area A, Site I. Near one end are 2 small notches. It was undoubtedly an ornament of some sort, perhaps a pendant.

A large fragment, irregular in shape and smoothed along one edge, probably from use, was found also in Site I. It was possibly employed as a scoop or scraper. It was about 50 mm. in diameter.

Floral Remains: Though in the upper level occasional twigs and bits of decayed grass occurred, none of these were large enough to identify. Throughout the fill quantities of charcoal was found and sacked in plastic bags. In addition to these items, one kernel of Dent corn was found 4.5 ft. beneath the surface in Area A below a large fallen roof rock in Site I. It is 12 mm. in length, 9 mm. in width. According to Manglesdorf it shows similarities to the specimens from Basket Maker sites and to corn found in the Ozark area in both prehistoric and historic contexts. It is highly improbable it was carried in by a rodent since no corn is grown within a radius of 20 miles.

Faunal Remains: The deposit contained numerous animal bones, which were identified by Dr. A. G. Beidleman. Most abundant remains were buffalo and elk. The following animals were represented: Bison (buffalo); Cervus (elk); Geomys (eastern pocket gopher); Antilocapra (pronghorn); Sylvilagus (cottontail); Canis (coyote rather than dog); Odocoileus (mule deer); Cynomys (prairie dog); Gallinaceous bird bones unidentified further; Ursus (grizzly bear?) tooth.

Site IV

Site IV (Woodland Cave) is situated about 250 ft. west of Site I. The rock shelter is 54 ft. long and has a maximum overhang of 22 ft. It faces southeast and has a rather flat ceiling about 15 ft. high. Site IV contained 3 levels; the first of gravel and sand was 7-9 in. thick, and was sterile. The second from 10-24 in. thick, was of medium coarse dry sand, gravel and dust, colored light grey by charcoal and ash. The third, separated from the second by a thin, light colored band of soil, was of moist fine sand and dust, colored dark brown to black by fire remains, and was from 20-28 in. thick.

Features: (See Fig. 2) The 2 features encountered in Site IV were both round basins, presumably firepits. Feature 1 was located in Area-B and was 3.5 ft. in diameter and 18 in. deep. The major portion lay in the second level, but it extended a maximum depth of 5 in. into the underlying sand of the third level. A fragment of a grinding stone was recovered from the fill of charcoal and burned stones.

Feature 2, located in Area A, was 3 ft. in diameter and 1 ft. in depth. It lay approximately half in the first level and half in the second. The fill, of ash, charcoal and blackened rock, included 2 broken projectile points and one fragment of a grinding slab.

Artifacts of Site IV

Chipped Stone: The rather numerous chipped stone artifacts of Site IV were predominantly of agate and grainy quartzite. Projectile points were quite common in Site IV, and are typed according to size and form. The first class consisted of 53 specimens, which range in length from 14-27 mm. and in width from 11-16 mm. All are bi-convex in cross-section and are moderately well made.

In Level 2 the following types are represented:

<u>Description</u>	<u>Type</u>	<u>Number</u>	<u>Percent</u>
Expanded stem, shouldered, straight base	(SCa2)	13	39
Expanded stem, shouldered and barbed, straight base	(SCb2)	7	21
Triangular, straight base, no notches	(NBa)	6	18
Triangular, concave base, no notches	(NBb)	4	12
Triangular, straight base, 2 side notches	(NBa1)	2	6
Triangular, straight base, 2 side notches, 1 basal notch	(NBa2)	1	3
Total		33	99

In Level 3 the following results were obtained:

<u>Description</u>	<u>Type</u>	<u>Number</u>	<u>Percent</u>
Expanded stem, shouldered, and straight base	(SCa2)	6	30
Expanded stem, shouldered and barbed, straight base	(SCb2)	3	15
Triangular, straight base, no notches	(NBa)	5	25
Triangular, concave base, no notches	(NBb)	4	20
Triangular, straight base, 2 side notches	(NBa1)	2	10
Total		20	100

The above table shows a preponderance of stemmed points like those found at Vy-1 and other Nebraska Woodland sites (Hill and

Kivett, p. 170; Kivett, 1952b, p. 17).

The one point with 2 side notches and a basal notch is of a type usually associated with the Upper Republican culture and here may have been intrusive. However, as Kivett has suggested (1952a, p. 18) a small number of these points may have been made by the Woodland people.

The 5 specimens in the second class are of interest because of their size and location. All are expanding base, stemmed points, shouldered and barbed, with straight or slightly convex bases (SCb2). They are rather thick, less finely worked relative to the other points and range in length from 30-50 mm. with an average of 40 mm., and in width from 19-32 mm. with an average of 26 mm. All were found in the third level. It seems possible in view of their size, greater weight, and location in the site, that these were dart rather than arrow points.

19 side-scrapers with only one side retouched were recovered. These are moderately well made and range from 20-50 mm. in length, and from 19-35 mm. in width. Plano-convex end-scrapers are the next most numerous form in this category. These are finely worked and "keeled" (having a sharp ridge running the length of the dorsal side and sloping to the retouched edges) and the working ends are semi-circular. They range in length from 19-35 mm. and from 14-25 mm. in width. A fairly large specimen (18x20 mm) was found, stemmed with a rounded bit. It resembles the base of a large projectile point. Although it is possible that this was used as a stunner, the shape and polish on the bit suggest that it was a scraper. Kivett reports the occurrence of 2 of these at the Massacre Canyon Site. He notes the similarity of these tools to a form common at the Renner Site (Kivett, 1952a, p. 18; Wedel, 1943, p. 53).

30 chipped stone knives were recovered, all bi-convex in cross-section. The workmanship varies from medium to extremely fine. All are ovoid (NAa, or NAb1) in shape; none are diamond shaped, similar to Vy-1 (Hill and Kivett, p. 172). They range from 35-50 mm. in length and 20-35 mm. in width.

25 tools whose function is not clear were found. These are triangular with convex bases, and concavo-convex to bi-convex in cross-section. They range in length from 14-24 mm. and in width from 13-17 mm. They are generally well made, and were probably used as perforators or small knives. One drill with an irregular expanding base was recovered. The specimen is 9x14 mm.

There are 153 utilized flakes, showing retouch or use, which range from 20-67 mm. in length and from 15-40 mm. in width. Three rounded, coarsely made choppers were recovered. These are bi-convex in cross-section, and range from 90-100 mm. in diameter and from 27-50 mm. in thickness. One specimen shows evidence of pecking.

Ground Stone: There were several examples of ground stone artifacts.

All are made of a fine-grained sandstone not found within a 50 mile radius. 2 handstones were found, both in Level 3. One is round, 145 mm. in diameter, bi-convex in cross-section and worn only on one face. There is no evidence of pecking apparent. The second specimen is also bi-convex in cross-section and is triangular in form. It is worn on both faces with no evidence of pecking.

Eight fragments of grinding slabs were recovered, 3 in Level 2 and 5 in Level 3. In thickness they range from 10-30 mm. 3 specimens show use on both sides. The largest fragment is an unpecked rectangular slab with a slight depression. In general, the slab fragments are similar to those from Ash Hollow Cave (p. 40).

Two abraders were found. One, of coarse sandstone, has 3 longitudinal grooves. The other is of fine sandstone with 2 longitudinal grooves. The grooves are 8-10 mm. wide and 2-4 mm. deep. A small semi-spherical piece of sandstone with a depression on one side contained pulverized yellow ochre. The stone is believed to have been used in grinding this substance. It measures 9 mm. in diameter and the depression is 1 mm. in depth. 3 irregular lumps of ochre were found, 1 red, the others yellow. They are about 9 mm. in diameter.

Ceramics: (See Figs. 3, 4) 19 sherds (5 rim sherds) belonging to the type designated Agate Cord-marked in Sites I-III were found. The thickness of the pieces varies from 4-9 mm., the majority 7 mm. In other respects the construction is similar to that previously described. The surface is covered with medium cord impressions. 3 of the rimsherds are straight and have flattened lips; on 2 this has caused a slight thickening. On one of these rimsherds the cord-marking continues from the body over the lip; the other 2 are amorously grooved and marked and have thickened lips. The remaining 2 rimsherds are flaring, have rounded lips without marking. On these the cord-marking is diagonal. Vessels, as indicated by these sherds, were large and unshouldered, probably with a conoidal base. 10 of the sherds were recovered from Level 2; 9 from Level 3.

The other ceramic type represented at Site IV conforms generally to the description of Owl Creek Fine Cord-Marked. There are 11 sherds (3 rimsherds) of this variety all from Level 2. All 3 rimsherds are collared, 2 have 3 parallel horizontal lines incised on the collar, with rows of punctations on both sides of the lines. The other sherd is similar, but the punctations are lacking.

Bone Artifacts: Ten beads were found at Site IV. 6 are made of short tubular bones, polished and thin-walled. They range in length from 1 1/2-3 mm. and in width from 8-18 mm. Two long tubular beads measure 30 mm. in length x 15 mm. in diameter and 14 mm. in length x 7 mm. in diameter respectively. All were made from mammal bones. A single discoidal-shaped bead was recovered. It appears to have been made from a flat rib bone of a mammal, then drilled in the center. It measures 2 1/2 mm. in thickness and 6 mm. in diameter. A modified root of a bison tooth was also made into a bead. The ends are rounded and the natural hole in the root enlarged. It shows no polish and

is 7 mm. in diameter x 18 mm. in length. The long tubular beads are similar to those found at Vy-1 site and at Ash Hollow Cave. The short type does not appear in either of the above sites and may be a local form (Champe, 1946, p. 41; Hill and Kivett, p. 165).

Nine splinter awls or perforators were recovered. On 8 of the specimens work was confined to the tip; the ninth was smoothed all over and the butt-end was rounded and flattened. They range in length from 40-75 mm. Two pieces of bone appear to have served as hide-working tools. The first specimen is 20x100 mm., smooth on both sides, rectangular in cross-section and round on one end. The other is 30x140 mm., smooth on both sides, rectangular in cross-section and rounded on both ends. Two flat pieces of bone (possibly gaming pieces) were found. The first is oblong, smoothed all over and is 9x33 mm. The corners are slightly rounded. The second is round, smoothed all over and is 11 mm. in diameter. Neither shows any cancellous tissue but may have been made from rib bones. There is no decoration on either piece.

A flat, slightly curved section of an elk rib-bone, 160x18 mm., appears to have been used for smoothing or cutting. The outer surface is highly polished from use. The natural shoulder or edge has been abraded leaving a section about 45 mm. This has been sharpened, as is evidenced by numerous scratches on the bone probably made by a sandstone abrader. The specimen fits into the hand and would have served as a cutting instrument. A similar flat piece of bison bone was found at Ash Hollow Cave (p. 42). The distal end of a deer metapodial was found. This bone has a groove 2 mm. deep around it and 2 grooves running length-wise on either side (about the same depth) probably in preparation for splitting for making awls.

Perishable Materials: (Fig. 5). There are 2 types of arrow-shaft fragments. The first type (3 specimens) is a straight piece of wood with the bark scraped off and with tiny spiraling grooves over a portion of its length. Two were found in Level 2, the other in Level 3. They range in diameter from 2-8 mm, in length from 19-32 mm.; the grooves are about 1 mm. deep. There are about 16 grooves per centimeter. Every indication points to the conclusion that these are from the ends of the shafts where sinew was employed to bind the feathers or points in place. Such sinew binding would leave the spiral markings described.

The second type of arrow-shaft fragment (3 specimens) is a straight piece of wood with the bark scraped off, without the spiral markings but with a wide groove running irregularly along the length. The 3 fragments range in length from 30-68 mm. and from 7-10 mm. in diameter. The grooves are about 0.2 mm. deep and about 1 mm. wide. These grooves are almost identical to those found on the shafts of some historic Plains arrows. The fragments fit readily into the abraders found at this site which, it is believed, were used to smooth such shafts.

A small fragment of yucca fiber rope was found in Level 3. It

is composed of 2 strands (about 2 mm. in width) twisted about each other in an "s" twist. Its length is about 50 mm. A small piece of yucca, flattened and bent in a series of waves closely resembling a strand of simple plaited basketry, was found in Level 2. It is 12 mm. in length, 2 mm. in width and .7 mm. in thickness.

Shell: One fragment of nacre, the size and shape of a penny, with 1 edge broken was found. The remaining part shows smoothing and rounding.

Floral Remains: The following plant remains were recovered: The leaf and fruit head of a sunflower (Similus); the leaf of a wax currant bush (Nibus cenunis); The base and stem of a wild grape leaf (Vitis sp.); several yucca seeds and stems. Identification was made by Dr. Joe Ben Wheat. Of this floral inventory only the sunflower and yucca are present in the area today. With the exception of the sunflower and the yucca seeds (which were found in Level 3) the floral remains were found in Level 2. Scattered in the fill were a number of twigs and pieces of decayed wood. The pieces were too small for identification but appear to have been from scrub pine and bushes. Several handfuls of grass were found concentrated in one place, perhaps being a padding of some sort.

Faunal Remains: Numerous animal bones were found throughout the fill and were identified by Dr. Beidleman as follows: (listed in order of frequency) Bison (buffalo); Cervus canadensis (elk); Antilocapra (pronghorn); Cynomys (prairiedog); Neotoma (Woodrat or packrat); Odocoileus (mule deer). Buffalo and elk remains were far more numerous than any of the others. The predominance of buffalo remains over antelope is interesting in view of the more frequent occurrence of smaller animals in Woodland sites in Nebraska (Kivett, 1949a, p. 283;) but is in accord with the faunal report on Ash Hollow Cave (Champe, 1946, p. 43). The heavy dependence on elk, an animal usually not found in Woodland sites in Nebraska, is probably due to regional variation of the animals. Perhaps the predominance of buffalo at both Ash Hollow Cave and Owl Creek was due to the same cause.

Conclusions

Investigations at Agate Bluff on Little Owl Creek reveal that this area had been inhabited by two distinct cultural groups, both showing affiliations to the east.

The bulk of the material from Sites I-III proved to be most closely related to the Upper Republican Aspect as defined by Strong (1933, p. 278). The diagnostic elements shared with this Aspect include ceramic inventory, projectile point types, small end and side scrapers, oval and diamond-shaped knives, chipped stone celts, hammerstones, bone beads and awls, shell beads, T-shaped drills, and the absence of grooved axes and catlinite. All of these traits, with the exception of the ornaments, are of a simple functional nature, adapted to a culture based on hunting and gathering rather than on sedentary agriculture. Other, more refined and elaborate elements,

characteristic of Upper Republican sites farther east, are absent. Foremost among them are pipes, boat-shaped shaft-smoothers, fish-hooks, scapula hoes, bone shaft straighteners, shell and antler bracelets, copper ornaments and perforated clay discs. The absence here of earth lodges is not conclusive, because of the presence of excellent local rock-shelters. Though the area was thoroughly explored, no evidence of ossuaries was reported.

Grinding slabs, very rare at other Upper Republican sites, are present here. Similar objects were recovered from sites in Ottawa County, Kansas, and were attributed to possible Southwestern connections (Wedel, 1934, p. 134, 135). Here (Agate Bluff) the phenomenon may be satisfactorily explained by the influence exerted by contemporary Woodland peoples in the area. Another similar artifact was found in Ash Hollow Cave (p. 49) in Lens C, with mixed Upper Republican-Woodland associations.

The identification of a focus for the Agate Bluff materials, Sites I-III, must remain somewhat tentative. The closest affiliations to a single site are to Ash Hollow Cave. The absence of many complex traits, the occurrence of grinding stones and short tubular beads all follow this hypothesis. Subsistence seems to have varied slightly. At Agate Bluff the elk, rather than the antelope, with the bison is the primary object of the chase. Fishhooks were found only at Ash Hollow. There is no evidence of agriculture at Ash Hollow. The single kernel of corn recovered from Site I, suggests that agriculture may have been practised, though lack of hoes and other evidence beyond this single object hardly indicate a basic resource. Ornamentation here was much more abundant than at Ash Hollow, as seen in the contents of 2 caches and the beads and pendants scattered through the fill. Worked shell is present here, absent at Ash Hollow. The ceramic remains are on the whole very similar to those of the latter site, though the sherds tend to be somewhat thinner. The types fall within the range of those of the Lost Creek Focus, to which Champe tentatively assigned the Upper Republican lens at Ash Hollow Cave. Similar material has been reported from Signal Butte (Strong, 1935, p. 299) and several sites along the Prairie Dog, Medicine, Willow, and Rebecca Creeks and other tributaries to the Upper Republican River (Wedel, 1934). The cord decorated rims characteristic of the Sweetwater Focus (Champe, 1936, p. 270) are absent.

A certain amount of material has been recovered from Colorado, but almost no published data is available. Withers (p. 2,3) has named a Buick Focus occurring on the South Platte and Republican River drainages. The only diagnostic trait described is the pottery type. "...squat round bottomed jars which are cord-marked and here have an out-curved rim. The rim is thickened to form a "collar" and incised geometric designs are placed on these." (p. 2). To the authors this appears to be Lost Creek type pottery, but Withers correlates it with the Sweetwater Focus. A more complete description of the material must be made before the issue can be clarified. The relation of the Little Owl Creek sites with this southern Colorado

Focus must remain obscure until data from these is recorded. The early surveys of Renaud (1931, 1932, 1933) reveal the widespread occurrence in eastern Colorado of "stamped" (i.e. cord-marked) pottery, which may belong to either the Upper Republican or Woodland cultures. Exact identification must await investigation.

On the whole, the material from Sites I-III suggests a marginal representation of a sedentary culture, adapted here to a more nomadic hunting-gathering pattern and stripped of many of the refinements of its eastern parent. Thus is seen, in an east-west direction, the Upper Republican culture grading from the complexities gained in mingling with the higher cultures of the East (at the St. Helena Focus, Cooper, 1936) through the basically sedentary but simple villages of the Nebraska loess plains toward an increasing simplification and reorientation to a hunting and gathering economy on the High Plains of western Nebraska and eastern Colorado.

The total range of years for the Upper Republican lenses in the tree-ring sequence from Ash Hollow Cave is from 1210-1517 A.D. (Champe, p. 49). It seems probable that the present material falls within this range. The lack of any Dismal River and Late Upper Republican types (such as the type "Z" Sweetwater-like pottery of Lens B in Ash Hollow) as well as the intrusive Woodland materials in all the levels, indicate an early date.

The people at Site IV appear to have been simple hunters and gatherers. As in most western Woodland sites there is no evidence of agriculture. Whether there was any or not, certainly its importance must have been most limited.

At Site IV two cultural levels were encountered. These were separated by a thin sterile zone (1/2 in. thick), apparently indicating brief abandonment. However, a general thinning out of the quantity of artifacts as depth increased was noted. This is especially apparent in comparing the total materials from the two levels. Also in the top level certain Upper Republican artifacts were unearthed. The relationship of these to the other sites and to Site IV itself will be discussed below.

The material recovered in the excavation of Site IV is of an interesting nature. Its obvious affiliation is with the Orleans Aspect of the Woodland culture. Pottery, projectile point types, ground stone, all point to this. The nature of its specific affiliations is a more complex and difficult question. The closest site in material inventory is Ash Hollow Cave Lens D. Pottery in many instances is most similar. Projectile point comparisons reveal a higher percentage of corner-notched stemmed varieties (Strong's "S" series) at Site IV. Work in bone is comparable, Site IV containing a more extensive inventory. At both sites there is evidence of grinding slabs.

Nevertheless this rather close affiliation of Site IV with its near neighbor, Ash Hollow Cave, is only a part of the problem.

Kivett in reporting on the Kelso Site, a site in the Sand Hills region of Nebraska (1952, p. 66) determined that Kelso was a close relative of Ash Hollow (Lens D), and believed that sites of this nature belonged to an unidentified focus of the Orleans Aspect. However, in referring to the rather scanty materials from the site, he decided that the evidence for the designation of a new focus was not adequate. It must be clear now that Site IV of Owl Creek is one of the sites of this type. However, the work at Site IV not only broadens the picture in terms of the artifact inventory (including perishable materials) but also shows that the particular association of traits and pottery type pointed out by Kivett is no local phenomenon. On the basis of its distinctive qualities we believe it should be designated the Ash Hollow Focus following Kivett's tentative suggestion.

As Kivett and others have pointed out, the sites of the Ash Hollow-Kelso-Agate Bluff type share traits with several Woodland foci on the Plains. Notable among these are specifically the Keith and Valley Foci. There are several traits found in the Ash Hollow type site that appears in one of these but not the other. Thus culturally the Ash Hollow sites are affiliated with both of these foci but not exclusively with one or the other. The most important comparisons are those of ceramics. In many respects the Ash Hollow type pottery looks similar to that of the Valley Focus, but it lacks the nodes and punctates, cord wrapped rod impressions and other decoration common to the sherds of Vy-1 (Kivett, 1952, p. 37; Hill and Kivett, 1940, p. 172-73). The Valley Focus pottery, on the other hand, lacks the thickened lips (for cord impression) common at sites of the Ash Hollow type. Fewer differences exist between it and the Keith Focus sites. The former lack fabric or cord impressions on the interior. However, at Kelso and at Agate Bluff a minority of sherds appear with cord-impressions running diagonally to the lip. There is no such occurrence in the Keith sites. Pottery of the Ash Hollow sites is generally thinner than that at Keith. It is interesting to note in this connection that the pottery at Agate Bluff is thinner than that of either Ash Hollow or Kelso, being in this respect similar to that at Vy-1. In projectile point types, Owl Creek and Ash Hollow approximate the inventory of Vy-1 with about 40% stemmed, 30% side-notched and the others stemless. At the Woodruff Ossuary and other sites of that nature such as the Guide Rock Site, all of the points were stemmed (Kivett, 1952b, p. 129). At none of the above sites were the diamond shaped knives characteristic of the Upper Republican culture found.

Shell, abundant in the fill of Vy-1, seemed to be little used for artifacts. Of course, shell ornaments were numerous at Woodruff. Some few shell beads were recovered from Ash Hollow, but these are unstudied. Agate Bluff reports only one occurrence. This, despite the fact that shell fish are not scarce in the Little Owl Creek region, and could have been easily transported had they been valuable for ornaments. In this respect these sites seem to align themselves with Vy-1.

Both Ash Hollow and Agate Bluff report some grinding tools. Though sites of the other 2 foci do not report these, they do occur in the general area, for instance at the Massacre Canyon Site (Kivett, 1952a, p. 20).

Finally, a short stubby bone bead type found at Ash Hollow and Agate Bluff seems to be peculiar to them. In addition all others discussed report tubular beads as do Ash Hollow and Owl Creek.

Farther south in Colorado, Withers has excavated some sites of Woodland nature. He has designated 2 foci. The published accounts of this work consist of a few brief summaries and will have to be fully presented before any affiliations between these sites and Agate Bluff can be established.

In setting a date for the Agate Bluff material one must be guided by Champe's analysis of the dendrochronology in Ash Hollow Cave. In Lens D a date of 1000-1150 A.D. was indicated. The Woodland material of Ash Hollow Cave extended into Lens C but Champe regards the Upper Republican peoples as the primary occupants of Lens C (p. 50). Allowing an additional 50 years this might stretch the Woodland occupation to 1200. This date is not out of line with a recently published age on one of Withers's sites (Hunt, 1954, p. 114) of 800 + 150 years A.D. However, considering the similarities between the foci, it is somewhat out of line with a date of 611 + 240 A.D. obtained for the Woodruff Ossuary (Wedel and Kivett, p. 415).

The value of Site IV in Plains archeology can be summarized briefly. First, it presents a relatively clear picture of the artifact inventory of the particular culture which a stratified site often fails to do. Second, there are enough intrusive artifacts from a nearby Upper Republican site to allow some interesting comparisons. Third, the artifact inventory was fairly extensive, including some perishables rarely found in Woodland Sites on the Plains.

The treatment of the material from the Agate Bluff Sites has thus far been under two rather rigid divisions. The occurrence of a certain amount of mixture in the sites between the cultures presents the problem of their interrelationships and temporal correlation.

In all occupation levels of Sites I-III there was some admixture of Woodland-like material, e.g. stemmed points, Agate cord-marked pottery, with the predominant Upper Republican artifacts. The highest occupied level of Site IV (Level 2) showed an infusion of Upper Republican artifacts. At the surface a sterile layer of approximately the same thickness was encountered in all the sites truncating respectively Upper Republican and Woodland material. One possible interpretation of this stratigraphic evidence is as follows:

The first ceramic-using group to inhabit the area was one of Woodland affiliation whose occupation seems to have been confined primarily to Site IV. During the latter part of this occupancy,

they were joined by a larger Upper Republican group which appropriated Sites I-III and several other small overhangs in the Bluff (demonstrated by material recovered by local collectors). The problem of why and when sites were abandoned is not yet solved. The similar depth and character of the sterile overburden and the consistency of the presence of Woodland materials in Sites I-III would seem to indicate that this was simultaneous with both groups. However, such cross-site stratigraphic correlation is at best uncertain. Also such an interpretation would postulate a very late survival of Woodland type material.

In the vast area of eastern Colorado, western Nebraska, and southern Wyoming many sites of this nature must be dug before even the elementary steps of taxonomic classification can be accomplished.

REFERENCES CITED

Bell, Earl H. (editor)

1936 Chapters in Nebraska Archeology, Vol. 1.

Champe, John L.

1936 "The Sweetwater Culture Complex", Chapters in Nebraska Archeology, pp. 249-299.

1946 Ash Hollow Cave. A Study of Stratigraphic Sequence in the Central Great Plains. Univ. of Nebraska Studies, No. 1.

Cooper, Paul

1936 "Archeology of Certain Sites in Cedar County", Chapters in Nebraska Archeology, pp. 5-145.

Hill, A. T. and M. F. Kivett

1940 "Woodland-like Manifestations in Nebraska", Nebraska History, Vol. XXI, No. 3, pp. 146-243.

Hunt, C. B.

1954 "Pleistocene and Recent Deposits in the Denver Area", U. S. Geological Survey, Bul. 996-C.

Kivett, Marvin F.

1952a "The Woodruff Ossuary, A Prehistoric Burial Site in Phillips County, Kansas", River Basins Survey Papers, No. 3. Bureau of American Ethnology, Smithsonian Institution, Bul. 154.

1952b Woodland Sites in Nebraska. Nebraska State Historical Society Publications in Anthropology, No. 1.

Renaud, Etienne B.

- 1931 Archaeological Survey of Eastern Colorado. Univ. of Denver, Department of Anthropology. June.
- 1932 Archaeological Survey of Eastern Colorado. Univ. of Denver, Department of Anthropology. March.
- 1933 Archaeological Survey of Eastern Colorado. Univ. of Denver, Department of Anthropology. March.

Strong, William D.

- 1933 "The Plains Culture Area in the Light of Archeology", American Anthropologist, Vol. 35, No. 2, pp. 271-287.
- 1935 An Introduction to Nebraska Archeology. Smithsonian Institution, Miscellaneous Collections, Vol. 93, No. 10.

Wedel, Waldo R.

- 1934a "Contributions to the Archeology of the Upper Republican Valley, Nebraska", Nebraska History, Vol. 15, No. 3.
- 1934b "Minneapolis I: A Prehistoric Village Site in Ottawa County, Kansas", Nebraska History, Vol. 15, No. 3.
- 1940 "Cultural Sequence in the Central Great Plains", Smithsonian Miscellaneous Collections, Vol. 100, pp. 291-352.
- 1943 Archeological Investigations in Platte and Clay Counties, Missouri. U. S. National Museum. Bul. 183

Wedel, Waldo R. and M. F. Kivett

- 1956 "Additional Data on the Woodruff Ossuary, Kansas", American Antiquity, Vol. 21, No. 4, pp. 414-416.

Withers, Arnold M.

- 1954 "University of Denver Archaeological Fieldwork", South-western Lore, Vol. 19, No. 4, pp. 1-3.

Cambridge, Massachusetts

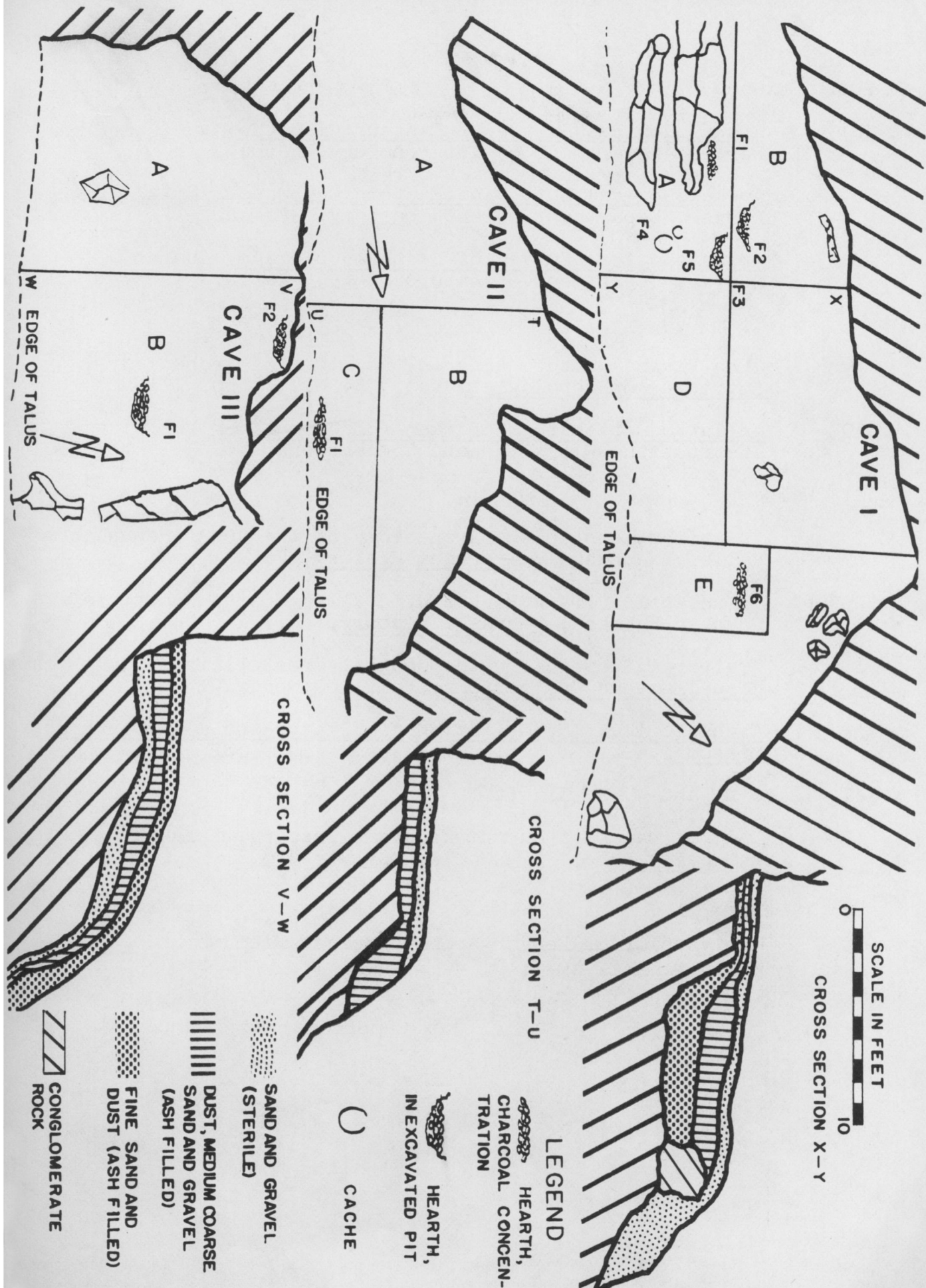


Figure 1

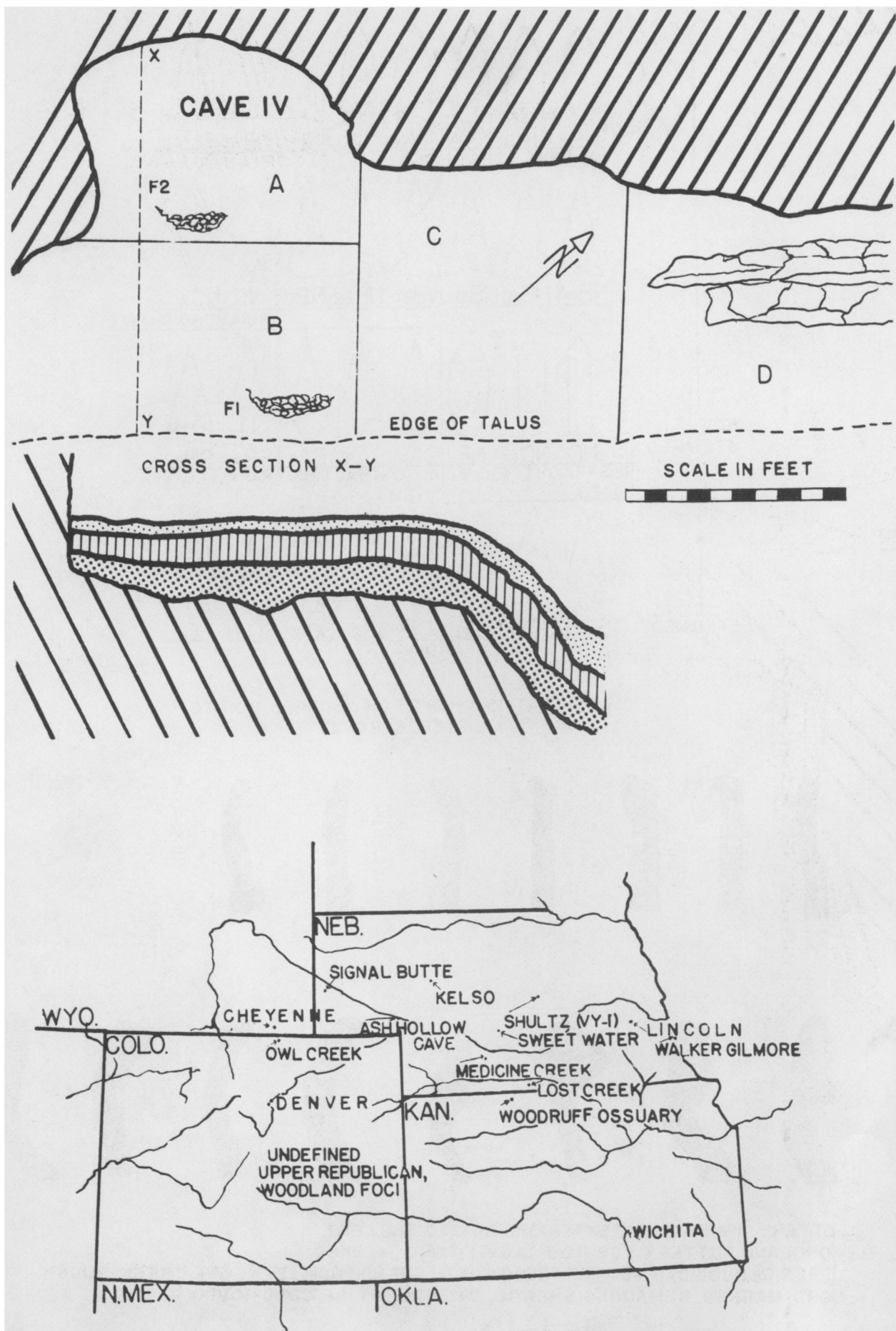
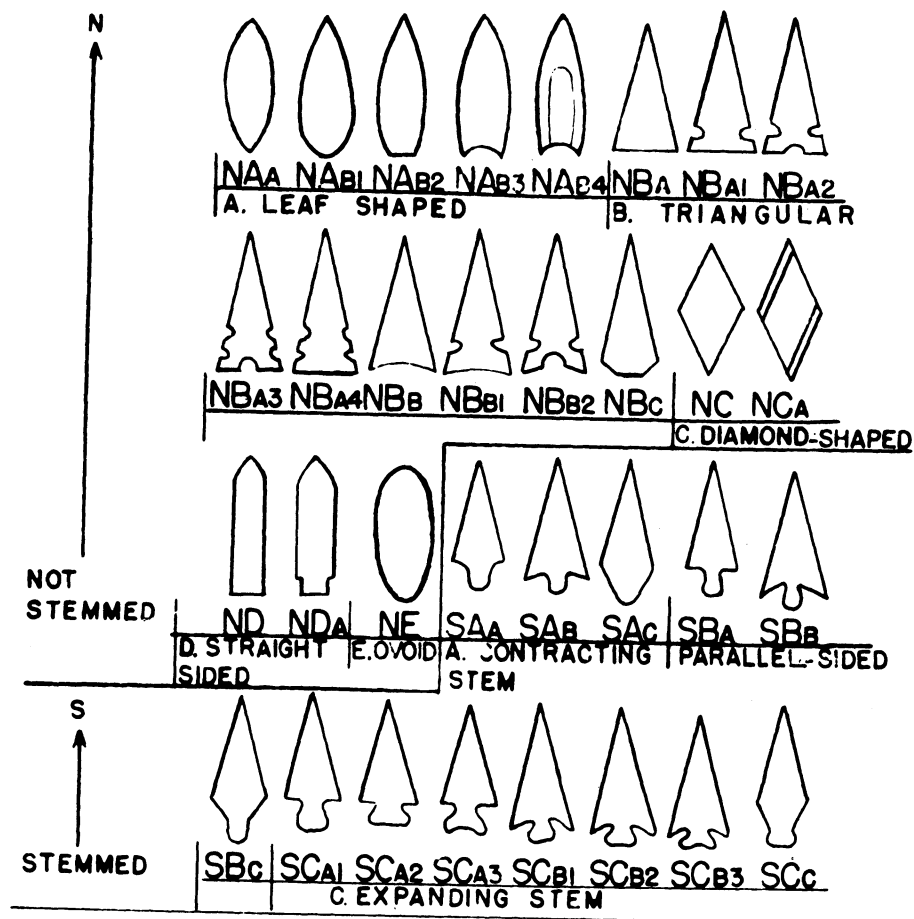
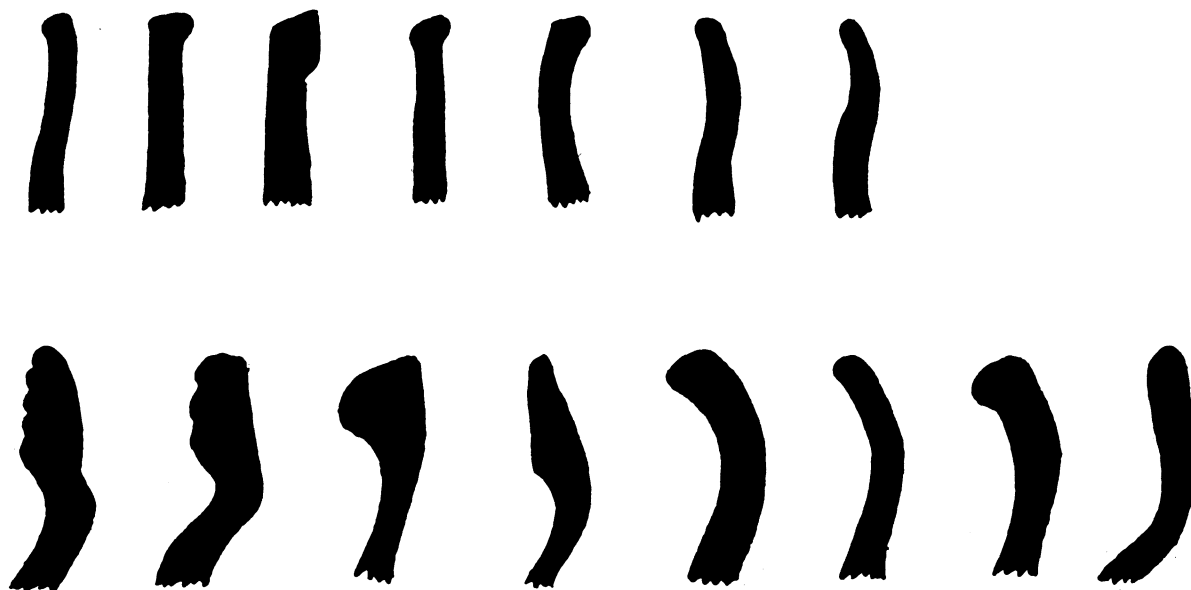


Figure 2

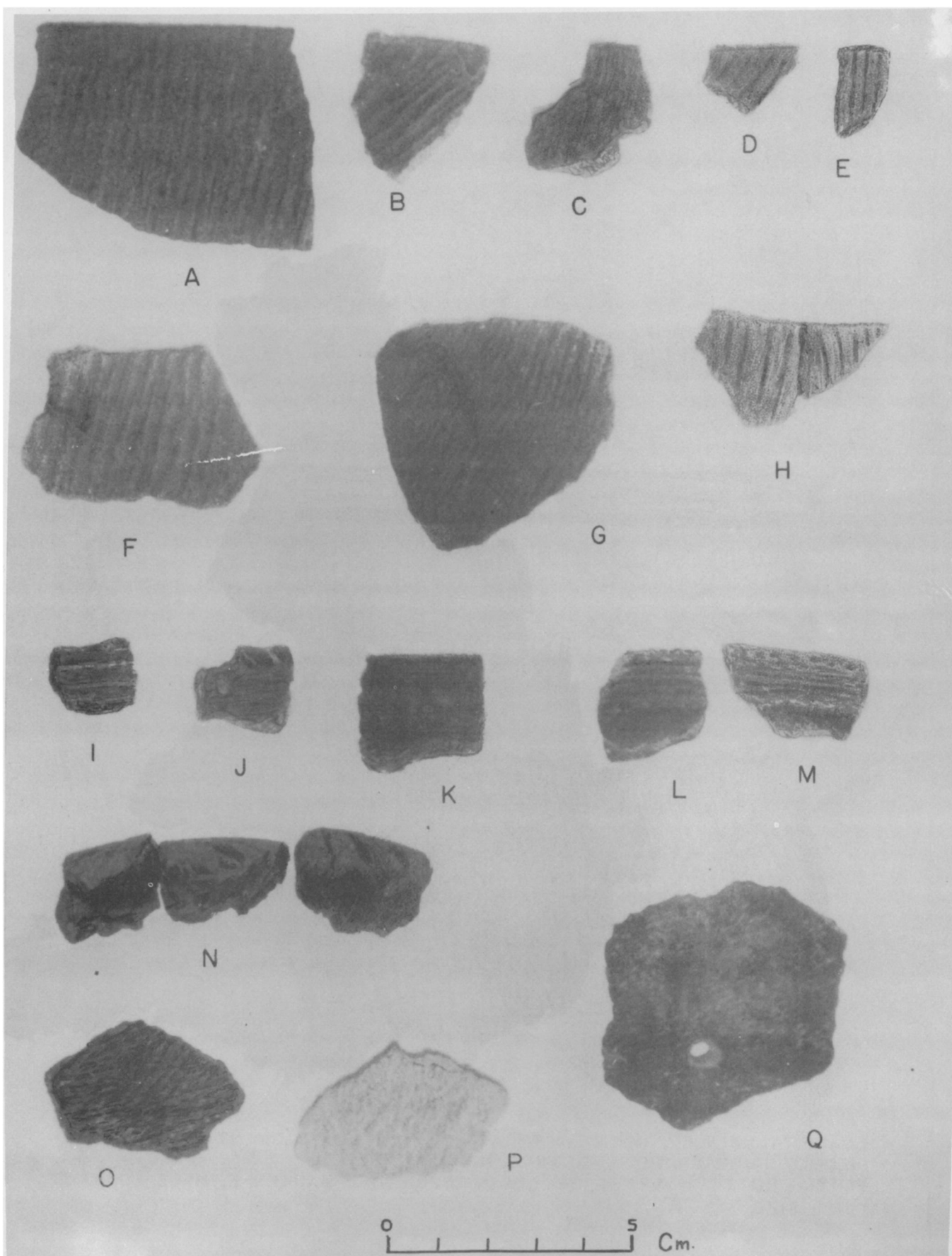


CLASSIFICATION CHART FOR CHIPPED POINTS
(AFTER STRONG)



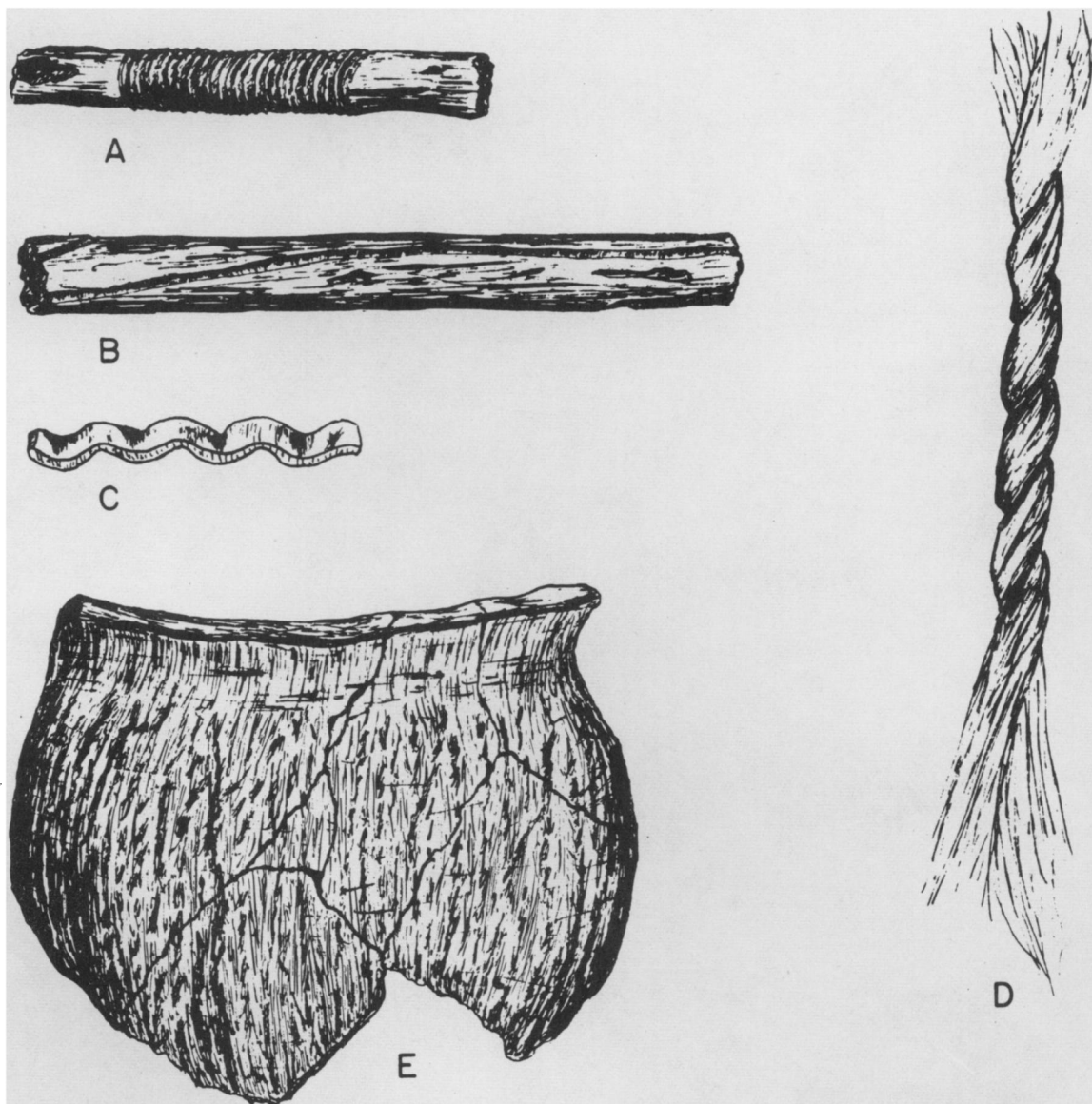
POTTERY RIM PROFILES. EXTERIORS ARE TO THE LEFT.
WOODLAND POTTERY TOP ROW: AGATE CORD-MARKED.
UPPER REPUBLICAN POTTERY BELOW: 5TH SHERD FROM LEFT, OWL CREEK ROUGH
CORD-MARKED. REMAINING SHERDS, OWL CREEK FINE CORD-MARKED.

Figure 3



POTTERY, SITES I-IV
 A-H, AGATE CORD-MARKED; A-E, H, RIM SHERDS
 I-O, Q, OWL CREEK FINE CORD-MARKED. P, OWL CREEK ROUGH CORD-MARKED. I-N RIM SHERDS

Figure 4



**A, B, ARROWSHAFT FRAGMENTS. A, TYPE I; B, TYPE II. C, FRAGMENT OF BASKTERY (?)
 D, PIECE OF TWINED ROPE. A-D, TWICE NATURAL SIZE
 E, PARTIAL POTTERY VESSEL, OWL CREEK ROUGH CORD-MARKED. E, THREE-FOURTHS
 NATURAL SIZE.**

Figure 5